Species Status Assessment

for

Prairie Dandelion

(Nothocalais cuspidata)

Photo by Eric Smith, taken at Revis Hill Prairie

Illinois Department of Natural Resources

January 2023

Section 1: Species Description

Taxonomy

Nothocalais cuspidata (Pursh) Greene (Family: Asteraceae) is commonly called prairie dandelion in Illinois, although other common names include sharppoint prairie-dandelion, microseris, wavy-leaf prairie-dandelion, sharppoint microseris, microséris cuspidé, and prairie false dandelion (ITIS, 2023; NatureServe Explorer, 2023). According to the Integrated Taxonomic Information System Report for the species, its scientific name includes the synonyms *Agoseris cuspidata* (Pursh) Raf. and *Microseris cuspidata* (Pursh) Sch. Bip.

The current classification for this species is (NatureServe Explorer, 2023):

Kingdom: Plantae

Phylum: Anthophyta

Class: Dicotyledoneae

Order: Asterales

Family: Asteraceae

Its NatureServe Element Code is PDAST6P020, and its symbol used for the USDA Plants Database is NOCU (NatureServe Explorer, 2023; USDA, 2023).

Physical characteristics

N. cuspidata is described as a "perennial, nonclonal member of the Asteraceae and very dandelion-like in appearance" (Dieringer and Cabrera, 2017). Its dandelion appearance comes from its bright yellow, radial flower that appears in April and May on top of a long, bare, and erect stalk coming from the plant's base. Its leaves are alternate and crowded near its base with rough, but entire edges, narrow shape, and a pointed tip (Dieringer and Cabrera, 2017). The plant's deep taproot helps it to be more drought-resistant than other plants, and as the flowers age, their color may turn from yellow to a dark purple (Prairie Moon Nursery, 2023). When its fruit is ripe, the plant again mimics its more common look-alike, and its yellow flowers turn to a white, fluffy pappus (Wisconsin State Herbarium, 2023). It produces one fruit for each achene (Dieringer and Cabrera, 2017).

Habitat

Records from the Illinois Natural History Database (2023) show Element Occurrences found in high quality sandy-loess and loess hill prairie near bluffs, gravely remnant prairies varied between open, savanna-like sections to mature-dry mesic sections, dry gravel hill prairie, dry-mesic prairie, glacial drift hill prairie, sand hill prairie, and dry hill prairies. Their populations are threatened by gravel mining and other development, which limits and fractures suitable habitat for this sensitive species. Woody invasion is also a notable threat to *N. cuspidata* (Paul Marcum, personal communication, Feb. 27, 2023). Associate lists are not available for each Element Occurrence, but it has been found with *Sporobolus heterolepis*, *Schizachyrium scoparium*,

Miscanthus sinesis, *Carex pensylvanica*, *Poa* species, *Koeleria macrantha*, *Lithospermum canescens*, *Sisyrinchium angustifolium*, *Tradescantia ohiensis*, *Amorpha canescens*, *Ruellia humilis*, *Viola pedata*, *Viola pedatifida*, *Penstemon pallidus*, *Asclepias verticillata*, *Euphorbia corollata*, *Symphyotrichum oblongifolium*, *Symphyotrichum oolentangiense*, *Scutellaria leonardii*, *Opuntia stricta*, *Verbena stricta*, *Hypoxis hirsuta*, *Maianthemum stellatum*, *Antennaria* species, and *Oxalis violacea*. In Illinois, the populations are often found on exposed, sunny slopes with limited competition.

Life History and Reproduction

According to Prairie Moon Nursery's webpage on *N. cuspidata*, seeds require 30 days stratification before they germinate. *N. cuspidata* germinates and grows in the early spring, with flowering taking place in April and May. The flower only produces viable florets over the course of a 4-to-5-day period, although flowering usually occurs over 4 weeks. It is found through experimental crosses that *N. cuspidata* is a primarily an outcrossing species, although it is capable of autogamy and shows evidence of self-compatibility at much lower levels than its outcrosses. It is known that those capitula with fewer flowers under normal habitat and environmental conditions do not produce proportionately fewer fruits (Weaver et al., 1935; Dieringer and Cabrera, 2017).

