FLORA OF INTERSTATE STATE PARK, POLK COUNTY, WISCONSIN

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ABSTRACT

The vascular plants and plant communities observed at Interstate State Park, located in Polk County, on the south side of the city of St. Croix Falls in northwestern Wisconsin are presented. The most commonly encountered plant communities were mesic and dry-mesic hardwood forest. The vascular plant list includes 652 taxa from 118 families, including 35 ferns and fern allies, nine gymnosperms, and 608 angiosperms. Fifty-nine county records were discovered in the course of the survey as well as two species listed as Threatened, and five as Special Concern, by the State of Wisconsin. These data are presented to document floral composition and to provide a base for future research activities within the park and the region.

KEYWORDS: Interstate State Park, flora of Wisconsin, St. Croix River

INTRODUCTION

Interstate State Park (the Park) is located in Polk County, on the south side of the city of St. Croix Falls in northwestern Wisconsin, approximately 70 kilometers (45 miles) northeast of St. Paul–Minneapolis, Minnesota. Formed in 1900, it is Wisconsin's oldest state park and is approximately 538 hectares (1330 acres) in area. There are three State Natural Areas within the boundary of the Park. The St. Croix National Scenic Riverway borders the Park to the west, the western terminus of the Ice Age National Scenic Trail is in the Park, and the Park is also a unit of the Ice Age National Scientific Reserve. The main features attracting the public to the Park are glacial potholes and scenic basalt cliffs that form The Dalles of the St. Croix River. This project was undertaken to document the flora of this Park and of the greater region, since these data are generally lacking and incomplete for northwestern Wisconsin.

The Park is primarily forested, and the most common forest types are mesic forest, dry-mesic forest, floodplain forest, and oak woodlands, following the classification of natural communities established by the Wisconsin Department of Natural Resources (2012b). The site is also situated in the middle of the tension zone. This zone roughly follows the border separating the northern hardwoods province and the prairie-forest province, and as a result, contains species from both (Curtis 1959). Compiling information on the range limits of 182

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TABLE 1: Collection contributions by major collectors at Interstate State Park, showing for each total collections and collections of the four largest plant families at the Park.

		Plant Families				
Collector	Total	Asteraceae	Poaceae	Cyperaceae	Rosaceae	Other
Anderson, Derek S.	722	73	83	70	31	465
Cochrane, Theodore S.	63	8	10	4	0	41
Fassett, Norman C.	84	15	12	8	2	47
Patman, Jacqueline	98	8	11	11	7	61
Pohl, Richard W.	187	21	22	7	13	124

plants, Curtis created maps identifiying this zone where a greater number of northern and southern species reach the edges of their range (Curtis 1959; Anderson 2005). Several uncommon habitats such as cliffs (dry and moist), forest seeps, bedrock glades, sedge meadows and emergent aquatic communities add to an already diverse flora.

The Park has a long history of botanizing, but until this survey, there had not been any exhaustive documentation of the flora. Richard Pohl conducted one of the more intensive surveys of the Park in 1936. Other noteworthy collecting trips were made by Norman Fassett in 1927 and 1934, Jacqueline Patman in 1959, and Theodore Cochrane in 1972 (Robert W. Freckman Herbarium 2015, Wisconsin State Herbarium 2015). A comparison of the contributions by past collectors with those of the authors is presented in Table 1.

A review of online databases of Wisconsin herbaria revealed a number of species that had been collected in the past and deposited in the state's herbaria but that were not relocated during this study. These species are indicated in Appendix I by the citation of collector and collection number, year of collection, and herbarium acronym.

Early public land survey records (Haight 1847–1848, Jenkins 1847, Whitcher 1847) indicate that the tree composition in the area of the Park in the mid-1800s is similar to that of today. Surveyors characterized the Park as being "very broken," since it "abounds with traprock [basalt]" (Haight 1847–1848). Other surveyors described the landscape in and around the Park as hilly and stony. They noted that the trees typical in the area of this rocky region of the Park included linden, birch, white oak, elm, hickory, pine, and butternut (presumably *Tilia americana, Betula* sp*., Quercus alba* and/or *Q. macrocarpa, Ulmus* sp*., Carya cordiformis, Pinus strobus,* and *Juglans cinerea*, respectively). The understory in these rocky areas also included hazel and prickly ash (presumably *Corylus* sp*.,* and *Zanthoxylum americanum*). Interestingly, the notes that describe section 36 in Township 34N, Range 19W mention prairie, which is consistent with the extensive bedrock glade community seen in the vicinity today.

The section line notes for the area near the St. Croix River indicate the presence of such species as white maple, black ash, willow, elm and linden (presumably *Acer saccharinum, Fraxinus nigra, Salix* sp*., Ulmus* sp*.,* and *Tilia americana*, respectively), which confirms the wetter nature of this area. The notes also reveal that in upland areas beyond the basalt exposures, species indicative of a mesic forest became common, including sugar maple, linden, white

walnut, white ash, pine, elm and oak (presumed to be *Acer saccharum, Tilia americana, Juglans cinerea, Fraxinus americana, Pinus strobus, Ulmus* sp.*,* and *Quercus rubra*, respectively), and, in the understory, ironwood (*Ostrya virginiana*) and prickly ash.

