

Habitat Management Plan

Turville Point Conservation Park

August 2026



Plan originally adopted in 2019.

Site information

Address: 1155 Olin-Turville Court
Acreage: 64 acres
Acquired: Acquired in 1967
Watershed: Lake Monona, Yahara River
Site summary: Turville Point is named for the family that settled here and farmed the land between 1850 and 1950. They grew fruit and vegetables, then flowers, and likely grazed much of the woods. Traces of the homesteads and farm remain in earthwork, remnants of foundations and stone walls, and ornamental plantings that persist on the site. The property was designated a conservation park in 1998 and is being managed to provide oak woodland, oak opening and prairie habitats. The park has 2.5 miles of hiking trails that are groomed for cross-country skiing in the winter. Visitors can also enjoy scenic views of the city from the point. See Appendix A, Figure 1 for an overview of the park.
Adjacent lands: Adjacent natural areas and areas of ecological significance include Turville Bay on Lake Monona, and a 13-acre complex of Oak Opening habitat within adjacent Olin Park.
Alder District: District 14 – Alder Noah L. Lieberman

Madison Parks' [Land Management Plan](#) (2025) defines land cover categories found in the City's parklands and provides general parameters for their management. That document provides a foundation upon which more detailed, site-specific work plans can be built. Turville Point Conservation Park includes areas categorized as:

- Tallgrass Prairie and Oak Savanna
- Urban forest – *Woodlands*
- Wetlands and Waterfronts – *Lake shore*

Conservation values

Madison is located within the Southeast Glacial Plains Ecological Landscape as defined by the Wisconsin Department of Natural Resources in [The Ecological Landscapes of Wisconsin](#) (2015). The park itself is located on a bedrock promontory along the southwestern shore of Lake Monona, and the point defines the mouth of Turville Bay. Soil types include Dodge and McHenry series silt loams throughout most of the park, with Boyer sandy loam along the southwest edge, and Military loam along the steep east-facing slope above the lake. See Appendix A, Figure 2 for a soils map.

The land cover and habitats at Turville Point can be further described as the following Natural Communities, in part:

- Dry-Mesic Prairie
- Oak Opening
- Oak Woodland
- Southern Dry-Mesic Forest

These recognized Natural Communities described by the Wisconsin Natural Heritage Inventory help provide more technical and specific restoration targets based on the ecology of Wisconsin. These reference communities provide benchmarks that help guide ecologically appropriate restoration efforts. Descriptions for Wisconsin's Natural Communities can be accessed at: apps.dnr.wi.gov/biodiversity/Home/Index/Communities. Appendix A, Figure 3 is a map delineating the recognized Natural Communities in the park.

Data on species that occur in and around Turville Point was obtained from the Global Biodiversity Information Facility (GBIF), which curates datasets including the [EOD – eBird Observation Dataset](#) and [iNaturalist Research-grade Observations](#). See Appendix B for a list of all species documented in these data sets.

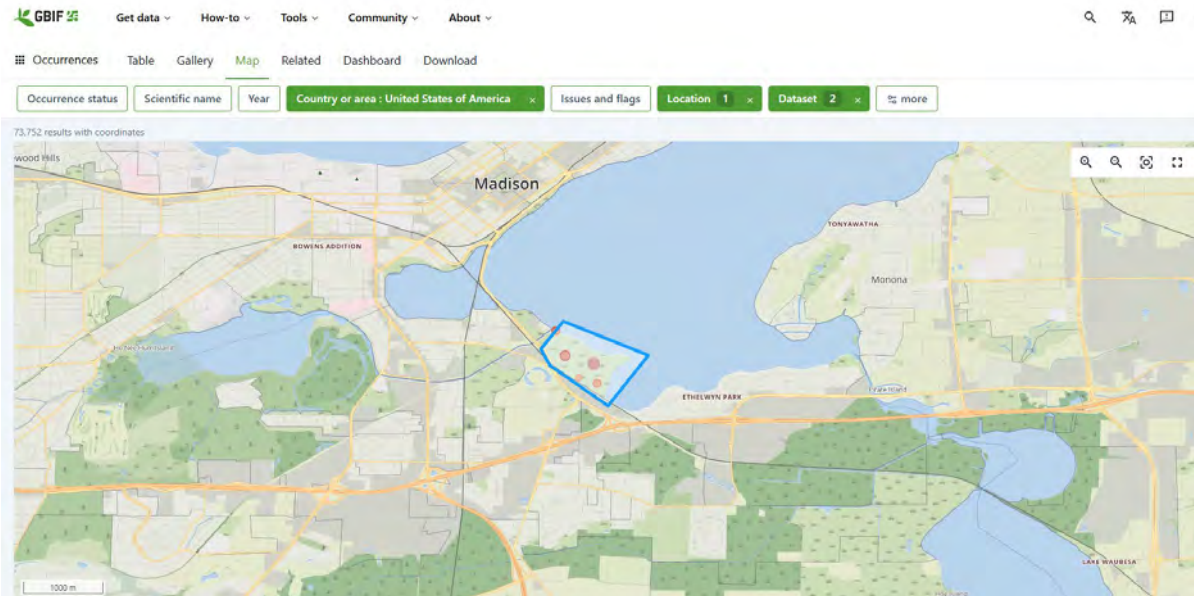


Figure 1. Map showing geographic extent of data obtained from GBIF.

The park is particularly valuable to migratory birds, as the upland natural area provides stopover habitat and a natural shoreline with less human activity along the bay. Several species of warblers (36), flycatchers (7) and other upland songbirds (14) have been observed within the park, and many waterfowl have been documented on nearshore waters in Lake Monona. This includes 33 species identified as [Species of Greatest Conservation Need](#) (SGCN) or Species of Greatest Information Need (SGIN) in Wisconsin's Wildlife Action Plan (DNR 2025). Of those, 21 are protected in Wisconsin and listed as Endangered, Threatened, or Special Concern.

By focusing on the most frequently observed SGCN and considering DNR Natural Community Association Scores for those species, we can select target species for which restoring and maintaining habitat requirements should be high priority. See table below.

The most frequently observed birds on migration include Ruby-crowned Kinglet, Swainson's Thrush, and Golden-winged Warbler. The most frequently observed birds that breed in this region include Cerulean Warbler and Common Nighthawk, followed by Worm-eating Warbler, Yellow-breasted Chat, and Eastern Meadowlark. These are all associated with the range of habitats present at Turville Point and in natural areas in adjacent Olin Park. Some may actually nest within the park, while others may eventually move to other sites to nest. A breeding bird survey of the park is needed.

While invasive species removal and canopy management are imperative for sustaining these habitats, goals should include maintaining vertical and horizontal structural diversity. A diverse age/diameter distribution of tree species will provide cover throughout all canopy layers, and maintaining stands of native shrub species such as chokecherry, bladdernut, and ninebark will ensure that some thickets are retained.

Species	common name	Number of Occurrences	WI Protected Status	Dry-Mesic Prairie	Oak Opening	Oak Woodland	Southern Dry-Mesic Forest	Notes
<i>Corthylio calendula</i>	Ruby-crowned Kinglet	542	SC/M					migrating to northwoods
<i>Catharus ustulatus</i>	Swainson's Thrush	491	SC/M					migrating to northwoods
<i>Vermivora chrysoptera</i>	Golden-winged Warbler	163	SC/M					migrating to pine barrens
<i>Contopus cooperi</i>	Olive-sided Flycatcher	21	SC/M					migrant
<i>Geothlypis formosa</i>	Kentucky Warbler	20	THR				3	migrating to northwoods
<i>Oporornis agilis</i>	Connecticut warbler	7	SC/M					migrating to northwoods
<i>Setophaga cerulea</i>	Cerulean Warbler	51	THR			3	3	breeding
<i>Chordeiles minor</i>	Common Nighthawk	32	SC/M	2	2			breeding
<i>Helmitheros vermivorum</i>	Worm-eating Warbler	4	END			2	3	breeding
<i>Icteria virens</i>	Yellow-breasted Chat	4	SC/M	2	1		1	breeding
<i>Sturnella magna</i>	Eastern Meadowlark	1	SC/M	3	2			breeding
<i>Sterna forsteri</i>	Forster's Tern	34	END					associated with lake
<i>Falco peregrinus</i>	Peregrine Falcon	25	END					associated with lake
<i>Podiceps grisegena</i>	Red-necked Grebe	19	END					associated with lake, migrating
<i>Anas rubripes</i>	Black Duck	14	SC/M					associated with lake
<i>Hydroprogne caspia</i>	Caspian Tern	11	END					associated with lake, migrating
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	5	SC/M					associated with lake
<i>Chlidonias niger</i>	Black Tern	4	END					associated with lake
<i>Sterna hirundo</i>	Common Tern	2	END					associated with lake

Table 1. Most frequently observed SGCN. Habitat association scores are shown in relevant columns under the natural communities listed. 1 = low/species present in this habitat; 2 = moderate/important; 3 = high/major

Although not captured in the GBIF datasets, an acoustic bat survey conducted in 2016 detected the presence of Little Brown Bat (*Myotis lucifugus*) and Big Brown Bat (*Eptesicus fuscus*), which are both SGCN and listed as "Threatened" in Wisconsin. Both are considered habitat generalists, and the Little Brown Bat has an association score of "1" for Oak Opening, Oak Woodland, and Southern Dry-Mesic Forest.

Native plant species have been re-established throughout most of the former crop field and across significant portions of woodlands that had been degraded. Particularly healthy native herbaceous plant communities are found along the southwestern side of the park (Pennsylvania sedge and other open oak woodland species), on the point (spring ephemerals), and in the prairie in the center of the park. Areas north and west of the house sites are recovering from weed infestations but need additional seeding and planting.

Conservation values at Turville Point also include significant cultural resources. A fur-trader's cabin was once located here along a trail used by the Ho Chunk. The trail led to a communal canoe livery that was used to cross the lake to Frost Woods and other settlements and camps in what is now Monona (Shutvet, personal communication). Remnants of the Turville family vegetable and flower farm (circa 1854-1951) remain today, and portions of the park include legally protected archaeological sites. Please refer to the Friends of Olin-Turville website for an extensive history of the park.

Ecological threats

Lack of adequate fire – While non-native shrub cover has been greatly reduced in recent years, a robust native plant community with an adequate proportion of grasses and sedges is still being established. Legacy effects of fire suppression and non-conservation land uses will subside as canopy management, prescribed burning, and seeding efforts continue, allowing prescribed fires to achieve more desired effects, which in turn will enhance and support a fire-dependent plant community that is more conducive to fire. Frequent prescribed fire is necessary as this positive feedback loop is restored to the landscape.

