

Species Status Assessment

Common Name American knotweed **Date Updated:** 2024-03-13
Scientific Name *Polygonum buxiforme* **Updated By:** Rachael A. Renzi
Family Polygonaceae

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

American knotweed, also known as Small's knotweed, is one of ten species of the genus *Polygonum* in NY, but one of eight that are native to the state (Werier et al. 2023). It is an annual forb in the buckwheat family (Polygonaceae). It is synonymous with *Polygonum aviculare* ssp. *buxiforme*, but, unlike other subspecies of *P. aviculare*, *P. buxiforme* originated in North America (Costea & Tardif 2005; FNA 2005; Stone 2010). Its range covers Alaska and Yukon east to Labrador, south to California and South Carolina (NatureServe 2023). In NY, there are seven populations scattered throughout the state: four are on rocky beaches of eastern Long Island, and three upstate vary in their choice of disturbed area (NYNHP 2023, 2024). Though the plants seem to need some disturbance in their habitat for germination, they face threats from destruction of their habitat (Courtney 1968; NYNHP 2023). Threats include trampling by beachgoers, vehicular traffic, or competition from other weedy plants (NYNHP 2023, 2024). No populations are known to be extirpated, but the number of historical occurrences outnumber the extant ones (NYNHP 2023). In total, there are an estimated 150 plants in the state, with over 100 plants occurring at one population (NYNHP 2023). While this 'large' population has persisted for 100 years, the smaller ones may not fare as well (NYNHP 2023, 2024). Overall trends of *Polygonum buxiforme* are difficult to discern, as their population count fluctuates over time (NYNHP 2023, 2024). More surveys are needed to determine trends, and more research is needed to plan conservation actions.

I. Status

a. Current legal protected Status

i. Federal: **Candidate:**
ii. New York: Endangered

b. Natural Heritage Program

i. Global: G5
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:

Polygonum buxiforme is Endangered in New York (2023). There are seven existing populations of *Polygonum buxiforme* in NY, but only one of them has more than 100 plants; the rest are very small (NYNHP 2023, 2024). There are 17 records from the early 1900s through 1976 which need to be rechecked, although at least one of them is probably gone because of development (NYNHP 2023, 2024).

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	Yes	Unknown	Unknown	Unknown	SH	
Massachusetts	Yes	Unknown	Unknown	Unknown	SNR	
New Jersey	Yes	Unknown	Unknown	Unknown	S3	
Pennsylvania	Yes	Unknown	Unknown	Unknown	SNR	
Vermont	Yes	Unknown	Unknown	Unknown	SNR	
Ontario	Yes	Unknown	Unknown	Unknown	S4	
Quebec	No	-	-	-		

