



# **The Meadoway: Vegetation, Bird, and Butterfly Monitoring 2016, 2018-2025**

Prepared by Watershed Planning and Ecosystem Science

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## INTRODUCTION

The Meadoway project involves the revitalization of a 16 km linear hydro corridor, formerly known as the Gatineau Hydro Corridor (**Error! Reference source not found.** and Figure 2). The goals of the revitalization are to create and maintain meadow habitat and to create an active east-west link between downtown Toronto and Rouge National Urban Park becoming one of the largest urban greenspaces in Canada (Sharma 2018).

Restoration and maintenance activities have included seeding portions of the corridor with flora species native to meadows in the region, selective mowing, and invasive species management. Restoration began in 2012 with the section near McCowan Road and Lawrence Avenue East being prepared and seeded. Several other sections were seeded between 2013 and 2016; however, some sections remained un-restored as highly manicured turfgrass. Several of these turfgrass areas started undergoing restoration (spraying, tilling, seeding cover crops) in the summer of 2019 while other sections began in 2020 and 2023. Mowing and herbicide application have occurred intermittently in different sections over the years.

Monitoring activities occurred in 2016 and 2018-2025 to document changes in species composition related to the vegetation, breeding birds, and butterfly presence. This report is an update to the 2024 monitoring report (TRCA 2024) but focusing more on comprehensive reporting of all species and percent cover across all years of monitoring. We have also included a summary of data collected in several experimental areas testing unique site preparation methods. We also summarized the results of bird and butterfly surveys throughout The Meadoway and conducted pre- and post-restoration comparisons where possible.



Figure 1. Large-flowered coreopsis (*Coreopsis grandiflora*) at The Meadoway.

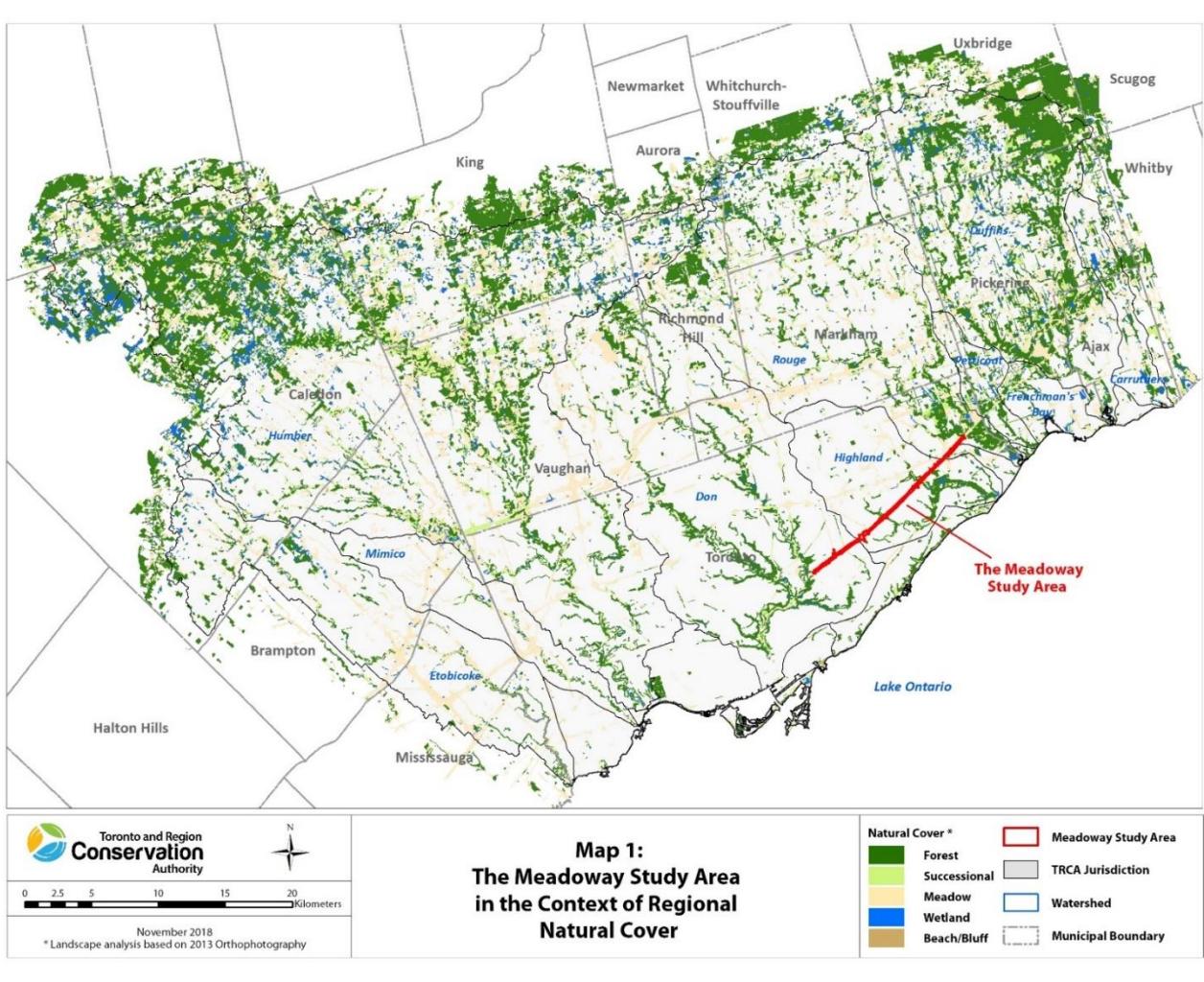


Figure 2. Geographic location of The Meadoway related to TRCA's jurisdiction.

## METHODOLOGY

### Vegetation plots

The methodology for monitoring meadow ecosystems used by Toronto and Region Conservation Authority (TRCA) is based on the Ecological Monitoring and Assessment Network (EMAN) endorsed terrestrial vegetation biodiversity monitoring protocols identified by Roberts-Pichette and Gillespie (1999). As the EMAN protocol was originally intended for forest communities, adaptations to the protocol were made making it specific to meadow ecosystems (Figure 3).

Each meadow plot consisted of one 20 x 20 m (400 m<sup>2</sup>) main plot, five 2 x 2 m (4 m<sup>2</sup>) shrub and sapling regeneration sub-plots and five 1 x 1 m (1 m<sup>2</sup>) ground cover vegetation sub-plots (nested within the larger regeneration sub-plots). Shrub and sapling regeneration sub-plots were monitored once during the growing season (September). Sites were visited approximately the same time each year coinciding with the second ground vegetation visit. All shrubs and seedlings that were <10 cm diameter-at-breast-height and ≥16 cm in height were considered in regeneration sub-plots. Only live plants were recorded in regeneration sub-plots. The boundaries of the 2 x 2 m sub-plots were identified and delineated. All qualifying plant species originating within the sub-plot were identified.

Individuals within each species were then measured with a metre stick and recorded into the appropriate height class located on the data sheet. Height measurements were taken from the ground to the upper most living portion of the plant. For plants that leaned, the vertical distance from the ground to the highest part of the plant was recorded as the height. The percent cover that each species provides was estimated.

All herbaceous plants, regardless of size, as well as shrub, tree, and woody vines <16 cm in height were considered in ground vegetation sub-plots.

Ground vegetation sub-plot monitoring was conducted twice during the growing season to capture early and late growing meadow/prairie species. The first visit was in early June and the second in late summer (September). Sites were visited approximately the same time each year. Each plant species originating within or hanging over into the 1 x 1 m sub-plot was identified. A 50 x 50 cm grid square consisting of smaller 10 x 10 cm grids was positioned over corner “A” of the sub-plot and shifted to the other three corners. The number of 10 x 10 cm squares that each species occupies was summed to determine their total percentage of cover within the sub-plot. It was also noted if a species was solitary. The cover of dead vegetation (thatch) was also measured in the ground vegetation plots (only in the spring visit).

Species lists were created for the plot as a whole using data combined from the 20 x 20, all 2 x 2s and all 1 x 1s. For a detailed description of vegetation monitoring methodology please see the Meadow Vegetation LTMP Monitoring Protocol (TRCA 2022).

Vegetation data were interpreted using TRCA’s local rank (L-rank) system for flora (TRCA 2017). The L-rank system is a species scoring and ranking system developed at TRCA to provide guidance for natural heritage protection and management within the jurisdiction. The L-rank system uses simple ranks to convey individual species’ ecological needs and sensitivities rather than just “rarity” in order to portray such complexities on a simple ordinal scale. Flora are scored using four criteria: local occurrence, population trend, habitat dependence and sensitivity to development impacts. For example, species ranked L1 would have: a limited local occurrence, declining population trends, habitat specialist preferences, and a sensitivity to development. Species ranked L5



Figure 3. Monitoring vegetation plots at The Meadoway.

would have: a widespread local occurrence, increasing population trends, habitat generalist preferences, and a tolerance to development. These are extreme examples and species can be ranked L1, L2, L3, L4 or L5 based on the scores associated with this combination of ecological needs and population status assessments. In addition, flora species can be categorized as follows: L1-L3 species are of regional conservation concern, L4 species are of conservation concern in urban areas, L5 species are not of conservation concern at this time, L\* species are native to southern Ontario but with no known natural records in TRCA jurisdiction, LX species have been extirpated from the TRCA jurisdiction (but have been planted since extirpation), L+ species are introduced species not native to the TRCA jurisdiction, L+? species are probably introduced.

## Bird stations

Meadow bird monitoring followed an adapted Ontario Forest Bird Monitoring Protocol (Figure 4). This protocol is also used for meadow bird surveys conducted through TRCA's Terrestrial Long-term Monitoring Program (TRCA 2011). Meadow birds were monitored twice during the field season with the first visit occurring between May 15<sup>th</sup> and May 30<sup>th</sup>, and the second visit between May 30<sup>th</sup> and June 15<sup>th</sup>, with at least 10 days between visits. Counts were conducted between 05:00 and 10:00 hours and at approximately the same time of day on subsequent visits from year to year. Counts were only conducted in good weather conditions (no rain, light winds). All birds seen or heard within a 100 m radius circle and during a 10-minute time period were recorded. This report only contains species potentially breeding at the site.



Figure 4. Biologists conducting bird monitoring.

## Butterfly transects

Butterflies were surveyed by slowly walking a specified path through the meadow and identifying/counting butterfly species observed (e.g., Figure 5). Butterflies were identified to species where possible or to genus if species-level identification was not possible. Four visits were made each year to capture variation in adult emergence dates among resident and migratory species. Surveys were conducted between 09:00 and 16:00 and only in good weather conditions ( $>10^{\circ}\text{C}$ , no rain, light winds). Start and end times were recorded and were generally consistent among years.



Figure 5. Monarch (*Danaus plexippus*) at The Meadoway.

## RESULTS

Thirty-five vegetation plots were set up between 2016 and 2025 (Table 1, Figure 6). Plots were set up in different years corresponding to the occurrence of management activities. Bird monitoring was completed in 2016, and 2018-2024 while butterfly monitoring was completed in 2016, and 2018-2025. In 2016 and 2018, five sections were surveyed for butterflies with transects situated on the paved trail that runs the length of the corridor. In 2019, transects were moved slightly in each section to run beneath the northmost hydro wires for the entire length of the corridor (instead of along the trail).

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Table 1. Vegetation plots, bird surveys, and butterfly survey locations and years surveyed. If blank, no surveys were done.

Section	Veg plot name	Vegetation plot monitoring years	Bird survey station #	Bird survey years	Butterfly transect	Butterfly survey years
1.1	MV-24_1.1X	2019-2025	11	2021-2024	1C	2021-2025
	MV-24_1.1Y	2020-2025				
1.2	MV-24_1.2P	2018-2025	8	2020-2024	Bermondsey to Soccer Field	2022, 2024, 2025
1.3	MV-24_1.3Q	2018, 2020-2025	12	2021-2024	1H	2021-2025
	MV-24_1.3V	2019, 2020				
1.4	MV-24_1.4W	2019	6	2018, 2019, 2021-2024	1J	2019, 2021-2025
	MV-24_1.4R	2018				
2.2	MV-24_2.2AJ	2023, 2024	15	2022, 2024	2	2022-2025
	MV-24_2.2S	2018, 2019, 2021-2025				
2.3	MV-24_2.3T	2018, 2019, 2021-2025				
2.4	MV-24_2.4U	2018, 2019, 2021-2025	7	2018, 2019-2024	2K	2019, 2021-2025
3.2	MV-24_3.2AA	2020, 2024, 2025	16	2024	3.2A, 3.2B	2024
3.3	MV-24_3.3AB	2020, 2024, 2025	17	2024	3.3A	2024
4.1	MV-24_4.1G	2016, 2018-2025	1	2016, 2018-2024	A	2016, 2018-2025
	MV-24_4.1H	2016, 2018-2025				
4.2	MV-24_4.1I	2016, 2018, 2019, 2021-2025	2	2016, 2018-2024	B	2016, 2018, 2019, 2021-2025
	MV-24_4.2A	2016, 2018-2025				
4.3	MV-24_4.2B	2016, 2018-2025	3	2016, 2018-2024	A, B, C, D	2016, 2018-2025
	MV-24_4.2C	2016, 2018-2025				
4.4	MV-24_4.3D	2016, 2018-2025	4	2016, 2018-2024	A, B, D	2016, 2018-2025
	MV-24_4.3E	2016, 2018-2025				
4.4	MV-24_4.3F	2016, 2018-2025				
	MV-24_4.4J	2016, 2018-2025				

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Section	Veg plot name	Vegetation plot monitoring years	Bird survey station #	Bird survey years	Butterfly transect	Butterfly survey years
	MV-24_4.4K	2016, 2018-2025			E	2021-2025
	MV-24_4.4L	2016, 2018-2025				
5.1	MV-24_5.1AC	2020, 2023, 2025				
5.2	N/A	N/A	9	2020, 2024	D	
5.3	MV-24_5.3AD	2020, 2023, 2025	10	2020, 2024	E, F	2020, 2023, 2025
5.4	MV-24_5.4AE	2020, 2023, 2025			G	
6.1	MV-24_6.1AF	2020, 2024, 2025			A	2025
6.2	MV-24_6.2AG	2020, 2024, 2025	13	2021, 2022	B	2021-2022, 2025
6.4	MV-24_6.4AH	2020, 2024, 2025	14	2021, 2022, 2024	C	2021-2025
	MV-24_7.1M	2016, 2018-2025				2016, 2018-
7.1	MV-24_7.1N	2016, 2018-2025	5	2016, 2018-2024	A, B, C, D, E	2025 (E only surveyed in 2019)
	MV-24_7.1O	2016, 2018-2025				

\*Research plots N and O and butterfly transects 7.1 B and C were mowed unexpectedly in 2025. Interpret data cautiously.

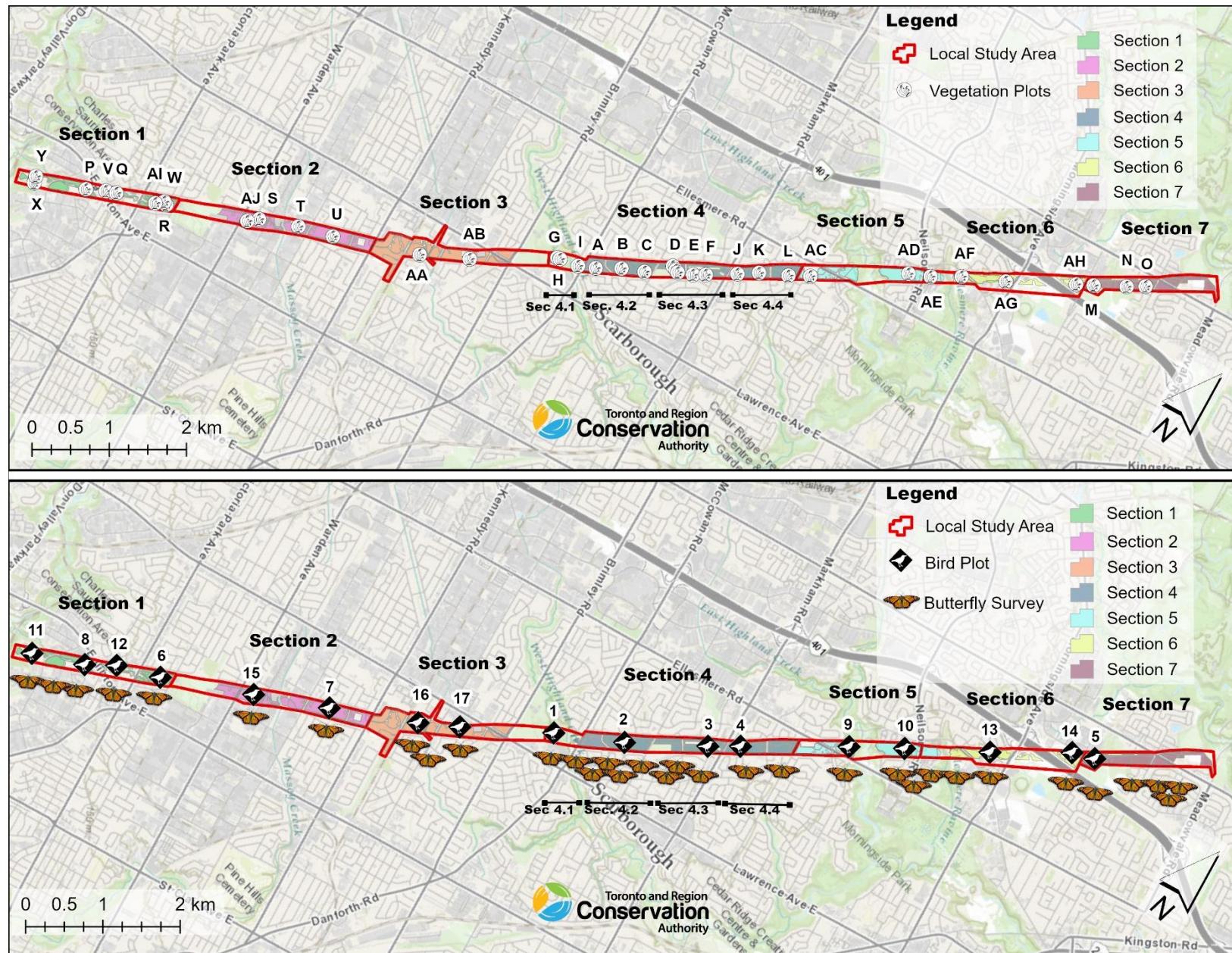


Figure 6. Vegetation plot, bird, and butterfly survey locations at The Meadoway in 2016, 2018-2025.

## Vegetation plots

Data collected at vegetation monitoring plots are comprehensively presented in this section of the report in tabular format. This allows for a visual representation of changes in plant communities and percent cover over time. Species are grouped by plant type (graminoid, forb, targeted invasive, or woody) and by origin (native or non-native to Ontario). Within each grouping, species are ordered from highest to lowest percent cover, with shading used to help visualize changes. Thatch and bare soil cover are also presented at the bottom of each table.

For each species, the percent cover value shown in the table represents the higher of the average cover values recorded during the spring and summer visits. For example, if common milkweed (*Asclepias syriaca*) had an average cover of 10% across sub-plots 1-5 during the spring visit and 20% during the summer visit, the value reported in the table would be 20%. Darker shades of green represent higher cover values as indicated in the legend for each table. Text summaries are provided by section, with plot-specific details found directly in tables.

### Section 1

#### Section 1.1

Two plots were monitored in section 1.1 (plots 1.1X and 1.1Y; Table 2 and 3). Pre-restoration in 2019, plot 1.1X was dominated by non-native graminoids and dog-strangling vine (*Vincetoxicum rossicum*; DSV). Following restoration both plots had a higher cover of native graminoids and forbs compared to pre-restoration conditions. In 2020, plot 1.1Y had a high cover of panic grass (*Panicum capillare*) and oats; however, cover of both species decreased to virtually zero in subsequent years. Oats are part of the cover crops and are expected to disappear within the first couple of years following restoration. Panic grass is a native plant associated with disturbed areas, and its decline reflects natural successional processes.

The cover of tall goldenrod (*Solidago altissima* var. *altissima*) increased in both plots, rising from 4.6% in 2019 to 18.5% in 2025 in plot 1.1X, and from 4.4% in 2020 to 72.4% in 2025 in plot 1.1Y. Other than tall goldenrod, forbs such as showy tick-trefoil (*Desmodium canadense*) and ox-eye (*Helianthopsis helianthoides*) appear to have established well in plot 1.1X, while black-eyed Susan (*Rudbeckia hirta* var. *pulcherrima*), false dragonhead (*Physostegia virginiana* ssp. *virginiana*), foxglove beardtongue (*Penstemon digitalis*), and wild bergamot (*Monarda fistulosa* var. *fistulosa*) established in plot 1.1Y. Varying levels of establishment across plots occurs as a result of different soil conditions, including an old gravel road substrate providing opportunities for unique species such as foxglove beardtongue. The cover of native graminoids was higher in plot 1.1X compared to 1.1Y.

#### Section 1.2

One plot was monitored in section 1.2 (plot 1.2P; Table 4). In 2018 and 2019, plot 1.2P was dominated by non-native graminoids and forbs. By 2025, dominant species include tall goldenrod (57.8%), and several non-native forbs. Creeping thistle (*Cirsium arvense*) cover was high in 2023 (12.2%) and 2024 (9.9%); however, decreased to 4.4% in 2025.

### **Section 1.3**

One plot was monitored in section 1.3 (plot 1.3Q; Table 5). In 2018, plot 1.3Q contained only non-native graminoids and forbs. By 2025, the plot contained a variety of native forbs with high covers such as ox-eye with a cover of 55.2% and tall goldenrod (15.8%).

### **Section 1.4**

One plot was monitored in section 1.4 (plot 1.4AI; Table 6). In 2025, plot 1.4AI was dominated by tall goldenrod (56.2%), ox-eye (7.2%), along with several other native and non-native grasses and forbs. Kentucky blue grass (*Poa pratensis* ssp. *pratensis*) cover has increased from 9.4% in 2023 to 15% in 2025.

Table 2. Plot 1.1X percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2019*	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	2.4	2.8	3.1	3.7	2	4.5	80-100
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	17.4	0	0	0	0	0	60-80
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	1.2	1.6	4.2	5.2	1.3	1.9	40-60
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	1.2	1.2	1.2	2.2	1.8	2.2	20-40
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0.4	1.5	0.4	0.5	0	0	10-20
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0.9	0.2	0.3	0	0.3	2-5
<i>Juncus dudleyi</i>	Dudley's rush	L5	Native	Graminoids	0	0	0	0	0	0.4	0.2	1-2
<i>Echinochloa muricata</i> var. <i>microstachya</i>	small-spiked barnyard grass	L5	Native	Graminoids	0	0.6	0	0	0	0	0	0.1-1
<i>Bromus ciliatus</i>	fringed brome grass	L3	Native	Graminoids	0	0	0.1	0.1	0.2	0	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	15.6	6	7	6.4	6.6	9.4	5.2	
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	12.6	0	0	0	0.8	8.2	7	
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	3.2	0	0.3	3.2	4.4	3.2	5.4	
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	6	0	0.1	0	0	0	0	
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	4	0	0	0	0	0	
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	2	0.2	0.1	0	0	0	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0.1	0	0.6	0.1	0.4	0.2	0	
<i>Digitaria sanguinalis</i>	hairy crab grass	L+	Non-native	Graminoids	0	0.8	0	0	0	0	0	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	4.6	2.8	13.2	14.4	20.8	22	18.5	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	3.4	7.8	6.2	13	10	10.8	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	2.6	2.6	3	8.4	9	7.4	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	3.2	6.6	12	4.2	2.7	1.5	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	11	11.8	0.4	0.6	0.1	0.1	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.6	1.7	1.7	2.4	1.7	2.7	
<i>Sympyotrichum ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0.1	0.2	0.4	1.5	3.2	1.8	2.8	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.6	1.2	1.6	0.6	2.4	3.1	
<i>Asclepias incarnata</i> ssp. <i>incarnata</i>	swamp milkweed	L4	Native	Forbs	0	1.2	1.6	0.7	2	2.1	1.6	
<i>Sympyotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0.8	0.6	0.6	1.6	2	1.2	0.6	
<i>Achillea borealis</i> var. <i>borealis</i>	woolly yarrow	L5	Native	Forbs	1	0	0.6	1	0.8	0.8	0.8	
<i>Solidago gigantea</i>	smooth goldenrod	L5	Native	Forbs	1.8	0	0	0.2	0.2	0.8	1.2	
<i>Equisetum arvense</i>	field horsetail	L5	Native	Forbs	1.8	0.2	0.2	0.4	0.5	0.2	0.6	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	1.2	0.8	1.6	0.1	0	0	
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0	1	1	0.6	0.4	0.6	
<i>Rudbeckia laciniata</i>	cut-leaved coneflower	L5	Native	Forbs	0	0.6	0.2	0.1	0.1	0	0	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0.1	0.2	0.2	0.2	0.1	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0.2	0.4	0	0.1	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0	0.1	0.2	0.2	0.1	0.1	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0.3	0.2	0	0.1	0	0	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.3	0.2	0	0	0	0	
<i>Physostegia virginiana</i> ssp. <i>virginiana</i>	false dragonhead	L3	Native	Forbs	0	0	0	0	0	0.4	0	
<i>Potentilla norvegica</i>	rough cinquefoil	L+?*	Native	Forbs	0	0.2	0.1	0	0	0	0	
<i>Acalypha rhomboidea</i>	three-seeded mercury	L5	Native	Forbs	0	0.2	0	0	0	0	0	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0	0.1	0	0	
<i>Galium palustre</i>	marsh bedstraw	L5	Native	Forbs	0	0	0	0	0	0	0.1	
<i>Galium triflorum</i>	sweet-scented bedstraw	L5	Native	Forbs	0	0	0	0	0	0	0.1	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0	0	0	0	0	0.1	
<i>Sympyotrichum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0	0.1	0	0	0	0	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	5.8	11.8	8.2	6.8	5.2	5.5	0.8	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	0.9	1	1.2	12.1	6.2	2.1	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.2	7.8	2.2	2.4	3.5	2.4	4.3	
<i>Cichorium intybus</i>	chicory	L+	Non-native	Forbs	0	1.4	3.8	0.6	1.4	1.5	2.8	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	0	0.5	0	1.2	2.9	1.6	2.2	
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0.1	3.8	2.7	0.2	0.4	0	0.1	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0	0	0	0.4	1	1.4	1.4	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0.2	0.1	0.4	1.5	0.2	0.2	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	0.1	1	0	0.2	0.5	0.6	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.1	0.1	0.3	0.5	0.9	0.1	0.3	
<i>Lythrum salicaria</i>	purple loosestrife	L+	Non-native	Forbs	0	0	0.5	0.2	0.4	0.4	0.8	
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0.1	0	0.4	0.4	0.6	0	0	
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0	0	0	0.2	0.6	0.2	0.2	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0	0	0.1	0.1	0.2	0.2	0.2	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0.2	0.1	0.1	0	0.1	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0	0	0.2	0.1	0	
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0.2	0.1	0	0	0	0	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0.1	0.1	0	0	0	0	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	
<i>Amaranthus albus</i>	tumbleweed	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	
<i>Dipsacus fullonum</i>	teasel	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	0.1	0	0	0	0	0	0	
<i>Tragopogon dubius</i>	lemon-yellow goat's beard	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	29.4	0.6	1	1.3	2.5	2.6	2.6	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.2	0.7	0.8	1	1.1	1.5	1.9	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0.1	0.2	0	0	0	0	0.1	
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0.1	0.2	0	0	0	0	0	
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0	0.2	0	0	0	0	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.1	0.1	0	0	0	0	0	
<i>Ailanthus altissima</i>	tree-of-heaven	L+	Non-native	Woody	0	0.1	0	0	0	0	0	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.1	0	0	0	0	0	
Thatch	Thatch				48	4.5	19.6	27.4	7.8	23	60	
Bare soil	Bare soil				0	54.6	6.8	5.8	2.8	0	0.2	

\*Only spring survey completed

Table 3. Plot 1.1Y percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0.65	0.1	0	0	0	0	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	1	3.2	3.5	2	0.5	0.1	60-80
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	2.2	0.6	0.8	1.2	1	0.4	40-60
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	1.1	0.6	1.1	1	0.3	0.4	20-40
<i>Bromus ciliatus</i>	fringed brome grass	L3	Native	Graminoids	0	0.7	0.3	0.3	0.1	0.2	10-20
<i>Juncus dudleyi</i>	Dudley's rush	L5	Native	Graminoids	0	0	0.1	0.2	0.5	0.6	5-10
<i>Echinochloa muricata var. microstachya</i>	small-spiked barnyard grass	L5	Native	Graminoids	1.2	0	0	0	0	0	2-5
<i>Elymus virginicus var. virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0	0	0	0.8	1-2
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0.1	0.1	0	0	0.1	0.1-1
<i>Carex vulpinoidea</i>	fox sedge	L5	Native	Graminoids	0	0	0	0	0	0.3	0
<i>Carex bebbii</i>	Bebb's sedge	L5	Native	Graminoids	0	0	0	0	0.1	0.1	0
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	2.9	0	0	0	0	0	0
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	0	0	0.4	1.6	2.2	0
<i>Digitaria sanguinalis</i>	hairy crab grass	L+	Non-native	Graminoids	0.4	0	0	0	0	0	0
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	4.4	37.6	38	64.8	61.4	72.4	0
<i>Phytostegia virginiana ssp. virginiana</i>	false dragonhead	L3	Native	Forbs	0	2.7	8.2	12.8	13.4	3	0
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	1.6	4.6	7.4	4.2	6.1	5.4	0
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	4.2	4.6	2.1	1.2	0.2	0.1	0
<i>Asclepias incarnata ssp. incarnata</i>	swamp milkweed	L4	Native	Forbs	1.2	2	2	1.8	1.8	1.2	0
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0.1	0.1	0.9	2.4	2.9	3	0
<i>Rudbeckia laciniata</i>	cut-leaved coneflower	L5	Native	Forbs	2.2	2.3	2.1	1.2	0.5	0.1	0
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	1	0.9	1.6	1.4	1	0.6	0
<i>Sympytrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0.2	0.6	1.2	1.8	0.9	0.8	0
<i>Sympytrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0.1	0.3	1.3	1.8	0.8	0.9	0
<i>Helopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0.8	0.3	0.7	0.7	1.8	0.6	0
<i>Sympytrichum laeve var. laeve</i>	smooth aster	L3	Native	Forbs	0	0.2	0.8	1.1	1.2	0.9	0
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	2.2	1.1	0.2	0.1	0	0	0
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0	0	0	0	3.3	0
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0.1	1.2	0.7	0.8	0.1	0
<i>Equisetum arvense</i>	field horsetail	L5	Native	Forbs	0.4	0.1	0.3	0.6	0.3	0.9	0
<i>Potentilla norvegica</i>	rough cinquefoil	L+?*	Native	Forbs	0.4	1	1	0.1	0.1	0	0
<i>Sympytrichum ericoides var. ericoides</i>	heath aster	L5	Native	Forbs	0	0.1	0.6	0.4	0.8	0.2	0
<i>Epilobium ciliatum ssp. ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0.1	0.2	0.4	0.6	0.5	0.2	0
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.6	0.4	0.2	0.1	0	0	0
<i>Eupatorium perfoliatum</i>	boneset	L5	Native	Forbs	0.1	0.2	0.2	0.1	0.1	0.5	0
<i>Solidago canadensis var. canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	0	0	0.8	0	0
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0.4	0	0.2	0	0	0.1	0
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0.6	0.1	0	0	0	0
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0.2	0.3	0	0	0.1	0
<i>Eurotium maculatum var. maculatum</i>	spotted Joe-Pye weed	L5	Native	Forbs	0	0.1	0.1	0	0.1	0.1	0
<i>Penstemon hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0.1	0.1	0.2	0	0	0
<i>Drymocallis arguta</i>	tall cinquefoil	L3	Native	Forbs	0	0	0.1	0	0	0.1	0
<i>Solidago gigantea</i>	smooth goldenrod	L5	Native	Forbs	0	0	0	0	0	0.2	0
<i>Amphicarpa bracteata</i>	hog-peanut	L5	Native	Forbs	0	0	0.1	0	0	0	0
<i>Coreopsis tripteris</i>	tall coreopsis	L+?*	Native	Forbs	0	0	0	0	0	0.1	0
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0.1	0	0	0
<i>Liatris spicata</i>	spike blazing-star	L2	Native	Forbs	0.1	0	0	0	0	0	0
<i>Lobelia cardinalis</i>	cardinal flower	L1	Native	Forbs	0.1	0	0	0	0	0	0
<i>Ratibida pinnata</i>	grey-headed coneflower	L+?*	Native	Forbs	0	0	0	0.1	0	0	0
<i>Solidago nemoralis ssp. nemoralis</i>	grey goldenrod	L5	Native	Forbs	0.1	0	0	0	0	0	0
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	5.4	7.4	7.2	7.2	7	2.6	0
<i>Lythrum salicaria</i>	purple loosestrife	L+	Non-native	Forbs	1.4	1	1.3	2.6	2.8	3	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	0.9	1.2	1.3	1.7	1.4	1.2	0
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0.8	2.7	0.2	0.5	1.3	1	0
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	1.1	1.4	0.9	1	0.9	0.4	0
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.2	0.1	0.4	1.1	0.5	0.6	0
<i>Sonchus arvensis ssp. arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0.2	0.6	0.6	0	0	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	0.3	0.4	0.3	0	0	0
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.1	0.4	0.2	0.2	0	0
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0	0.1	0.1	0.4	0.2	0	0
<i>Oenothera fruticosa ssp. glauca</i>	sundrops	L+	Non-native	Forbs	0.4	0	0	0	0	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0.2	0.1	0	0	0	0	0
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0	0.1	0.1	0	0.1	0	0
<i>Chaenorhinum minus ssp. minus</i>	dwarf snapdragon	L+	Non-native	Forbs	0.2	0	0	0	0	0	0
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0	0	0.1	0.1	0
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0.2	0	0	0	0	0
<i>Alliaria petiolata</i>	garlic mustard	L+	Non-native	Forbs	0	0	0	0	0	0.1	0
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0	0	0	0	0.1	0
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0.1	0	0	0	0	0
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0	0	0.1	0	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	1.5	1.2	3.7	2.6	3.1	3.2	0
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	3.6	3.7	2.6	2.3	2.2	0.7	0
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0.1	0.1	0.4	0.1	0.2	0.2	0
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0.2	0	0	0.1	0	0	0
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0.1	0	0.1	0	0	0	0
<i>Rosa blanda</i>	smooth wild rose	L4	Native	Woody	0	0	0.1	0	0	0	0
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.2	0	0.2	0.2	0	0	0
<i>Rosa canina</i>	dog rose	L+	Non-native	Woody	0	0.1	0	0.1	0	0.1	0
Thatch	Thatch				0	0	0	0	0	25.8	
Bare soil	Bare soil				56.8	4	0	0.2	0	0	0

