

Species Status Assessment

Common Name	dune sandspur	Date Updated:	2024-01-10
Scientific Name	<i>Cenchrus tribuloides</i>	Updated By:	Kyle J. Webster
Family	Poaceae		

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

Dune sandspur (*Cenchrus tribuloides*) is an annual graminoid in the Grass Family (Poaceae). Globally, *Cenchrus tribuloides* occurs along the coastal plain, from Long Island south to Florida and west along the Gulf Coast to Louisiana, and including a few scattered inland populations from Maine to Ohio, Virginia, and Georgia (NatureServe 2023). There are five species of *Cenchrus* in New York, two of which are native to the state (Werier et al. 2023).

In New York, *Cenchrus tribuloides* is known from maritime dunes, beaches, and grasslands (Edinger et al. 2014, NYNHP 2023, 2024). It is currently only known from the south shore beaches of western Long Island in Suffolk and Nassau County, and on the eastern shore of Staten Island in Richmond County (NYNHP 2023).

The short-term trend seems stable with little fluctuation observed over the years (NYNHP 2023). However, the number of populations has declined over the long-term and the amount of beach habitat has declined and is not expected to increase (NYNHP 2023). More regular surveys of extant populations and increased research regarding the trends of its primary habitat are needed to better understand the population trends of *Cenchrus tribuloides* in New York (NYNHP 2023).

I. Status

a. Current legal protected Status

i. Federal:		Candidate:	
ii. New York:	<u>Threatened</u>		

b. Natural Heritage Program

i. Global:	<u>G5</u>		
ii. New York:	<u>S2</u>	Tracked by NYNHP?	On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada
IUCN Red List: Least Concern

Status Discussion:

Cenchrus tribuloides is Threatened in New York (Ring 2023). There are 17 extant and 20 historical occurrences in the state. The number of individuals can fluctuate dramatically within a population and multiple surveys are needed to accurately assess the number of individuals present. Only one population has more than 1000 individuals, ten populations contain between 10-200 individuals, and five populations contain ten or fewer individuals.

II. Abundance and Distribution

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Unknown	Unknown	Unknown		
Northeastern US	Yes	Unknown	Unknown	Unknown		
New York	Yes	Unknown	Unknown	Unknown	T	
Connecticut	No	-	-	-		
Massachusetts	Yes	Unknown	Unknown	Unknown	SNR	
New Jersey	Yes	Unknown	Unknown	Unknown	S4	
Pennsylvania	Yes	Unknown	Unknown	Unknown	SNR	
Vermont	No	-	-	-		
Ontario	No	-	-	-		
Quebec	No	-	-	-		

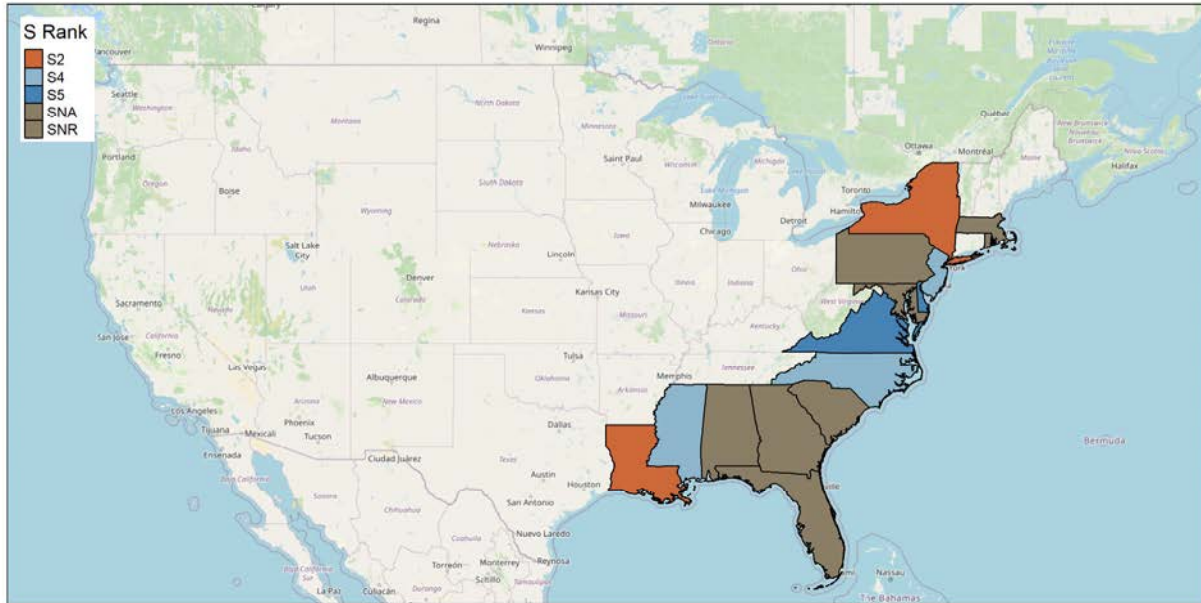


Figure 11: *Cenchrus tribuloides* North American distribution.