Invasive species - Major non-native species include garlic mustard, dame's rocket, daylily, burdock, Himalayan pokeweed, buckthorn, and honeysuckle. A smaller amount of Asian bittersweet, periwinkle, scilla and Japanese knotweed occur here as well. Although native, an aspen clone in the east end of the prairie should be managed, considering the small size of the park and limited area available for maintaining larger-scale habitat features such as these.

Oak decline – Oak decline is widespread in the parks system and in southern Wisconsin. Older, overcrowded trees succumb to the combination of biotic and abiotic stressors such as drought, pests and diseases. This results in the loss of individual trees and the reduction in oak as a genus across the landscape. Managing for a multi-aged stand with an open canopy will help individual trees be more resilient to stressors.

Foraging – Foraging is rampant at this and many other conservation parks. With no coordination to ensure sustainable harvest, over collecting is known to decimate populations of native plants. Many of these populations are already isolated and particularly vulnerable due to habitat fragmentation. While prohibited by MGO 8.40 and indicated on signs posted at park entrances, staff frequently discover evidence of plant and mushroom harvest and often encounter people off trail and in the process of collecting plants and mushrooms.

Conservation goals

1. Restore and maintain Oak Woodland.

Oaks are keystone species. The legacy ecological effects of European settlement and the subsequent fire-suppression and species introduction have resulted in degraded oak woodland plant communities in which mesophication has begun or become established. Priorities for management include retention of oak species dominance, re-establishing structural diversity throughout the canopy, promoting oak regeneration, and re-establishing the native herbaceous plant community.

2. Expand and maintain diverse Dry-Mesic Prairie and Oak Opening habitats.

Recent efforts to reduce warm season grass dominance through growing season burns and establishment of hemi-parasitic species have yielded a more balanced, diverse plant community. Woody encroachment and invasive species remain a threat in pockets within the prairie and within the ecotone with the surrounding oak woodland.

3. Retain the small pocket of Dry-mesic Forest habitat.

Although small, the dry-mesic forest in the northern part of the park provides increased structural diversity and important habitat, especially for migrating birds.

Management considerations

Madison Parks' vision is "to provide the ideal system of parks, natural resources and recreational opportunities which will enhance the quality of life for everyone." Ord. 8.40, Preservation of Conservation Parks, includes, "It is important to the residents of Madison that the City preserve Madison's native landscapes, its plant and animal populations for residents' careful use and full enjoyment."

In pursuit of this, we strive to balance ecological management needs with the needs of the community. Ecological management at Turville Point should consider the following:

Smoke management - The park is situated just east of John Nolen Drive and is bordered by several hotels. The "Beltline" Hwy12/18 passes through a valley between three knobs approximately 0.3 mile south of the park, and downtown Madison lies just over 1 mile NNW across Lake Monona. This limits acceptable wind directions for conducting prescribed burns. Careful burn execution and proactive stakeholder outreach are crucial for limiting impacts and sustaining public acceptance of this management practice.

Snag management – Red-headed Woodpeckers, Barred Owls, and other cavity-nesting and snag-dependent species have been documented in the park. Care shall be taken to retain this ecological resource where they can be safely left to decay naturally. Snags will be removed when they are located near trails or pose a safety hazard to staff and volunteers.

Management History

Tallgrass prairie was established on former cropland in the west central portion of the park in 1983 and expanded to its current acreage in 1990. Occasional prescribed burns and minor efforts to control invasive shrubs such as bush honeysuckle and common buckthorn occurred from 1996 through 2010. The Madison Police Department led a major effort in 2010-11 to remove brush, improve visibility, and make the park less inviting to illicit activities. Oaks and native shrubs were planted in 2012 and 2013.

Since then, the Parks Division has managed native and non-native shrub cover with a combination of mowing, grazing, cut-stump treatments, and prescribed burning. Regular, systematic management of invasive herbaceous species and Asian bittersweet began in 2016 and is ongoing. Excessive woody debris has accumulated from the legacy of fire suppression, lack of canopy management, and the death of several hundred ash trees from Emerald Ash Borer in the 2010s. Efforts to reduce the woody debris load have been ongoing in the 2020s.

Friends of Olin-Turville

The Friends of Olin-Turville was established in 2010 "to preserve and improve the parks' facilities and landscapes and encourage the community to rediscover the beauty and unique offerings of these two historic parks." (Friends of Olin-Turville, 2019) The organization accomplishes this not only through a series of entertainment events, but also through outreach and restoration efforts. Members lead several tours and volunteer workdays each year at Turville Point to promote the park and support Parks staff in ecological management and restoration.

Members have been and will continue to be an invaluable resource for monitoring and controlling invasive plants throughout the park, including buckthorn, burdock, garlic mustard, and Japanese hedge parsley. They have also helped re-establish native species by planting and tending oak trees and herbaceous plants in the woodland and prairie.

Woodland Data Analysis

An inventory of all trees 6 inches diameter and larger was conducted in 2024 and recorded in TreeKeeper. Data was then cross-referenced with GIS layers to provide a broad analysis of the woodlands in the park, which were delineated into three land cover polygons. Polygons were assigned “Asset ID” numbers of MV0587, MV0588, and MV0589.

The majority of Oak Woodland in the park is encompassed in polygon MV0588. Data analysis reveals that the overstory canopy is dominated by red, bur, and white oak, as well as faster growing basswood and black cherry which presumably have filled canopy gaps in the absence of fire. Looking at the ten most abundant species detected in the inventory, these oaks together comprise 37% of trees 12 inches diameter and larger. Of note, shagbark hickory comprises 10% of this size class.

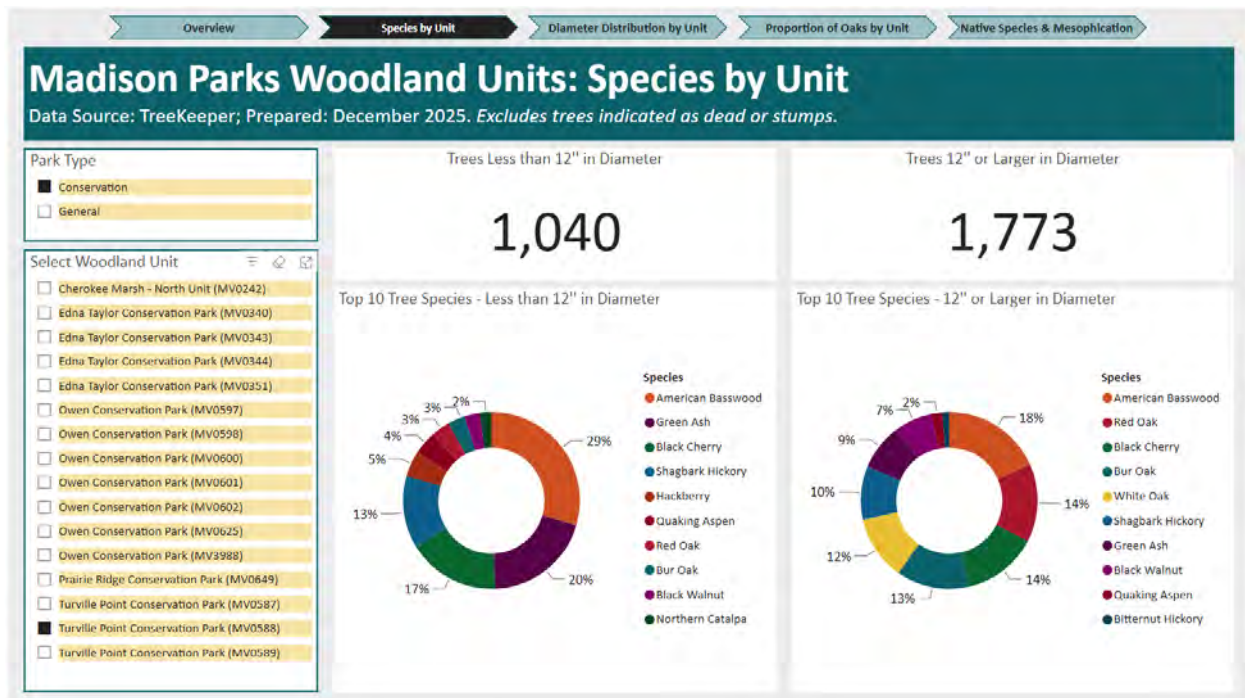


Figure 2

Oaks are underrepresented in younger cohorts, and mesophication is illustrated by the dominance of basswood, ash, and black cherry, which together comprise 66% of the ten most abundant species smaller than 12 inches diameter. While shagbark hickory comprises 13% of trees in this size class, oaks comprise just 6.3%, just 60 individuals across this 46-acre polygon. This is insufficient to maintain oak as a component of the woodland. This is more clearly illustrated in the bar graph below (Figure 3), which illustrates the proportional loss of oak in smaller size classes.

This is also illustrated in the line graph below (Figure 4), which shows the diameter distribution of oak versus all other species. With sufficient oak recruitment the curve for oak would track parallel to the curve for all other species. Related, the shape of the curve shows an excess of trees in approximately the 12-inch and 20-inch diameter size classes. A classic stable diameter distribution for uneven aged stands (populations of trees) is a “reverse-J shaped curve, which plots abundant saplings that develop under a midstory that is not overcrowded.

While this general population analysis is critical, it is important to note that it does not convey the horizontal spatial diversity of the park. The western portion of the park has widely spaced bur oak trees characteristic of Oak Opening habitat, but also has an area dominated by 12”-20” diameter black walnut that are encroaching into this and the Dry-mesic prairie habitat. The point features a mature red oak overstory that has become closed with 6”-16” diameter basswood. Management prescriptions for canopy

management must be specific and consider the mosaic of cover and species dominance present across the park. Despite advanced mesophication in some pockets of remnant oak canopy, conditions are favorable for restoring and maintaining Oak Woodland at Turville Point. Much progress has been made in removing invasive shrubs and restoring an understory structure that is conducive to both fire management and oak regeneration.