Table 4. Plot 1.2P percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2018	2019*	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0.2	0.2	0.2	0.2	0.1	0.2	80-100
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0	0.1	0	0.1	0.2	0	60-80
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0	0.1	0	0	0.2	0	0	40-60
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0	0	0	0.1	0.1	0	20-40
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0	0.1	0.1	0	0	0	0	10-20
<i>Schizachyrium scoparium</i>	little bluestem	L2	Native	Graminoids	0	0	0.1	0	0	0	0	0	5-10
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	15.8	40	0.1	0	0	0	0.7	0.4	2-5
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	25	23.6	0	0.1	1.6	1	0.1	0	1-2
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	12.2	1.1	1.2	2.2	3	7	4	0.3	0.1-1
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0.3	2	0.1	0.4	1.3	4.6	2.2	1.4	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	1.8	0	0.6	1.6	3.5	3.2	0.7	0.1	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0.2	0.8	1.2	1.5	2.6	1	0
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0	0.6	0.3	0	0	0	0	0
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	0	0.8	0	0	0	0	0	0
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	0	0	0	0.1	0.6	0	0	0	0
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0	0.1	0.3	0.1	0.1	0	0	0
<i>Panicum miliaceum</i>	millet	L+	Non-native	Graminoids	0	0	0.4	0	0	0	0	0	0
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0.2	0.1	0.4	2.1	4.6	16.2	37.2	57.8	0
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	0	0.1	0.4	0.7	0.7	0.8	1.5	0
<i>Solidago ptarmicoides</i>	upland white goldenrod	L2	Native	Forbs	0	0	0.1	0.9	1.2	1	0.6	0.4	0
<i>Sympphytum ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0.1	0	0.3	0.2	0.3	1.1	1.1	0.8	0
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.1	0.1	0	0.9	1	1.5	0
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	0	0.1	0.2	0.8	0.1	0.2	2.1	0
<i>Sympphytum novae-angliae</i>	New England aster	L5	Native	Forbs	0.1	0.1	0	0	0.2	0.7	0.9	0.6	0
<i>Sympphytum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0.1	0	0.1	0	0.2	1.4	0.4	0.1	0
<i>Fragaria vesca</i> ssp. <i>americana</i>	woodland strawberry	L5	Native	Forbs	0	0	0	0	0.2	0.4	0.6	0.6	0
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	common wild strawberry	L5	Native	Forbs	0.8	0.8	0	0	0	0	0	0	0
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0	0	0	0.2	0.1	0	0.8	0
<i>Sympphytum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0	0	0	0	0	0.2	0.9	0
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0	0.1	0.1	0.4	0.1	0.1	0.2	0
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0	0	0	0.2	0.2	0.2	0.4	0
<i>Sympphytum cordifolium</i>	heart-leaved aster	L5	Native	Forbs	0.4	0.5	0	0.1	0	0	0	0	0
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	heal-all (native)	L5	Native	Forbs	0	0	0.1	0	0.2	0	0	0.1	0
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0	0.1	0	0.1	0.1	0	0	0
<i>Sympphytum olentangiae</i>	sky-blue aster	L4	Native	Forbs	0	0	0	0	0.2	0.1	0	0	0
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0	0	0	0.1	0.1	0
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0	0	0	0.2	0	0
<i>Linum virginianum</i>	Virginia yellow flax	LX	Native	Forbs	0	0	0	0	0	0	0.2	0	0
<i>Sisyrinchium montanum</i>	blue-eyed grass	L4	Native	Forbs	0	0	0.1	0.1	0	0	0	0	0
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	0	0	0.1	0	0	0	0
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0.1	0	0	0	0	0	0	0	0
<i>Solanum ptychanthum</i>	American black nightshade	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0
<i>Sympphytum ciliolatum</i>	Lindley's aster	L4	Native	Forbs	0	0	0	0	0	0	0	0.1	0
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.2	0.2	2.4	11.2	29.4	26.6	8.1	3.6	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	6.8	2.8	24.2	10.4	3.1	11.6	12.4	4.6	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	3.2	1.3	29.8	23.6	3.8	3.6	2.1	3	0
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	4.2	2.4	9.4	18.5	6.2	4.1	0.4	1.5	0
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.2	0.4	11.9	1.2	0.5	0.3	0.1	0.3	0
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.4	0.2	0.3	1.3	1.3	1.8	0.6	0.5	0
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0	0.1	0.6	1	0.7	2.1	1.3	0.2	0
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.2	0.3	0.4	1.4	0.7	0.5	0.8	0.8	0
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0	0	0.1	0.3	0.8	1.8	1.4	0.1	0
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0	0	0	0	0.2	1.4	1	1.6	0
<i>Cirsium vulgare</i>	bulb thistle	L+	Non-native	Forbs	0	0	2.6	0	0.1	0	0.6	0.5	0
<i>Cichorium intybus</i>	chicory	L+	Non-native	Forbs	0	0	0	0	0	0.5	0.8	0.4	0
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0	0.2	0.8	0.3	0	0.2	0.2	0
<i>Sonchus arvensis</i> ssp. <i>arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0	0	0.4	0.2	0.2	0	0.4	0
<i>Carduus acanthoides</i>	plumeless thistle	L+	Non-native	Forbs	0	0	1	0.2	0	0	0	0	0
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0	0
<i>Melilotus officinalis</i>	yellow sweet clover	L+	Non-native	Forbs	0	0	0	0.4	0	0.2	0	0	0
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0	0.2	0.3	0.1	0	0	0	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	0.6	0	0	0	0	0	0	0	0
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0.2	0.1	0	0	0.1	0	0	0	0
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	0.1	0.2	0	0.1	0	0	0	0	0
<i>Sonchus oleraceus</i>	annual sow-thistle	L+	Non-native	Forbs	0	0	0.4	0	0	0	0	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0	0.1	0.1	0	0	0	0	0
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0	0	0	0.2	0	0	0	0	0
<i>Atriplex patula</i>	halberd-leaved orache	L+?	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0.1	0	0	0	0	0	0	0	0
<i>Sympphytum ciliatum</i>	rayless aster	L+*	Non-native	Forbs	0	0	0	0	0	0	0	0.1	0
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0	2.8	2.4	2.4	12.2	9.9	4.4	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	2.9	5	0.1	0.2	0.8	1.2	1.8	0.6	0
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0.1	0	0	0	0	0	0.1	0
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0.1	0	0	0	0	0	0	0	0
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.5	0.1	0	0	0	0	0	0	0
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0	0	0.1	0.1	0	0	0	0
Thatch	Thatch				40	39	0	0.6	7.6	5.8	16	21	
Bare soil	Bare soil				0	0	26.8	4	4.6	3.2	10.2	5.8	

\*Only spring survey completed

Table 5. Plot 1.3Q percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2018	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0.1	3.4	1.7	1.4	0.6	0.1	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	2.6	1.1	2.4	1	0	0.1	60-80
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	1.6	0.5	1	0.8	0.7	1.2	40-60
<i>Elymus virginicus var. virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0.7	0.5	0.8	0.4	0.3	20-40
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0.3	0.3	0.2	0.1	1.4	0.4	10-20
<i>Schizachyrium scoparium</i>	little bluestem	L2	Native	Graminoids	0	0	0	0.4	0.4	0	0	5-10
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.4	0	0	0	0	0	2-5
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	47	0.1	0	0	0	0	1-2
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	21.4	0	0.4	0	0	0	0	0.1-1
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	21	0	0	0	0.2	0.4	0	0
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0	1.2	2.2	3.6	0.1	0	0
<i>Digitaria sanguinalis</i>	hairy crab grass	L+	Non-native	Graminoids	0	3.6	0	0	0.1	0	0	0
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	2.2	0	0	0	0	0	0	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	2	0	0	0	0	0	0	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0	0	0	0	1	0
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0.9	0	0	0	0	0	0
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0.4	0.1	0	0	0	0	0
<i>Helianthus helianthoides</i>	ox-eye	L2	Native	Forbs	0	0.6	3.3	9.5	19.4	29.2	55.3	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	1.2	3.4	17.4	13.8	7	2.5	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	3.4	4.8	0.5	16.2	14.8	0.4	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0	0.3	1.7	8.1	10.6	15.8	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	2.4	4.6	13	4.7	2.9	3.2	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.2	0.2	1.5	1.6	4.8	4.2	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0.6	6	0.1	0.1	0.1	0.1	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0.2	4.9	0.1	0.1	1	0	
<i>Epilobium ciliatum ssp. ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0	0.5	3.1	0.1	
<i>Sympytrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0.2	0	0.1	0.6	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0.1	0	0	0	0.4	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0.1	0.2	0	0	0	0	
<i>Sympytrichum ericoides var. ericoides</i>	heath aster	L5	Native	Forbs	0	0.1	0	0	0	0	0	
<i>Sympytrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0	0	0	0	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	9.6	5.4	34.4	0.5	0.5	0.1	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	7.8	1.1	3.4	5.4	10.8	6.6	2.6	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0	6	7.8	10.1	3.2	3.5	2.2	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.4	1.4	4.2	14	4.2	1.9	1	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	1	2.8	6.6	1.5	0.1	0.8	0.2	
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0.8	2.8	1.8	2.2	3.4	1.2	0.5	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	1.1	0.8	4	2.8	2.8	0.6	0.2	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	5.9	2.1	0.2	1.2	0.5	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	1.4	7	0	0	0.6	0	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0	0.4	0.5	7	0	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	1.4	0	0.2	0.4	0.1	2	0.2	
<i>Dipsacus fullonum</i>	teasel	L+	Non-native	Forbs	0	0	0	0	0	0	2.4	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0.8	0.4	0.2	0	0	0.1	0.1	
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0	0	0	1	0.5	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	1.1	0	0	0	0	0	0	
<i>Cichorium intybus</i>	chicory	L+	Non-native	Forbs	0	0	0.4	0.2	0	0	0	
<i>Amaranthus retroflexus</i>	red-root pigweed	L+	Non-native	Forbs	0	0.6	0	0	0	0	0	
<i>Cerastium arvense ssp. arvense</i>	field chickweed	L+	Non-native	Forbs	0	0	0	0	0	0.6	0	
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0	0.3	0.2	0	0	0	
<i>Sonchus arvensis ssp. arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0	0	0	0.1	0.1	0.1	
<i>Arctium minus</i>	common burdock	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	0.1	0	0	0	0	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0	0.3	2.8	6.8	4.6	5.8	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.9	0.1	0.1	0.2	0.3	0.4	0.3	
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0.1	0	0	0	0	0	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0.2	0.2	0.1	0	0	0	0	
<i>Catalpa speciosa</i>	northern catalpa	L+	Non-native	Woody	0	0	0.1	0	0	0	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.1	0	0	0	0	0	0	
Thatch	Thatch				42	0	8	26	29	8.6	17	
Bare soil	Bare soil				0	41.6	1	2.6	5.6	6.4	1.8	

Table 6. Plot 1.4AI percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2023	2024	2025	Average Percent Cover
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	21.4	1.6	0.1	80-100
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0.5	0	0	60-80
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0.2	0	0.2	40-60
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0.1	0.1	20-40
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0.1	10-20
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	9.4	13.6	15	5-10
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	2.8	0.6	0	2-5
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	1.4	1	0.2	1-2
								0.1-1
								0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	21	48.4	56.2	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	5.8	7.5	7.2	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	10.2	5.4	1.1	
<i>Drymocallis arguta</i>	tall cinquefoil	L3	Native	Forbs	3.4	3.1	3.2	
<i>Sympyotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicled aster	L5	Native	Forbs	6.3	2	0.8	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	3.8	1.5	1.5	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	3.5	1.5	1.6	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	2.6	2	0.2	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	1.6	1.4	1	
<i>Sympyotrichum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0.6	1.8	0.3	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0.8	0.6	0.8	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0.2	1	
<i>Solidago juncea</i>	early goldenrod	L5	Native	Forbs	0.7	0	0	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0.6	0	0	
<i>Oxalis dilrenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.1	0.1	0.2	
<i>Silphium terebinthinaceum</i>	prairie dock	L+*	Native	Forbs	0	0.4	0	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0.1	0.2	0	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0.1	0.2	0	
<i>Potentilla norvegica</i>	rough cinquefoil	L+?*	Native	Forbs	0	0.2	0	
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0.2	0	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0.1	0	0	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0.1	0	0	
<i>Solidago ptarmicoides</i>	upland white goldenrod	L2	Native	Forbs	0.1	0	0	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	13.8	5	0.7	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	18.4	0.4	0.4	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	1.3	3	1.2	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	1	0.4	0.3	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	1.1	0.1	0	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.4	0.5	0.3	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	1.1	0	0	
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0.2	0.2	0.1	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0.4	
<i>Alliaria petiolata</i>	garlic mustard	L+	Non-native	Forbs	0.2	0	0.1	
<i>Arctium minus</i>	common burdock	L+	Non-native	Forbs	0	0.1	0.1	
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0.2	0	0	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0.1	0	0	
<i>Medicago falcata</i>	alfalfa	L+	Non-native	Forbs	0	0	0.1	
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0.1	0	0	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0	0	0.1	
<i>Sisymbrium altissimum</i>	tumble mustard	L+	Non-native	Forbs	0.1	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	3	6.4	3.8	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0.1	0	0	
Thatch	Thatch				4.4	17	60	
Bare soil	Bare soil				0.6	0.6	1	

## Section 2

### Section 2.2

One plot was monitored in section 2.2 in 2025 (2.2S; Table 7). In 2018 and 2019, plot 2.2S contained almost exclusively non-native species; however, restoration led to the introduction of numerous native grasses and forbs. Common evening primrose (*Oenothera biennis*) and sticky willow-herb (*Epilobium ciliatum* ssp. *ciliatum*) had higher cover in previous years compared to 2025, while tall goldenrod and foxglove beard-tongue have higher covers continuing into 2025.

### Section 2.3

One plot was monitored in section 2.3 (plot 2.3T; Table 8). Prior to restoration in 2020, this plot was dominated by non-native grasses such as meadow fescue (*Lolium pratense*) (45% cover) and Kentucky blue grass (26.4% cover). Post-restoration, many of these non-native species decreased to near zero covers, with many more native species occurring and establishing. Tall goldenrod cover increased from 0.2% pre-restoration to 78% post-restoration in 2025.

### Section 2.4

One plot was monitored in section 2.4 (plot 2.4U; Table 9). Similar to section 2.3, non-native graminoids and forbs dominated the plot pre-restoration. Post-restoration in 2025, the plot was dominated by switchgrass (*Panicum virgatum*; 30.8%) and tall goldenrod (24%).

Table 7. Plot 2.2S percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2018	2019*	2021	2022	2023	2024	2025	Average Percent Cover
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0	0.7	3.8	6.8	0.7	0.3	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0.4	1.4	2.2	6.2	1.7	60-80
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0	0.2	1.4	0	0	40-60
<i>Carex vulpinoidea</i>	fox sedge	L5	Native	Graminoids	0	0	0	0	0	0.4	0.8	20-40
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0	1.2	0	0	0	0	10-20
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0.2	0	0	0	0	5-10
<i>Juncus dudleyi</i>	Dudley's rush	L5	Native	Graminoids	0	0	0	0	0	0	0.1	2-5
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	12	24	0.4	0.6	8	3.6	13.1	1-2
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	32	18.6	0	0	0	0	0	0.1-1
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	19.4	31	0	0	0	0	0	0
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	0	0	0.1	0.8	5	3.8	2	
<i>Pheum pratense</i>	timothy grass	L+	Non-native	Graminoids	1.8	2.5	0.1	0	0	0	0	
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	2	0	0	0	0	0	0.4	
<i>Poa annua</i>	annual blue grass	L+	Non-native	Graminoids	0	0	2.4	0	0	0	0	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	0.8	0	0	0	0	0	
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0	0.3	0.4	0.1	0	0	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0.2	0	0	0	0	0	0	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0	29.6	4.3	16.6	22.6	0.8	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0	0.3	1.8	6	8.8	23	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0	1.7	3.4	4.2	13.8	13.6	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0.1	8.8	22.6	1.5	
<i>Sympytrichum lanceolatum</i> var. <i>lanceolatum</i>	panicled aster	L5	Native	Forbs	0	0	0.1	1.7	9.1	9.6	7.4	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0	1.2	4.6	4.6	2.8	0.4	
<i>Equisetum arvense</i>	field horsetail	L5	Native	Forbs	0.1	0	1.5	2	3	4	0.6	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0.6	1	2.4	2.4	3.3	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	0	0	1	3	1.4	2.4	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	0	1.1	2	2.1	1.4	1.8	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0	2.3	4.4	0.5	0.5	0.3	
<i>Sympytrichum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0	0.4	1.6	2.3	1.6	1.5	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0	5.8	0.4	0	0	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	2.2	0.6	1.5	0.2	0.1	
<i>Sympytrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0	0	0.4	2.1	
<i>Penstemon hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0	1.3	0.6	0.2	0.1	0	
<i>Fragaria vesca</i> ssp. <i>americana</i>	woodland strawberry	L5	Native	Forbs	0	0	0	0.2	0.6	0.4	0	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0	0.1	0.5	0.1	0.1	0.2	
<i>Solidago ptarmicoides</i>	upland white goldenrod	L2	Native	Forbs	0	0	0.5	0.3	0	0	0	
<i>Drymocallis arguta</i>	tall cinquefoil	L3	Native	Forbs	0	0	0.5	0	0	0.1	0	
<i>Solidago nemoralis</i> ssp. <i>nemoralis</i>	grey goldenrod	L5	Native	Forbs	0	0	0.2	0.3	0	0	0	
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	common wild strawberry	L5	Native	Forbs	0	0	0	0	0	0	0.4	
<i>Solanum ptychanthum</i>	American black nightshade	L5	Native	Forbs	0	0	0	0	0.4	0	0	
<i>Acalypha rhomboidea</i>	three-seeded mercury	L5	Native	Forbs	0	0	0.2	0	0.1	0	0	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0	0.2	0	0	0	0	
<i>Lepidium virginicum</i>	Virginia pepper-grass	L4	Native	Forbs	0	0	0	0.1	0	0	0	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0	0	0	0	0	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	1.8	1	9.4	10.6	0.3	0.1	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	9.2	4.2	1.2	1.8	1.7	0.8	1.7	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0	18.4	0.5	0	0	0	
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0.3	0	6.4	7.7	1.2	0.1	0	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	0	1.2	2.5	4.6	1.5	0.4	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.5	0	2.7	1.5	5.3	0.1	0	
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0.1	0	0	4.6	4.8	0	0	
<i>Falllopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0	5.8	0.4	0.2	0.1	0	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.2	0.1	2	3.2	0.6	0.2	0.1	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	3.2	2.7	0.1	0	
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0	1.2	2.3	0.1	0	0	
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0.4	1.2	0.4	0.2	0	
<i>Persicaria maculosa</i>	lady's thumb	L+	Non-native	Forbs	0	0	1.2	0.6	0	0	0	
<i>Cirsium vulgare</i>	bul thistle	L+	Non-native	Forbs	0	0	0	0	0.4	0.5	0.7	
<i>Amaranthus albus</i>	tumbleweed	L+	Non-native	Forbs	0	0	1.4	0	0	0	0	
<i>Sisymbrium altissimum</i>	tumble mustard	L+	Non-native	Forbs	0	0	0	1.2	0.2	0	0	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	0.3	0.5	0	0	0.1	0.2	0.2	
<i>Chaenorhinum minus</i> ssp. <i>minus</i>	dwarf snapdragon	L+	Non-native	Forbs	0	0	0.8	0.1	0	0	0	
<i>Thlaspi arvense</i>	penny-cress	L+	Non-native	Forbs	0	0	0.6	0.2	0	0	0	
<i>Erysimum cheiranthoides</i>	wormseed mustard	L+	Non-native	Forbs	0	0	0.6	0.1	0	0	0	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0	0.2	0	0.2	0.2	0	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.4	0.2	0	0	0	0	0	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	0	0	0.1	0.1	0.2	0.1	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	0	0.2	0	0	0.1	0.1	
<i>Dipsacus fullonum</i>	teasel	L+	Non-native	Forbs	0	0	0	0	0.2	0	0	
<i>Polygonum achoreum</i>	striate knotweed	L+	Non-native	Forbs	0	0	0.1	0.1	0	0	0	
<i>Sonchus arvensis</i> ssp. <i>arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0	0	0	0.2	0	0	
<i>Rumex obtusifolius</i>	bitter dock	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.1	0	0	0	0	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.5	0.2	14.9	13.8	5.4	5.6	7.4	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.4	0.3	0	0	0	0	0	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0.2	0	0	0.1	0	0.1	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.2	0.2	0	0	0	0	0	
<i>Acer platanoides</i>	Norway maple	L+	Non-native	Woody	0.1	0	0	0	0	0	0	
<i>Malus pumila</i>	apple	L+	Non-native	Woody	0	0	0	0	0	0	0.1	
Thatch	Thatch				43	28.8	0	4.6	18	4.4	37	
Bare soil	Bare soil				0	0	17.8	0.6	14.4	3.8	4	

\*Only spring survey completed

Table 8. Plot 2.3T percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2018	2019*	2021	2022	2023	2024	2025	Average Percent Cover
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0	0.9	9.4	6.4	1.4	0.2	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0.6	1.1	2.8	0.3	0.1	60-80
<i>Elymus virginicus var. virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0.1	0	0	0.2	0.3	40-60
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0	0	0	0.4	0	0	20-40
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0.1	0	0	0	0	10-20
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0	0.1	0	0	0	0	5-10
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	41.2	45	0	0	0	0	0	2-5
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	7.6	26.4	0	0.5	1.6	1.1	1.2	1-2
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	2.4	5.6	0.5	3.5	0.5	0.8	0	0.1-1
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0.1	1	1.1	2.2	1.5	0
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	1.3	0	0	2	1.3	0.4	0.2	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0.1	0	0.2	0	2.8	0	0	
<i>Panicum miliaceum</i>	millet	L+	Non-native	Graminoids	0	0	2.9	0	0	0	0	
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	0.6	0.8	0	0	0	0	0	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	0.4	0	0	0	0	0	
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	0	0.1	0.1	0	0	0	
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0.1	
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	0	0	0.1	0	0	0	0	
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0.2	0	3	19.2	42	68	7.8	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0	10	3.1	5.4	5.3	0.3	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	1.4	11.6	1	0.9	0.3	
<i>Epilobium ciliatum ssp. ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0.8	4	7.2	3	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0	0.5	5	51	1.3	0.2	
<i>Sympyotrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0.1	1	4.8	3.6	2.5	
<i>Heliospilus helianthoides</i>	ox-eye	L2	Native	Forbs	0	0	0	1.2	3.8	1.1	0.6	
<i>Sympyotrichum laeve var. laeve</i>	smooth aster	L3	Native	Forbs	0	0	0.5	1	2	0.3	1.5	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	0	1.3	1.2	1.8	0.3	0.3	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0	1.3	1.4	2.1	
<i>Fragaria virginiana ssp. virginiana</i>	common wild strawberry	L5	Native	Forbs	1.8	2.4	0.1	0	0	0	0	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0	0.4	0.5	0.8	1	1	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0.2	0.2	0.6	1	0.8	
<i>Lepidium virginicum</i>	Virginia pepper-grass	L4	Native	Forbs	0	0	0	1.8	0.1	0.1	0	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0	0.4	1.2	0.2	0.1	0.1	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.9	0.2	0.3	0	0	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0	0.1	0.6	0.4	0.1	0.2	
<i>Fragaria vesca ssp. americana</i>	woodland strawberry	L5	Native	Forbs	0	0	0	0.4	0.4	0.4	0.1	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.1	0	0.6	0	0	0.4	0.2	
<i>Drymocallis arguta</i>	tall cinquefoil	L3	Native	Forbs	0	0	0.5	0	0.2	0	0	
<i>Solidago ptarmicoides</i>	upland white goldenrod	L2	Native	Forbs	0	0	0.5	0	0	0	0	
<i>Penstemon hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0	0.4	0	0	0	0	
<i>Potentilla norvegica</i>	rough cinquefoil	L+?	Native	Forbs	0	0	0	0.2	0	0.1	0.1	
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0	0.1	0	0	0	0.2	
<i>Geum aleppicum</i>	yellow avens	L5	Native	Forbs	0	0	0	0	0	0.1	0.2	
<i>Sympyotrichum ericoides var. ericoides</i>	heath aster	L5	Native	Forbs	0	0	0	0	0.1	0	0.1	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0.1	0	0	0	0	
<i>Galium aparine</i>	cleavers	L5	Native	Forbs	0	0	0	0	0	0	0.1	
<i>Solidago nemoralis ssp. nemoralis</i>	grey goldenrod	L5	Native	Forbs	0	0	0	0	0	0	0.1	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0	55	0.1	0.2	0	0	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.1	0.1	6.6	9.2	3.2	2.6	0.6	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	6.6	6	3.2	3.4	1.4	0.1	0.1	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	7.2	2.7	1	2.9	1.3	0.5	1.8	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	6	1.1	0	0	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.8	0.9	2.8	0.7	0.4	0.3	0	
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0	2.1	0.1	1.9	1.6	
<i>Ceratium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.4	0.6	1.2	1.7	0.6	0.5	0.3	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.1	0	0.4	2.2	1.2	0.6	0.2	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.8	1.1	0	0.3	0.4	0.5	0.3	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	1.2	1.2	0.7	0.1	0.1	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	1	1.3	0	0	0	0	0	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0.6	0.4	0.2	0	0.1	0.3	0	
<i>Prunella vulgaris</i>	heal-all	L+?	Non-native	Forbs	0.6	0.8	0	0	0	0	0	
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0	0	0.4	0.5	0.1	0	
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0	0.6	0.2	0.2	0	0	
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0	0	0.4	0.1	0.1	0	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.4	0.1	0	0	0	0	0	
<i>Sisymbrium altissimum</i>	tumble mustard	L+	Non-native	Forbs	0	0	0	0.3	0	0	0	
<i>Sisymbrium officinale</i>	hedge mustard	L+	Non-native	Forbs	0	0	0	0.3	0	0	0	
<i>Sonchus arvensis ssp. arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0	0	0	0	0	0.2	
<i>Arcium minus</i>	common burdock	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	
<i>Atriplex patula</i>	halberd-leaved orache	L+?	Non-native	Forbs	0	0	0	0.1	0	0	0	
<i>Chaenorhinum minus ssp. minus</i>	dwarf snapdragon	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	
<i>Geum urbanum</i>	urban avens	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	
<i>Lythrum salicaria</i>	purple loosestrife	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	
<i>Tussilago farfara</i>	coltsfoot	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.4	0	1.9	5.9	4.2	3.7	3.6	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	2.8	2.4	0.2	0	0	0.1	0.1	
<i>Acer negundo</i>	Manitoba maple	L+?	Native	Woody	0.2	0.2	0.1	0.3	0.1	0	0	
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0.1	0	0	0	0	0	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.3	0.1	0	0	0	0	0	
<i>Alianthus altissima</i>	tree-of-heaven	L+	Non-native	Woody	0	0	0	0	0.1	0	0	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0	0	0.1	0	0	0	
Thatch	Thatch	#N/A	#N/A	#N/A	140.2	15	0	8	48	42	24	
Bare soil	Bare soil	#N/A	#N/A	#N/A	0.2	0	52	0	2.8	0	0	

Table 9. Plot 2.4U percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2018	2019	2021	2022	2023	2024	2025	Average Percent Cover
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	8.2	33	42.2	36.6	30.8	80-100
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0	0.2	10.1	6	0.6	0.1	60-80
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0	8.2	0	0	0	0	40-60
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0	0.6	0.4	0.1	0.1	20-40
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0	0.4	0.2	0.4	0	0	10-20
<i>Juncus dudleyi</i>	Dudley's rush	L5	Native	Graminoids	0	0	0	0	0	0.2	0.4	5-10
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0.1	0	0.1	0	0	2-5
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	49	52	0	0	0	0	0	1-2
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	0	0	0.9	9.8	17	24.6	17.4	0.1-1
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	27	25	0	0.6	1.2	0.2	1.2	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	6.2	0.5	0	1.4	1.4	0.2	0.1	
<i>Panicum miliaceum</i>	millet	L+	Non-native	Graminoids	0	0	6.4	0	0	0	0	
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0.1	0.9	1.2	1.8	1	
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0.4	0	0.1	0	0.8	2	1.2	
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	1.2	0	0	0	0	0	0	
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	0	0.7	0	0	0	0	
<i>Digitaria sanguinalis</i>	hairy crab grass	L+	Non-native	Graminoids	0	0	0.2	0	0	0	0	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0	0.2	0	0	0	0	
<i>Poa annua</i>	annual blue grass	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0	0.5	4.5	9.4	14.4	24	
<i>Sympytrichium lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0.1	5	12.2	13	7.2	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	17.4	6.7	0	0.1	0	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0	16.2	4.3	0.6	0.2	0	
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0	0	1.6	6	1.4	0.4	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0	4	1.4	0.7	0.5	0	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0.1	3	0.9	0.7	0.2	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0	0.4	1.7	0.7	0.5	0.4	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0.5	1	0	0.2	0.7	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	0	2.4	0	0	0	0	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	0	0.8	1	0	0	0	
<i>Sympytrichium laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0	0.4	0.8	0.2	0.1	0	
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	common wild strawberry	L5	Native	Forbs	0	0	0	0.4	0.6	0.4	0.1	
<i>Penstemon hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0	1.1	0.1	0	0	0	
<i>Drymocallis arguta</i>	tall cinquefoil	L3	Native	Forbs	0	0	0.4	0.1	0	0	0	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0	0.4	0	0	0	
<i>Solidago nemoralis</i> ssp. <i>nemoralis</i>	grey goldenrod	L5	Native	Forbs	0	0	0	0.3	0	0	0	
<i>Solidago ptarmicoides</i>	upland white goldenrod	L2	Native	Forbs	0	0	0.3	0	0	0	0	
<i>Equisetum arvense</i>	field horsetail	L5	Native	Forbs	0	0	0.1	0.1	0	0	0	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	0	0	0.2	0	0	0	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0	0.1	0.1	0	0	0	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0	0.1	0	0	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0	0.1	0	0	0	0	
<i>Solanum ptychanthum</i>	American black nightshade	L5	Native	Forbs	0	0	0.1	0	0	0	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	13.8	5	3.2	6.8	5.2	1.9	0.2	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	0	2.6	4.9	5.8	0	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	2.4	0.6	3.9	4.3	0.1	0	0	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	2.1	2.4	0.4	3	1.2	0.3	0.3	
<i>Sonchus arvensis</i> ssp. <i>arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0	0.1	3	2.6	0.2	0.2	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0	2	3.4	0.6	0	0	
<i>Medicago lupulina</i>	black medic	L+	Non-native	Forbs	0.4	0.2	2.6	1	0.3	0	0	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.1	0.2	1.9	1.7	0.2	0	0	
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0	2.4	0.8	0	0	0	
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0.3	0	0	2.2	0.1	0	0	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0	1.7	0.5	0.1	0.1	0	
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0	1.1	0.2	0	0	0	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.4	0.1	0	0	0	0	0	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0.1	0.2	0	0	0	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	0.3	0	0	0	
<i>Cichorium intybus</i>	chicory	L+	Non-native	Forbs	0	0	0.2	0	0	0	0	
<i>Persicaria maculosa</i>	lady's thumb	L+	Non-native	Forbs	0	0	0	0.2	0	0	0	
<i>Atriplex patula</i>	halberd-leaved orache	L+?	Non-native	Forbs	0	0	0.1	0	0	0	0	
<i>Epilobium parviflorum</i>	small-flowered willow-herb	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	
<i>Lythrum salicaria</i>	purple loosestrife	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0	0	1.1	3.6	1.7	2.6	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.2	0.1	0	0	0	0	0	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0	0	0.2	0	0	0	
<i>Ulmus pumila</i>	Siberian elm	L+	Non-native	Woody	0	0	0.1	0	0	0	0	
Thatch	Thatch				33.4	11.6	0	3	78	79	83	
Bare soil	Bare soil				0.4	0	77.6	0	0	0.8	0	

\*Only spring survey completed

## Section 3

Sections 3.2 and 3.3 were monitored for the first time in 2020 (vegetation plots 3.2AA and 3.3AB) and represented pre-management, turfgrass communities. Plots primarily contained meadow fescue and Kentucky blue grass. No management activities occurred in this section in 2020 or 2021 and the plots were not monitored 2021-2023. In 2025, both plots were monitored providing data from the second growing season post-seeding.

### Section 3.2

Section 3.2 was unique for pre-restoration areas with several naturally occurring native species including golden-fruited sedge (*Carex aurea*), blue-eyed grass (*Sisyrinchium montanum*), plantain-leaved pussytoes (*Antennaria parlenii* ssp. *fallax*), and Howell's pussytoes (*Antennaria howellii* ssp. *howellii*). By 2025, native grasses dominated (compared to non-native grasses) including panic grass (5.5%) and Virginia wild rye (*Elymus virginicus* var. *virginicus*; 3.7%; Table 10). Tall goldenrod was the dominant native forb (19.4%) with lower amounts of several other native forbs including ox-eye (7.7%) and cup-plant (7.5%).

### Section 3.3

In contrast to plot 3.2AA, plot 3.2AB was dominated by Virginia wild rye (19.8%) and had relatively low cover of tall goldenrod (6.5%; Table 11). Panicked aster (*Sympyotrichum lanceolatum* var. *lanceolatum*) also had a comparatively high cover in this plot (10%) relative to other plots.