Conservation Status

N. cuspidata is globally ranked as a G5 – Apparently Secure. At the state/province level, its conservation status is listed as S4 - Apparently Secure in Montana and Iowa, and S3 - Vulnerable in Wyoming and the Saskatchewan province of Canada. It is rated as S2 - Imperiled in Wisconsin, Missouri, and the Alberta province of Canada, and **S1 – Critically Imperiled** in **Illinois** and the Manitoba province of Canada. It does not have a status rank in New York, Minnesota, Arkansas, Texas, New Mexico, Colorado, Oklahoma, Kansas, Nebraska, and North and South Dakota (NatureServe Explorer, 2023). Despite A.E. Porsild's 1938 record from the Northwestern Province of Canada, there is no indication on the NatureServe Explorer (2023) website that this plant has been found in this area. It was first listed as endangered in Illinois in 1980, due to its former widespread population in Illinois that is now greatly restricted due to a variety of anthropological pressures (Mankowski, 2012). It is not federally listed (USFWS, 2023).

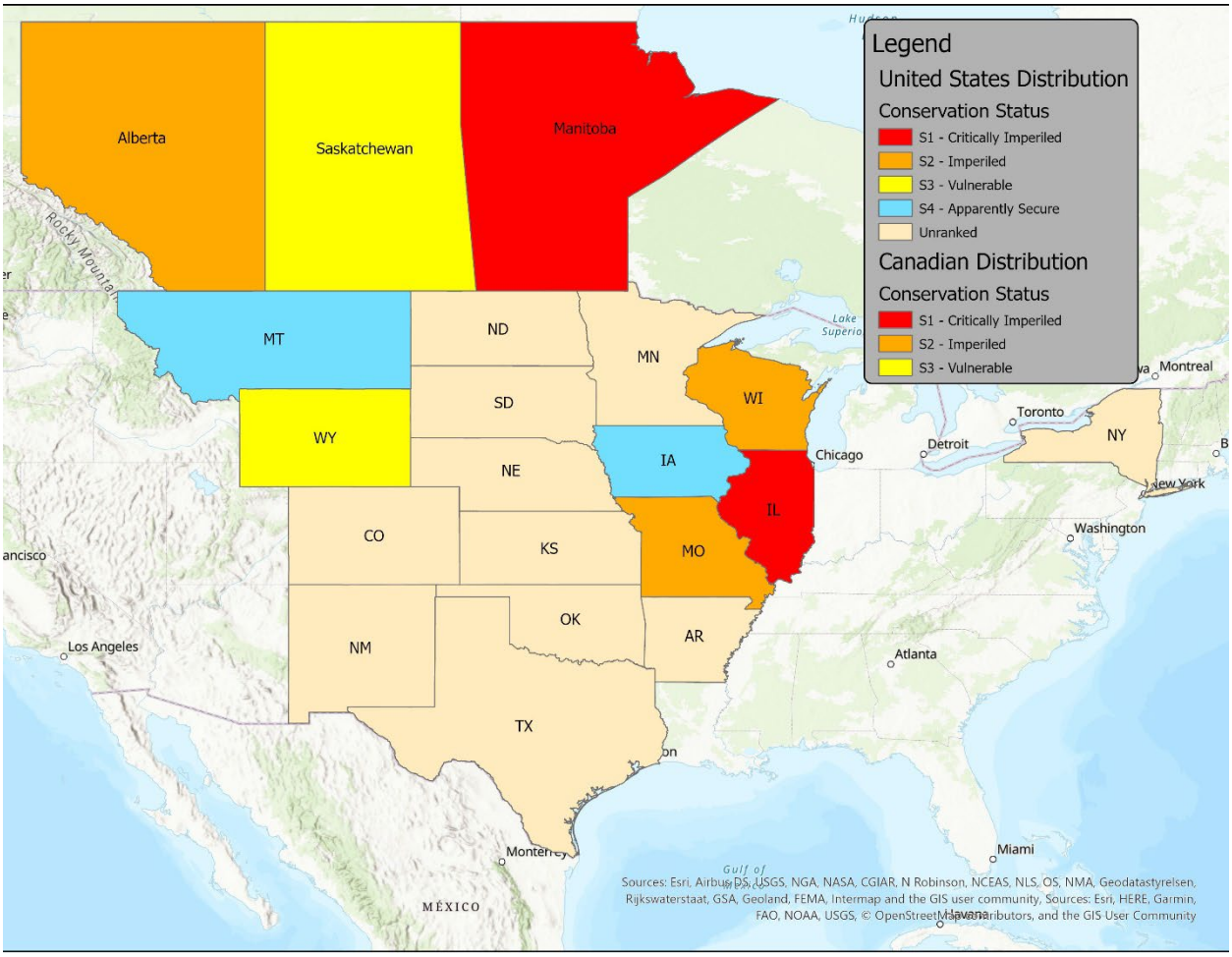

Figure 1: *Nothocalais cuspidata* National Distribution Map

Section 2: Range and Distribution

Range

The most eastward record of *N. cuspidata* according to NatureServe Explorer (2023) is in New York, although Illinois and Wisconsin are also included in its eastward boundary. Texas is the farthest south the species is found, and Montana and Alberta are the farthest westward boundary the plant is found. According to NatureServe Explorer (2023), the farthest north the population is found is in the Canadian provinces of Alberta, Manitoba, and Saskatchewan, although if A.E. Porsild's 1938 record is to be believed the Husky Lake basin of the Northwestern Province of Canada, located inside of the Arctic Circle, there is or was remnant populations of this species. The distribution according to NatureServe Explorer (2023) is shown in Figure 1, and the Illinois distribution is shown in Figure 2.