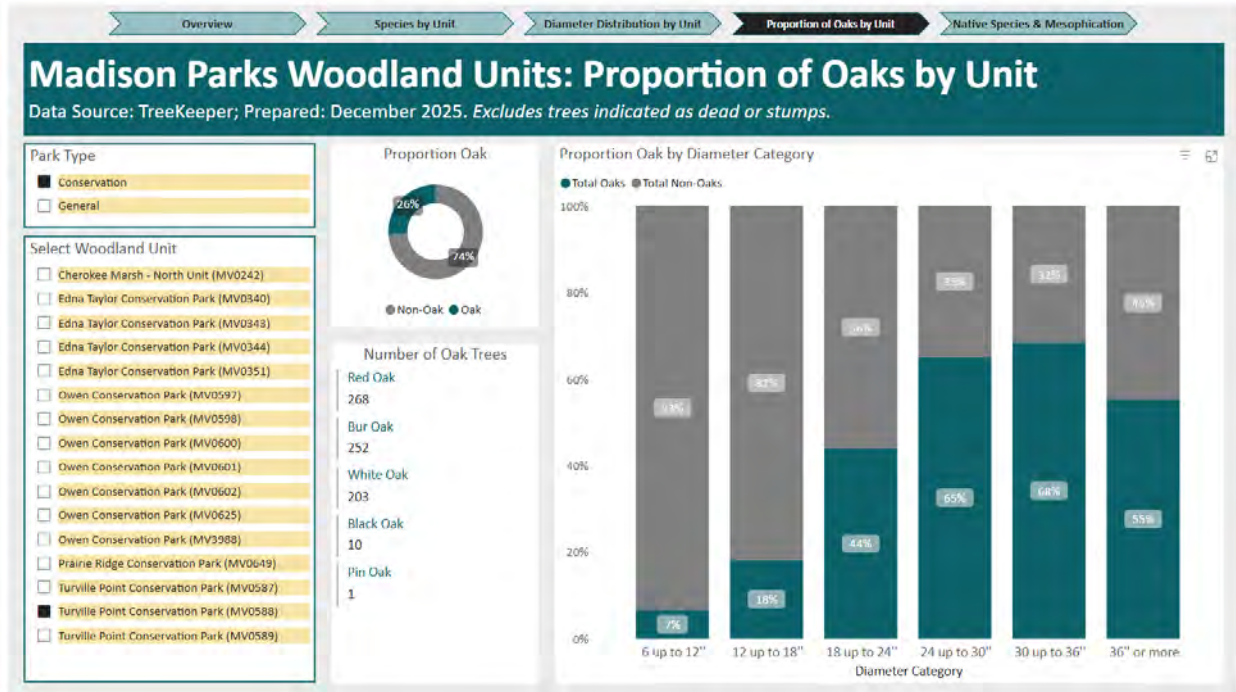


Figure 3.

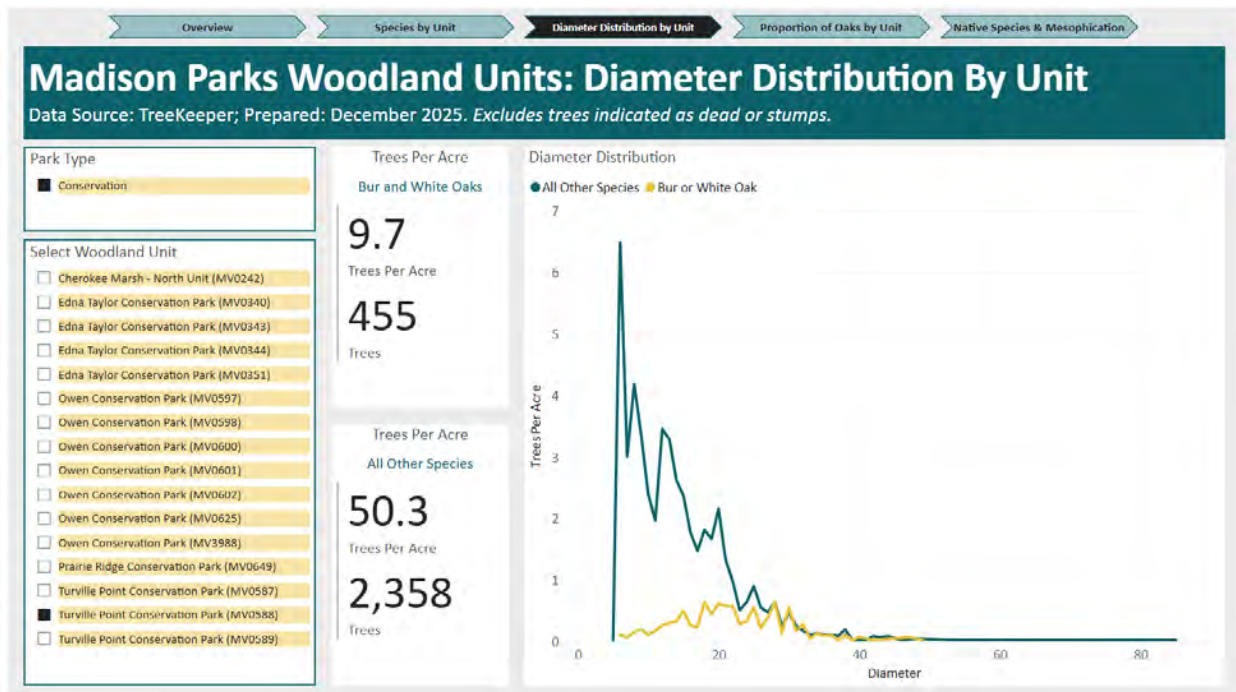


Figure 4.

Management Units

Please refer to Appendix A, Figure 4 for a map of management units.

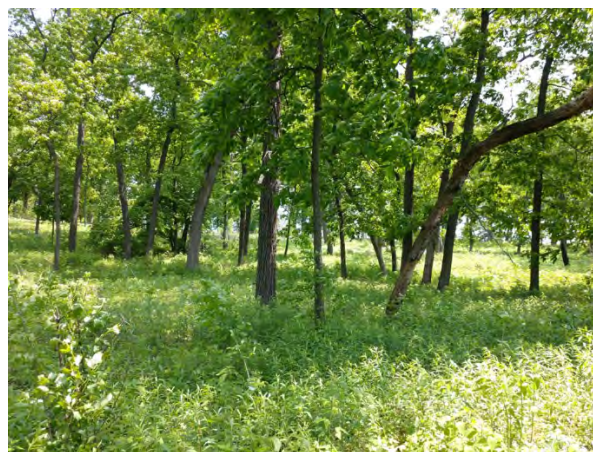
North Unit (17 ac) Oak Woodland and Dry-Mesic Forest dominated by walnut, basswood and red oak, with very little bur and white oak (3% of all trees $\geq 6"$ dbh). The northernmost end of this unit [Land Cover polygon MV0589] can be characterized as Dry-Mesic Forest with a closed canopy dominated by basswood, followed by ash and red oak. Moving southward, [Land Cover polygon MV0587] the canopy is much more open and the overstory becomes dominated by black walnut and red oak becomes more dominant (22% of trees $\geq 12"$ dbh). This unit contains several introduced trees and herbaceous plant species associated with the former homestead and flower farm. Much progress has been made in reducing dame's rocket and garlic mustard and establishing a more diverse native plant community.

Lakeshore Unit (12 ac) Dense woodland (approaching Dry-mesic Forest) on the point, with many mature red oak and basswood forming a nearly closed canopy. Healthy populations of trout lily, toothwort, Dutchman's breeches, and other spring ephemerals occur on the point and extend southward along the lowland. Chokecherry and American hophornbeam are plentiful. Moving southward, the overstory becomes more open and dominated by ash and black cherry in an area that was obviously more open in the past. The steep east-facing slope in the southern end of this unit is characterized by very open, mature oak woodland.

South Unit (20 ac) Oak Woodland with several large open-grown bur and white oaks. Overstory canopy density is variable, but many areas are fairly open. Targeted canopy management will ensure desired species composition and structural diversity. Herbaceous invasive species have been reduced in recent years, but more work remains. In many areas, there are roust populations of wild geranium, yellow giant hyssop, upland joe-pye weed, may apple, Jacob's ladder, and wild senna.

West Unit (10 ac) Oak Woodland on the west edge of the park adjacent to a degraded wetland and pond in the south end of Olin Park. Characterized as Oak Opening where woodland transitions to prairie. Some dead ash remain standing on the west-facing slope in this unit, but most have fallen or been removed at this point. Herbaceous layer has responded well to prescribed grazing to control woody species dominance. Fire and seeding are needed to increase diversity. Understory shrubs include elderberry, chokecherry and bladdernut.

Prairie Unit (5 ac) Dry-Mesic Prairie habitat in west central portion of park. Generally very diverse, although the southeast portion has an abundance of Canada goldenrod, and pockets of brush and daylilies occur in the middle and northeast portion of the unit.



The West Unit features woodland with an open understory and recovering native herbaceous plant community.

Objectives

The following objectives are recommended to repair and sustain the natural communities at this site:

- Continued control of invasive shrubs and invasive herbaceous species.
- Maintain 70 -100% native overstory canopy cover in areas delineated as Southern Dry-Mesic Forest.
- Canopy management (selective thinning) to reverse mesophication, allow oak regeneration, and maintain oak species dominance in Oak Woodland: Achieve and maintain 50%-70% overstory canopy cover in areas delineated as Oak Woodland.
- Use tree inventory data to develop tree cutting plans for specific work areas. Hire logger or firewood producer to implement selective thinning and apply value of resource recovery against cost of removals - *i.e.* sell trees identified for removal rather than paying to haul and dispose of them.
- Establish and maintain a minimum of 10% native shrub cover, measured in individual management units, in areas delineated as Oak Woodland
- Limit native woody species cover to 2% or less in areas delineated as Dry-Mesic Prairie, and 10% or less in areas delineated as Oak Opening.
- Sow native seed to increase diversity and augment native plant communities.
- Establish and maintain oak regeneration throughout the diameter distribution in Oak Opening and Oak Woodland habitats.
- Conduct prescribed burns. Burn prairie on a 2-3 year return interval. (Allow 2 growing seasons between burns.) Burn no more than ½ of prairie habitat in one season to conserve invertebrate diversity. Burn woodland units on a minimum 3-year return interval. (Allow 3 growing seasons between burns.)

