

Final Report for Franklin Creek State Natural Area
Botanical Inventory and Natural Community Mapping Project



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INTRODUCTION

Franklin Creek State Natural Area (FCSNA) is a 932-acre site located in Lee County, Illinois owned by the Illinois Department of Natural Resources (Figure 1.). It contains a north and south unit, separated by Old Mill Road, and most of the property is a dedicated nature preserve. It occurs entirely within the Oregon Section of the Rock River Hill Country Natural Division, which is notable for the exposure of New Richmond sandstone, the oldest exposed rock formation in the state. Exposures of St. Peter sandstone and Shakopee dolomite are also present within the preserve.

A portion of the current nature preserve was dedicated as the 24th Illinois Nature Preserve with final approval granted in 1970 (Bittner 1995). It is recognized as a significant natural area for its undisturbed bedrock exposures, glacial drift hill prairies, and high quality forests (Szafoni 1987). Many adjacent parcels were later acquired and added to the nature preserve.

This is an INAI site (#1068) evaluated by Fran Harty and Robin Moran in 1977. It qualified as a category III site (Illinois Nature Preserve) and a category IV site (outstanding geologic feature) for the exposure of New Richmond sandstone. The authors also noted the presence of exceptional features like a grade A sandstone cliff and grade C glacial drift hill prairie. Other natural communities documented during the 1977 survey include dry-mesic upland forest, mesic upland forest, dry upland forest, mesic bottomland forest, perennial stream, and successional field, although none have been delineated as high quality natural communities according to INAI survey standards and protocols.

Later it was added as a category II site for the presence of threatened or endangered species when a specimen of *Cystopteris laurentiana* collected from the site was annotated by Robin Moran (see Appendix). A 1987 report mentions the need for a complete inventory of heritage resources to document “additional natural values which may occur on the site” (Szafoni 1987). This report serves as that inventory and one new heritage record, an occurrence for *Eurybia furcata*, resulted from the 2018 survey.

METHODS

A comprehensive inventory of all the highest quality areas within the FCSNA, which is mostly the nature preserve within the southern unit of the FCSNA, was performed on five separate visits on the following 9 dates in 2018: May 6, 7, June 12, 13, July 17, 18, August 11, 12, and October 2. Not all areas within the FCSNA were surveyed, but in general the south unit was extensively investigated and all the highest quality areas were closely examined. These remnants yielded the most conservative plant species for the inventory.

Five species lists were created based on the highest quality natural communities at the site: one for the entire site, one for the steep slopes and cliffs, one for the seeps, one for the hill prairies, and one for the savannas by Twist Road and Franklin Creek.

The steep slopes and rock outcrops harbored the most conservative species, including some northern species at the southern edge of their range, and were grouped together. Many of the species on this list are located on the forested slope to the south and east of Mill Spring, but

many small and isolated cliff exposures occur throughout the southern unit. These areas host rich displays of spring ephemerals, ferns, and woodland sedges such as wild ginger (*Asarum canadense*), red and white baneberry (*Actaea* spp.), bishops cap (*Mitella diphylla*), bellwort (*Uvularia grandiflora*), blue ash (*Fraxinus quadrangulata*), liverleaf (*Hepatica acutiloba*), shooting star (*Dodecatheon meadia*), leatherwood (*Dirca palustris*), American spikenard (*Aralia racemosa*), pagoda dogwood (*Cornus alternifolia*), Canada yew (*Taxus canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), white bear sedge (*Carex albursina*), gray sedge (*Carex amphibola*), and curly-styled wood sedge (*Carex rosea*).

Another list was created for the seep communities within the southern unit. The main seep is located below HP1, but there are two other seep communities: one by Mill Spring and one north of Franklin Creek in a bend of the creek near the Husar barn. The seep communities are dominated by skunk cabbage (*Symplocarpus foetidus*), with scattered individuals of other wetland species like orange jewelweed (*Impatiens capensis*), water cress (*Nasturtium officinale**), fowl manna grass (*Glyceria striata*), and lake sedge (*Carex lacustris*).

Another list was generated based on the glacial drift hill prairie openings. The highest quality glacial drift hill prairie is located at the eastern end of the south unit, referred to as HP1. Another hill prairie occurs on the south side of the river in this area, as well as one by a clearing on the north side of the river off the Husar trail. The hill prairies are dominated by side oats grama (*Bouteloua curtipendula*), pale purple coneflower (*Echinacea pallida*), violet wood sorrel (*Oxalis violacea*), blue-eyed grass (*Sisyrinchium albidum*), common milkweed (*Asclepias syriaca*), mullein foxglove (*Dasistoma macrophylla*), hairy petunia (*Ruellia humilis*), tall anemone (*Anemone virginiana*), and various grass and sedge species.

Another list was generated for the cliffs north of Franklin Creek and west of Twist Road. This area is identified as Savanna because it has a few open grown oaks and is full of prairie grass in between the widely spaced trees. This degraded opening is much lower in natural quality than the other areas where lists were made, but it was unique and easy to access so a separate list was made.

All other species observed within the FCSNA were added to the comprehensive list along with the species observed in the forested slopes/cliffs, hill prairies, and seeps. All the tables list scientific names and Coefficient of Conservatism values (C-values) according to the nomenclature used in the Flora of the Chicago Region (Wilhelm and Reicher, 2017). Lists were generated using the FQA calculator (Freyman *et al.* 2016).

A GPS unit recorded tracks for some of the surveys and provides a general idea of the terrain covered during the inventory (Figure 4.). In addition to species lists, natural communities were delineated and graded in order to provide some guidance in restoration efforts. Aerial imagery used in the maps is from ESRI (Source imagery: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.).

*denotes non-native species

RESULTS

Plant Inventory

A total of 392 plant species were observed during the inventory of the FCSNA and 325 species (83.3%) are native to Illinois (Table 1.). There are two taxa not included in the FQA database for taxonomic reasons and are therefore not included in the metrics: *Oryzopsis racemosa* and *Trillium recurvatum* f. *luteum*. Species observed with a C value of 7-10 represent 24.9% of the species encountered and species with a C value of 10 include *Actaea rubra*, *Adiantum pedatum*, *Aralia racemosa*, *Asarum canadense*, *Asclepias exaltata*, *Asimina triloba*, *Asplenium rhizophyllum*, *Aureolaria grandiflora* var. *pulchra*, *Bromus pubescens*, *Carex amphibola*, *Carex careyana*, *Cornus alternifolia*, *Cystopteris bulbifera*, *Deparia acrostichoides*, *Dichanthelium linearifolium*, *Dirca palustris*, *Echinacea pallida*, *Endodeca serpentaria*, *Eurybia furcata*, *Galium circaezans*, *Heuchera richardsonii*, *Leersia lenticularis*, *Mitella diphylla*, *Morus rubra*, *Muhlenbergia sobolifera*, *Pellaea glabella*, *Polypodium virginianum*, *Scutellaria elliptica* var. *hirsuta*, *Selaginella rupestris*, *Taxus canadensis*, and *Woodsia obtusa*. Additionally, 21 species of sedges in the genus *Carex* were identified during the survey. The complete list of species and other conservation metrics are listed in Table 1.

A total of 162 plant species were observed in the slope and cliff communities in the southern portion of the FCSNA and 146 species (91.3%) are native to Illinois (Table 2.). Two taxa are not included in this database for taxonomic reasons and are therefore not included in the analyses: *Oryzopsis racemosa* and *Trillium recurvatum* f. *luteum*. Species observed with a C value of 7-10 represent 33.8% of the species encountered and species with a C value of 10 include *Actaea rubra*, *Adiantum pedatum*, *Aralia racemosa*, *Asarum canadense*, *Asclepias exaltata*, *Asplenium rhizophyllum*, *Carex amphibola*, *Cornus alternifolia*, *Cystopteris bulbifera*, *Dirca palustris*, *Endodeca serpentaria*, *Eurybia furcata*, *Galium circaezans*, *Leersia lenticularis*, *Mitella diphylla*, *Muhlenbergia sobolifera*, *Scutellaria elliptica* var. *hirsuta*, *Taxus canadensis*. The complete list of species encountered in the slope and cliff communities in the southern portion of the FCSNA and other conservation metrics are listed in Table 2.

A total of 49 plant species were observed in the seep communities in the southern portion of the FCSNA and 41 species (83.7%) are native to Illinois (Table 3.). Species observed with a C value of 7-10 represent 16.3% of the species encountered and include *Angelica atropurpurea*, *Asarum canadense*, *Cardamine bulbosa*, *Carex sprengelii*, *Enemion biternatum*, *Equisetum fluviatile*, *Fraxinus nigra*, and *Symplocarpus foetidus*. The complete list of species encountered in the seep communities and other conservation metrics are listed in Table 3.

A total of 109 plant species were observed in the hill prairie communities in the southern portion of the FCSNA and 85 species (78%) are native to Illinois (Table 4.). Species observed with a C value of 7-10 represent 14.7% of the species encountered and include *Anemonella thalictroides*, *Arnoglossum atriplicifolium*, *Bouteloua curtipendula*, *Carex festucacea*, *Dasistoma macrophylla*, *Desmodium illinoense*, *Dichanthelium villosissimum*, *Echinacea pallida*, *Hesperostipa spartea*, *Lithospermum canescens*, *Oxalis violacea*, *Penstemon hirsutus*, *Pycnanthemum tenuifolium*, *Symphotrichum oblongifolium*, *Vitis cinerea*, and *Woodsia obtusa*.

The complete list of species encountered in the hill prairie communities in the southern portion of the FCSNA and other conservation metrics are listed in Table 4.

A total of 102 plant species were observed in the cliff communities along Twist Road in the northern portion of the FCSNA and 77 species (75.5%) are native to Illinois (Table 5.). Species observed with a C value of 7-10 represent 11.8% of the species encountered and include *Amelanchier arborea*, *Amelanchier laevis*, *Cirsium altissimum*, *Cystopteris protrusa*, *Dichanthelium lindheimeri*, *Heuchera richardsonii*, *Pellaea glabella*, *Penstemon hirsutus*, *Polypodium virginianum*, *Ruellia humilis*, *Selaginella rupestris*, and *Woodsia obtusa*. The complete list of species encountered in the cliff communities along Twist Road in the northern portion of the FCSNA and other conservation metrics are listed in Table 5.

Previously 173 species had been recorded from various sources over the years (Table 6.) and 143 of them were recorded in the 2018 survey. There are 30 species that were recorded in the 1978 survey, but not in the 2018 survey. These include *Amorpha canescens*, *Anemone cylindrica*, *Aronia melanocarpa*, *Asclepias viridiflora*, *Caltha palustris*, *Chelone glabra*, *Cornus rugosa*, *Crataegus crus-galli*, *Dalea purpurea*, *Elodea* sp., *Goodyera pubescens*, *Hedeoma hispida*, *Hydrastis canadensis*, *Juglans cinerea*, *Liatris aspera*, *Lycopus americanus*, *Mimulus ringens*, *Nuphar advena*, *Panax quinquefolius*, *Pedicularis canadensis*, *Phyla lanceolata*, *Physocarpus opulifolius*, *Populus grandidentata*, *Ratibida pinnata*, *Rosa palustris*, *Sagittaria* sp., *Sanicula marilandica*, *Sporobolus asper*, *Trillium flexipes*, and *Woodsia ilvensis*. An additional 249 species were added to what was recorded in 1978.

There is one endangered plant species previously known from this site and one threatened plant species that was discovered at the site during these surveys. *Cystopteris laurentiana* was discovered here in the 1970s by Dr. Robin Moran, a fern expert currently with the New York Botanical Garden. This is the only known occurrence for the species in Illinois. It is a fairly rare plant in the United States with stable populations only in Minnesota and Wisconsin (Figure 5., BONAP, Kartesz 2015). Unfortunately, this species was not observed during this survey and Dr. Moran was not able to provide specific location information. A letter written by Robin Moran to the Department of Natural Heritage at the Illinois Department of Natural Resources in 1989 was located at the Illinois Nature Preserves Commission and is included in the appendix. A previously undocumented population of forked aster (*Eurybia furcata*), was discovered on a small terrace below a steep slope near Franklin Creek. An EO form and map are attached and have been submitted to the IDNR natural heritage database (Figure 6. & 7. BONAP, Kartesz 2015, and see Appendix). This species is a rare plant of rich mesic woodlands.

Other observations: a northern watersnake (*Nerodia sipedon*) was encountered along the gravel road by the parking lot on the eastern side of the park.

Natural Community Mapping

There are 8 different natural community types identified at Franklin Creek State Natural Area and they are listed in Table 7. They include Dry-mesic Woodland, Floodplain Forest, Glacial Drift Hill Prairie, Savanna, Seep, Slope/Cliffs, and Cultural. The individual natural community polygons are categorized in Table 8. The Slope/Cliffs areas are technically part of the Dry-mesic

Woodland community and do not represent an actual INAI natural community type, however, the vegetation in these areas is higher quality (more conservative) than the surrounding woodlands so these patches were delineated.

Boundary lines are approximations and were not precisely mapped with GPS and not all natural communities within the FCSNA were delineated. However, all the higher quality habitats and areas with restoration potential were delineated and graded.

Grades within the site are relative to one another and three levels of grade C categories are supplied in order to provide more detailed analysis. Grade C+ areas are the highest quality natural community types within the FCSNA, but in most cases these areas are still low in overall natural quality from an INAI perspective. Grade C- areas are generally dominated by invasive shrubs or weedy monocultures.

Maps displaying the current aerial imagery, historical aerial imagery, and the mapped natural communities for the entire site, and separately for the north and south units, are provided (Figures 1-3.). A map displaying the tracks some of the areas surveyed is included as well (Figure 4.).

Specific notes regarding many of the delineated natural community polygons are included in the following categories below.

Dry-mesic Woodland

PolyID 13: This large polygon is mostly Dry-mesic Woodland, but due to mapping constraints, some Floodplain Forest natural communities that occur along Franklin Creek are included. In most areas the steep woodland slopes continue to the creek edge, but in a few locations, like around the Husar barn and picnic area, impressive expanses of Virginia bluebells (*Mertensia virginica*) occur in the floodplain terraces along Franklin Creek. Some of these populations occur in association with Carey's sedge (*Carex careyana*) and blue ash (*Fraxinus quadrangulata*) and generally the spring ephemeral flora is well represented. The woodlands are dominated by a variety of native upland trees like white oak (*Quercus alba*), red oak (*Quercus rubra*), basswood (*Tilia americana*), shagbark hickory (*Carya ovata*), elms (*Ulmus* spp.), black cherry (*Prunus serotina*), and sugar maple (*Acer saccharum*). On level soils south of Old Mill Road, sugar maple dominates the canopy and as a result very little light reaches the ground layer and it is mostly bare soil. Continued thinning of sugar maple and supplemental seeding of conservative forbs is recommended. The portion of polygon 13 north of Old Mill Road is in much worse condition than the portion of polygon 13 that is along Franklin Creek. The woods in the northern unit are an impenetrable understory of bush honeysuckle (*Lonicera maackii*). It should be considered grade C- and in need of a major restoration effort, although the priority of restoration work in this area is low compared to other areas of the FCSNA.

PolyID 24: This area was not investigated and is a woodland.

PolyID 28: This area is a woodland with some planted pine in it, but also has scattered large red oaks and topography that is different enough from the surrounding area to be notable.

PolyID 32: This area contains young hickories and oaks and lots of bush honeysuckle. There are many inclusions in this polygon of open prairie that were not mapped separately, but the

natural quality is low, although comprised of mostly native species.

PolyID 33: This area is rated higher than the surrounding woodland because of the scattered, large, open grown oaks.

PolyID 34, 35: These areas are small remnant woodlands that contains large, scattered, open grown oaks on the historical aerial imagery as well as on the current aerial imagery. Bush honeysuckle is still present, but it would be manageable to clear it from this small area and it should be prioritized.

PolyID 42: This area is a woodland with potential in some areas because of the remnant spring flora. Generally, the area is dominated by young sugar maples and an understory with bush honeysuckle.

PolyID 41, 43, 44, 45, 47, 51, 53: These areas contain degraded woodlands in need of restoration. Canopy trees are generally young and include basswood (*Tilia americana*), red oak (*Quercus rubra*), white oak (*Quercus alba*), bur oak (*Quercus macrocarpa*), shagbark hickory (*Carya ovata*), hackberry (*Celtis occidentalis*), elm (*Ulmus* spp.), and ash (*Fraxinus* spp.) Bush honeysuckle invasion is moderate to low. Restoration efforts to clear invasives, thin young native trees, and conduct prescribed burning is recommended. Seeding is likely necessary as common weedy woodland forbs like white snakeroot (*Ageratina altissima*) and stickseed (*Hackelia virginiana*) will likely dominate following thinning and burning.

PolyID 46: This area is degraded woodland that needs a massive effort to clear the invasive shrubs.

PolyID 48, 49: These areas contain mostly young trees and a lot of honeysuckle. Certain parts have a high density of young hickory trees and box elder is common as well. The structure and composition throughout these areas varies to some degree, but the lack of conservative plant species and presence of bush honeysuckle are the reasons for the low natural quality rating.

Floodplain Forests

PolyID 29, 54: These areas are in the floodplain along Franklin Creek and are dominated by reed canary grass (*Phalaris arundinacea*), box elder (*Acer negundo*), and other low quality vegetation.

Glacial Drift Hill Prairies

PolyID 8: This area is a small, rocky, and steep hill prairie with some interesting plant species like shooting star (*Dodecatheon meadia*), false toadflax (*Comandra umbellata*), hoary puccoon (*Lithospermum canescens*), and wild columbine (*Aquilegia canadensis*). The surrounding forest has been cleared in this area, which is favoring sun-loving perennials, but the easy access also makes the grassy opening vulnerable to trampling and litter.

PolyID 11: This is the main hill prairie in the southern unit called HP1. It has been managed periodically over the years with sumac clearing and prescribed fire. The quality is variable and collectively is given a generous grade C+ rating, but weedy species are common such as cinquefoil (*Potentilla recta*), clovers (*Trifolium* spp.), Canada goldenrod (*Solidago canadensis*), and smooth brome (*Bromus inermis*), while conservative species are few. The conservative species common on the hill prairie are mullein foxglove (*Dasistoma macrophylla*), pale purple coneflower (*Echinacea pallida*), hairy beard's tongue (*Penstemon hirsutus*), early horse gentian (*Triosteum aurantiacum*), side-oats grama grass (*Bouteloua curtipendula*), violet wood sorrel

(*Oxalis violacea*), and blue-eyed grass (*Sisyrinchium albidum*).

PolyID 12: This area is a hill prairie known as HP2. It is small and weedy, but it has seen some recent management. It was visited twice late in the season and was determined to be low in natural quality.

Recreated Prairie

PolyID 14, 17, 18, 19, 21, 26, 31, 36: These polygons contain recreated prairie. These areas are former farm fields that have been converted to native prairie grass. The dominant species are Indian grass (*Sorghastrum nutans*) and big bluestem (*Andropogon gerardii*).

Savannas

PolyID 30: This area is a small Savanna with scattered open grown white, red, and bur oaks (*Quercus* spp.), as well as scattered black cherry (*Prunus serotina*), hickories (*Carya* spp.), and juniper (*Juniperus virginiana*). The understory is notable in that it is open and not dominated by bush honeysuckle (*Lonicera maackii*) or other invasive species, but rather contains native grasses and forbs like big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), Canada goldenrod (*Solidago canadensis*), late boneset (*Eupatorium altissimum*), and common milkweed (*Asclepias syriaca*). However, the ground layer is weedy with Virginia knotweed (*Antenoron virginianum*), pokeweed (*Phytolacca americana*), stickseed (*Hackelia virginiana*), greenbriar (*Smilax* spp.), black snakeroot (*Sanicula canadensis*), and white snakeroot (*Ageratina altissima*).
PolyID 37: This area includes the cliffs on the west side of Twist Road just north of the crossing at Franklin Creek. This area has exposed rock and scattered, open grown trees allowing for herbaceous vegetation to thrive. Although somewhat weedy and worn down from trampling, some interesting lycophytes occur here such as cliffbrake fern (*Pellaea glabella*), rock polypody fern (*Polypodium virginianum*), rock spikemoss (*Selaginella rupestris*), and common woodsia (*Woodsia obtusa*).

Seeps

PolyID 1: This area is a degraded seep along a path near Mill Springs. It is dominated by skunk cabbage (*Symplocarpus foetidus*) and water cress (*Nasturtium officinale*). Plant diversity is low.

PolyID 3: This area is a seep community dominated by skunk cabbage (*Symplocarpus foetidus*). Very few other plant species were observed in this area.

PolyID 10: This area is a seep known as Seep1 and it is along Franklin Creek downslope from HP1. It is dominated by skunk cabbage (*Symplocarpus foetidus*) and orange jewelweed (*Impatiens capensis*). Plant diversity is low and the seep seems to have decreased in natural quality since 1978.

Slopes/Cliffs

PolyID 2: This area is a steep south-facing slope above a seep. It is dominated by large red oaks (*Quercus rubra*), although some are dying. There is a fence along the private property to the west, where the woodlands are more degraded from clearing and trash/debris accumulation. There is a lot of sugar maple seedlings and bush honeysuckle shrubs, but the spring visit exhibited robust populations of Virginia bluebells (*Mertensia virginica*), common oak sedge (*Carex pennsylvanica*), and liverleaf (*Hepatica acutiloba*).

PolyID 5: This is a north-facing steep slope woodland along Franklin Creek. Many uncommon

and conservative species occur here such as poke milkweed (*Asclepias exaltata*), leatherwood (*Dirca palustris*), liverleaf (*Hepatica acutiloba*), many fern species, and a variety of spring ephemerals and woodland sedges species.

PolyID 4: This area is a steep slope with some small rock outcrops with access via trails and a wooden staircase. Bush honeysuckle is common in the understory. The spring flora was expressed to some degree, but a visit later in the year found mostly weedy species.

PolyID 6, 7, 9: These areas are steep woodland and cliffs of dolomite or sandstone with uncommon plants like Canada yew (*Taxus canadensis*), black-seeded rice grass (*Oryzopsis racemosa*), American spikenard (*Aralia racemosa*), bulblet fern (*Cystopteris bulbifera*), walking fern (*Asplenium rhizophyllum*), bishops cap (*Mitella diphylla*), blue ash (*Fraxinus quadrangulata*), and liverleaf (*Hepatica acutiloba*). A small terrace along Franklin Creek next to polygon 7 is where the forked aster (*Eurybia furcata*) occurs.

Cultural

PolyID 16, 20, 22, 23, 25, 39, 40: These are agricultural fields still in production with either corn or soybeans.

PolyID 39: This area is developed with picnic areas and a fishing lake. Much of the area is mowed, but there are native trees present.

Developed

PolyID 23, 50, 52: These areas are picnic grounds, campground, maintenance sheds, and other state park buildings and mowed areas that are developed. These areas contain non-native weeds and grasses with the exception of native trees.

PolyID 27: This area is a buried gasline ROW.

Unknown

PolyID 15, 38: These areas were not investigated. Polygon 15 is a sliver of vegetation along a crop field and polygon 38 appears to be an old field and degraded woodland on the current aerial imagery.

DISCUSSION

Floristic quality assessment (FQA) is a useful tool for assessing the quality of the flora of a certain area, or in other words, it is a measure of the natural quality of a parcel of land based on the plant species present (Spyreas, 2019). FQA is achieved by using the coefficient of conservatism value or C-value. The concept is defined as follows, “native species most successful in badly damaged habitats are given values of 0. At the other end of the spectrum, species virtually restricted to natural areas in Illinois received C values of 10” (Taft *et al.*, 1997).

A relatively high number of conservative species were encountered during the survey as 25% of the species observed had a C value between 7 and 10. A remarkable 31 species observed in the survey have a C value of 10. This speaks to the quality and diversity of the site and habitats that contain these species should be prioritized. From the Flora of the Chicago Region 2017, Gerould Wilhlem writes “Essentially, remnant landscapes with Mean C-values above 4.0 are unmitigable: Once destroyed their full biodiversity and system organization cannot be reconstructed”

(Wilhelm and Rericha, 2017). Collectively a mean C of 4.2 was calculated for the entire site and a mean C of 5 was calculated for the slopes and cliffs, which are the highest quality areas.

