Species Status Assessment

Common Name	false toad flax	**Date Updated:**	2024-02-13
Scientific Name	*Geocaulon lividum*	**Updated By:**	Gregory J. Edinger
Family	Santalaceae		

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

False toad flax (*Geocaulon lividum*), also called northern comandra, is a perennial herb in the Sandalwood Family (Santalaceae). *Geocaulon lividum* is the only native species of *Geocaulon* in NY (Werier et al. 2023).

False toad flax its widespread across boreal North America. It occurs from Labrador to Alaska south to Maine, the mountains of northern New England and New York, Michigan, Minnesota, and southern British Columbia (Fernald 1970). In NY, it is restricted to some of the highest mountains in the High Peaks region of the Adirondacks, where off trail trampling by hikers is a threat to some populations. In NY, there are nine known populations of false toad flax with about 1300 plants total. There are about four historical locations that need to be surveyed. All of the populations are within about 14 air miles from each other (NYNHP 2023, 2024).

The populations in the High Peaks are not regularly monitored, but six of the nine extant locations have last observed dates from 2003 to 2013; and three locations were last observed in 1990 or earlier (1988, 1989, and 1990). Lastly, false toad flax was not found in any of the 51 vegetation plots sampled on four summits in 2013 (NYNHP 2023). Additional monitoring is needed, as current data may be somewhat inaccurate as basal rosettes can be easily overlooked. Further, because monitoring is carried out by differing organizations, different levels of survey effort may contribute to population data inconsistencies (NYNHP 2024).

I. Status

a. Current legal protected Status

i. Federal: **Candidate:**

ii. New York: Endangered

b. Natural Heritage Program

i. Global: G5

ii. New York: S1 **Tracked by NYNHP?** On Active Tracking List

Other Ranks:

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

Status Discussion:

Geocaulon lividum is Endangered in New York (Ring 2023). There are nine known and about four historical (not seen within 20 years) populations of false toad flax in NY with a total of approximately 1300 plants. Two of the historical populations were searched for without success, but more survey work is needed at these sites before they can be determined extirpated. All of the populations are limited to the highest mountains in the High Peaks region of the Adirondacks within 14 air miles of each other. Most are quite small, allowing for the possibility of complete stem counts during surveys. Some of the populations are threatened by trampling by hiker traffic. This species is at the edge of its range in NY, where the cool alpine habitat it requires is very limited in distribution. Populations which have not been seen recently need to be surveyed to improve our understanding of false toad flax's status (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	No	-	-	-		
Massachusetts	No	-	-	-		
New Jersey	No	-	-	-		
Pennsylvania	No	-	-	-		
Vermont	Yes	Unknown	Unknown	Unknown	SX	
Ontario	Yes	Unknown	Unknown	Unknown	S5	
Quebec	No	-	-	-		