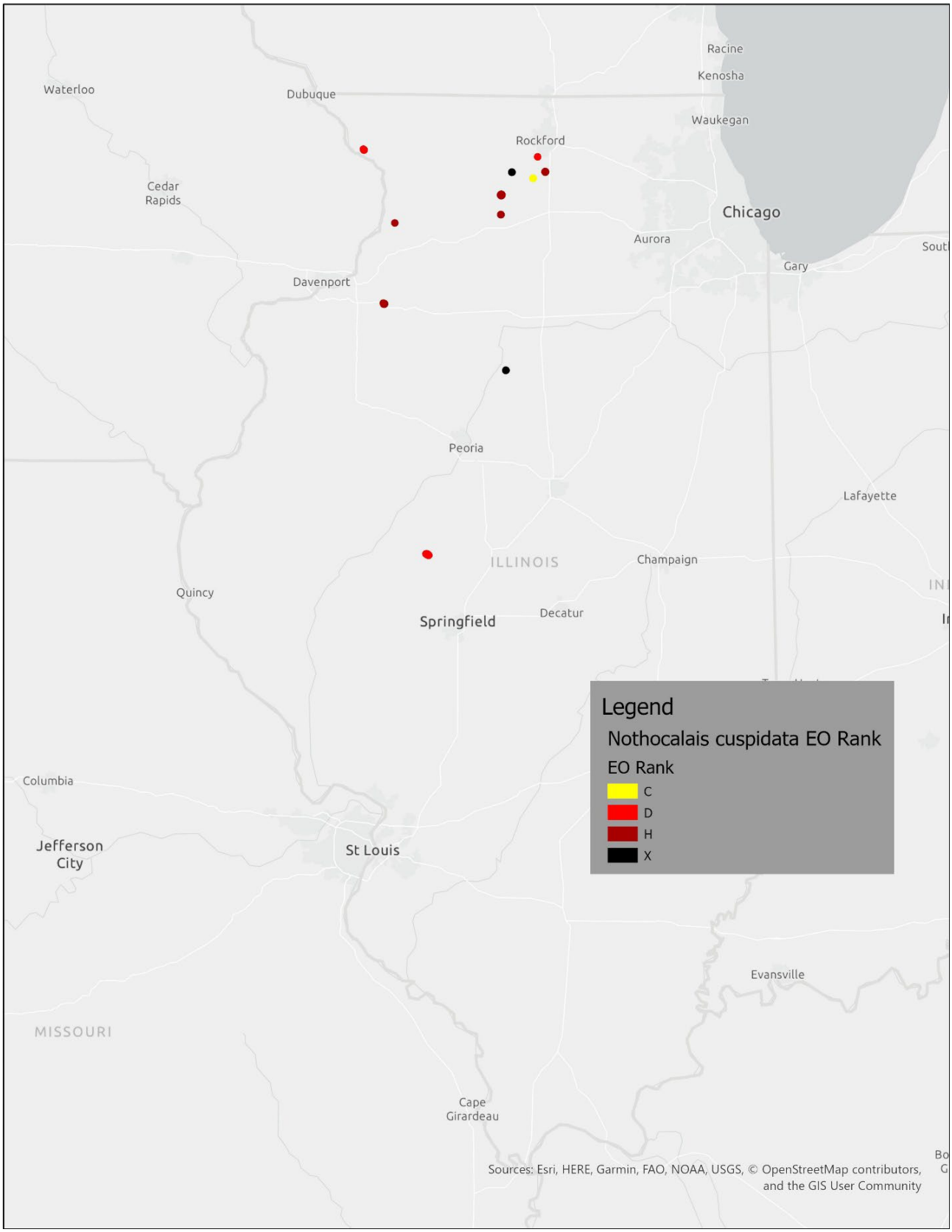

Figure 2: IL Distribution and EO Rank of *N. cuspidata*

Illinois Distribution

In Illinois, *N. cuspidata* is found primary in the north/northwestern parts of the state, although there is an Element Occurrence record found in central Illinois (Figure 2). According to the records with the Illinois Natural History Database (2023), all populations across the state have either been in sharp decline or have disappeared in the last decade or so. Many Element Occurrence records include only one or two locations in which the plant has been seen at one time or another, meaning that even existing populations primarily only exist in small patches that are vastly disconnected from one another. Due to the fragmented nature of high-quality hill prairie in Illinois that *N. cuspidata* needs, its distribution is likely limited to only a few, disconnected locations throughout the state.

Section 3: Abundance

Each Element Occurrence Record of *N. cuspidata* is of low abundance. Comparing the number of plants seen in the last surveys taken at these locations to the size of the EO, most EOs that have a record of this plant being seen in the last 10 years hardly have 1 plant/acre of the total EO. The abundance has continued to be declining through the 2010s and 2020s, even at locations with historically high abundance.

EO Number	Site Name	Last Observed Date	Plant Count at Last Observed Date	Acreage of EO
1	[redacted]	2021-05-18	6 flowering plants	13.8
2	[redacted]	1986-05-05	100+ plants	30.9
3	[redacted]	2016-06-09	7 plants	7.7
4	[redacted]	2023-04-25	1 plant	149.1
5	[redacted]	1983	20 plants	7.7
6	[redacted]	1986	5-12 plants	123.6
7	[redacted]	1991-04-28	2 plants	7.7