Volunteers and staff at the FCSNA should consider continuing to look for the 30 species observed in 1978, but not in the 2018 survey and these include *Amorpha canescens*, *Anemone cylindrica*, *Aronia melanocarpa*, *Asclepias viridiflora*, *Caltha palustris*, *Chelone glabra*, *Cornus rugosa*, *Crataegus crus-galli*, *Dalea purpurea*, *Elodea* sp., *Goodyera pubescens*, *Hedeoma hispida*, *Hydrastis canadensis*, *Juglans cinerea*, *Liatris aspera*, *Lycopus americanus*, *Mimulus ringens*, *Nuphar advena*, *Panax quinquefolius*, *Pedicularis canadensis*, *Phyla lanceolata*, *Physocarpus opulifolius*, *Populus grandidentata*, *Ratibida pinnata*, *Rosa palustris*, *Sagittaria* sp., *Sanicula marilandica*, *Sporobolus asper*, *Trillium flexipes*, and *Woodsia ilvensis*. Some of these may still be extant, while others are likely extirpated from the site. Most concerning is that the quality of the seeps appears to be decreasing as *Caltha palustris*, *Chelone glabra*, *Lycopus americanus*, *Mimulus ringens*, and *Sagittaria* were not observed in any of the seep communities in the 2018 survey.

Franklin Creek State Natural Area has seen many changes to the landscape since 1938, the year of the historical aerial imagery. The FCSNA is more forested now than historically. In particular, the north unit historically was likely open savanna habitat with scattered trees and a diverse herbaceous layer, but in the historical imagery the area is mostly cleared of trees with the fields or pastures divided into parcels. This area has grown up dense with mesophytic tree species like box elder, ash, elm, sugar maple, hackberry, as well as some oak and hickory. The vegetation in the south unit is likely very similar to historical conditions, although the forests there have been extensively logged and grazed at some point in the past, and since becoming a state property have been infested with invasive species and a drastic increase in native mesophytic tree species, both of which plague most of the forests in Illinois. However, small areas of high quality vegetation do occur throughout the south unit on small rock outcrops, openings, steep slopes, and wetlands.

There are a few threats worth mentioning. Bush honeysuckle is a major problem throughout the FCSNA. While some of it is being controlled with prescribed fire, many areas are completely impenetrable and not much for ground vegetation can occur in such infestations. The recommendation is to focus on clearing invasive shrubs from the slopes/cliffs communities, although care must be taken in these dangerous areas to be safe and to minimally impact the soil.

Another threat comes from visitor use. Trails that are poorly maintained are eroding and getting wider as users try to go around the obstacle. IDNR staff should do more to mitigate the pressures from irresponsible trail use. Another issue is the spider-webbing of trails. Official trails should be designated and spur trails closed off. Lastly, extreme weather events and flooding are also impacting plants along Franklin Creek and on the steep hillsides. Other climate change effects are expected as well and may have a detrimental effect on the northern plants at the southern edge of their range like Canada yew (*Taxus canadensis*) and others.

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Table 1. Total Species List for Franklin Creek State Natural Area

Conservatism-Based Metrics:

Total Mean C:	4.2	
Native Mean C:	5	
Total FQI:	82.9	
Native FQI:	90.1	
Adjusted FQI:	45.6	
% C value 0:	23.3	
% C value 1-3:	16.2	
% C value 4-6:	35.6	
% C value 7-10:	24.9	
Native Tree Mean C:	4.9	
Native Shrub Mean C:	4.4	
Native Herbaceous Mean C:	5.1	

Species Richness:

Total Species:	390	
Native Species:	325	83.30%
Non-native Species:	65	16.70%

Species Wetness:

Mean Wetness:	0.8	
Native Mean Wetness:	0.7	

Physiognomy Metrics:

Tree:	37	9.50%
Shrub:	30	7.70%
Vine:	14	3.60%
Forb:	230	59%
Grass:	38	9.70%
Sedge:	23	5.90%
Rush:	0	0%
Fern:	18	4.60%
Bryophyte:	0	0%

Duration Metrics:

Annual:	42	10.80%
Perennial:	325	83.30%
Biennial:	23	5.90%
Native Annual:	31	7.90%
Native Perennial:	285	73.10%
Native Biennial:	9	2.30%

<u>Scientific Name</u>	<u>Family</u>	<u>Native?</u>	<u>C</u>	<u>W</u>	<u>Physiognomy</u>	<u>Duration</u>	<u>Common Name</u>
<i>Abutilon theophrasti</i>	Malvaceae	non-native	0	1	forb	annual	velvetleaf
<i>Acalypha rhomboidea</i>	Euphorbiaceae	native	0	1	forb	annual	three-seeded mercury
<i>Acer negundo</i>	Sapindaceae	native	0	0	tree	perennial	boxelder
<i>Acer saccharinum</i>	Sapindaceae	native	1	-1	tree	perennial	silver maple
<i>Acer saccharum</i>	Sapindaceae	native	5	1	tree	perennial	sugar maple
<i>Achillea millefolium</i>	Asteraceae	native	0	1	forb	perennial	common yarrow
<i>Actaea pachypoda</i>	Ranunculaceae	native	8	1	forb	perennial	white baneberry
<i>Actaea rubra</i>	Ranunculaceae	native	10	1	forb	perennial	red baneberry
<i>Adiantum pedatum</i>	Adiantaceae	native	10	1	fern	perennial	maidenhair fern
<i>Ageratina altissima</i>	Asteraceae	native	3	1	forb	perennial	white Snakeroot
<i>Agrimonia gryposepala</i>	Rosaceae	native	2	1	forb	perennial	tall agrimony
<i>Agrimonia parviflora</i>	Rosaceae	native	4	-1	forb	perennial	swamp agrimony
<i>Agrimonia pubescens</i>	Rosaceae	native	6	2	forb	perennial	soft agrimony
<i>Agrostis gigantea</i>	Poaceae	non-native	0	-1	grass	perennial	redtop
<i>Agrostis perennans</i>	Poaceae	native	5	1	grass	perennial	thin grass
<i>Alisma subcordatum</i>	Alismataceae	native	3	-2	forb	perennial	common water plantain
<i>Alliaria petiolata</i>	Brassicaceae	non-native	0	0	forb	biennial	garlic mustard
<i>Allium burdickii</i>	Alliaceae	native	7	1	forb	perennial	chicago leek
<i>Allium canadense</i>	Alliaceae	native	3	1	forb	perennial	wild onion
<i>Allium cernuum</i>	Alliaceae	native	7	1	forb	perennial	nodding wild onion
<i>Allium tricoccum</i>	Alliaceae	native	9	1	forb	perennial	wild leek
<i>Ambrosia artemisiifolia</i>	Asteraceae	native	0	1	forb	annual	common ragweed
<i>Ambrosia trifida</i>	Asteraceae	native	0	0	forb	annual	giant ragweed
<i>Amelanchier arborea</i>	Rosaceae	native	8	1	tree	perennial	eastern juneberry
<i>Amelanchier laevis</i>	Rosaceae	native	7	1	tree	perennial	allegheny juneberry
<i>Andropogon gerardii</i>	Poaceae	native	5	0	grass	perennial	big bluestem
<i>Anemone quinquefolia</i>	Ranunculaceae	native	7	0	forb	perennial	wood anemone
<i>Anemone virginiana</i>	Ranunculaceae	native	5	1	forb	perennial	eastern tall anemone
<i>Anemonella thalictroides</i>	Ranunculaceae	native	7	1	forb	perennial	rue anemone
<i>Angelica atropurpurea</i>	Apiaceae	native	7	-2	forb	perennial	great angelica

<i>Antennaria neglecta</i>	Asteraceae	native	3	2	forb	perennial	woolly cats foot
<i>Antennaria plantaginifolia</i>	Asteraceae	native	4	2	forb	perennial	pussytoes
<i>Antenoron virginianum</i>	Polygonaceae	native	4	0	forb	perennial	jumpseed
<i>Apocynum cannabinum</i>	Apocynaceae	native	6	-1	forb	perennial	hairy dogbane
<i>Aquilegia canadensis</i>	Ranunculaceae	native	6	1	forb	perennial	wild columbine
<i>Aralia racemosa</i>	Araliaceae	native	10	1	forb	perennial	spikenard
<i>Arctium minus</i>	Asteraceae	non-native	0	1	forb	biennial	common burdock
<i>Arisaema dracontium</i>	Araceae	native	6	-1	forb	perennial	green dragon
<i>Arisaema triphyllum</i>	Araceae	native	5	0	forb	perennial	jack-in-the-pulpit
<i>Arnoglossum atriplicifolium</i>	Asteraceae	native	8	2	forb	perennial	pale indian plantain
<i>Artemisia campestris</i> subsp. <i>caudata</i>	Asteraceae	native	5	2	forb	biennial	beach wormwood
<i>Asarum canadense</i>	Aristolochiaceae	native	10	1	forb	perennial	tailed wild ginger
<i>Asclepias exaltata</i>	Asclepiadaceae	native	10	2	forb	perennial	poke milkweed
<i>Asclepias purpurascens</i>	Asclepiadaceae	native	8	1	forb	perennial	purple milkweed
<i>Asclepias syriaca</i>	Asclepiadaceae	native	0	1	forb	perennial	common milkweed
<i>Asclepias verticillata</i>	Asclepiadaceae	native	1	2	forb	perennial	whorled milkweed
<i>Asimina triloba</i>	Annonaceae	native	10	0	tree	perennial	pawpaw
<i>Asparagus officinalis</i>	Asparagaceae	non-native	0	1	forb	perennial	asparagus
<i>Asplenium platyneuron</i>	Aspleniaceae	native	3	1	fern	perennial	ebony spleenwort
<i>Asplenium rhizophyllum</i>	Aspleniaceae	native	10	2	fern	perennial	walking fern
<i>Athyrium filix-femina</i>	Woodsiaceae	native	8	0	fern	perennial	lady fern
<i>Aureolaria grandiflora</i> var. <i>pulchra</i>	Orobanchaceae	native	10	2	forb	perennial	yellow false foxglove
<i>Berberis thunbergii</i>	Berberidaceae	non-native	0	1	shrub	perennial	japanese barberry
<i>Bidens cernua</i>	Asteraceae	native	3	-2	forb	annual	nodding bur marigold
<i>Bidens frondosa</i>	Asteraceae	native	1	-1	forb	annual	common beggars ticks
<i>Boechera laevigata</i>	Brassicaceae	native	8	2	forb	biennial	smooth bank cress
<i>Boehmeria cylindrica</i>	Urticaceae	native	5	-2	forb	perennial	swamp false nettle
<i>Botrypus virginianus</i>	Ophioglossaceae	native	5	1	fern	perennial	rattlesnake fern
<i>Bouteloua curtipendula</i>	Poaceae	native	8	2	grass	perennial	side-oats grama
<i>Brassica rapa</i>	Brassicaceae	non-native	0	2	forb	annual	turnip
<i>Bromus inermis</i>	Poaceae	non-native	0	2	grass	perennial	hungarian brome
<i>Bromus pubescens</i>	Poaceae	native	10	1	grass	perennial	woodland brome

<i>Calystegia sepium</i>	Convolvulaceae	native	1	0	forb	perennial	hedge bindweed
<i>Campanulastrum americanum</i>	Campanulaceae	native	4	0	forb	annual	tall bellflower
<i>Cardamine bulbosa</i>	Brassicaceae	native	7	-2	forb	perennial	bulbous cress
<i>Cardamine pensylvanica</i>	Brassicaceae	native	5	-2	forb	biennial	pennsylvania bitter cress
<i>Carex albicans</i>	Cyperaceae	native	5	2	sedge	perennial	blunt-scaled oak sedge
<i>Carex albursina</i>	Cyperaceae	native	8	2	sedge	perennial	blunt-scaled wood sedge
<i>Carex amphibola</i>	Cyperaceae	native	10	1	sedge	perennial	gray sedge
<i>Carex blanda</i>	Cyperaceae	native	1	0	sedge	perennial	common wood sedge
<i>Carex brevior</i>	Cyperaceae	native	3	2	sedge	perennial	plains oval sedge
<i>Carex careyana</i>	Cyperaceae	native	10	2	sedge	perennial	careys wood sedge
<i>Carex cephalophora</i>	Cyperaceae	native	5	2	sedge	perennial	short-headed bracted sedge
<i>Carex festucacea</i>	Cyperaceae	native	9	0	sedge	perennial	fescue oval sedge
<i>Carex gracillima</i>	Cyperaceae	native	7	1	sedge	perennial	purple-sheathed graceful sedge
<i>Carex grisea</i>	Cyperaceae	native	3	0	sedge	perennial	wood gray sedge
<i>Carex hirtifolia</i>	Cyperaceae	native	5	2	sedge	perennial	hairy wood sedge
<i>Carex jamesii</i>	Cyperaceae	native	5	2	sedge	perennial	grass sedge
<i>Carex lacustris</i>	Cyperaceae	native	5	-2	sedge	perennial	common lake sedge
<i>Carex leavenworthii</i>	Cyperaceae	non-native	0	2	sedge	perennial	dwarf bracted sedge
<i>Carex muehlenbergii</i>	Cyperaceae	native	4	2	sedge	perennial	sand bracted sedge
<i>Carex pensylvanica</i>	Cyperaceae	native	5	2	sedge	perennial	common oak sedge
<i>Carex radiata</i>	Cyperaceae	native	5	0	sedge	perennial	straight-styled wood sedge
<i>Carex rosea</i>	Cyperaceae	native	5	2	sedge	perennial	curly-styled wood sedge
<i>Carex sparganioides</i>	Cyperaceae	native	5	1	sedge	perennial	loose-headed bracted sedge
<i>Carex spengelii</i>	Cyperaceae	native	8	2	sedge	perennial	long-beaked sedge
<i>Carex vulpinoidea</i>	Cyperaceae	native	2	-1	sedge	perennial	brown fox sedge
<i>Carpinus caroliniana</i>	Betulaceae	native	8	0	tree	perennial	blue beech
<i>Carya cordiformis</i>	Juglandaceae	native	5	1	tree	perennial	bitternut hickory
<i>Carya ovata</i>	Juglandaceae	native	5	1	tree	perennial	shagbark hickory
<i>Caulophyllum thalictroides</i>	Berberidaceae	native	8	2	forb	perennial	blue cohosh
<i>Celastrus scandens</i>	Celastraceae	native	4	2	vine	perennial	climbing bittersweet
<i>Celtis occidentalis</i>	Ulmaceae	native	2	0	tree	perennial	hackberry
<i>Cerastium fontanum</i>	Caryophyllaceae	non-native	0	2	forb	perennial	mouse-ear chickweed

<i>Cerastium semidecandrum</i>	Caryophyllaceae	non-native	0	2	forb	annual	small mouse-ear chickweed
<i>Cicuta maculata</i>	Apiaceae	native	6	-2	forb	perennial	water hemlock
<i>Cinna arundinacea</i>	Poaceae	native	5	-1	grass	perennial	common wood reed
<i>Circaea canadensis</i>	Onagraceae	native	3	1	forb	perennial	enchanters nightshade
<i>Cirsium altissimum</i>	Asteraceae	native	8	2	forb	perennial	tall thistle
<i>Cirsium discolor</i>	Asteraceae	native	3	1	forb	biennial	pasture thistle
<i>Cirsium vulgare</i>	Asteraceae	non-native	0	1	forb	biennial	bull thistle
<i>Claytonia virginica</i>	Portulacaceae	native	4	2	forb	perennial	spring beauty
<i>Comandra umbellata</i>	Santalaceae	native	9	1	forb	perennial	false toadflax
<i>Conium maculatum</i>	Apiaceae	non-native	0	-1	forb	biennial	poison hemlock
<i>Conyza canadensis</i>	Asteraceae	native	0	1	forb	annual	tall horseweed
<i>Cornus alternifolia</i>	Cornaceae	native	10	1	tree	perennial	pagoda dogwood
<i>Cornus racemosa</i>	Cornaceae	native	1	0	shrub	perennial	gray dogwood
<i>Corylus americana</i>	Betulaceae	native	5	1	shrub	perennial	american hazelnut
<i>Crataegus mollis</i>	Rosaceae	native	2	0	tree	perennial	downy hawthorn
<i>Cryptotaenia canadensis</i>	Apiaceae	native	4	0	forb	perennial	honestwort
<i>Cuscuta gronovii</i>	Cuscutaceae	native	5	-1	forb	annual	common dodder
<i>Cyperus echinatus</i>	Cyperaceae	non-native	0	0	sedge	perennial	globe nut sedge
<i>Cystopteris bulbifera</i>	Woodsiaceae	native	10	-1	fern	perennial	bladder fern
<i>Cystopteris protrusa</i>	Woodsiaceae	native	8	1	fern	perennial	woodland fragile fern
<i>Dactylis glomerata</i>	Poaceae	non-native	0	1	grass	perennial	orchard grass
<i>Danthonia spicata</i>	Poaceae	native	3	2	grass	perennial	poverty oat grass
<i>Dasistoma macrophylla</i>	Orobanchaceae	native	8	1	forb	annual	mullein foxglove
<i>Daucus carota</i>	Apiaceae	non-native	0	2	forb	biennial	queen annes lace
<i>Dentaria laciniata</i>	Brassicaceae	native	5	1	forb	perennial	toothwort
<i>Deparia acrostichoides</i>	Woodsiaceae	native	10	0	fern	perennial	silvery spleenwort
<i>Desmodium illinoense</i>	Fabaceae	native	9	2	forb	perennial	illinois ticktrefoil
<i>Dianthus armeria</i>	Caryophyllaceae	non-native	0	1	forb	biennial	deptford pink
<i>Dicentra cucullaria</i>	Fumariaceae	native	7	2	forb	perennial	dutchmans breeches
<i>Dichantherium lindheimeri</i>	Poaceae	native	8	-1	grass	perennial	smooth panic grass
<i>Dichantherium linearifolium</i>	Poaceae	native	10	2	grass	perennial	slender-leaved panic grass
<i>Dichantherium praecocius</i>	Poaceae	native	5	0	grass	perennial	long-haired panic grass

<i>Dichanthelium scribnerianum</i>	Poaceae	native	4	1	grass	perennial	scribners panic grass
<i>Dichanthelium villosissimum</i>	Poaceae	native	8	2	grass	perennial	woolly panic grass
<i>Dirca palustris</i>	Thymelaeaceae	native	10	2	shrub	perennial	leatherwood
<i>Dodecatheon meadia</i>	Primulaceae	native	6	1	forb	perennial	shooting star
<i>Dryopteris carthusiana</i>	Dryopteridaceae	native	8	0	fern	perennial	spinulose shield fern
<i>Dryopteris intermedia</i>	Dryopteridaceae	native	9	0	fern	perennial	florists wood fern
<i>Echinacea pallida</i>	Asteraceae	native	10	2	forb	perennial	pale purple coneflower
<i>Echinochloa crus-galli</i>	Poaceae	non-native	0	0	grass	annual	barnyard grass
<i>Ellisia nyctelea</i>	Hydrophyllaceae	native	2	0	forb	annual	aunt lucy
<i>Elymus canadensis</i>	Poaceae	native	4	1	grass	perennial	canada wild rye
<i>Elymus virginicus</i>	Poaceae	native	3	-1	grass	perennial	virginia wild rye
<i>Endodeca serpentaria</i>	Aristolochiaceae	native	10	2	forb	perennial	virginia Snakeroot
<i>Enemion biternatum</i>	Ranunculaceae	native	9	1	forb	perennial	false rue anemone
<i>Equisetum fluviatile</i>	Equisetaceae	native	8	-2	fern	perennial	pipes
<i>Equisetum hyemale</i>	Equisetaceae	native	1	1	fern	perennial	tall scouring rush
<i>Eragrostis capillaris</i>	Poaceae	native	2	2	grass	annual	lace grass
<i>Erechtites hieraciifolius</i>	Asteraceae	native	0	0	forb	annual	american burnweed
<i>Erigeron annuus</i>	Asteraceae	native	0	1	forb	annual	annual fleabane
<i>Erigeron strigosus</i>	Asteraceae	native	5	2	forb	biennial	daisy fleabane
<i>Erythronium albidum</i>	Liliaceae	native	5	2	forb	perennial	white trout lily
<i>Euonymus alatus</i>	Celastraceae	non-native	0	2	shrub	perennial	winged euonymus
<i>Euonymus atropurpureus</i>	Celastraceae	native	9	0	shrub	perennial	wahoo
<i>Eupatorium altissimum</i>	Asteraceae	native	0	1	forb	perennial	tall boneset
<i>Euphorbia corollata</i>	Euphorbiaceae	native	4	2	forb	perennial	flowering spurge
<i>Eurybia furcata</i>	Asteraceae	native	10	1	forb	perennial	forked aster
<i>Eutrochium maculatum</i>	Asteraceae	native	5	-2	forb	perennial	spotted joe pye weed
<i>Eutrochium purpureum</i>	Asteraceae	native	6	2	forb	perennial	purple joe pye weed
<i>Fallopia scandens</i>	Polygonaceae	native	3	0	vine	perennial	climbing false buckwheat
<i>Festuca subverticillata</i>	Poaceae	native	5	2	grass	perennial	nodding fescue
<i>Floerkea proserpinacoides</i>	Limnanthaceae	native	7	0	forb	perennial	false mermaid
<i>Fraxinus americana</i>	Oleaceae	native	5	1	tree	perennial	white ash
<i>Fraxinus nigra</i>	Oleaceae	native	8	-1	tree	perennial	black ash

<i>Fraxinus pennsylvanica</i>	Oleaceae	native	4	-1	tree	perennial	red ash
<i>Fraxinus quadrangulata</i>	Oleaceae	native	8	1	tree	perennial	blue ash
<i>Galium aparine</i>	Rubiaceae	native	0	1	forb	annual	wild velcro
<i>Galium circaezans</i>	Rubiaceae	native	10	2	forb	perennial	smooth wild licorice
<i>Galium concinnum</i>	Rubiaceae	native	7	2	forb	perennial	shining bedstraw
<i>Galium triflorum</i>	Rubiaceae	native	5	1	forb	perennial	sweet-scented bedstraw
<i>Gaura biennis</i>	Onagraceae	non-native	0	2	forb	biennial	biennial gaura
<i>Geranium maculatum</i>	Geraniaceae	native	5	1	forb	perennial	wild geranium
<i>Geum canadense</i>	Rosaceae	native	1	0	forb	perennial	white avens
<i>Glechoma hederacea</i>	Lamiaceae	non-native	0	1	forb	perennial	creeping charlie
<i>Gleditsia triacanthos</i>	Caesalpiniaceae	native	1	0	tree	perennial	honey locust
<i>Glyceria striata</i>	Poaceae	native	4	0	grass	perennial	green fowl manna grass
<i>Gymnocladus dioicus</i>	Caesalpiniaceae	native	5	2	tree	perennial	kentucky coffee tree
<i>Hackelia virginiana</i>	Boraginaceae	native	1	1	forb	perennial	stickseed
<i>Helianthus divaricatus</i>	Asteraceae	native	5	2	forb	perennial	woodland sunflower
<i>Helianthus grosseserratus</i>	Asteraceae	native	4	0	forb	perennial	sawtooth sunflower
<i>Helianthus tuberosus</i>	Asteraceae	native	3	0	forb	perennial	jerusalem artichoke
<i>Heliopsis helianthoides</i>	Asteraceae	native	7	1	forb	perennial	false sunflower
<i>Hepatica acutiloba</i>	Ranunculaceae	native	8	2	forb	perennial	sharp-lobed hepatica
<i>Hesperostipa spartea</i>	Poaceae	native	8	1	grass	perennial	porcupine grass
<i>Heuchera richardsonii</i>	Saxifragaceae	native	10	1	forb	perennial	prairie alum root
<i>Hydrophyllum appendiculatum</i>	Hydrophyllaceae	native	8	2	forb	biennial	great waterleaf
<i>Hydrophyllum virginianum</i>	Hydrophyllaceae	native	5	0	forb	perennial	virginia waterleaf
<i>Hypericum perforatum</i>	Hypericaceae	non-native	0	1	forb	perennial	common st johns wort
<i>Hypericum punctatum</i>	Hypericaceae	native	4	0	forb	perennial	spotted st johns wort
<i>Hystrix patula</i>	Poaceae	native	5	2	grass	perennial	bottlebrush grass
<i>Impatiens capensis</i>	Balsaminaceae	native	4	-1	forb	annual	spotted touch-me-not
<i>Impatiens pallida</i>	Balsaminaceae	native	6	-1	forb	annual	pale touch-me-not
<i>Ipomoea pandurata</i>	Convolvulaceae	native	4	1	forb	perennial	wild sweet potato
<i>Juglans nigra</i>	Juglandaceae	native	3	1	tree	perennial	black walnut
<i>Juncus dudleyi</i>	Juncaceae	native	2	0	forb	perennial	dudleys rush
<i>Juncus tenuis</i>	Juncaceae	native	0	0	forb	perennial	path rush