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

III. NY Rarity and Trends

Trends Discussion

The short-term trend seems stable with little fluctuation over the years. Populations were expected to grow along with increased shoreline protection for rare shorebirds, but this does not seem to have happened. The number of populations has declined over the long-term and the number of beaches available to the species is not expected to increase. More data is needed to understand the trends among, and population dynamics within, *Cenchrus tribuloides* populations (NYNHP 2023, NYNHP 2024).

Details of historic and current occurrence:

Cenchrus tribuloides is currently only known from the south shore beaches of western Long Island in Suffolk and Nassau County, and on the eastern shore of Staten Island in Richmond County. There is one historical record from the late 1800s collected in the Albany area that is likely extirpated. There are probably under 2000 plants present in any one year.

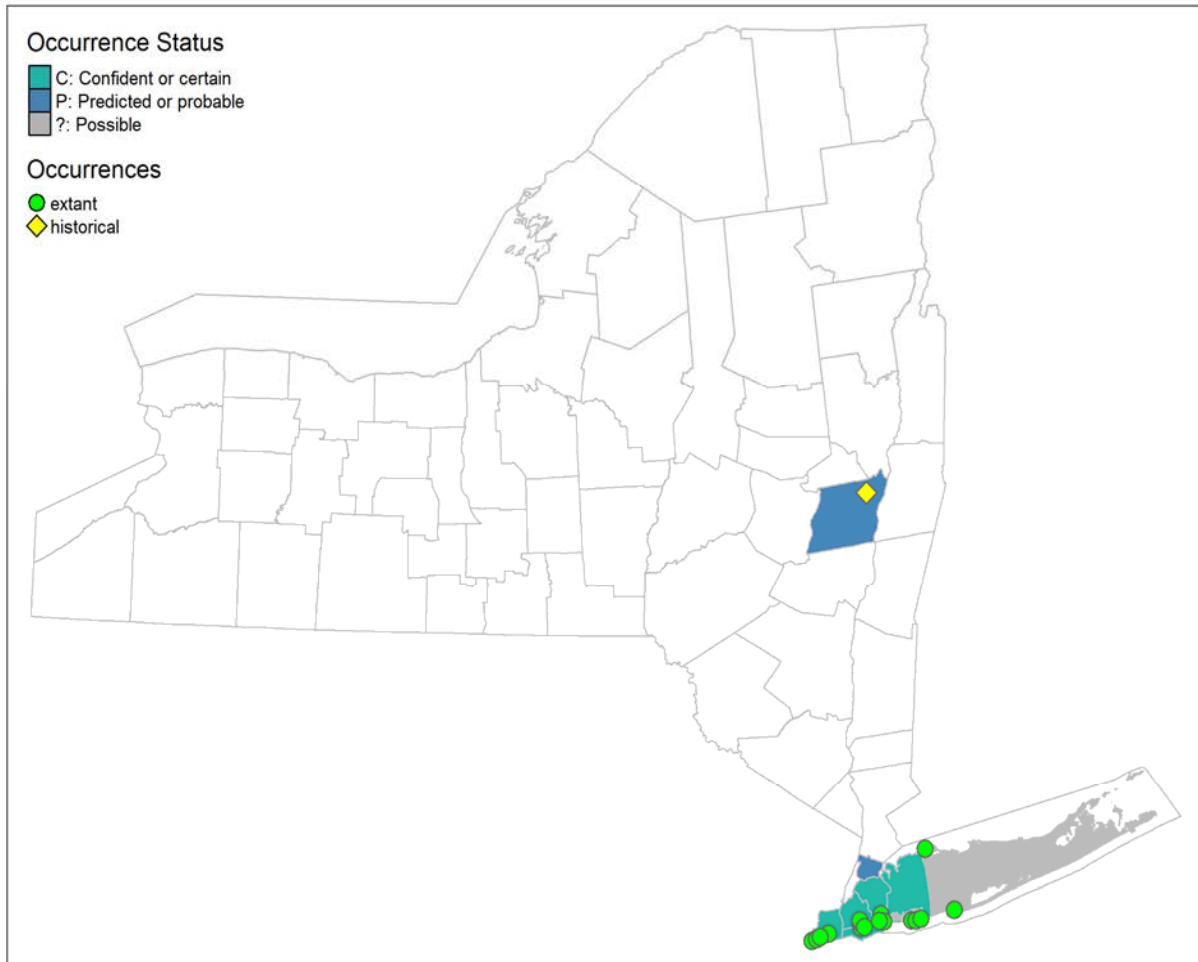


Figure 22: NYS distribution for *Cenchrus tribuloides*.