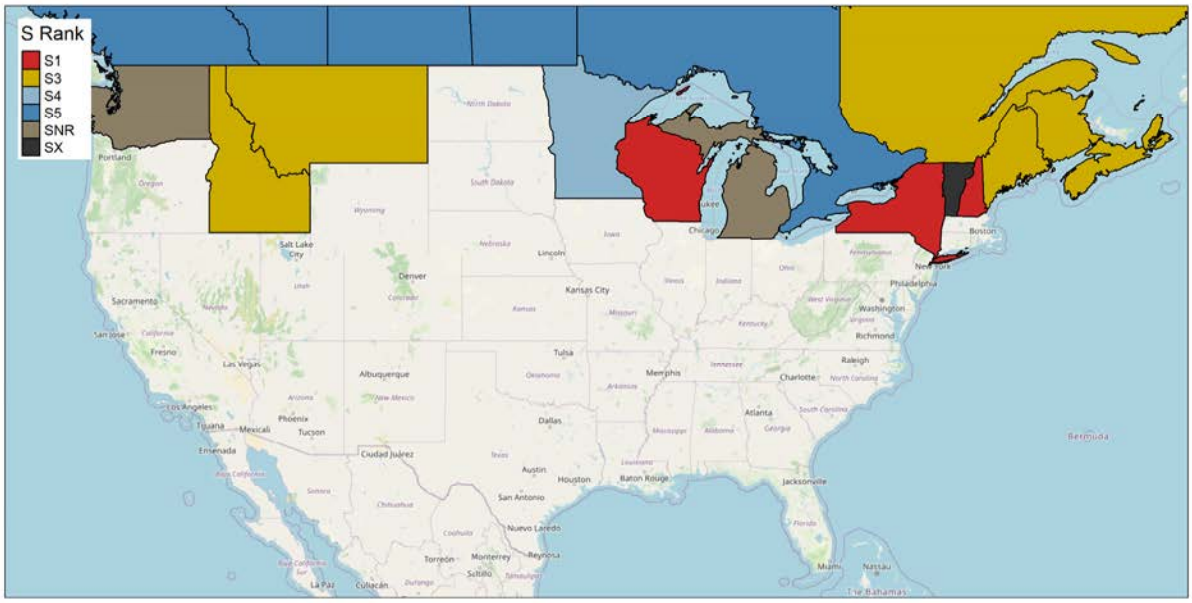

Figure 11: Geocaulon lividum North American distribution.

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

In NY, false toad flax is restricted to some of the highest mountains in the High Peaks region of the Adirondacks (NYNHP 2023, 2024). Most of its populations in the state were first seen within the past 20 years. This most likely is a result of these populations being overlooked due to both the generally small size of the populations and the inconspicuous nature of the species. Most populations have under 100 individuals but there is no evidence that this is a result of declining populations (NYNHP 2023, 2024).

No false toad flax populations are known to have become extirpated in the past 100 or so years. There are two populations that were searched for recently without success. These populations have not been seen in the past 20+ years but further survey work is needed before these populations can be deemed extirpated (NYNHP 2023, 2024).

Details of historic and current occurrence:

In New York *Geocaulon lividum* has only been documented in Essex County within the Adirondack Mountains.

