

Species Status Assessment

Class: Birds
Family: Scolopacidae
Scientific Name: *Calidris canutus rufa*
Common Name: Red Knot

Species synopsis:

Red knots breed in the Canadian Arctic and winter at the southern tip of South America. A major stopping point on the 10,000-mile northward migration is the Delaware Bay, where these shorebirds feed heavily on horseshoe crab eggs to replenish fat supplies before continuing. In New York, the subspecies *C. c. rufa* occurs along the salt meadows and mudflat of the South Shore of Long Island in both spring and fall, numbering more than 1,000 individuals.

Red knot populations have declined by 75% since the 1980s in some key areas across its range due to declines in horseshoe crab populations in Delaware Bay and to threats from sea-level rise and shoreline development. Numbers have declined in New York since the 1950s. The dramatic decline in red knot numbers at the major wintering area of Tierra del Fuego resulted in consideration for inclusion the federal endangered species list in 2006; it was listed as Threatened in 2014.

I. Status

a. Current and Legal Protected Status

- i. **Federal** Threatened **Candidate?**
- ii. **New York** SGCN, Threatened

b. Natural Heritage Program Rank

- i. **Global** G4
- ii. **New York** SNRN **Tracked by NYNHP?** No

Other Rank:

U.S. Shorebird Conservation Plan - Species of High Concern
IUCN – Least Concern
COSEWIC – Endangered (subspecies *rufa*)
Species of Northeast Regional Conservation Concern (Therres 1999)

Status Discussion:

Very common to abundant local coastal migrant in spring and fall. Uncommon to fairly common and local on Long Island in winter. Inland, rare in spring, regular but uncommon in fall along the Great Lakes and inland lakes (Sherony 1998). Red knot was listed as federally Threatened in 2014 due to declines in horseshoe crab populations, and to challenges resulting from climate change and coastal development.

II. Abundance and Distribution Trends

a. North America

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Time frame considered: 1990-2010

b. Regional

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Regional Unit Considered: Delaware Bay

Time Frame Considered: 1980s to 2005

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: _____

Listing Status: _____ Not Listed _____ SGCN? Yes _____

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

i. Abundance

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

ii. Distribution:

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

Time frame considered: 1979-2008 _____

Listing Status: _____ Not Listed _____ SGCN? Yes _____

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

i. Abundance

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

ii. Distribution:

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

Time frame considered: 1980s to 2005 _____

Listing Status: _____ Endangered _____ SGCN? Yes _____

| | | |
|--------------|--------------------------|---------------|
| ONTARIO | Not Present <u> X </u> | No data _____ |
| PENNSYLVANIA | Not Present <u> X </u> | No data _____ |
| QUEBEC | Not Present <u> X </u> | No data _____ |
| VERMONT | Not Present <u> X </u> | No data _____ |

d. NEW YORK No data _____

i. Abundance

 X declining ___ increasing ___ stable ___ unknown

ii. Distribution:

___ declining ___ increasing ___ stable X unknown

Time frame considered: Since 1950s

Monitoring in New York.

None.

Trends Discussion:

Numbers of red knots counted on Delaware Bay surveys have declined from over 100,000 in the early 1980s to only about 14,000 in 2006. The entire Western Hemisphere population, numbering from 100,000 to 150,000 just 20 years ago, is now between 18,000 and 33,000 birds.



Figure 1. Distribution of red knot in North America (Birds of North America Online).

