Species Status Assessment

Common Name:	Red Knot	**Date Updated:**	February 2025
Scientific Name:	*Calidris canutus*	**Updated By:**	Tgh, V. Bonaiuto
Class:	Aves		
Family:	Scolopacidae		

Species Synopsis

(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):

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. Horseshoe crabs are an important prey for red knots.

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. In 2024, red knot was assessed for the IUCN red list, and remained near threatened with a decreasing global population (BirdLife International 2024).

I. Status

a. Current legal protected Status

i. Federal: Threatened **Candidate:**

ii. New York: Threatened (*C. c. rufa)*

b. Natural Heritage Program

i. Global: G4

ii. New York: S2S3M **Tracked by NYNHP?** On Active Tracking List

Other Ranks:

NYS 2025 SGCN status: High Priority Species of Greatest Conservation Need
COSEWIC: Not listed in Canada
IUCN Red List: Near Threatened
Northeast Regional SGCN: RSGCN (*C. c. rufa)*

Status Discussion:

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Declining	Unknown	Unknown for US	T	
Northeastern US	Yes	Unknown	Unknown	Unknown		RSGCN
New York	Yes	Unknown	Unknown	Unknown	T	Yes
Connecticut	Yes	Unknown	Unknown	Unknown	S1M	No
Massachusetts	Yes	Unknown	Unknown	Unknown	T; S2N	Yes
New Jersey	Yes	Unknown	Unknown	Unknown	E; S1N	Yes
Pennsylvania	Yes	Unknown	Unknown	Unknown	T; SNRM	Yes
Vermont	No	Unknown	-	Unknown		
Ontario	Yes	Unknown	Unknown	Unknown	SC (NE pop.); S1M	
Quebec	Yes	Unknown	Unknown	Unknown	T; SNA	

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York

(specify any monitoring activities or regular surveys that are conducted in New York):

While not directly monitoring red knots, the NYC Bird Alliance monitors beaches in which horseshoe crabs spawn, including monitoring disturbances to horseshoe crabs and red knots.

Trends Discussion

(insert map of North American/regional distribution and status):

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. Between 2012 and 2019, the stopover population seemed to stabilize at an average of 25,500 red knots, still lower than the 1997 average of 42,000 (NJDEP 2020). 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.

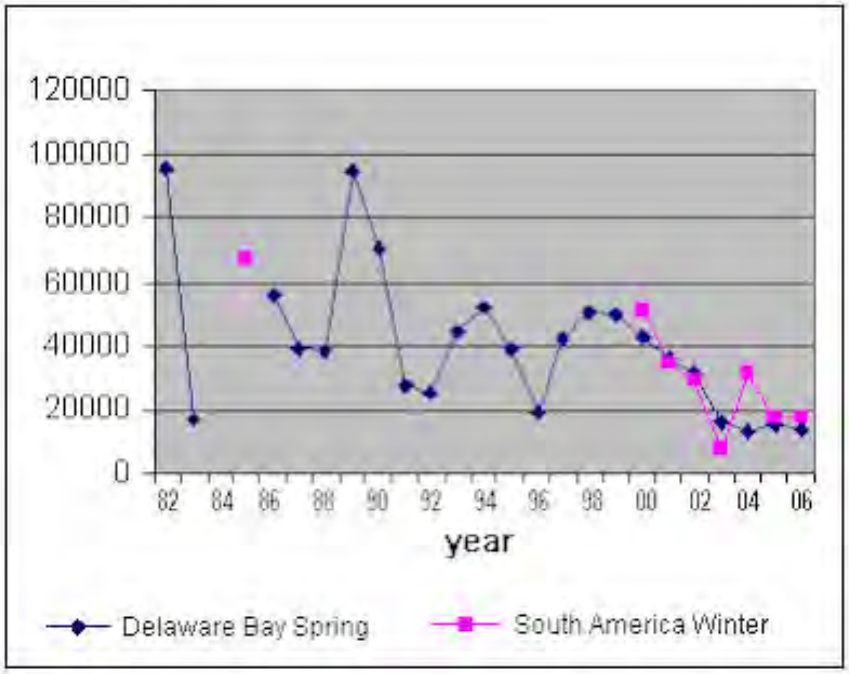

Figure 1. Number of red knots per year 1982-2006 (Niles et al. 2007).