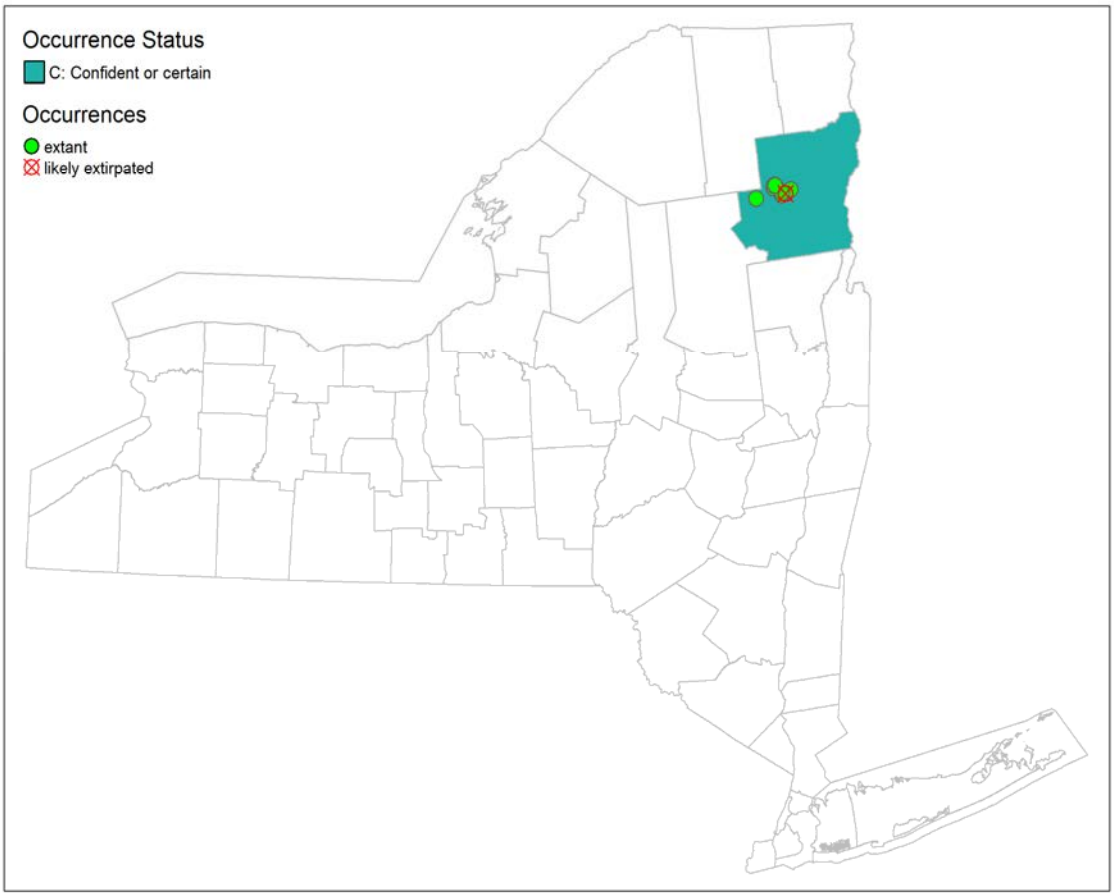

Figure 22: *NYS distribution for* Geocaulon lividum.

Table 1. *Number of records (element occurrences) of* Geocaulon lividum *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	10	4	0.4
1995-2004	5	3	0.3
2005-2014	5	3	0.3
2015-2023	0	0	0.0

Monitoring in New York

All known *Geocaulon lividum* populations in New York occur on protected, state-owned lands in the Adirondack Forest Preserve. The populations in the High Peaks are not regularly monitored, but six of the nine extant locations have last observed dates from 2003 to 2013; and three locations were last observed in 1990 or earlier (1988, 1989, and 1990). Lastly, false toad flax was not found in any of the 51 vegetation plots sampled on four summits in 2013 (NYNHP 2023). Additional monitoring is needed, as current data may be somewhat inaccurate as basal rosettes can be easily overlooked. Further, because monitoring is carried out by differing

organizations, different levels of survey effort may contribute to population data inconsistencies (NYNHP 2024).

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

Northeastern Terrestrial Habitat Classification Macrogroup: Alpine

NYNHP Ecological Communities: Alpine krummholz, Open alpine community, Dwarf shrub bog (Edinger et al. 2014, NYNHP 2023, 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, false toad flax occurs in alpine meadows, under dwarfed trees in alpine and subalpine habitats, openings in krummholz, and high elevation bogs. It is sometimes found growing in mats of various ericaceous shrubs and it prefers wet, mossy microsites (NYNHP 2023, 2024). In Maine, false toad flax grows in Sphagnum bogs, coniferous woods, and alpine areas (Haines and Vining 1998). Sphagnum bogs and wet coniferous woods (Gleason and Cronquist 1991). Moss or damp humus (Fernald 1950).

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):*

False toadflax is a herbaceous perennial that presumably reproduces via seed and sprouting from rhizomes. However, specific information on regeneration is not available in the literature. Undisturbed feathermoss mats may inhibit germination of false toadflax seeds, but not vegetative reproduction (Matthews 1994, Zasada 1986). False toadflax is a parasitic plant, and as such its fine roots attach to the roots of a wide variety of host plants, including alder, asters, bearberry, birch, pine, spruce, twinflower, and willow (Minnesota Wildflowers 2024).

Table 2. *Phenology of* Geocaulon lividum *in New York State (NYNHP 2023).*

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

VI. Threats

Off trail trampling by hikers is a threat to some false toad flax populations (NYNHP 2023, 2024).

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:

The Summit Steward program which works to inform hikers of the fragile nature of alpine plants, such as false toad flax, is a critical program which is helping to reduce trampling of alpine vegetation. This program and other efforts designed to reduce trampling of alpine meadows are needed (NYNHP 2023, 2024).

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* Geocaulon lividum.

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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