8	[redacted]	1999-05-11	17 plants	7.7
9	[redacted]	2007-07	15 plants	0.5
10	[redacted]	1937-05-18	Unknown	52.9
12	[redacted]	2017-05-11	1 flowering individual	1.9

Table 1: Abundance Measured by EO

Section 4: Population Identification and Viability

This assessment uses NatureServe's EO Rank values to determine the viability of the *N. cuspidata* populations in Illinois. Guidance for determining these Element Occurrence Records is provided by NatureServe and used by the Illinois Natural Heritage Database, using the 1-kilometer default minimum separation distance between observations of *N. cuspidata*. This

means that any observation of *N. cuspidata* in Illinois that was greater than 1 kilometer away from an existing Element Occurrence would be recorded as a new Element Occurrence.

Illinois Element Occurrence records consist of primarily H – Historical records or are ranked as D – Poor viability. This is due to a lack of repeat surveys at some locations and severely declining populations at others, usually despite the presence of high-quality prairie. The highest ranking given was C – Fair viability for a currently, but also historically small population that appears to be in a high-quality prairie. Given its historical record as a small population, it appears that this population is currently stable despite its low numbers, although it could easily be wiped out with a stochastic event in the area. Two Element Occurrences were ranked as X – Extirpated, as surveys had taken place at those locations for several years in a row without finding any individuals. Of these, only two sites now occur on state-owned property (Illinois Natural Heritage Database, 2023).