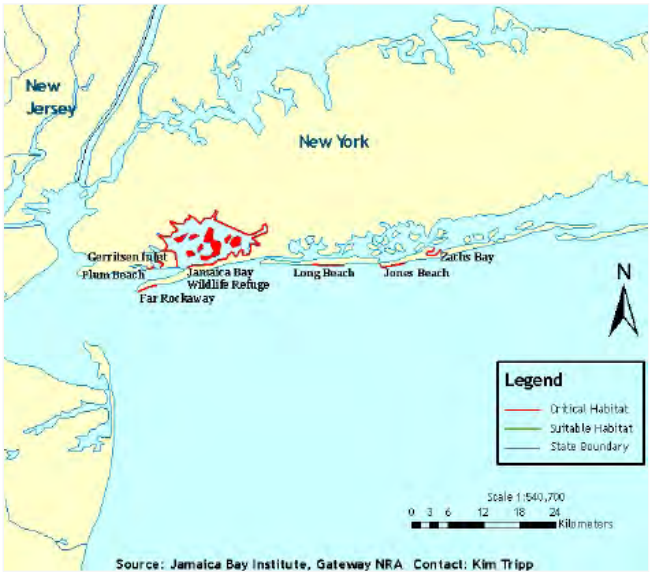

Figure 2. Critical habitat for red knot on Long Island (Niles et al. 2007). Used by permission

Figure 3. Breeding range of red knot (eBird).