Specific Management Unit Prescriptions:

Timeline	Unit(s)	Task
Fall 2026	West North	Spray biennial rosettes (<i>staff, contract</i>)
Winter 2027	South	Woody invasive control (<i>contract- PO 25002845 Good Oak</i>)
	North Lakeshore	Woody debris removal (<i>contract- PO 26001871 Boley TLC</i>)
	West	Canopy management – land cover unit [MV0588] Remove 50% of black walnut >12" dbh Remove 75% each of the following species 6"-12" dbh: ash, basswood, black cherry
Spring 2027	South	Rx burn
	Lakeshore South	Spray or hand pull garlic mustard, dame's rocket and burdock (<i>staff, volunteers, and contract</i>)
Summer 2027	North Lakeshore	Dig to eradicate Himalayan pokeweed (<i>staff, volunteers</i>) Reduce cover of American pokeweed to allow richer native species establishment
	North South	Cut and spray Japanese knotweed, Asian bittersweet
Fall 2027	Prairie	Rx burn
	Lakeshore South	Spray biennial rosettes (<i>staff</i>)
	West	Collect and sow acorns (<i>volunteers</i>)

Timeline	Unit(s)	Task
Winter 2028	Lakeshore	Canopy management – land cover unit [MV0588] Remove 50% of basswood, ash, and black cherry 6"-16" dbh Focus on point and lowlands
Winter 2028 (continued)	North	Canopy management – land cover unit [MV0587] Remove 50% of black walnut and basswood >12" dbh Remove 75% each of the following species 6"-12" dbh: ash, basswood, hackberry, box elder
Spring 2028	West	Rx burn, sow seed mix
	North	Plant 2" diameter bur and white oak (<i>volunteers</i>)
Summer 2028	West	control flush of <i>Rubus</i> and herbaceous species (burdock, garlic mustard, dame's rocket, pokeweed)
	North Lakeshore	Dig to eradicate Himalayan pokeweed (<i>staff, volunteers</i>) Reduce cover of American pokeweed
	North South	Cut and spray Japanese knotweed, Asian bittersweet
Fall 2028	North	Collect and sow acorns (<i>volunteers</i>) Spray biennial rosettes (<i>staff</i>)
	West	Sow seed mix
Winter 2029	South	Canopy management – land cover unit [MV0588] Remove 50% of basswood and black cherry >12" dbh Remove 75% each of the following species 6"-12" dbh: ash, basswood, black cherry
Spring 2029	Lakeshore North	Rx burn
	West	Plant 2" diameter bur and white oak (<i>volunteers</i>)
Summer 2029	Lakeshore	control flush of <i>Rubus</i> and herbaceous species (burdock, garlic mustard, dame's rocket, pokeweed)
Fall 2029	Lakeshore West	Spray biennial rosettes (<i>staff</i>)
	Lakeshore North	Sow seed mix
Winter 2030	all	No actions planned
Spring 2030	Prairie South	Rx Burn
	South West	Spray or hand pull garlic mustard, dame's rocket and burdock (<i>staff and contract</i>)
Summer 2030	South	control flush of <i>Rubus</i> and herbaceous species (burdock, garlic mustard, dame's rocket, pokeweed)
Fall 2030	Lakeshore	Collect and sow acorns (<i>volunteers</i>)
	all	Plant native shrub species to augment populations where needed
Spring 2031	Lakeshore West	Rx burn
	all	Spray or hand pull garlic mustard, dame's rocket and burdock (<i>staff and volunteers</i>)
Fall 2031	all	Conduct tree inventory (<i>contract or volunteers</i>)

Monitoring and Evaluation

Measuring results is critical to determining success. Refer to Appendix C for an outline of the goals for monitoring natural areas in Madison Parks.

Parks staff currently have limited capacity to conduct monitoring. However, the Parks Division is supported by a network of volunteers and researchers. Community science programs collect data on sensitive ecological indicators and provide crucial information on which to base management decisions. Volunteers should be encouraged to participate in the Wisconsin Bumble Bee Brigade program, and track observations of plants and animals in iNaturalist.

A few key metrics that should be tracked at Turville Point include canopy cover (in all layers), tree population characteristics such as diameter distribution and species composition, plant and animal diversity, and breeding bird species presence and abundance.

More effort is needed to document bats, amphibians, reptiles, and insects in the park. Staff should actively engage volunteers to conduct Bumble Bee Brigade monitoring here.

Budget

The work outlined in this plan is accomplished through financial and in-kind support from the City's General Operating budget, special Capital Improvement Project funding, and volunteer labor.

:

Task	Labor required (staff and volunteer hours only)	Annual cost (includes labor, materials, and contracts)
Prescribed burn	70	\$5,000
Prescribed graze (average 10 ac per year)	30	\$13,000
Native seed, plugs, trees	30	\$5,000
Invasive species control - contracted (average 25 acres per year @\$700/ac)	-	\$17,500
Invasive species control – in-house (average 20 acres per year @\$30/hr)	400	\$12,000
Woody debris management	80	\$15,000
Monitoring (@ \$25/hr)	40	\$1,000
Trail maintenance and repair (@ \$20/hr plus materials)	40	\$800
Totals		\$69,300

Citations

Friends of Olin-Turville. 2019. olin-turville.org/ Accessed February 1, 2019.

GBIF.org (31 July 2026) GBIF Occurrence Download <https://doi.org/10.15468/dl.sr7cf8>

Madison General Ordinance 8.40, Preservation of Conservation Parks
https://library.municode.com/wi/madison/codes/code_of_ordinances?nodeId=COORMAWIVOICH1--10_CH8PUPR_8.40PRCOPA

Madison Parks. 2025. *City of Madison, Parks Division Land Management Plan*. City of Madison, Parks Division, Madison. <https://www.cityofmadison.com/parks/documents/LandMgmPlanAdopted2025.pdf>

Shutvet, R. 2019. Personal communication.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <https://websoilsurvey.nrcs.usda.gov/>. Accessed July 231, 2026.

Wisconsin Department of Natural Resources. 2015. *The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Chapter 18, Southeast Glacial Plains Ecological Landscape. Wisconsin Department of Natural Resources, PUB-SS-1131T 2015, Madison, WI.

Wisconsin Department of Natural Resources. 2025. Wisconsin Wildlife Action Plan 2025 - 2035. Wisconsin Department of Natural Resources, PUB-NH-951 2025, Madison.

Document History

This Habitat Management Plan is consistent with Madison Parks' Land Management Plan. This Habitat Management Plan has 5-year lifespan and should be reviewed yearly. It can be revised whenever new information is discovered. If no changes have been made, it should be updated in its 5th year.

Version	Description
2/1/2019	First draft, presented to FOOT
2/12/2019	Minor edits made, presented to HSC
8/10/2026	Updated plan

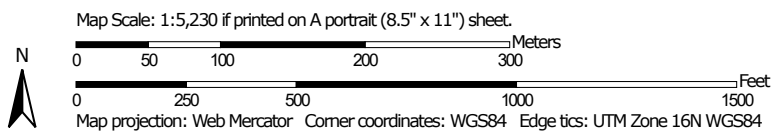
Appendices

- A. Maps
 - Figure 1. Park Overview
 - Figure 2. Soils Map
 - Figure 3. Natural Communities
 - Figure 4. Management Units
 - Figure 5. Recent Prescribed Burns
 - Figure 6. Vegetation Monitoring Transects
- B. Species Lists
- C. Natural Areas Monitoring Goals
- D. Example Tree Cutting Plan

Figure 1. Turville Point: Park Overview



Soil Map—Dane County, Wisconsin (Turville Point Conservation Park)



Soil Map—Dane County, Wisconsin
(Turville Point Conservation Park)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dane County, Wisconsin

Survey Area Data: Version 24, Sep 10, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2022—Sep 13, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7124B	Dodge silt loam, 2 to 6 percent slopes	24.7	40.5%
7310C2	McHenry silt loam, 6 to 12 percent slopes, eroded	24.7	40.4%
7325B	Dresden silt loam, 2 to 6 percent slopes	0.3	0.5%
7706C2	Boyer sandy loam, 6 to 12 percent slopes, eroded	5.9	9.7%
7804D2	Military loam, 12 to 20 percent slopes, eroded	5.4	8.8%
Totals for Area of Interest		61.0	100.0%

Figure 3. Turville Point: Natural Communities



Figure 4. Turville Point: Management Units



Figure 5. Turville Point: Recent Prescribed Burns



Figure 6. Turville Point: Vegetation Monitoring Transects



Appendix B. - Species List

Source: [GBIF.org \(31 July 2026\) GBIF Occurrence Download https://doi.org/10.15468/dl.sr7cf8](https://doi.org/10.15468/dl.sr7cf8)

SGCN = Species of Greatest Conservation Need
SGIN-M - Species of Greatest Information Need - Monitoring

Protected Status (Wisconsin):
END = Endangered
THR = Threatened
SC/M = Special Concern/Monitoring