<i>Juniperus virginiana</i>	Cupressaceae	native	0	1	shrub	perennial	red cedar
<i>Lactuca canadensis</i>	Asteraceae	native	1	1	forb	biennial	wild lettuce
<i>Lactuca serriola</i>	Asteraceae	non-native	0	1	forb	biennial	prickly lettuce
<i>Laportea canadensis</i>	Urticaceae	native	5	-1	forb	perennial	wood nettle
<i>Leersia lenticularis</i>	Poaceae	native	10	-2	grass	perennial	catchfly grass
<i>Leersia oryzoides</i>	Poaceae	native	3	-2	grass	perennial	rice cut grass
<i>Leersia virginica</i>	Poaceae	native	5	0	grass	perennial	white grass
<i>Lemna minor</i>	Lemnaceae	native	5	-2	forb	annual	green duckweed
<i>Leonurus cardiaca</i>	Lamiaceae	non-native	0	2	forb	perennial	motherwort
<i>Lepidium virginicum</i>	Brassicaceae	native	0	1	forb	annual	common pepper cress
<i>Lespedeza capitata</i>	Fabaceae	native	4	2	forb	perennial	round-headed bush clover
<i>Leucanthemum vulgare</i>	Asteraceae	non-native	0	2	forb	perennial	garden ox-eye daisy
<i>Lithospermum canescens</i>	Boraginaceae	native	8	2	forb	perennial	hoary puccoon
<i>Lobelia inflata</i>	Lobeliaceae	native	5	1	forb	annual	indian tobacco
<i>Lobelia siphilitica</i>	Lobeliaceae	native	4	-1	forb	perennial	great blue lobelia
<i>Lonicera japonica</i>	Caprifoliaceae	non-native	0	2	vine	perennial	japanese honeysuckle
<i>Lonicera maackii</i>	Caprifoliaceae	non-native	0	2	shrub	perennial	amur honeysuckle
<i>Lonicera reticulata</i>	Caprifoliaceae	native	8	2	vine	perennial	yellow honeysuckle
<i>Lonicera x bella</i>	Caprifoliaceae	non-native	0	2	shrub	perennial	showy fly honeysuckle
<i>Lysimachia nummularia</i>	Myrsinaceae	non-native	0	-1	forb	perennial	moneywort
<i>Maclura pomifera</i>	Moraceae	non-native	0	2	tree	perennial	osage orange
<i>Medicago sativa</i>	Fabaceae	non-native	0	2	forb	perennial	alfalfa
<i>Melilotus albus</i>	Fabaceae	non-native	0	1	forb	biennial	white sweet clover
<i>Melilotus officinalis</i>	Fabaceae	non-native	0	1	forb	biennial	yellow sweet clover
<i>Menispermum canadense</i>	Menispermaceae	native	5	1	vine	perennial	moonseed
<i>Mentha canadensis</i>	Lamiaceae	native	5	-2	forb	perennial	wild mint
<i>Mertensia virginica</i>	Boraginaceae	native	5	0	forb	perennial	virginia bluebells
<i>Mitella diphylla</i>	Saxifragaceae	native	10	1	forb	perennial	eastern mitrewort
<i>Monarda fistulosa</i>	Lamiaceae	native	4	1	forb	perennial	wild bergamot
<i>Morus alba</i>	Moraceae	non-native	0	1	tree	perennial	white mulberry
<i>Morus rubra</i>	Moraceae	native	10	1	tree	perennial	red mulberry
<i>Muhlenbergia frondosa</i>	Poaceae	native	2	-1	grass	perennial	leafy satin grass

<i>Muhlenbergia sobolifera</i>	Poaceae	native	10	2	grass	perennial	rock satin grass
<i>Nasturtium officinale</i>	Brassicaceae	non-native	0	-2	forb	perennial	common watercress
<i>Nepeta cataria</i>	Lamiaceae	non-native	0	1	forb	perennial	catnip
<i>Oenothera biennis</i>	Onagraceae	native	0	1	forb	biennial	common evening primrose
<i>Osmorhiza claytonii</i>	Apiaceae	native	4	2	forb	perennial	hairy sweet cicely
<i>Osmorhiza longistylis</i>	Apiaceae	native	5	2	forb	perennial	smooth sweet cicely
<i>Osmundastrum cinnamomeum</i>	Osmundaceae	native	8	-1	fern	perennial	cinnamon fern
<i>Ostrya virginiana</i>	Betulaceae	native	5	1	tree	perennial	hop hornbeam
<i>Oxalis stricta</i>	Oxalidaceae	native	0	1	forb	perennial	tall wood sorrel
<i>Oxalis violacea</i>	Oxalidaceae	native	8	2	forb	perennial	violet wood sorrel
<i>Packera paupercula</i>	Asteraceae	native	4	0	forb	perennial	balsam ragwort
<i>Packera plattensis</i>	Asteraceae	native	4	2	forb	perennial	prairie ragwort
<i>Panicum virgatum</i>	Poaceae	native	3	0	grass	perennial	switch grass
<i>Parthenocissus inserta</i>	Vitaceae	native	0	1	vine	perennial	thicket creeper
<i>Parthenocissus quinquefolia</i>	Vitaceae	native	4	1	vine	perennial	virginia creeper
<i>Pastinaca sativa</i>	Apiaceae	non-native	0	2	forb	biennial	wild parsnip
<i>Pellaea glabella</i>	Adiantaceae	native	10	2	fern	perennial	purple cliffbrake
<i>Penstemon hirsutus</i>	Scrophulariaceae	native	9	2	forb	perennial	hairy beard tongue
<i>Persicaria hydropiper</i>	Polygonaceae	native	2	0	forb	annual	woodland water pepper
<i>Persicaria longiseta</i>	Polygonaceae	non-native	0	0	forb	annual	creeping smartweed
<i>Persicaria maculosa</i>	Polygonaceae	non-native	0	0	forb	annual	ladys thumb
<i>Persicaria punctata</i>	Polygonaceae	native	4	-2	forb	annual	water pepper
<i>Phalaris arundinacea</i>	Poaceae	non-native	0	-1	grass	perennial	reed canary grass
<i>Phleum pratense</i>	Poaceae	non-native	0	1	grass	perennial	timothy
<i>Phlox divaricata</i>	Polemoniaceae	native	5	2	forb	perennial	woodland phlox
<i>Phryma leptostachya</i>	Phrymaceae	native	6	2	forb	perennial	lopseed
<i>Physalis heterophylla</i>	Solanaceae	native	3	2	forb	perennial	clammy ground cherry
<i>Physalis longifolia</i>	Solanaceae	native	0	2	forb	perennial	tall ground cherry
<i>Phytolacca americana</i>	Phytolaccaceae	native	0	1	forb	perennial	pokeweed
<i>Pilea fontana</i>	Urticaceae	native	7	-2	forb	annual	bog clearweed
<i>Pilea pumila</i>	Urticaceae	native	2	-1	forb	annual	clearweed
<i>Plantago aristata</i>	Plantaginaceae	non-native	0	2	forb	annual	poor joe

<i>Plantago lanceolata</i>	Plantaginaceae	non-native	0	1	forb	perennial	english plantain
<i>Plantago patagonica</i>	Plantaginaceae	non-native	0	2	forb	annual	woolly plantain
<i>Plantago rugelii</i>	Plantaginaceae	native	0	0	forb	annual	red-stalked plantain
<i>Plantago virginica</i>	Plantaginaceae	native	0	1	forb	annual	dwarf plantain
<i>Platanus occidentalis</i>	Platanaceae	native	5	-1	tree	perennial	sycamore
<i>Poa compressa</i>	Poaceae	non-native	0	1	grass	perennial	canada bluegrass
<i>Poa pratensis</i>	Poaceae	non-native	0	1	grass	perennial	kentucky bluegrass
<i>Podophyllum peltatum</i>	Berberidaceae	native	4	1	forb	perennial	mayapple
<i>Polemonium reptans</i>	Polemoniaceae	native	8	0	forb	perennial	jacobs ladder
<i>Polygonatum biflorum</i>	Convallariaceae	native	4	1	forb	perennial	smooth solomons seal
<i>Polygonum tenue</i>	Polygonaceae	native	5	2	forb	annual	wiry knotweed
<i>Polypodium virginianum</i>	Polypodiaceae	native	10	2	fern	perennial	polypody
<i>Polystichum acrostichoides</i>	Dryopteridaceae	native	8	2	fern	perennial	christmas fern
<i>Populus deltoides</i>	Salicaceae	native	0	0	tree	perennial	eastern cottonwood
<i>Potentilla recta</i>	Rosaceae	non-native	0	2	forb	perennial	sulfur cinquefoil
<i>Prenanthes alba</i>	Asteraceae	native	5	1	forb	perennial	white lettuce
<i>Prenanthes crepidinea</i>	Asteraceae	native	9	0	forb	perennial	great white lettuce
<i>Prunella vulgaris</i>	Lamiaceae	non-native	0	2	forb	perennial	lawn self heal
<i>Prunus americana</i>	Rosaceae	native	3	2	shrub	perennial	wild plum
<i>Prunus serotina</i>	Rosaceae	native	0	1	tree	perennial	wild black cherry
<i>Prunus virginiana</i>	Rosaceae	native	3	1	shrub	perennial	choke cherry
<i>Ptelea trifoliata</i>	Rutaceae	native	4	2	shrub	perennial	wafer ash
<i>Pycnanthemum tenuifolium</i>	Lamiaceae	native	7	0	forb	perennial	slender mountain mint
<i>Quercus alba</i>	Fagaceae	native	5	1	tree	perennial	white oak
<i>Quercus macrocarpa</i>	Fagaceae	native	5	1	tree	perennial	bur oak
<i>Quercus muehlenbergii</i>	Fagaceae	native	8	2	tree	perennial	chinquapin oak
<i>Quercus palustris</i>	Fagaceae	native	5	-1	tree	perennial	pin oak
<i>Quercus rubra</i>	Fagaceae	native	5	2	tree	perennial	red oak
<i>Quercus velutina</i>	Fagaceae	native	5	2	tree	perennial	black oak
<i>Ranunculus abortivus</i>	Ranunculaceae	native	1	0	forb	biennial	small-flowered buttercup
<i>Ranunculus fascicularis</i>	Ranunculaceae	native	6	2	forb	perennial	early buttercup
<i>Ranunculus hispidus</i>	Ranunculaceae	native	8	2	forb	perennial	rough crowfoot

<i>Ranunculus recurvatus</i>	Ranunculaceae	native	5	-1	forb	perennial	hooked buttercup
<i>Ranunculus sceleratus</i>	Ranunculaceae	native	4	-2	forb	annual	cursed buttercup
<i>Ranunculus septentrionalis</i>	Ranunculaceae	native	5	1	forb	perennial	swamp crowfoot
<i>Rhamnus cathartica</i>	Rhamnaceae	non-native	0	0	shrub	perennial	common buckthorn
<i>Rhus glabra</i>	Anacardiaceae	native	1	2	shrub	perennial	smooth sumac
<i>Ribes americanum</i>	Grossulariaceae	native	4	-1	shrub	perennial	wild black currant
<i>Ribes missouriense</i>	Grossulariaceae	native	2	1	shrub	perennial	missouri wild gooseberry
<i>Robinia pseudoacacia</i>	Fabaceae	non-native	0	1	tree	perennial	black locust
<i>Rosa carolina</i>	Rosaceae	native	5	1	shrub	perennial	pasture rose
<i>Rosa multiflora</i>	Rosaceae	non-native	0	1	shrub	perennial	multiflora rose
<i>Rubus allegheniensis</i>	Rosaceae	native	3	1	shrub	perennial	highbush blackberry
<i>Rubus occidentalis</i>	Rosaceae	native	0	1	shrub	perennial	black raspberry
<i>Rudbeckia hirta</i>	Asteraceae	native	1	1	forb	perennial	black-eyed susan
<i>Rudbeckia laciniata</i>	Asteraceae	native	4	-1	forb	perennial	wild golden glow
<i>Rudbeckia triloba</i>	Asteraceae	native	1	1	forb	annual	brown-eyed susan
<i>Ruellia humilis</i>	Acanthaceae	native	8	2	forb	perennial	prairie petunia
<i>Rumex acetosella</i>	Polygonaceae	non-native	0	2	forb	perennial	field sorrel
<i>Rumex verticillatus</i>	Polygonaceae	native	8	-2	forb	perennial	riverbank dock
<i>Salix nigra</i>	Salicaceae	native	5	-2	tree	perennial	black willow
<i>Sambucus canadensis</i>	Adoxaceae	native	4	-1	shrub	perennial	elderberry
<i>Sanguinaria canadensis</i>	Papaveraceae	native	5	2	forb	perennial	bloodroot
<i>Sanicula canadensis</i>	Apiaceae	native	5	1	forb	perennial	canadian black Snakeroot
<i>Schizachyrium scoparium</i>	Poaceae	native	5	1	grass	perennial	little bluestem
<i>Scirpus atrovirens</i>	Cyperaceae	native	4	-2	sedge	perennial	dark green rush
<i>Scrophularia marilandica</i>	Scrophulariaceae	native	4	1	forb	perennial	late figwort
<i>Scutellaria elliptica</i> var. <i>hirsuta</i>	Lamiaceae	native	10	2	forb	perennial	hairy skullcap
<i>Scutellaria lateriflora</i>	Lamiaceae	native	4	-2	forb	perennial	mad-dog skullcap
<i>Scutellaria parvula</i>	Lamiaceae	native	8	2	forb	perennial	small skullcap
<i>Selaginella rupestris</i>	Selaginellaceae	native	10	2	fern	perennial	sand clubmoss
<i>Setaria faberi</i>	Poaceae	non-native	0	1	grass	annual	giant foxtail
<i>Setaria pumila</i>	Poaceae	non-native	0	0	grass	annual	yellow foxtail
<i>Sicyos angulatus</i>	Cucurbitaceae	native	2	-1	vine	annual	bur cucumber

<i>Silene antirrhina</i>	Caryophyllaceae	native	1	2	forb	annual	sleepy catchfly
<i>Silene latifolia</i>	Caryophyllaceae	non-native	0	2	forb	biennial	white campion
<i>Silene stellata</i>	Caryophyllaceae	native	6	2	forb	perennial	starry campion
<i>Silphium integrifolium</i>	Asteraceae	native	5	0	forb	perennial	rosinweed
<i>Silphium perfoliatum</i>	Asteraceae	native	5	-1	forb	perennial	cup plant
<i>Silphium terebinthinaceum</i>	Asteraceae	native	5	0	forb	perennial	prairie dock
<i>Sisyrinchium albidum</i>	Iridaceae	native	6	1	forb	perennial	common blue-eyed grass
<i>Sisyrinchium angustifolium</i>	Iridaceae	native	5	0	forb	perennial	stout blue-eyed grass
<i>Smilacina racemosa</i>	Convallariaceae	native	5	1	forb	perennial	feathery false solomons seal
<i>Smilacina stellata</i>	Convallariaceae	native	5	0	forb	perennial	starry false solomons seal
<i>Smilax ecirrhata</i>	Smilacaceae	native	5	2	forb	perennial	upright carrion flower
<i>Smilax hispida</i>	Smilacaceae	native	4	2	vine	perennial	bristly cat brier
<i>Smilax rotundifolia</i>	Smilacaceae	native	5	1	vine	perennial	four-angled cat brier
<i>Solanum dulcamara</i>	Solanaceae	non-native	0	0	vine	perennial	deadly nightshade
<i>Solidago canadensis</i>	Asteraceae	native	1	1	forb	perennial	canada goldenrod
<i>Solidago flexicaulis</i>	Asteraceae	native	7	1	forb	perennial	zig-zag goldenrod
<i>Solidago ulmifolia</i>	Asteraceae	native	5	2	forb	perennial	elm-leaved goldenrod
<i>Sorghastrum nutans</i>	Poaceae	native	5	1	grass	perennial	indian grass
<i>Sphenopholis intermedia</i>	Poaceae	native	3	0	grass	perennial	slender wedge grass
<i>Sphenopholis obtusata</i>	Poaceae	native	4	0	grass	perennial	prairie wedge grass
<i>Staphylea trifolia</i>	Staphyleaceae	native	7	1	shrub	perennial	bladdernut
<i>Symphoricarpos orbiculatus</i>	Caprifoliaceae	non-native	0	2	shrub	perennial	coralberry
<i>Symphyotrichum cordifolium</i>	Asteraceae	native	7	2	forb	perennial	heart-leaved aster
<i>Symphyotrichum drummondii</i>	Asteraceae	native	3	2	forb	perennial	drummonds aster
<i>Symphyotrichum ericoides</i>	Asteraceae	native	6	1	forb	perennial	heath aster
<i>Symphyotrichum lanceolatum</i>	Asteraceae	native	3	-1	forb	perennial	panicled aster
<i>Symphyotrichum lateriflorum</i>	Asteraceae	native	4	1	forb	perennial	calico aster
<i>Symphyotrichum novae-angliae</i>	Asteraceae	native	3	0	forb	perennial	new england aster
<i>Symphyotrichum oblongifolium</i>	Asteraceae	native	9	2	forb	perennial	aromatic aster
<i>Symphyotrichum ontarionis</i>	Asteraceae	native	5	0	forb	perennial	ontario aster
<i>Symphyotrichum pilosum</i>	Asteraceae	native	0	0	forb	perennial	hairy aster
<i>Symphyotrichum shortii</i>	Asteraceae	native	7	2	forb	perennial	shorts aster

<i>Symphotrichum urophyllum</i>	Asteraceae	native	5	2	forb	perennial	arrow-leaved aster
<i>Symplocarpus foetidus</i>	Araceae	native	8	-2	forb	perennial	skunk cabbage
<i>Taraxacum officinale</i>	Asteraceae	non-native	0	1	forb	perennial	common dandelion
<i>Taxus canadensis</i>	Taxaceae	native	10	2	shrub	perennial	canadian yew
<i>Teucrium canadense</i>	Lamiaceae	native	3	0	forb	perennial	canadian germander
<i>Thalictrum revolutum</i>	Ranunculaceae	native	6	-2	forb	perennial	waxy meadow rue
<i>Thlaspi arvense</i>	Brassicaceae	non-native	0	2	forb	annual	large-fruited penny cress
<i>Tilia americana</i>	Tiliaceae	native	5	1	tree	perennial	american linden
<i>Toxicodendron radicans</i>	Anacardiaceae	native	2	0	vine	perennial	poison ivy
<i>Tradescantia ohiensis</i>	Commelinaceae	native	3	1	forb	perennial	common spiderwort
<i>Tradescantia virginiana</i>	Commelinaceae	native	5	2	forb	perennial	virginia spiderwort
<i>Tragopogon pratensis</i>	Asteraceae	non-native	0	2	forb	biennial	common goats beard
<i>Trifolium pratense</i>	Fabaceae	non-native	0	2	forb	perennial	red clover
<i>Trifolium repens</i>	Fabaceae	non-native	0	2	forb	perennial	white clover
<i>Trillium recurvatum</i>	Trilliaceae	native	5	1	forb	perennial	prairie trillium
<i>Triodanis perfoliata</i>	Campanulaceae	native	1	2	forb	annual	common venus looking glass
<i>Triosteum aurantiacum</i>	Caprifoliaceae	native	5	2	forb	perennial	early horse gentian
<i>Triosteum perfoliatum</i>	Caprifoliaceae	native	4	2	forb	perennial	late horse gentian
<i>Typha latifolia</i>	Typhaceae	native	5	-2	forb	perennial	broad-leaved cattail
<i>Ulmus americana</i>	Ulmaceae	native	3	-1	tree	perennial	american elm
<i>Ulmus rubra</i>	Ulmaceae	native	4	2	tree	perennial	slippery elm
<i>Urtica gracilis</i>	Urticaceae	native	1	-1	forb	perennial	tall nettle
<i>Uvularia grandiflora</i>	Colchicaceae	native	7	2	forb	perennial	bellwort
<i>Vaccinium pallidum</i>	Ericaceae	native	6	2	shrub	perennial	late low blueberry
<i>Verbascum thapsus</i>	Scrophulariaceae	non-native	0	2	forb	biennial	common mullein
<i>Verbena stricta</i>	Verbenaceae	native	4	2	forb	perennial	hoary vervain
<i>Verbena urticifolia</i>	Verbenaceae	native	2	0	forb	perennial	hairy white vervain
<i>Verbesina alternifolia</i>	Asteraceae	native	5	-1	forb	perennial	wingstem
<i>Veronica anagallis-aquatica</i>	Scrophulariaceae	non-native	0	-2	forb	perennial	water pimpernel
<i>Viburnum dentatum</i>	Adoxaceae	non-native	0	2	shrub	perennial	southern arrowwood
<i>Viburnum lentago</i>	Adoxaceae	native	4	0	shrub	perennial	nannyberry
<i>Viburnum prunifolium</i>	Adoxaceae	native	5	2	shrub	perennial	black haw

<i>Viburnum rafinesquianum</i>	Adoxaceae	native	8	2	shrub	perennial	downy arrowwood
<i>Viola priceana</i>	Violaceae	native	0	2	forb	perennial	confederate violet
<i>Viola pubescens</i>	Violaceae	native	5	2	forb	perennial	downy yellow violet
<i>Viola sororia</i>	Violaceae	native	3	1	forb	perennial	common blue violet
<i>Vitis aestivalis</i>	Vitaceae	native	5	1	vine	perennial	summer grape
<i>Vitis cinerea</i>	Vitaceae	native	7	0	vine	perennial	winter grape
<i>Woodsia obtusa</i>	Woodsiaceae	native	10	2	fern	perennial	cliff fern
<i>Zanthoxylum americanum</i>	Rutaceae	native	3	1	shrub	perennial	prickly ash
Not in the list due to taxonomy							
<i>Oryzopsis racemosa</i>	Poaceae	native	8	1	grass	perennial	black-seeded rice grass
<i>Trillium recurvatum</i> f. <i>luteum</i>	Trilliaceae	native	5	1	forb	perennial	prairie trillium

Table 2. Total Species List for Franklin Creek State Natural Area – Slopes and Cliffs

Conservatism-Based Metrics:

Total Mean C:	5
Native Mean C:	5.4
Total FQI:	63.2
Native FQI:	65.2
Adjusted FQI:	51.6
% C value 0:	15
% C value 1-3:	14.4
% C value 4-6:	36.9
% C value 7-10:	33.8
Native Tree Mean C:	5.3
Native Shrub Mean C:	5.1
Native Herbaceous Mean C:	5.5

Species Richness:

Total Species:	160	
Native Species:	146	91.30%
Non-native Species:	14	8.80%

Species Wetness:

Mean Wetness:	0.9
Native Mean Wetness:	0.9

Physiognomy Metrics:

Tree:	16	10%
Shrub:	15	9.40%
Vine:	5	3.10%
Forb:	93	58.10%
Grass:	10	6.30%
Sedge:	11	6.90%
Rush:	0	0%
Fern:	10	6.30%
Bryophyte:	0	0%

Duration Metrics:

Annual:	8	5%
Perennial:	145	90.60%
Biennial:	7	4.40%
Native Annual:	6	3.80%
Native Perennial:	136	85%
Native Biennial:	4	2.50%

