

Species Status Assessment

Common Name large-calyxed goosefoot **Date Updated:** 2022-01-12

Scientific Name *Chenopodium berlandieri*
var. macrocalycium **Updated By:** Kyle J. Webster

Family Amaranthaceae

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

Large-calyxed goosefoot (*Chenopodium berlandieri* var. *macrocalycium*) is an annual forb/herb in the Amaranth Family (Amaranthaceae). The species *Chenopodium berlandieri* as a whole was cultivated and used as a food source by Native Americans. Variety *macrocalycium* ranges from coastal areas of New England and eastern Canada, south to North Carolina, with disjunct occurrences in Indiana and Illinois. There are eight species of *Chenopodium* in NY, of which three are native (Werier et al. 2023).

In New York, *Chenopodium berlandieri* var. *macrocalycium* occurs on ocean beaches and the adjacent pond shores, salt marshes, and shrub thickets, generally in open habitat near the high tide line (Edinger et al. 2014, NYNHP 2023, 2024).

Chenopodium berlandieri var. *macrocalycium* has declined over the last 100 years. Most historical populations on Western Long Island and near New York City have been extirpated (NYNHP 2023). Populations are now only known from Plum Island, Fishers Island, and Montauk in eastern Suffolk County in New York. The short-term trends are unknown due to a lack of survey data.

I. Status

a. Current legal protected Status

i. Federal: **Candidate:**

ii. New York: Endangered

b. Natural Heritage Program

i. Global: G5T4

ii. New York: S1S2 **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:

Chenopodium berlandieri var. *macrocalycium* is Endangered in New York (Ring 2023). There are seven extant populations in the state. Six of the populations are restricted to Fishers Island in the Long Island Sound. The remaining population occurs nearby on Montauk Point. There are at least 19 historical collections from the New York City and Long Island area dating from the late 1800s and early 1900s. Surveys for these historical populations have not been conducted, however those from western Long Island and around New York City are probably extirpated. More undiscovered populations may be present on eastern Long Island (NYNHP 2023).

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	Yes	Unknown	Unknown	Unknown	SNR	
New Jersey	Yes	Unknown	Unknown	Unknown	S3	
Pennsylvania	No	-	-	-		
Vermont	Yes	Unknown	Unknown	Unknown	SU	
Ontario	No	-	-	-		
Quebec	No	-	-	-		