Table 10. Plot 3.2AA percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2024	2025	Average Percent Cover
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	4.6	3.7	80-100
<i>Juncus tenuis</i>	path rush	L5	Native	Graminoids	7	0.2	0.2	60-80
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	5.5	0	40-60
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	1	0.3	20-40
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0.4	0.3	10-20
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0.3	0.3	5-10
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0.1	2-5
<i>Carex aurea</i>	golden-fruited sedge	L4	Native	Graminoids	0	0.1	0	1-2
<i>Carex granularis</i>	meadow sedge	L5	Native	Graminoids	0	0	0.1	0.1-1
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	16.6	0	0	0
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	14.4	0	0	
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	13.2	0	0	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	8.8	0	0	
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	4.4	0.3	0.3	
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	0	0.6	0.5	
<i>Setaria viridis</i>	green foxtail	L+	Non-native	Graminoids	0	0.6	0	
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	0.5	0	
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0.1	0.3	0	
<i>Digitaria sanguinalis</i>	hairy crab grass	L+	Non-native	Graminoids	0	0.1	0	
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0.1	0	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	24	0.7	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0.2	4.6	19.4	
<i>Silphium perfoliatum</i>	cup-plant	L+*?	Native	Forbs	0	10	7.5	
<i>Helianthus helianthoides</i>	ox-eye	L2	Native	Forbs	0	4.2	7.7	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0.1	7.6	2.7	
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	heal-all (native)	L5	Native	Forbs	7.4	0.8	1.4	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	4	5.2	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	8	0.1	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	2	5.9	
<i>Sympyotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0.2	1.6	2.9	
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	common wild strawberry	L5	Native	Forbs	2.8	0.5	0.5	
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	1.4	1.5	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	2	0.7	
<i>Verbena stricta</i>	hoary vervain	L3	Native	Forbs	0	1.3	1.1	
<i>Pestemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0.5	1.2	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.5	0.7	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.4	0.2	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0.2	0.4	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0.1	0.1	0.4	
<i>Sisyrinchium montanum</i>	blue-eyed grass	L4	Native	Forbs	0.3	0.2	0	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.1	0.1	0.2	
<i>Potentilla norvegica</i>	rough cinquefoil	L+?	Native	Forbs	0	0.2	0.2	
<i>Sympyotrichum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0.2	0.2	
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	L+*	Native	Forbs	0	0.2	0.1	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0.2	0.1	
<i>Drymocallis arguta</i>	tall cinquefoil	L3	Native	Forbs	0	0.1	0.2	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0.2	0.1	
<i>Pesteman hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0.2	0.1	
<i>Sympyotrichum ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0.1	0	0.2	
<i>Viola sororia</i> var. <i>sororia</i>	common blue violet	L5	Native	Forbs	0	0.1	0.2	
<i>Erigeron philadelphicus</i>	Philadelphia fleabane	L5	Native	Forbs	0	0.1	0.1	
<i>Lespedeza capitata</i>	round-headed bush-clover	L3	Native	Forbs	0	0.2	0	
<i>Solidago gigantea</i>	smooth goldenrod	L5	Native	Forbs	0	0	0.2	
<i>Veronica peregrina</i> ssp. <i>peregrina</i>	purslane speedwell	L+?	Native	Forbs	0	0.2	0	
<i>Plantago rugelii</i>	red-stemmed plantain	L5	Native	Forbs	0	0	0.1	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0.1	0	
<i>Solidago nemoralis</i> ssp. <i>nemoralis</i>	grey goldenrod	L5	Native	Forbs	0	0.1	0	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	6.4	3.2	1.4	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	7.6	0.9	0.8	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	2.8	1.6	0.1	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	2.4	0.9	
<i>Ceratium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	1	1	1.2	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.4	2.2	0.6	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0.2	1.8	1	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	2.2	0.1	0.4	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	1.2	0.8	0.6	
<i>Artemisia vulgaris</i>	common mugwort	L+	Non-native	Forbs	0	0.9	1.4	
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0.1	0.4	0.6	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0.6	0.2	0.1	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.1	0.5	0.3	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.6	0.1	0.2	
<i>Mellotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0.6	0.2	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0.4	0	
<i>Glechoma hederacea</i>	creeping Charlie	L+	Non-native	Forbs	0	0.2	0.2	
<i>Chaenorhinum minus</i> ssp. <i>minus</i>	dwarf snapdragon	L+	Non-native	Forbs	0	0.1	0	
<i>Nepeta cataria</i>	catnip	L+	Non-native	Forbs	0	0.1	0	
<i>Persicaria hydropiper</i>	water-pepper	L+?	Non-native	Forbs	0	0.1	0	
<i>Persicaria maculosa</i>	lady's thumb	L+	Non-native	Forbs	0	0	0.1	
<i>Pilosella caespitosa</i>	yellow hawkweed	L+	Non-native	Forbs	0	0	0.1	
<i>Sagina procumbens</i>	pearlwort	L+	Non-native	Forbs	0	0.1	0	
<i>Sonchus oleraceus</i>	annual sow-thistle	L+	Non-native	Forbs	0	0	0.1	
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0.1	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.1	19.4	8.4	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	2	0.2	0.1	
<i>Acer negundo</i>	Manitoba maple	L+?	Native	Woody	0.2	0.3	0	
<i>Betula papyrifera</i>	paper birch	L4	Native	Woody	0	0.1	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.2	0	0	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.1	0	
Bare soil	Bare soil				0	71	8.4	
Thatch	Thatch				46	0	4.4	

Table 11. Plot 3.3AB percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2024	2025	Average Percent Cover
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	7.2	19.8	80-100
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	4.6	0	60-80
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0.9	2.8	40-60
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0.2	0.5	20-40
<i>Juncus bufonius</i>	toad rush	L5	Native	Graminoids	0	0.1	0	10-20
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0	0.1	5-10
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	31.4	0.2	2.2	2-5
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	26.6	0	0	1-2
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	9.4	0	0.1-1
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	5.6	0.6	2	0
<i>Lolium perenne</i>	perennial rye	L+	Non-native	Graminoids	0	5	1.4	
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	2.9	0	
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	2.2	0	0	
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	2.1	0	0	
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	2	0	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	1	0	0	
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0.1	0	
<i>Sympyotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0	6	10	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	9	5.1	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	11.6	0	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	4.6	5	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	2.4	6.5	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	2.2	5.4	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	3	1	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	2.4	1	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	2.2	0	
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	heal-all (native)	L5	Native	Forbs	0	1.4	0.6	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	1.2	0.2	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	1.1	0.2	
<i>Verbena stricta</i>	hoary vervain	L3	Native	Forbs	0	1	0.2	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.4	0.4	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0.3	0.5	
<i>Sympyotrichum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0.4	0.4	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0	0.6	
<i>Sympyotrichum ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0	0.6	0	
<i>Penstemon hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0.2	0.3	
<i>Veronica peregrina</i> ssp. <i>peregrina</i>	purslane speedwell	L+?*	Native	Forbs	0	0.5	0	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.3	0.1	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0.1	0.2	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0.1	0.1	
<i>Stellaria longifolia</i>	long-leaved chickweed	L4	Native	Forbs	0	0.2	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	13.4	11.8	7.2	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	1.5	6	8.8	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	7.4	0	0	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	2.7	3.1	0.4	
<i>Glechoma hederacea</i>	creeping Charlie	L+	Non-native	Forbs	1	1.4	2.6	
<i>Polygonum achoreum</i>	striate knotweed	L+	Non-native	Forbs	0	4.4	0	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	4.1	0	
<i>Atriplex patula</i>	halberd-leaved orache	L+?	Non-native	Forbs	0	3.4	0	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.2	2.2	0.7	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	2.8	0.2	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	1.6	1.4	
<i>Sonchus arvensis</i> ssp. <i>arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0.4	1.9	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	1	0.1	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	0.6	0.4	
<i>Persicaria maculosa</i>	lady's thumb	L+	Non-native	Forbs	0	0.8	0	
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0.2	0.6	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.5	0.2	0.1	
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0.1	0.4	0.2	
<i>Amaranthus retroflexus</i>	red-root pigweed	L+	Non-native	Forbs	0	0.5	0	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	0.5	0	0	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	0	0.4	
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0.1	0	0.2	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.3	0	0	
<i>Artemisia biennis</i>	biennial wormwood	L+	Non-native	Forbs	0	0.2	0	
<i>Cirsium vulgare</i>	bulb thistle	L+	Non-native	Forbs	0	0.2	0	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	0	0.1	
<i>Malva neglecta</i>	common mallow	L+	Non-native	Forbs	0	0.1	0	
<i>Portulaca oleracea</i>	purslane	L+	Non-native	Forbs	0	0.1	0	
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0	0.1	
<i>Sympyotrichum ciliatum</i>	rayless aster	L+*	Non-Native	Forbs	0	0.1	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.2	2.4	7.8	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.3	0.2	0.2	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0	0.1	
<i>Acer saccharinum</i>	silver maple	L4	Native	Woody	0	0	0.1	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.1	0	
Thatch	Thatch				33.2	0	7.2	
Bare soil	Bare soil				0.4	33	0.8	

Average Percent Cover
80-100
60-80
40-60
20-40
10-20
5-10
2-5
1-2
0.1-1
0

\*Only spring survey completed

## Section 4

Twelve vegetation plots have been monitored in section 4 since 2016. The plots in this section underwent initial restoration between 2013 and 2016 providing one of the longest records of data collection post-restoration within The Meadoway. We provide a general summary of findings for each sub-section (4.1, 4.2, 4.3, 4.4) with detailed information on percent cover by species provided in individual tables.

### Section 4.1

Plots 4.1G, H, and I demonstrated several similar patterns in percent cover and community composition (Table 12, 13, 14). Tall goldenrod and wild bergamot increased in cover over time in plots G, H, and I, while ox-eye increased in plots G and H only. The cover of native grasses was highest post-restoration in 2018-2022; however, has decreased to lower covers by 2025. Plots G and H have some microenvironmental variations due to differences in slope, resulting in unique species composition including more native asters and strawberry on the sloped areas. Kentucky bluegrass increased in cover across all plots, with the largest increases in plot I, where it reached 52% cover in 2025. Non-native forb cover was generally quite low and decreased over time compared to native forbs, particularly in 2024. Creeping thistle cover was consistently low, showed no clear temporal trend, and was virtually absent in plot I. DSV cover continues to increase. Thatch cover was high across all plots, ranging from 37-80% in 2025.

Table 12. Plot 4.1G percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020*	2021	2022	2023	2024	2025	Average Percent Cover
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	1.6	3.6	2.7	2.7	0.3	0.1	0.2	0	0	80-100
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0.4	0.5	1.9	1.6	0.8	0.5	1.2	0.3	0.5	60-80
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0.1	0.5	0.5	0	0.2	0.2	0.3	40-60
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0	0	0	0	0	0	0	0.1	20-40
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	0.2	0.6	1.2	2.9	2.6	8.5	4.4	14.4	10-20
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	4	0.2	0.3	1	0.4	0.2	0	0.1	5-10
<i>Setaria viridis</i>	green foxtail	L+	Non-native	Graminoids	2.1	0	0	0	0	0	0	0	0	2-5
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0.1	0.4	0.2	0.2	0.1	0.3	0	0.1	1-2
<i>Digitaria ischaemum</i>	smooth crab grass	L+	Non-native	Graminoids	0	0.2	0	0	0	0	0	0	0	0.1-1
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	0	0	0	0.2	0	0	0	0	0	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	0	0	0	0	0	0	0.1	0	0	0
<b>*Only summer survey completed</b>														
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	1.6	4.2	7.5	13.4	27.2	23	51	61	
<i>Helianthus helianthoides</i>	ox-eye	L2	Native	Forbs	0.4	4.4	8.4	8.1	12.3	15.1	9.3	17.2	8.1	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	36.6	9.6	27.4	1.8	0.9	2.1	1.3	0.7	1	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	2.6	1.3	2.2	7.1	9.3	9.8	17.6	14.4	8.6	
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	1.2	10.6	13	17.2	8.6	7.1	4.2	2.6	0.8	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0.8	2.8	3	0.1	0.6	0.9	0.5	1.2	0.2	
<i>Erigeron philadelphicus</i> var. <i>philadelphicus</i>	Philadelphia fleabane	L5	Native	Forbs	0	0	0.2	0	0.5	1.9	1.5	1.2	1	
<i>Geum canadense</i>	white avens	L5	Native	Forbs	0	0.1	0.2	0.8	0.8	1	0.6	0.2	0	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0.1	0.5	0.4	0.6	0.9	0.2	0.3	0.4	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0.1	0.1	0	0.4	0.4	0.4	0.3	0.4	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0.1	0	0.8	0.1	0	0.8	0.1	0	0.1	
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	0	2	0	0	0	0	0	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0.2	0.7	0.3	0.3	0.2	0.1	0.1	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	1.1	0.4	0	0	0	0	0	0	0	
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	heal-all (native)	L5	Native	Forbs	0.4	0	0.1	0	0	0	0.1	0.1	0.1	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0.5	0	0.1	0	0	0	0	0	0	
<i>Clinopodium vulgare</i>	wild basil	L5	Native	Forbs	0	0.2	0	0	0	0	0	0	0	
<i>Galium asprellum</i>	rough bedstraw	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0.1	
<i>Galium aparine</i>	cleavers	L5	Native	Forbs	0	0	0	0	0	0	0	0	0.1	
<i>Hackelia virginiana</i>	Virginia stickseed	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0	
<i>Senna hebecarpa</i>	wild senna	L4*	Native	Forbs	0	0.1	0	0	0	0	0	0	0	
<i>Sympytrum lateriflorum</i> var. <i>lateriflorum</i>	calico aster	L5	Native	Forbs	0	0	0	0	0	0	0.1	0	0	
<i>Viola sororia</i> var. <i>sororia</i>	common blue violet	L5	Native	Forbs	0	0	0	0	0	0	0	0.1	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	20.4	2.8	5	0.7	11.4	4.2	5.2	3.1	3	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	1.7	21.1	11.7	7.5	5	1.3	0.9	0.5	0.5	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	7.2	11.6	7.3	1.4	1.5	1.7	2.7	1.6	0.8	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.1	2.2	3.1	0.3	0.5	0.8	0.2	0.4	0.4	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	0.3	0.4	1	1	1.6	0.6	0.4	0.6	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0.5	1.8	2.1	0.3	0.2	0.2	0.1	0.1	0	
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0.7	2.1	0	0.7	0.3	0.5	0.4	0.5	
<i>Potentilla argentea</i>	silver cinquefoil	L+	Non-native	Forbs	2.6	0.6	1	0	0.1	0	0.1	0	0	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	0.3	2.1	0.2	0.6	0.2	0.1	0	0	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.2	1.2	0.4	0.1	0.1	0	0	0	0	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	0	0.1	0.1	0.2	0.2	0.3	0.3	0.2	
<i>Veronica officinalis</i>	common speedwell	L+	Non-native	Forbs	0.8	0	0	0	0	0	0	0	0	
<i>Geum urbanum</i>	urban avens	L+	Non-native	Forbs	0	0	0.1	0.1	0	0.1	0	0	0.2	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.2	0.3	0	0	0	0	0	0	
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0	0.1	0	0	0.1	0.1	0.1	0.1	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0	0.2	0	0.1	0.1	0	0	0	
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0.4	0	0	0	0	0	0	0	0	
<i>Alliaria petiolata</i>	garlic mustard	L+	Non-native	Forbs	0	0	0	0	0	0.1	0.1	0.1	0.1	
<i>Erysimum hieracifolium</i>	hawkweed-leaved mustard	L+	Non-native	Forbs	0	0	0	0	0.3	0	0	0	0	
<i>Coreopsis grandiflora</i>	large-flowered tickseed	L+	Non-native	Forbs	0	0.2	0.1	0	0	0	0	0	0	
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0	0	0	0	0	0	0	0.1	0.1	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	0	0	0	0.1	0	0	
<i>Rumex acetosella</i>	sheep sorrel	L+	Non-native	Forbs	0	0	0	0	0	0	0	0	0.1	
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0	0	0	0	0	0	0	0.1	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.1	1	1.3	1.1	1.4	3	3.4	3	3.6	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	1.2	1.9	3	2.2	1.6	2	1.1	0.4	0.5	
<i>Parthenocissus vitacea</i>	thicket creeper	L5	Native	Woody	0	0	0	0.2	0.1	0.1	0.1	0.1	0	
<i>Acer saccharum</i> ssp. <i>nigrum</i>	black maple	L4	Native	Woody	0	0	0	0.1	0	0.1	0.1	0.1	0.1	
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0	0.2	0	0	0.1	0.1	0	0	0.1	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0.2	0	0	0	0	0	0	0.1	
<i>Ulmus americana</i>	white elm	L5	Native	Woody	0	0.2	0	0	0	0	0	0	0	
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0.1	0.1	0	0	0	0	0	0	
<i>Parthenocissus inserta</i>	thicket creeper	L5	Native	Woody	0	0	0	0	0	0	0.1	0	0	
<i>Acer tataricum</i> ssp. <i>ginnala</i>	Amur maple	L+	Non-native	Woody	0	0	0.1	0.1	0	0	0.1	0	0.1	
<i>Robinia pseudoacacia</i>	black locust	L+	Non-native	Woody	0.2	0	0	0	0	0	0	0	0.01	
<i>Euonymus europaeus</i>	European spindle-tree	L+	Non-native	Woody	0	0	0	0	0	0	0.1	0	0.1	
<i>Malus pumila</i>	apple	L+	Non-native	Woody	0	0.1	0	0	0	0	0	0	0	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.1	0	0	0	0	0	0	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0	0	0	0	0	0	0	0	0.1	
Thatch	Thatch				0	0	0.5	0	22	52	57	64	54	
Bare soil	Bare soil				9	1.4	0.6	1	1	2.6	1	0	0	

Table 13. Plot 4.1H percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020*	2021	2022	2023	2024	2025	Average Percent Cover
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0.6	0.6	0.8	0.9	0.4	1.4	1.4	2.3	80-100
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	1.8	0.7	0.7	0.8	0.6	0.9	0.8	1.9	60-80
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0.5	2.4	1.8	2.2	0.7	0.1	0.2	0.1	0	40-60
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	0.1	0.3	0.7	1.3	1.9	6.8	4.7	14	20-40
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	17.2	0.2	0.2	0.5	0	0	0	0	10-20
<i>Setaria viridis</i>	green foxtail	L+	Non-native	Graminoids	5.7	0	0	0	0	0	0	0	0	5-10
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	0	0	0	0.2	0	0	0	3	0	2-5
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0.1	0	0.2	0.1	0.1	0	0	0	0	1-2
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0	0	0	0.3	0.1	0.1	0	0.1-1
<i>Digitaria ischaemum</i>	smooth crab grass	L+	Non-native	Graminoids	0	0.2	0	0	0	0	0	0	0	0
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	0	0	0
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	1.2	7.4	3.4	12.5	16.4	19	31.4	32.6	20.4	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0.4	2	9.8	11	20.2	23.1	35.4	37	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	12.8	27.1	44.3	7.8	1.7	1.9	2.3	1.5	0.7	
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	3.3	14	17	13.4	5.4	2.1	1.4	1.1	0.8	
<i>Heliospasis helianthoides</i>	ox-eye	L2	Native	Forbs	0.5	1.4	1.5	2.4	4.6	6.8	5.9	7.4	3.1	
<i>Solidago canadensis var. canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	0	2.8	6	0	0	0	1	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	2.7	2.5	0.6	0.9	1.7	0.3	0.4	0.4	
<i>Senna hebecarpa</i>	wild senna	L4*	Native	Forbs	0	0.1	0.8	1.2	0.9	1.4	1.2	0.8	0.6	
<i>Oxalis dilrenia</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0.3	0.1	0.4	0.4	0.8	0.4	0.5	0.3	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0.5	1.7	0.2	0.1	0	0	0	0.1	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0.1	1.1	0.1	0.2	0.2	0.3	0.2	0.2	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0.1	1.1	0	0.5	0.2	0.1	0	0	
<i>Fragaria virginiana ssp. virginiana</i>	common wild strawberry	L5	Native	Forbs	0	0.1	0.2	0.2	0.4	0.4	0.2	0.2	0.2	
<i>Erigeron philadelphicus var. philadelphicus</i>	Philadelphia fleabane	L5	Native	Forbs	0	0	0	0.1	0.2	0.2	0.2	0.4	0.2	
<i>Prunella vulgaris ssp. lanceolata</i>	heal-all (native)	L5	Native	Forbs	0	0.1	0.2	0.1	0.1	0.4	0.1	0.1	0	
<i>Geum canadense</i>	white avens	L5	Native	Forbs	0	0.1	0.2	0.4	0	0	0	0	0	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0.4	0	0	0	0	0	0	0	0.1	
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	L4*	Native	Forbs	0.4	0	0	0	0	0	0	0	0	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0	0	0	0.1	0	0.1	0.1	
<i>Sympytrichum cordifolium</i>	heart-leaved aster	L5	Native	Forbs	0	0	0	0	0	0.1	0.1	0.1	0	
<i>Epilobium ciliatum ssp. ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0.1	0	0	0	0	0	
<i>Fragaria vesca ssp. americana</i>	woodland strawberry	L5	Native	Forbs	0	0	0	0	0	0	0.1	0	0	
<i>Hackelia virginiana</i>	Virginia stickseed	L5	Native	Forbs	0	0	0	0	0.1	0	0	0	0	
<i>Potentilla norvegica</i>	rough cinquefoil	L4?*	Native	Forbs	0	0	0	0	0.1	0	0	0	0	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0	0	0	0	0	0	0	0.1	
<i>Silphium perfoliatum</i>	cup-plant	L4?*	Native	Forbs	0	0	0	0	0	0	0	0	0.1	
<i>Solidago gigantea</i>	smooth goldenrod	L5	Native	Forbs	0	0	0	0	0	0	0	0	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	59.4	6	2.2	0.5	2.5	2.5	2.2	1.9	1.6	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	4.3	6.9	15.6	9	10.5	1.5	0.8	0.5	0.4	
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0	3	1.4	2.5	3	5.1	3.4	1.4	1.6	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	5	5.8	0.9	0.5	2	2.3	1.9	1.7	0.8	
<i>Veronica serpyllifolia ssp. serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	0.2	0.1	0.9	1.6	2.3	1.4	0.5	0.5	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	2.6	2.4	0.1	0.5	0.4	0.2	0.1	0.3	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	0.1	0.1	0.6	1.8	0.9	1	1	0.8	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	1.7	1	0.1	0.3	0.5	0.2	0.2	0.1	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.2	1	0.6	0	0.3	0.5	0.5	0.2	0.2	
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0.2	1.2	0	0	0.1	0.3	1	0.2	
<i>Geum urbanum</i>	urban avens	L+	Non-native	Forbs	0	0	0.1	0.3	0.3	1.6	0.3	0.1	0	
<i>Potentilla argentea</i>	silvery cinquefoil	L+	Non-native	Forbs	1.1	0.4	0.4	0.2	0.2	0.1	0	0	0	
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0.3	0.8	0	0.2	0.3	0.1	0.3	0.1	
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0	0.2	0.6	0	0.4	0.2	0	0	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0.3	0.2	0.5	0.3	0	0.1	0	0	0	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0	0	0	0	0	0.1	0.1	0.2	0.2	
<i>Alliaria petiolata</i>	garlic mustard	L+	Non-native	Forbs	0	0	0	0	0	0.1	0	0	0.1	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0	0	0	0	0.1	0.1	0	
<i>Euphorbia maculata</i>	spotted spurge	L4?	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0	
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0	0.2	0	0	0	0	0	0	
<i>Coreopsis grandiflora</i>	large-flowered tickseed	L+	Non-native	Forbs	0	0.1	0.1	0	0	0	0	0	0	
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	
<i>Veronica officinalis</i>	common speedwell	L+	Non-native	Forbs	0.1	0	0	0	0	0	0	0	0	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.5	1	0.6	1	1.4	2.4	1.3	1.9	3.3	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	1	0	0	0	0	0.2	0.2	0.1	
<i>Acer negundo</i>	Manitoba maple	L4?*	Native	Woody	0.1	0	0	0	0	0.1	0.1	0.1	0	
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0	0.2	0	0	0	0	0	0	0	
<i>Thuja occidentalis</i>	white cedar	L5	Native	Woody	0	0	0	0	0	0	0	0	0.1	
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0	0	0	0	0	0	0	0.1	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0.2	0.4	0	0	0	0	0	0	0	
<i>Acer tataricum ssp. ginnala</i>	Amur maple	L+	Non-native	Woody	0	0	0.1	0	0	0	0.1	0	0.1	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0	0	0	0	0	0	0.1	0.1	0.1	
<i>Euonymus europaeus</i>	European spindle-tree	L+	Non-native	Woody	0	0	0	0	0	0	0	0	0.1	
Thatch	Thatch				0	0.8	41	0	30.4	31	47	53	37	
Bare soil	Bare soil				11.4	0.8	0.8	0	1.8	1.6	1.2	0	0	

\*Only summer survey completed

Table 14. Plot 4.11 percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2021	2022	2023	2024	2025	Average Percent Cover
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0.8	12	6.1	4.4	1.8	2.4	1.7	1	80-100
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	1	4.5	4.2	3.6	3.8	1.4	1.8	2.1	60-80
<i>Schizachyrium scoparium</i>	little bluestem	L2	Native	Graminoids	0.2	1.4	0.7	0.4	0.4	0.4	0.1	0.1	40-60
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0.1	0.3	0.9	0.2	0	0	0.2	0	20-40
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0.1	0	0	0	0	0	0	0	10-20
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	0.8	2.1	7.9	7.1	14.8	18.8	52	5-10
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0.1	0	0.4	0.4	0.5	0.2	0.1	0.1	1-2
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	0	0.8	0.4	0	0.2	0	0.1	0	0.1-1
<i>Bromus japonicus</i>	Japanese chess	L+	Non-native	Graminoids	0	0.2	0	0.4	0.4	0.1	0	0	0
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	0	0.4	0.4	0.1	0	0	0	0	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0.1	0.1	0.1	0.1	0.4	0	0	0	0
<i>Setaria viridis</i>	green foxtail	L+	Non-native	Graminoids	0.3	0	0	0	0	0	0	0	0
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0.2	0	0	0	0	0	0	0
<i>Bromus commutatus</i>	upright chess	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0.6	8.6	30.2	31.2	31	36.8	48	29.8	80-100
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0.1	1.3	1.5	4	8.6	8.8	8	2.9	60-80
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	3.4	5.3	7.8	3.4	2.8	2.7	1.2	0.9	40-60
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0.8	2.1	2.4	0.4	0.2	0.2	0.2	0.1	20-40
<i>Oenothera biennis</i>	common evening-primrose	LS	Native	Forbs	0.8	4	0.3	0.3	0.3	0.1	0	0.1	10-20
<i>Heliospasis helianthoides</i>	ox-eye	L2	Native	Forbs	0.1	1.2	0.6	0.7	0.4	0.1	0	0	5-10
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	1.1	0.5	0.4	0.3	0.3	0.1	0.2	1-2
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	heal-all (native)	L5	Native	Forbs	0	2.4	0.2	0	0.1	0	0	0.1	0.1-1
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.8	0.2	0.1	0	0	0	0	0
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0.5	0	0	0.5	0.1	0	0	0
<i>Erigeron philadelphicus</i> var. <i>philadelphicus</i>	Philadelphia fleabane	L5	Native	Forbs	0	0.1	0.2	0	0.2	0	0	0.1	0
<i>Senna hebecarpa</i>	wild senna	L+*	Native	Forbs	0	0	0.1	0.2	0.1	0	0.1	0.1	0
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0.1	0	0	0	0	0.1	0.1	0
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0.2	0.1	0	0	0	0	0	0	0
<i>Galium aparine</i>	cleavers	L5	Native	Forbs	0	0	0	0.1	0.1	0	0	0	0
<i>Symphoricarpon lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0.1	0.1	0	0	0	0	0	0
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	L+*	Native	Forbs	0.1	0	0	0	0	0	0	0	0
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0	0	0.1	0	0	0	0	0
<i>Solidago gigantea</i>	smooth goldenrod	L5	Native	Forbs	0	0	0	0	0	0	0	0.1	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	51.8	10.5	4.3	2.1	2.2	0.7	1.5	0.4	80-100
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.7	11.8	10.2	4.6	1.1	0.6	0.6	0.3	60-80
<i>Dipsacus fullonum</i>	teasel	L+	Non-native	Forbs	0	0	0.4	1.8	8	8	8	4	1.4
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0.6	8	2.2	0.6	0.6	0.8	0.3	0.1	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	1.8	5.3	1.4	0.2	0.6	0.1	0.1	0	0
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0.4	2.2	3.2	0.2	0.6	0	0.1	0	0
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	5.2	0	0	0	0	0.1	0	0	0
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0.4	0.5	0.4	2.2	0.7	0.4	0.2	0
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	2.2	1.4	0.2	0.2	0.2	0	0	0
<i>Potentilla argentea</i>	silvery cinquefoil	L+	Non-native	Forbs	1.1	0.2	0.1	0	0	0	0	0	0
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	0.2	0.5	0.2	0.1	0.1	0.1	0	0
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0.4	0	0	0	0	0	0.2	0.2	0
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	0.1	0	0.1	0.1	0.1	0.1	0.1	0
<i>Arenaria serpyllifolia</i>	thyme-leaved sandwort	L+	Non-native	Forbs	0	0.1	0	0.1	0.1	0.1	0	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0.2	0.1	0	0	0	0	0	0	0
<i>Geum urbanum</i>	urban avens	L+	Non-native	Forbs	0	0	0	0	0.1	0.1	0	0	0
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.1	0.1	0	0	0	0	0	0
<i>Prunella vulgaris</i>	heal-all	L+?	Non-native	Forbs	0.1	0	0.1	0	0	0	0	0	0
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0	0.1	0.1	0	0	0	0	0	0
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0
<i>Coreopsis grandiflora</i>	large-flowered tickseed	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0
<i>Echium vulgare</i>	viper's bugloss	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0
<i>Euphorbia maculata</i>	spotted spurge	L+?	Non-native	Forbs	0.1	0	0	0	0	0	0	0	0
<i>Polygonum aviculare</i>	prostrate knotweed	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.7	2.2	1.9	1.2	2.4	2.7	3.3	5.5	80-100
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0	0.2	0	0	0.1	0	0.1	60-80
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0.2	0.1	0	0.3	0	0.2	0	0
<i>Juglans nigra</i>	black walnut	L5	Native	Woody	0	0	0	0	0.1	0.1	0	0	0
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0	0	0	0	0	0	0.1	0	0
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.1	0.3	0.1	0.1	0.2	0.1	0.2	0
<i>Acer tataricum</i> ssp. <i>ginnala</i>	Amur maple	L+	Non-native	Woody	0	0	0.1	0	0	0	0	0	0
Thatch	Thatch				0	0	4.7	18	40	70.8	74.6	80.2	80-100
Bare soil	Bare soil				8.4	2	6.8	4.8	2.2	2.6	0.4	0	60-80

\*Only summer survey completed

## Section 4.2

Plots 4.2A, B, and C demonstrated several similar patterns in percent cover and community composition (Table 15, 16, 17). Percent cover of tall goldenrod increased over time in all plots reaching a high of 62.6% in 2025 in plot A. The cover of native grasses were generally low across all plots. In contrast, Kentucky bluegrass increased in cover over time especially in plot A reaching 74.6% in 2024 and 60% in 2025. Non-native forb cover generally decreased over time although bird's foot trefoil (*Lotus corniculatus*) increased in plots A and B. Creeping thistle cover decreased over time and DSV cover increased over time. The cover of thatch was very high in plots reaching almost 100% in 2024 or 2025.

## Section 4.3

Plots 4.3D, E, and F showed similar patterns in percent cover and community composition (Table 18-20). native grass cover was initially very high, peaking in the early years before declining in plots D and E, while remaining consistently low in plot F. Kentucky bluegrass cover generally increased over time but showed slight declines in 2024 and 2025 in plots D and E; in contrast, cover continued to increase in plot F. Percent cover of tall goldenrod generally increased over time to a high of 62.8% in plot F in 2025. Non-native forb cover decreased over time with the greatest decreases for dandelion (*Taraxacum officianale*). By 2025, creeping thistle and DSV cover were low across all plots, ranging from 0.3-1.6%. Thatch cover was very high in plots reaching over 80% in all plots in 2025.

## Section 4.4

Plots 4.4J, K, and L also demonstrated several similar patterns in percent cover and community composition (Table 21, 22, 23). Percent cover of tall goldenrod increased over time in this section. Native grass cover was low similar to section 4.2 (<6%). There was moderate to high cover of non-native grasses including quack grass (*Elymus repens*), Kentucky bluegrass, and smooth brome grass (*Bromus inermis*). Non-native forb cover generally decreased over time. The cover of common milkweed, a native forb, was considerably higher in this section compared to other sections (e.g. 13.2% in plot J and 4.8% in plot L in 2025). Creeping thistle cover increased between 2023 and 2024 particularly in plots K and L, while DSV cover was very low to none in recent years. Creeping thistle and DSV cover has been generally low over the years, but may be increasing in plots K and L.