<u>Scientific Name</u>	<u>Family</u>	<u>Native?</u>	<u>C</u>	<u>W</u>	<u>Physiognomy</u>	<u>Duration</u>	<u>Common Name</u>
<i>Acalypha rhomboidea</i>	Euphorbiaceae	native	0	1	forb	annual	three-seeded mercury
<i>Acer negundo</i>	Sapindaceae	native	0	0	tree	perennial	boxelder
<i>Acer saccharum</i>	Sapindaceae	native	5	1	tree	perennial	sugar maple
<i>Actaea pachypoda</i>	Ranunculaceae	native	8	1	forb	perennial	white baneberry
<i>Actaea rubra</i>	Ranunculaceae	native	10	1	forb	perennial	red baneberry
<i>Adiantum pedatum</i>	Adiantaceae	native	10	1	fern	perennial	maidenhair fern
<i>Ageratina altissima</i>	Asteraceae	native	3	1	forb	perennial	white Snakeroot
<i>Alliaria petiolata</i>	Brassicaceae	non-native	0	0	forb	biennial	garlic mustard
<i>Allium burdickii</i>	Alliaceae	native	7	1	forb	perennial	chicago leek
<i>Allium cernuum</i>	Alliaceae	native	7	1	forb	perennial	nodding wild onion
<i>Allium tricoccum</i>	Alliaceae	native	9	1	forb	perennial	wild leek
<i>Anemone quinquefolia</i>	Ranunculaceae	native	7	0	forb	perennial	wood anemone
<i>Anemonella thalictroides</i>	Ranunculaceae	native	7	1	forb	perennial	rue anemone
<i>Antenoron virginianum</i>	Polygonaceae	native	4	0	forb	perennial	jumpseed
<i>Aquilegia canadensis</i>	Ranunculaceae	native	6	1	forb	perennial	wild columbine
<i>Aralia racemosa</i>	Araliaceae	native	10	1	forb	perennial	spikenard
<i>Arctium minus</i>	Asteraceae	non-native	0	1	forb	biennial	common burdock
<i>Arisaema triphyllum</i>	Araceae	native	5	0	forb	perennial	jack-in-the-pulpit
<i>Asarum canadense</i>	Aristolochiaceae	native	10	1	forb	perennial	tailed wild ginger
<i>Asclepias exaltata</i>	Asclepiadaceae	native	10	2	forb	perennial	poke milkweed
<i>Asclepias syriaca</i>	Asclepiadaceae	native	0	1	forb	perennial	common milkweed
<i>Asparagus officinalis</i>	Asparagaceae	non-native	0	1	forb	perennial	asparagus
<i>Asplenium rhizophyllum</i>	Aspleniaceae	native	10	2	fern	perennial	walking fern
<i>Athyrium filix-femina</i>	Woodsiaceae	native	8	0	fern	perennial	lady fern
<i>Berberis thunbergii</i>	Berberidaceae	non-native	0	1	shrub	perennial	japanese barberry
<i>Boechera laevigata</i>	Brassicaceae	native	8	2	forb	biennial	smooth bank cress
<i>Botrypus virginianus</i>	Ophioglossaceae	native	5	1	fern	perennial	rattlesnake fern
<i>Bromus inermis</i>	Poaceae	non-native	0	2	grass	perennial	hungarian brome
<i>Carex albicans</i>	Cyperaceae	native	5	2	sedge	perennial	blunt-scaled oak sedge
<i>Carex albursina</i>	Cyperaceae	native	8	2	sedge	perennial	blunt-scaled wood sedge

<i>Carex amphibola</i>	Cyperaceae	native	10	1	sedge	perennial	gray sedge
<i>Carex blanda</i>	Cyperaceae	native	1	0	sedge	perennial	common wood sedge
<i>Carex grisea</i>	Cyperaceae	native	3	0	sedge	perennial	wood gray sedge
<i>Carex hirtifolia</i>	Cyperaceae	native	5	2	sedge	perennial	hairy wood sedge
<i>Carex jamesii</i>	Cyperaceae	native	5	2	sedge	perennial	grass sedge
<i>Carex pennsylvanica</i>	Cyperaceae	native	5	2	sedge	perennial	common oak sedge
<i>Carex radiata</i>	Cyperaceae	native	5	0	sedge	perennial	straight-styled wood sedge
<i>Carex rosea</i>	Cyperaceae	native	5	2	sedge	perennial	curly-styled wood sedge
<i>Carex sparganioides</i>	Cyperaceae	native	5	1	sedge	perennial	loose-headed bracted sedge
<i>Carpinus caroliniana</i>	Betulaceae	native	8	0	tree	perennial	blue beech
<i>Caulophyllum thalictroides</i>	Berberidaceae	native	8	2	forb	perennial	blue cohosh
<i>Celtis occidentalis</i>	Ulmaceae	native	2	0	tree	perennial	hackberry
<i>Circaea canadensis</i>	Onagraceae	native	3	1	forb	perennial	enchanters nightshade
<i>Cirsium discolor</i>	Asteraceae	native	3	1	forb	biennial	pasture thistle
<i>Cirsium vulgare</i>	Asteraceae	non-native	0	1	forb	biennial	bull thistle
<i>Claytonia virginica</i>	Portulacaceae	native	4	2	forb	perennial	spring beauty
<i>Comandra umbellata</i>	Santalaceae	native	9	1	forb	perennial	false toadflax
<i>Cornus alternifolia</i>	Cornaceae	native	10	1	tree	perennial	pagoda dogwood
<i>Cryptotaenia canadensis</i>	Apiaceae	native	4	0	forb	perennial	honestwort
<i>Cystopteris bulbifera</i>	Woodsiaceae	native	10	-1	fern	perennial	bladder fern
<i>Cystopteris protrusa</i>	Woodsiaceae	native	8	1	fern	perennial	woodland fragile fern
<i>Dentaria laciniata</i>	Brassicaceae	native	5	1	forb	perennial	toothwort
<i>Desmodium illinoense</i>	Fabaceae	native	9	2	forb	perennial	illinois ticktrefoil
<i>Dicentra cucullaria</i>	Fumariaceae	native	7	2	forb	perennial	dutchmans breeches
<i>Dirca palustris</i>	Thymelaeaceae	native	10	2	shrub	perennial	leatherwood
<i>Dodecatheon meadia</i>	Primulaceae	native	6	1	forb	perennial	shooting star
<i>Dryopteris carthusiana</i>	Dryopteridaceae	native	8	0	fern	perennial	spinulose shield fern
<i>Endodeca serpentaria</i>	Aristolochiaceae	native	10	2	forb	perennial	virginia Snakeroot
<i>Enemion biternatum</i>	Ranunculaceae	native	9	1	forb	perennial	false rue anemone
<i>Equisetum hyemale</i>	Equisetaceae	native	1	1	fern	perennial	tall scouring rush
<i>Erythronium albidum</i>	Liliaceae	native	5	2	forb	perennial	white trout lily
<i>Euonymus alatus</i>	Celastraceae	non-native	0	2	shrub	perennial	winged euonymus

<i>Eupatorium altissimum</i>	Asteraceae	native	0	1	forb	perennial	tall boneset
<i>Eurybia furcata</i>	Asteraceae	native	10	1	forb	perennial	forked aster
<i>Eutrochium purpureum</i>	Asteraceae	native	6	2	forb	perennial	purple joe pye weed
<i>Festuca subverticillata</i>	Poaceae	native	5	2	grass	perennial	nodding fescue
<i>Floerkea proserpinacoides</i>	Limnanthaceae	native	7	0	forb	perennial	false mermaid
<i>Fraxinus americana</i>	Oleaceae	native	5	1	tree	perennial	white ash
<i>Fraxinus nigra</i>	Oleaceae	native	8	-1	tree	perennial	black ash
<i>Fraxinus pennsylvanica</i>	Oleaceae	native	4	-1	tree	perennial	red ash
<i>Fraxinus quadrangulata</i>	Oleaceae	native	8	1	tree	perennial	blue ash
<i>Galium circaezans</i>	Rubiaceae	native	10	2	forb	perennial	smooth wild licorice
<i>Galium concinnum</i>	Rubiaceae	native	7	2	forb	perennial	shining bedstraw
<i>Galium triflorum</i>	Rubiaceae	native	5	1	forb	perennial	sweet-scented bedstraw
<i>Geranium maculatum</i>	Geraniaceae	native	5	1	forb	perennial	wild geranium
<i>Geum canadense</i>	Rosaceae	native	1	0	forb	perennial	white avens
<i>Hackelia virginiana</i>	Boraginaceae	native	1	1	forb	perennial	stickseed
<i>Hepatica acutiloba</i>	Ranunculaceae	native	8	2	forb	perennial	sharp-lobed hepatica
<i>Hydrophyllum appendiculatum</i>	Hydrophyllaceae	native	8	2	forb	biennial	great waterleaf
<i>Hydrophyllum virginianum</i>	Hydrophyllaceae	native	5	0	forb	perennial	virginia waterleaf
<i>Hystrix patula</i>	Poaceae	native	5	2	grass	perennial	bottlebrush grass
<i>Laportea canadensis</i>	Urticaceae	native	5	-1	forb	perennial	wood nettle
<i>Leersia lenticularis</i>	Poaceae	native	10	-2	grass	perennial	catchfly grass
<i>Leersia virginica</i>	Poaceae	native	5	0	grass	perennial	white grass
<i>Lonicera maackii</i>	Caprifoliaceae	non-native	0	2	shrub	perennial	amur honeysuckle
<i>Lonicera reticulata</i>	Caprifoliaceae	native	8	2	vine	perennial	yellow honeysuckle
<i>Mertensia virginica</i>	Boraginaceae	native	5	0	forb	perennial	virginia bluebells
<i>Mitella diphylla</i>	Saxifragaceae	native	10	1	forb	perennial	eastern mitrewort
<i>Muhlenbergia sobolifera</i>	Poaceae	native	10	2	grass	perennial	rock satin grass
<i>Osmorhiza claytonii</i>	Apiaceae	native	4	2	forb	perennial	hairy sweet cicely
<i>Osmundastrum cinnamomeum</i>	Osmundaceae	native	8	-1	fern	perennial	cinnamon fern
<i>Ostrya virginiana</i>	Betulaceae	native	5	1	tree	perennial	hop hornbeam
<i>Oxalis stricta</i>	Oxalidaceae	native	0	1	forb	perennial	tall wood sorrel
<i>Panicum virgatum</i>	Poaceae	native	3	0	grass	perennial	switch grass

<i>Parthenocissus inserta</i>	Vitaceae	native	0	1	vine	perennial	thicket creeper
<i>Parthenocissus quinquefolia</i>	Vitaceae	native	4	1	vine	perennial	virginia creeper
<i>Persicaria hydropiper</i>	Polygonaceae	native	2	0	forb	annual	woodland water pepper
<i>Persicaria longiseta</i>	Polygonaceae	non-native	0	0	forb	annual	creeping smartweed
<i>Persicaria maculosa</i>	Polygonaceae	non-native	0	0	forb	annual	ladys thumb
<i>Persicaria punctata</i>	Polygonaceae	native	4	-2	forb	annual	water pepper
<i>Phlox divaricata</i>	Polemoniaceae	native	5	2	forb	perennial	woodland phlox
<i>Phytolacca americana</i>	Phytolaccaceae	native	0	1	forb	perennial	pokeweed
<i>Pilea fontana</i>	Urticaceae	native	7	-2	forb	annual	bog clearweed
<i>Pilea pumila</i>	Urticaceae	native	2	-1	forb	annual	clearweed
<i>Plantago rugelii</i>	Plantaginaceae	native	0	0	forb	annual	red-stalked plantain
<i>Platanus occidentalis</i>	Platanaceae	native	5	-1	tree	perennial	sycamore
<i>Poa pratensis</i>	Poaceae	non-native	0	1	grass	perennial	kentucky bluegrass
<i>Podophyllum peltatum</i>	Berberidaceae	native	4	1	forb	perennial	mayapple
<i>Polemonium reptans</i>	Polemoniaceae	native	8	0	forb	perennial	jacobs ladder
<i>Polygonatum biflorum</i>	Convallariaceae	native	4	1	forb	perennial	smooth solomons seal
<i>Polystichum acrostichoides</i>	Dryopteridaceae	native	8	2	fern	perennial	christmas fern
<i>Prenanthes alba</i>	Asteraceae	native	5	1	forb	perennial	white lettuce
<i>Prunus virginiana</i>	Rosaceae	native	3	1	shrub	perennial	choke cherry
<i>Quercus alba</i>	Fagaceae	native	5	1	tree	perennial	white oak
<i>Quercus rubra</i>	Fagaceae	native	5	2	tree	perennial	red oak
<i>Ranunculus abortivus</i>	Ranunculaceae	native	1	0	forb	biennial	small-flowered buttercup
<i>Ranunculus hispidus</i>	Ranunculaceae	native	8	2	forb	perennial	rough crowfoot
<i>Ribes americanum</i>	Grossulariaceae	native	4	-1	shrub	perennial	wild black currant
<i>Ribes missouriense</i>	Grossulariaceae	native	2	1	shrub	perennial	missouri wild gooseberry
<i>Robinia pseudoacacia</i>	Fabaceae	non-native	0	1	tree	perennial	black locust
<i>Rubus occidentalis</i>	Rosaceae	native	0	1	shrub	perennial	black raspberry
<i>Ruellia humilis</i>	Acanthaceae	native	8	2	forb	perennial	prairie petunia
<i>Sambucus canadensis</i>	Adoxaceae	native	4	-1	shrub	perennial	elderberry
<i>Sanguinaria canadensis</i>	Papaveraceae	native	5	2	forb	perennial	bloodroot
<i>Sanicula canadensis</i>	Apiaceae	native	5	1	forb	perennial	canadian black Snakeroot
<i>Scutellaria elliptica</i> var. <i>hirsuta</i>	Lamiaceae	native	10	2	forb	perennial	hairy skullcap

<i>Smilacina racemosa</i>	Convallariaceae	native	5	1	forb	perennial	feathery false solomons seal
<i>Smilax ecirrhata</i>	Smilacaceae	native	5	2	forb	perennial	upright carrion flower
<i>Smilax hispida</i>	Smilacaceae	native	4	2	vine	perennial	bristly cat brier
<i>Solidago canadensis</i>	Asteraceae	native	1	1	forb	perennial	canada goldenrod
<i>Solidago flexicaulis</i>	Asteraceae	native	7	1	forb	perennial	zig-zag goldenrod
<i>Solidago ulmifolia</i>	Asteraceae	native	5	2	forb	perennial	elm-leaved goldenrod
<i>Sphenopholis intermedia</i>	Poaceae	native	3	0	grass	perennial	slender wedge grass
<i>Sphenopholis obtusata</i>	Poaceae	native	4	0	grass	perennial	prairie wedge grass
<i>Staphylea trifolia</i>	Staphyleaceae	native	7	1	shrub	perennial	bladdernut
<i>Symphyotrichum cordifolium</i>	Asteraceae	native	7	2	forb	perennial	heart-leaved aster
<i>Symphyotrichum drummondii</i>	Asteraceae	native	3	2	forb	perennial	drummonds aster
<i>Symphyotrichum lanceolatum</i>	Asteraceae	native	3	-1	forb	perennial	panicled aster
<i>Symphyotrichum lateriflorum</i>	Asteraceae	native	4	1	forb	perennial	calico aster
<i>Symphyotrichum ontarionis</i>	Asteraceae	native	5	0	forb	perennial	ontario aster
<i>Symphyotrichum urophyllum</i>	Asteraceae	native	5	2	forb	perennial	arrow-leaved aster
<i>Symplocarpus foetidus</i>	Araceae	native	8	-2	forb	perennial	skunk cabbage
<i>Taraxacum officinale</i>	Asteraceae	non-native	0	1	forb	perennial	common dandelion
<i>Taxus canadensis</i>	Taxaceae	native	10	2	shrub	perennial	canadian yew
<i>Tilia americana</i>	Tiliaceae	native	5	1	tree	perennial	american linden
<i>Toxicodendron radicans</i>	Anacardiaceae	native	2	0	vine	perennial	poison ivy
<i>Trillium recurvatum</i>	Trilliaceae	native	5	1	forb	perennial	prairie trillium
<i>Triosteum aurantiacum</i>	Caprifoliaceae	native	5	2	forb	perennial	early horse gentian
<i>Ulmus rubra</i>	Ulmaceae	native	4	2	tree	perennial	slippery elm
<i>Urtica gracilis</i>	Urticaceae	native	1	-1	forb	perennial	tall nettle
<i>Uvularia grandiflora</i>	Colchicaceae	native	7	2	forb	perennial	bellwort
<i>Verbena stricta</i>	Verbenaceae	native	4	2	forb	perennial	hoary vervain
<i>Verbesina alternifolia</i>	Asteraceae	native	5	-1	forb	perennial	wingstem
<i>Viburnum dentatum</i>	Adoxaceae	non-native	0	2	shrub	perennial	southern arrowwood
<i>Viburnum prunifolium</i>	Adoxaceae	native	5	2	shrub	perennial	black haw
<i>Viburnum rafinesquianum</i>	Adoxaceae	native	8	2	shrub	perennial	downy arrowwood
<i>Viola priceana</i>	Violaceae	native	0	2	forb	perennial	confederate violet
<i>Viola pubescens</i>	Violaceae	native	5	2	forb	perennial	downy yellow violet

<i>Viola sororia</i>	Violaceae	native	3	1	forb	perennial	common blue violet
<i>Zanthoxylum americanum</i>	Rutaceae	native	3	1	shrub	perennial	prickly ash
Not on the list due to taxonomy							
<i>Oryzopsis racemosa</i>	Poaceae	native	8	1	grass	perennial	black-seeded rice grass
<i>Trillium recurvatum</i> f. <i>luteum</i>	Trilliaceae	native	5	1	forb	perennial	prairie trillium

Table 3. Total Species List for Franklin Creek State Natural Area – Seeps

Conservatism-Based Metrics:

Total Mean C:	3.8
Native Mean C:	4.5
Total FQI:	26.6
Native FQI:	28.8
Adjusted FQI:	41.2
% C value 0:	20.4
% C value 1-3:	16.3
% C value 4-6:	46.9
% C value 7-10:	16.3
Native Tree Mean C:	4.8
Native Shrub Mean C:	4.3
Native Herbaceous Mean C:	4.5

Species Richness:

Total Species:	49	
Native Species:	41	83.70%
Non-native Species:	8	16.30%

Species Wetness:

Mean Wetness:	-0.3
Native Mean Wetness:	-0.5

Physiognomy Metrics:

Tree:	4	8.20%
Shrub:	6	12.20%
Vine:	2	4.10%
Forb:	30	61.20%
Grass:	4	8.20%
Sedge:	2	4.10%
Rush:	0	0%
Fern:	1	2%
Bryophyte:	0	0%

Duration Metrics:

Annual:	8	16.30%
Perennial:	39	79.60%
Biennial:	2	4.10%
Native Annual:	8	16.30%
Native Perennial:	32	65.30%
Native Biennial:	1	2%

<u>Scientific Name</u>	<u>Family</u>	<u>Native?</u>	<u>C</u>	<u>W</u>	<u>Physiognomy</u>	<u>Duration</u>	<u>Common Name</u>
<i>Alliaria petiolata</i>	Brassicaceae	non-native	0	0	forb	biennial	garlic mustard
<i>Angelica atropurpurea</i>	Apiaceae	native	7	-2	forb	perennial	great angelica
<i>Arisaema triphyllum</i>	Araceae	native	5	0	forb	perennial	jack-in-the-pulpit
<i>Asarum canadense</i>	Aristolochiaceae	native	10	1	forb	perennial	tailed wild ginger
<i>Bidens frondosa</i>	Asteraceae	native	1	-1	forb	annual	common beggars ticks
<i>Boehmeria cylindrica</i>	Urticaceae	native	5	-2	forb	perennial	swamp false nettle
<i>Cardamine bulbosa</i>	Brassicaceae	native	7	-2	forb	perennial	bulbous cress
<i>Cardamine pennsylvanica</i>	Brassicaceae	native	5	-2	forb	biennial	pennsylvania bitter cress
<i>Carex lacustris</i>	Cyperaceae	native	5	-2	sedge	perennial	common lake sedge
<i>Carex spengelii</i>	Cyperaceae	native	8	2	sedge	perennial	long-beaked sedge
<i>Celtis occidentalis</i>	Ulmaceae	native	2	0	tree	perennial	hackberry
<i>Cicuta maculata</i>	Apiaceae	native	6	-2	forb	perennial	water hemlock
<i>Cinna arundinacea</i>	Poaceae	native	5	-1	grass	perennial	common wood reed
<i>Cryptotaenia canadensis</i>	Apiaceae	native	4	0	forb	perennial	honestwort
<i>Dentaria laciniata</i>	Brassicaceae	native	5	1	forb	perennial	toothwort
<i>Enemion biternatum</i>	Ranunculaceae	native	9	1	forb	perennial	false rue anemone
<i>Equisetum fluviatile</i>	Equisetaceae	native	8	-2	fern	perennial	pipes
<i>Fraxinus nigra</i>	Oleaceae	native	8	-1	tree	perennial	black ash
<i>Fraxinus pennsylvanica</i>	Oleaceae	native	4	-1	tree	perennial	red ash
<i>Galium aparine</i>	Rubiaceae	native	0	1	forb	annual	wild velcro
<i>Galium triflorum</i>	Rubiaceae	native	5	1	forb	perennial	sweet-scented bedstraw
<i>Glechoma hederacea</i>	Lamiaceae	non-native	0	1	forb	perennial	creeping charlie
<i>Glyceria striata</i>	Poaceae	native	4	0	grass	perennial	green fowl manna grass
<i>Impatiens capensis</i>	Balsaminaceae	native	4	-1	forb	annual	spotted touch-me-not
<i>Laportea canadensis</i>	Urticaceae	native	5	-1	forb	perennial	wood nettle
<i>Lemna minor</i>	Lemnaceae	native	5	-2	forb	annual	green duckweed
<i>Lonicera maackii</i>	Caprifoliaceae	non-native	0	2	shrub	perennial	amur honeysuckle
<i>Lysimachia nummularia</i>	Myrsinaceae	non-native	0	-1	forb	perennial	moneywort
<i>Persicaria hydropiper</i>	Polygonaceae	native	2	0	forb	annual	woodland water pepper
<i>Phalaris arundinacea</i>	Poaceae	non-native	0	-1	grass	perennial	reed canary grass

<i>Pilea pumila</i>	Urticaceae	native	2	-1	forb	annual	clearweed
<i>Poa pratensis</i>	Poaceae	non-native	0	1	grass	perennial	kentucky bluegrass
<i>Ranunculus recurvatus</i>	Ranunculaceae	native	5	-1	forb	perennial	hooked buttercup
<i>Ranunculus sceleratus</i>	Ranunculaceae	native	4	-2	forb	annual	cursed buttercup
<i>Ranunculus septentrionalis</i>	Ranunculaceae	native	5	1	forb	perennial	swamp crowfoot
<i>Ribes americanum</i>	Grossulariaceae	native	4	-1	shrub	perennial	wild black currant
<i>Rosa multiflora</i>	Rosaceae	non-native	0	1	shrub	perennial	multiflora rose
<i>Rudbeckia laciniata</i>	Asteraceae	native	4	-1	forb	perennial	wild golden glow
<i>Sambucus canadensis</i>	Adoxaceae	native	4	-1	shrub	perennial	elderberry
<i>Sicyos angulatus</i>	Cucurbitaceae	native	2	-1	vine	annual	bur cucumber
<i>Solanum dulcamara</i>	Solanaceae	non-native	0	0	vine	perennial	deadly nightshade
<i>Solidago canadensis</i>	Asteraceae	native	1	1	forb	perennial	canada goldenrod
<i>Symphyotrichum lanceolatum</i>	Asteraceae	native	3	-1	forb	perennial	panicled aster
<i>Symplocarpus foetidus</i>	Araceae	native	8	-2	forb	perennial	skunk cabbage
<i>Tilia americana</i>	Tiliaceae	native	5	1	tree	perennial	american linden
<i>Urtica gracilis</i>	Urticaceae	native	1	-1	forb	perennial	tall nettle
<i>Viburnum lentago</i>	Adoxaceae	native	4	0	shrub	perennial	nannyberry
<i>Viburnum prunifolium</i>	Adoxaceae	native	5	2	shrub	perennial	black haw
<i>Viola priceana</i>	Violaceae	native	0	2	forb	perennial	confederate violet

Table 4. Total Species List for Franklin Creek State Natural Area – Hill Prairies