The climate of the region is continental. Based on weather data from St. Croix Falls, the mean annual precipitation is 77.7 cm, and August is the month with the greatest mean monthly precipitation (11.9 cm). The mean annual temperature for the area is 7° C; July is the hottest month (mean 28.9° C), and January is the coldest (mean –17.6° C). The length of the frost-free growing season ranges from 117 days to 172 days with an average of 144 days per year (Midwestern Regional Climate Center 2015).

Development within the Park includes a contact station, a nature interpretive center, two campgrounds, a swimming beach, a boat landing, approximately 14.4 kilometers of hiking trails, and 20.9 kilometers of winter recreation trails (Wisconsin Department of Natural Resources 2012a). The most disturbed areas of the Park are a gas pipeline right-of-way and the Silverbrook Mansion site on the south end of the Park. Although most of the infrastructure of the mansion is gone, foundation remnants and trout ponds that were created by the berming of springs remain. Other portions of the Park continue to recover from logging, mining, grazing, and agricultural activities that took place around the turn of the twentieth century.

Geology

The complex landscape of the Park is the result of geological events spanning a billion years. Evidence of lava flows, faulting, flooding, glaciation, and erosion can be seen in the Park. The geologic events of the past have directly and indirectly impacted the landscape and plant communities as they exist in the Park today.

Late in the Precambrian, about 1.1 billion years ago, tectonic forces began to pull the North American continent apart. Outpourings of lava, called fissure flows, continued for millions of years, completely burying the pre-existing landscape in this area beneath thousands of feet of Keweenawan basalt. Eight individual basalt flows have been mapped in the area (Cordua 1989). The weight of the lava and accumulated sediment at the surface resulted in the Lake Superior syncline, a down-warping of the earth's surface. The northeast–southwest axis of the syncline lies west of the Park; as a result, the lava flows in this area dip toward the west. Faulting also occurred in many places within the syncline.

Toward the end of Precambrian time, a long period of erosion began that lasted a few hundred million years and wore deep valleys into the Keweenawan sediments and the rocks below. Then, starting in the Late Cambrian, this region was submerged under a shallow sea. Hundreds of feet of sediments reburied the Keweenawan rocks under layers of sedimentary rock. Where sea cliffs stood at the edge of the sea, boulders fell into the wave zone where the surf tumbled, broke, and ground them smooth, resulting in a conglomerate rock layer at the base of the much thicker overlying sandstone (Mickelson et al. 2011). Ravines

containing examples of basal conglomerate are evidence of the ancient exhumed landscape of this area.

Eventually the area rose above sea level, followed by another long period of erosion lasting over 300 million years. Gradual erosion ended two million years ago when the Ice Age began in Wisconsin. During the Pleistocene, several episodes of glacial and interglacial periods altered the landscape, each advance leaving little evidence of earlier glaciations.

The most recent glacial episode was the Wisconsin Glaciation, which began about 100,000 years ago. The best record of late Wisconsin ice cover is preserved on bedrock surfaces as striations, which indicate the direction of ice flow. Johnson (2000) interpreted the striations at the tops of Observation Rock and Eagle Peak as having been formed by the Superior Lobe during the last glaciation. The Superior Lobe was one of six major lobes of ice that advanced over Wisconsin during the Wisconsin Glaciation. This lobe of ice deepened the Lake Superior basin as the ice advanced along the Lake Superior syncline, and is thus named after Lake Superior (Johnson 2000).

Extensive erosion of the St. Croix River gorge and the formation of the potholes occurred very late during the retreat of the Superior Lobe. The retreating ice exposed the Lake Superior basin. Melt water filled the basin to form glacial Lake Duluth at the ice margin. Glacier ice blocked drainage of the melt water to other outlets. As a result, glacial Lake Duluth eventually overflowed, flooding the Bois Brule–St. Croix valley. At the Park, torrents of glacial melt water filled the valley to an elevation of at least 274 meters (900 feet), as is evident at Eagle Peak by rock eroded by the river (Mickelson et al. 2011).

The rapidly flowing river repeatedly ripped away pieces of the highly fractured basalt. Continued cutting of the gorge resulted in the deep, narrow formation known as The Dalles of the St. Croix. Lake o' the Dalles is another feature of the torrential flow of the river. It is a plunge pool basin formed at the base of cascading water as the glacial St. Croix River tumbled over the bluffs of Summit Rock.

The rushing melt water also formed glacial potholes in the bedrock 6–21 m (20–70 ft) above the present level of the river (Figure 1). In the fast-flowing current of the river, recurring eddies moved debris in a circular motion on the riverbed. Over time, the spinning debris drilled holes into the bedrock. Rocks caught in the swirling water were worn to a smooth, spherical shape. These rocks are called grindstones.