Table 15. Plot 4.2A percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	1	1	0.4	0.6	0.2	0.1	0	0	0	80-100
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	60-80
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0.2	0.8	0.2	0.2	0.2	0.1	0	0	0	40-60
<i>Schizachyrium scoparium</i>	little bluestem	L2	Native	Graminoids	0	0.4	0	0	0	0	0	0	0	20-40
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.2	0	0	0	0	0	0	0	10-20
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	2.4	18.2	19.8	33.2	27.6	16.8	50	74.6	60	5-10
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	14.4	5	0.8	0.4	4	1.2	0	0	0	2-5
<i>Schedonorus pratensis</i>	meadow fescue	L+	Non-native	Graminoids	10.6	0	0	0	0	0	0	0	0	1-2
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0.4	0.7	0.7	1	1	2.2	2.2	0.4	0.1-1
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0.1	0	0.1	0.6	0	1	0	0
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0.9	0.5	0.2	0.2	0	0	0	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	1.1	0.1	0	0	0	0	0	0	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	0.8	0.2	0	0	0	0	0	0	0	0
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	0	0	0	0.2	0.4	0.2	0	0.1	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	4.2	20.6	2.4	13.2	10.2	13	14.4	19.6	19.6	80-100
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada goldenrod	L5	Native	Forbs	0.6	0	18.2	13.2	7.6	0	0	0	0	60-80
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	1.1	1.2	1.8	3.2	3.2	6.4	5.8	7	3	40-60
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0.1	0.1	1	1.5	4.3	5.8	8	5.2	2.8	20-40
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0.8	1.6	3.1	1.2	2.1	3.1	2.1	1	1.2	10-20
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	0.3	1.2	3	2.6	3.6	0.5	0.6	0.1	5-10
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0.5	0.8	3.8	2.5	1	1.4	0.2	0.1	0.1	2-5
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0.4	0.2	0.4	0.4	1.2	0.4	0.6	1	1.2	1-2
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.6	0.2	1	1.6	0.4	0.6	0.9	0.2	0.1-1
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0.6	0.2	1.3	0.6	0.2	0.8	0.1	0.4	0.2	0.1
<i>Solidago rigida</i> ssp. <i>rigida</i>	stiff goldenrod	LX	Native	Forbs	0	0	0	0	0.4	1.1	0.8	1.6	0.2	0.1
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	0	0.1	0.4	0.4	0.6	0.7	0.2	0.3	0.3	0.1
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0.1	0	0.6	0.4	0.8	0.3	0	0	0	0
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0.5	0.5	0.2	0.4	0.1	0	0	0	0
<i>Asclepias incarnata</i> ssp. <i>incarnata</i>	swamp milkweed	L4	Native	Forbs	0	0	0	0	0	0.4	0.2	0	0	0
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.1	0.5	0	0	0	0	0	0	0
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.1	0.4	0	0	0	0	0	0
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0.1	0	0.2	0	0	0	0	0
<i>Asclepias sullivantii</i>	smooth milkweed	LX	Native	Forbs	0.2	0	0	0	0	0	0	0	0	0
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0	0.2	0	0	0	0	0	0	0
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Potentilla norvegica</i>	rough cinquefoil	L+?*	Native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Sympytrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0	0	0	0	0.1	0	0
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0.2	0.1	1.8	7	14.1	10	14	9.2	5.6	80-100
<i>Echium vulgare</i>	viper's bugloss	L+	Non-native	Forbs	0	12	13	2.6	10	2	0	0	0	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	14.4	5.6	8.4	5.2	1.5	1.6	0.3	0.6	0.3	60-80
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	11.7	1.9	0.8	0.6	0.4	0.3	0.4	0.2	0.2	20-40
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	14.4	0.1	0.8	0.3	0.2	0.1	0.1	0	0.1	0
<i>Medicago sativa</i> ssp. <i>sativa</i>	alfalfa	L+	Non-native	Forbs	3.6	0.8	0.6	1.4	2.6	2	1	0.2	0.1	0
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	2.8	5.1	1.2	0.7	0.3	0.2	0	0.1	0
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	1.5	1.6	1.9	1.3	0.9	0.5	0	0	0	0
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0.4	0	0.2	0.4	0.4	2	0.4	0.2	0
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0.1	0.4	1.5	0.6	0.2	0.1	0.4	0.1	0.2	0
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.6	0.3	1	0.3	0.3	0.2	0.2	0.1	0.2	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.6	0	0.5	0.6	0.5	0.2	0	0	0.1	0
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0.4	0.4	0.5	0.4	0.1	0	0	0	0
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.1	0	0.5	0.1	0.3	0.4	0.1	0	0	0
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0.4	0.2	0.2	0.1	0.2	0.2	0	0	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0.8	0.1	0.2	0	0.1	0	0	0	0
<i>Coreopsis grandiflora</i>	large-flowered tickseed	L+	Non-native	Forbs	0	0.2	0.4	0	0	0	0	0	0	0
<i>Lepidium campestre</i>	field pepper-grass	L+	Non-native	Forbs	0	0	0.1	0	0.4	0	0	0	0	0
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0	0	0	0	0.2	0	0	0	0
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0	0
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0	0
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	1.7	2.9	5.9	9.6	5.6	13.6	13.6	16.4	14	80-100
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	2.8	11.4	6.4	8.6	1.4	1.6	0.6	0.3	0.3	60-80
<i>Cornus stolonifera</i>	red osier dogwood	L5	Native	Woody	0	0	0.3	0	0	0	0	0	0	0
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0	0	0	0.1	0.1	0	0	0	0	0
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.1	0	0	0	0	0	0	0	0
Thatch	Thatch				2	34	16.6	46.6	39.4	63	98	94	95.6	60-80
Bare soil	Bare soil				0.6	0	0	1.6	0	0	0.2	0	0	0

\*Only summer survey completed

Table 16. Plot 4.2B percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.4	0	0	0	0	0	0	0	80-100
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	8.4	11.4	5	10.7	10.4	9.8	24.6	22	18.2	60-80
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	3.8	11.7	11.4	10.8	5.6	6.3	4.6	2.8	0.2	40-60
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	31.6	0.2	0.3	1.3	0	0	0	0	20-40
<i>Poa pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	0	0	0	0	0	0	0	0	10-20
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	0	0.8	0	0.2	0.6	0.4	0.1	0	0	5-10
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	0	0	0	0.2	0	0	0	0	2-5
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0	0.2	0	0	0	0	0	1-2
<i>Setaria viridis</i>	green foxtail	L+	Non-native	Graminoids	0.1	0	0	0	0	0	0	0	0	0.1-1
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	23	25.3	23.4	31.4	16.4	28.2	36	65.1	62.6	0
<i>Helianthus heterothoides</i>	ox-eye	L2	Native	Forbs	2.6	1.9	3.5	5.6	14.2	15.2	21.9	9.4	4.4	0
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	0.5	2.6	4.4	4.3	6.2	1.6	1.5	0.8	0
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.6	1.4	3	2.2	2.1	1.8	1.6	1.4	0
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	0.1	0.2	1.1	1.4	3	2.7	1.6	1.2	0
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.8	0.4	1.2	1.2	2.7	0.4	0.8	1.2	0
<i>Sympyotrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	1	1.1	2.8	3.1	0.3	0.4	0	0
<i>Solidago canadensis var. canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	5.4	0	0	0	0	0.2	0.2	0
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0.1	0.3	0.4	2.1	0.3	1.1	0
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0.1	0.1	0	0.7	2.4	0.1	0	0	0
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	0	0.2	0.2	0.4	0.4	1	0.2	0	0	0
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	1.2	0.5	0.1	0.6	0	0	0	0	0
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0	0	0.1	0.2	0.3	0.7	0.6	0.5	0
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0.3	0.3	0.2	0.3	0.5	0	0	0	0
<i>Erigeron philadelphicus var. philadelphicus</i>	Philadelphia fleabane	L5	Native	Forbs	0	0	0	0	0	0	0.6	0	0	0
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.2	0	0.3	0	0	0	0	0
<i>Epilobium ciliatum ssp. ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0.1	0.1	0.1	0	0	0	0
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0.2	0	0	0	0	0	0	0	0
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0	0	0	0	0	0	0	0.1	0
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0	0	0	0	0	0	0.1	0	0	0
<i>Solidago rigida ssp. rigida</i>	stiff goldenrod	LX	Native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	27.8	11	4.6	3.6	2.1	1.5	1.1	2.4	1	0
<i>Medicago sativa ssp. sativa</i>	alfalfa	L+	Non-native	Forbs	13	6	7	4.2	5.6	2.8	0.6	1.2	0.8	0
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	21.8	0.9	0.2	0.1	0.4	0.6	0.1	0.1	0	0
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0	0.2	1.4	1.8	2	1.2	3	6.8	4.6	0
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	1	1.4	1.4	2.7	2.2	3	2.2	1.2	2.5	0
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0.6	0.5	3.8	2.2	0.7	0.9	0.2	0	0	0
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	2.4	3.8	1	0.5	0.5	0.2	0.4	0	0
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.4	1	1	2.7	1.6	0.5	0.2	0.2	0.2	0
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.3	1.2	0	0.5	0.5	0.1	0.1	0.2	0
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0.3	0.8	0.3	0.6	0.7	0	0	0	0
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0	0.4	0.5	0.1	0.2	0.1	0.1	0.1	0.2	0
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0.4	0.2	0.2	0.1	0	0	0	0	0
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0.1	0	0	0.2	0.4	0	0	0.1	0
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.4	0.1	0.1	0	0	0	0	0	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	0.2	0	0.1	0.2	0	0	0	0	0
<i>Arctium minus</i>	common burdock	L+	Non-native	Forbs	0	0	0	0	0	0	0	0	0.1	0.2
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0	0	0.2	0	0.1	0	0	0	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0	0
<i>Tragopogon dubius</i>	lemon-yellow goat's beard	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0	0
<i>Epilobium parviflorum</i>	small-flowered willow-herb	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0	0
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0	0	0	0	0	0	0	0.1	0
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	30.2	11.4	8.7	4.6	3.2	2.8	1.5	1.2	1.1	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0	1.6	1.8	2.8	4.4	6.2	7	4.5	9.2	0
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.2	0	0	0.1	0	0	0	0	0
<i>Sorbus aucuparia</i>	European mountain-ash	L+	Non-native	Woody	0	0	0	0.1	0	0	0	0	0	0
Thatch	Thatch				21	34	8.3	55	40	54.8	94	94.1	87	0
Bare soil	Bare soil				3	1.4	0	0	0	0	0	0	0	0

*Only summer survey completed
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Table 17. Plot 4.2C percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	1.9	2.6	2.6	5.4	3.4	2	1.2	0.5	0.1	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0.4	4.1	1.6	0.4	0.4	0.4	0	0	60-80
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	1	0	0.3	0.7	1.2	0.4	1.2	0.2	40-60
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	30	58.4	49.6	25.4	24.4	25.6	20.4	46	20-40
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	24.4	33	0.4	10	38	2	5	7	1.4	10-20
<i>Poa pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	0	0	0	0	0	0	0	0	5-10
<i>Schedonorus pratensis</i>	meadow fescue	L+	Non-native	Graminoids	12.8	0	0	0	0	0	0	0	0	2-5
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	3.2	0.2	1	1.4	1.3	0.5	0.3	0.1	0	1-2
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0.6	1.4	0.1	0.1	0	0	0	0	0.1-1
<i>Bromus inermis</i>	smooth brome grass	L+	Non-native	Graminoids	0	0	0	0.4	0.3	0.1	0.1	0.1	0.1	0
<i>Lolium arundinaceum</i>	tall fescue	L+	Non-native	Graminoids	0	0	0.4	0	0	0	0	0	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	0.4	0	0	0	0	0	0	0	0
<i>Phalaris arundinacea</i>	reed canary grass	L?	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	3.6	0	0.8	3	8.6	21.2	35.4	41	32.6	80-100
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	5.8	7.8	6.4	6.4	6.4	6.6	4.7	3.7	2.5	60-80
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	4.8	2.1	4.3	4	2.9	2.8	2.9	0.3	0.6	40-60
<i>Solidago rigida ssp. rigida</i>	stiff goldenrod	LX	Native	Forbs	2	1.2	1.8	2.6	3.6	4	3.8	1.7	0.7	20-40
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0.1	1.8	2.8	2	4	2.3	2.1	1.4	1.6	10-20
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	1.2	1.8	2.4	1.8	3.4	1.6	1.8	1.6	5-10
<i>Solidago canadensis var. canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	2	2.4	5	0	0	0	0	0
<i>Sympytrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0.8	1.7	1	0.5	0.5	0.3	0	0	0
<i>Silphium perfoliatum</i>	cup-plant	L+?	Native	Forbs	0	0.4	0.9	0.6	0.7	0.4	0.2	0.9	0.4	0
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0.4	0.1	0.3	0.6	1.2	0.6	0.2	0.6	0
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	1.6	0.4	0	0.2	0.2	0.1	0	0	0	0
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	0.1	0.2	0.8	0.4	0	0	0	0	0
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0.4	0.2	0.6	0.1	0	0	0	0	0	0
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	L+*	Native	Forbs	1	0	0	0	0	0	0	0	0	0
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	0	0	0	0.1	0.1	0	0	0	0.1	0
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0	0	0	0	0.1	0	0.1	0	0
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0.1	0	0	0.1	0	0	0	0	0	0
<i>Sympytrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0	0	0.1	0.1	0	0	0
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	30.8	10.2	10.2	5.2	2.6	1.4	1.7	1.8	0.9	80-100
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	12.8	2.2	1.7	0.5	0.5	0.7	0.3	0.1	0.1	60-80
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.2	1.4	1	5.4	2.8	1.2	0.7	0.8	0.4	40-60
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	12	0	0	0.8	0.1	0	0	0	0	0
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	2.8	0.1	1.3	1.5	0.1	0.1	0.2	0.1	0.1	0
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0	0.1	0.2	0.1	0.4	0.4	0.8	1.4	20-40
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.2	0	0.2	1.5	0.1	0.2	0	0.1	0.2	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.7	0	0.2	0.8	0.1	0.1	0	0	0	0
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0	0.2	1	0.6	0	0	0	0	0
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0	0	0.4	0	0	0	0	0	0	0
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0.3	0	0	0	0	0	0	0	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0	0
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	9.4	15.5	13	1.7	1.6	2.4	6.3	3.2	2.8	80-100
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.6	1.4	0.9	0.7	0.9	1.6	1.2	1.2	2.1	60-80
<i>Cornus stolonifera</i>	red osier dogwood	L5	Native	Woody	0	0	0.1	0	0	0	0	0	0	0
Thatch	Thatch				0	38	73.4	63.8	78.4	79.6	95	99.8	85	0

\*Only summer survey completed

Table 18. Plot 4.3D percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	17.6	34.1	14.9	14.4	17	4.8	6.4	3.5	7.7	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	20.8	18.9	9.2	3.8	4.2	1.6	0.2	0	0	60-80
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	3.8	3.7	0	0	0	0	0.2	0.1	0	40-60
<i>Elymus virginicus var. virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0	0	0	0.1	0	0	0	20-40
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	4.6	3.9	8.2	21.1	23	34.2	16.6	15.4	10-20
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	8	0	0.8	0.2	1	0	0.4	0.1	0	5-10
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	1.1	0	0.6	0.2	0.2	0.1	0	0	0	2.5
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0.4	0.2	0	0.1	0	0	0	0	1-2
<i>Setaria faberii</i>	giant foxtail	L+	Non-native	Graminoids	0	0.4	0.2	0	0	0	0	0	0	0.1-1
<i>Bromus inermis</i>	smooth brome grass	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Setaria viridis</i>	green foxtail	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	1.2	5.4	11	10.6	10.9	32.6	30.8	39.6	37.6	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	4.9	11.3	9.6	6.4	8.2	7.7	6.4	4.2	3	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	6.3	6.8	9.4	6.2	5.5	3.8	4.6	3	1	
<i>Fragaria virginiana ssp. virginiana</i>	common wild strawberry	L5	Native	Forbs	0.2	1.2	3.8	5.2	6	5.3	5	1.2	1.4	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	2	10.1	5.4	2.2	7.5	0.9	0.6	0.3	0	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	9.6	0.6	2	0.4	4.3	0.5	0.2	0.1	0.2	
<i>Solidago rigida ssp. rigida</i>	stiff goldenrod	LX	Native	Forbs	0.4	0	0.2	1.6	2.1	2.3	2.5	1.4	0.8	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	1.6	7.7	1.5	0	0.3	0	0	0.1	0	
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0.4	1	1.7	1.8	2.1	0.2	0.2	0.1	0.1	
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	1.4	1.4	1.6	1	0.4	0	0	0	0	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.3	0.1	0.3	0.2	0.4	0.1	0.2	0.2	0.3	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0.2	1.2	0.3	0	0.1	0	0	0	0	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0.8	0.4	0.1	0.1	0.2	0	0	0.1	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0.2	0.2	1.1	0	0	0	0	0	0	
<i>Solidago canadensis var. canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	1.4	0	0	0	0	0	0	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0.6	0.2	0.2	0.1	0.2	0	0	0	0	
<i>Fragaria vesca ssp. americana</i>	woodland strawberry	L5	Native	Forbs	0	0	0.4	0.8	0	0	0	0	0	
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	0	0.2	0.3	0.2	0.2	0	0.1	0.2	0	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0.1	0.2	0.4	0.2	0.1	0	0	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.4	0.2	0	0	0	0.1	0	0	
<i>Oenothera parviflora</i>	smaller evening-primrose	L4	Native	Forbs	0.6	0	0	0	0	0	0	0	0	
<i>Epilobium ciliatum ssp. ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0.1	0.1	0	0	0	0	
<i>Lespedeza capitata</i>	round-headed bush-clover	L3	Native	Forbs	0	0	0	0	0.2	0	0	0	0	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0	
<i>Fragaria virginiana ssp. glauca</i>	blue-leaved wild strawberry	L5	Native	Forbs	0	0.1	0	0	0	0	0	0	0	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0	0	0	0	0.1	0	0	0	
<i>Sympytrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0	0	0	0	0.1	0	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	7.6	8.8	5.6	5.9	2	1	1.2	0.2	0.6	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	7.8	1.2	0.8	0.2	0.3	0.7	0.1	0.1	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	4.3	0.5	1.9	3.8	0.1	0	0.2	0	0.1	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	1.2	1.3	0.8	1.6	0.3	0.4	0.2	0.1	0.1	
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0.1	0.8	1	0.6	0.4	0.4	0.2	0.4	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	1	2	0.1	0.2	0.1	0.1	0	0	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.2	0.4	1.1	0.8	0.2	0.2	0.1	0.1	0	
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0	0	0	0.1	0.6	1.6	0	0	
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.1	0.5	0	0.3	0.1	0	0	0.1	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0.2	0.6	0.1	0	0	0	0	0	0	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.1	0.4	0	0.1	0	0	0	0	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0.1	0.1	0	0.1	0	0	0	0	
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0	0	0.2	0	0	0	0	0	0	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.2	0	0	0	0	0	0	0	0	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0	
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	0	0	0	0	0	0	0.1	0	
<i>Potentilla argentea</i>	silvery cinquefoil	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0	
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	
<i>Tragopogon dubius</i>	lemon-yellow goat's beard	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	1.2	2.1	0.8	1	1.2	3.4	5.2	3.6	1.8	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	2	2.5	2	0.9	0.7	4	3.5	3	0.6	
Thatch	Thatch				0	40	67	60	48	76	82	89.6	94.4	
Bare soil	Bare soil				0	0.4	0.4	0	0	0	0	0.4	0.2	

\*Only summer survey completed

Table 19. Plot 4.3E percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	5.2	21.4	29.2	21.2	21.8	23.4	19.6	11	7.2	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	14.8	4.1	1.2	5.3	3.3	3	0.8	0	0	60-80
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	4.2	4.4	0.6	0.9	0.4	0.1	0.1	0	0	40-60
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	5.8	22.2	7.4	30	22	53	25.6	27.6	20-40
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	13.1	0.6	1.1	0	0.6	0.4	0.3	0.4	0.4	10-20
<i>Bromus inermis</i>	smooth brome grass	L+	Non-native	Graminoids	0	0.8	1.6	0.4	4	3	3.2	0	0	5-10
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	7	0	1	4.8	0	0	0	0	0	2-5
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	0	4	0.2	0.2	0	0	0	0	0	1-2
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	2.2	0	0	0	0	0	0	0	0	0.1-1
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0	0.2	0.6	0.6	0.2	0.1	0.1	0.1	0.1	0
<i>Schedonorus pratensis</i>	meadow fescue	L+	Non-native	Graminoids	1.2	0	0	0	0	0	0	0	0	0
<i>carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0	0	0	0	0	0	1	0	0	0
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0.3	0.1	0	0	0	0	0	0	0	0
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	0	0	0	0	0	0	0	0.1	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0	0	0	0	0.1	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	3.8	14	16	19.6	23	30.6	26	24.4	26.2	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	9.4	11.8	10.1	9.6	6.8	6.6	5	5.6	6.2	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	5.8	11.2	13.2	7.6	6.2	6.7	4.2	4.1	0.7	
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	4	10.4	7.7	1.2	4	0.2	0.1	0.2	0	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	4.8	1.8	1.8	2.2	2.6	3	1.4	0.5	0.3	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	1.4	1.2	1	1.4	1.8	1.2	4.9	3.7	
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	4.2	2.3	3.4	1.6	0.6	1.3	0.3	0	0	
<i>Solidago canadensis var. canadensis</i>	Canada goldenrod	L5	Native	Forbs	0.4	0	5	1.2	1.2	0.1	0	0	0	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	2.2	1.4	1.2	1	0.4	0.1	0	0	0	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0.4	0.1	0.8	0.2	0.5	0.4	0.1	0.2	1.2	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	2.3	0.3	0.1	0	0.1	0	0	0	0	
<i>Asclepias sullivantii</i>	smooth milkweed	LX	Native	Forbs	0	0.4	0.4	0	0.2	0.1	0.6	0.4	0.6	
<i>Vernonia missurica</i>	Missouri ironweed	L+*	Native	Forbs	0	0.4	0.2	0	0.2	0.2	0.4	0.6	0.6	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0.1	0.1	0.2	0.4	0.6	0.1	0.2	0.2	
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	L+*	Native	Forbs	1.6	0	0	0	0	0	0	0	0	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	1.2	0.3	0	0	0	0	0	0	
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0.6	0.4	0.2	0	0	0	0	0	0	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0.8	0.2	0	0.1	0	0	0	0	0	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.8	0	0	0	0.1	0	0	0	0	
<i>Oenothera parviflora</i>	smaller evening-primrose	L4	Native	Forbs	0.8	0	0	0	0	0	0	0	0	
<i>Lespedeza capitata</i>	round-headed bush-clover	L3	Native	Forbs	0.2	0	0	0	0	0	0	0	0	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0.1	0	0	0	0	0	0	0	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0	0.1	0	0	0	0	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0.1	0	0	0	0	0	0	0	0	
<i>Hibiscus moscheutos</i>	swamp rose-mallow	L+?*	Native	Forbs	0.1	0	0	0	0	0	0	0	0	
<i>Vernonia gigantea</i>	tall ironweed	L+*	Native	Forbs	0	0	0	0	0	0	0.1	0	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	13.4	6.6	4.6	0	0.5	0.7	0.2	0	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	4.2	0.3	0.2	0	0	0	0	0	0	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	2.3	0.5	0.5	0.1	0.1	0	0	0	0.1	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.2	0.5	0.8	0.1	0.2	0.1	0.1	0.1	0	
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	1.1	0	0	0	0	0.1	0	0	0.1	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0.2	0.2	0	0	0.1	0	0	0	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.1	0	0	0	0.1	0.1	0	0	0.1	
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.1	0	0	0	0.1	0.1	0.1	0.1	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0	0	0	0	0	0	0	0.1	0.2	
<i>Potentilla argentea</i>	silvery cinquefoil	L+	Non-native	Forbs	0.2	0	0	0	0	0	0	0	0	
<i>Stellaria media</i>	common chickweed	L+	Non-native	Forbs	0	0	0	0	0	0	0	0.1	0	
<i>Veronicastrum virginicum</i>	Culver's root	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	6	1.3	1.3	0.1	0.4	0.2	0.1	0.1	1.2	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0	0.1	1	0.1	0.2	0.3	0.3	0.4	0.5	
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0	0	0	0	0	0.1	0	0.1	0.1	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0.1	0	0	0	0	0	0	0	0	
Thatch	Thatch				0	27.4	77.2	0	67	99	99.2	94.6	90.8	
Bare soil	Bare soil				0	0	0	0.6	0	0.2	0	0	0.2	

Table 20. Plot 4.3F percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020*	2021	2022	2023	2024	2025	Average Percent Cover
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	3.3	11	4.2	4.8	8.4	2	5	5	3.4	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0.5	3.6	2.2	3	0.8	2.6	2	0	0	60-80
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	1	0.5	0.5	1.6	0.8	0.2	0.9	0.1	0.2	40-60
<i>Dichanthelium implicatum</i>	hairy panic grass	L4	Native	Graminoids	0	0	0	0	0	0	0	0.1	0	20-40
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	11	5.5	7.1	11	6.3	7.4	12.4	17.4	10-20
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	9.6	2.6	0.9	1.2	1.1	0.8	0.4	0.1	0	5-10
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0.3	3.2	1.5	1.3	0.4	0.1	0	0	0	2-5
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	6.6	0	0	0	0	0	0	0	0	1-2
<i>Schedonorus pratensis</i>	meadow fescue	L+	Non-native	Graminoids	6	0	0	0	0	0	0	0	0	0.1-1
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	1	0	0	3.2	0	0	0	0	0	0
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	1.8	0	0.4	0	0.8	0.2	0	0	0	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	0.2	0.5	0.6	0	0.4	0	0	0	0	0
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0.8	0	0	0	0.2	0.2	0	0	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	0.2	0.4	0	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	2.4	4.7	14	33.7	48	55.4	51.4	52.8	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	13.8	4.7	3.7	5.4	4.7	6.4	11.4	5.6	5.6	
<i>Helopsis helianthoides</i>	ox-eye	L2	Native	Forbs	3	7.2	15.4	4.8	5	7.8	5	4	1.1	
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	4.6	5.2	5	3.5	2	2.9	2.7	0.1	0	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	5.2	0.9	2.2	4.8	1	0.6	0.3	0.2	0.2	
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	3	4.5	4.3	0.3	1	1	0.4	0.3	0.4	
<i>Sliprium perfoliatum</i>	cup-plant	L+?	Native	Forbs	2.6	5.8	2.4	1	2.1	0.3	0.6	0.2	0.2	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0.4	0.6	2.2	3.2	1.2	3.8	1.8	0.4	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0.8	1.8	2	0.5	0.8	1.4	1.6	1.1	0.3	
<i>Eriogon canadensis</i>	horse-weed	L5	Native	Forbs	0	0.1	5.2	2.2	0	0	0	0	0	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	2.6	0.5	1.6	0	0.2	0.1	0	0.2	0	
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	0	2.6	2	0	0	0	0	
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	L+*	Native	Forbs	2.9	0	0	0	0	0	0	0	0	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	1.4	1	0.3	0.1	0	0	0	
<i>Potentilla norvegica</i>	rough cinquefoil	L+?	Native	Forbs	0	0.5	1.7	0.4	0.1	0	0	0	0	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0.4	0	0.1	1.6	0	0	0	0	0	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0.2	1.3	0.1	0	0.1	0	0	0	0	
<i>Sympyrrhium lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0.4	0.4	0.3	0.2	0.1	0	0	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0.8	0.3	0.2	0	0	0	0	0	
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0.2	0	0	0	0.4	0	0.1	0.1	0	
<i>Hibiscus moscheutos</i>	swamp rose-mallow	L+?	Native	Forbs	0	0.1	0.2	0.2	0.1	0.1	0.1	0	0	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.2	0	0.2	0.1	0.2	0	0	0	0.1	
<i>Oenothera parviflora</i>	smaller evening-primrose	L4	Native	Forbs	0.4	0.2	0	0	0	0	0	0	0	
<i>Galium aparine</i>	cleavers	L5	Native	Forbs	0	0	0	0	0.1	0.2	0.1	0.1	0.1	
<i>Geum canadense</i>	white avens	L5	Native	Forbs	0	0	0.1	0.4	0	0	0	0	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	13.8	4	3	0.2	2.8	3	1.8	0.5	0.3	
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.8	21.5	1.1	1	0.7	0.3	0.1	0.2	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	14.4	0.6	0.6	0.3	0.4	0.9	0.3	0.2	0	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	8.1	2.9	0	0.1	0	0	0	0.1	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	3.8	0.4	3.8	0.4	0.4	0.3	0	0.1	0	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	2.7	0.4	0.3	0.8	0.6	0.4	0.5	0.1	0.1	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.4	0.1	0	0.4	0.5	1.4	0.6	1.3	0.2	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.1	0.5	3.3	0.2	0.2	0.3	0.1	0.1	0.1	
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0.5	3.6	0.1	0	0.1	0.2	0	0.1	0.1	
<i>Vicia sativa</i> var. <i>angustifolia</i>	common vetch	L+	Non-native	Forbs	0	0.2	0.8	0	0.4	0.6	0.2	0.1	0.2	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0.1	0.4	0.1	0.2	0.3	0.7	0.3	0.2	0.1	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	0	0	0.8	0.1	0.4	0	0	0	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0.4	0.2	0.4	0	0	0	0	0	0	
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0.2	0.1	0.2	0.1	0	0	0	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	0	0	0.1	0.1	0.2	0.1	0	0	
<i>Artemisia vulgaris</i>	common mugwort	L+	Non-native	Forbs	0	0	0	0	0.1	0.1	0	0	0	
<i>Geum urbanum</i>	urban avens	L+	Non-native	Forbs	0	0	0	0	0.1	0.1	0	0	0	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0	0	0.1	0	0.1	0	0	0	0	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0	
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0	
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0	
<i>Silene latifolia</i>	evening lychnis	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	10	11.4	1.6	3.8	1.4	1.4	1.5	1	0.3	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.8	0.4	0.2	0.2	0.4	0.8	0.8	1		
<i>Parthenocissus vitacea</i>	thicket creeper	L5	Native	Woody	0	0	0.2	0	0.1	0.6	0.8	0.1	0.3	
<i>Parthenocissus inserta</i>	thicket creeper	L5	Native	Woody	0	0	0	0	0	0.3	0	0	0	
<i>Tilia americana</i>	basswood	L5	Native	Woody	0	0	0	0	0	0	0	0	0.1	
<i>Ulmus pumila</i>	Siberian elm	L+	Non-native	Woody	0	0	0	0	0	0	0	0	0.1	
Thatch	Thatch				0	24.4	41.4	0	33.2	58.6	98	86.6	0	
Bare soil	Bare soil				0	0.8	2.2	0	0	0	1	0.2	0	

Table 21. Plot 4.4J percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020*	2021	2022	2023	2024	2025	Average Percent Cover	
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0.3	0.2	0	0.2	2.6	0.8	0.2	0.2	80-100	
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0.1	4	0	0	0	0	0	0	0	60-80	
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0.2	0	0	0.8	0.1	0	0	0	0	40-60	
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0.2	0.1	0.1	0.2	0	0	0	20-40	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0.6	10.1	27	18	20.4	15.5	28.2	30.6	12.1	10-20	
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0.3	7.4	21.6	19.6	28.6	14	30.2	18.2	21	5-10	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	0	6.5	17	8	7.6	3	1.5	0.3	2-5	
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	0.1	0.1	4	31.6	0	0.1	0.1	0.8	0.4	1-2	
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	1.5	3.5	0.1	0.2	0	1.1	0.1	0	0	0.1-1	
<i>Bromus inermis</i>	smooth brome grass	L+	Non-native	Graminoids	0	0	0	0	0	0	0.1	3	0	0	0
<i>Bromus japonicus</i>	Japanese chess	L+	Non-native	Graminoids	0	0	0.1	0.1	0.1	0.5	0.8	1	0.1		
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	0	0	1.6	0	0	0	0	0	0		
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	1.2	0	0	0	0	0	0	0		
<i>Bromus tectorum</i>	downy chess	L+	Non-native	Graminoids	0.1	0	0	0	0	0	0	0	0		
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0	2	1.5	2	4.4	10.4	10.2	17.5		
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0.6	0.3	0.2	1.2	3.9	6.4	13.2		
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	1.8	1.9	2.1	0.8	0.4	2.6	7.8	3.6	1		
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	0	0.1	0	0.1	0.4	0.6	2.4	4.2		
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.1	0.5	0	0.2	0.1	0.4	2	2.8		
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.4	0	0	4.3	0.1	0.1	0		
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0.2	0	0.3	0	0.6	1.8	1	0.5		
<i>Senna hebecarpa</i>	wild senna	L+*	Native	Forbs	0	0	1.4	0.8	0.2	0	0	0	0		
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.4	0	0.1	0.1	0.1	0.2	0.4	0.2	0.1		
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0	0	0.1	0.4	0.1	0.1		
<i>Helopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	0	0	0.2	0	0.2	0	0.2	0		
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0	0	0.2	0.1	0.2	0.1		
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0.2	0	0	0	0	0	0	0	0		
<i>Erigeron philadelphicus</i> var. <i>philadelphicus</i>	Philadelphia fleabane	L5	Native	Forbs	0	0	0	0	0	0	0	0	0.1		
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.1	0	0	0	0	0	0	0		
<i>Sympytrichium ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0	0	0	0.1	0	0	0	0	0		
<i>Sympytrichium lanceolatum</i> var. <i>lanceolatum</i>	panicled aster	L5	Native	Forbs	0	0	0	0	0.1	0	0	0	0		
<i>Sympytrichium novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0	0	0	0	0	0.1		
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	75.4	18.2	14.4	2	5.8	11	6.2	2.7	2.6		
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	14.1	26.4	7.1	2.2	0.8	3.9	4.8	6.2	2.7		
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	10.2	1.9	1.3	0.3	1.1	1.8	0.5	1.5		
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	2.8	3	4.4	0.1	0	0.5	1.7	0	1.4		
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.1	4.8	4.2	0	0.2	2.6	0.4	0.1	0.1		
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	4.3	2.4	1.2	0.5	0.2	0.4	0.3	0.5	0.4		
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	1.1	0.2	3.2	0.2	0.1	1.3	1.2	0.1	0.6		
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.3	0	0	0.1	5.4	1.9	0.1	0.1		
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0.1	0	2.1	0.1	0.1	1.2	0.2	0.2	0		
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.7	0	0	0.1	0	0	0	0	0		
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0.1	0.1	0.1	0	0	0.1	0	0	0		
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0	0	0	0	0	0.4	0		
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0.4	0	0	0	0	0	0	0		
<i>Silene vulgaris</i>	bladder campion	L+	Non-native	Forbs	0	0	0	0.1	0	0	0	0	0		
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0		
<i>Vicia sativa</i> var. <i>angustifolia</i>	common vetch	L+	Non-native	Forbs	0	0	0	0	0	0.1	0	0	0		
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	1.5	8	8.6	7.2	7.4	3.2	4.7	6.4	5.3		
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0	0	0.1	0.2	0.3	0	0	0	0.3		
<i>Acer platanoides</i>	Norway maple	L+	Non-native	Woody	0	0	0.1	0	0	0	0	0	0		
Thatch	Thatch				0	1	40	0	74.6	90	87.4	93	31		
Bare soil	Bare soil				0	0	0	0	0.4	0.4	0	0	2		