Conservatism-Based Metrics:

Total Mean C:	3.2
Native Mean C:	4.1
Total FQI:	33.4
Native FQI:	37.8
Adjusted FQI:	36.2
% C value 0:	33
% C value 1-3:	18.3
% C value 4-6:	33.9
% C value 7-10:	14.7
Native Tree Mean C:	3.4
Native Shrub Mean C:	1.8
Native Herbaceous Mean C:	4.4

Species Richness:

Total Species:	109	
Native Species:	85	78%
Non-native Species:	24	22%

Species Wetness:

Mean Wetness:	1.2
Native Mean Wetness:	1.1

Physiognomy Metrics:

Tree:	9	8.30%
Shrub:	9	8.30%
Vine:	6	5.50%
Forb:	66	60.60%
Grass:	13	11.90%
Sedge:	5	4.60%
Rush:	0	0%
Fern:	1	0.90%
Bryophyte:	0	0%

Duration Metrics:

Annual:	8	7.30%
Perennial:	94	86.20%
Biennial:	7	6.40%
Native Annual:	6	5.50%
Native Perennial:	78	71.60%
Native Biennial:	1	0.90%

<u>Scientific Name</u>	<u>Family</u>	<u>Native?</u>	<u>C</u>	<u>W</u>	<u>Physiognomy</u>	<u>Duration</u>	<u>Common Name</u>
<i>Abutilon theophrasti</i>	Malvaceae	non-native	0	1	forb	annual	velvetleaf
<i>Acalypha rhomboidea</i>	Euphorbiaceae	native	0	1	forb	annual	three-seeded mercury
<i>Achillea millefolium</i>	Asteraceae	native	0	1	forb	perennial	common yarrow
<i>Agrimonia pubescens</i>	Rosaceae	native	6	2	forb	perennial	soft agrimony
<i>Agrostis gigantea</i>	Poaceae	non-native	0	-1	grass	perennial	redtop
<i>Ambrosia artemisiifolia</i>	Asteraceae	native	0	1	forb	annual	common ragweed
<i>Andropogon gerardii</i>	Poaceae	native	5	0	grass	perennial	big bluestem
<i>Anemone virginiana</i>	Ranunculaceae	native	5	1	forb	perennial	eastern tall anemone
<i>Anemonella thalictroides</i>	Ranunculaceae	native	7	1	forb	perennial	rue anemone
<i>Antennaria neglecta</i>	Asteraceae	native	3	2	forb	perennial	woolly cats foot
<i>Apocynum cannabinum</i>	Apocynaceae	native	6	-1	forb	perennial	hairy dogbane
<i>Aquilegia canadensis</i>	Ranunculaceae	native	6	1	forb	perennial	wild columbine
<i>Arnoglossum atriplicifolium</i>	Asteraceae	native	8	2	forb	perennial	pale indian plantain
<i>Asclepias syriaca</i>	Asclepiadaceae	native	0	1	forb	perennial	common milkweed
<i>Asclepias verticillata</i>	Asclepiadaceae	native	1	2	forb	perennial	whorled milkweed
<i>Asparagus officinalis</i>	Asparagaceae	non-native	0	1	forb	perennial	asparagus
<i>Bouteloua curtipendula</i>	Poaceae	native	8	2	grass	perennial	side-oats grama
<i>Carex blanda</i>	Cyperaceae	native	1	0	sedge	perennial	common wood sedge
<i>Carex brevior</i>	Cyperaceae	native	3	2	sedge	perennial	plains oval sedge
<i>Carex cephalophora</i>	Cyperaceae	native	5	2	sedge	perennial	short-headed bracted sedge
<i>Carex festucacea</i>	Cyperaceae	native	9	0	sedge	perennial	fescue oval sedge
<i>Carex muehlenbergii</i>	Cyperaceae	native	4	2	sedge	perennial	sand bracted sedge
<i>Carya ovata</i>	Juglandaceae	native	5	1	tree	perennial	shagbark hickory
<i>Celastrus scandens</i>	Celastraceae	native	4	2	vine	perennial	climbing bitter-sweet
<i>Cirsium vulgare</i>	Asteraceae	non-native	0	1	forb	biennial	bull thistle
<i>Cornus racemosa</i>	Cornaceae	native	1	0	shrub	perennial	gray dogwood
<i>Dactylis glomerata</i>	Poaceae	non-native	0	1	grass	perennial	orchard grass
<i>Dasistoma macrophylla</i>	Orobanchaceae	native	8	1	forb	annual	mullein foxglove
<i>Daucus carota</i>	Apiaceae	non-native	0	2	forb	biennial	queen annes lace
<i>Desmodium illinoense</i>	Fabaceae	native	9	2	forb	perennial	illinois ticktrefoil

<i>Dichanthelium praecocius</i>	Poaceae	native	5	0	grass	perennial	long-haired panic grass
<i>Dichanthelium scribnerianum</i>	Poaceae	native	4	1	grass	perennial	scribners panic grass
<i>Dichanthelium villosissimum</i>	Poaceae	native	8	2	grass	perennial	woolly panic grass
<i>Echinacea pallida</i>	Asteraceae	native	10	2	forb	perennial	pale purple coneflower
<i>Elymus canadensis</i>	Poaceae	native	4	1	grass	perennial	canada wild rye
<i>Erigeron annuus</i>	Asteraceae	native	0	1	forb	annual	annual fleabane
<i>Erigeron strigosus</i>	Asteraceae	native	5	2	forb	biennial	daisy fleabane
<i>Eupatorium altissimum</i>	Asteraceae	native	0	1	forb	perennial	tall boneset
<i>Fraxinus pennsylvanica</i>	Oleaceae	native	4	-1	tree	perennial	red ash
<i>Galium aparine</i>	Rubiaceae	native	0	1	forb	annual	wild velcro
<i>Galium triflorum</i>	Rubiaceae	native	5	1	forb	perennial	sweet-scented bedstraw
<i>Geum canadense</i>	Rosaceae	native	1	0	forb	perennial	white avens
<i>Gleditsia triacanthos</i>	Caesalpiniaceae	native	1	0	tree	perennial	honey locust
<i>Helianthus divaricatus</i>	Asteraceae	native	5	2	forb	perennial	woodland sunflower
<i>Hesperostipa spartea</i>	Poaceae	native	8	1	grass	perennial	porcupine grass
<i>Hystrix patula</i>	Poaceae	native	5	2	grass	perennial	bottlebrush grass
<i>Juglans nigra</i>	Juglandaceae	native	3	1	tree	perennial	black walnut
<i>Juncus tenuis</i>	Juncaceae	native	0	0	forb	perennial	path rush
<i>Leonurus cardiaca</i>	Lamiaceae	non-native	0	2	forb	perennial	motherwort
<i>Lespedeza capitata</i>	Fabaceae	native	4	2	forb	perennial	round-headed bush clover
<i>Lithospermum canescens</i>	Boraginaceae	native	8	2	forb	perennial	hoary puccoon
<i>Lonicera maackii</i>	Caprifoliaceae	non-native	0	2	shrub	perennial	amur honeysuckle
<i>Medicago sativa</i>	Fabaceae	non-native	0	2	forb	perennial	alfalfa
<i>Melilotus officinalis</i>	Fabaceae	non-native	0	1	forb	biennial	yellow sweet clover
<i>Monarda fistulosa</i>	Lamiaceae	native	4	1	forb	perennial	wild bergamot
<i>Morus alba</i>	Moraceae	non-native	0	1	tree	perennial	white mulberry
<i>Muhlenbergia frondosa</i>	Poaceae	native	2	-1	grass	perennial	leafy satin grass
<i>Nepeta cataria</i>	Lamiaceae	non-native	0	1	forb	perennial	catnip
<i>Oxalis violacea</i>	Oxalidaceae	native	8	2	forb	perennial	violet wood sorrel
<i>Packera plattensis</i>	Asteraceae	native	4	2	forb	perennial	prairie ragwort
<i>Parthenocissus quinquefolia</i>	Vitaceae	native	4	1	vine	perennial	virginia creeper
<i>Pastinaca sativa</i>	Apiaceae	non-native	0	2	forb	biennial	wild parsnip

<i>Penstemon hirsutus</i>	Scrophulariaceae	native	9	2	forb	perennial	hairy beard tongue
<i>Phleum pratense</i>	Poaceae	non-native	0	1	grass	perennial	timothy
<i>Phlox divaricata</i>	Polemoniaceae	native	5	2	forb	perennial	woodland phlox
<i>Physalis heterophylla</i>	Solanaceae	native	3	2	forb	perennial	clammy ground cherry
<i>Plantago lanceolata</i>	Plantaginaceae	non-native	0	1	forb	perennial	english plantain
<i>Plantago rugelii</i>	Plantaginaceae	native	0	0	forb	annual	red-stalked plantain
<i>Podophyllum peltatum</i>	Berberidaceae	native	4	1	forb	perennial	mayapple
<i>Polygonatum biflorum</i>	Convallariaceae	native	4	1	forb	perennial	smooth solomons seal
<i>Potentilla recta</i>	Rosaceae	non-native	0	2	forb	perennial	sulfur cinquefoil
<i>Prunus serotina</i>	Rosaceae	native	0	1	tree	perennial	wild black cherry
<i>Ptelea trifoliata</i>	Rutaceae	native	4	2	shrub	perennial	wafer ash
<i>Pycnanthemum tenuifolium</i>	Lamiaceae	native	7	0	forb	perennial	slender mountain mint
<i>Quercus alba</i>	Fagaceae	native	5	1	tree	perennial	white oak
<i>Quercus macrocarpa</i>	Fagaceae	native	5	1	tree	perennial	bur oak
<i>Ranunculus fascicularis</i>	Ranunculaceae	native	6	2	forb	perennial	early buttercup
<i>Rhamnus cathartica</i>	Rhamnaceae	non-native	0	0	shrub	perennial	common buckthorn
<i>Rhus glabra</i>	Anacardiaceae	native	1	2	shrub	perennial	smooth sumac
<i>Ribes missouriense</i>	Grossulariaceae	native	2	1	shrub	perennial	missouri wild gooseberry
<i>Rosa multiflora</i>	Rosaceae	non-native	0	1	shrub	perennial	multiflora rose
<i>Rubus occidentalis</i>	Rosaceae	native	0	1	shrub	perennial	black raspberry
<i>Rudbeckia hirta</i>	Asteraceae	native	1	1	forb	perennial	black-eyed susan
<i>Setaria faberi</i>	Poaceae	non-native	0	1	grass	annual	giant foxtail
<i>Sisyrinchium albidum</i>	Iridaceae	native	6	1	forb	perennial	common blue-eyed grass
<i>Sisyrinchium angustifolium</i>	Iridaceae	native	5	0	forb	perennial	stout blue-eyed grass
<i>Smilacina racemosa</i>	Convallariaceae	native	5	1	forb	perennial	feathery false solomons seal
<i>Smilax rotundifolia</i>	Smilacaceae	native	5	1	vine	perennial	four-angled cat brier
<i>Solidago canadensis</i>	Asteraceae	native	1	1	forb	perennial	canada goldenrod
<i>Symphyotrichum drummondii</i>	Asteraceae	native	3	2	forb	perennial	drummonds aster
<i>Symphyotrichum ericoides</i>	Asteraceae	native	6	1	forb	perennial	heath aster
<i>Symphyotrichum oblongifolium</i>	Asteraceae	native	9	2	forb	perennial	aromatic aster
<i>Symphyotrichum pilosum</i>	Asteraceae	native	0	0	forb	perennial	hairy aster
<i>Taraxacum officinale</i>	Asteraceae	non-native	0	1	forb	perennial	common dandelion

<i>Toxicodendron radicans</i>	Anacardiaceae	native	2	0	vine	perennial	poison ivy
<i>Tradescantia ohiensis</i>	Commelinaceae	native	3	1	forb	perennial	common spiderwort
<i>Tragopogon pratensis</i>	Asteraceae	non-native	0	2	forb	biennial	common goats beard
<i>Trifolium pratense</i>	Fabaceae	non-native	0	2	forb	perennial	red clover
<i>Trifolium repens</i>	Fabaceae	non-native	0	2	forb	perennial	white clover
<i>Triosteum aurantiacum</i>	Caprifoliaceae	native	5	2	forb	perennial	early horse gentian
<i>Ulmus rubra</i>	Ulmaceae	native	4	2	tree	perennial	slippery elm
<i>Verbascum thapsus</i>	Scrophulariaceae	non-native	0	2	forb	biennial	common mullein
<i>Verbena stricta</i>	Verbenaceae	native	4	2	forb	perennial	hoary vervain
<i>Verbena urticifolia</i>	Verbenaceae	native	2	0	forb	perennial	hairy white vervain
<i>Viola sororia</i>	Violaceae	native	3	1	forb	perennial	common blue violet
<i>Vitis aestivalis</i>	Vitaceae	native	5	1	vine	perennial	summer grape
<i>Vitis cinerea</i>	Vitaceae	native	7	0	vine	perennial	winter grape
<i>Woodsia obtusa</i>	Woodsiaceae	native	10	2	fern	perennial	cliff fern
<i>Zanthoxylum americanum</i>	Rutaceae	native	3	1	shrub	perennial	prickly ash

Table 5. Total Species List for Franklin Creek State Natural Area – Savannas in North Unit on both sides of Twist Road north of Franklin Creek.

Conservatism-Based Metrics:

Total Mean C:	2.9
Native Mean C:	3.9
Total FQI:	29.3
Native FQI:	34.2
Adjusted FQI:	33.9
% C value 0:	38.2
% C value 1-3:	18.6
% C value 4-6:	31.4
% C value 7-10:	11.8
Native Tree Mean C:	4.4
Native Shrub Mean C:	1.6
Native Herbaceous Mean C:	4

Species Richness:

Total Species:	102	
Native Species:	77	75.50%
Non-native Species:	25	24.50%

Species Wetness:

Mean Wetness:	1.2
Native Mean Wetness:	1.2

Physiognomy Metrics:

Tree:	9	8.80%
Shrub:	7	6.90%
Vine:	6	5.90%
Forb:	59	57.80%
Grass:	11	10.80%
Sedge:	5	4.90%
Rush:	0	0%
Fern:	5	4.90%
Bryophyte:	0	0%

Duration Metrics:

Annual:	12	11.80%
Perennial:	81	79.40%
Biennial:	9	8.80%
Native Annual:	9	8.80%
Native Perennial:	64	62.70%
Native Biennial:	4	3.90%

<u>Scientific Name</u>	<u>Family</u>	<u>Native?</u>	<u>C</u>	<u>W</u>	<u>Physiognomy</u>	<u>Duration</u>	<u>Common Name</u>
<i>Acer negundo</i>	Sapindaceae	native	0	0	tree	perennial	boxelder
<i>Achillea millefolium</i>	Asteraceae	native	0	1	forb	perennial	common yarrow
<i>Agrimonia gryposepala</i>	Rosaceae	native	2	1	forb	perennial	tall agrimony
<i>Allium canadense</i>	Alliaceae	native	3	1	forb	perennial	wild onion
<i>Ambrosia artemisiifolia</i>	Asteraceae	native	0	1	forb	annual	common ragweed
<i>Amelanchier arborea</i>	Rosaceae	native	8	1	tree	perennial	eastern juneberry
<i>Amelanchier laevis</i>	Rosaceae	native	7	1	tree	perennial	allegHENY juneberry
<i>Andropogon gerardii</i>	Poaceae	native	5	0	grass	perennial	big bluestem
<i>Antennaria neglecta</i>	Asteraceae	native	3	2	forb	perennial	woolly cats foot
<i>Antennaria plantaginifolia</i>	Asteraceae	native	4	2	forb	perennial	pussytoes
<i>Artemisia campestris</i> subsp. <i>caudata</i>	Asteraceae	native	5	2	forb	biennial	beach wormwood
<i>Asclepias syriaca</i>	Asclepiadaceae	native	0	1	forb	perennial	common milkweed
<i>Asclepias verticillata</i>	Asclepiadaceae	native	1	2	forb	perennial	whorled milkweed
<i>Asparagus officinalis</i>	Asparagaceae	non-native	0	1	forb	perennial	asparagus
<i>Bromus inermis</i>	Poaceae	non-native	0	2	grass	perennial	hungarian brome
<i>Calystegia sepium</i>	Convolvulaceae	native	1	0	forb	perennial	hedge bindweed
<i>Carex brevior</i>	Cyperaceae	native	3	2	sedge	perennial	plains oval sedge
<i>Carex cephalophora</i>	Cyperaceae	native	5	2	sedge	perennial	short-headed bracted sedge
<i>Carex muehlenbergii</i>	Cyperaceae	native	4	2	sedge	perennial	sand bracted sedge
<i>Carex radiata</i>	Cyperaceae	native	5	0	sedge	perennial	straight-styled wood sedge
<i>Carya ovata</i>	Juglandaceae	native	5	1	tree	perennial	shagbark hickory
<i>Cerastium semidecandrum</i>	Caryophyllaceae	non-native	0	2	forb	annual	small mouse-ear chickweed
<i>Cirsium altissimum</i>	Asteraceae	native	8	2	forb	perennial	tall thistle
<i>Cirsium discolor</i>	Asteraceae	native	3	1	forb	biennial	pasture thistle
<i>Conyza canadensis</i>	Asteraceae	native	0	1	forb	annual	tall horseweed
<i>Cyperus echinatus</i>	Cyperaceae	non-native	0	0	sedge	perennial	globe nut sedge
<i>Cystopteris protrusa</i>	Woodsiaceae	native	8	1	fern	perennial	woodland fragile fern
<i>Dactylis glomerata</i>	Poaceae	non-native	0	1	grass	perennial	orchard grass
<i>Danthonia spicata</i>	Poaceae	native	3	2	grass	perennial	poverty oat grass
<i>Daucus carota</i>	Apiaceae	non-native	0	2	forb	biennial	queen annes lace

<i>Dianthus armeria</i>	Caryophyllaceae	non-native	0	1	forb	biennial	deptford pink
<i>Dichanthelium lindheimeri</i>	Poaceae	native	8	-1	grass	perennial	smooth panic grass
<i>Eragrostis capillaris</i>	Poaceae	native	2	2	grass	annual	lace grass
<i>Erigeron strigosus</i>	Asteraceae	native	5	2	forb	biennial	daisy fleabane
<i>Eupatorium altissimum</i>	Asteraceae	native	0	1	forb	perennial	tall boneset
<i>Euphorbia corollata</i>	Euphorbiaceae	native	4	2	forb	perennial	flowering spurge
<i>Galium triflorum</i>	Rubiaceae	native	5	1	forb	perennial	sweet-scented bedstraw
<i>Heuchera richardsonii</i>	Saxifragaceae	native	10	1	forb	perennial	prairie alum root
<i>Hypericum punctatum</i>	Hypericaceae	native	4	0	forb	perennial	spotted st johns wort
<i>Juncus dudleyi</i>	Juncaceae	native	2	0	forb	perennial	dudleys rush
<i>Juniperus virginiana</i>	Cupressaceae	native	0	1	shrub	perennial	red cedar
<i>Lepidium virginicum</i>	Brassicaceae	native	0	1	forb	annual	common pepper cress
<i>Leucanthemum vulgare</i>	Asteraceae	non-native	0	2	forb	perennial	garden ox-eye daisy
<i>Medicago sativa</i>	Fabaceae	non-native	0	2	forb	perennial	alfalfa
<i>Monarda fistulosa</i>	Lamiaceae	native	4	1	forb	perennial	wild bergamot
<i>Nepeta cataria</i>	Lamiaceae	non-native	0	1	forb	perennial	catnip
<i>Oenothera biennis</i>	Onagraceae	native	0	1	forb	biennial	common evening primrose
<i>Packera paupercula</i>	Asteraceae	native	4	0	forb	perennial	balsam ragwort
<i>Parthenocissus inserta</i>	Vitaceae	native	0	1	vine	perennial	thicket creeper
<i>Pellaea glabella</i>	Adiantaceae	native	10	2	fern	perennial	purple cliffbrake
<i>Penstemon hirsutus</i>	Scrophulariaceae	native	9	2	forb	perennial	hairy beard tongue
<i>Phleum pratense</i>	Poaceae	non-native	0	1	grass	perennial	timothy
<i>Physalis heterophylla</i>	Solanaceae	native	3	2	forb	perennial	clammy ground cherry
<i>Physalis longifolia</i>	Solanaceae	native	0	2	forb	perennial	tall ground cherry
<i>Plantago aristata</i>	Plantaginaceae	non-native	0	2	forb	annual	poor joe
<i>Plantago patagonica</i>	Plantaginaceae	non-native	0	2	forb	annual	woolly plantain
<i>Plantago virginica</i>	Plantaginaceae	native	0	1	forb	annual	dwarf plantain
<i>Poa compressa</i>	Poaceae	non-native	0	1	grass	perennial	canada bluegrass
<i>Poa pratensis</i>	Poaceae	non-native	0	1	grass	perennial	kentucky bluegrass
<i>Podophyllum peltatum</i>	Berberidaceae	native	4	1	forb	perennial	mayapple
<i>Polygonatum biflorum</i>	Convallariaceae	native	4	1	forb	perennial	smooth solomons seal
<i>Polygonum tenue</i>	Polygonaceae	native	5	2	forb	annual	wiry knotweed

<i>Polypodium virginianum</i>	Polypodiaceae	native	10	2	fern	perennial	polypody
<i>Potentilla recta</i>	Rosaceae	non-native	0	2	forb	perennial	sulfur cinquefoil
<i>Prunus serotina</i>	Rosaceae	native	0	1	tree	perennial	wild black cherry
<i>Prunus virginiana</i>	Rosaceae	native	3	1	shrub	perennial	choke cherry
<i>Ptelea trifoliata</i>	Rutaceae	native	4	2	shrub	perennial	wafer ash
<i>Quercus alba</i>	Fagaceae	native	5	1	tree	perennial	white oak
<i>Quercus palustris</i>	Fagaceae	native	5	-1	tree	perennial	pin oak
<i>Quercus rubra</i>	Fagaceae	native	5	2	tree	perennial	red oak
<i>Quercus velutina</i>	Fagaceae	native	5	2	tree	perennial	black oak
<i>Ranunculus fascicularis</i>	Ranunculaceae	native	6	2	forb	perennial	early buttercup
<i>Rhamnus cathartica</i>	Rhamnaceae	non-native	0	0	shrub	perennial	common buckthorn
<i>Rhus glabra</i>	Anacardiaceae	native	1	2	shrub	perennial	smooth sumac
<i>Rosa multiflora</i>	Rosaceae	non-native	0	1	shrub	perennial	multiflora rose
<i>Rubus occidentalis</i>	Rosaceae	native	0	1	shrub	perennial	black raspberry
<i>Rudbeckia triloba</i>	Asteraceae	native	1	1	forb	annual	brown-eyed susan
<i>Ruellia humilis</i>	Acanthaceae	native	8	2	forb	perennial	prairie petunia
<i>Rumex acetosella</i>	Polygonaceae	non-native	0	2	forb	perennial	field sorrel
<i>Schizachyrium scoparium</i>	Poaceae	native	5	1	grass	perennial	little bluestem
<i>Selaginella rupestris</i>	Selaginellaceae	native	10	2	fern	perennial	sand clubmoss
<i>Sicyos angulatus</i>	Cucurbitaceae	native	2	-1	vine	annual	bur cucumber
<i>Silene latifolia</i>	Caryophyllaceae	non-native	0	2	forb	biennial	white campion
<i>Silphium integrifolium</i>	Asteraceae	native	5	0	forb	perennial	rosinweed
<i>Smilacina racemosa</i>	Convallariaceae	native	5	1	forb	perennial	feathery false solomons seal
<i>Smilax hispida</i>	Smilacaceae	native	4	2	vine	perennial	bristly cat brier
<i>Solanum dulcamara</i>	Solanaceae	non-native	0	0	vine	perennial	deadly nightshade
<i>Sorghastrum nutans</i>	Poaceae	native	5	1	grass	perennial	indian grass
<i>Symphotrichum ericoides</i>	Asteraceae	native	6	1	forb	perennial	heath aster
<i>Taraxacum officinale</i>	Asteraceae	non-native	0	1	forb	perennial	common dandelion
<i>Teucrium canadense</i>	Lamiaceae	native	3	0	forb	perennial	canadian germander
<i>Toxicodendron radicans</i>	Anacardiaceae	native	2	0	vine	perennial	poison ivy
<i>Tradescantia ohiensis</i>	Commelinaceae	native	3	1	forb	perennial	common spiderwort
<i>Tradescantia virginiana</i>	Commelinaceae	native	5	2	forb	perennial	virginia spiderwort

<i>Tragopogon pratensis</i>	Asteraceae	non-native	0	2	forb	biennial	common goats beard
<i>Trifolium repens</i>	Fabaceae	non-native	0	2	forb	perennial	white clover
<i>Triodanis perfoliata</i>	Campanulaceae	native	1	2	forb	annual	common venus looking glass
<i>Verbascum thapsus</i>	Scrophulariaceae	non-native	0	2	forb	biennial	common mullein
<i>Verbena stricta</i>	Verbenaceae	native	4	2	forb	perennial	hoary vervain
<i>Verbesina alternifolia</i>	Asteraceae	native	5	-1	forb	perennial	wingstem
<i>Vitis aestivalis</i>	Vitaceae	native	5	1	vine	perennial	summer grape
<i>Woodsia obtusa</i>	Woodsiaceae	native	10	2	fern	perennial	cliff fern

Table 6. Total Species List from Previous Surveys.