Order	Family	Species	# of Occurrences	SGCN	Protected Status	introduced
Arachnids						
Araneae	Araneidae	Araneus diadematus	1			
Araneae	Tetragnathidae	Tetragnatha sp.	2			
Ixodida	Ixodidae	Dermacentor variabilis	1			
Opiliones	Phalangidae	Phalangium opilio	3			
Trombidiformes	Eriophyidae	Eriophyes tiliae	1			
Trombidiformes	Phytoptidae	Phytoptus abnormis	1			
Insects						
Coleoptera	Buprestidae	Agrilus subcinctus	1			
Coleoptera	Chrysomelidae	Chrysochus auratus	1			
Coleoptera	Coccinellidae	Coccinella septempunctata	1			
Coleoptera	Coccinellidae	Coleomegilla maculata	1			
Coleoptera	Chrysomelidae	Diabrotica undecimpunctata	1			
Coleoptera	Coccinellidae	Harmonia axyridis	2			
Coleoptera	Curculionidae	Hormorus undulatus	1			
Coleoptera	Curculionidae	Polydrusus formosus	3			
Coleoptera	Coccinellidae	Propylea quatuordecimpunctata	4			
Coleoptera	Chrysomelidae	Pyrrhalta viburni	1			
Coleoptera	Cerambycidae	Tetraopes tetrophthalmus	1			
Coleoptera	Chrysomelidae	Trirhabda canadensis	6			
Diptera	Cecidomyiidae	Asphondylia helianthiglobulus	1			
Diptera	Rhagionidae	Chrysopilus thoracicus	2			
Diptera	Syrphidae	Eristalis transversa	1			
Diptera	Conopidae	Myopa clausa	1			
Diptera	Tipulidae	Nephrotoma ferruginea	1			
Diptera	Syrphidae	Philhelius flavipes	1			
Diptera	Conopidae	Physocephala tibialis	1			
Diptera	Rhagionidae	Rhagio mystaceus	2			
Diptera	Empididae	Rhamphomyia longicauda	1			
Diptera	Cecidomyiidae	Rhopalomyia capitata	1			
Diptera	Cecidomyiidae	Rhopalomyia solidaginis	1			
Diptera	Cecidomyiidae	Schizomyia eupatoriiflorae	1			
Diptera	Syrphidae	Toxomerus gemminata	1			
Hemiptera	Cicadellidae	Graphocephala coccinea	1			
Hemiptera	Aphalaridae	Pachypsylla celtidisvesicula	1			
Hemiptera	Miridae	Poecilocapsus lineatus	4			
Hymenoptera	Apidae	Apis mellifera	1			
Hymenoptera	Apidae	Bombus auricomus	1			
Hymenoptera	Apidae	Bombus bimaculatus	1			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Hymenoptera	Apidae	Bombus griseocollis	3			
Hymenoptera	Apidae	Bombus impatiens	4			
Hymenoptera	Formicidae	Camponotus americanus	1			
Hymenoptera	Formicidae	Camponotus pennsylvanicus	3			
Hymenoptera	Vespidae	Dolichovespula maculata	1			
Hymenoptera	Vespidae	Parazumia symmorphia	1			
Hymenoptera	Peleciniidae	Pelecinus polyturator	1			
Hymenoptera	Formicidae	Prenolepis imparis	3			
Lepidoptera	Geometridae	Campaea perlata	1			
Lepidoptera	Nymphalidae	Danaus plexippus	1			
Lepidoptera	Depressariidae	Depressaria depressana	1			
Lepidoptera	Erebidae	Euchaetes egle	3			
Lepidoptera	Erebidae	Hypena scabra	1			
Lepidoptera	Nymphalidae	Lethe anthedon	1			
Lepidoptera	Nymphalidae	Limenitis arthemis	1			
Lepidoptera	Papilionidae	Papilio glaucus	2			
Lepidoptera	Nymphalidae	Phyciodes coccyta	1			
Lepidoptera	Pieridae	Pieris rapae	2			
Lepidoptera	Nymphalidae	Polygonia comma	2			
Lepidoptera	Pyrilidae	Pyrilis farinalis	1			
Lepidoptera	Nymphalidae	Vanessa virginiensis	1			
Mantodea	Mantidae	Tenodera sinensis	1			
Odonata	Aeshnidae	Anax junius	1			
Odonata	Coenagrionidae	Enallagma geminatum	1			
Odonata	Coenagrionidae	Ischnura verticalis	5			
Odonata	Libellulidae	Plathemis lydia	1			
Odonata	Libellulidae	Sympetrum obtrusum	1			
Odonata	Libellulidae	Sympetrum vicinum	1			
Amphibians						
Anura	Bufonidae	Anaxyrus americanus	1			
Birds						
Passeriformes	Fringillidae	Acanthis flammea	4			
Accipitriformes	Accipitridae	Accipiter striatus	19	SGIN-M		
Charadriiformes	Scolopacidae	Actitis macularius	191			
Podicipediformes	Podicipedidae	Aechmophorus occidentalis	30			
Passeriformes	Icteridae	Agelaius phoeniceus	1349			
Anseriformes	Anatidae	Aix sponsa	563			
Anseriformes	Anatidae	Anas acuta	5			
Anseriformes	Anatidae	Anas crecca	22			
Anseriformes	Anatidae	Anas platyrhynchos	2157			
Anseriformes	Anatidae	Anas rubripes	14	SGCN	SC/M	
Anseriformes	Anatidae	Anser anser	1			
Anseriformes	Anatidae	Anser caerulescens	1			
Anseriformes	Anatidae	Anser rossii	1			
Passeriformes	Motacillidae	Anthus rubescens	7			
Gruiformes	Gruidae	Antigone canadensis	234			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Apodiformes	Trochilidae	Archilochus colubris	127			
Pelecaniformes	Ardeidae	Ardea alba	18	SGIN-M	THR	
Pelecaniformes	Ardeidae	Ardea herodias	374			
Accipitriformes	Accipitridae	Astur cooperii	194			
Anseriformes	Anatidae	Aythya affinis	278			
Anseriformes	Anatidae	Aythya americana	136			
Anseriformes	Anatidae	Aythya collaris	88			
Anseriformes	Anatidae	Aythya marila	20			
Anseriformes	Anatidae	Aythya valisineria	77			
Passeriformes	Paridae	Baeolophus bicolor	184			
Passeriformes	Bombycillidae	Bombycilla cedrorum	740			
Anseriformes	Anatidae	Branta canadensis	1538			
Anseriformes	Anatidae	Branta hutchinsii	12			
Strigiformes	Strigidae	Bubo scandiacus	5			
Strigiformes	Strigidae	Bubo virginianus	362			
Anseriformes	Anatidae	Bucephala albeola	592			
Anseriformes	Anatidae	Bucephala clangula	373			
Accipitriformes	Accipitridae	Buteo jamaicensis	945			
Accipitriformes	Accipitridae	Buteo lagopus	3			
Accipitriformes	Accipitridae	Buteo platypterus	26			
Pelecaniformes	Ardeidae	Butorides virescens	74			
Passeriformes	Parulidae	Cardellina canadensis	62	SGIN-M		
Passeriformes	Parulidae	Cardellina pusilla	63			
Passeriformes	Cardinalidae	Cardinalis cardinalis	2018			
Accipitriformes	Cathartidae	Cathartes aura	363			
Passeriformes	Turdidae	Catharus fuscescens	153			
Passeriformes	Turdidae	Catharus guttatus	277			
Passeriformes	Turdidae	Catharus minimus	80			
Passeriformes	Turdidae	Catharus ustulatus	491	SGCN	SC/M	
Passeriformes	Certhiidae	Certhia americana	341			
Apodiformes	Apodidae	Chaetura pelagica	467	SGIN-M		
Charadriiformes	Charadriidae	Charadrius semipalmatus	1			
Charadriiformes	Charadriidae	Charadrius vociferus	246			
Charadriiformes	Laridae	Chlidonias niger	4	SGCN	END	
Caprimulgiformes	Caprimulgidae	Chordeiles minor	32	SGCN	SC/M	
Charadriiformes	Laridae	Chroicocephalus philadelphia	65			
Accipitriformes	Accipitridae	Circus hudsonius	9	SGIN-M		
Passeriformes	Troglodytidae	Cistothorus platensis	5			
Anseriformes	Anatidae	Clangula hyemalis	26			
Cuculiformes	Cuculidae	Coccyzus americanus	22			
Cuculiformes	Cuculidae	Coccyzus erythrophthalmus	16			
Piciformes	Picidae	Colaptes auratus	1461			
Columbiformes	Columbidae	Columba livia	105			
Passeriformes	Tyrannidae	Contopus cooperi	21	SGCN	SC/M	
Passeriformes	Tyrannidae	Contopus virens	605			
Passeriformes	Regulidae	Corthylio calendula	542	SGCN	SC/M	
Passeriformes	Corvidae	Corvus brachyrhynchos	955			
Passeriformes	Corvidae	Cyanocitta cristata	1823			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Anseriformes	Anatidae	Cygnus buccinator	4			
Anseriformes	Anatidae	Cygnus columbianus	85			
Anseriformes	Anatidae	Cygnus olor	1			
Passeriformes	Icteridae	Dolichonyx oryzivorus	2	SGIN-M		
Piciformes	Picidae	Dryobates pubescens	1920			
Piciformes	Picidae	Dryocopus pileatus	20			
Passeriformes	Mimidae	Dumetella carolinensis	1188			
Passeriformes	Tyrannidae	Empidonax alnorum	26			
Passeriformes	Tyrannidae	Empidonax flaviventris	13			
Passeriformes	Tyrannidae	Empidonax minimus	334			
Passeriformes	Tyrannidae	Empidonax traillii	22			
Passeriformes	Tyrannidae	Empidonax virescens	5			
Passeriformes	Icteridae	Euphagus carolinus	9			
Falconiformes	Falconidae	Falco columbarius	15			
Falconiformes	Falconidae	Falco peregrinus	25	SGCN	END	
Falconiformes	Falconidae	Falco sparverius	5			
Gruiformes	Rallidae	Fulica americana	478			
Gaviiformes	Gaviidae	Gavia immer	764			
Gaviiformes	Gaviidae	Gavia pacifica	5			
Gaviiformes	Gaviidae	Gavia stellata	6			
Passeriformes	Parulidae	Geothlypis formosa	20	SGCN	THR	
Passeriformes	Parulidae	Geothlypis philadelphia	22			
Passeriformes	Parulidae	Geothlypis trichas	429			
Passeriformes	Fringillidae	Haemorhous mexicanus	807			
Passeriformes	Fringillidae	Haemorhous purpureus	28			
Accipitriformes	Accipitridae	Haliaeetus leucocephalus	309			
Passeriformes	Parulidae	Helmitheros vermivorum	4	SGCN	END	
Passeriformes	Hirundinidae	Hirundo rustica	489			
Charadriiformes	Laridae	Hydroprogne caspia	11	SGCN	END	
Passeriformes	Turdidae	Hylocichla mustelina	155			
Passeriformes	Icteriidae	Icteria virens	4	SGCN	SC/M	
Passeriformes	Icteridae	Icterus galbula	972			
Passeriformes	Icteridae	Icterus spurius	105			
Passeriformes	Passerellidae	Junco hyemalis	610	SGIN-M		
Passeriformes	Laniidae	Lanius borealis	3			
Charadriiformes	Laridae	Larus delawarensis	1347			
Charadriiformes	Laridae	Larus fuscus	1			
Charadriiformes	Laridae	Larus glaucoides	2			
Charadriiformes	Laridae	Larus hyperboreus	2			
Charadriiformes	Laridae	Larus smithsonianus	576			
Passeriformes	Parulidae	Leiostyris celata	118			
Passeriformes	Parulidae	Leiostyris peregrina	616			
Passeriformes	Parulidae	Leiostyris ruficapilla	472			
Piciformes	Picidae	Leuconotopicus villosus	4			
Charadriiformes	Laridae	Leucophaeus pipixcan	1			
Anseriformes	Anatidae	Lophodytes cucullatus	205			
Passeriformes	Fringillidae	Loxia leucoptera	1			
Anseriformes	Anatidae	Mareca americana	68			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Anseriformes	Anatidae	Mareca strepera	358			
Coraciiformes	Alcedinidae	Megasceryle alcyon	454			
Strigiformes	Strigidae	Megascops asio	1			
Piciformes	Picidae	Melanerpes carolinus	2181			
Piciformes	Picidae	Melanerpes erythrocephalus	343	SGIN-M		
Anseriformes	Anatidae	Melanitta americana	2			
Anseriformes	Anatidae	Melanitta deglandi	15			
Anseriformes	Anatidae	Melanitta perspicillata	2			
Galliformes	Phasianidae	Meleagris gallopavo	380			
Passeriformes	Passerellidae	Melospiza georgiana	60			
Passeriformes	Passerellidae	Melospiza lincolnii	64			
Passeriformes	Passerellidae	Melospiza melodia	1180			
Anseriformes	Anatidae	Mergus merganser	254			
Anseriformes	Anatidae	Mergus serrator	197			
Passeriformes	Parulidae	Mniotilta varia	402			
Passeriformes	Icteridae	Molothrus ater	894			
Passeriformes	Tyrannidae	Myiarchus crinitus	650			
Suliformes	Phalacrocoracidae	Nannopterum auritum	82			
Pelecaniformes	Ardeidae	Nycticorax nycticorax	5	SGCN	SC/M	
Passeriformes	Parulidae	Oporornis agilis	7	SGCN	SC/M	
Anseriformes	Anatidae	Oxyura jamaicensis	190			
Accipitriformes	Pandionidae	Pandion haliaetus	344			
Passeriformes	Parulidae	Parkesia motacilla	6	SGIN-M		
Passeriformes	Parulidae	Parkesia noveboracensis	188			
Passeriformes	Passeridae	Passer domesticus	510			
Passeriformes	Passerellidae	Passerculus sandwichensis	16			
Passeriformes	Passerellidae	Passerella iliaca	123			
Passeriformes	Cardinalidae	Passerina cyanea	380			
Pelecaniformes	Pelecanidae	Pelecanus erythrorhynchos	256			
Passeriformes	Hirundinidae	Petrochelidon pyrrhonota	31			
Galliformes	Phasianidae	Phasianus colchicus	2			
Passeriformes	Cardinalidae	Pheucticus ludovicianus	750			
Passeriformes	Passerellidae	Pipilo erythrophthalmus	263			
Passeriformes	Cardinalidae	Piranga olivacea	224			
Passeriformes	Cardinalidae	Piranga rubra	9			
Podicipediformes	Podicipedidae	Podiceps auritus	173			
Podicipediformes	Podicipedidae	Podiceps grisegena	19	SGCN	END	
Podicipediformes	Podicipedidae	Podiceps nigricollis	4			
Podicipediformes	Podicipedidae	Podilymbus podiceps	299			
Passeriformes	Paridae	Poecile atricapillus	2219			
Passeriformes	Poliophtidae	Poliophtila caerulea	710			
Passeriformes	Passerellidae	Poecetes gramineus	2	SGIN-M		
Passeriformes	Hirundinidae	Progne subis	85	SGIN-M		
Passeriformes	Parulidae	Protonotaria citrea	42	SGIN-M		
Passeriformes	Icteridae	Quiscalus quiscula	1042			
Passeriformes	Regulidae	Regulus satrapa	420			
Passeriformes	Hirundinidae	Riparia riparia	34	SGIN-M		
Passeriformes	Tyrannidae	Sayornis phoebe	396			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Charadriiformes	Scolopacidae	Scolopax minor	2			
Passeriformes	Parulidae	Seiurus aurocapilla	273			
Passeriformes	Parulidae	Setophaga aestiva	2			
Passeriformes	Parulidae	Setophaga americana	217			
Passeriformes	Parulidae	Setophaga caerulescens	14			
Passeriformes	Parulidae	Setophaga castanea	169			
Passeriformes	Parulidae	Setophaga cerulea	51	SGCN	THR	
Passeriformes	Parulidae	Setophaga citrina	2	SGIN-M	THR	
Passeriformes	Parulidae	Setophaga coronata	1053			
Passeriformes	Parulidae	Setophaga fusca	153			
Passeriformes	Parulidae	Setophaga magnolia	348			
Passeriformes	Parulidae	Setophaga nigrescens	163			
Passeriformes	Parulidae	Setophaga palmarum	658			
Passeriformes	Parulidae	Setophaga pensylvanica	292			
Passeriformes	Parulidae	Setophaga petechia	883			
Passeriformes	Parulidae	Setophaga pinus	44			
Passeriformes	Parulidae	Setophaga ruticilla	582			
Passeriformes	Parulidae	Setophaga striata	257			
Passeriformes	Parulidae	Setophaga tigrina	100			
Passeriformes	Parulidae	Setophaga virens	276			
Passeriformes	Turdidae	Sialia sialis	425			
Passeriformes	Sittidae	Sitta canadensis	101			
Passeriformes	Sittidae	Sitta carolinensis	2070			
Anseriformes	Anatidae	Spatula clypeata	253			
Anseriformes	Anatidae	Spatula discors	128			
Piciformes	Picidae	Sphyrapicus varius	180			
Passeriformes	Fringillidae	Spinus pinus	22			
Passeriformes	Fringillidae	Spinus tristis	1635			
Passeriformes	Passerellidae	Spizella pallida	8			
Passeriformes	Passerellidae	Spizella passerina	247			
Passeriformes	Passerellidae	Spizella pusilla	69			
Passeriformes	Passerellidae	Spizelloides arborea	68			
Passeriformes	Hirundinidae	Stelgidopteryx serripennis	201			
Charadriiformes	Laridae	Sterna forsteri	34	SGCN	END	
Charadriiformes	Laridae	Sterna hirundo	2	SGCN	END	
Strigiformes	Strigidae	Strix varia	14			
Passeriformes	Icteridae	Sturnella magna	1	SGCN	SC/M	
Passeriformes	Sturnidae	Sturnus vulgaris	1064			
Passeriformes	Hirundinidae	Tachycineta bicolor	1182			
Passeriformes	Troglodytidae	Thryothorus ludovicianus	71			
Passeriformes	Mimidae	Toxostoma rufum	149			
Charadriiformes	Scolopacidae	Tringa flavipes	4			