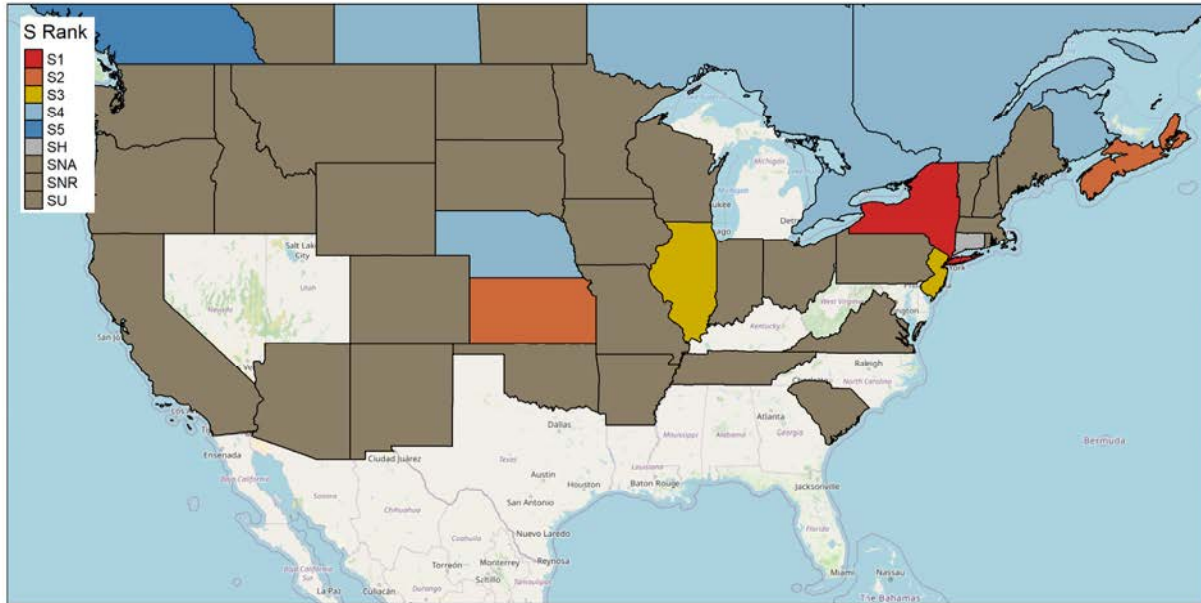


Figure 1. *Polygonum buxiforme* North American distribution.

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

This species seems to have been more common in the early 1900s, but it has declined to only seven populations today (NYNHP 2023, 2024). Three populations have been visited more than once and their numbers fluctuate depending upon the amount of disturbance (NYNHP 2023, 2024). One of these populations has been visited 10 times between 1918 and 2018, indicating stability within that population (NYNHP 2023). This population is the largest, with between 10-200 plants depending on the year (NYNHP 2023). Though no plants were seen at this population in 2018, it likely still exists (NYNHP 2023). The other populations have less than 20 plants and may not persist over the long-term (NYNHP 2023). One of these smaller populations visited more recently was found to have no plants (NYNHP 2023). While the overall trend seems to be negative, more long-term monitoring is needed to assess the trends of this plant in NY.

Details of historic and current occurrence

This low herb is scattered throughout New York in natural and human-disturbed dry open habitats (NYNHP 2023, 2024). It occurs in Cortland, Chataqua, St. Lawrence, and Suffolk Counties (NYNHP 2023). Those extant in upstate NY grow on a college quad, along a dirt road, and in a stabilized area of a sand-gravel beach (NYNHP 2023). Many historical upstate records are from roadsides, fields, and railroad yards (NYNHP 2023, 2024). Most historic populations, however, as well as four of the seven extant populations, are restricted to the rocky beach areas

of far eastern Long Island (NYNHP 2023, 2024). There are an estimated 100-200 plants total in the state (NYNHP 2023).