<i>Acer negundo</i>	Nyboer	1978	Daniel's Tract
<i>Acer saccharinum</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Acer saccharum</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Adiantum pedatum</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Ambrosia artemisiifolia</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Amelanchier arborea</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Amorpha canescens</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Anemone cylindrica</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Antennaria plantaginifolia</i>	Nyboer	1978	Daniel's Tract
<i>Apocynum sp.</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Aquilegia canadensis</i>	Nyboer	1978	Daniel's Tract
<i>Aralia racemosa</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Arisaema dracontium</i>	Nyboer	1978	Daniel's Tract
<i>Arisaema triphyllum</i>	Nyboer	1978	Daniel's Tract
<i>Aronia melanocarpa</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Asarum canadense</i>	Nyboer	1978	Daniel's Tract
<i>Asclepias verticillata</i>	Nyboer	1978	HP1
<i>Asclepias viridiflora</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Asimina triloba</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Asparagus officinalis</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Asplenium platyneuron</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Athyrium filix-femina</i>	Nyboer	1978	Daniel's Tract
<i>Botrypus virginianus</i>	Nyboer	1978	Daniel's Tract
<i>Bouteloua curtipendula</i>	Nyboer	1978	HP1
<i>Bromus pubescens</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Caltha palustris</i>	Szafoni	1987	Franklin Creek Nature Preserve
<i>Carex sp.</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Carpinus caroliniana</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Carya cordiformis</i>	Nyboer	1978	Daniel's Tract
<i>Carya ovata</i>	Nyboer	1978	Daniel's Tract
<i>Caulophyllum thalictroides</i>	Szafoni	1987	Franklin Creek Nature Preserve
<i>Celastrus scandens</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve

<i>Celtis occidentalis</i>	Nyboer	1978	Daniel's Tract
<i>Chelone glabra</i>	Nyboer	1978	Seep
<i>Cicuta maculata</i>	Nyboer	1978	Seep
<i>Comandra umbellata</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Cornus alternifolia</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Cornus racemosa</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Cornus rugosa</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Corylus americana</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Crataegus crus-galli</i>	Nyboer	1978	Daniel's Tract
<i>Crataegus sp.</i>	Nyboer	1978	Daniel's Tract
<i>Cyperus sp.</i>	Nyboer	1978	HP1
<i>Cystopteris bulbifera</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Cystopteris protrusa</i>	Nyboer	1978	Daniel's Tract
<i>Dalea purpurea</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Danthonia spicata</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Dirca palustris</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Dodecatheon meadia</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Echinacea pallida</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Elodea sp.</i>	Nyboer	1978	Daniel's Tract
<i>Elymus canadensis</i>	Nyboer	1978	Daniel's Tract
<i>Enemion biternatum</i>	Nyboer	1978	Daniel's Tract
<i>Equisetum hyemale</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Erigeron annuus</i>	Nyboer	1978	HP1
<i>Eupatorium sp.</i>	Nyboer	1978	Seep
<i>Euphorbia corollata</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Fraxinus americana</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Fraxinus nigra</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Fraxinus quadrangulata</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Galium sp.</i>	Nyboer	1978	Seep
<i>Geum sp.</i>	Nyboer	1978	Daniel's Tract
<i>Gleditsia triacanthos</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Goodyera pubescens</i>	Szafoni	1987	<i>Franklin Creek Nature Preserve</i>
<i>Gymnocladus dioicus</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve

<i>Hedeoma hispida</i>	Nyboer	1978	HP1
<i>Hepatica acutiloba</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Hepatica sp.</i>	Nyboer	1978	Daniel's Tract
<i>Hydrastis canadensis</i>	Nyboer	1978	Daniel's Tract
<i>Impatiens pallida</i>	Nyboer	1978	Daniel's Tract
<i>Juglans cinerea</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Juglans nigra</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Juniperus virginiana</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Liatris aspera</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Lithospermum canescens</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Lonicera japonica</i>	Nyboer	1978	Daniel's Tract
<i>Lonicera prolifera</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Lycopus americanus</i>	Nyboer	1978	Seep
<i>Lysimachia nummularia</i>	Nyboer	1978	Seep
<i>Maclura pomifera</i>	Nyboer	1978	Daniel's Tract
<i>Melilotus albus</i>	Nyboer	1978	HP1
<i>Menispermum canadense</i>	Nyboer	1978	Daniel's Tract
<i>Mimulus ringens</i>	Nyboer	1978	Seep
<i>Mitella diphylla</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Monarda fistulosa</i>	Nyboer	1978	HP1
<i>Morus alba</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Morus rubra</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Nepeta cataria</i>	Nyboer	1978	HP1
<i>Nuphar advena</i>	Nyboer	1978	Daniel's Tract
<i>Oenothera biennis</i>	Nyboer	1978	HP1
<i>Osmundastrum cinnamomeum</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Ostrya virginiana</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Packera plattensis</i>	Nyboer	1978	HP1
<i>Panax quinquefolius</i>	Szafoni	1987	Franklin Creek Nature Preserve
<i>Parthenocissus quinquefolia</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Pedicularis canadensis</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Pellaea glabella</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Penstemon pallidus</i>	Nyboer	1978	Daniel's Tract

<i>Phyla lanceolata</i>	Nyboer	1978	Seep
<i>Physocarpus opulifolius</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Pilea pumila</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Plantago rugelii</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Platanus occidentalis</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Poa compressa</i>	Nyboer	1978	Daniel's Tract
<i>Poa pratensis</i>	Nyboer	1978	Daniel's Tract
<i>Podophyllum peltatum</i>	Nyboer	1978	Daniel's Tract
<i>Polygonatum biflorum</i>	Nyboer	1978	Daniel's Tract
<i>Polypodium vulgare</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Polystichum acrostichoides</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Populus deltoides</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Populus grandidentata</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Potentilla recta</i>	Nyboer	1978	HP1
<i>Prunella vulgaris</i>	Nyboer	1978	HP1
<i>Prunus serotina</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Prunus virginiana</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Ptelea trifoliata</i>	Nyboer	1978	Daniel's Tract
<i>Quercus alba</i>	Nyboer	1978	Daniel's Tract
<i>Quercus macrocarpa</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Quercus muhlenbergii</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Quercus rubra</i>	Nyboer	1978	Daniel's Tract
<i>Quercus velutina</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Ratibida pinnata</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Rhamnus cathartica</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Rhus glabra</i>	Nyboer	1978	Daniel's Tract
<i>Ribes americanum</i>	Nyboer	1978	Daniel's Tract
<i>Ribes missouriense</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Ribes sp.</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Robinia pseudoacacia</i>	Nyboer	1978	Daniel's Tract
<i>Rosa carolina</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Rosa multiflora</i>	Nyboer	1978	Daniel's Tract
<i>Rosa palustris</i>	Nyboer	1978	Daniel's Tract

<i>Rubus alleghaniensis</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Rubus occidentalis</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Rubus sp.</i>	Nyboer	1978	Daniel's Tract
<i>Ruellia humilis</i>	Nyboer	1978	HP1
<i>Rumex sp.</i>	Nyboer	1978	Seep
<i>Sagittaria sp.</i>	Nyboer	1978	Daniel's Tract
<i>Salix nigra</i>	Nyboer	1978	Daniel's Tract
<i>Sambucus canadensis</i>	Nyboer	1978	Daniel's Tract
<i>Sanguinaria canadensis</i>	Nyboer	1978	Daniel's Tract
<i>Sanicula marilandica</i>	Nyboer	1978	Daniel's Tract
<i>Scutellaria parvula</i>	Nyboer	1978	HP1
<i>Silphium perfoliatum</i>	Nyboer	1978	Daniel's Tract
<i>Smilacina racemosa</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Smilax hispida</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Smilax sp.</i>	Nyboer	1978	Daniel's Tract
<i>Solidago flexicaulis</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Sorghastrum nutans</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Sphenopholis intermedia</i>	Nyboer	1978	Seep
<i>Sporobolus asper</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Staphylea trifolia</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Symphoricarpos orbiculatus</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Symphyotrichum oblongifolium</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Symphyotrichum pilosum</i>	Nyboer	1978	HP1
<i>Symplocarpus foetidus</i>	Nyboer	1978	Seep
<i>Taxus canadensis</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Tilia americana</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie
<i>Toxicodendron radicans</i>	Nyboer	1978	Daniel's Tract
<i>Tradescantia sp.</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Tragopogon sp.</i>	Nyboer	1978	HP1
<i>Trillium flexipes</i>	Szafoni	1987	Franklin Creek Nature Preserve
<i>Trillium recurvatum</i>	Nyboer	1978	Daniel's Tract
<i>Ulmus americana</i>	Nyboer	1978	Daniel's Tract
<i>Ulmus rubra</i>	Harty and Paulson	1977	Glacial Drift Hill Prairie

<i>Urtica gracilis</i>	Nyboer	1978	Daniel's Tract
<i>Uvularia grandiflora</i>	Szafoni	1987	Franklin Creek Nature Preserve
<i>Verbena stricta</i>	Nyboer	1978	HP1
<i>Viburnum lentago</i>	Nyboer	1978	Daniel's Tract
<i>Viburnum prunifolium</i>	Harty and Paulson	1977	Franklin Creek Nature Preserve
<i>Viburnum rafinesquianum</i>	Harty and Paulson	1977	Sandstone Cliff - Franklin Creek Nature Preserve
<i>Woodsia ilvensis</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Woodsia obtusa</i>	Harty and Paulson	1977	Sandstone Cliff
<i>Zanthoxylum americanum</i>	Nyboer	1978	Daniel's Tract

Table 7. List of Natural Community types, acreages, and grades at Franklin Creek Nature Preserve and State Natural Area

<u>Natural Community Type</u>	<u>Acreage</u>	<u>Grade</u>
Dry-mesic Woodland	595.43	C+, C, C-
Floodplain Forest	17.81	C, C-
Glacial Drift Hill Prairie	1.02	C+, C
Recreated Prairie	107.58	C
Savanna	0.86	C+, C
Seep	4.73	C+, C
Slope/Cliffs	18.33	C+, C
Cultural	189.18	D

Table 8. List of Natural Community polygons at Franklin Creek FCSNA.

PolyID	Natural Community Type	Grade	Acreage
1	Seep	C	1.74
2	Slope/Cliffs	C	2.36
3	Seep	C	1.60
4	Slope/Cliffs	C	3.24
5	Slope/Cliffs	C+	5.55
6	Slope/Cliffs	C	2.43
7	Slope/Cliffs	C	1.70
8	Hill Prairie	C+	0.23
9	Slope/Cliffs	C	3.05
10	Seep	C+	1.39
11	Hill Prairie	C+	0.51
12	Hill Prairie	C	0.28
13	Dry-mesic Woodland	C	195.94
14	Recreated Prairie	C	12.98
15	Unknown	NA	4.09
16	Agriculture	D	71.31
17	Recreated Prairie	C	7.42
18	Recreated Prairie	C	4.01
19	Recreated Prairie	C	38.59
20	Agriculture	D	20.96
21	Recreated Prairie	C	18.14
22	Agriculture	D	22.60
23	Developed	D	17.91
24	Dry-mesic Woodland	NA	3.37
25	Agriculture	D	17.81
26	Recreated Prairie	C	5.27
27	Cultural	D	5.78

PolyID	Natural Community Type	Grade	Acreage
28	Dry-mesic Woodland	C+	16.37
29	Floodplain Forest	C	6.57
30	Savanna	C+	0.26
31	Recreated Prairie	C	10.26
32	Dry-mesic Woodland	C-	73.16
33	Dry-mesic Woodland	C+	5.01
34	Dry-mesic Woodland	C+	11.05
35	Dry-mesic Woodland	C+	8.15
36	Recreated Prairie	C	10.91
37	Savanna	C	0.60
38	Unknown	NA	15.52
39	Developed	D	10.31
40	Cultural	D	2.30
41	Dry-mesic Woodland	C-	4.83
42	Dry-mesic Woodland	C	24.11
43	Dry-mesic Woodland	NA	19.17
44	Dry-mesic Woodland	C-	47.47
45	Dry-mesic Woodland	C	16.75
46	Dry-mesic Woodland	C-	29.62
47	Dry-mesic Woodland	C-	85.70
48	Dry-mesic Woodland	C-	18.45
49	Dry-mesic Woodland	C-	29.95
50	Developed	D	1.31
51	Dry-mesic Woodland	C-	1.26
52	Developed	D	3.37
53	Dry-mesic Woodland	C-	0.98
54	Floodplain Forest	C	11.24

Figure 1a. Current aerial imagery of Franklin Creek Nature Preserve and State Natural Area

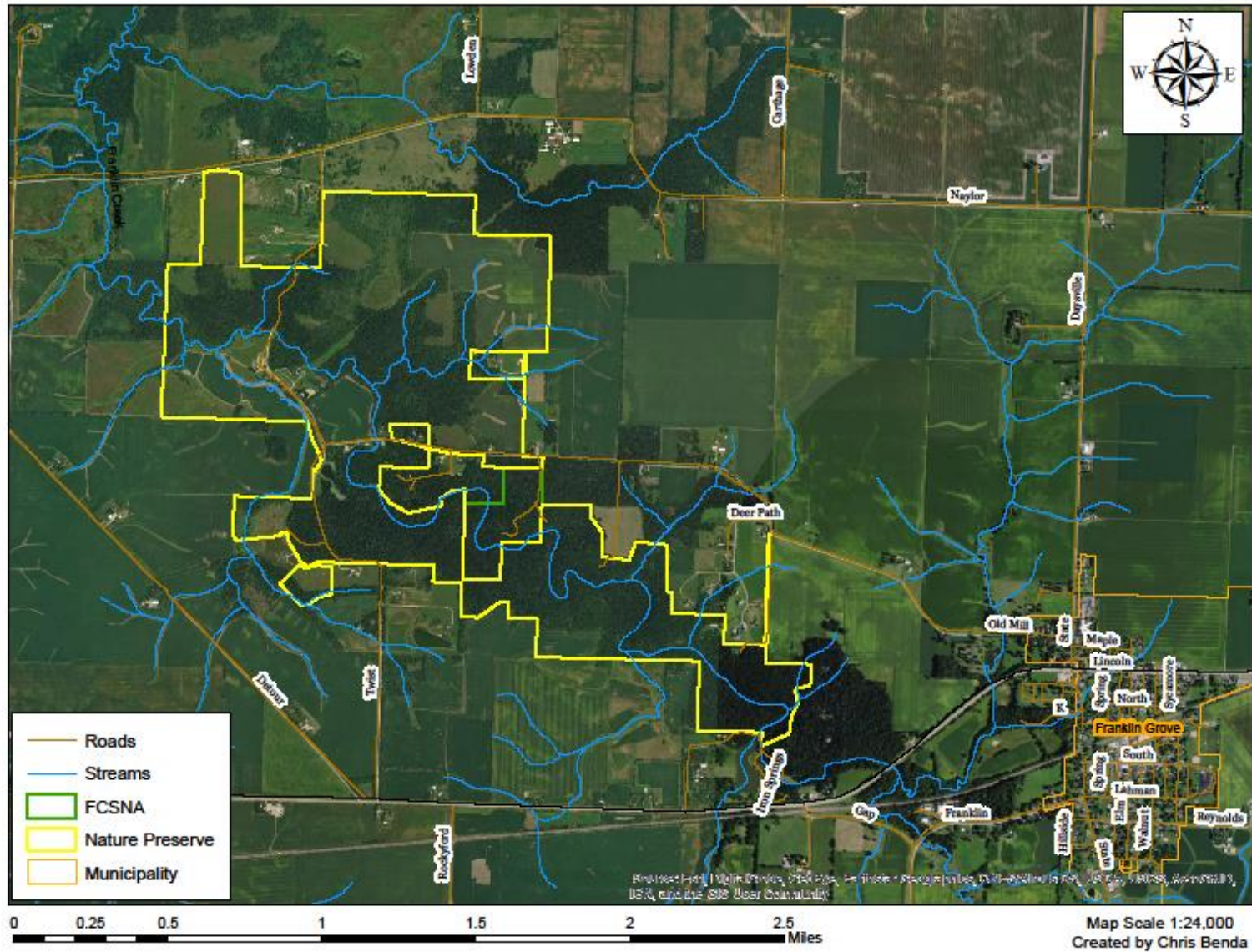


Figure 1b. Historical aerial imagery of Franklin Creek Nature Preserve and State Natural Area

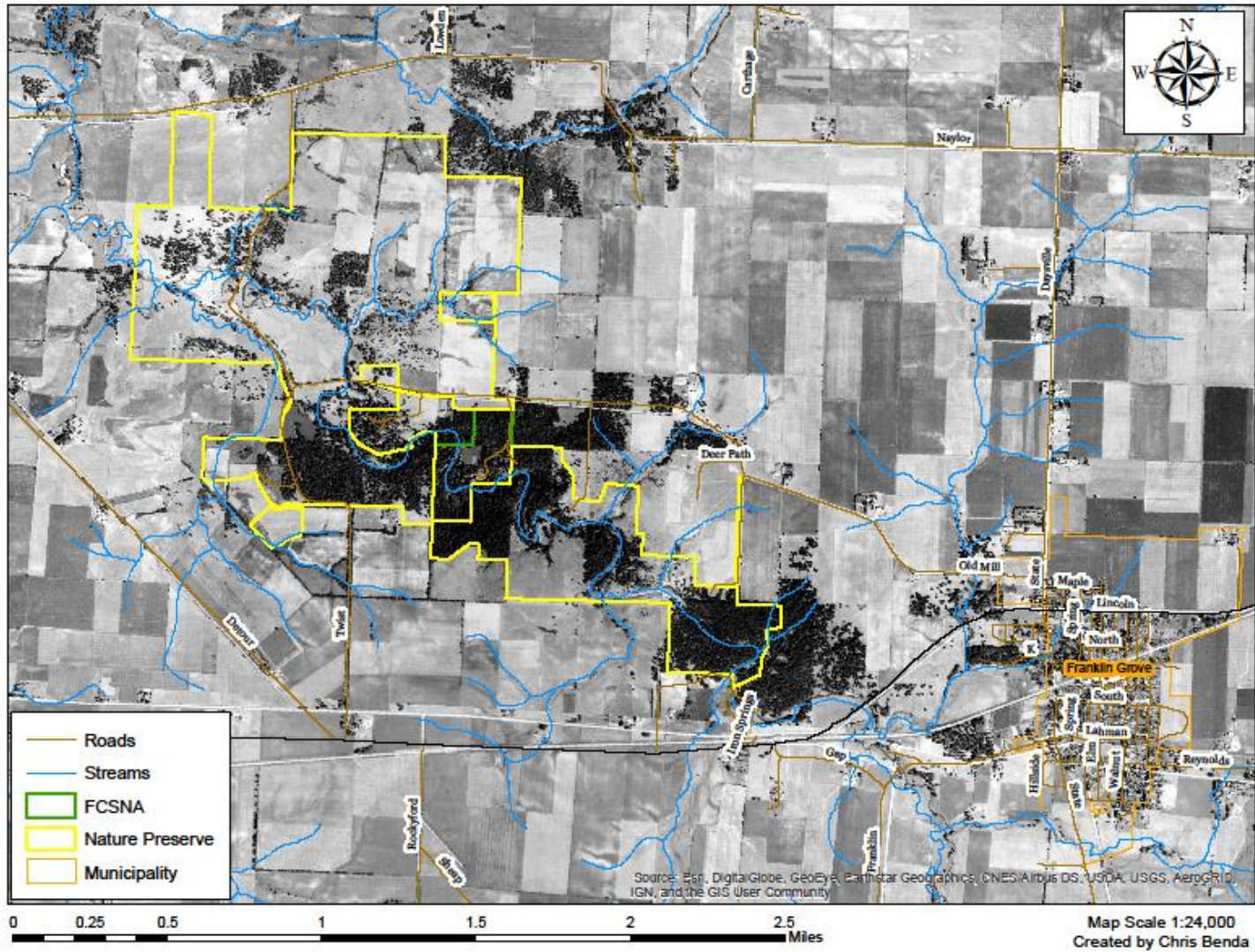


Figure 1c. Current aerial imagery of the Natural Communities of Franklin Creek Nature Preserve and State Natural Area

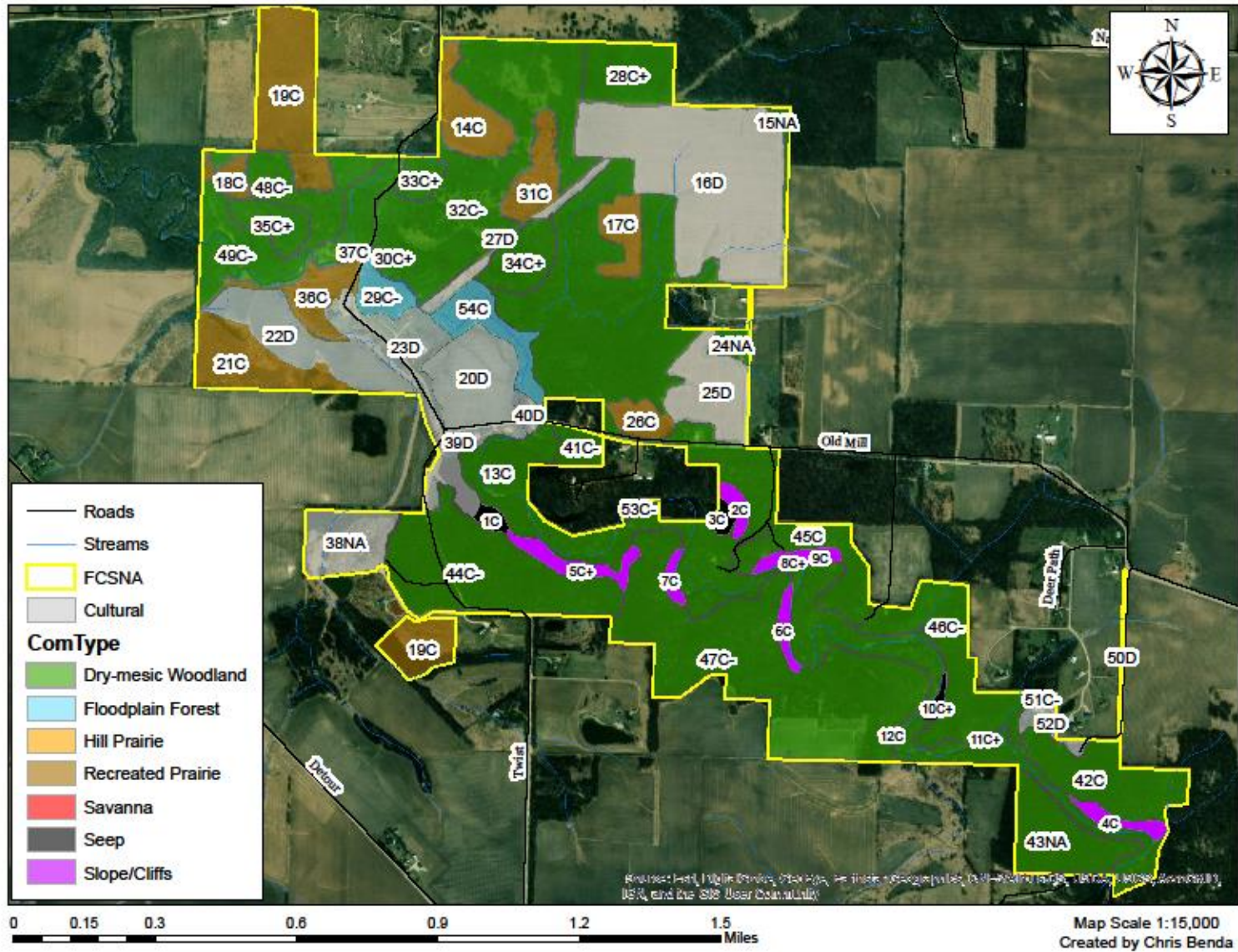


Figure 1d. Topographical imagery of the Natural Communities of Franklin Creek Nature Preserve and State Natural Area