Charadriiformes	Scolopacidae	Tringa melanoleuca	3			
Charadriiformes	Scolopacidae	Tringa solitaria	6			
Passeriformes	Troglodytidae	Troglodytes aedon	1101			
Passeriformes	Troglodytidae	Troglodytes hiemalis	67			
Passeriformes	Turdidae	Turdus migratorius	2178			
Passeriformes	Tyrannidae	Tyrannus tyrannus	575			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Passeriformes	Tyrannidae	Tyrannus verticalis	9			
Passeriformes	Parulidae	Vermivora chrysoptera	163	SGCN	SC/M	
Passeriformes	Parulidae	Vermivora cyanoptera	121			
Passeriformes	Vireonidae	Vireo flavifrons	144			
Passeriformes	Vireonidae	Vireo gilvus	615			
Passeriformes	Vireonidae	Vireo griseus	4			
Passeriformes	Vireonidae	Vireo olivaceus	409			
Passeriformes	Vireonidae	Vireo philadelphicus	23			
Passeriformes	Vireonidae	Vireo solitarius	92			
Columbiformes	Columbidae	Zenaida macroura	1302			
Passeriformes	Passerellidae	Zonotrichia albicollis	781			
Passeriformes	Passerellidae	Zonotrichia leucophrys	140			
Total bird species		219		33	21	
<i>Mammals</i>						
Rodentia	Castoridae	Castor canadensis	1			
Rodentia	Sciuridae	Marmota monax	9			
Artiodactyla	Cervidae	Odocoileus virginianus	13			
Rodentia	Cricetidae	Ondatra zibethicus	3			
Carnivora	Procyonidae	Procyon lotor	1			
Rodentia	Sciuridae	Sciurus carolinensis	4			
Lagomorpha	Leporidae	Sylvilagus floridanus	3			
Rodentia	Sciuridae	Tamias striatus	10			
<i>Mollusks</i>						
	Dreissenidae	Dreissena polymorpha	1			
		Lampsilis siliquoidea	4			
	Valvatidae	Valvata tricarinata	1			
<i>Fungi</i>						
	Nectriaceae	Fusicolla merismoides	2			
Agaricales	Lycoperdaceae	Calvatia gigantea	1			
Agaricales	Entolomataceae	Entoloma abortivum	1			
Agaricales	Mycenaceae	Mycena inclinata	1			
Agaricales	Omphalotaceae	Omphalotus illudens	1			
Agaricales	Pleurotaceae	Pleurotus citrinopileatus	2			
Agaricales	Schizophyllaceae	Schizophyllum commune	1			
Agaricales	Tricholomataceae	Tricholomopsis rutilans	1			
Auriculariales		Protohydnum album	1			
Boletales	Boletinellaceae	Boletinellus merulioides	1			
Polyporales	Polyporaceae	Cerioporus squamosus	5			
Polyporales	Polyporaceae	Daedaleopsis confragosa	1			
Polyporales	Polyporaceae	Ganoderma applanatum	1			
Polyporales	Grifolaceae	Grifola frondosa	1			
Polyporales	Polyporaceae	Neofavolus alveolaris	1			
Polyporales	Polyporaceae	Trametes hirsuta	1			
Polyporales	Polyporaceae	Trametes versicolor	1			
Pucciniales	Phragmidiaceae	Arthuriomyces peckianus	1			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Pucciniales	Pucciniaceae	Puccinia coronata	1			
Pucciniales	Pucciniaceae	Puccinia podophylli	7			
Pucciniales	Pucciniaceae	Uromyces ari-triphylli	1			
Russulales	Peniophoraceae	Peniophora rufa	1			
Venturiales	Venturiaceae	Apiosporina morbosa	4			
Total fungi species		23				
Plants						
Sapindales	Sapindaceae	Acer negundo	14			
Sapindales	Sapindaceae	Acer platanoides	2			x
Sapindales	Sapindaceae	Acer saccharinum	1			
Sapindales	Sapindaceae	Acer tataricum	1			x
Asterales	Asteraceae	Achillea millefolium	3			
Ranunculales	Ranunculaceae	Actaea rubra	1			
Sapindales	Sapindaceae	Aesculus glabra	12			x
Lamiales	Lamiaceae	Agastache scrophulariifolia	6			
Asterales	Asteraceae	Ageratina altissima	10			
Rosales	Rosaceae	Agrimonia gryposepala	3			
Lamiales	Lamiaceae	Ajuga reptans	2			x
Capparales	Brassicaceae	Alliaria petiolata	11			x
Asparagales	Amaryllidaceae	Allium burdickii	1			
Asparagales	Amaryllidaceae	Allium canadense	1			
Asterales	Asteraceae	Ambrosia artemisiifolia	1			
Asterales	Asteraceae	Ambrosia trifida	6			
Fabales	Fabaceae	Amphicarpaea bracteata	2			
Asterales	Asteraceae	Anacis tripteris	5			
Poales	Poaceae	Andropogon gerardi	4			
Ranunculales	Ranunculaceae	Anemone quinquefolia	31			
Ranunculales	Ranunculaceae	Anemone virginiana	5			
Fabales	Fabaceae	Apios americana	1			
Gentianales	Apocynaceae	Apocynum androsaemifolium	2			
Gentianales	Apocynaceae	Apocynum cannabinum	6			
Ranunculales	Ranunculaceae	Aquilegia canadensis	2			
Apiales	Araliaceae	Aralia racemosa	2			
Asterales	Asteraceae	Arctium lappa	5			x
Asterales	Asteraceae	Arctium minus	1			x
Alismatales	Araceae	Arisaema triphyllum	30			
Asterales	Asteraceae	Arnoglossum atriplicifolium	7			
Asterales	Asteraceae	Arnoglossum reniforme	1			
Piperiales	Asaraceae	Asarum canadense	3			
Gentianales	Apocynaceae	Asclepias syriaca	9			
Gentianales	Apocynaceae	Asclepias tuberosa	5			
Polypodiales	Athyriaceae	Athyrium angustum	3			
Fabales	Fabaceae	Baptisia lactea	1			
Fabales	Fabaceae	Baptisia leucophaea	1			
Capparales	Brassicaceae	Barbarea vulgaris	6			x
Asterales	Asteraceae	Bidens frondosa	1			
Lamiales	Lamiaceae	Blephilia hirsuta	7			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Asterales	Campanulaceae	Campanula rapunculoides	5			
Asterales	Campanulaceae	Campanulastrum americanum	8			
Capparales	Brassicaceae	Cardamine concatenata	43			
Poales	Cyperaceae	Carex blanda	2			
Poales	Cyperaceae	Carex sprengelii	13			
Fagales	Juglandaceae	Carya cordiformis	1			
Fagales	Juglandaceae	Carya ovata	7			
Lamiales	Bignoniaceae	Catalpa speciosa	6			
Celastrales	Celastraceae	Celastrus orbiculatus	2			x
Celastrales	Celastraceae	Celastrus scandens	1			
Rosales	Cannabaceae	Celtis occidentalis	16			
Fabales	Fabaceae	Cercis canadensis	1			
Fabales	Fabaceae	Chamaecrista fasciculata	1			
Asterales	Asteraceae	Cichorium intybus	1			x
Asterales	Asteraceae	Cirsium arvense	1			x
Asterales	Asteraceae	Cirsium discolor	8			
Asterales	Asteraceae	Cirsium vulgare	2			
Ranunculales	Ranunculaceae	Clematis virginiana	3			
Asparagales	Asparagaceae	Convallaria majalis	10			
Solanales	Convolvulaceae	Convolvulus arvensis	1			
Cornales	Cornaceae	Cornus alternifolia	1			
Cornales	Cornaceae	Cornus sericea	7			
Fagales	Betulaceae	Corylus americana	2			
Apiales	Apiaceae	Cryptotaenia canadensis	3			
Poales	Poaceae	Dactylis glomerata	1			x
Apiales	Apiaceae	Daucus carota	3			x
Poales	Poaceae	Diarrhena obovata	2			
Ranunculales	Papaveraceae	Dicentra cucullaria	30			
Dioscoreales	Dioscoreaceae	Dioscorea villosa	3			
Asterales	Asteraceae	Echinacea purpurea	11			
Cucurbitales	Cucurbitaceae	Echinocystis lobata	4			
Poales	Poaceae	Elymus hystrix	3			
Poales	Poaceae	Elymus repens	1			x
Poales	Poaceae	Elymus villosus	1			
Poales	Poaceae	Elymus virginicus	2			
Asterales	Asteraceae	Erigeron annuus	1			
Asterales	Asteraceae	Erigeron philadelphicus	1			
Apiales	Apiaceae	Eryngium yuccifolium	6			
Liliales	Liliaceae	Erythronium albidum	33			
Liliales	Liliaceae	Erythronium americanum	1			
Asterales	Asteraceae	Eupatorium perfoliatum	2			
Malpighiales	Euphorbiaceae	Euphorbia corollata	1			
Asterales	Asteraceae	Eutrochium maculatum	1			
Asterales	Asteraceae	Eutrochium purpureum	14			
Caryophyllales	Polygonaceae	Fallopia scandens	1			
Poales	Poaceae	Festuca subverticillata	1			
Lamiales	Oleaceae	Forsythia intermedia	1			x
Rosales	Rosaceae	Fragaria virginiana	2			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Rosales	Rhamnaceae	Frangula alnus	2			x
Lamiales	Oleaceae	Fraxinus pennsylvanica	3			
Asparagales	Amaryllidaceae	Galanthus nivalis	5			x
Gentianales	Rubiaceae	Galium aparine	6			
Gentianales	Rubiaceae	Galium odoratum	1			
Gentianales	Rubiaceae	Galium triflorum	2			
Gentianales	Gentianaceae	Gentiana alba	2			
Geraniales	Geraniaceae	Geranium maculatum	19			
Rosales	Rosaceae	Geum canadense	2			
Rosales	Rosaceae	Geum catlingii	2			
Lamiales	Lamiaceae	Glechoma hederacea	27			x
Fabales	Fabaceae	Gymnocladus dioicus	2			x
Asterales	Asteraceae	Helianthus grosseserratus	1			
Asterales	Asteraceae	Heliopsis helianthoides	5			
Asparagales	Asphodelaceae	Hemerocallis dumortieri	1			x
Apiales	Apiaceae	Heracleum maximum	8			
Capparales	Brassicaceae	Hesperis matronalis	31			x
Boraginales	Hydrophyllaceae	Hydrophyllum virginianum	22			
Fabales	Fabaceae	Hylodesmum glutinosum	3			
Malpighiales	Hypericaceae	Hypericum ascyron	3			
Malpighiales	Hypericaceae	Hypericum perforatum	1			x
Ericales	Balsaminaceae	Impatiens capensis	5			
Fagales	Juglandaceae	Juglans nigra	7			
Cupressales	Cupressaceae	Juniperus virginiana	2			
Asterales	Asteraceae	Lactuca canadensis	2			
Ranunculales	Papaveraceae	Lamprocapnos spectabilis	1			x
Pinales	Pinaceae	Larix decidua	1			x
Lamiales	Lamiaceae	Leonurus cardiaca	8			x
Asterales	Asteraceae	Leucanthemum vulgare	2			x
Asterales	Asteraceae	Liatris aspera	3			
Asterales	Asteraceae	Liatris pycnostachya	1			
Liliales	Liliaceae	Lilium michiganense	2			
Magnoliales	Magnoliaceae	Liriodendron tulipifera	1			
Asterales	Campanulaceae	Lobelia cardinalis	1			
Asterales	Campanulaceae	Lobelia siphilitica	1			
Dipsacales	Caprifoliaceae	Lonicera bella	1			x
Dipsacales	Caprifoliaceae	Lonicera morrowii	5			x
Dipsacales	Caprifoliaceae	Lonicera tatarica	1			x
Lamiales	Lamiaceae	Lycopus americanus	2			
Lamiales	Lamiaceae	Lycopus europaeus	1			x
Ericales	Primulaceae	Lysimachia ciliata	1			
Ericales	Primulaceae	Lysimachia nummularia	1			x
Asparagales	Asparagaceae	Maianthemum racemosum	4			
Asparagales	Asparagaceae	Maianthemum stellatum	9			
Polypodiales	Onocleaceae	Matteuccia struthiopteris	1			
Fabales	Fabaceae	Melilotus albus	1			x
Ranunculales	Menispermaceae	Menispermum canadense	5			
Boraginales	Boraginaceae	Mertensia virginica	39			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Lamiales	Lamiaceae	Monarda fistulosa	10			
Ericales	Ericaceae	Monotropa uniflora	4			
Rosales	Moraceae	Morus alba	1			x
Asparagales	Asparagaceae	Muscari botryoides	1			x
Malvales	Malvaceae	Napaea dioica	8			
Asparagales	Amaryllidaceae	Narcissus poeticus	11			x
Proteales	Nelumbonaceae	Nelumbo lutea	3			
Lamiales	Lamiaceae	Nepeta cataria	2			x
Myrtales	Onagraceae	Oenothera biennis	1			
Myrtales	Onagraceae	Oenothera gaura	4			
Asparagales	Asparagaceae	Ornithogalum umbellatum	2			x
Apiales	Apiaceae	Osmorhiza longistylis	3			
Fagales	Betulaceae	Ostrya virginiana	4			
Asterales	Asteraceae	Packera paupercula	1			
Poales	Poaceae	Panicum virgatum	2			
Asterales	Asteraceae	Parthenium integrifolium	1			
Vitales	Vitaceae	Parthenocissus quinquefolia	3			
Lamiales	Orobanchaceae	Pedicularis canadensis	4			
Lamiales	Plantaginaceae	Penstemon digitalis	1			
Caryophyllales	Polygonaceae	Persicaria hydropiper	2			
Caryophyllales	Polygonaceae	Persicaria lapathifolia	1			
Caryophyllales	Polygonaceae	Persicaria longiseta	2			
Caryophyllales	Polygonaceae	Persicaria maculosa	2			
Caryophyllales	Polygonaceae	Persicaria pensylvanica	2			
Caryophyllales	Polygonaceae	Persicaria punctata	1			
Caryophyllales	Polygonaceae	Persicaria virginiana	11			
Ericales	Polemoniaceae	Phlox divaricata	8			
Ericales	Polemoniaceae	Phlox paniculata	5			
Lamiales	Phrymaceae	Phryma leptostachya	5			
Caryophyllales	Phytolaccaceae	Phytolacca acinosa	20			x
Caryophyllales	Phytolaccaceae	Phytolacca americana	21			
Pinales	Pinaceae	Picea abies	2			x
Pinales	Pinaceae	Pinus resinosa	1			x
Pinales	Pinaceae	Pinus strobus	3			
Lamiales	Plantaginaceae	Plantago lanceolata	2			x
Ranunculales	Berberidaceae	Podophyllum peltatum	52			
Ericales	Polemoniaceae	Polemonium reptans	18			
Asparagales	Asparagaceae	Polygonatum biflorum	9			
Malpighiales	Salicaceae	Populus alba	1			x
Malpighiales	Salicaceae	Populus deltoides	7			
Malpighiales	Salicaceae	Populus grandidentata	1			
Malpighiales	Salicaceae	Populus tremuloides	5			
Rosales	Rosaceae	Potentilla indica	2			
Lamiales	Lamiaceae	Prunella vulgaris	1			
Rosales	Rosaceae	Prunus serotina	7			
Rosales	Rosaceae	Prunus virginiana	14			
Hypnales	Neckeraceae	Pseudanomodon attenuatus	1			
Lamiales	Lamiaceae	Pycnanthemum verticillatum	2			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Lamiales	Lamiaceae	Pycnanthemum virginianum	2			
Fagales	Fagaceae	Quercus alba	7			
Fagales	Fagaceae	Quercus ellipsoidalis	2			
Fagales	Fagaceae	Quercus macrocarpa	8			
Fagales	Fagaceae	Quercus rubra	2			
Ranunculales	Ranunculaceae	Ranunculus abortivus	3			
Ranunculales	Ranunculaceae	Ranunculus fascicularis	2			
Ranunculales	Ranunculaceae	Ranunculus recurvatus	1			
Asterales	Asteraceae	Ratibida pinnata	3			
Caryophyllales	Polygonaceae	Reynoutria japonica	3			x
Rosales	Rhamnaceae	Rhamnus cathartica	7			x
Sapindales	Anacardiaceae	Rhus glabra	3			
Sapindales	Anacardiaceae	Rhus typhina	3			
Saxifragales	Grossulariaceae	Ribes americanum	12			
Saxifragales	Grossulariaceae	Ribes rubrum	1			
Fabales	Fabaceae	Robinia pseudoacacia	1			x
Rosales	Rosaceae	Rosa multiflora	1			x
Rosales	Rosaceae	Rubus allegheniensis	3			
Rosales	Rosaceae	Rubus idaeus	1			
Rosales	Rosaceae	Rubus occidentalis	14			
Asterales	Asteraceae	Rudbeckia hirta	4			
Asterales	Asteraceae	Rudbeckia laciniata	2			
Asterales	Asteraceae	Rudbeckia subtomentosa	3			
Asterales	Asteraceae	Rudbeckia triloba	12			
Lamiales	Acanthaceae	Ruellia humilis	1			
Caryophyllales	Polygonaceae	Rumex crispus	1			x
Alismatales	Alismataceae	Sagittaria latifolia	2			
Malpighiales	Salicaceae	Salix interior	1			
Dipsacales	Viburnaceae	Sambucus canadensis	2			
Ranunculales	Papaveraceae	Sanguinaria canadensis	31			
Apiales	Apiaceae	Sanicula canadensis	1			
Asparagales	Asparagaceae	Scilla siberica	32			x
Lamiales	Scrophulariaceae	Scrophularia marilandica	2			
Fabales	Fabaceae	Senna hebecarpa	2			
Fabales	Fabaceae	Senna marilandica	4			
Poales	Poaceae	Setaria pumila	2			x
Caryophyllales	Caryophyllaceae	Silene stellata	2			
Asterales	Asteraceae	Silphium integrifolium	1			
Asterales	Asteraceae	Silphium laciniatum	4			
Asterales	Asteraceae	Silphium perfoliatum	5			
Liliales	Smilacaceae	Smilax lasioneuron	1			
Solanales	Solanaceae	Solanum dulcamara	12			x
Asterales	Asteraceae	Solidago altissima	1			
Asterales	Asteraceae	Solidago flexicaulis	7			
Asterales	Asteraceae	Solidago rigida	4			
Asterales	Asteraceae	Sonchus arvensis	1			x
Rosales	Rosaceae	Sorbaria sorbifolia	1			x
Poales	Poaceae	Sorghastrum nutans	3			