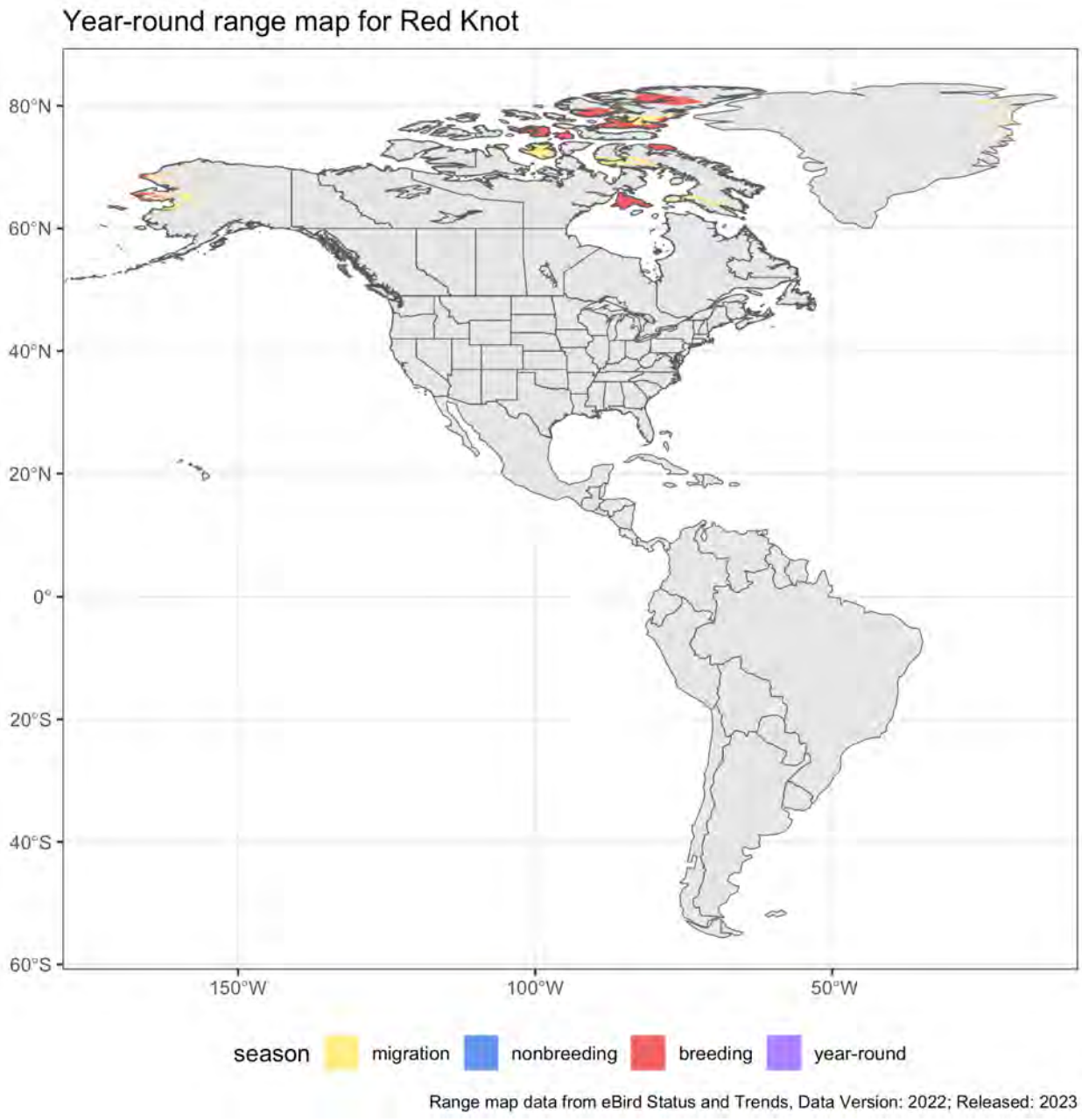

Figure 4. Year-round range of red knot (eBird).

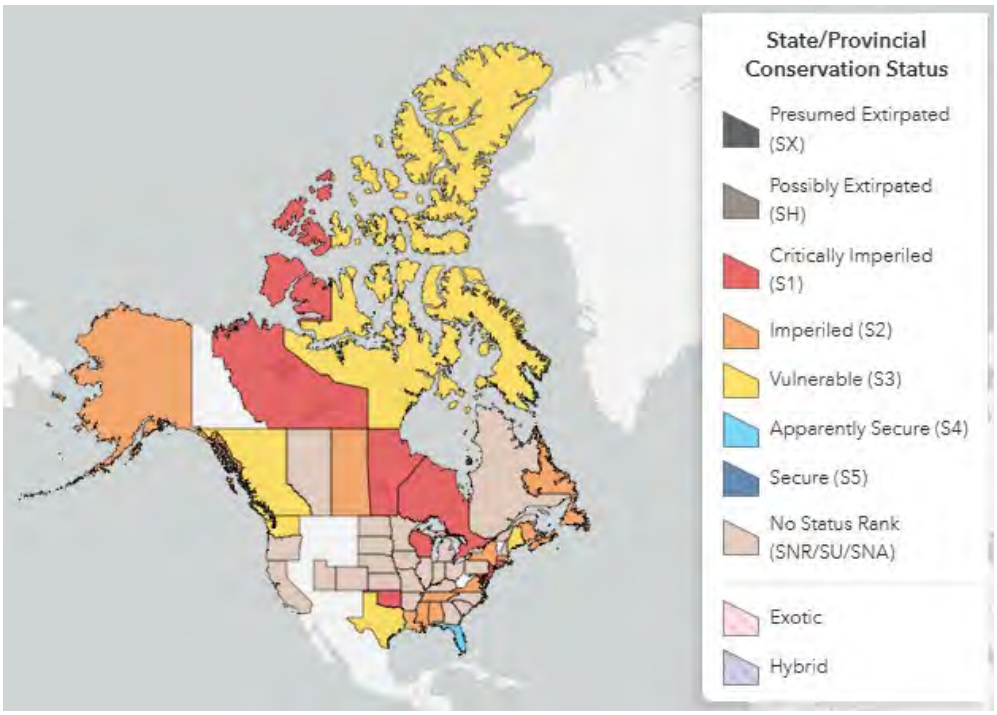

Figure 5. Conservation status of red knot in North America (NatureServe 2025).