Table 22. Plot 4.4K percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020*	2021	2022	2023	2024	2025	Average Percent Cover	
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0.2	0	0	2.4	0.1	0	0.2	80-100	
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0.4	0.2	0	0	0	0	0	0	0	60-80	
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0	0	0	0.2	0	0	0	40-60	
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.2	0	0	0	0	0	0	0	20-40	
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0.2	0	0	0	0	0	0	0	0	10-20	
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0.6	9.2	8.2	28.6	41	26.4	37	24	21.4	5-10	
<i>Bromus inermis</i>	smooth bromegrass	L+	Non-native	Graminoids	0.6	3.4	8.2	12.8	8	9	10	4.1	2.6	2-5	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	0.3	2.8	4.2	1.8	1.5	5.8	1.5	0.8	1-2	
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	6	8	0.5	2.5	0	0.6	0.1	0	0	0.1-1	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	1.2	0.2	5	1.6	1.4	1.3	0.4	0.4	0.1	0	
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	0.4	1	0.1	0	0.6	0.8	0	0	0.2	0	
<i>Schedonorus pratensis</i>	meadow fescue	L+	Non-native	Graminoids	0.5	0	0	0	0	0	0	0	0	0	
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0	0	0	0.1	0.2	0	0	0	
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0.1	0	0	0	
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	0	0	0	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0.1	2	2.2	4	5.2	14.4	27.8	36.6		
<i>Sympytrichum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0	0.4	0.4	1.4	4.4	3.5	11		
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	2.4	0.9	5	0.4	0.3	0.5	2.8	0.5	0.2		
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.2	1.2	1.1	1	2	1.2	0.8	0.4		
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	1.2	0.8	2	0	0.2	0.8	0.6	0.5	0.1		
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0.1	0.8	0	0.1	0.3	3.4	0.2	0		
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	2.4	1.2	0.4	0.1	0.1	0	0	0.2		
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0	0	0	0	0	0.8	1.8		
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	1.2	0.1	0	0	0	0	0	0	0		
<i>Galium aparine</i>	cleavers	L5	Native	Forbs	0	0	0	0	0	0	0.2	0.8	0		
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	0.8	0	0	0	0	0	0.1	0		
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0	0	0	0	0.2	0.4	0		
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.2	0.1	0.1	0	0	0.1	0	0	0		
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	0.4	0	0	0	0	0	0	0	0		
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0.1	0	0	0	0	0	0	0		
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.1	0	0	0	0	0	0	0		
<i>Potentilla norvegica</i>	rough cinquefoil	L+?*	Native	Forbs	0	0	0	0	0	0.1	0	0	0		
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	75	54	32	6.8	5.8	5.6	3.4	2.2	3.8		
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	4.6	4.8	19.1	13.2	8.6	0.1	1.3	0.1	0.4		
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0	6	4	5	1.8	1	2.6	4	4.4		
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.1	14.8	2.7	3	0.3	0.3	1.5	0.8	0.8		
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	5.2	4.4	2.8	0.8	1.2	1.3	2.2	1.8	1.6		
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0.1	0.8	2	2.6	1.8	4	2	2.6	2		
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	3.7	8.6	0	0.2	0.5	1.2	0.1	0		
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	4.6	0.3	3.2	0.3	0.1	0.5	1.9	0.2	1.4		
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.9	2.8	0.5	0	0.1	0.1	0	0.1	0.1		
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.1	0.4	0	0.1	0.3	1.4	0	0.2		
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0	0	0.1	0.4	1.2	0	0		
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	0	0	0	1.7	0	0		
<i>Medicago sativa</i> ssp. <i>sativa</i>	alfalfa	L+	Non-native	Forbs	0	0.8	0.1	0	0.2	0	0.2	0	0		
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0.1	0.2	0.8	0.1	0	0	0	0	0		
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0	0.1	0	0	0	0.6	0.3	0.1		
<i>Geum urbanum</i>	urban avens	L+	Non-native	Forbs	0	0.4	0.2	0	0	0	0	0	0		
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0.2	0.4	0	0	0	0	0	0		
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0.2	0	0	0	0	0	0	0	0		
<i>Coreopsis grandiflora</i>	large-flowered tickseed	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0		
<i>Vicia sativa</i> var. <i>angustifolia</i>	common vetch	L+	Non-native	Forbs	0	0	0.1	0	0	0.1	0	0	0		
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0	0	0	0	0.1	0	0		
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0		
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0	0	0	0	0	0	0.1	0	0		
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	3.2	13.1	6.2	4.2	6	6.8	6.1	10.8	11.9		
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.2	0.8	0.8	0.4	0.5	0.7	1.4	1.8	2.8		
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.1	0	0	0	0	0	0	0		
Thatch	Thatch				0	4.4	6.4	0	54	92	91.4	83.6	42		
Bare soil	Bare soil				0	0	0	0	0	0	1	0.2	0.4	1.8	

\*Only summer survey completed

Table 23. Plot 4.4L percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020*	2021	2022	2023	2024	2025	Average Percent Cover	
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	2	3	5	2	1	5	4.6	6	80-100	
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0.1	2.6	4.2	1.3	1.3	2.3	1.1	0.5	0.5	60-80	
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0.4	0.4	0.2	1.2	0.4	0.8	0.8	0.8	0.1	40-60	
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0	0.1	0	0.1	0.1	0.1	0	20-40	
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0.9	10.6	25	47	42	20	10.2	12.4	16.6	10-20	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0.7	6.2	20.2	4.3	14	9.6	13.8	6.6	3.2	5-10	
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	0	0	0.6	0	5	2.6	0.6	3	2.1	2-5	
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	0	3.5	1.6	0.4	0	0	0	0	0	1-2	
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	0	0	0.9	0.5	0.3	0.2	0.8	0	0.1	0.1-1	
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	0	0	2.4	0	0	0	0	0	0	0
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0	1	0.4	0	0.1	0	0	0	0	0	0
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0.7	0	0	0	0	0	0	0	0	0	0
<i>Schedonorus pratensis</i>	meadow fescue	L+	Non-native	Graminoids	0.5	0	0	0	0	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0	0.1	0.6	0.9	2.6	12.2	17.2	34.4		
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	1.3	8	5.4	5.9	6.6	4.5	2.3	0.6		
<i>Sympyotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0.3	0.1	0	0	5.2	5	0.8		
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0	0	0	0.6	3	5	1		
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0	0.4	0	0.2	0	1.4	2	4.8		
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0.5	0.1	0.1	0.1	0.1	5.3	1.4	0.1		
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.1	0.1	0.6	0.5	1.1	0.8	1.4	1		
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	1.2	0.2	0	0.1	0.1	0.1	1.4	0.8	0.2		
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0.4	1.5	0	0	0.1	0	0	0		
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0.6	0.2	0	0	0	0.2	0.1	0.1		
<i>Oxalis dilleni</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.3	0.2	0.1	0.1	0	0	0.1	0.1	0		
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.1	0	0	0.1	0.4	0	0		
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0.2	0	0.4	0	0	0	0	0		
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0.2	0	0.1	0	0	0.1	0.1	0.1	0		
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	common wild strawberry	L5	Native	Forbs	0	0	0.1	0	0.1	0	0	0	0		
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	74	34	24.8	6	9.8	11.6	5.8	5.2	2.8		
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.5	44.4	2.4	1.7	1.1	1.5	2.3	0.3	0.3		
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	8	10.8	8.2	5.4	4.7	3.9	4	3	2.7		
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	9.6	2.4	5.6	2.5	0.3	0.3	0.1	0	0.1		
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	5.1	2.4	0.7	1.2	1.7	1.4	0.4	0.3	0.2		
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0.8	0	0	0.1	2.1	6.4	1.7	0.7	0.6		
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	4	0.1	0.6	0.1	0.1	0.1	1.4	0	0.1		
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0	0	0	0	2	0.4	0.2		
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.2	0.7	0.6	0.1	0.3	0.1	0	0	0		
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0	0	0	1.2	0.5	0.2	0	0		
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	1.7	0	0	0	0	0	0	0	0		
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	0.2	0.4	0.2	0	0	0	0	0		
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0	0	0.1	0	0.1	0	0	0		
<i>Dipsacus fullonum</i>	teasel	L+	Non-native	Forbs	0	0	0	0	0	0.2	0	0	0		
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.1	0.1	0	0	0	0	0	0	0		
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0.2	0.9	3.8	0.8	0.9	2.6	7.8	5.8		
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.2	1	1	0.8	0.4	0.4	0.6	1.7	2.3		
<i>Ulmus pumila</i>	Siberian elm	L+	Non-native	Woody	0	0	0	0	0.1	0	0	0	0		
Thatch	Thatch				0	0.8	5.4	0	70	83.4	84	80.8	98.2		
Bare soil	Bare soil				0	0	0	4	0	1.4	0.8	0	0		

\*Only summer survey completed

## Section 5

### Section 5.1

Plot 5.1AC was monitored in 2020 (pre-restoration) and in 2023-2025 after seeding in 2023 (Table 24). The cover of native grasses in 2025 was higher than in previous years reaching 8% cover for big bluestem (*Andropogon gerardii*). In contrast, previously dominant non-native grasses, such as red fescue (*Festuca rubra* ssp. *rubra*) and orchard grass (*Dactylis glomerata*) remain at low cover in 2025. Native forbs with the highest cover in 2025 were tall goldenrod (12.2%), black-eyed Susan (6%), and common milkweed (4.8%). The percent cover of creeping thistle and DSV were very low (0-1.2%).

### Section 5.3

Plot 5.3AD was monitored pre-restoration in 2020 and from 2023-2025, with seeding occurring in 2022, 2023, and 2024 (Table 25). In 2020, the area consisted primarily of turfgrass dominated by Kentucky bluegrass and dandelion. By 2025, native forb cover was highest for ox-eye (14.4%) and tall goldenrod (10.2%). Dominant non-native forbs included dandelion (9%) and red clover (8.2%). The percent cover of creeping thistle and DSV were very low (0-1%).

### Section 5.4

Plot 5.4AE was monitored pre-restoration in 2020 and from 2023-2025, with seeding occurring in 2022 and 2024 (Table 26). Prior to restoration, the plot was dominated by red fescue, Kentucky bluegrass, and dandelion. The cover of native grasses remains low in 2025 (<0.5%), with non-native grasses still present (e.g. 23% cover of Kentucky bluegrass). Native forbs with the highest cover in 2025 included tall goldenrod (11.5%), wild bergamot (4.8%), and ox-eye (2.8%). Non-native forbs with high cover in 2025 included white clover (*Trifolium repens*; 29.6%) and dandelion (23.4%). The percent cover of creeping thistle and DSV were very low (0-1.6%).

Table 24. Plot 5.1AC percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2023	2024	2025	Average Percent Cover
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	1	2	8	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0.5	1.8	7.4	60-80
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0.3	1.1	5.8	40-60
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0.2	1.6	2.2	20-40
<i>Sporobolus vaginiflorus</i>	ensheathed dropseed	L+?*	Native	Graminoids	0.4	0.4	0.2	0.4	10-20
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0.2	0.2	5-10
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.2	0	0	2-5
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	24.8	0	0	0	1-2
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	17.8	0	0	0.2	0.1-1
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	5.8	0.8	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	4.2	0	0	0	
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0.3	0.1	0.3	0.4	
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0.6	0.1	0	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0.1	0.1	0	
<i>Phalaris arundinacea</i>	reed canary grass	L+?	Non-native	Graminoids	0.2	0	0	0	
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0	0.1	0	
<i>Elymus</i> sp.	wild rye sp.			Graminoids	0	0	0	0.4	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	10.2	13.6	1.2	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0.4	5.6	12.2	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	4.1	9	4.8	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	0.2	4	6	
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	common wild strawberry	L5	Native	Forbs	3.4	0	0	0	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	1.5	1	0	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0.3	0.5	1.3	
<i>Sympotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicled aster	L5	Native	Forbs	0	0	0	1.6	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.7	0.2	
<i>Sympotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0.3	0.5	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0.2	0.1	0.2	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0.2	
<i>Lespedeza capitata</i>	round-headed bush-clover	L3	Native	Forbs	0	0	0.2	0	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0	0	0.1	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.1	0	0	
<i>Sympotrichum ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0.1	0	0	0	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	4	21	58	3.2	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	25.4	3.2	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	11.4	1.8	3.8	7.6	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.1	0.4	2.9	15.4	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.8	4.2	3.8	7.2	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	2.1	1.1	2.5	1.9	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	0	1.2	3.4	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	3.3	0.9	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0	0.4	0.7	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.9	0	0	0.1	
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0.6	0.2	0.1	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0	0.1	0.4	
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0.4	0	0	0	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	0.2	0	0	
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0	0.1	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0	1.2	0.4	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.4	0	0	0	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0	0.1	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.1	0	0	0	
Bare soil	Bare soil				2.8	90	3.8	2.7	
Thatch	Thatch				6	0	2.2	8.2	

Table 25. Plot 5.3 AD percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2023	2024	2025	Average Percent Cover
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0.6	1.6	0.8	80-100
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0.1	1	1.4	60-80
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0.1	0.1	0.4	40-60
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0.1	0.2	0.1	20-40
<i>Juncus bufonius</i>	toad rush	L5	Native	Graminoids	0	0.2	0	0	10-20
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.1	0	0	5-10
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	25.2	0.2	4.3	27.6	2-5
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	15.2	0.1	4.8	4.2	1-2
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	16.2	0	0	0	0.1-1
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	9.2	0	0	0
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	6	0	0	0	
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	0.7	1.4	0	0	
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0.8	0	0	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0.4	0.2	0	
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0.1	0.4	0	0	
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0.2	0	0	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	12.6	15.2	2	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	2.3	8.4	14.4	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	6.6	3.6	4.9	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0.8	2.1	10.2	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	4.6	6.2	0.9	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	8	2.9	0	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.2	2.4	3.9	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0.6	1.6	2.4	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0	1	1.8	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	2.2	0.1	0	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.2	0.6	1.4	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0.4	0	1.6	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0.1	0.3	1.4	
<i>Acalypha rhomboidea</i>	three-seeded mercury	L5	Native	Forbs	0	1.1	0.3	0	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0.6	0.6	0.2	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	0.2	0.1	0	
<i>Solidago nemoralis ssp. nemoralis</i>	grey goldenrod	L5	Native	Forbs	0	0	0.3	0	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0.1	0	0.1	
<i>Coreopsis tripteris</i>	tall tickseed	L+*	Native	Forbs	0	0.1	0.1	0	
<i>Sympyotrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0	0.2	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0.1	0	0	
<i>Sympyotrichum pilosum var. pilosum</i>	hairy aster	L3	Native	Forbs	0	0	0.1	0	
<i>Verbena stricta</i>	hoary vervain	L3	Native	Forbs	0	0.1	0	0	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	21.8	8.8	12.6	9	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0.5	22.2	10.2	8.2	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.4	24	1.6	0.9	
<i>Pilosella caespitosa</i>	yellow hawkweed	L+	Non-native	Forbs	9	0	0	0	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	5.8	0	0	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	0.2	2	3.4	
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0	0.1	1.2	3.5	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.1	1.4	0.4	1	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0.3	1.4	1	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.1	1.8	0.1	0.3	
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	1.2	0.6	0.2	
<i>Veronica serpyllifolia ssp. serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0	0.3	0.6	0.1	
<i>Silene latifolia</i>	evening lychnis	L+	Non-native	Forbs	0	0.8	0	0.1	
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.2	0.4	0.2	
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0.6	0	0.1	
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0.6	0	0	0	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.2	0.1	0	
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0	0	0.3	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.3	0	0	0	
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0.2	0	0	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.2	0	0	0	
<i>Amaranthus sp.</i>	pigweed sp.	L+?*	Non-native	Forbs	0	0.1	0	0	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0.1	0	0	0	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	0.1	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	0.1	0	0	0	
<i>Stellaria media</i>	common chickweed	L+	Non-native	Forbs	0	0.1	0	0	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	1	0.2	0.1	0.5	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.4	0	0	0	
<i>Acer saccharum ssp. saccharum</i>	sugar maple	L5	Native	Woody	0	0.2	0	0	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0.1	0	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.3	0	0	0	
<i>Malus pumila</i>	apple	L+	Non-native	Woody	0.1	0	0	0	
Thatch	Thatch				26	0	27	22	
Bare soil	Bare soil				0.2	44.2	0	0.4	

Table 26. Plot 5.4AE percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2023	2024	2025	Average Percent Cover
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0	0.6	0.5	80-100
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0.1	0	0.5	60-80
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.6	0	0	40-60
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0	0	0.1	20-40
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0	0.1	10-20
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	13.2	1.5	6.4	23	5-10
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	29	0	0	0	2-5
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	10.4	1.2	0	1-2
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	5.8	0	0	0	0.1-1
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	4.2	0	0	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	3	0.1	0.1	0.1	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	2	0.1	0.2	0	
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	1.8	0	0	
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0.1	0.2	0.3	
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0.1	0.1	0	0	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	11.9	3.6	1.2	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0.4	2.7	11.5	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.4	3.5	4.8	
<i>Helianthus annuus</i>	ox-eye	L2	Native	Forbs	0	0.8	0.9	2.8	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	3.4	0.2	0.3	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0.5	1.4	1	
<i>Sympotrichum pilosum var. pilosum</i>	hairy aster	L3	Native	Forbs	0	0	0.6	1.5	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0.8	1.2	0	
<i>Sympotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0.2	0.7	1	
<i>Sympotrichum ericoides var. ericoides</i>	heath aster	L5	Native	Forbs	0	0.1	0.1	1.1	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0.1	0.7	0.4	0	
<i>Verbena stricta</i>	hoary vervain	L3	Native	Forbs	0	0.4	0.3	0.3	
<i>Plantago rugelii</i>	red-stemmed plantain	L5	Native	Forbs	0	0.8	0	0.1	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.1	0.2	0.1	
<i>Epilobium ciliatum ssp. ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0.1	0.2	0.1	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0	0	0.4	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0.2	0	0	
<i>Sympotrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0	0.1	0.1	
<i>Acalypha rhomboidea</i>	three-seeded mercury	L5	Native	Forbs	0	0.1	0	0	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0	0	0.1	
<i>Senna hebecarpa</i>	wild senna	L+*	Native	Forbs	0	0	0	0.1	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	14.2	1.8	29.4	23.4	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0.3	0.8	53	29.6	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0.2	11.2	23	2.8	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	5	5.2	0.5	0.3	
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0	6.8	1.4	2.1	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.6	4.3	1.3	1.1	
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0	0	1.6	2.4	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0.2	1.8	1.4	0.1	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	0.2	1.5	1.3	
<i>Atriplex patula</i>	halberd-leaved orache	L+?	Non-native	Forbs	0	2	0	0	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	1.6	0.1	0	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	0	0.3	0.8	
<i>Chenopodium bonus-henricus</i>	good King Henry	L+	Non-native	Forbs	0	1	0	0	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0.8	0.1	0.1	
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	1	0	0	0	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.4	0	0	0	
<i>Polygonum aviculare ssp. aviculare</i>	prostrate knotweed	L+	Non-native	Forbs	0	0.3	0	0	
<i>Medicago sativa ssp. sativa</i>	alfalfa	L+	Non-native	Forbs	0.2	0	0	0	
<i>Sonchus arvensis ssp. arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0.1	0.1	0	
<i>Sonchus arvensis ssp. uliginosus</i>	smooth perennial sow-thistle	L+	Non-native	Forbs	0.2	0	0	0	
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0.1	0	0	
<i>Taraxacum erythrospermum</i>	red-seeded dandelion	L+	Non-native	Forbs	0	0.1	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	1.2	1.6	1.4	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	1.2	0	0	0	
<i>Acer negundo</i>	Manitoba maple	L+?	Native	Woody	0	0	0.1	0	
<i>Sambucus canadensis</i>	common elderberry	L5	Native	Woody	0	0.1	0	0	
Thatch	Thatch				42	0	4.2	12.8	
Bare soil	Bare soil				0.6	51.4	0	0.4	

## Section 6

### Section 6.1

Plot 6.1AF was monitored pre-restoration in 2020 and post-restoration from 2024-2025 (Table 27). Prior to restoration, the plot primarily consisted of Kentucky bluegrass (30.4%) and meadow fescue (43%). The cover of native grasses was high in both 2024 and 2025, including Virginia wild rye (13% in 2025) and Canada wild rye (*Elymus canadensis* var. *canadensis*; 10.5% in 2025). Kentucky bluegrass returned in 2025 at a cover of 25%. Native forbs with the highest cover in 2025 included tall goldenrod (20%), ox-eye (7%), and cup-plant (*Silphium perfoliatum* var. *perfoliatum*; 6.2%). The percent cover of creeping thistle and DSV were very low (0-5.6%).

### Section 6.2

Section 6.2 was seeded in January 2024 and plot 6.2AG was monitored both pre-restoration in 2020 and post-restoration from 2024-2025. Before restoration, the plot was dominated by DSV (31%), Kentucky bluegrass (22.8%), and red fescue (25.6%) (Table 28). Following restoration, several native forbs and native grasses were establishing including Canada wild rye (3%), tall goldenrod (13.6%), ox-eye (7.4%), and black-eyed Susan (6.1%). The percent cover of creeping thistle and DSV were very low (0-1%).

### Section 6.4

Plot 6.4AH was monitored pre-restoration in 2020 and post-restoration from 2024-2025. It has transitioned from being dominated by all non-native grasses and forbs, to high covers of native grasses and forbs including Canada wild rye (9.2%), Virginia wild rye (6%), ox-eye (30.6%), and black-eyed Susan (17.6%; Table 29). The percent cover of creeping thistle and DSV were very low (0-1.2%).

Table 27. Plot 6.1AF percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2024	2025	Average Percent Cover
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	28.8	13	80-100
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	20	10.5	60-80
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.8	0	40-60
<i>Carex tenera</i>	straw sedge	L4	Native	Graminoids	0	0	0.2	20-40
<i>Juncus bufonius</i>	toad rush	L5	Native	Graminoids	0	0.2	0	10-20
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0.1	5-10
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	30.4	0.2	25	2-5
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	43	0	0	1-2
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	23.6	0	0.1-1
<i>Agrostis stolonifera</i>	creeping bent grass	L+?	Non-native	Graminoids	6	0	0	0
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	0.2	3.2	0	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	2.2	0	0	
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0.6	0.4	0	
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	0.4	0	0	
grass sp.	grass sp.			Graminoids	0	6	0	
<i>Elymus</i> sp.	wild rye sp.			Graminoids	0	2	0	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	11	20	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	16.8	6.2	
<i>Heliopsis helianthoides</i>	ox-eye	L2	Native	Forbs	0	12.8	7	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	12.4	0	
<i>Bidens frondosa</i>	common beggar's-ticks	L5	Native	Forbs	0	10	2	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	7.2	2	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	4.8	2.6	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	4.4	1.3	
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	common wild strawberry	L5	Native	Forbs	4	0	0	
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	3.2	0	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.6	1.4	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	1.6	0.2	
<i>Verbena stricta</i>	hoary vervain	L3	Native	Forbs	0	1.8	0	
<i>Sympyotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0.4	1	
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	1	0.2	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	0.2	1	
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0	1	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0.8	0.1	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	0.6	0.3	
<i>Penstemon hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0.6	0.2	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.6	0	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0.2	0.2	
<i>Sympyotrichum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0.4	0	
<i>Echinacea pallida</i>	pale purple coneflower	L+*	Native	Forbs	0	0.2	0	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0.2	0	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0.2	0	
<i>Lespedeza capitata</i>	round-headed bush-clover	L3	Native	Forbs	0	0.2	0	
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	heal-all (native)	L5	Native	Forbs	0	0.2	0	
<i>Sympyotrichum pilosum</i> var. <i>pilosum</i>	hairy aster	L3	Native	Forbs	0	0.2	0	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	1.2	15.8	9.6	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	4.4	15	4.2	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	13.2	5.2	4.4	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.7	2	2	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.5	1.8	1.2	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	0.8	1.6	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0	2	0.4	
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	1.4	0	0	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thyme-leaved speedwell	L+	Non-native	Forbs	0.4	1	0	
<i>Conringia orientalis</i>	hare's ear mustard	L+	Non-native	Forbs	0	1.2	0	
<i>Falllopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0.4	0.4	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.7	0	0	
<i>Lysimachia nummularia</i>	moneywort	L+	Non-native	Forbs	0	0.6	0	
<i>Silene latifolia</i>	evening lychnis	L+	Non-native	Forbs	0	0.6	0	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	0.2	0.2	
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0.4	0	
<i>Ranunculus repens</i>	creeping buttercup	L+	Non-native	Forbs	0	0.4	0	
<i>Tussilago farfara</i>	coltsfoot	L+	Non-native	Forbs	0	0.4	0	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0.2	0	
<i>Ranunculus acris</i>	tall buttercup	L+	Non-native	Forbs	0.1	0	0	
<i>Sinapis arvensis</i>	charlock	L+	Non-native	Forbs	0	0	0.1	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.2	5.6	2.8	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.4	0	0	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0.4	0	
<i>Malus pumila</i>	apple	L+	Non-native	Woody	0	0.2	0	
Bare soil	Bare soil				0	57.2	0	
Thatch	Thatch				33	0	8.6	

Table 28. Plot 6.2AG percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2024	2025	Average Percent Cover
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	3.6	3	80-100
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.2	0	60-80
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0.1	40-60
<i>Festuca rubra ssp. rubra</i>	red fescue	L+	Non-native	Graminoids	25.6	0	0	20-40
<i>Poa pratensis ssp. pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	22.8	0	2.6	10-20
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	12	0	5-10
<i>Phleum pratense</i>	timothy grass	L+	Non-native	Graminoids	8.2	0	0	2-5
<i>Bromus inermis</i>	smooth brome grass	L+	Non-native	Graminoids	4.4	0	0	1-2
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	4	0.2	0	0.1-1
<i>Setaria pumila ssp. pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0.3	0.6	0	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0.2	0.1	
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	0	0	0.3	
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0.2	0	0	
grass sp.	grass sp.			Graminoids	0	6	0	
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	62	3.1	
<i>Helianthus helianthoides</i>	ox-eye	L2	Native	Forbs	0	14.4	7.4	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	2.2	13.6	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	6.4	6.1	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	6.8	4	
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	10.4	0	
<i>Verbena hastata</i>	blue vervain	L5	Native	Forbs	0	3.2	1.8	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	4.4	0.2	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	1.2	3.3	
<i>Verbena stricta</i>	hoary vervain	L3	Native	Forbs	0	2.6	1.4	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	1.6	1.4	
<i>Penstemon digitalis</i>	foxglove beard-tongue	L4	Native	Forbs	0	1	0.3	
<i>Penstemon hirsutus</i>	hairy beard-tongue	L3	Native	Forbs	0	0.8	0.1	
<i>Sympyotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0.6	0.3	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	0.6	0.1	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.6	0	
<i>Lespedeza capitata</i>	round-headed bush-clover	L3	Native	Forbs	0	0.6	0	
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0.4	
<i>Asclepias tuberosa</i>	butterfly milkweed	LX	Native	Forbs	0	0.2	0.1	
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0	0.2	0.1	
<i>Drymocallis arguta</i>	tall cinquefoil	L3	Native	Forbs	0	0.2	0	
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	L3	Native	Forbs	0	0.2	0	
<i>Solidago nemoralis ssp. nemoralis</i>	grey goldenrod	L5	Native	Forbs	0	0.2	0	
<i>Sympyotrichum laeve var. laeve</i>	smooth aster	L3	Native	Forbs	0	0.2	0	
<i>Sympyotrichum lanceolatum var. lanceolatum</i>	panicked aster	L5	Native	Forbs	0	0.2	0	
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	3	26	38.6	
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0.6	38	10.4	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	34.8	6.2	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	1.8	1.4	8.4	
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	7	1.4	
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0.6	3.8	2	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	1.2	0	5.1	
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	1.4	3.4	
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	1	2.2	0.6	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	2.6	0.6	0.3	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	2.2	0.8	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	1.6	0	
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0.4	0	0	
<i>Securigera varia</i>	crown vetch	L+	Non-native	Forbs	0.4	0	0	
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0.4	0	
<i>Barbarea vulgaris</i>	winter cress	L+	Non-native	Forbs	0	0	0.2	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.2	0	0	
<i>Polygonum aviculare ssp. aviculare</i>	prostrate knotweed	L+	Non-native	Forbs	0	0	0.1	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	31	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.4	0.2	1	
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0.2	0.1	
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0.2	0.1	
<i>Malus pumila</i>	apple	L+	Non-native	Woody	0	0.2	0	
Thatch	Thatch				69	0	0	
Bare soil	Bare soil				0	42	2	

Table 29. Plot 6.4AH percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2020	2024	2025	Average Percent Cover
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	8	9.2	80-100
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0.8	6	60-80
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	5	0.8	40-60
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	2	0	20-40
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	1.2	0.2	10-20
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0.4	0.4	5-10
<i>Lolium pratense</i>	meadow fescue	L+	Non-native	Graminoids	35	0	0	2-5
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	31	0	0	1-2
<i>Avena sativa</i>	oats	L+	Non-native	Graminoids	0	22.4	0	0.1-1
<i>Bromus inermis</i>	smooth brome grass	L+	Non-native	Graminoids	6	0	0	0
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	4	0	0	
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0.8	0	0	
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0.4	0	0	
<i>Digitaria ischaemum</i>	smooth crab grass	L+	Non-native	Graminoids	0	0.2	0	
<i>Eragrostis minor</i>	little love grass	L+	Non-native	Graminoids	0	0.2	0	
<i>Helianthus annuus</i>	sunflower	L2	Native	Forbs	0	27.6	30.6	
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	12.4	17.6	
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	7.2	5.6	
<i>Desmodium canadense</i>	showy tick-trefoil	L5	Native	Forbs	0	2.4	0.4	
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.8	0.7	
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.6	0.5	
<i>Lepidium virginicum</i>	Virginia pepper-grass	L4	Native	Forbs	0	0.8	0.2	
<i>Senna hebecarpa</i>	wild senna	L+*	Native	Forbs	0	0.4	0.1	
<i>Lespedeza capitata</i>	round-headed bush-clover	L3	Native	Forbs	0	0.2	0.1	
<i>Asclepias incarnata</i> ssp. <i>incarnata</i>	swamp milkweed	L4	Native	Forbs	0	0.2	0	
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0.1	
<i>Silphium perfoliatum</i>	cup-plant	L+?*	Native	Forbs	0	0	0.1	
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	0	0.1	
<i>Sympyrrhium novae-angliae</i>	New England aster	L5	Native	Forbs	0	0	0.1	
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	25.6	0.8	
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	6.6	13.6	5.9	
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	5.2	4.4	
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.6	1.4	1.8	
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.1	1.4	1.2	
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	1.3	
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0.8	0	0	
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0.4	0.2	
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.5	0	0	
<i>Lotus corniculatus</i>	bird's foot trefoil	L+	Non-native	Forbs	0.3	0	0	
<i>Barbarea vulgaris</i>	winter cress	L+	Non-native	Forbs	0	0.2	0	
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0.2	0	
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0	0.2	0	
<i>Sonchus arvensis</i> ssp. <i>arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0.2	0	
<i>Thlaspi arvense</i>	penny-cress	L+	Non-native	Forbs	0	0.2	0	
<i>Polygonum achoreum</i>	striate knotweed	L+	Non-native	Forbs	0	0	0.1	
<i>Tragopogon dubius</i>	lemon-yellow goat's beard	L+	Non-native	Forbs	0.1	0	0	
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0	1.2	
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.4	0.2	0.3	
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0.2	0.1	
<i>Morus alba</i>	white mulberry	L+	Non-native	Woody	0	0.2	0	
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.1	0	0.1	
Thatch	Thatch				69	4.8	19	
Bare soil	Bare soil				0	84.2	4.4	

## Section 7

### Section 7.1

Section 7.1 was initially restored in 2016 and has been seeded repeatedly since that time. Three plots were monitored annually since 2016 (plots 7.1M, N, and O).

In 2016, plot 7.1M had low vegetation cover and low species richness (12 species). By 2025, species richness had increased substantially to 101 species, including many newly seeded native species (Table 30). Native grass cover remained low, ranging from 0 to 1.7% between 2018 and 2025. A variety of native forbs were observed post-seeding with tall goldenrod now dominating in 2025 (88% cover). Non-native forb cover was higher between 2018 and 2021 (e.g., reaching 12% for evening lychnis (*Silene latifolia*)) but has been lower since 2023 (<1%). The cover of targeted invasives was generally low, but the cover of DSV has risen from 2.8% in 2016 to 8.5% in 2025. Spotted knapweed (*Centaurea stoebe* ssp. *micranthos*) was not found in the plot in 2025.

Plot 7.1N initially supported relatively few species (25 species); however, by 2025 species richness had increased to 88 species, including many newly seeded native species (Table 31). Native grass cover was highest between 2021 and 2024 with the cover of copper savannah grass (*Sorghastrum nutans*) reaching 44% in 2023 and this is likely due to the dry, sandy conditions present in section 7 (and particularly near plot N). The cover of flat-stemmed blue grass (*Poa compressa*) and Kentucky blue grass were highest in 2022 and 2023. A variety of native forbs were observed post-seeding reaching the highest covers between 2018 and 2021; however, covers were generally lower in 2025 with the dominant species including black-eyed Susan (5%), tall goldenrod (3.4%), and daisy fleabane (*Erigeron annuus*; 3.2%). The percent cover of non-native forbs was highest between 2018 and 2019 (e.g. reaching 35% for ox-eye daisy (*Leucanthemum vulgare*)) but has been lower since 2023 (<2.9%). The cover of targeted invasives was very low in 2025 with zero cover of DSV and creeping thistle. Spotted knapweed was present at very low cover in 2025 (0.1%).

Plot 7.1O also began with low species richness (11 species) but increased to 88 species by 2025, including many newly seeded native species (Table 32). Native grass cover was high including panic grass in 2018 and 2019 (17-23%), and Virginia wild rye (3-9.2%). A variety of native forbs were observed post-seeding with tall goldenrod (28%) and ox-eye (12.4%) having the highest cover in 2025. The percent cover of non-native forbs was highest between 2018 and 2023 (e.g. reaching 34% for black medick) but were lower in 2025 (<2.4%). The cover of targeted invasives was fairly low with 3.7% cover of DSV and 1% cover of creeping thistle in 2025. There was no spotted knapweed in this plot; however, it has been found in the larger 20x20m plot every year since 2022.