Order	Family	Species	# of Occurrences	Protected		
				SGCN	Status	introduced
Crossosomatales	Staphyleaceae	Staphylea trifolia	20			
Asterales	Asteraceae	Symphyotrichum ericoides	1			
Asterales	Asteraceae	Symphyotrichum lateriflorum	1			
Asterales	Asteraceae	Symphyotrichum novae-angliae	10			
Asterales	Asteraceae	Symphyotrichum pilosum	1			
Asterales	Asteraceae	Symphyotrichum prenanthoides	1			
Asterales	Asteraceae	Symphyotrichum puniceum	1			
Asterales	Asteraceae	Symphyotrichum urophyllum	1			
Asterales	Asteraceae	Taraxacum officinale	3			
Lamiales	Lamiaceae	Teucrium canadense	1			
Cupressales	Cupressaceae	Thuja occidentalis	6			
Malvales	Malvaceae	Tilia americana	27			
Sapindales	Anacardiaceae	Toxicodendron rydbergii	1			
Commelinales	Commelinaceae	Tradescantia ohiensis	1			
Asterales	Asteraceae	Tragopogon dubius	2			x
Fabales	Fabaceae	Trifolium pratense	1			x
Fabales	Fabaceae	Trifolium repens	3			x
Liliales	Melanthiaceae	Trillium flexipes	1			
Liliales	Melanthiaceae	Trillium grandiflorum	1			
Liliales	Melanthiaceae	Trillium recurvatum	6			
Liliales	Liliaceae	Tulipa sylvestris	15			x
Poales	Typhaceae	Typha latifolia	1			
Rosales	Ulmaceae	Ulmus americana	6			
Rosales	Urticaceae	Urtica gracilis	1			
Liliales	Colchicaceae	Uvularia grandiflora	15			
Lamiales	Scrophulariaceae	Verbascum thapsus	3			x
Lamiales	Verbenaceae	Verbena hastata	2			
Lamiales	Verbenaceae	Verbena urticifolia	2			
Lamiales	Plantaginaceae	Veronicastrum virginicum	4			
Dipsacales	Viburnaceae	Viburnum opulus	13			
Fabales	Fabaceae	Vicia sativa	1			
Gentianales	Apocynaceae	Vinca minor	4			
Malpighiales	Violaceae	Viola communis	6			
Malpighiales	Violaceae	Viola eriocarpa	5			
Malpighiales	Violaceae	Viola striata	16			
Vitales	Vitaceae	Vitis riparia	3			
Apiales	Apiaceae	Zizia aurea	7			
Total plant species		269				57