III. New York Rarity

(provide map, numbers, and percent of state occupied)

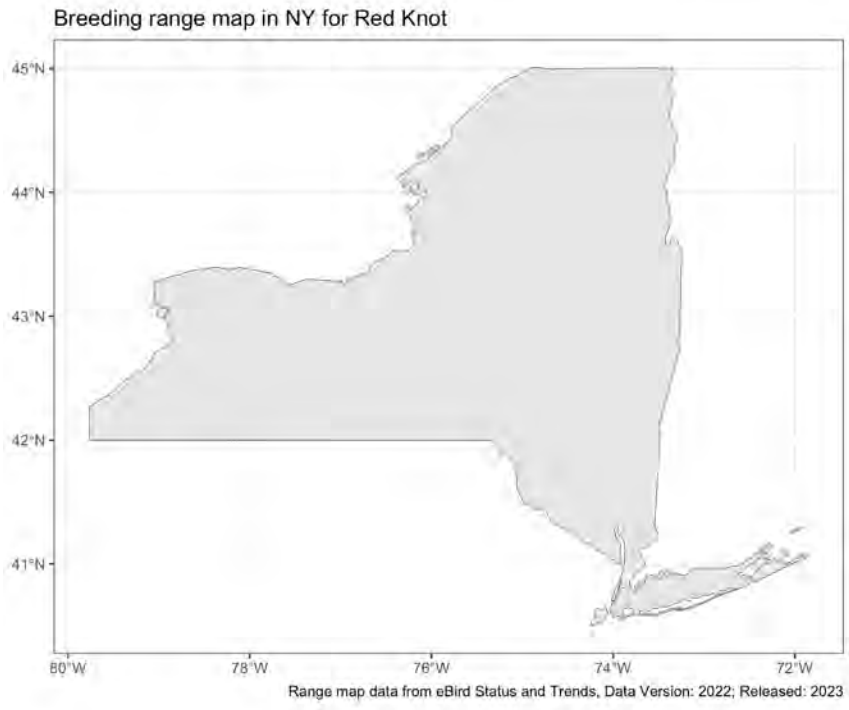

Figure 6. NYS breeding range of red knot (eBird)

Details of historic and current occurrence:

The first Breeding Bird Atlas (BBA) (1980-85) documented occupancy in 0 blocks, 0% of the survey blocks statewide (Andrle and Carroll 1988). The second BBA (2000-05) documented occupancy in 0 blocks, 0% of the survey blocks statewide (McGowan and Corwin 2008).

The third BBA (2020-25) is currently underway and utilizes a different number and layout of survey blocks across New York, making direct comparison with the first two Atlases difficult. There were 5,333 blocks in the first and second BBAs, and there are 5,710 blocks in the current BBA, of which 1,815 are considered priority blocks. To date, red knot has been documented in 1 priority blocks, 0.1% of all priority blocks statewide during the third BBA (NY BBA III Overview, 2024).

New York's Contribution to Species North American Range:

Based on eBird data, 0.02 percent of the population breeds in New York, while 0 percent of the non-breeding population occurs in New York. Among all states with breeding populations, New York ranks 8 of 8.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Core	

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%' 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type

(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):

NatureServe broad habitat types: Tundra, Sand/dune, Tidal flat/shore, Herbaceous wetland

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/ Increase
Yes	No	Unknown	Unknown

Column options
Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item.
Habitat/Community Trend: Declining; Stable; Increasing: Unknown; (blank) or Choose an item.