EO Number	Site Name	EO ID Number	Last Date Observed	EO Rank	Justification
1	[redacted]	5105	2021-05-18	D	General comments state that population is at immediate extirpation risk despite restoration efforts, likely to be gone in 10-15 years without immediate intervention
2	[redacted]	1046	1997-07-30	H	No recent surveys conducted, although last records state that prairie was degraded and there was a severe sweet clover and buckthorn invasion
3	[redacted]	3261	2016-06-09	C	Small, but persistent population in a high-quality prairie, although a lack of suitable crossbreeding partners may cause this population to be extirpated
4	[redacted]	3145	2022-04-16	D	Despite large, high-quality prairie the population appears to be in severe decline from previous decades, although dramatic population fluctuations have occurred before
5	[redacted]	1096	1983	X	Despite high-quality prairie, area had been searched for plants for 10 years by 2008 with none located, and none were found in a 1992 survey either
6	[redacted]	4960	1986	H	No other surveys have taken place in this area since its initial sighting
7	[redacted]	2223	1991-04-28	H	No other surveys have taken place in this area since its initial sighting

8	[redacted]	3585	1999-05-11	X	Surveyed and not found for 8 years in a row, although area is appropriate for grassy and herbaceous growth, which has become denser in the area where the species was previous found
9	[redacted]	7729	2007-07	H	No other surveys have taken place in this area since its initial sighting, area threatened by woody encroachment
10	[redacted]	10469	1937-05-18	H	No other surveys have taken place in this area since its initial sighting
12	[redacted]	11628	2017-05-11	D	Only one plant found during initial survey, and most recent survey found none

Table 2: *Nothocalais cuspidata* EO Ranking

Section 7: References

Albertson, J. W. (1943). Resurvey of Grasses, Forbs, and Underground Plant Parts at the End of the Great Drought. *Ecological Monographs*, 63-117.

Curtis, H. G. (1950). Germination Studies of Wisconsin Prairie Plants. *The American Midland Naturalist*, 186-194.

Illinois Natural Heritage Database. (2023, 5 8). *Nothocalais cuspidata*. Retrieved from Illinois Natural Heritage Database.

ITIS. (2023, 02 09). *Nothocalais cuspidata (Pursh) Greene*. Retrieved from Integrated Taxonomic Information System: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=38132#null

J.E. Weaver, L. S. (1935). Response of the Prairie to the Great Drought of 1934. *Ecology*, 612-629.

Mankowski, A. (2012). *The Illinois Endangered Species Protection Act at Forty: A Review of the Act's Provisions and the Illinois List of Endangered and Threatened Species.* Springfield, IL: Illinois Endangered Species Protection Board.

NatureServe Explorer. (2023, 02 03). *Nothocalais cuspidata: Prairie False Dandelion*. Retrieved from NatureServe Explorer: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.156105/Nothocalais_cuspidata

Porsild, A. (1938). Earth Mounds in Unglaciated Arctic Northwestern America. *Geographical Review*, 46-58.

Prairie Moon Nursery. (2023). *Agoseris cuspidata: Prairie Dandelion*. Retrieved from Prairie Moon Nursery: https://www.prairiemoon.com/agoseris-cuspidata-prairie-dandelion-prairie-moon-nursery.html

R., G. D. (2017). Pollination and Reproductive Biology in a Hill Prairie Population of Nothocalais cuspidata (Asteraceae: Cichorieae). *The American Midland Naturalist*, 289-298.

Raup, H. M. (1941). Botanical Problems in Boreal America. II. *Botanical Review*, 209-248.

Smith, C. C. (1940). Ecological Monographs. *Biotic and Physiographic Succession on Abandoned Eroded Farmland*, 421-484.

Steiger, T. (1930). Structure of Prairie Vegetation. *Ecology*, 170-217.

USDA. (2023, 5 8). *Nothocalais cuspidata (Pursh) Greene*. Retrieved from USDA Plants Database: https://plants.usda.gov/home/plantProfile?symbol=NOCU

USFWS. (2023, June 6). *Listed Plants*. Retrieved from Environmental Conservation Online System: https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report?kingdom=P&status=E&status=T&status=EmE&status=EmT&status=EXPE&status=EXPN&status=SAE&status=SAT&mapstatus=3&fcrithab=on&fstatus=on&fspecrule=on&finvpop=on&fgroup=on&ffamily=on&header=Listed+Plants

Wisconsin State Herbarium, UW-Madison. (2023, 5 8). *Nothocalais cuspidata (Pursh) Greene*. Retrieved from Flora of Wisconsin: https://wisflora.herbarium.wisc.edu/taxa/index.php?taxon=13167