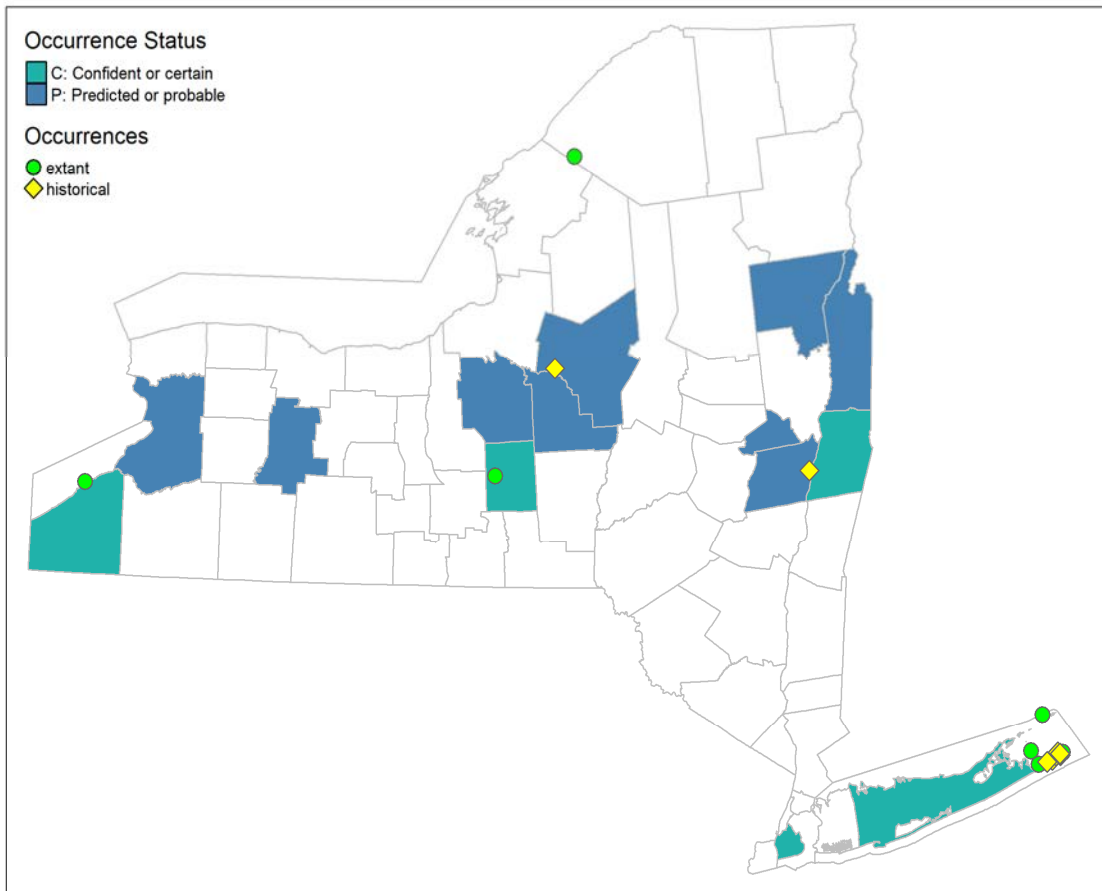


Figure 2: NYS distribution for *Polygonum buxiforme*.

Table 1. Number of records (element occurrences) of *Polygonum buxiforme* 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	11	6	0.6
1995-2004	2	2	0.2
2005-2014	4	4	0.4
2015-2023	0	0	0.0

Monitoring in New York

Two populations occur on state park land, which are monitored on a 10-year cycle (NYNHP 2023). Two populations are on privately owned land, one is on land owned by SUNY, and one occurs on DEC land (NYNHP 2023).

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

Northeast Habitat Classification Macrogroups: Coastal grassland and shrubland, Intertidal shore, Lakes and ponds ().

NY Ecological Communities: Inland non-calcareous lake shore, Maritime beach, Maritime dunes, Sand beach, Cobble shore, Great Lakes dunes, Riverside sand/gravel bar, Railroad, Unpaved road/path (Edinger et al. 2014, NYNHP 2024).

Habitat or Community Type Trend in New York

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

Habitat Discussion:

In NY, *Polygonum buxiforme* occurs mainly on sandy (sometimes also pebbly or gravelly) beaches in both maritime and inland areas (NYNHP 2023, 2024). It also has been found on areas of disturbed, compacted soils such as railroad yards and old roads (NYNHP 2023, 2024). Throughout North America, it is found in packed, non-drifting sands, borders of marshes and dunes, and sandy soils, both maritime and inland (Gleason and Cronquist 1991; Mitchell and Deam 1978).

Associated species include *Cakile edentula*, *Chamaesyce polygonifolia*, *Chenopodium album*, *Equisetum arvense*, *Medicago sativa*, *Plantago major*, *Polygonum glaucum*, *Salsola kali*, and *Solidago sempervirens* (NYNHP 2023, 2024).

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):

Polygonum buxiforme is a taprooted annual forb/herb that can colonize early successional or trampled sites (Costea & Tardif 2005; Stone 2010). It flowers from July through October and fruits until November (NYNHP 2023, 2024). *P. buxiforme* can be considered part of the *Polygonum aviculare* complex because of its overlap in distribution and intergradation with other *P. aviculare* subspecies (Costea & Tardif; Stone 2010). Though *P. buxiforme* is the only taxon from the *aviculare* complex to have originated in northeastern North America, and differs from *P. aviculare* in flower morphology, it is often difficult to differentiate due to interbreeding populations with intermediate characteristics (Haines et al. 2011; Costea & Tardif 2005; FNA 2005; Stone 2010). The following species biology information is based on *Polygonum aviculare*, compiled by Stone (2010).

Plants in the *Polygonum aviculare* complex have both chasmogamous and cleistogamous flowers, usually in the same cyme, allowing both cross- and self-pollination (Costea & Tardif 2005). The flowers attract both aerial and terrestrial insects (Bugg et al. 1987). A single plant may produce 125 to 6,400 achenes, which mature in the summer and in the autumn (Costea & Tardif 2005). Then, seeds are dispersed by birds, mammals, and water (Costea & Tardif 2005). The seeds can form a persistent seed bank, especially when buried at depths deeper than six inches in soil (Costea & Tardif 2005; Con et al. 2006). Seeds (likely those matured in summer)

Conservation Actions	
Action Category	Action
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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