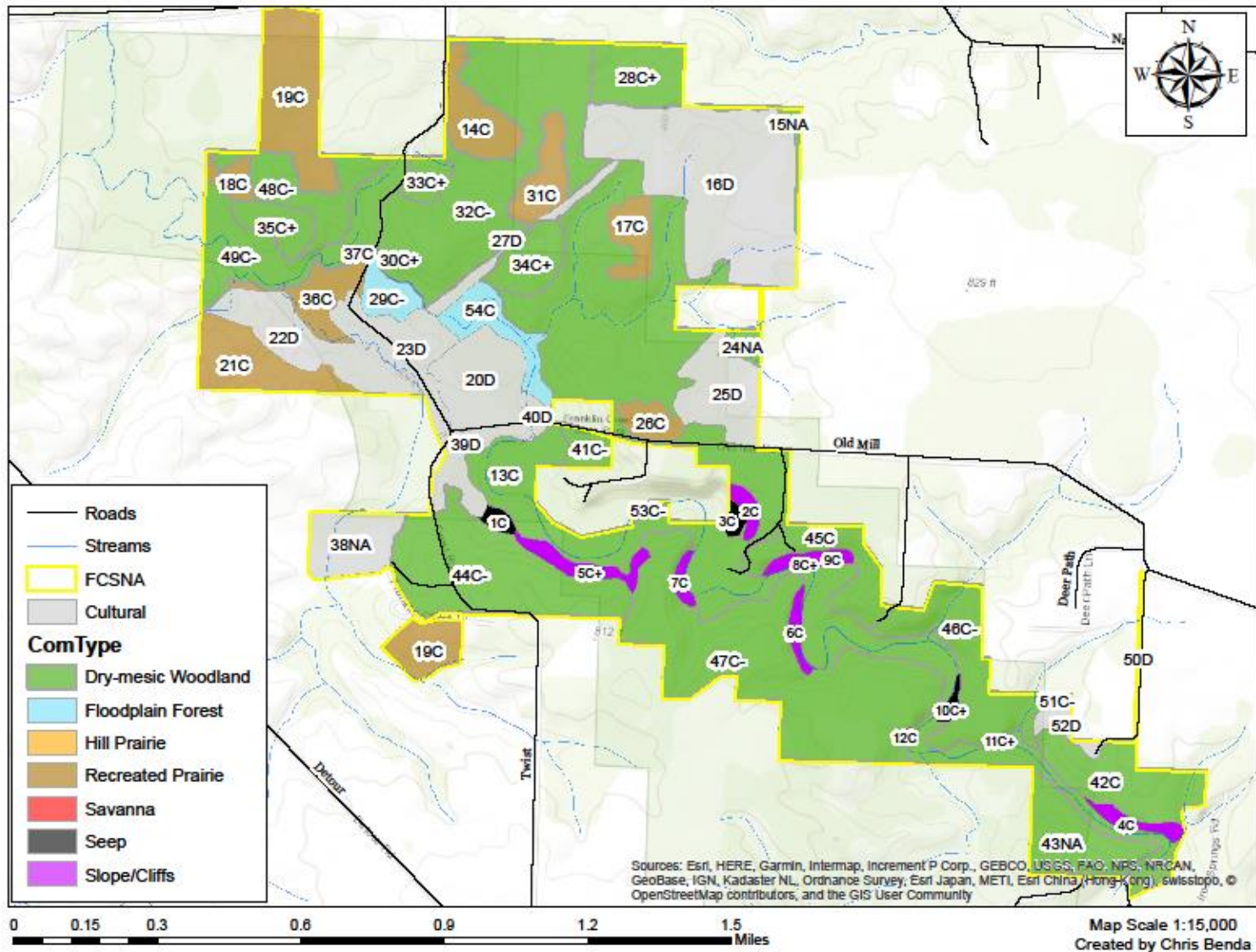


Figure 2b. Historical aerial imagery of Franklin Creek Nature Preserve and State Natural Area – North Unit

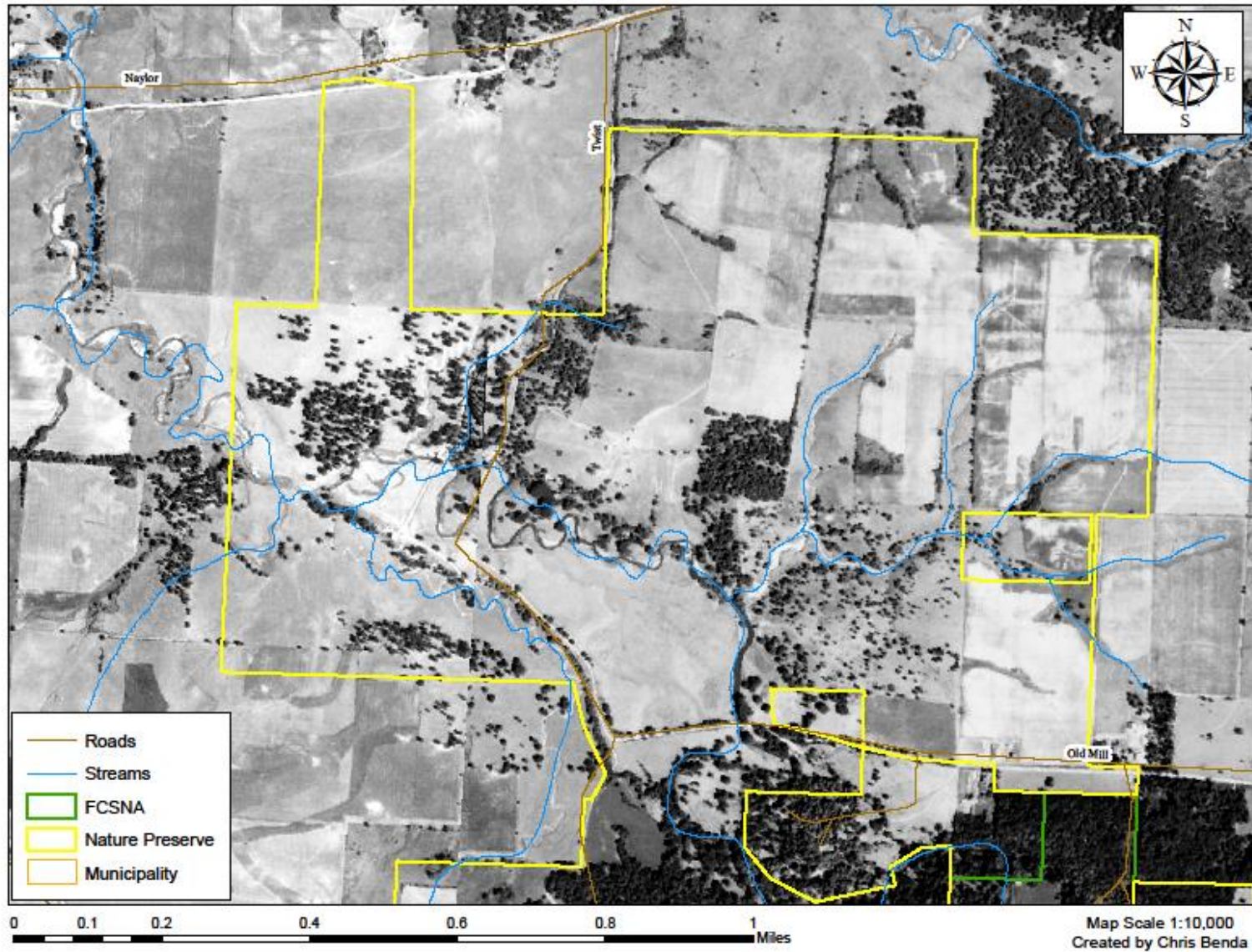


Figure 2c. Natural Communities of Franklin Creek Nature Preserve and State Natural Area – North Unit

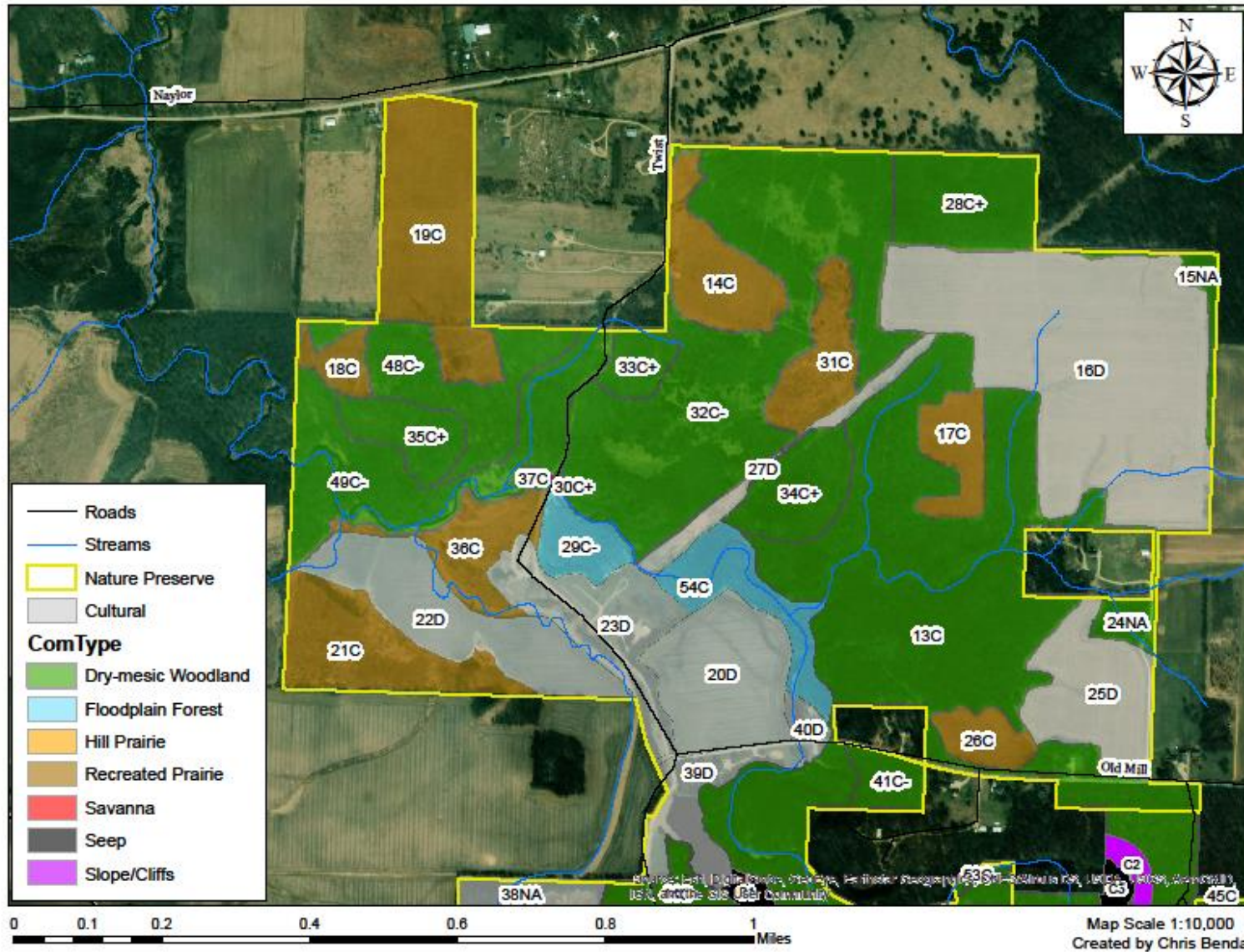


Figure 3a. Current aerial imagery of Franklin Creek Nature Preserve and State Natural Area – South Unit

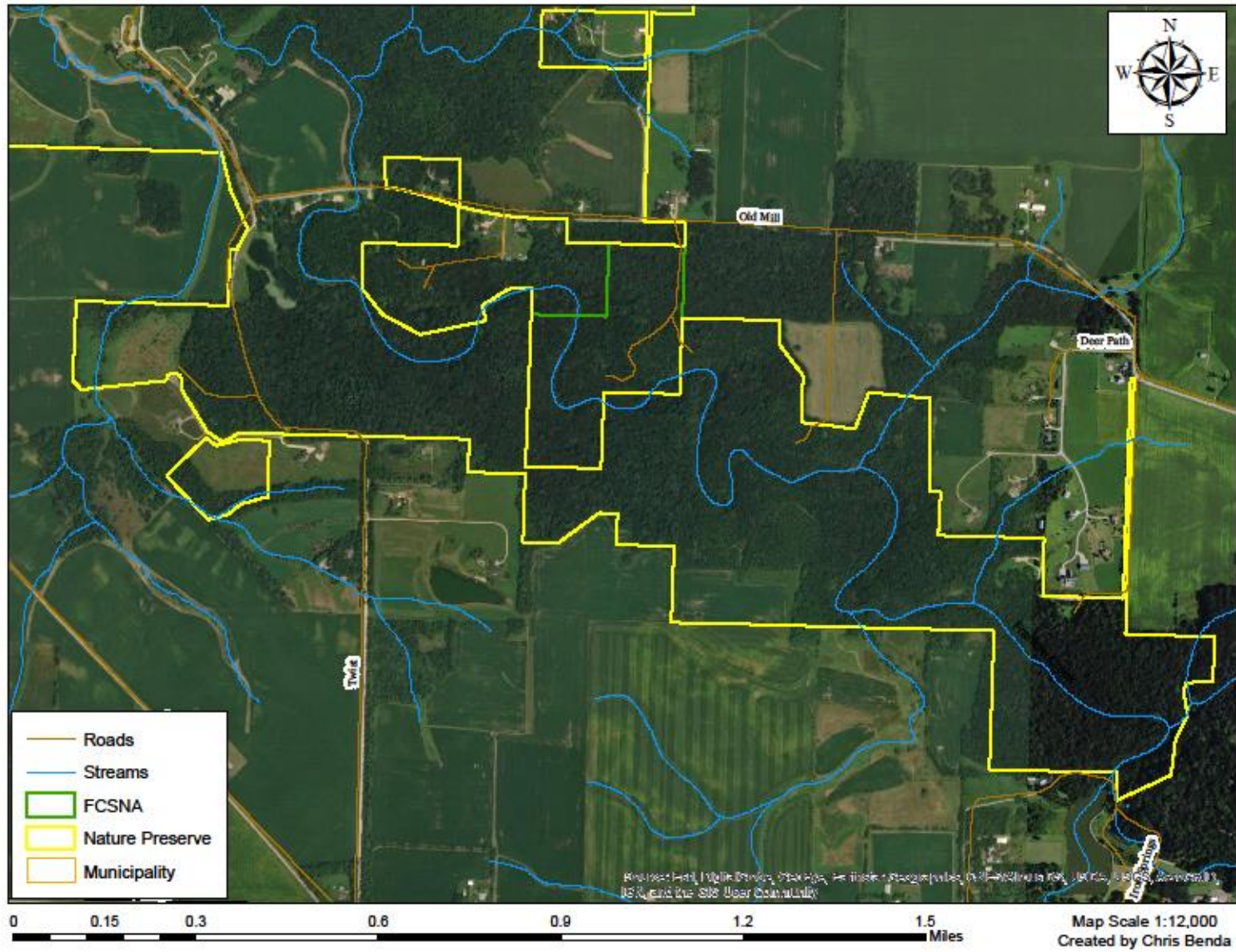


Figure 3b. Historical aerial imagery of Franklin Creek Nature Preserve and State Natural Area – South Unit

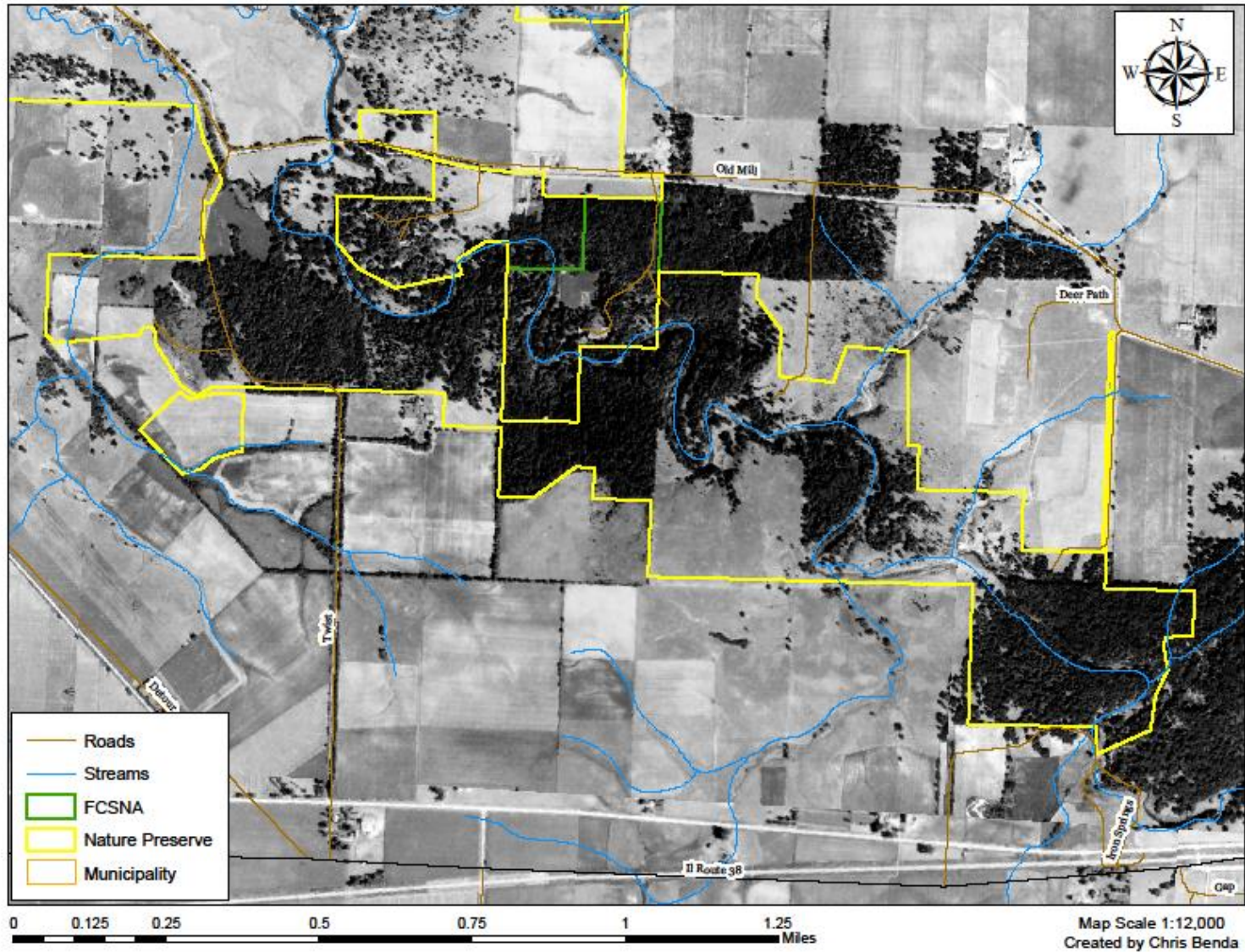


Figure 3c. Natural Communities of Franklin Creek Nature Preserve and State Natural Area – South Unit

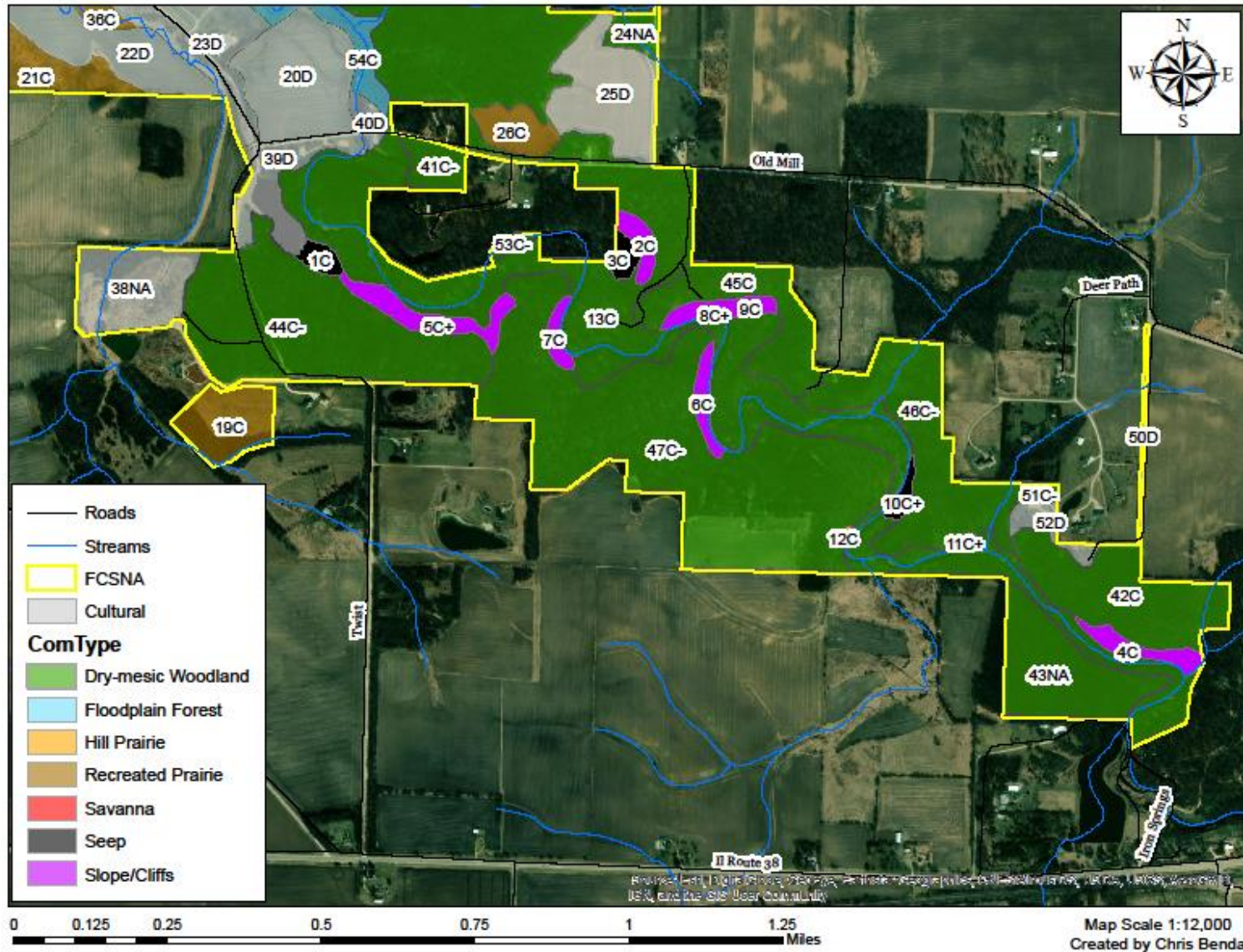


Figure 4. Map including some of the tracks covered by the survey.