Table 30. Plot 7.1M percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	1.1	1.3	1.7	1.5	0.8	0.3	0.1	0	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0.5	1.3	1	0.7	1.3	0.9	0.1	0	60-80
<i>Carex tenera var. tenera</i>	straw sedge	L4	Native	Graminoids	0	0	1.2	2	1	1.4	0	0	0.1	40-60
<i>Carex tenera</i>	straw sedge	L4	Native	Graminoids	0	0	0	0	0	0	1.4	0.1	0	20-40
<i>Carex pellita</i>	woolly sedge	L4	Native	Graminoids	0	1.2	0	0	0	0	0	0	0	10-20
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0	0.2	0.2	0.2	0	0	0	5-10
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	0.6	0	0	0	0	0	0	0	2.5
<i>Schizachyrium scoparium</i>	little bluestem	L2	Native	Graminoids	0	0.2	0	0	0	0	0	0	0	1-2
<i>Juncus tenuis</i>	path rush	L5	Native	Graminoids	0	0	0	0.1	0	0	0	0	0	0.1-1
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0	0	1.8	2.4	2.8	4.6	3.2	11	2	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0.1	0	0.4	0.4	0.4	1	6	6	0
<i>Bromus japonicus</i>	Japanese chess	L+	Non-native	Graminoids	0	0	0.9	0.8	0.3	1.3	1.3	0	0.2	0
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	0.7	0	2.4	0	0	0	0	0	0	0
<i>Flymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0	0.2	0.6	0.6	0.2	0	0	0	0
<i>Phalaris arundinacea</i>	reed canary grass	L+?	Non-native	Graminoids	0	0	0.2	0.4	0.4	0.2	0	0	0	0
<i>Bromus inermis</i>	smooth bromegrass	L+	Non-native	Graminoids	0.8	0.1	0	0	0	0	0	0.1	0	0
<i>Phragmites australis</i> ssp. <i>australis</i>	common reed	L+	Non-native	Graminoids	0.6	0	0	0	0	0	0	0	0	0
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0	0	0	0.2	0	0	0	0	0.1	0
<i>Agrostis gigantea</i>	reddot	L+	Non-native	Graminoids	0	0	0	0.1	0	0	0	0	0	0
<i>Digitaria sanguinalis</i>	hairy crab grass	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	3.8	4.4	21.2	40.4	53.4	56	57	72.4	7.4	80-100
<i>Symptrichium ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0.2	0.9	4	3	1.8	1.3	0.5	0.1	0.1	60-80
<i>Rotibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0	1	2.2	1.6	0.8	0.1	0	0	0.1	40-60
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.5	0.3	0.3	0.5	1	1.7	0.2	0.4	20-40
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	2	0.6	0.9	0.4	0.6	0.1	0	0	10-20
<i>Helianthus helianthoides</i>	ox-eye	L2	Native	Forbs	0	0	0	0	0.2	0.5	1	1.8	0.9	5-10
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	0.9	0.4	0.8	0.3	1.2	0.5	0.1	0.2	2.5
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	2.2	0.8	0.1	0.1	0.5	0	0	0	1-2
<i>Oxalis illinensis</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	2.2	0.5	0.1	0.1	0.3	0.1	0.1	0.1	0.1-1
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0.1	0.7	1.1	0.1	0	0	0	0	0	0
<i>Solanum ptychanthum</i>	American black nightshade	L5	Native	Forbs	0	1.2	0.3	0	0	0	0	0	0	0
<i>Chenopodium simplex</i>	maple-leaved goosefoot	L5	Native	Forbs	0	1	0	0	0	0	0	0	0	0
<i>Symptrichium novae-angliae</i>	New England aster	L5	Native	Forbs	0	0.1	0.6	0.1	0.1	0	0	0	0	0
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	0	0.8	0	0	0	0	0	0
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0	0	0.1	0.6	0	0.1	0
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0.1	0.4	0	0.2	0	0	0	0	0
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	0.3	0	0	0	0	0	0	0
<i>Chenopodium simplex</i>	maple-leaved goosefoot	L5	Native	Forbs	0	0.2	0	0	0	0	0	0	0	0
<i>Potentilla norvegica</i>	rough cinquefoil	L+?	Native	Forbs	0	0	0.1	0.1	0	0	0	0	0	0
<i>Echinacea pallida</i>	pale purple coneflower	L+*	Native	Forbs	0	0	0	0	0	0.1	0	0	0	0
<i>Achillea borealis</i> var. <i>borealis</i>	woolly yarrow	L5	Native	Forbs	0	0	0	0	0	0	0.1	0	0	0
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	sticky willow-herb	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Gallium aparine</i>	cleavers	L5	Native	Forbs	0	0	0	0	0	0	0	0	0.1	0
<i>Persicaria lapathifolia</i>	pale smartweed	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Symptrichium lanceolatum</i> var. <i>lanceolatum</i>	pincushion aster	L5	Native	Forbs	0	0	0	0.1	0	0	0	0	0	0
<i>Silene latifolia</i>	evening lychnis	L+	Non-native	Forbs	0	5.5	12.2	8.9	4.5	3.3	1	0.2	0.2	80-100
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.5	4.8	7.8	2.2	1.4	1	0.5	0.2	0.6	60-80
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	1.6	3.6	5.5	0.8	0.4	0.2	0.1	0.1	40-60
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	7.8	1.6	0	0	0.1	0.7	0	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	6.4	0.5	0	0	0	0	0	0	0
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	2.5	3.8	0.1	0.1	0	0.4	0	0	0
<i>Polygonum achoreum</i>	striate knotweed	L+	Non-native	Forbs	0	6.2	0	0	0	0	0	0	0	0
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	2.2	1.8	0.5	0.3	0.5	0.2	0.4	0.2	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	0.2	0.9	1	1.4	0.9	1.1	0.1	0.1	0.1	0
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	1.1	1.4	1.8	0.2	0.1	0.1	0	0	0
<i>Lepidium campestre</i>	field pepper-grass	L+	Non-native	Forbs	0	2	1.6	0.1	0.1	0.1	0	0	0	0
<i>Silene vulgaris</i>	bladder campion	L+	Non-native	Forbs	0	0.6	0.8	1.2	0.2	1	0.1	0	0	0
<i>Amaranthus palmeri</i>	tumbleweed	L+	Non-native	Forbs	0	3.8	0	0	0	0	0	0	0	0
<i>Convolvulus arvensis</i>	field bindweed	L+	Non-native	Forbs	0.6	0	0.1	0.2	0.3	1.1	0.5	0.4	0.3	0
<i>Neptea cataria</i>	catnip	L+	Non-native	Forbs	0	0.8	1.4	0	0	0.1	0.4	0.2	0.1	0
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0.8	2.2	0	0	0	0	0	0	0
<i>Vicia tetrasperma</i>	slender vetch	L+	Non-native	Forbs	0	0.2	1.2	0	0	0.3	0.2	0.4	0.7	0
<i>Thlaspi arvense</i>	penny-cress	L+	Non-native	Forbs	0	1.6	0.5	0	0.1	0.3	0.1	0	0	0
<i>Fallopia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0.8	1.1	0.1	0	0	0	0	0	0
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0.3	0.2	0.1	0.1	1	0.1	0.1	0.1	0
<i>Amaranthus retroflexus</i>	red-root pigweed	L+	Non-native	Forbs	0	1.8	0	0	0	0	0	0	0	0
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0	0.3	0.3	0.2	0.2	0.1	0	0.1	0.2	0
<i>Medicago lupulina</i>	black medic	L+	Non-native	Forbs	0	0.3	0.5	0	0	0.2	0	0.1	0	0
<i>Sisymbrium altissimum</i>	tumble mustard	L+	Non-native	Forbs	0	0.3	0.6	0	0	0.1	0	0	0	0
<i>Camelina microcarpa</i>	small-seeded false flax	L+	Non-native	Forbs	0	0.4	0.2	0	0.1	0.1	0.1	0	0	0
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0.1	0.8	0	0	0	0	0	0	0
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0.8	0	0	0	0	0	0	0	0
<i>Vicia sativa</i> var. <i>angustifolia</i>	common vetch	L+	Non-native	Forbs	0	0.4	0.2	0	0	0.1	0	0	0	0
<i>Taraxacum erythrospermum</i>	red-seeded dandelion	L+	Non-native	Forbs	0	0.4	0.2	0	0	0	0	0	0	0
<i>Rumex obtusifolius</i>	bitter dock	L+	Non-native	Forbs	0	0.6	0	0	0	0	0	0	0	0
<i>Arenaria serpyllifolia</i>	thyme-leaved sandwort	L+	Non-native	Forbs	0	0	0	0	0	0	0.2	0.3	0	0
<i>Erysimum cheiranthoides</i>	wormseed mustard	L+	Non-native	Forbs	0	0	0.1	0	0	0.1	0.2	0	0	0
<i>Cerastium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0.1	0	0.1	0	0	0.1	0	0	0
<i>Rumex crispus</i>	curly dock	L+	Non-native	Forbs	0	0	0.2	0.1	0	0	0	0	0	0
<i>Barberis vulgaris</i>	winter cress	L+	Non-native	Forbs	0	0	0	0	0	0	0	0.1	0.1	
<i>Sonchus arvensis</i> ssp. <i>arvensis</i>	glandular perennial sow-thistle	L+	Non-native	Forbs	0	0	0.1	0.1	0	0	0	0	0	0
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0	0
<i>Alliaria petiolata</i>	garlic mustard	L+	Non-native	Forbs	0	0	0	0	0	0	0	0	0	0
<i>Cirsium vulgaris</i>	bulb thistle	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Creepois grandiflora</i>	large-flowered tickseed	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	2.8	2.5	5.5	4.2	5	8.2	6.2	7.1	8.5	80-100
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0.3	0.9	1.4	1.4	0.2	0.2	0.2	0.2	0.1	40-60
<i>Centaura stoebe</i> ssp. <i>micanthos</i>	spotted knapweed	L+	Non-native	Targeted Invasive	0	0	0.1	0.1	0	0.1	0.4	0.1	0	20-40
<i>Toxicodendron radicans</i> var. <i>rydbergii</i>	poison ivy (shrub form)	L5	Native	Woody	2.9	0.6	0	0.3	0.1	0.1	0	0	0	80-100
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0.2	0.1	0	0	0	0	0.1	0.1	60-80
<i>Cornus stolonifera</i>	red osier dogwood	L5	Native	Woody	0	0.2	0	0	0	0	0			

Table 31. Plot 7.1N percent cover by species

Species	Common Name	L-rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	2.1	3.6	6.8	20.2	32.8	44	21.2	12	80-100
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0	0.8	2.2	4.5	6.8	6.2	3.1	0.4	60-80
<i>Dichanthelium implicatum</i>	hairy panic grass	L4	Native	Graminoids	0	0	0	3.4	5	2.4	0.4	0.1	0	40-60
<i>Carex granularis</i>	meadow sedge	L5	Native	Graminoids	0	0	0.5	0.5	0.6	1.6	0.5	0.5	0.4	20-40
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0.1	0	0.3	0.1	0.6	1	0.4	0.1	10-20
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	1.2	0.2	0.1	0.2	0.4	0.4	0	0.1	5-10
<i>Dichanthelium acuminatum ssp. acuminatum</i>	hairy panic grass	L4	Native	Graminoids	0	0.6	1.6	0	0	0	0	0	0	2-5
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0.2	0.1	0	0	0.1	0	0	0.4	1-2
<i>Schizachyrium scoparium</i>	little bluestem	L2	Native	Graminoids	0	0	0	0	0.5	0	0.2	0	0	0.1-1
<i>Danthonia spicata</i>	poverty oat grass	L4	Native	Graminoids	0.1	0	0.1	0.1	0	0	0	0	0	0
<i>Carex aurea</i>	golden-fruited sedge	L4	Native	Graminoids	0	0	0.1	0.1	0	0	0	0	0	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0.7	0.8	1.1	3.4	4	8	4.2	2.8	4.6	0
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0.1	0	0	0	0	0.4	3.2	0	0	0
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	0.3	0.2	0	0	0	0	0	0	0
<i>Agrostis gigantea</i>	redtop	L+	Non-native	Graminoids	0	0	0.1	0	0.1	0.1	0	0	0	0
<i>Bromus japonicus</i>	Japanese chess	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Carex spicata</i>	spiked sedge	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	0	0	0
<i>Eragrostis minor</i>	little love grass	L+	Non-native	Graminoids	0	0.1	0	0	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	1.1	4	6.2	10.7	10	5.4	4.7	3.8	3.4	0
<i>Sympotrichum ericoides</i> var. <i>ericoides</i>	heath aster	L5	Native	Forbs	0.7	1.9	5.2	9.4	6.7	4.6	3.6	2.7	1.2	0
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0.2	11	10.2	0.5	0.3	1	1.1	5	3.2	0
<i>Solidago nemoralis</i> ssp. <i>nemoralis</i>	grey goldenrod	L5	Native	Forbs	0.3	0.2	4.8	10.6	5.3	1.8	1.7	0.2	0.1	0
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0	0.4	1.6	3	2.6	3.4	5	2	1.6	0
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	0.5	0.5	1.1	0.7	2.4	4	4.7	5	0
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0.2	0.3	0.6	3.2	1.9	2.5	2.1	1.9	0
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	L5	Native	Forbs	0	0.6	1.3	1.3	1	0.9	0.8	0.6	0.2	0
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	0.5	1.4	1	0.2	0	0.1	0	0	0
<i>Sympotrichum pilosum</i> var. <i>pilosum</i>	hairy aster	L3	Native	Forbs	0	0.4	1.2	1	0.2	0	0.1	0	0	0
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	0.8	1.2	0.1	0.1	0.1	0.2	0.3	0	0
<i>Sisyrinchium montanum</i>	blue-eyed grass	L4	Native	Forbs	0	0.2	0.4	1	0.6	0.2	0.1	0	0	0
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	L+*	Native	Forbs	0	0	0.4	0.6	0	0	0	0.4	0.1	0
<i>Oxalis dillenii</i>	deflexed yellow wood-sorrel	L5	Native	Forbs	0	0	0	0.1	0.3	0.5	0.3	0.2	0.1	0
<i>Echinacea pallida</i>	pale purple coneflower	L+*	Native	Forbs	0	0	0.1	0.2	0.2	0.2	0.1	0	0	0
<i>Heliosperma helianthoides</i>	ox-eye	L2	Native	Forbs	0	0.3	0.3	0.2	0	0	0	0	0	0
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada goldenrod	L5	Native	Forbs	0	0	0	0.6	0	0	0	0	0	0
<i>Sympotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicked aster	L5	Native	Forbs	0.1	0.1	0.2	0.1	0	0	0	0	0	0
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0.3	0.1	0	0	0	0	0	0	0
<i>Potentilla norvegica</i>	rough cinquefoil	L+?*	Native	Forbs	0	0	0	0.1	0	0	0.1	0	0.2	0
<i>Achillea borealis</i> var. <i>borealis</i>	woolly yarrow	L5	Native	Forbs	0	0	0	0.1	0	0	0	0.1	0.1	0
<i>Achillea millefolium</i> ssp. <i>lanulosa</i>	woolly yarrow	L5	Native	Forbs	0.1	0	0	0	0	0	0	0	0.1	0
<i>Erigeron philadelphicus</i> var. <i>philadelphicus</i>	Philadelphia fleabane	L5	Native	Forbs	0	0	0.2	0	0	0	0	0	0	0
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	0	0	0	0.1	0	0	0	0
<i>Antennaria howellii</i> ssp. <i>howellii</i>	Howell's pussytoes	L5	Native	Forbs	0.1	0	0	0	0	0	0	0	0	0
<i>Asclepias incarnata</i> ssp. <i>incarnata</i>	swamp milkweed	L4	Native	Forbs	0	0	0	0	0	0	0	0	0.1	0
<i>Oxalis stricta</i>	common yellow wood-sorrel	L5	Native	Forbs	0	0	0.1	0	0	0	0	0	0	0
<i>Solanum ptychanthum</i>	American black nightshade	L5	Native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Leucanthemum vulgare</i>	ox-eye daisy	L+	Non-native	Forbs	0.3	20	35	2.1	0.8	1.7	2.9	2.4	1.2	0
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0.5	25.6	11	0.4	0.2	0.4	0.8	0.4	0.3	0
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0.1	3	3.6	3	1.6	2.2	0.6	0.2	0.8	0
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0.1	3	4.1	0.2	0.3	0.4	0.6	0.9	2.4	0
<i>Potentilla recta</i>	sulphur cinquefoil	L+	Non-native	Forbs	0.1	0.7	0.6	1.4	1.4	1.8	0.8	0.5	1	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0.5	2	3.1	0.2	0.1	0.6	0.9	0.4	0.1	0
<i>Ceratium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0.5	0.5	1.5	0.2	0.2	0.4	0.4	0.8	0
<i>Coreopsis grandiflora</i>	large-flowered tickseed	L+	Non-native	Forbs	0	0.5	0.2	1.4	0.7	0.8	0.5	0	0	0
<i>Silene vulgaris</i>	bladder campion	L+	Non-native	Forbs	0	0.2	0.4	0.6	0.1	0	0.6	0	0	0
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	1.2	0.6	0	0	0	0	0	0.1	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	0.7	0.1	0.2	0.1	0.2	0.2	0	0	0.2	0
<i>Arabidopsis thaliana</i>	mouse-ear cress	L+	Non-native	Forbs	0	0.3	0	0.5	0.4	0.4	0	0	0	0
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0	0.3	0.4	0.1	0	0	0	0	0	0
<i>Arenaria serpyllifolia</i>	thyme-leaved sandwort	L+	Non-native	Forbs	0	0	0.1	0.2	0.1	0.2	0.1	0	0	0
<i>Cardamine hirsuta</i>	hairy bitter cress	L+	Non-native	Forbs	0	0.6	0	0	0	0	0	0	0	0
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.6	0	0	0	0	0	0	0	0	0
<i>Melilotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0.3	0.2	0	0	0	0	0	0	0
<i>Pilosella caespitosa</i>	yellow hawkweed	L+	Non-native	Forbs	0.3	0	0	0	0.1	0	0	0	0	0
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0	0	0	0	0	0.4	0	0	0
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0.2	0.1	0	0	0	0	0	0	0
<i>Amaranthus retroflexus</i>	red-root pigweed	L+	Non-native	Forbs	0	0.2	0	0	0	0	0	0	0	0
<i>Barbara vulgaris</i>	winter cress	L+	Non-native	Forbs	0	0	0	0	0	0	0.1	0.1	0	0
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	0	0.1	0.1	0	0	0	0.1	0	0
<i>Tanacetum vulgare</i>	tansy	L+	Non-native	Forbs	0.2	0	0	0	0	0	0	0	0	0
<i>Trifolium hybridum</i>	alsike clover	L+	Non-native	Forbs	0	0.1	0.1	0	0	0	0	0	0	0
<i>Asparagus officinalis</i>	asparagus	L+	Non-native	Forbs	0.1	0	0	0	0	0	0	0	0	0
<i>Plantago major</i>	common plantain	L+	Non-native	Forbs	0	0	0	0	0	0.1	0	0	0	0
<i>Polygonum aviculare</i> ssp. <i>aviculare</i>	prostrate knotweed	L+	Non-native	Forbs	0	0	0	0	0	0	0	0.1	0	0
<i>Stellaria graminea</i>	grass-leaved chickweed	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Stellaria media</i>	common chickweed	L+	Non-native	Forbs	0	0	0	0	0	0	0.1	0	0	0
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	spotted knapweed	L+	Non-native	Targeted Invasive	0.2	0.6	0.7	3	1.8	0.2	0.3	0.2	0.1	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	1	0.3	0	0.1	0.1	0.1	0	0	0	0
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	0.2	0.1	0	0	0	0	0	0	0
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0.3	0.2	0.1	0	0.1	0.1	0	0	0
<i>Cornus stolonifera</i>	red osier dogwood	L5	Native	Woody	0	0.3	0.2	0	0	0	0	0	0	0
<i>Prunus virginiana</i> var. <i>virginiana</i>	choke cherry	L5	Native	Woody	0.2	0	0	0.1	0	0	0	0	0	0
<i>Rhus typhina</i>	staghorn sumach	L5	Native	Woody	0	0.1	0.2	0	0	0	0	0	0	0
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0	0.1	0.1	0	0.1	0	0	0	0
<i>Juniperus virginiana</i>	red cedar	L5	Native	Woody	0.1	0	0	0	0	0	0	0	0	0
<i>Parthenocissus vitacea</i>	thicket creeper	L5	Native	Woody	0	0	0	0.1	0	0	0	0	0	0
<i>Allianthus altissima</i>	tree-of-heaven	L+	Non-native	Woody	0	0.1	0	0	0	0	0	0	0	0
<i>Robinia pseudoacacia</i>	black locust	L+	Non-native	Woody	0	0	0.1	0	0	0	0	0	0	0
Thatch	Thatch				59.6	0	0.6	3.7	16.2	13.8	44	35	65	
Bare soil	Bare soil				16.8	29	3.2	23.4	11.6	12.8	7.4	3.8	0.2	

\*Only summer survey completed

Table 32. Plot 7.1O percent cover by species

Species	Common Name	L-Rank	Native or Non-native	Plant Type	2016*	2018	2019	2020	2021	2022	2023	2024	2025	Average Percent Cover
					2016*	2018	2019	2020	2021	2022	2023	2024	2025	
<i>Panicum capillare</i>	panic grass	L5	Native	Graminoids	0	16.6	23.4	0.4	0	0	0	0	0	80-100
<i>Elymus virginicus</i> var. <i>virginicus</i>	Virginia wild rye	L5	Native	Graminoids	0	0	0	3.4	9	8.7	8.2	9.2	1.2	60-80
<i>Andropogon gerardii</i>	big bluestem	L3	Native	Graminoids	0	0	0	0.1	0	0.2	0.8	0.1	0	40-60
<i>Elymus villosus</i>	hairy wild rye	L2	Native	Graminoids	0	0	0	0	0	0.6	0	0	0	20-40
<i>Panicum virgatum</i>	switch grass	L3	Native	Graminoids	0	0.5	0	0.1	0	0	0	0	0	10-20
<i>Elymus canadensis</i>	Canada wild rye	L4	Native	Graminoids	0	0	0	0	0.1	0	0	0	0	5-10
<i>Sorghastrum nutans</i>	copper savannah grass	L2	Native	Graminoids	0	0	0	0	0.1	0	0	0	0	2-5
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	L+	Non-native	Graminoids	0.3	0	0	0.5	14	20	22.2	34	11.8	1-2
<i>Elymus repens</i>	quack grass	L+	Non-native	Graminoids	0	0.1	0.1	1	1	4	16	2.6	0.8	0.1-1
<i>Festuca rubra</i> ssp. <i>rubra</i>	red fescue	L+	Non-native	Graminoids	11.2	0	0	0.2	1.4	0	0	0	0	0
<i>Setaria pumila</i> ssp. <i>pumila</i>	yellow foxtail	L+	Non-native	Graminoids	0	3.1	4.2	1.4	0.2	0.1	0	0	0	0
<i>Schedonorus pratensis</i>	meadow fescue	L+	Non-native	Graminoids	1.7	0	0	0	0	0	0	0	0	0
<i>Elymus</i> sp.	wild rye sp.			Graminoids	0	1	0	0	0	0	0	0	0	0
<i>Poa compressa</i>	flat-stemmed blue grass	L+	Non-native	Graminoids	0	0	0	0	0.1	0.3	0.2	1	0	0
<i>Dactylis glomerata</i>	orchard grass	L+	Non-native	Graminoids	0.7	0	0	0	0	0	0	0	0	0
<i>Bromus japonicus</i>	Japanese chess	L+	Non-native	Graminoids	0	0	0	0	0	0	0.1	0.4	0	0
<i>Bromus tectorum</i>	downy chess	L+	Non-native	Graminoids	0	0	0	0	0	0.4	0	0	0	0
<i>Setaria viridis</i>	green foxtail	L+	Non-native	Graminoids	0	0	0.4	0	0	0	0	0	0	0
<i>Setaria verticillata</i>	bristly foxtail	L+	Non-native	Graminoids	0	0	0	0.2	0	0	0	0	0	0
<i>Triticum aestivum</i>	wheat	L+	Non-native	Graminoids	0	0	0	0.2	0	0	0	0	0	0
<i>Secale cereale</i>	rye	L+	Non-native	Graminoids	0	0	0	0	0	0.1	0	0	0	0
<i>Setaria faberi</i>	giant foxtail	L+	Non-native	Graminoids	0	0	0.1	0	0	0	0	0	0	0
<i>Solidago altissima</i>	tall goldenrod	L5	Native	Forbs	0	1.6	0	0.2	1	3.6	6	20.6	28	80-100
<i>Helianthus helianthoides</i>	ox-eye	L2	Native	Forbs	0	4.6	0.1	0.5	1.4	3.5	7.2	12.2	12.4	60-80
<i>Helianthus giganteus</i>	tall sunflower	LX	Native	Forbs	0	12.4	0.2	1.3	1.3	2.4	0.8	0.8	0.5	40-60
<i>Oxalis dillenii</i>	flexed yellow wood-sorrel	L5	Native	Forbs	0	2.6	0	6	1.2	0.1	0	0	0	10-20
<i>Ambrosia artemisiifolia</i>	common ragweed	L5	Native	Forbs	0	0	0.1	4	1.2	0.4	0	0	0	0
<i>Erigeron annuus</i>	daisy fleabane	L5	Native	Forbs	0	0	0	0.1	1.3	2.3	1	0.2	0	0
<i>Erigeron canadensis</i>	horse-weed	L5	Native	Forbs	0	0	0	1.4	2.9	0.5	0	0	0	0
<i>Sympotrichum laeve</i> var. <i>laeve</i>	smooth aster	L3	Native	Forbs	0	0	0	0	0.4	1	2.2	0.1	0.1	0
<i>Rudbeckia hirta</i>	black-eyed Susan	L4	Native	Forbs	0	1.2	0	0.6	0.1	0.3	0.1	0.2	0	0
<i>Solanum ptychanthum</i>	American black nightshade	L5	Native	Forbs	0	2.4	0.2	0.1	0	0.1	0	0	0	0
<i>Oenothera biennis</i>	common evening-primrose	L5	Native	Forbs	0	1.4	0.4	1	0	0	0	0	0	0
<i>Veronica peregrina</i> ssp. <i>peregrina</i>	purslane speedwell	L+*	Native	Forbs	0	0.2	0	1.6	0	0	0	0	0	0
<i>Ratibida pinnata</i>	grey-headed coneflower	L+*	Native	Forbs	0	1.2	0	0	0	0	0	0	0	0
<i>Sympotrichum novae-angliae</i>	New England aster	L5	Native	Forbs	0	0.8	0	0	0	0.1	0	0.2	0	0
<i>Potentilla norvegica</i>	rough cinquefoil	L+**	Native	Forbs	0	0	0	0.2	0.2	0.2	0	0	0	0
<i>Sympotrichum ericooides</i> var. <i>ericooides</i>	heather aster	L5	Native	Forbs	0	0.4	0	0	0	0	0	0	0	0
<i>Asclepias syriaca</i>	common milkweed	L5	Native	Forbs	0	0.2	0	0.1	0	0	0	0	0	0
<i>Sympotrichum lanceolatum</i> var. <i>lanceolatum</i>	panicled aster	L5	Native	Forbs	0	0	0	0	0.2	0	0	0	0	0
<i>Monarda fistulosa</i>	wild bergamot	L5	Native	Forbs	0	0	0	0	0	0	0.1	0	0	0
<i>Solidago ptarmicoides</i>	upland white goldenrod	L2	Native	Forbs	0	0	0	0	0.1	0	0	0	0	0
<i>Medicago lupulina</i>	black medick	L+	Non-native	Forbs	0	1.4	0.6	31.8	34	7.6	0.5	0	0	0
<i>Berteroa incana</i>	hoary alyssum	L+	Non-native	Forbs	0	0	0	0	4.6	12	11	0.8	0	0
<i>Chenopodium album</i>	lamb's quarters	L+	Non-native	Forbs	0	3.6	8.9	12	0.1	0	0	0	0	0
<i>Sisymbrium altissimum</i>	tumble mustard	L+	Non-native	Forbs	0	0	0	17	3.8	1.4	0	0	0	0
<i>Linaria vulgaris</i>	butter-and-eggs	L+	Non-native	Forbs	0	1.2	0	0.4	4.4	4.4	4.2	3.4	0.5	0
<i>Taraxacum officinale</i>	dandelion	L+	Non-native	Forbs	2.3	3.6	0.1	0.5	0.8	3.2	1.8	2.8	2.4	80-100
<i>Lactuca serriola</i>	prickly lettuce	L+	Non-native	Forbs	0	0	0	1	7.6	4.2	0.4	0	0	0
<i>Vicia cracca</i>	cow vetch	L+	Non-native	Forbs	0.4	3.8	0.2	1	0.2	0.6	0.6	2.2	1.1	0
<i>Daucus carota</i>	Queen Anne's lace	L+	Non-native	Forbs	0	4.2	0	2	1	0.8	0.4	0.1	0	0
<i>Ceratium fontanum</i>	mouse-ear chickweed	L+	Non-native	Forbs	0	0.4	0	0.9	1.5	2.7	0.3	0.1	0	0
<i>Arabidopsis thaliana</i>	mouse-ear cress	L+	Non-native	Forbs	0	0	0	3.6	1.5	0	0	0	0	0
<i>Thlaspi arvense</i>	penny-cress	L+	Non-native	Forbs	0	0	0	1.7	1.4	1.4	0	0	0	0
<i>Silene latifolia</i>	evening lychnis	L+	Non-native	Forbs	0	0	0	0	0.2	1.7	1	0.5	0.1	0
<i>Plantago lanceolata</i>	English plantain	L+	Non-native	Forbs	0	0	0	0.2	1	1.4	0.3	0.1	0.1	0
<i>Amaranthus blitoides</i>	prostrate pigweed	L+	Non-native	Forbs	0	0	3	0	0	0	0	0	0	0
<i>Amaranthus retroflexus</i>	red-root pigweed	L+	Non-native	Forbs	0	0	2.4	0.2	0	0	0	0	0	0
<i>Tragopogon pratensis</i>	meadow goat's beard	L+	Non-native	Forbs	0.2	0.9	0	0.1	0.4	0.1	0.6	0	0.2	0
<i>Barbera vulgaris</i>	winter cress	L+	Non-native	Forbs	0	0	0	0.4	1.2	0.8	0	0	0	0
<i>Amaranthus albus</i>	tumbleweed	L+	Non-native	Forbs	0	0	2.4	0	0	0	0	0	0	0
<i>Malva neglecta</i>	common mallow	L+	Non-native	Forbs	0	0.4	1	1	0	0	0	0	0	0
<i>Polygonum achoreum</i>	strike knotweed	L+	Non-native	Forbs	0	2.2	0	0	0	0	0	0	0	0
<i>Verbascum thapsus</i>	common mullein	L+	Non-native	Forbs	0	0	0	0.2	1.4	0.4	0	0	0	0
<i>Trifolium pratense</i>	red clover	L+	Non-native	Forbs	0.2	0	0	0.1	1.1	0	0	0	0	0
<i>Capsella bursa-pastoris</i>	shepherd's purse	L+	Non-native	Forbs	0	0	0	0.6	0.6	0.2	0	0	0	0
<i>Arenaria serpyllifolia</i>	thyme-leaved sandwort	L+	Non-native	Forbs	0	0	0	0.1	0.1	0.4	0	0	0	0
<i>Cardamine hirsuta</i>	hairy bitter cress	L+	Non-native	Forbs	0	0.1	0	0.4	0	0	0	0	0	0
<i>Cirsium vulgare</i>	bull thistle	L+	Non-native	Forbs	0	0.1	0	0	0	0.4	0	0	0	0
<i>Veronica arvensis</i>	corn speedwell	L+	Non-native	Forbs	0	0	0.1	0	0.1	0.3	0	0	0	0
<i>Geranium pusillum</i>	small-flowered crane's-bill	L+	Non-native	Forbs	0	0	0	0	0	0.4	0	0	0	0
<i>Sonchus asper</i>	spiny sow-thistle	L+	Non-native	Forbs	0	0	0	0.4	0	0	0	0	0	0
<i>Fallugia convolvulus</i>	black bindweed	L+	Non-native	Forbs	0	0	0	0.1	0.1	0.1	0	0	0	0
<i>Camelina microcarpa</i>	small-seeded false flax	L+	Non-native	Forbs	0	0	0	0	0.2	0	0	0	0	0
<i>Cichorium intybus</i>	chicory	L+	Non-native	Forbs	0.1	0	0	0	0	0	0	0.1	0	0
<i>Descurainia sophia</i>	flixweed	L+	Non-native	Forbs	0	0	0	0	0.1	0	0	0	0	0
<i>Hypericum perforatum</i>	common St. John's-wort	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Mellotus albus</i>	white sweet clover	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Sonchus oleraceus</i>	annual sow-thistle	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Trifolium repens</i>	white clover	L+	Non-native	Forbs	0	0.1	0	0	0	0	0	0	0	0
<i>Cynanchum rossicum</i>	dog-strangling vine	L+	Non-native	Targeted Invasive	0.3	1	0.7	0.7	2.3	5.2	4.8	4.3	3.7	80-100
<i>Cirsium arvense</i>	creeping thistle	L+	Non-native	Targeted Invasive	0	2.9	0.1	0.2	0	0.1	0.4	0.2	1	60-80
<i>Acer negundo</i>	Manitoba maple	L+?*	Native	Woody	0	0	0	0.1	0	0.1	0	0	0	0
<i>Cornus stolonifera</i>	red osier dogwood	L5	Native	Woody	0	0.1	0	0	0	0	0	0	0	0
<i>Vitis riparia</i>	riverbank grape	L5	Native	Woody	0	0.1	0	0	0	0	0	0	0	0
<i>Rhamnus cathartica</i>	common buckthorn	L+	Non-native	Woody	0.1	0.1	0	0	0	0	0	0	0	0
<i>Solanum dulcamara</i>	bittersweet nightshade	L+	Non-native	Woody	0	0	0.1	0.1	0	0	0	0	0	0
<i>Acer tataricum</i> ssp. <i>ginnala</i>	Amur maple	L+	Non-native	Woody	0	0	0	0	0	0.1	0	0	0	0
Thatch	Thatch				0.5	28	2.4	1.4	9	6	54	177	57	2-5
Bare soil	Bare soil				0	7	63.7	6.2	3.6	2.2	0	0	0.4	0

\*Only summer survey completed

## Xerces experimental plots

In 2022, an experimental site preparation trial plot was set up in section 5.3. The broad goal of the experiment was to determine how a unique site preparation technique (termed the Xerces technique) affects seeding success in The Meadoway. The Xerces site preparation method included performing a deep plow, flipping the soil, followed by a light discing, and seeding in mid-June 2022. Common evening-primrose seed was also added in fall/winter 2022. Unlike the current site preparation method, the Xerces method does not include glyphosate application and involves less intensive soil disturbance, resulting in reduced soil compaction and an untreated seed bed. In contrast, the current site preparation method includes multiple rounds of rototilling and the application of glyphosate. By conducting this study, we wanted to understand how the percent cover of native species and stem count of species from the seed mix varies between the Xerces method and the current method.

