

Species Status Assessment

Common Name	large yellow nut sedge	Date Updated:	2023-12-20
Scientific Name	<i>Cyperus esculentus</i> var. <i>macrostachyus</i>	Updated By:	Kyle J. Webster
Family	Cyperaceae		

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

Large yellow nut sedge (*Cyperus esculentus* var. *macrostachyus*) is a perennial graminoid in the Sedge Family (Cyperaceae). *Cyperus* has a global distribution throughout tropical and temperate areas and consists of approximately 600 species, 96 of which occur in North America (Flora North America 2002). There are 32 species of *Cyperus* in New York, 19 of which are native (Werier et al. 2023).

Cyperus esculentus is a widespread species in North America with four varieties currently recognized (Flora North America 2002, Schippers et al. 1995, Weakley 2020). Two of these varieties occur in New York: *Cyperus esculentus* var. *macrostachyus* and *Cyperus esculentus* var. *leptostachyus* (Werier et al. 2023). *Cyperus esculentus* var. *leptostachyus* is common throughout New York and its North American range (Flora North America, 2002, Weakley 2020, Werier et al. 2023). *Cyperus esculentus* var. *macrostachyus* occurs across the southern US coastal plain from Texas to Florida, north to North Carolina, and has a disjunct population in southeastern New York. (NatureServe 2023, NYNHP 2023, Weakley 2020).

The habitat of *Cyperus esculentus* var. *macrostachyus* in New York is not well understood. Elsewhere in its range it occurs in disturbed areas, croplands, and dunes (Flora North America 2002, Weakley 2020). It is currently known from only one population in Richmond County (NYNHP 2023). Due to a lack of data and surveys the population trends of *Cyperus esculentus* var. *macrostachyus* in New York are unknown at this time.

I. Status

a. Current legal protected Status

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

b. Natural Heritage Program

i. Global:	<u>G5TNR</u>		
ii. New York:	<u>S1</u>	Tracked by NYNHP?	On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada

IUCN Red List: Not assessed by IUCN Red List

Status Discussion:

There is one extant and two historical populations. The extant population has never been censused and was last seen in 1992 (NYNHP 2023). Its current status is unknown.

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	E	
Connecticut	No	-	-	-		
Massachusetts	No	-	-	-		
New Jersey	No	-	-	-		
Pennsylvania	No	-	-	-		
Vermont	No	-	-	-		
Ontario	No	-	-	-		
Quebec	No	-	-	-		