Table 1. Number of records (element occurrences) of *Cenchrus tribuloides* grouped by the dates known to be extant (the years spanning first observation to last observation) and the number and percent of total of USGS 7.5 minute map quadrangles these observations fall within for New York State.

Years	# of Records	# of distinct quads	% of quads in State
Pre-1995	3	3	0.3
1995-2004	8	7	0.7
2005-2014	1	1	0.1
2015-2023	6	4	0.4

Monitoring in New York

There are 37 populations known statewide, of which 17 are extant and 20 are historical. Six occur on NYS Park lands and one occurs on NYS DEC land. Populations on State Park lands are monitored on a ten-year rotation. None of the other populations have been regularly monitored. The 17 extant occurrences were last observed between 1995 and 2021. Four of

those populations have not been surveyed since the 1990s (NYNHP 2023, 2024). Eight of the extant populations have been surveyed in two or more years and these populations seem to fluctuate between 10-200 individuals. Another eight extant populations have been surveyed only once, and one population has never been censused (NYNHP 2023, 2024).

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

NY Natural Heritage Communities: Maritime beach, Maritime dunes, Maritime grassland

Habitat or Community Type Trend in New York

Declining: Stable: Increasing: Unknown: ✓
 Time Frame of Decline/Increase:
 Habitat Specialist Yes: ✓ No:

Habitat Discussion:

In New York, *Cenchrus tribuloides* is known from maritime dunes, beaches, and grasslands (Edinger et al. 2014, NYNHP 2023, 2024). The plants need disturbed sands to thrive (NYNHP 2024). Coastal sands, especially on dunes (Gleason and Cronquist 1991). Moist, sandy dunes (Utah State University 2005).

V. Species Demographics and Life History (include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

Cenchrus tribuloides is an annual grass that occurs on maritime dunes, beaches, and grasslands (Edinger et al. 2014, NYNHP 2023, 2024) and is an important early colonizer of bare sandy area along coastal beaches (Cheplick 2006). Like all grass species, they are wind-pollinated. Plants germinate in early spring, flower in mid-summer, and produce mature fruits in fall (Cheplick 2006, NYNHP 2024). Seeds produced in fall then overwinter and sprout the following spring (Cheplick 2006). Seedlings and seed banks were found to be most dense at 20 meter and 44 meters from the shoreline and least dense where *Calamagrostis breviligulata* was dominant on the beach (Cheplick 2006). *Cenchrus* seeds have sharp spines with recurved barbs that allow them to attach to, and be dispersed by, animals.

Because of this annual life cycle and the sometimes transient habitat of beaches, *Cenchrus tribuloides* can be negatively impacted by powerful fall storms that wash away the annual seedbank (Cheplick 2017).

Table 2. Phenology of *Cenchrus tribuloides* in New York State (NYNHP 2023).

Phenology	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flowering												
Fruiting												

VI. Threats

While *Cenchrus tribuloides* needs disturbed sands to thrive, populations are threatened by persistent disturbances and direct destruction from beach grooming, vehicle use, and trampling. Invasive species, succession, and rising sea levels may also threaten this species. Cheplick (2017) found that one-year post-hurricane *Cenchrus tribuloides* populations were reduced, and that a subsequent fall hurricane resulted in no seedling recruitment the following year. This lack of post-hurricane recovery may indicate that the increased number and intensity of storms due to climate change will negatively impact this species.

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:

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

Protect the beach habitat from direct destruction by human means, but disturb areas enough so open sands prevail.

Protect existing un-maintained beaches and maintain natural disturbance cycles. Limit recreation and maintenance activities that directly impact the plants, such as beach grooming and vehicle use. Avoid shoreline stabilization projects around *Cenchrus tribuloides* populations. Consider additional land protection behind current dune and beach systems so that in the event of sea level rise, dune and beach systems can migrate inland, continuing to provide habitat for *Cenchrus tribuloides* in the long-term.

Complete Conservation Actions table using IUCN conservation actions taxonomy at link below. Use headings 1-6 for Action Category (e.g., Land/Water Protection) and associated subcategories for Action (e.g., Site/Area Protection) - <https://www.iucnredlist.org/resources/conservation-actions-classification-scheme>

Table 3. Recommended conservation actions for *Cenchrus tribuloides*.

Conservation Actions	
Action Category	Action
Land/water protection	1.1. Site/area protection
Land/water protection	1.2. Resource & habitat protection
Land/water management	2.1. Site/area management
Land/water management	2.2. Invasive/problematic species control
Land/water management	2.3. Habitat & natural process restoration

VII. References

This SSA drew heavily from these resources:

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