For this assessment, the most effective method was defined as the one that maximized both the percent cover of native species and total stem count of species from the seed mix.

From 2023-2025, 10 plots (1m x 1m) treated with the Xerces method and 4 plots (1m x 1m) treated with the current method were monitored each year. While we aimed for consistency of all factors other than the site preparation method, there were several differences between the Xerces method plots and the current method plots including using different seed mixes, different timing of seeding, and different treatments for invasives. These differences should be considered when interpreting results.

Percent cover of native and exotic species varied between the site preparation methods (Figures 7 and 8). Plots treated with the Xerces method had on average 61% cover of native species, while plots treated with the current method had on average 59% cover of native species across all years. Plots treated with the Xerces method had on average 38% cover of exotic species, while plots treated with the current method had 25% cover of exotic species across all years. The Xerces plots generally had more exotics and in 2025 they had more dog-strangling vine and creeping thistle than in previous years.

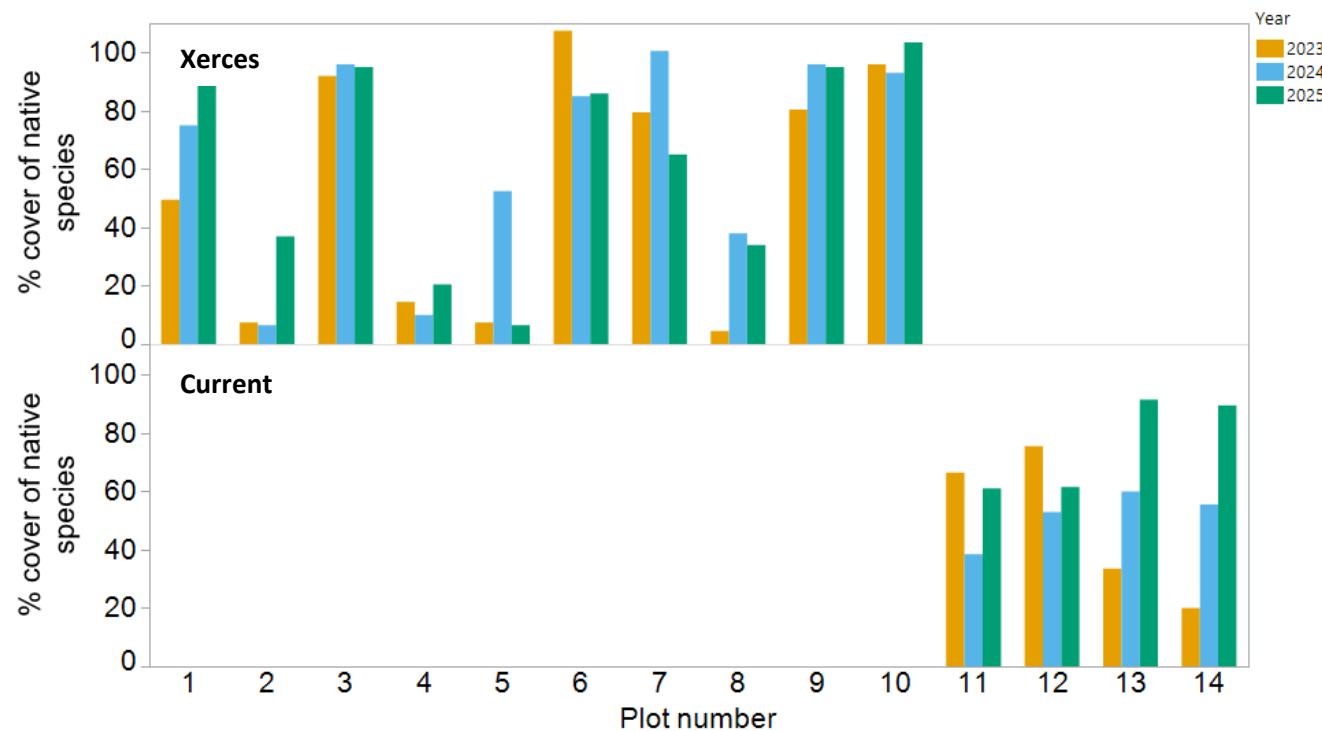


Figure 7. Total percent cover of native plant species in plots treated with the Xerces method or the current method.

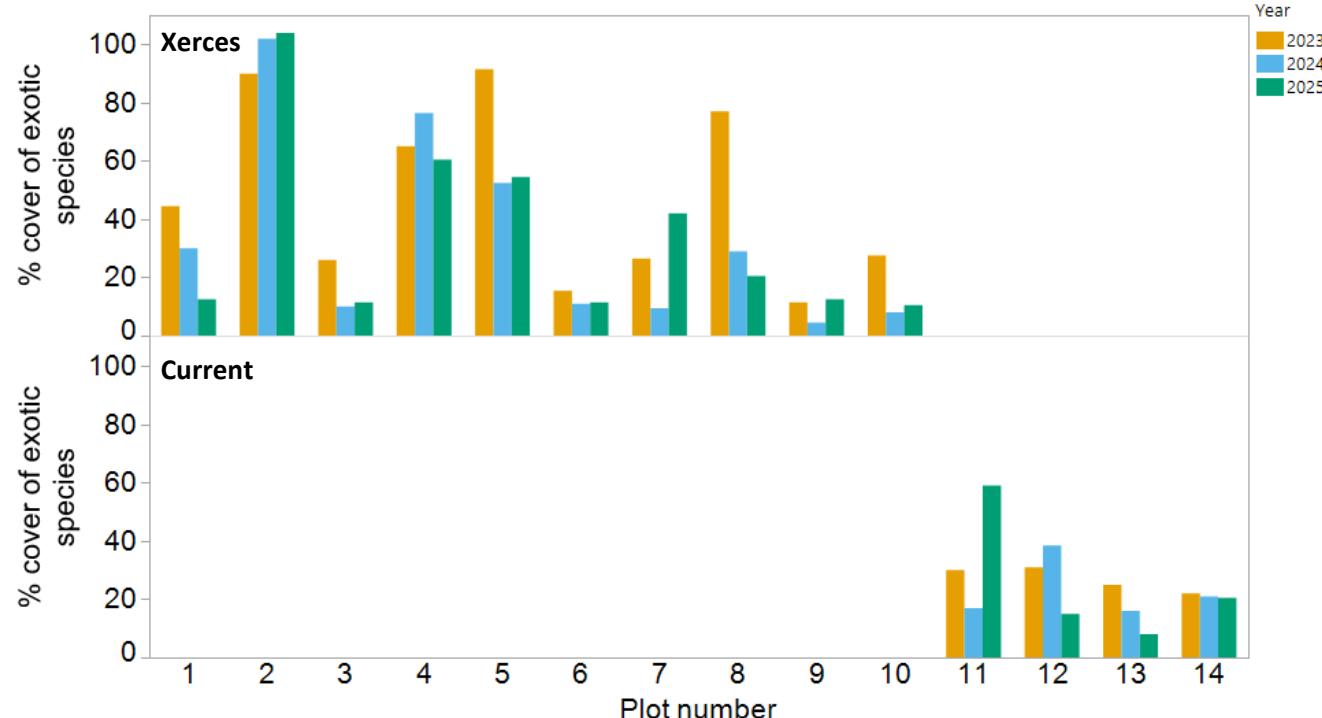


Figure 8. Total percent cover of exotic plant species in plots treated with the Xerces method or the current method.

## Section 4.2 Site Preparation Trial

Section 4.2 was seeded with Dry Mesic seed mix in 2013. The area was mowed by contractors midway through 2016 and has continued to be mowed regularly by City contractors since the summer of 2016. Some seeded native species are surviving despite the frequent mowing. In 2024, three site preparation techniques were tested in small areas of section 4.2: Area A (green), Area B (blue), and Area C (orange) (Figure 9). Area A was mowed multiple times and invasive species were spot-sprayed; no tilling occurred in this area (Turf Drill). Area B was sprayed across the entire area 3 times, with additional spot spraying to target remaining invasive species. Oats were seeded between spray applications, and no tilling occurred (Spray - No Till). In the fall of 2024, Area A was seed drilled with a turf drill and Area B was seeded with a typical seed drill. Both areas were sown with the Butterfly seed mix. Area C was mowed multiple times and invasive species were spot sprayed following the same approach used in Area A. In the fall of 2024, Area C was plowed and disced (Xerces method) and then hand-seeded with the Butterfly seed mix (Figure 10).



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Figure 9: Area A (green), Area B (red), Area C (blue), and the passively re-restored areas (purple).

Data collection began in fall 2025. Five 1m X 1m monitoring subplots were set up in each of the small areas (A, B, and C) for a total of 15 subplots. The Butterfly seed mix includes 29 species. Across the 15 subplots, 22 species from the seed mix were observed, although in smaller quantities than the projected number of seeds (Table 33).

The Turf Drill seeding had the lowest number of species from the seed mix; only 4 of 29. The Spray and No Till yielded almost the same number of species from the seed mix as the Xerces (15 and 16, respectively).



Figure 10. Subplots set up site prep trial methods section 4.2: the Turf Drill seeding (left), The Spray and No Till (middle) and Xerces (right).

The perennial species in the Turf Drill area were mature (several were flowering) and bigger than species in the Spray - No Till and the Xerces. Their relative covers were larger than the typical seedling covers one year after seeding. Therefore, the four seed mix species that were observed in the Turf Drill seeding area (Area A) likely came from the 2013 Dry Mesic seed mix and did not represent success from the more recent seeding.

The four most observed species in the Spray and No Till and Xerces methods were Canada wild rye, foxglove beard-tongue, common evening-primrose, and black-eyed Susan (Table 33).

The observed number of species from the seed mix was almost the same for the Xerces and Spray - No Till subplots. However, for most species, the Spray - No Till subplots had higher overall quantities and higher germination rates compared to Xerces subplots (Table 33 and Figure 11). For instance, tall cinquefoil (*Drymocallis arguta*) had the highest germination rate of 30.8% in Spray - No Till subplots but had only 3% in the Xerces subplots. Nine of the species observed in Spray - No Till subplots had over 10% germination rate. The highest germination rate in the Xerces subplots was less than 20%, and most species had less than a 10% germination rate.

From observations over the last nine years in the Meadoway, certain species (e.g., tall ironweed, *Vernonia gigantea*) may take longer to germinate and get to an identifiable size. Tall ironweed, for example, was not observed initially in newly seeded plots but appeared 3-4 years after seeding. Monitoring for a second growing season would be beneficial to capture some of the slower germinating and maturing species.

Table 33. Projected versus observed seed density for Turf Drill Seeding, Spray No Till and Xerces subplots in section 4.2

Scientific Name	Common Name	Projected number of seeds per 1 m x 1m	Average number of plants in 1 m x 1m		
			Turf Drill Seeding	Spray No Till	Xerces
<i>Elymus canadensis</i> var. <i>canadensis</i>	Canada wild rye	39		7.6	
<i>Penstemon digitalis</i>	foxglove beard-tongue	26		5.2	1.6
<i>Rudbeckia hirta</i> var. <i>pulcherrima</i>	black-eyed Susan	32		3.6	2.2
<i>Solidago rigida</i> ssp. <i>rigida</i>	stiff goldenrod	13		3.2	
<i>Symphyotrichum novae-angliae</i>	New England aster	19		3	1.4
<i>Verbena hastata</i>	blue vervain	19		2.4	1.2
<i>Drymocallis arguta</i>	tall cinquefoil	6		2	0.2
<i>Oenothera biennis</i>	common evening-primrose	19		1.6	3.8
<i>Monarda fistulosa</i> var. <i>fistulosa</i>	wild bergamot	39		1.6	
<i>Ratibida pinnata</i>	grey-headed coneflower	13		1.4	0.8
<i>Verbena stricta</i>	hoary vervain	13		1.4	0.2
<i>Penstemon hirsutus</i>	hairy beard-tongue	19		1	
<i>Helianopsis helianthoides</i>	ox-eye	32		0.6	0.4
<i>Symphyotrichum laeve</i> var. <i>laeve</i>	smooth aster	13		0.2	0.8
<i>Solidago nemoralis</i> ssp. <i>nemoralis</i>	grey goldenrod	6		0.2	0.6
<i>Andropogon gerardii</i>	big bluestem	58	0.2		1.4
<i>Asclepias syriaca</i>	common milkweed	19			0.6
<i>Asclepias tuberosa</i> ssp. <i>interior</i>	butterfly milkweed	19	0.4		0.4
<i>Desmodium canadense</i>	showy tick-trefoil	19			0.2
<i>Lespedeza capitata</i>	round-headed bush-clover	13			0.2
<i>Sorghastrum nutans</i>	copper savannah grass	52	1.6		
<i>Silphium perfoliatum</i> var. <i>perfoliatum</i>	cup-plant	13	0.2		
<i>Panicum virgatum</i>	switch grass	58			
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	little bluestem	19			
<i>Coreopsis tripteris</i>	tall coreopsis	6			
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	6			
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	19			
<i>Symphyotrichum ericoides</i> var. <i>ericoides</i>	heath aster	13			
<i>Vernonia gigantea</i>	tall Ironweed	13			

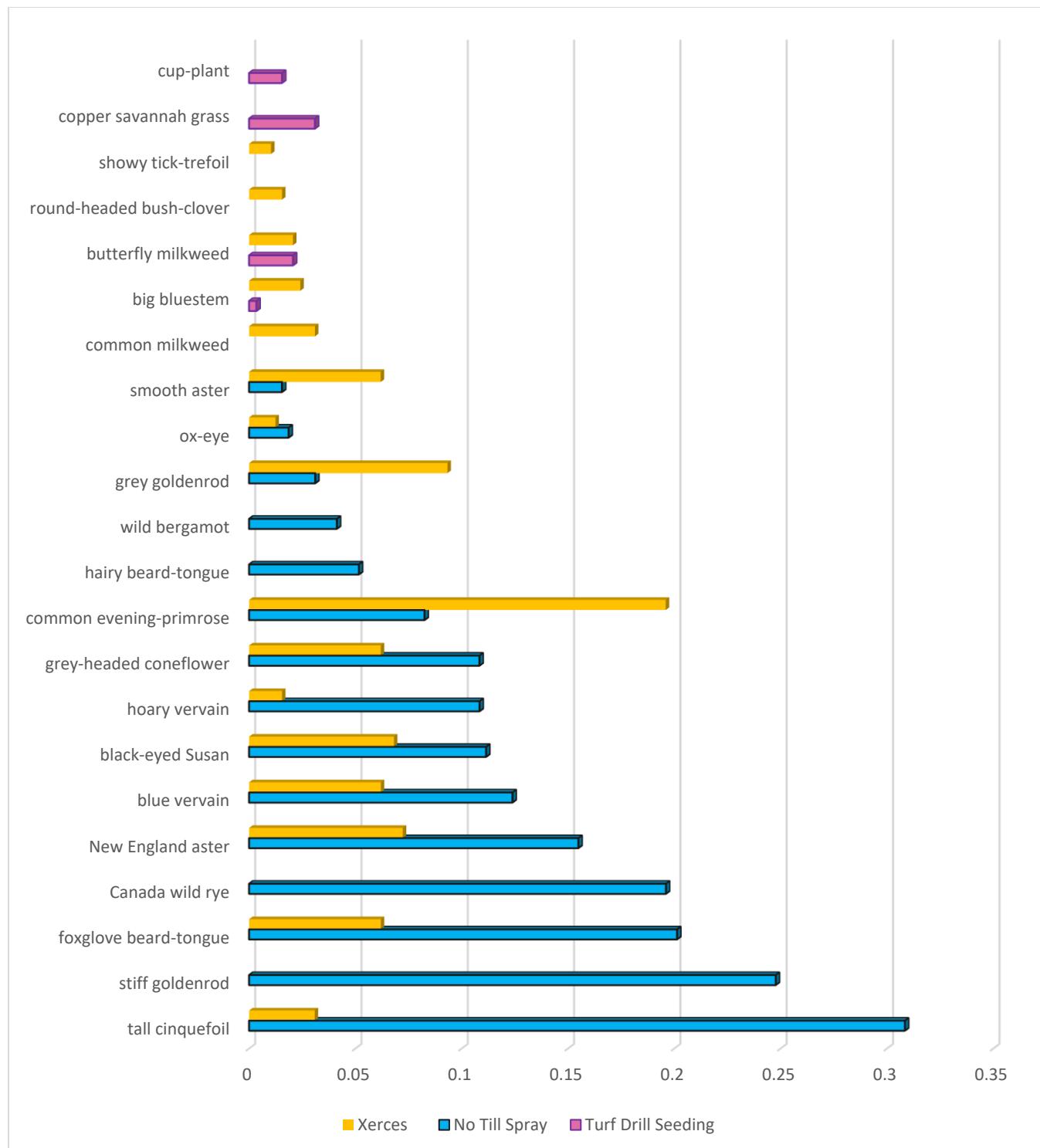


Figure 11. Germination percentage of seeded species using three prep techniques: Turf Drill Seeding, Spray - No Till, and Xerces

## Section 5.3 Seeding Methods Trial

Two areas in Section 5.3 were previously used as staging areas by the construction contractor as they implemented the new multi-use trail (Figures 12 and 13). These areas stored large piles of topsoil, stone, and site trailers. Once construction was completed in the fall of 2023, they were scraped smooth leaving behind heavily compacted soil. In 2024, decompaction techniques were implemented which involved four rounds of rototilling followed by seeding a cover crop of oats with the use of harrows and a seed roller for seed-soil contact. In fall 2024, Area D was Hand Seeded and rolled while Area E was Drill Seeded with Butterfly Mix.



Figure 12. Trial areas in Section 5.3. Existing meadows surround these areas.

Data collection began in fall 2025. Five 1m X 1m monitoring subplots were set up in each area (D and E), for a total of 10 subplots. The Butterfly Mix includes 29 species. Across the 10 subplots, 24 species from the seed mix were observed. More seeded species were found in the Drill Seed subplots compared to Hand Seed subplots (24 and 18, respectively; Table 34).



Figure 13. Subplot set-up seeding methods trial, Section 5.3.

Fewer species from the seed mix were observed than the projected number of seeds per 1m x 1m. Most species in the Drill Seed subplots had higher quantities and higher germination rates than the Hand Seed subplots (Table 34 and Figure 14). The three most observed species in both seeding methods were common evening-primrose, black-eyed Susan and Canada wild rye. Common evening-primrose was the most observed species in the Drill Seed subplots, with a 45% germination rate (in contrast to only 11% in Hand Seed subplots). Eight seeded species from the Drill Seed subplots had a greater than 10% germination rate. The species with the highest germination rate in the Hand Seed subplots was grey-headed coneflower (12.4%). Sixteen species from the Hand Seed trial had germination rates of less than 10%.

From observations over the last 9 years in the Meadoway, certain species (e.g., tall ironweed) may take longer to germinate and get to an identifiable size. Tall ironweed, for example, was not observed initially in newly seeded plots but appeared 3-4 years after seeding. Monitoring for a second growing season would be beneficial to capture some of the slower germinating and maturing species.

Table 34. Projected versus observed seed density for hand seed and drill seed subplots section 5.3

Scientific Name	Common Name	Projected number of seeds per 1 m x 1m	Average number of plants in 1 m x 1m for hand seed	Average number of plants in 1 m x 1m for drill seed
<i>Panicum virgatum</i>	switch grass	58	0.4	
<i>Andropogon gerardii</i>	big bluestem	58	0.4	1.2
<i>Sorghastrum nutans</i>	copper savannah grass	52	0.2	0.8
<i>Elymus canadensis</i> var. <i>canadensis</i>	Canada wild rye	39	2.4	4.8
<i>Monarda fistulosa</i> var. <i>fistulosa</i>	wild bergamot	39	0.6	2
<i>Helianopsis helianthoides</i>	ox-eye	32	1.8	2.2
<i>Rudbeckia hirta</i> var. <i>pulcherrima</i>	black-eyed Susan	32	3.2	7.4
<i>Penstemon digitalis</i>	foxglove beard-tongue	26	0.2	0.2
<i>Oenothera biennis</i>	common evening-primrose	19	2.2	8.8
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	19		0.4
<i>Asclepias tuberosa</i> ssp. <i>interior</i>	butterfly milkweed	19		0.2
<i>Asclepias syriaca</i>	common milkweed	19	0.2	1.8
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	little bluestem	19		
<i>Desmodium canadense</i>	showy tick-trefoil	19	0.4	0.8
<i>Verbena hastata</i>	blue vervain	19	0.8	2.2
<i>Symphyotrichum novae-angliae</i>	New England aster	19	1.4	3.6
<i>Penstemon hirsutus</i>	hairy beard-tongue	19		0.6
<i>Symphyotrichum laeve</i> var. <i>laeve</i>	smooth aster	13	0.6	1
<i>Vernonia gigantea</i>	tall Ironweed	13		
<i>Lespedeza capitata</i>	round-headed bush-clover	13	0.4	0.2
<i>Silphium perfoliatum</i> var. <i>perfoliatum</i>	cup-plant	13	0.4	0.4
<i>Ratibida pinnata</i>	grey-headed coneflower	13	1.6	3.4
<i>Solidago rigida</i> ssp. <i>rigida</i>	stiff goldenrod	13	0.2	1.8
<i>Verbena stricta</i>	hoary vervain	13	0.2	0.4
<i>Symphyotrichum ericoides</i> var. <i>ericoides</i>	heath aster	13		0.4
<i>Drymocallis arguta</i>	tall cinquefoil	6		0.2
<i>Coreopsis tripteris</i>	tall coreopsis	6		
<i>Solidago nemoralis</i> ssp. <i>nemoralis</i>	grey goldenrod	6		
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	6		

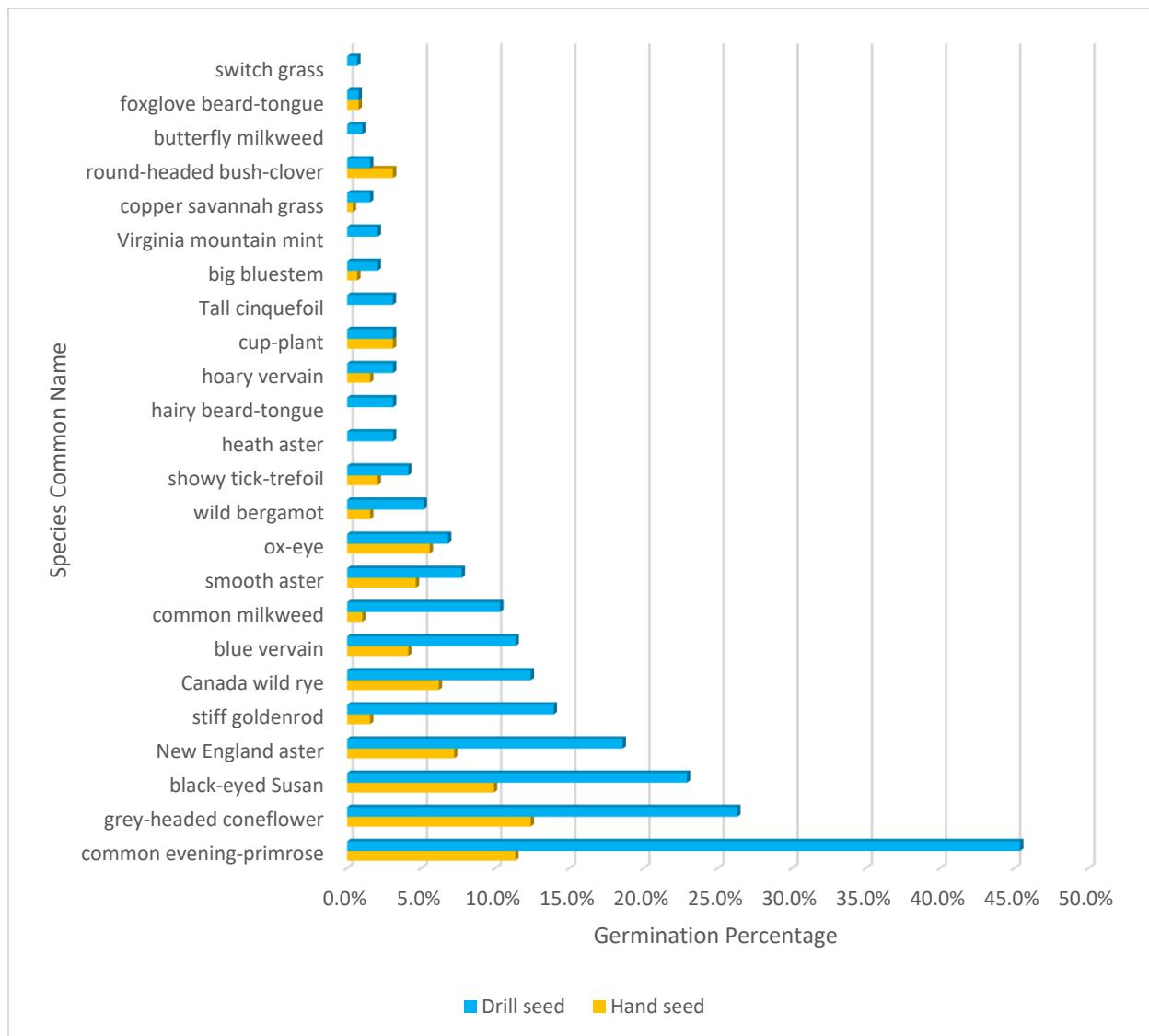


Figure 14. Germination percentage of seeded species using two techniques: Drill Seeding and Hand Seeding

## Breeding Bird Surveys

No bird surveys were conducted in 2025. Please see TRCA (2025) for previous results.

## Butterfly surveys

Forty-six butterfly species were observed between 2016 and 2025 (Appendix 2). Of these 46 species, the Acadian Hairstreak (*Satyrium acadica*), Giant Swallowtail (*Papilio cresphontes*), Delaware Skipper (*Anatrytone logan*), Silver-spotted Skipper (*Epargyreus clarus*), Pearl Crescent (*Phyciodes tharos*), and Wild Indigo Duskywing (*Erynnis baptisiae*) are ranked at the provincial level as S4 species. Species with an S4 rank are not rare species, but are uncommon, and there is some cause for long-term concern due to population declines or other factors (Nature Serve 2018). Monarch (*Danaus plexippus*) were also found using The Meadoway in very

high numbers although numbers varied from year-to-year. For example, 280 monarchs were counted using section 4.3 (between Bellamy Road North and Markham Road) in 2019; however, only 6 were recorded in 2025.

## Sections 1 and 2

Sections 1.4 (transect 1J) and 2.4 (transect 2K) were monitored both pre-restoration (2019) and post-restoration (2021-2025). Butterfly communities appeared to have changed between 2019 and 2021-2025 by increasing in either species richness or abundance of specific species (Figures 15 and 16). In section 1, species richness has remained relatively similar with 8 or 9 species observed each year except for in 2023 when 13 species were recorded. Species only present post-restoration included Acadian Hairstreak, American Lady (*Vanessa virginiensis*), Common Wood-Nymph (*Cercyonis pegala*), European Common Blue, Pearl Crescent, Peck's Skipper (*Polites peckius*), and Silvery Blue (*Glaucomysche lygdamus*). Pre-restoration in section 2, only 6 species were present, while post-restoration species richness was generally higher (2021 – 9 species, 2022 – 9 species, 2023 – 10 species, 2024 – 11 species); however, it was lower in 2025 (5 species). New species found post-restoration include European Common Blue which has been increasing in other areas of The Meadoway, and four other resident species including Eastern Tailed Blue (*Cupido comyntas*), European Skipper (*Thymelicus lineola*), Peck's Skipper, and Silvery Blue.

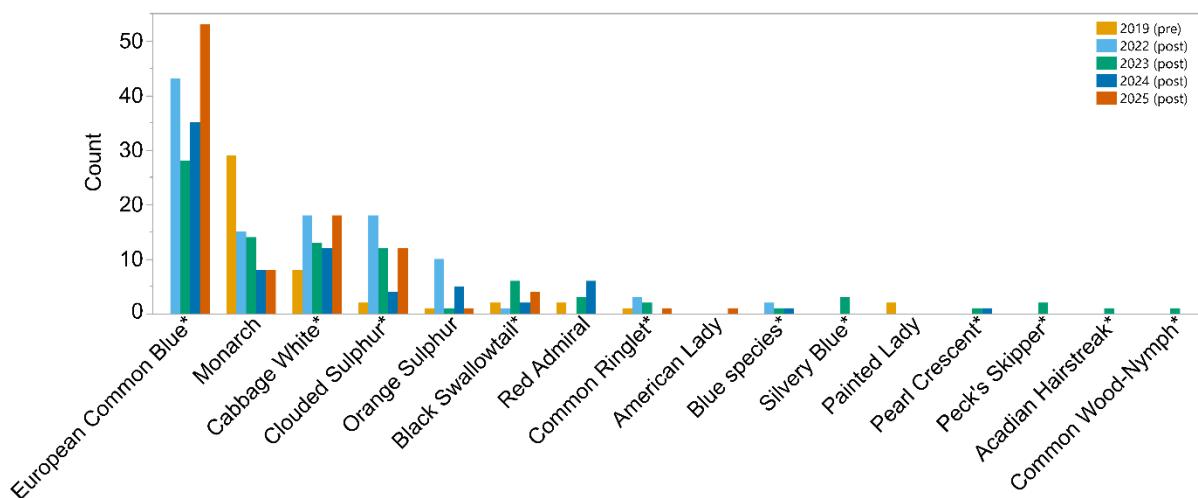


Figure 15. Temporal changes in butterfly species composition and abundance on transect 1J in section 1.4 pre- and post-restoration. An asterisk (\*) indicates a resident species.

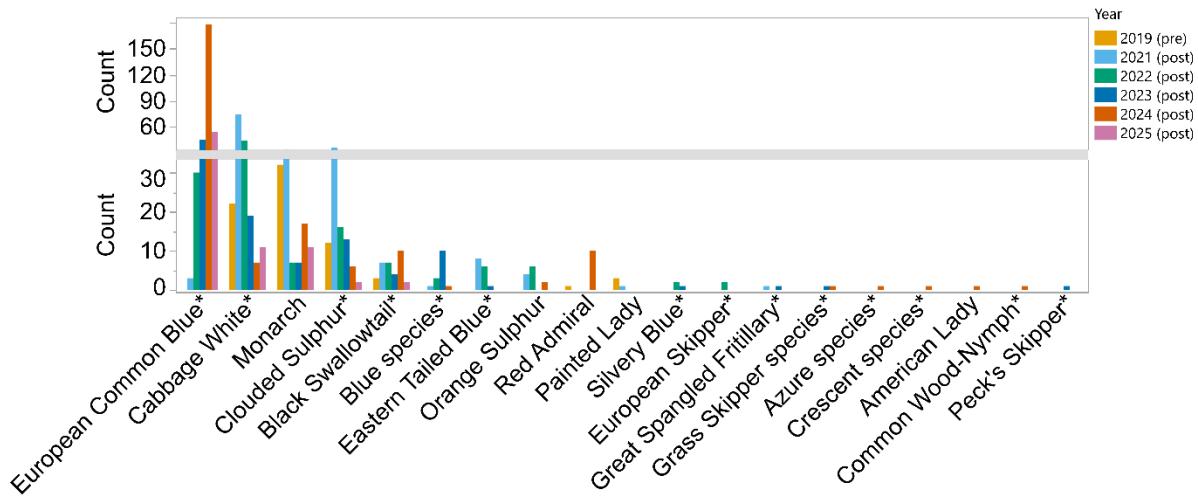


Figure 16. Temporal changes in butterfly species composition and abundance on transect 2K in section 2.4 pre- and post-restoration. An asterisk (\*) indicates a resident species.

## Section 4

Forty species were observed in section 4, including 32 resident butterfly species. Resident species are those that spend their entire life cycle in the Toronto region. Non-residents include migratory species such as Monarch. Between 2016 and 2025, resident and non-resident abundance varied with residents species more abundant in all years except for 2019 (Figure 17). We compared butterfly communities in section 4 using correlations of year and count by species in transects 4.1 A-B, 4.2 A-D, 4.3 A, B, D, and 4.4 B). Most species had non-significant trends over time; however, several species had significant increasing or decreasing trends. Species with increasing trends including Common Wood-Nymph ( $p = 0.018$ ), European Common Blue (*Polymmatus icarus*;  $p < 0.001$ ), Tawny-edged Skipper (*Polites themistocles*;  $p = 0.003$ ). Species with decreasing trends included Black Swallowtail (*Papilio polyxenes*;  $p = 0.002$ ) and Clouded Sulphur (*Colias philodice*;  $p = 0.007$ ; Figure 18). In addition to section 4, European Common Blue has been increasing in abundance across The Meadoway since 2020 (Figure 32). It is a non-native species first identified in North America in 2007 near Montreal and has since spread both to the east and west of Montreal being observed in Ontario for the first time in 2017.