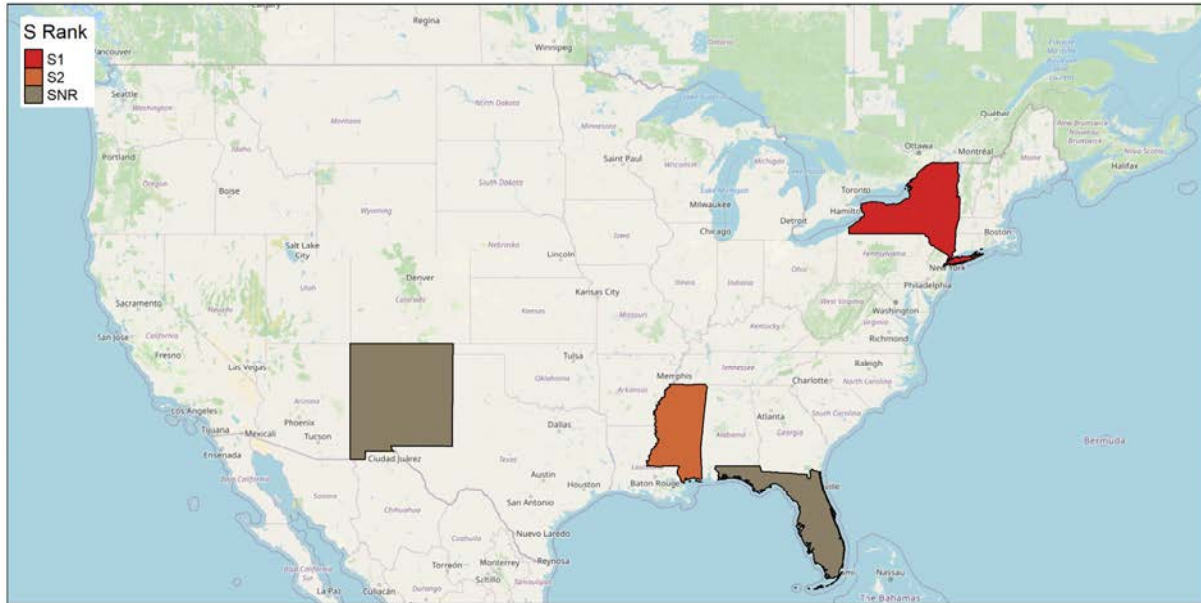


Figure 1: *Cyperus esculentus* var. *macrostachyus* North American distribution.

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

III. NY Rarity and Trends

Trends Discussion

The short- and long-term trends of *Cyperus esculentus* var. *macrostachyus* in New York are unknown. This variety was only recently recognized by field botanists in New York. The only extant population has only been surveyed once and has never been censused. More surveys, herbarium review for historical populations, and monitoring are needed to determine the trends of *Cyperus esculentus* var. *macrostachyus* in New York.

Details of historic and current occurrence

Cyperus esculentus var. *macrostachyus* has only been documented from Kings and Richmond Counties in New York City. It is currently only extant in Richmond County.