Habitat Discussion:

In New York, red knots are found in coastal salt marshes and mud flats shore of Long Island.

Primarily they are found on seacoasts on tidal flats and beaches, and less frequently in marshes and flooded fields (AOU 1983). On sandy or pebbly beaches, especially at river mouths; they feed on mudflats, and loafs and sleeps on salinas and salt-pond dikes (Costa Rica, Stiles and Skutch 1989). Red knots nest on the ground in barren or stony tundra and in well-vegetated moist tundra.

V. Species Demographics and Life History

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Yes	Yes	No	Yes	Yes	No

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item.
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item.

Species Demographics and Life History Discussion

(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

The known maximum life span is 19 years, although low survival rates for adults makes individuals living for this long a rare occurrence (Baker 2020). Generally breeding happens on annual intervals, with one brood per year. Clutch size is usually 4 eggs (Baker 2020). Nonbreeding groups are usually in compact flocks.

VI. Threats

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	(horseshoe crab harvesting)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
6. Human Intrusions & Disturbance	6.1 Recreational Activities	6.1.4 Recreational boating	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
6. Human Intrusions & Disturbance	6.1 Recreational Activities	6.1.8 Wildlife observation/photography	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
7. Natural System Modifications	7.3 Other Ecosystem Modifications	(dredging shoals)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.1 Habitat Shifting & Alteration	(sea level rise)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to red knot

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?

Yes:	✓	**No:**	**Unknown:**

If yes, describe mechanism and whether adequate to protect species/habitat:

This species is included in the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) and is protected as a native species under the NYS Environmental Conservation Law, and as a federally Threatened species.

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

For migratory populations of red knots, the 2023 U.S. Fish and Wildlife Service's Recovery Implementation Strategy includes recommended actions for recovery. The highest priority actions include: maintaining, enhancing, and restoring habitat; working with local land managers and regulatory authorities to prevent new hard shoreline stabilization structures; promoting

habitat restoration of beaches, wetlands, and tidal flats, developing best practices for restoration techniques; developing strategies for facilitating shoreline migration; developing protocols to assess coastal habitats following storms; maintain and restore food supplies; continue science-based horseshoe crab management, better characterize the role of horse shoe crab eggs for red knots outside of Delaware Bay; and limiting human disturbance in foraging and roosting habitats (USFWS 2023).

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.3.1.2 Fence to limit pedestrian access	Site/Area management (posting or fencing)
B.3 Outreach	B.3.1.4.0 Public outreach and information	Awareness & Communications (educational materials)
C.6 Design and Plan Conservation	C.6.2.2.0 Acquire title for conservation purposes	-Site/Area protection (acquisition)
C.6 Design and Plan Conservation	C.6.2.3.1 Conservation easement	-Site/Area protection (easements)
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	-Resource/Habitat Protection
C.7 Legislative and Regulatory Framework or Tools	C.7.1.0.0 Create, amend, or influence legislation, regulation, or codes	Policy/Regulations (establish seasonal use restrictions, adjust state land unit mgmt. plans)
C.10 Institutional Development	C.10.2.0.0 External support and organizational development	Alliance and Partnership Development (support and participate in international shorebird conservation efforts).

Table 3. Recommended conservation actions for *red knot*.

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

This SSA drew heavily from these resources:

eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: http://www.ebird.org. [Accessed: 11/25/2024].

Ziolkowski Jr., D.J., Lutmerding, M., English, W.B., and Hudson, M-A.R., 2024, North American Breeding Bird Survey Dataset 1966 - 2023: U.S. Geological Survey data release, https://doi.org/10.5066/P136CRBV.

New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry. 2024. Element Occurrence and Element Dataset. Albany, New York. [Exported 11/20/2024].

NatureServe. 2024. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. http://www.natureserve.org/explorer. [Accessed 11/20/2024].

Additional references:

American Ornithologists' Union (AOU). 1983. Check-list of North American Birds, 6th edition. Allen Press, Inc., Lawrence, Kansas. 877 pp.