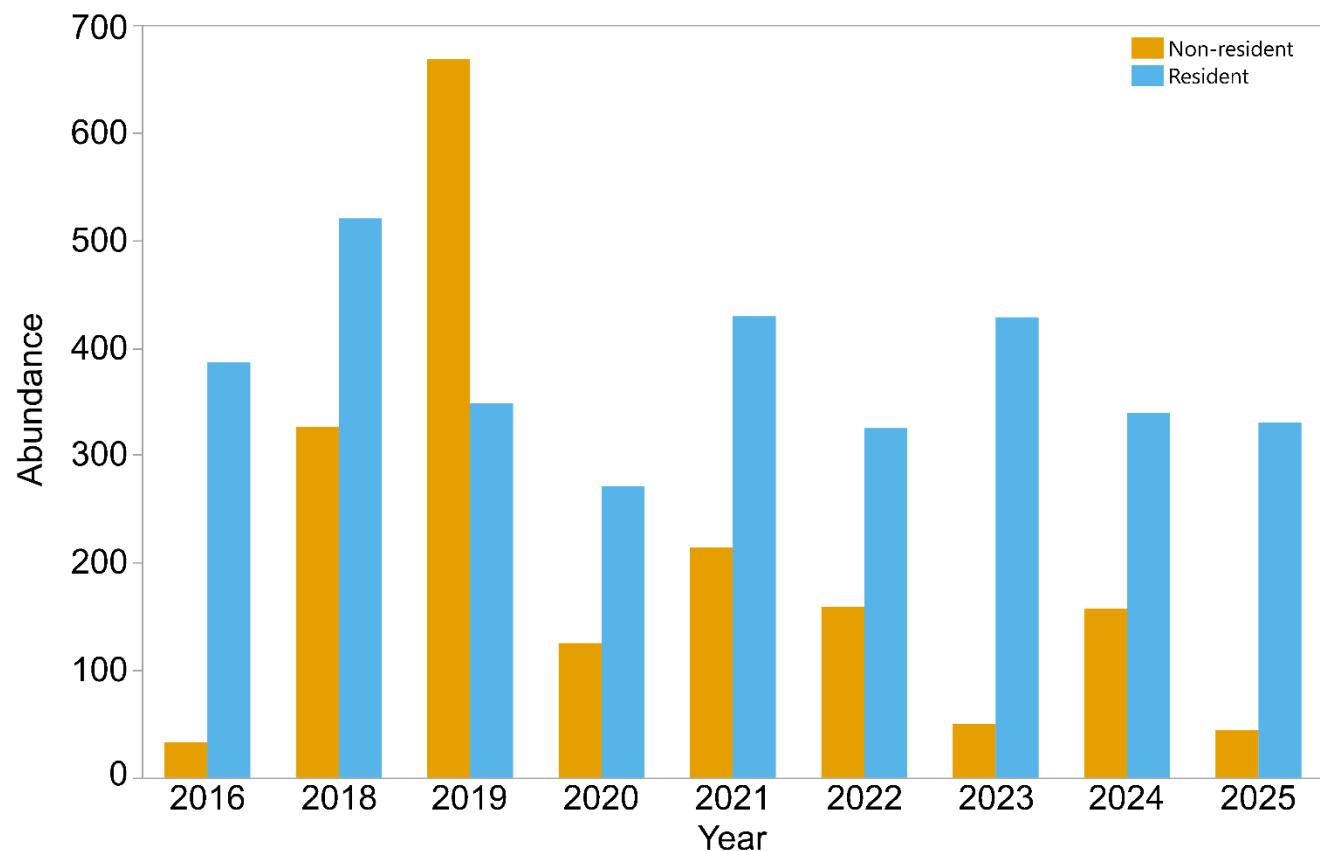


Figure 17. Abundance of resident and non-resident butterflies in section 4 between 2016 and 2025.

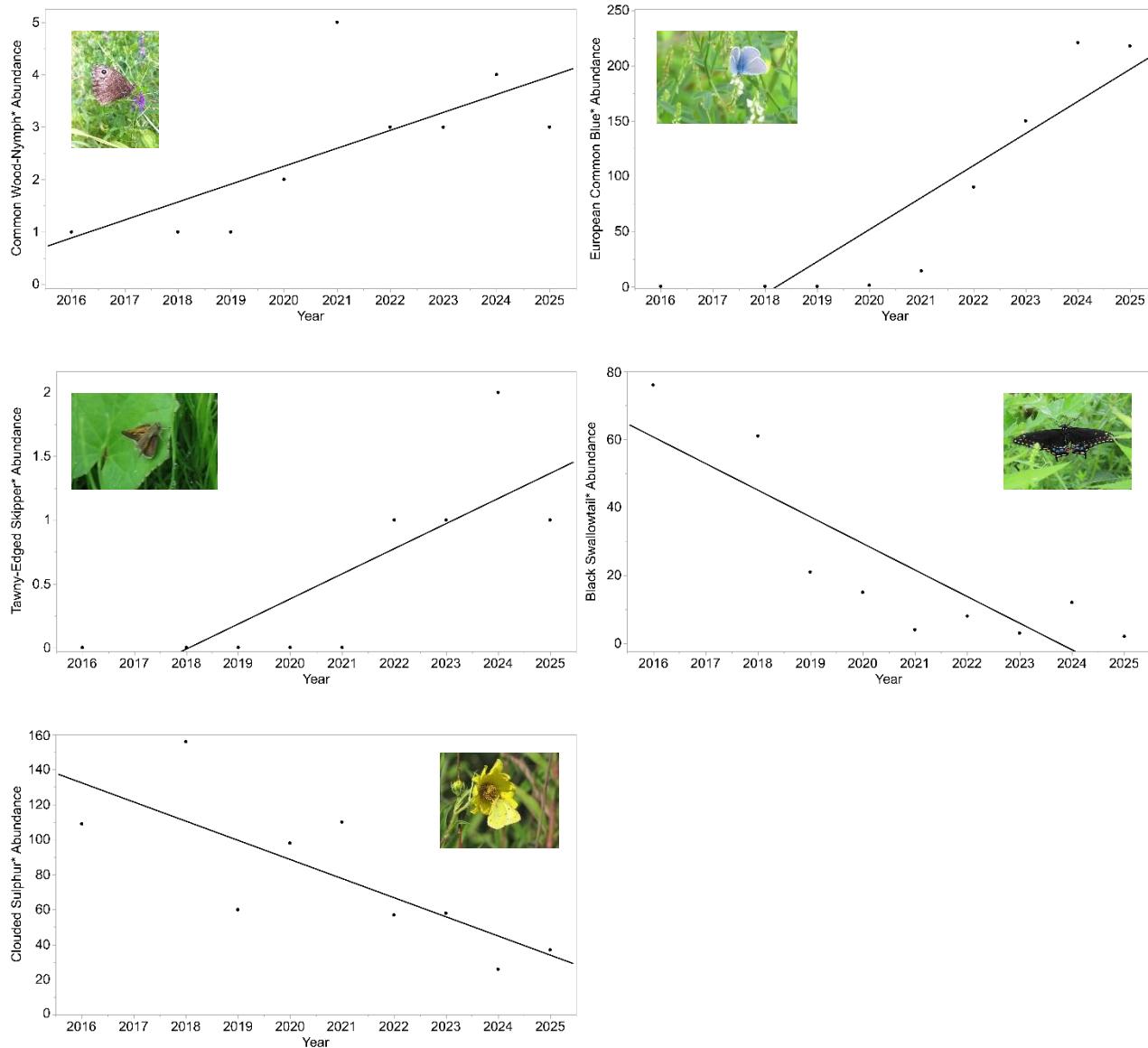


Figure 18. Butterfly species with significant temporal trends in section 4. An asterisk (\*) indicates a resident species.

## Section 5

Sections 5.3 (transects E and F) and 5.4 (transect G) were monitored both pre-restoration in 2020 and post-restoration in 2023-2025. Butterfly species richness was similar both pre- and post-restoration with high abundance of European Common Blue post-restoration (Figure 19). New species only found post-restoration include European Common Blue, Little Wood Satyr (*Megisto cymela*), Red Admiral (*Vanessa atalanta*), White Admiral (*Limenitis arthemis*), and Painted Lady (*Vanessa cardui*). The abundance of resident butterflies (excluding European Common Blue) was highest pre-restoration (22 individuals) and lowest in 2025 (5 individuals).

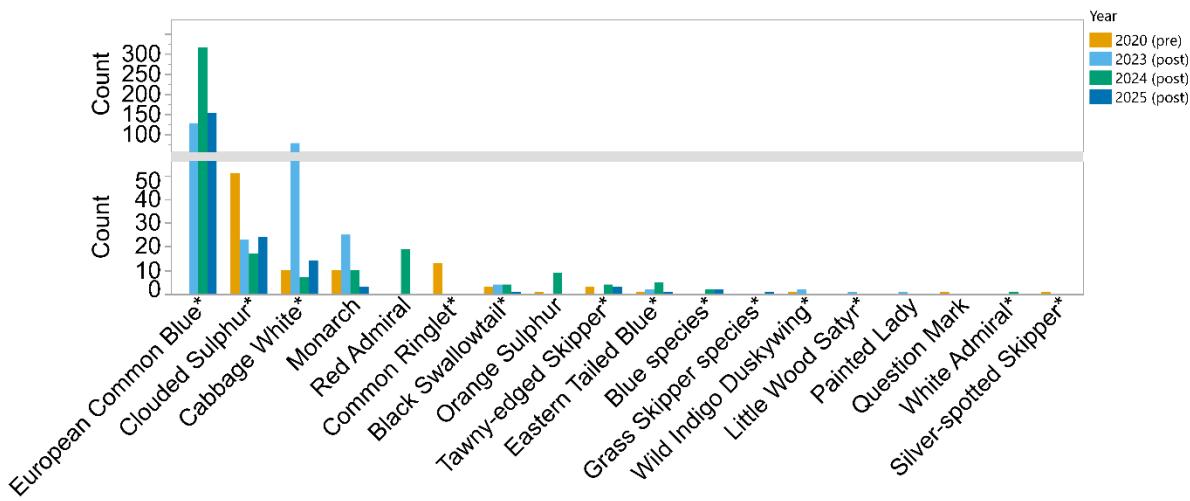


Figure 19. Temporal changes in butterfly species composition and abundance on transects E, F, and G in sections 5.3 and 5.4 pre- and post-restoration. An asterisk (\*) indicates a resident species.

## Section 6

Section 6.4 (butterfly transect C) was surveyed in 2021, 2022, 2024, and 2025. In 2023, a maintenance mow was conducted along with work on shrub nodes. Between six and eight species were found each year with total counts increasing largely due to increases in European Common Blue but also increases in almost every other species occurred other than Common Ringlet that has not been seen since 2022 (Figure 20).

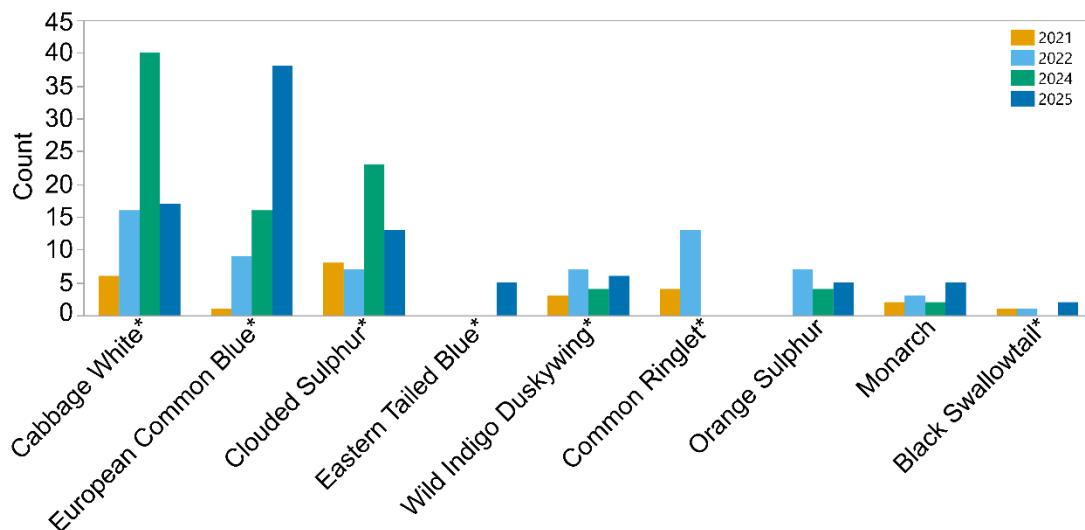


Figure 20. Butterfly abundance and species composition in section 6. An asterisk (\*) indicates a resident species.

## Section 7

Similar to section 4, section 7 only has post-restoration data from 2016 and 2018-2025 on transects A, B, C, and D. Section 7 supports 32 butterfly species including 26 resident species. The abundance of resident butterflies was highest in 2018 and was higher than non-residents in all other years except for 2019 (Figure 21). There were fewer significant temporal trends for butterfly species in this section compared to section 4 although Silvery Blue declined between 2016 and 2025 ( $p = 0.007$ ) while Wild Indigo Duskywing ( $p = 0.026$ ) and European Common Blue increased ( $p < 0.001$ ) (Figure 22).

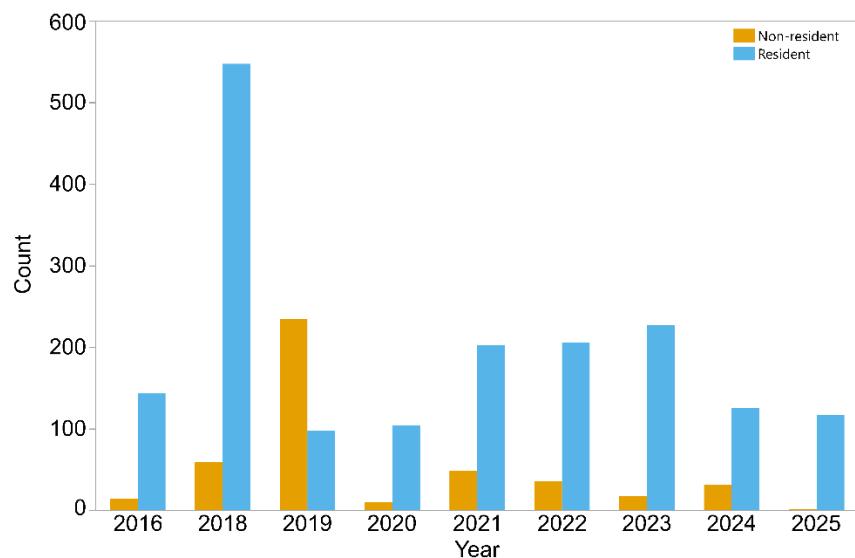


Figure 21. Abundance of resident and non-resident butterflies in section 7 between 2016 and 2025.

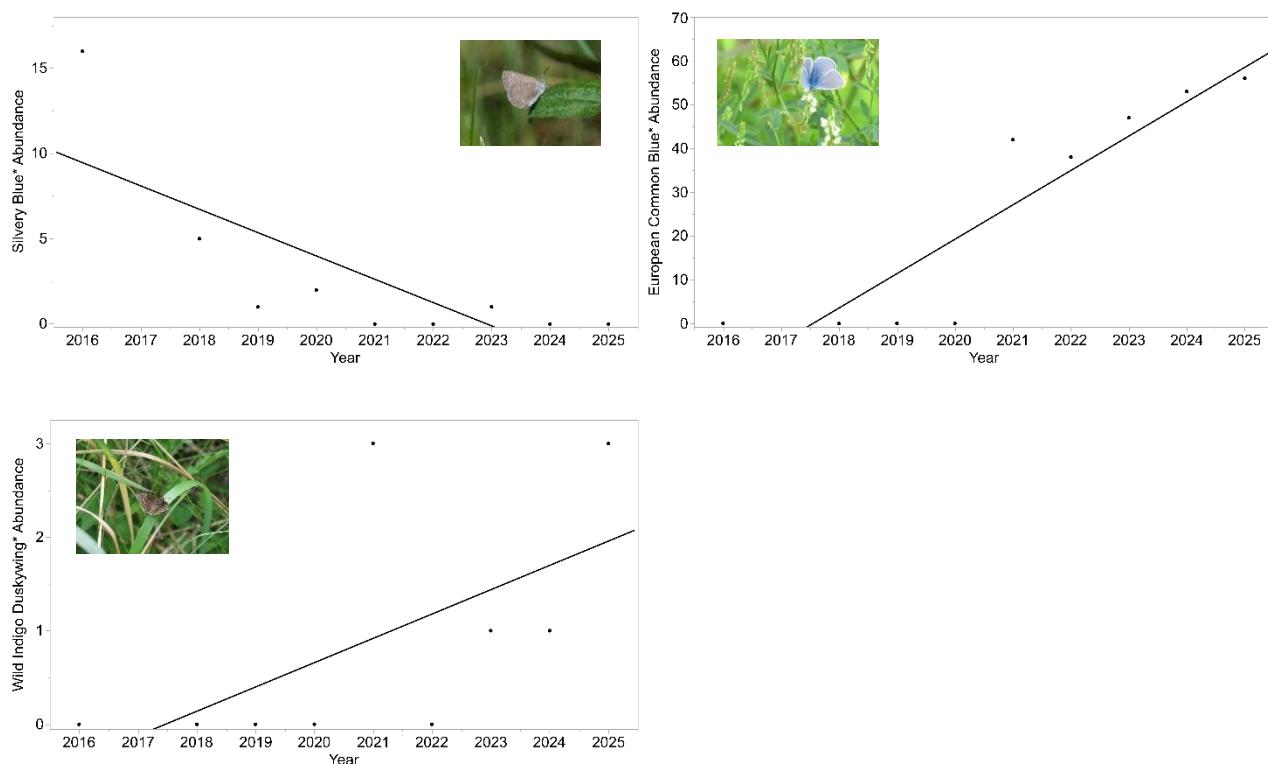


Figure 22. Butterfly species with significant temporal trends in section 7. An asterisk (\*) indicates a resident species.

## SUMMARY

Meadow monitoring during 2016, and 2018-2025 generally indicated that restoration work in The Meadoway has successfully introduced a variety of meadow flora through seeding, provides habitat used by breeding birds, and foraging opportunities for butterflies. A wide range of species were found during monitoring including numerous rare and sensitive species and species of conservation concern. In addition to these sensitive species, invasive flora species are persisting in The Meadoway although recent management initiatives have been successful at reducing their extent.

Detailed analyses of percent cover for all plant species highlight the success of restoration, with plant communities transitioning from low-diversity assemblages dominated by non-native grasses and forbs to more species-rich communities composed of a diverse mix of native grasses and forbs. Butterfly communities appeared to respond to these changes with higher species richness post-restoration including species likely using the seeded species as host plants. Some changes could also be due to broader changes in butterfly populations including the large increase in European Common Blue which occurred across The Meadoway.

After eight years of monitoring, several patterns emerged related to the longer term success of restoration efforts. Many seeded species have increased in cover and remained high into 2025 including wild bergamot, ox-eye, common milkweed, stiff goldenrod (*Solidago rigida* ssp. *rigida*), cup-plant, big bluestem, tall sunflower (*Helianthus giganteus*), and copper savannah grass. The longer monitoring record demonstrated the

competitive processes between species after disturbance with some species, such as tall goldenrod, dominating communities (Figure 23) along with the return and increasing cover of non-native grasses such as Kentucky bluegrass. Sections with the longest record of restoration and monitoring indicate that many of the seeded species were establishing populations although again, there was variation among sections and species, and native grasses may be declining in some sections in the most recent years.

Several trends can be observed in the vegetation across the Meadoway using this long-term dataset. The most prominent trend is the increase in dominance of tall goldenrod (*Solidago altissima* var. *altissima*) in the years following native meadow establishment. Over time, tall goldenrod typically becomes the dominant species, despite not being included in the original native seed mix. It is an important keystone species in the Meadoway due to its widespread abundance and high wildlife value as an exceptional nectaring plant, good winter structure, and as an important food source for birds in both summer and winter. The dominance of goldenrod across the Meadoway can be attributed to many factors including rich soils, abundant seed production, and aggressive vegetative reproduction. It is through this last mechanism that tall goldenrod is able to form such an extensive matrix across wide expanses of natural meadows.

While increasing abundance of goldenrod may appear to coincide with a reduction in native species from the seed mix, many of the seeded species tend to persist in the meadows but at reduced densities. While direct competition with goldenrod may be a contributing factor for observed declines of some of these species, another important consideration is mammal browse. For many years during vegetation monitoring, extensive browse has been observed on several species such as ox-eye, tall sunflower, wild bergamot, cup-plant, showy tick-trefoil, and goldenrod being among the favorites. Entire colonies or populations of plants may be impacted within a single season by severe rodent/rabbit browse. Colonial plants such as goldenrod, wild bergamot, and to a more limited extent, ox-eye are best able to cope with intense browse. Species that do not spread colonially like tall sunflower and showy tick-trefoil may experience sharper population declines if browsing is too severe or prolonged over many seasons.

Many native forb species included in Meadoway seed mixes for their size, aesthetic appeal, and contribution to plant diversity also produce large, nutrient-rich seeds that are highly attractive to birds and rodents. Heavy seed predation, particularly in years with low snow cover, may hamper natural recruitment of these species. In meadows where rodent and fall/winter foraging bird populations are high, it is expected that species which do not solely rely on seeds for recruitment, or have smaller, less appealing seeds (like goldenrod) will be favoured over time. It is likely that a combination of browse and seed consumption by birds and rodents will limit the natural abundance and possibly diversity of several grass and forb species in the Meadoway in the years to come. While this may seem like a hindrance to the success of these meadows, it is a sign of the valuable and complex contributions these native plants make to the local ecosystem.

In sections 4 and 5, detailed observations of germination were made in 2025 related to site preparation and seeding methods. Site preparation trials in section 4 found that the Spray - No Till subplots had higher overall quantities and higher germination rates compared to Xerces subplots, germination rates were variable among species, and among treatments. Seeding trials in section 5 found that species in the Drill Seed subplots were found in higher quantities and at higher germination rates than the Hand Seed subplots. It is expected that not all of the seeds will germinate, and different species have different germination and predation rates. The

absence of some species included in the seed mix could be a result of several factors, either alone or in concert such as time passed since completion of the restoration work, specific habitat requirements not being met, low seed viability, and others. Monitoring germination for a second growing season would be beneficial to capture some of the slower maturing species.



Figure 23. Tall goldenrod (*Solidago altissima* var. *altissima*) in section 1.4 in September 2025.

Invasive species management has been effective throughout The Meadoway with most sub-plots showing decreases in cover of creeping thistle and DSV. Overall, current methods appear to be most effective for controlling thistle and DSV although cover appears to be higher or increasing slowly in many sub-plots such as creeping thistle increasing in sections 1.3, 2.2, 3.2, 3.3 and 4.4 and DSV increasing in sections 4.1, 4.2, 4.4, and 7.1. Even with these increases, without management, it is likely that DSV would quickly spread and outcompete other species.

Butterfly monitoring continues to detect species characteristic of meadows in more urbanized areas of southern Ontario. Monarch, Clouded Sulphur, Cabbage White, and European Common Blue remain the most abundant species in The Meadoway in 2025. European Common Blue are dependent on birds foot trefoil, a non-native larval food plant, and as it is removed then populations of European Common Blue should also decline. In addition to resident species, The Meadoway continues to be used by numerous migratory butterfly species due to the abundant nectaring opportunities. Declines in several species also occurred in specific sections including Black Swallowtail and Clouded Sulphur (section 4) and Silvery Blue (section 7). Black

Swallowtails may be supported by planting more host plants in the carrot family as plugs (e.g., purple-stemmed Angelica (*Angelica atropurpurea*), golden Alexanders (*Zizia aurea*)).

Pre- and post-restoration monitoring suggests that restoration has variable effects on butterfly species and this could be related to both seeded species that are host plants and/or changing nectaring opportunities. Many resident butterfly species either only occurred post-restoration or increased in abundance post-restoration including Eastern Tailed Blue, European Skipper, Silvery Blue, and Silver-spotted Skipper although these patterns were section-specific and sometimes only temporary. For example, there was no change in species richness and a decrease in the abundance of resident butterflies in section 5, but in section 1 there was also no change in richness and a peak in abundance in 2023 (the second year post-restoration) followed by a decrease. This is important to consider since resident butterflies occupy an area year-round and are non-migratory. These pre- and post-restoration data suggest that restoration efforts are creating habitat for many butterfly species including resident species; however, with repeated site management (e.g., mowing/tilling), the final impact of the restoration may not be apparent until site management occurs less frequently. Data collected in future years for vegetation, birds, and butterflies should continue to provide evidence of the overall effectiveness of restoration efforts in The Meadoway.

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## APPENDIX

### Appendix 2. Butterfly occurrence in The Meadoway 2016, 2018-2025.

Common name	Scientific name	S-rank	Section 1										Section 2										Section 3		Section 4.1										Section 4.2										Host plant
			2016	2018	2019	2020	2021	2022	2023	2024	2025	2016	2018	2019	2020	2021	2022	2023	2024	2025	2016	2018	2019	2020	2021	2022	2023	2024	2025	2016	2018	2019	2020	2021	2022	2023	2024	2025							
Acadian Hairstreak*	<i>Satyrium acadica</i>	S4							2																															Various willow species including black willow ( <i>Salix nigra</i> ) and silk willow ( <i>Salix sericea</i> )					
American Lady	<i>Vanessa virginiensis</i>	S5								1																														Sunflower family, pearly everlasting, plantain-leaved pussy toes, wormwood, ironweed, burdock					
Azure species*	<i>Celastrina</i> spp.	n/a																																											
Black Swallowtail*	<i>Papilio polyxenes</i>	S5			2	2	4	12	8	6	7			3		7	11	5	16	2	14	3	5	3	1	1						2	22	19	7	7	2	4	1	9	Carrot family... parsley, dill, celery, Queen Anne's lace				
Blue species*	Lycaenidae family	n/a					15	3	1	1						1	3	10	1																										
Cabbage White*	<i>Pieris rapae</i>	SNA		8	13	148	151	54	47	50				22		75	82	35	9	15	35	55	90	24	12	36	11	11	8	21	51	36	12	72	36	49	7	7 Mustards... cabbage, cauliflower and broccoli							
Clouded Sulphur*	Blue species*	S5		2	16	105	107	36	27	30				12		37	30	20	8	7	51	5	5	1	7	14	3	6	5	32	52	17	33	46	19	13	5	10 Legumes... cultivated crops							
Common Buckeye	<i>Junonia coenia</i>	SNR (G5)																																							Uncommon breeding migrant				
Common Ringlet*	<i>Coenonympha tullia</i>	S5		1		2	4	2		2											2	1		1	1				1	3	7	17	10	18	1			Kentucky bluegrass							
Common Wood-Nymph*	<i>Cercyonis pegala</i>	S5						1	1											1		1							1	1	1		1	4	1			1 Grasses (Poaceae)							
Crescent species*	<i>Phyciodes</i> spp.	n/a																	1																										
Delaware Skipper*	<i>Anatrytone logan</i>	S4						1												1																			Big bluestem and old switch panicgrass						
Dun Skipper*	<i>Euphyes vestris</i>	S5																				1																	Sedges: chufa flatsedge, sun sedge						
Duskywing species*								1																																					
Eastern Comma*	<i>Polygonia comma</i>	S5																				1																	Elm and nettle families: American elm, hops, nettle, false nettle, wood nettle						
Eastern Tailed Blue*	<i>Cupido comyntas</i>	S5		2	13		1	3	5					8	8	1				4		1		6				6	4	8	5	20	1	1	6	7 Clovers and legumes									
Eastern Tiger Swallowtail*	<i>Pterourus glaucus</i>	S5																	1								1	1			1	1					Trees... hop tree, cherries and ashes								
European Common Blue*	<i>Polymmatum icarus</i>	SNA			32	87	83	197	251					3	54	62	205	151	453			2	1	10	15	12				4	25	14	96	44 Alfalfa, clover, crown vetch (Burghardt et al. 2001), bird's-foot trefoil (many other legumes black medick)											
European Skipper*	<i>Thymelicus lineola</i>	SNA			6	6	11	1						2	1	1																					Grasses (Poaceae) prefers common timothy								
Giant Swallowtail*	<i>Papilio cresphontes</i>	S4																																						Common prickly ash and common hop tree					
Grass Skipper species*	Hesperiinae family	n/a			2			1								1	1				1																								
Great-spangled Fritillary*	<i>Speyeria cybele</i>	S5				1		1						1		1																								Violets					
Hobomok Skipper*	<i>Lon hobomok</i>	S5					1																																	Various grasses including panic grasses ( <i>Panicum</i> ) and blue grasses					
Lady species	<i>Vanessa</i> spp.	n/a																												1															
Least Skipper*	<i>Ancyloxypha numitor</i>	S5		2	8	1	3	1																																Grasses (Poaceae)					
Little Wood-Satyr*	<i>Megisto cymela</i>	S5			1																	1		1																Grasses (Poaceae)... Kentucky bluegrass orchard grass					
Little Yellow	<i>Pyrisitia lisa</i>	SNA																																							A variety of legumes (Fabaceae)				
Monarch	<i>Danaus plexippus</i>	S2N,S4B		29	13	50	38	25	49	35			32	34	20	15	28	24	25	6	37	11	16	9	1	7	6	7	217	195	46	86	59	22	54	8 Milkweeds									
Mourning Cloak*	<i>Nymphalis antiopa</i>	S5																																							Trees... willows, elms, cottonwoods and hackberries				

## Appendix 2. (cont'd)

Common name	Scientific name	S-rank	Section 4.3							Section 4.4							Section 5					Section 6					Section 7					Host plant							
			2016	2018	2019	2020	2021	2022	2023	2024	2025	2016	2018	2019	2020	2021	2022	2023	2024	2025	2020	2021	2022	2023	2024	2025	2021	2022	2023	2024	2025								
Acadian Hairstreak*	<i>Satyrium acadica</i>	S4																																Various willow species including black willow ( <i>Salix nigra</i> ) and silk willow ( <i>Salix sericea</i> )					
American Lady	<i>Vanessa virginiensis</i>	S5							1	1				1																			Sunflower family, pearly everlasting, plantain-leaved pussy toes, wormwood, burdock						
Azure species*	<i>Celastrina</i> spp.	n/a																															0						
Black Swallowtail*	<i>Papilio polyxenes</i>	S5	26	17	3	4	1	1		1	1	25	20	8	3	1	4	4	1	1	5		4	11	2	1	2						Carrot family... parsley, dill, celery and Queen Anne's lace						
Blue species*	Lycenidae family	n/a					21		3	3	2	1	1			2		1	6	3		1		1	2	2													
Cabbage White*	<i>Pieris rapae</i>	SNA	26	56	40	15	34	17	48	12	16	53	86	38	2	44	46	93	16	9	20		89	8	16	15	28		40	39	61	327	28	36	77	95	113	29	22 Mustards... cabbage, cauliflower and broccoli
Clouded Sulphur*	<i>Colias philodice</i>	S5	35	37	17	40	38	29	15	12	11	37	62	25	18	30	11	27	14	11	80		33	21	32	31	23		23	37	24	105	58	57	32	45	41	21	17 Legumes... cultivated crops
Common Buckeye	<i>Junonia coenia</i>	SNR (G5)																															0		Uncommon breeding migrant				
Common Ringlet*	<i>Coenonympha tullia</i>	S5		1		1	3	3	2	1				3	11	18	3		1	15				8	49				20	66	4	7	14	13	7	10 Kentucky bluegrass			
Common Wood-Nymph*	<i>Cercyonis pegala</i>	S5			1	1	2	2	3	4	1									1																1 Grasses (Poaceae)			
Crescent species*	<i>Phyciodes</i> spp.	n/a	1																																				
Delaware Skipper*	<i>Anatrytone logan</i>	S4	2				2		1																												2 Big bluestem and old switch panicgrass		
Dun Skipper*	<i>Euphyes vestris</i>	S5		3		1																															1 Sedges: chufa flatsedge, sun sedge		
Duskywing species*																																							
Eastern Comma*	<i>Polygonia comma</i>	S5																																			Elm and nettle families: American elm, hops, nettle, false nettle, wood nettle		
Eastern Tailed Blue*	<i>Cupido comyntas</i>	S5	7	40	52	58	20	8	8	9	2	1	6	5	23	2	3	7	3	2		2	7	8	3	2		5	13	10		8	2	1	2 Clovers and legumes				
Eastern Tiger Swallowtail*	<i>Pterourus glaucus</i>	S5							1	1	1			1																					1 1 Trees... hop tree, cherries and ashes				
European Common Blue*	<i>Polymmatum icarus</i>	SNA			6	29	17	45	33					7	61	119	92	129	1		148	363	221	2	59		16	203			42	38	47	53	56 Alfalfa, clover, crown vetch (Burghardt et al. 2001), bird's-foot trefoil (many other legumes e.g. black medick)				
European Skipper*	<i>Thymelicus lineola</i>	SNA		5	1			1						1	5	3																		Grasses (Poaceae) prefers common timothy					
Giant Swallowtail*	<i>Papilio cresphontes</i>	S4																																	Common prickly ash and common hop tree				
Grass Skipper species*	Hesperiinae family	n/a								1		4	1			1				1														2	Violets				
Great-spangled Fritillary*	<i>Speyeria cybele</i>	S5																																					
Hobomok Skipper*	<i>Lon hobomok</i>	S5																																			1 Various grasses including panic grasses ( <i>Panicum</i> ) and blue grasses		
Lady species	<i>Vanessa</i> spp.	n/a		1																																			
Least Skipper*	<i>Ancyloxypha numitor</i>	S5																																			Grasses (Poaceae)		
Little Wood-Satyr*	<i>Megisto cymela</i>	S5																																		Grasses (Poaceae)... Kentucky bluegrass and orchard grass			
Little Yellow	<i>Pyrisitia lisa</i>	SNA																																		2 A variety of legumes (Fabaceae)			
Monarch	<i>Danaus plexippus</i>	S2N,S4B	3	46	280	49	68	39	14	26	6	5	28	79	11	44	43	13	23	11	12		40	24	13	20	10		2	9	4	38	227	7	46	11	11	11 Milkweeds	
Mourning Cloak*	<i>Nymphalis antiopa</i>	S5		1					1		1					1																			1 3 Trees... willows, elms, cottonwoods and hackberries				
Northern Broken-Dash*	<i>Wallengrenia egeremet</i>	S5		1																															1 1 Panic grasses: deertongue				
Northern Crescent*	<i>Phyciodes cocyta</i>	S5													1																				2 Asters				
Orange Sulphur	<i>Colias eurytheme</i>	S5	2	4	2	3	3	4		3	9	7	22	2	5	21		4	3	3																			

## Appendix 2. (cont'd)

S2N (non-breeding)-Imperiled-imperiled nationally because of rarity due to very restricted range, very few population (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation nationally
S3B (breeding)-Vulnerable-vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation
S4-Apparently secure-uncommon but not rare; some cause for long-term concern due to declines or other factors
S5-Secure-common, widespread, and abundant in Ontario
N5-Secure-common, widespread, and abundant in the nation
SNR-Unranked-provincial conservation status not yet assessed (G5-globally secure)
SNA-Not applicable-a <b>conservation status rank</b> is not applicable because the species is not a suitable target for conservation activities
*resident species



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