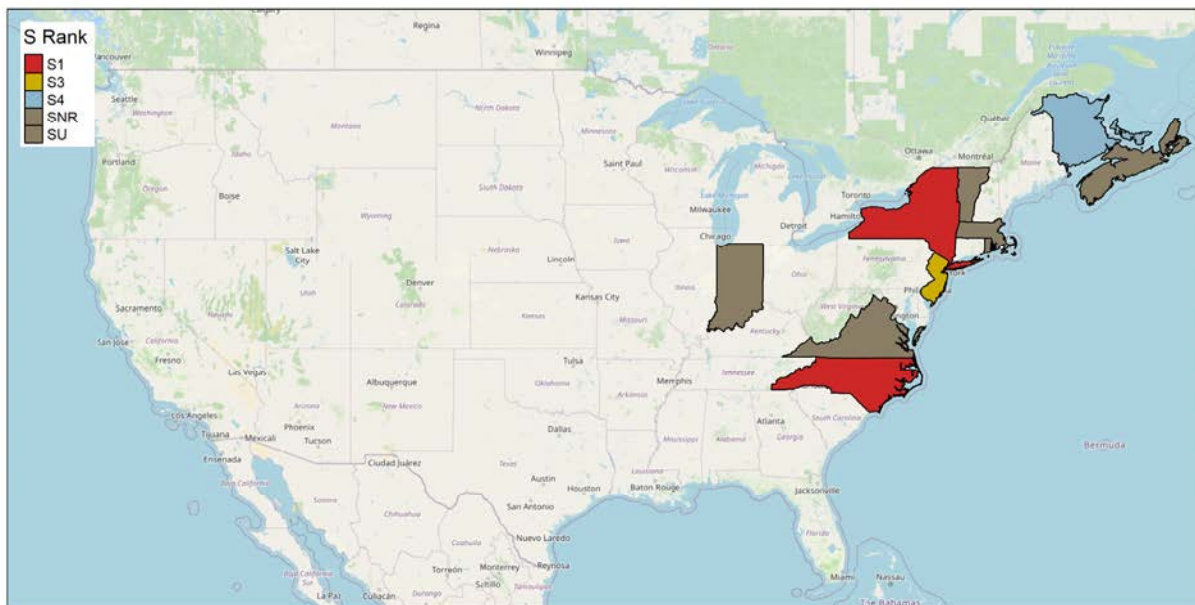


Figure 11: *Chenopodium berlandieri* var. *macrocalyctium* North American distribution.

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

III. NY Rarity and Trends

Trends Discussion

Chenopodium berlandieri var. *macrocalyctium* has probably declined over the 100 years. Most of the historical populations are from the Western Long Island and New York City areas. These populations are likely extirpated due to development. More surveys of these historical populations and surveys of potential habitat on eastern Long Island are needed to fully understand the long-term trends. The short-term trends are unknown due to a lack of survey data. None of populations have been surveyed more than once (NYNHP 2023).

Details of historic and current occurrence

The species was historically found in all counties on Long Island, Staten Island, and north to the Bronx. It is currently known only on Fishers Island and Montauk Point in Suffolk County. There are an estimated 2,000 plants present in New York.