Baker, A., P. Gonzalez, R. I. G. Morrison, and B. A. Harrington (2020). Red Knot (*Calidris canutus*), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.redkno.01

BirdLife International. 2024. *Calidris canutus*. *The IUCN Red List of Threatened Species* 2024: e.T22693363A154080160. https://dx.doi.org/10.2305/IUCN.UK.2024-2.RLTS.T22693363A154080160.en. Accessed on 24 January 2025.

Bent, A.C. 1927. Life histories of North American shorebirds (Part I). U.S. Natl. Mus. Bull. 142, Washington, D.C.

Botton, M. L., R. E. Loveland, and T. R. Jacobsen. 1994. Site selection by migratory shorebirds in Delaware Bay, and its relationship to beach characteristics and abundance of horseshoe crab (LIMULUS POLYPHEMUS) eggs. Auk 111:605-616.

Bull, John. 1974. Birds of New York State. Doubleday, Garden City, New York. 655 pp.

Carter, M., C. Hunter, D. Pashley, and D. Petit. 1998. The Watch List. Bird Conservation, Summer 1998:10.

Carter, M., G. Fenwick, C. Hunter, D. Pashley, D. Petit, J. Price, and J. Trapp. 1996. Watchlist 1996: For the future. Field Notes 50(3):238-240.

Clark, K. E., L. J. Niles, and J. Burger. 1993. Abundance and distribution of migrant shorebirds in Delaware Bay. Condor 95:694-705.

Flint, V. E. 1972. The breeding of the knot on Vrangelya (Wrangell) Island, Siberia. Western Foundation [of Vertebrate Zoology]?

Harrington, B. A., J. M. Hagan, and L. E. Leddy. 1988. Site fidelity and survival differences between two groups of New World red knots (CALIDRIS CANUTUS). Auk 105:439-445.

Hayman, P., J. Marchant, and T. Prater. 1986. Shorebirds: an identification guide to the waders of the world. Houghton Mifflin Co., Boston.

Hobson, W. 1972. The breeding biology of the knot. Western Foundation [of Vertebrate Zoology]?

Johnson, S. R. and D. R. Herter. 1989. The Birds of the Beaufort Sea. BP Exploration (Alaska) Inc., Anchorage, Alaska. 372 pp.

Morrison, R. I. G., and R. K. Ross. 1989. Atlas of Nearctic shorebirds on the coast of South America. Vols. 1 and 2. Canadian Wildl. Serv. Spec. Publ. 325 pp.

NatureServe. 2025. NatureServe Explorer. Page last published 1/3/25. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.100057/Calidris_canutus. Accessed January 24, 2025.

New York State Department of Environmental Conservation. Checklist of the amphibians, reptiles, birds, and mammals of New York State, including their protective status. Nongame Unit, Wildlife Resources Center, Delmar, NY.

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.

NJDEP. Wildlife Populations: Red Knot. Environmental Trends Report. 2020. https://dep.nj.gov/wp-content/uploads/dsr/trends-red-knot.pdf

Piersma, T., and N. Davidson, editors. 1992a. Wader Study Group Bulletin 64, Supplement, April 1992. 209 pp.

Robert, M., R. McNeil, and A. Leduc. 1989. Conditions and significance of night feeding in shorebirds and other water birds in a tropical lagoon. Auk 106:94-101.

Stiles, F. G. and A. F. Skutch. 1989. A guide to the birds of Costa Rica. Cornell University Press, Ithaca, New York, USA. 511 pp.

Terres, J. K. 1980. The Audubon Society encyclopedia of North American birds. Alfred A. Knopf, New York.

U.S. Fish and Wildlife Service. 2023. Recovery implementation strategy for the rufa red knot (Calidris canutus rufa). U.S. Fish and Wildlife Service, New Jersey Field Office, Galloway, New Jersey. 16 pages.