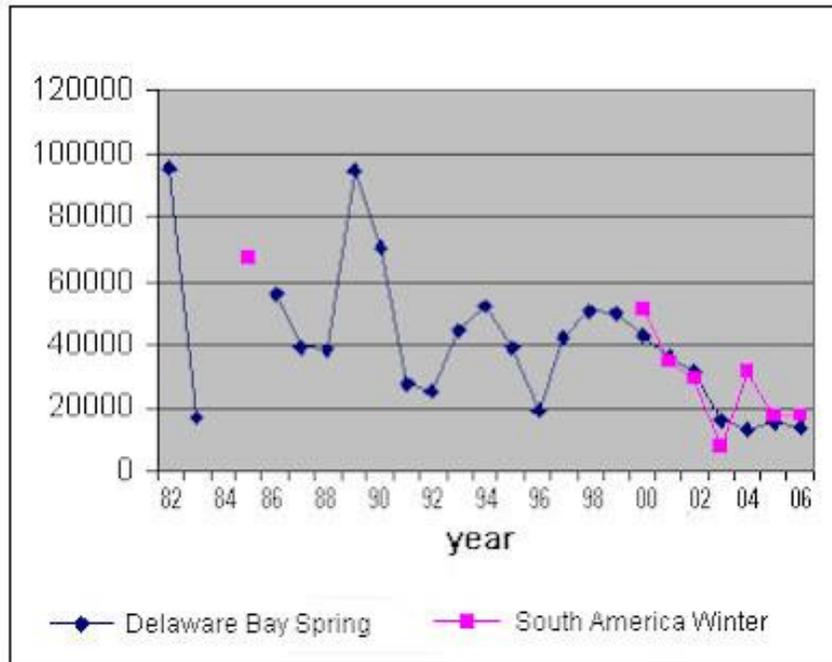


Figure 2. Number of red knots per year 1982-2006 (Niles et al. 2007).



Figure 3. Critical habitat for red knot on Long Island (Niles et al. 2007). Used by permission.

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 | _____ | _____ | _____ |

Details of historic occurrence:

From Sherony (1998): Before 1890 it was said to occur by the thousands. From 1950 to 1970s, it was very common on Lake Ontario during migration but was reported to be observed “in very small numbers.” In the fall, “more than 1,000” can be seen at once time at certain coastal locations.

| Current | <u># of Animals</u> | <u># of Locations</u> | <u>% of State</u> |
|----------------|----------------------------|------------------------------|--------------------------|
| | _____ | _____ | _____ |

Details of current occurrence:

During past ten years, a high count of 500+ red knots was reported in 2006 (Suffolk County). The East Pond Impoundment and Plumb Beach of the Jamaica Bay Wildlife Refuge is an important area of concentration for red knots on the New York coast. Secondary locations where red knots are known to congregate are Far Rockaway, Long Beach, and Jones Beach (Niles et al. 2007).

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
- Peripheral
- Disjunct

Distance to core population:

IV. Primary Habitat or Community Type:

1. Marine, Intertidal, Benthic Geomorphology, Tidal Flat
2. Marine Intertidal Gravel/Sand Beach
3. Estuarine, Intertidal, Brackish Meadow

Habitat or Community Type Trend in New York:

Declining Stable Increasing Unknown

Time frame of decline/increase: _____

Habitat Specialist? Yes No

Indicator Species? Yes No

Habitat Discussion:

During the boreal winter, red knots frequent intertidal habitats, especially on coasts of oceans and large bays where relatively high wave or current action supplies sandy habitat. During migrations, birds are found in the broad coastal salt meadows and mudflats of the South Shore of Long Island.

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:

From Harrington (2001): Age at first breeding unknown. Generally annual intervals between breeding, but may skip some years when snow conditions are unfavorable (Tomkovich and Soloviev 1994). No information on lifetime reproductive success. One brood per season. Few published data on life span and survivorship. The life span unknown, but a banded individual seen at Delaware Bay in May 2013 was 20 years old (see www.manonet.org). Males are highly faithful to breeding territories from year to year. The species is quite faithful to specific migration staging sites.

VI. Threats:

The red knot relies almost entirely on horseshoe crab eggs during an annual spring stopover in Delaware Bay, NJ on its 10,000-mile migration from the tip of South America to the Arctic.

Overharvesting of horseshoe crabs has diminished the abundance and availability of horseshoe crab eggs. The strong reliance of red knots on horseshoe crab eggs has been evidenced by the declines in red knots concurrent to the declines in horseshoe crabs and horseshoe crab eggs (Clark et al. 1993). Other factors such as mites are also affecting horseshoe crab populations.

The red knot's tendency to concentrate at traditional migration staging sites and wintering areas may render populations vulnerable to loss of strategic habitats critical to the well-being of their populations (Myers et al. 1987). According to studies by Harrington et al. (1989), which evaluated the relative concentration of 24 shorebird species at migration staging sites, red knots were the most heavily concentrated of all shorebirds, with 98% in the spring and 97% in the fall concentrated at key sites, virtually all of which were coastal locations.

Global warming may have especially strong impacts on this species. Anticipated climate change will be greatest at polar and temperate latitudes, where red knots breed and winter, respectively. All known major migration staging sites, and most of the major wintering range, are on temperate coastlines of both the New and Old World, where sea level change is predicted to be greatest.