Appendix C. Madison Parks Natural Areas Monitoring Goals

August 2023

Monitoring is necessary to track the success of restoration efforts as well as the overall quality of the habitat being managed. Data collected can quantify results, show trends in natural area health, and reveal potential concerns. The following framework identifies some possible monitoring subjects and strategies. Objectives and tasks can be implemented and completed as staff and volunteer capacity allow.

Much information can be gained by engaging and supporting various formal community science programs, and less formal community-populated databases. Data from many of these are accessible from the individual host organizations, as well as through clearing houses such as the [Global Biodiversity Information Facility \(GBIF\)](#). Many volunteers currently conduct monitoring within conservation parks and other natural areas. These programs are recognized below as well.

Taxa: Plants

Objectives:

1. Complete and update species inventories for each park, and each management unit where applicable (Managed Meadow, Woodland, management unit within a conservation park, etc.).

Tasks:

- a. Conduct meander surveys three times during the growing season to compile and update plant species list.
2. Determine and track floristic quality in managed natural areas
- Tasks:*
- a. Establish permanent transects with randomized 1m² plots (quadrats)
 - b. Survey quadrats and record percent cover of each species present.
 - c. Analyze data to calculate species richness, diversity, and Floristic Quality Index.

Taxa: Insects

Objectives:

1. Complete overall species inventory per park

Tasks:

- a. Conduct daytime surveys with sweep nets
 - b. Conduct nighttime surveys with light traps
 - c. Conduct surveys of soil surface insect fauna
2. Monitor pollinator abundance and species composition

Tasks:

- a. Collect data using [Wisconsin Bumble Bee Brigade](#) protocols
- b. Support the [Integrated Monarch Monitoring Program](#)
- c. Collect data using Pollard transects to target butterflies
- d. Support the [Wisconsin Odonata Survey](#)

Taxa: Herptiles

Objectives:

1. Complete overall species inventory per park

Tasks:

- a. Conduct surveys with funnel traps

2. Conduct breeding survey

Tasks:

- a. Establish [Wisconsin Frog and Toad Survey](#) phenology survey locations where appropriate

Taxa: Birds

Objectives:

1. Conduct surveys and document species present.
2. Analyze data available from [eBird](#) through the [Global Biodiversity Information Facility \(GBIF\)](#)

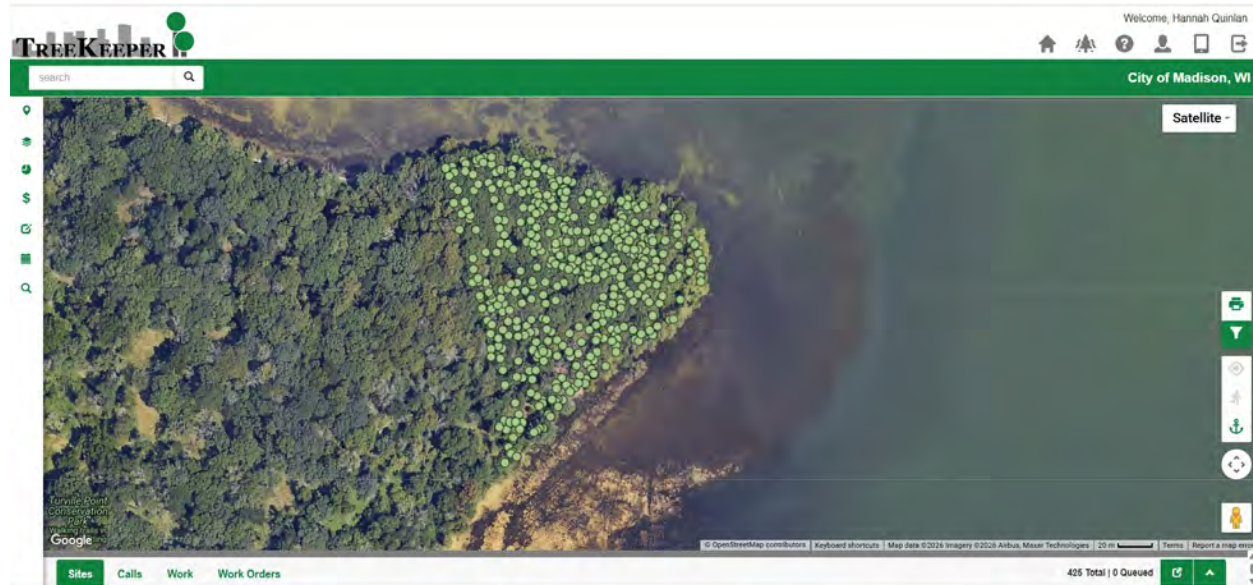
Tasks:

- a. Download data sets for each park

Appendix D.

Example of specific tree removal plan based on tree inventory data.

1. In TreeKeeper, select trees within specific target area. The point in the Lakeshore Unit is shown here.
2. Generate table showing numbers of trees by species and diameter
3. Analyze to select proportion and diameter of each species to remove



Count of Diameter	Diameter (inches)																																																totals					
Species	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	48																		
American Basswood (Tilia americana)	38	25	30	17	14	9	19	11	15	15	2	9	3	7	6	2	3		2	1	3	1	1		1	4	1	1							1		1	242	80% of basswood are 16" dbh or smaller Remove 50% of basswood, ash, and black cherry 6"-16" dbh 80% of red oak are 20" diameter or larger															
Green Ash (Fraxinus pennsylvanica)	6	7	5	1	3	1		1	2	3	1		2	1	1																						34																	
Black Cherry (Prunus serotina)	3				3	1	3	2							1													1									14																	
Red Oak (Quercus rubra)	1							2	1	1	3	1	3	3	2	9	6	3	9	8	6	5	2	3	2	3	2		2	1	1	2	1				82																	
Eastern Cottonwood (Populus deltoides)																1			1	1	2	1			1	1				1						9																		
Shagbark Hickory (Carya ovata)				2	1	1	1	1	2				1																								9																	
Bur Oak (Quercus macrocarpa)															1		1	1		1					1								1		1	7																		
Hackberry (Celtis occidentalis)	1			1	2		1	1						1																						7																		
Ironwood (Ostrya virginiana)	2	1		1				1																												5																		
White Oak (Quercus alba)													1	1	1	1				1																5																		
Northern Catalpa (Catalpa speciosa)	2		1																																	3																		
Bitternut Hickory (Carya cordiformis)				1									1																							2																		
Unknown Tree (Unknown Tree)			1								1																										2																	
White Mulberry (Morus alba)	1	1																																			2																	
Black Walnut (Juglans nigra)													1																								1																	
Willow Spp. (Salix Species)		1																																			1																	
(blank)																																																						
Total number of trees	54	35	37	23	23	12	24	19	20	20	6	10	10	13	14	12	11	5	12	12	11	6	3	4	5	7	3	2	3	1	1	2	2	1	1	1	425																	