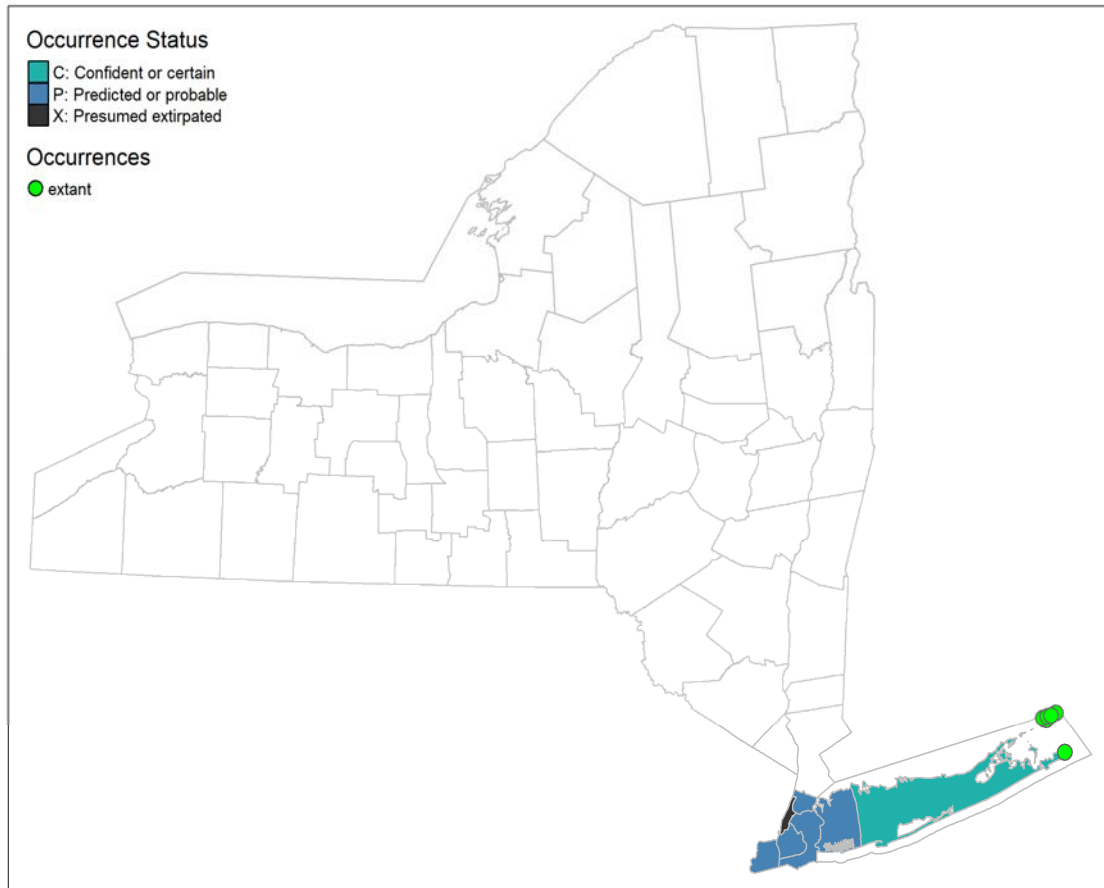


Figure 22: NYS distribution for *Chenopodium berlandieri* var. *macrocalycium*

Table 1. Number of records (element occurrences) of *Chenopodium berlandieri* var. *macrocalycium* 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	6	2	0.2
1995-2004	2	2	0.2
2005-2014	2	2	0.2
2015-2023	2	2	0.2

Monitoring in New York

There are 26 populations known statewide, of which seven are extant and 19 are historical. Only the seven extant populations are reflected in Figure 2 and Table 1. One population occurs on NYS Park lands and is monitored on a ten-year rotation. None of the other populations have been regularly monitored. Three of the known extant populations have not been seen since 1990, the remaining four were last seen in 2020, 2021, and 2022 (NYNHP 2023).

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

NY Natural Heritage Communities: Marine intertidal gravel/sand beach, Coastal plain pond, High salt marsh, Low salt marsh, Salt shrub

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, *Chenopodium berlandieri* var. *macrocalycium* occurs on ocean beaches and the adjacent pond shores, salt marshes, and shrub thickets, often just above the high tide line, in open habitat (Edinger et al. 2014, NYNHP 2023, 2024). Coastal sands, beaches (Weakly 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):

Chenopodium berlandieri var. *macrocalycium* is an annual forb (Werier et al. 2023). Plants flowers in mid-summer from July through August and fruit matures in September (NYNHP 2023). Plants are wind pollinated (NYNHP 2023).

Very little information regarding the natural history and demographics of *Chenopodium berlandieri* and its varieties is available. More research is needed.

Table 2. Phenology of *Chenopodium berlandieri* var. *macrocalycium* in New York State (NYNHP 2023).

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

VI. Threats

Chenopodium berlandieri var. *macrocalycium* is threatened by its small population extent, impacts from various shoreline uses, and invasive species. Only one population, consisting of fewer than 10 plants, is on protected land. The remaining populations are limited to an island where it occurs primarily on private lands. Trampling, vehicle use, and beach grooming along coastal plain pond shorelines could negatively impact or directly destroy these populations. *Phragmites* (*Phragmites australis*) is established around some of the populations and may negatively impact them if it becomes more widely established.

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:

Control the *Phragmites* established in salt marshes and shorelines where *Chenopodium berlandieri* var. *macrocalyrium* occurs, and prevent its introduction elsewhere. Natural buffers should be established around the salt marshes. More surveys should be conducted to better understand the species distribution. Shorelines and saltmarshes where it occurs should be protected.

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 *Chenopodium berlandieri* var. *macrocalyrium*.

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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New York Natural Heritage Program. 2024. Online Conservation Guide for *Chenopodium berlandieri* var. *macrocalyrium*. Available from: <https://guides.nynhp.org/large-calyx-goosefoot/>. [Accessed 01/12/2024].

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Wahl, Herbert A. 1952. A Preliminary Study of the Genus *Chenopodium* in North America. *Bartonia* Issue 27, pp 1-46.