Band recoveries indicate that knots are killed commonly for food in some regions of South America, especially in the Guianas. They also are shot for sport in Barbados. The overall take from these activities is unknown, but information from band recoveries ($n = 17$) in the Guianas hints that the take may be substantial.

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

No Unknown

Yes

Red knot is protected by the Migratory Bird Treaty Act.

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

From NJ Division of Fish & Wildlife website:

New Jersey was one of the first Atlantic coastal states to implement a state-specific horseshoe crab-permitting and harvest-reporting system in 1993. In 2005, New Jersey and Delaware took significant steps to protect the red knot population from further decline. Both states imposed restrictions on horseshoe crab harvest during the spawning season and on public access to Delaware Bay and Atlantic Coast beaches to allow shorebirds to feed undisturbed. New Jersey then took additional steps to protect the red knot by restoring area beaches to their natural state, which provides good crab spawning habitat and removes debris that traps spawning crabs, and imposing

a two-year moratorium (2006-2007) on horseshoe crab harvest to give the crab population a chance to begin recovery.

Management actions are outlined in the red knot assessment (Niles et al. 2007). Conservation actions following IUCN taxonomy are categorized in the table below.

| Conservation Actions | |
|-----------------------------|--|
| Action Category | Action |
| Education & Awareness | Awareness & Communications (educational materials) |
| Land/Water Protection | Site/Area Protection (acquisition, easements) |
| Land/Water Protection | Resource/Habitat Protection |
| Land/Water Management | Site/Area Management (posting or fencing) |
| Law & Policy Actions | Policy/Regulations (establish seasonal use restrictions, adjust state land unit mgmt plans) |
| External Capacity Building | Alliance & Partnership Development (support and participate in international shorebird conservation efforts) |

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for transient shorebirds, which includes red knot.

Fact Sheet:

- ___ Develop educational materials about conservation needs of shorebirds in New York, and promote habitat protection measures.

Habitat Management:

- ___ As important foraging areas become known, identify potential threats and protect those habitats (ex- beaches, tidal flats, shoals, etc.) from permanent alteration, degradation, or adverse human disturbances. Management may include acquisition, easements, establishing seasonal use restrictions, and posting or fencing, etc. as is currently done for beach-nesting birds.

Habitat Research:

- ___ Conduct field studies to document ecology of transient shorebirds on Long Island, including important food items, habitat use (ex- importance of tidal flats) and time/activity budgets.
- ___ Compile data and input from birders to derive a map showing important shorebird foraging and resting areas in New York.

Other Action:

- ___ Provide technical support, funding, or political support as needed, to further international shorebird conservation efforts.

Population monitoring:

- ___ Identify specific locations, procedures, and observers (volunteer or other) for conducting annual shorebird surveys at 5-10 locations in New York, and initiate surveys as soon as possible.

State Land Unit Management Plan:

- ___ On state-owned or other public lands, ensure that management plans consider shorebird needs and appropriately restrict site development and seasonal uses that may adversely affect critical shorebird foraging areas.

Statewide Management Plan:

- ___ Develop a conservation plan for transient (non-breeding) shorebirds that regularly occur in New York, to include objectives and actions that we can assist with both inside and out of New York State.

VII. References

Harrington, B.A. 2001. Red Knot (*Calidris canutus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online:

<http://bna.birds.cornell.edu/bna/species/563> doi:10.2173/bna.563

Harrington, B. A., J. P. Myers, and J. S. Grear. 1989. Coastal refueling sites for global bird migrants: Coastal Zone 89. Proc. Sixth Symp. on Coastal and Ocean Manage. 5:4293-4307.

Myers, J. P., R. I. G. Morrison, P. Z. Antas, B. A. Harrington, and T. E. Lovejoy. 1987. Conservation strategy for migratory species. Am. Sci. 75:19-26.

Niles, L.J. et al. 2007. Status of the red knot (*Calidris canutus rufa*) in the western hemisphere. New Jersey Department of Environmental Protection, Trenton, NJ.

Sherony, D.F. 1998. Red knot, *Calidris canutus*. Pages 250-251 in Bull's birds of New York State (E. Levine, ed.). Cornell University Press, Ithaca, NY.

Therres, G.D. 1999. Wildlife species of regional conservation concern in the northeastern United States. *Northeast Wildlife* 54:93-100.

Tomkovich, P. S. and M. Soloviev. 1996. Distribution, migrations and biometrics of knots *Calidris canutus canutus* on Taimyr, Siberia. *Ardea* 84:85-98.

Date last revised: December 2014