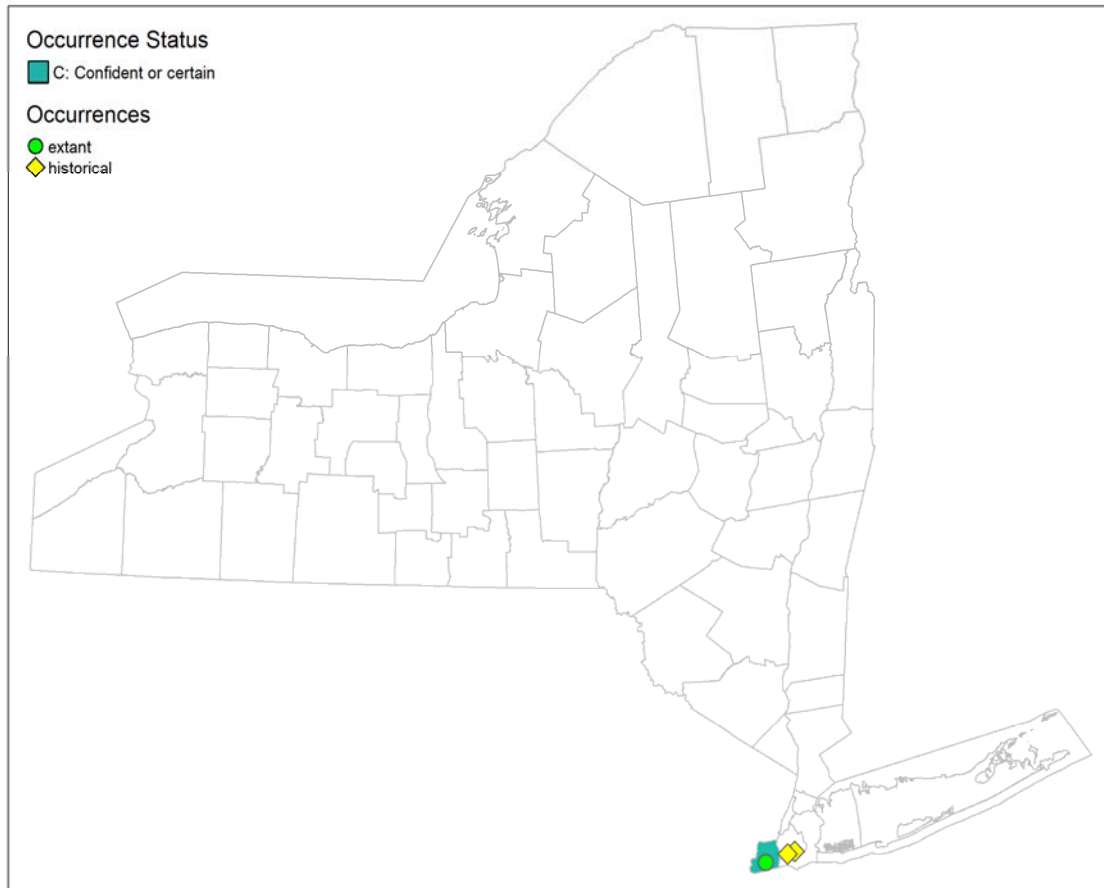


Figure 2: NYS distribution of *Cyperus esculentus var. macrostachyus*.

Table 1. Number of records (element occurrences) of *Cyperus esculentus var. macrostachyus* 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	0	0	0.0
2005-2014	0	0	0.0
2015-2023	0	0	0.0

Monitoring in New York

There are three populations known statewide, of which one is extant and two are historical. None of the populations are regularly monitored. The extant population was last documented by the Natural Heritage Program in 1992 (NYNHP 2023).

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

NY Ecological Communities: Maritime dunes, Maritime beaches (Edinger et al. 2014).

Habitat or Community Type Trend in New York

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

Habitat Discussion:

This species occurs on maritime dunes and maritime beaches, though its habitat in New York is not yet well understood (Edinger et al. 2014, NYNHP 2023). Elsewhere in its range it occurs in dunes, disturbed areas, disturbed soils, and croplands (Flora North America 2002, Weakley 2020).

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):

Cyperus esculentus var. *macrostachyus* is a perennial sedge. In New York. The wind-pollinated flowers bloom in late-summer. Each flower develops into a single seed (achene). The seeds develop and disperse when mature, typically in early autumn (NYNHP 2023). In addition to falling directly from the inflorescence, seeds may be dispersed short distances by wind and water (Lew-Smith 2003). However, little published information is available regarding the seed dispersal of *Cyperus*.

Justice (1975) found that the seeds of some related *Cyperus* were dormant at maturity and for a short time after dispersal. They found that many species of *Cyperus* require after-ripening (maturation of the seed after dispersal) for germination to occur (Justice 1957). While some dormant seeds were able to germinate under a combination of light exposure and cold stratification, after-ripening was found to reduce those requirements and increase germination rates over time (Justice 1957). Baskin and Baskin (1971a, 1971b) found that the seeds of the related *Cyperus squarrosus* could be forced to germinate through a combination of stratification, scarification, and exposure to light. Baskin and Baskin (1971b) concluded that the duration and intensity of light was a critical factor to initiating germination of *Cyperus squarrosus* seeds and likely limited the species habitat. The combination of these factors being required for germination may indicate that disturbance is required to induce germination in the field.

Most *Cyperus* species, including *Cyperus esculentus* var. *macrostachyus*, occur in open habitats and are assumed to be disturbance-adapted. Disturbance is often required to prevent shading by perennial woody plants and initiate germination. In New England, the severity and frequency of disturbance are important to the growth and persistence of *Cyperus houghtonii* populations (Lew-Smith 2003). Given *Cyperus esculentus* var. *macrostachyus* occupies similar habitats, similar conclusions might be drawn. Unfortunately, little information regarding the natural history, demographics, or ecology of *Cyperus esculentus* var. *macrostachyus* is available. More research is needed.

Table 2. Phenology of *Cyperus esculentus* var. *macrostachyus* in New York State (NYNHP 2023).

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

VI. Threats

Due to a lack of surveys, the potential threats to this species are not known.

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:

No specific conservation or management actions have been recommended— additional surveys and research is needed to assess the conservation needs.

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 *Cyperus esculentus* var. *macrostachyus*.

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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