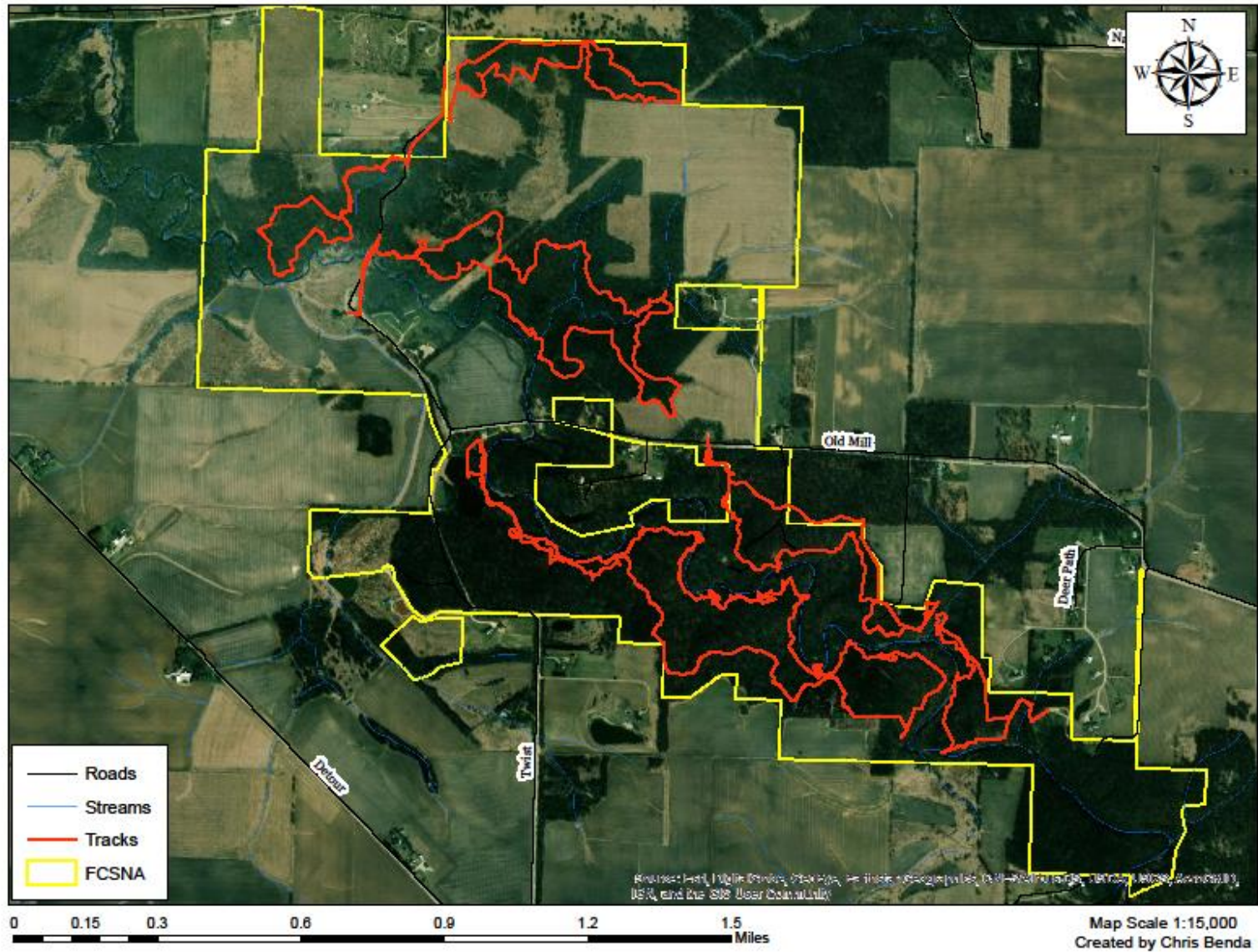


Figure 5. Distribution of *Cystopteris laurentiana* in the contiguous United States.

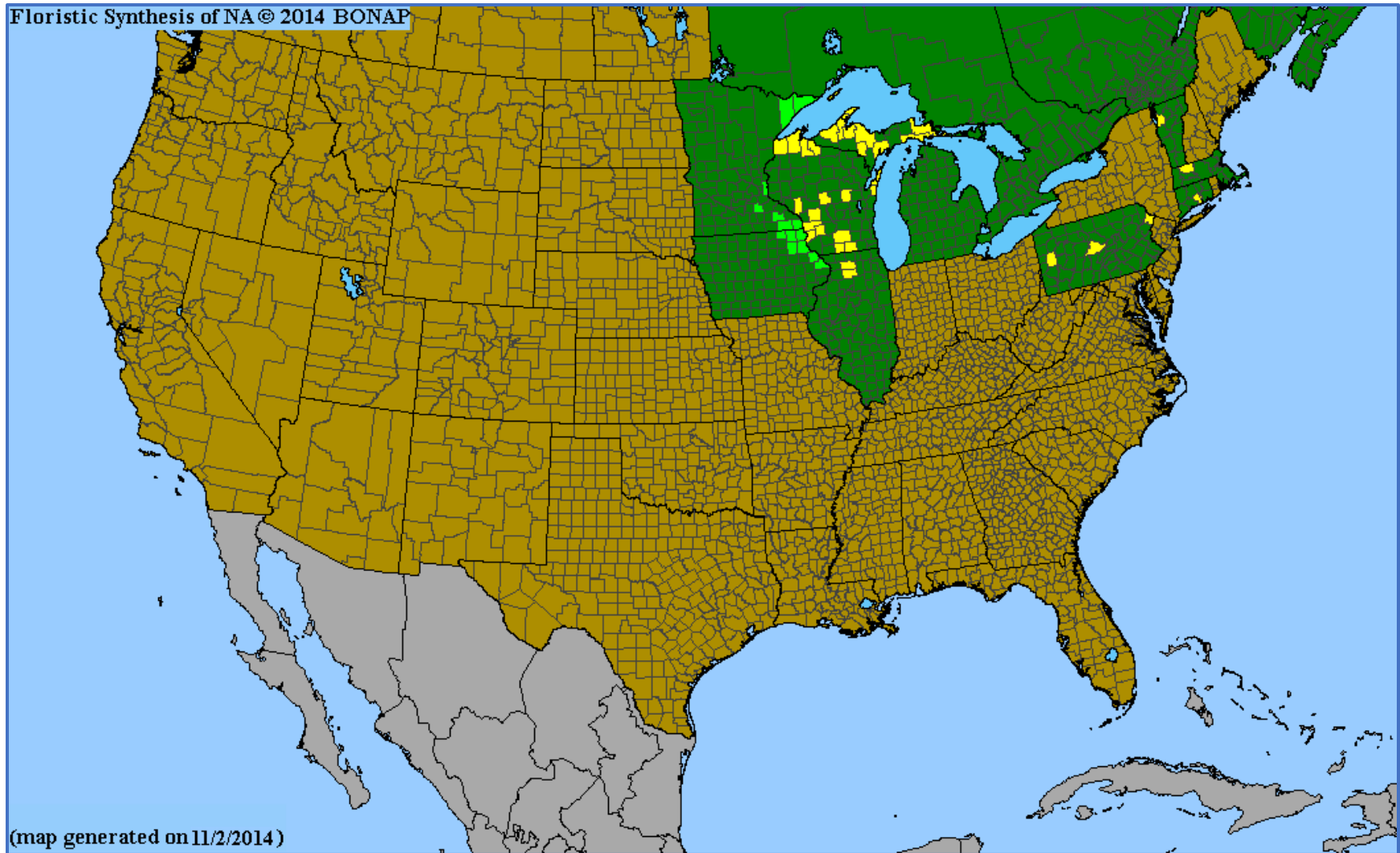


Figure 6. Distribution of *Eurybia furcata* in the contiguous United States.

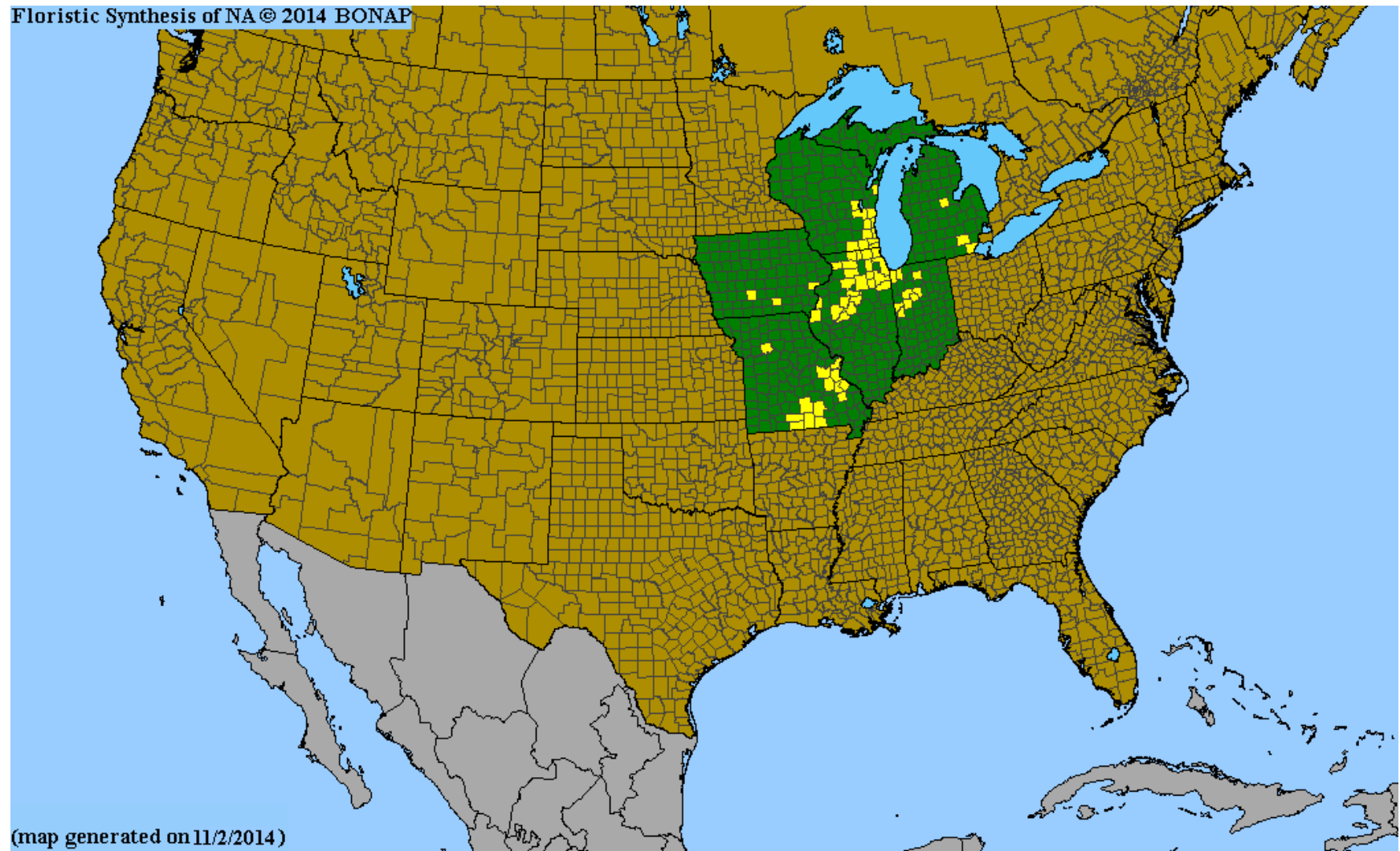
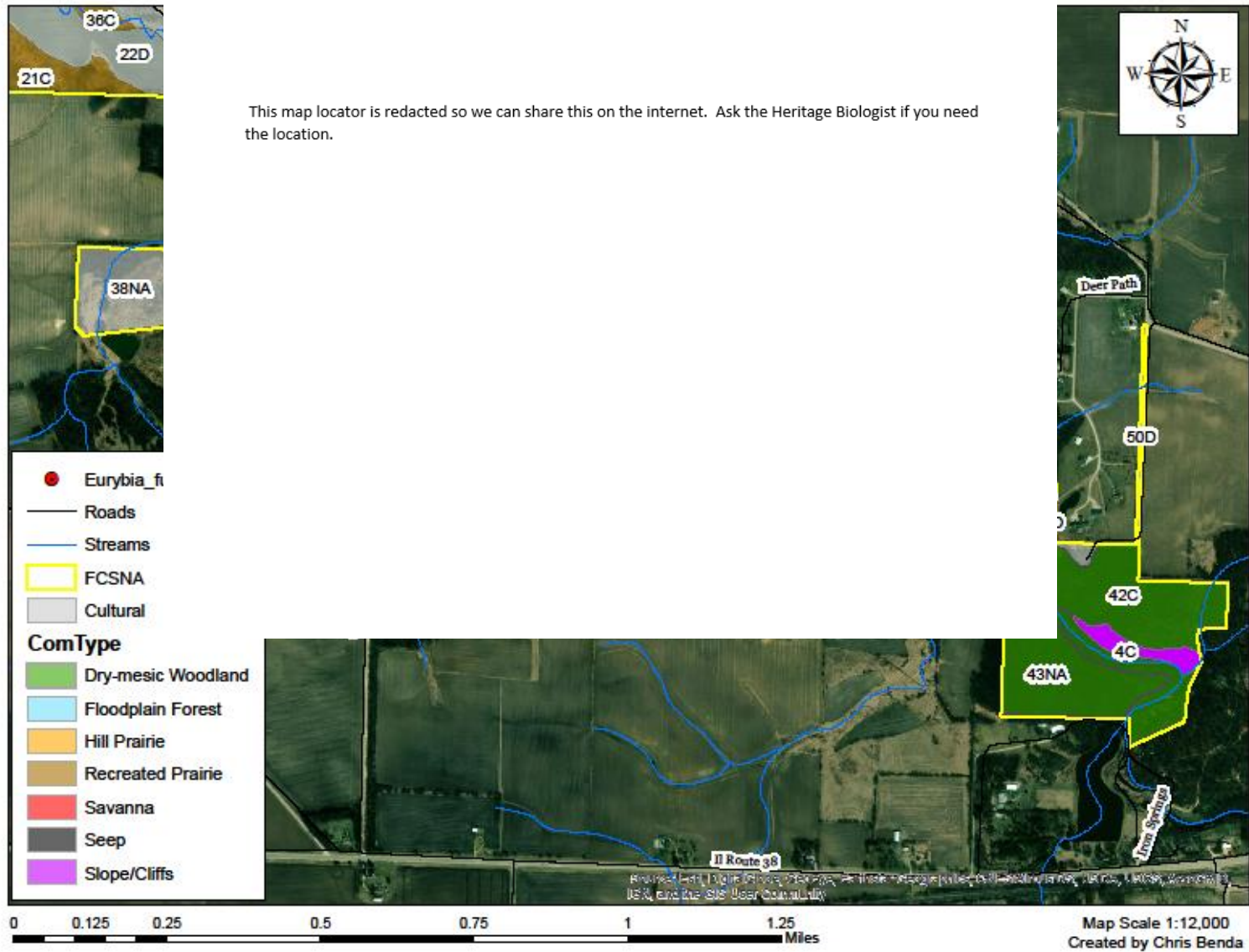


Figure 7. Map indicating location of *Eurybia furcata*.

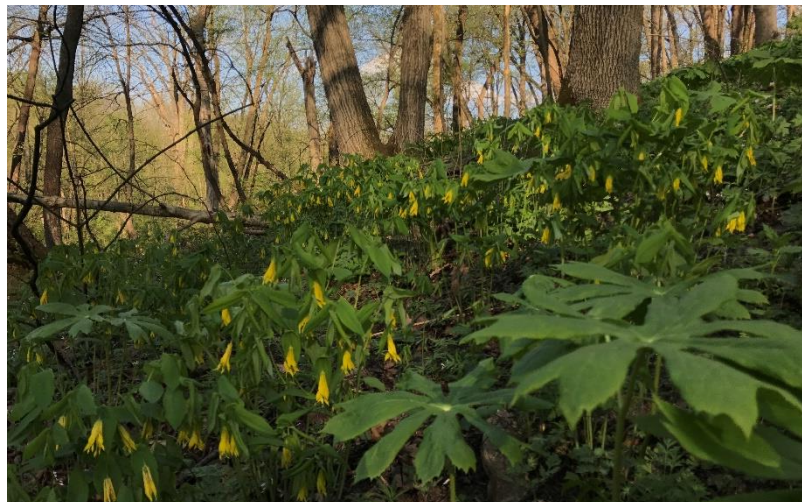




violet wood sorrel (*Oxalis violacea*) at HP1 (polygon 11)



Seep 1 (polygon 10) with skunk cabbage (*Symplocarpus foetidus*)



bellwort (*Uvularia grandiflora*) and mayapple (*Podophyllum peltatum*) in steep Dry mesic Woodland (polygon 5)



blue ash (*Fraxinus quadrangulata*)



blue cohosh (*Caulophyllum thalictroides*) in Dry-mesic Woodland



shooting star (*Dodecatheon meadia*) in Dry-mesic Woodland



leatherwood (*Dirca palustris*) in Dry-mesic Woodland



bishops cap (*Mitella diphylla*) in Dry-mesic Woodland



hoary puccoon (*Lithospermum canescens*) in Hill Prairie



false toadflax (*Comandra umbellata*) in Hill Prairie



Virginia bluebells (*Mertensia virginica*) in Floodplain Forest



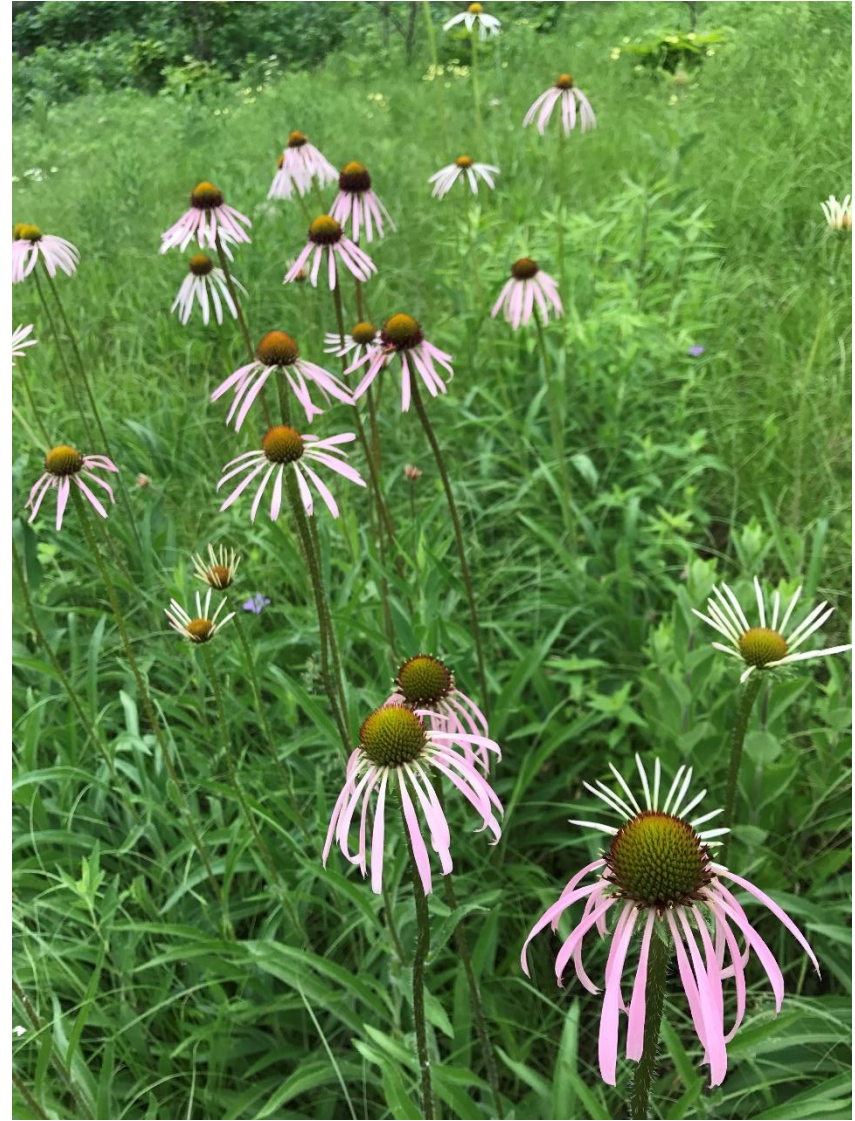
High quality Dry-mesic Woodland in polygon 9



Franklin Creek



tall anemone (*Anemone virginiana*)



pale purple coneflower (*Echinacea pallida*)



rock spikemoss (*Selaginella rupestris*)



cliffbrake fern (*Pellaea glabella*)



Canada yew (*Taxus canadensis*)



bulblet fern (*Cystopteris bulbifera*)



forked aster (*Eurybia furcata*)



red baneberry (*Actaea rubra*)



forked aster (*Eurybia furcata*)



American spikenard (*Aralia racemosa*)



poke milkweed (*Asclepias exaltata*)



walking fern (*Asplenium rhizophyllum*)



Mill Springs



Dry-mesic Woodland



Cliffs and Savanna west of Twist Road at Franklin Creek



Cliffs and Savanna west of Twist Road at Franklin Creek



Trail damage by Franklin Creek



Trail damage on steep slopes

Missouri
Botanical
Garden

14 June 1989



Jean Karnes
Dept. of Natural Heritage
Illinois Dept. of Conservation
Lincoln Tower Plaza
524 South Second Street
Springfield, IL 62701-1787

Dear Jean,

It's been so long since I found the plants of Cystopteris laurentiana in Lee County that I cannot remember where the preserve is on your map! Even if I knew where the preserve boundaries were, I am not sure how well my memory would serve as to where the plants occurred in the preserve. Thus, I have not annotated your map.

The species grows on rocks and I clearly remember collecting it from a rock outcrop along Franklin creek. There are few (one?) rock outcrops along the creek in the preserve, so that should narrow the possible places where the plant came from. Perhaps you can pinpoint the location from this fact or someone who is more familiar with the preserve can do so.

The species was first collected in the preserve by Wade & Wade. Their specimen is at ISM, annotated by me. When I first found these plants I thought they were fertile hexaploids of the sterile triploid C. illinoensis R. C. Moran. But isozyme studies by Dr. Christopher Haufler at Lawrence, Kansas, clearly showed that the plants are C. laurentiana. As you probably know, this species is a fertile allohexaploid of hybrid origin from a cross involving C. bulbifera and C. fragilis (4X).

Previously, C. laurentiana was known from the St. Lawrence region in Canada, Pennsylvania, northern Wisconsin, and northern Minnesota. Field work by myself, Jim Peck (Little Rock, ARK), and Carl Taylor (Milwaukee Public Museum) showed that the species was widespread in the Driftless Area. The species, however, is certainly rare in Illinois.

Please call or write if I can be of further help.

Sincerely,

Robbin

Dr. Robbin C. Moran

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**Illinois Natural Heritage Database
Endangered /Threatened Species Occurrence and Sighting Report Form**

Name of Species: Eurybia furcata **Date Last Observed:** 10/2/2018

New Sighting **or Update** Entire extent of occurrence is: **known** OR/ **not known**

Naturally Occurring **or Introduced** **When?** **From Where?**
Location _____

Location: (For more accurate mapping, please provide a map showing the exact location, or if available, provide GIS data) GPS coordinates, photos, and a map are enclosed.

County: Lee **Latitude** _____ **Longitude** redacted

Direction from Nearest Landmark: From the Mill Springs parking area follow ...

Legal Description: Township 22N Range 10E Section 34 Quad name Franklin Grove

INAI Site Name: Franklin Creek State Natural Area **Survey Site Name (alias)** _____

Observations: (evidence of breeding or # of %, && juvenile animals or # fruiting/flowering/seedling plants, etc.):
fruiting/flowering/seedling plants

Approximately 100 individuals were seen in various stages of growth, but most were flowering.

Description of Area: The plants grow in a clump on a small terrace next to the creek with cliffs nearby.

Comments: _____

Specimen/voucher #(s): Yes: BENDA C. D. 3 **Where deposited?** Southern Illinois University herbarium

Name of Observer: Chris Benda

Observer's Phone Number (217) 417 - 4145

Return to:
Illinois Natural Heritage Database Program Manager
Illinois Department of Natural Resources
ORC – Division of Natural Heritage
One Natural Resources Way
Springfield IL 62702-1271