Land History

Little is known about the earliest inhabitants of the area now preserved in the Park. Settlers tell of finding stone spear points and axes and other prehistoric tools about the Park (Pond 1937). Archeological surveys have not identified any definite village or campsite dating to prehistoric times. In 1936, an important archeological discovery provided evidence of prehistoric mammals inhabiting this area. A number of large bones were uncovered by Civilian Conservation Corps workmen while digging in peat not far from Lake o' the Dalles. The bones were identified as *Bison occidentalis*, an extinct species of bison. Based on bone

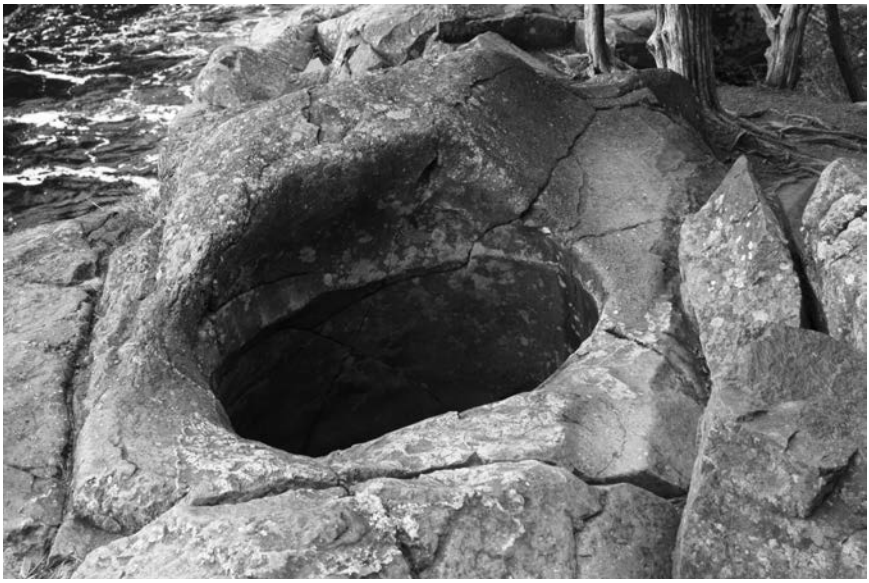

FIGURE 1. A glacial pothole carved into the basalt bedrock along the St. Croix River. Photograph by Derek Anderson, October 1, 2010.

dating, *B. occidentalis* persisted in the region for about 4,000 years, with the greatest presence between ca. 8,000–7,000 calibrated years B.P. (Hawley et al. 2013). Over 1400 bison, deer, and elk bones were recovered from the excavation site, as well as one copper tool.

The first European to record travel from Lake Superior to the Mississippi River via the Bois Brule–St. Croix portage was Daniel Greysolon, Sieur du Lhut, in 1679 (du Lhut is the namesake of Duluth, Minnesota). It was the French, during this early period of exploration, who named this river the *St. Croix,* or Holy Cross river, and described the river gorge as the *Dalles*—a word to describe rivers with steep walls and fast-flowing water. Du Lhut claimed the region for France and offered gifts to the Dakota Indians, the first historic inhabitants of the St. Croix Valley (McMahon and Karamanski 2009).

The river became a regular route for missionaries, fur traders, and other voyagers. Ojibwa Indians began migrating into the valley in the seventeenth century and became involved in the fur trade. McMahon and Karamanski (2009) discussed the eventual and mounting tension and violence between the Ojibwa and Dakota that escalated into an epic battle fought here at the Dalles of the St. Croix around 1770. Combined war parties of Fox and Dakota Indians met Ojibwa warriors in combat on the portage trail around the St. Croix Falls. After a fierce battle with heavy losses on all sides, the Ojibwa emerged victorious. An uneasy boundary between the Ojibwa and Dakota was established, yet skirmishes continued for the next several decades.

By the mid-1800s, the fur trade had diminished and the logging industry

began in earnest due to the rising market for lumber in the Mississippi River Valley and beyond. For more than a half century, the St. Croix River was used to transport pine logs to mills and markets downstream. The most spectacular event of the logging days occurred in the Dalles in the spring of 1886. More than 150 million feet of pine were stacked in a logjam that extended three miles upstream of the 90-degree bend in the river known as the "Elbow of the St. Croix." By 1914, the last log drive had reached the mills and the logging boom was over. Other business ventures such as copper mining, traprock excavation and blasting, and construction of the hydroelectric dam at the "falls" of Taylors Falls and St. Croix Falls had also begun by the 1890s (St. Croix Falls Area History, compiled by Knudson, unpublished).

Local citizens became concerned about preserving the scenic beauty of the river gorge. In the mid-1890s, George Hazzard of Taylors Falls, Minnesota, began encouraging citizens of that community to lobby their legislators to create a state park on the Minnesota side of the Dalles. As a result, Minnesota Interstate State Park was established in 1895. Harry Baker of St. Croix Falls, Wisconsin, was doing the same in his community. After five years of numerous trips to Madison, and fundraisers by local businessmen to support the lobbying efforts, the legislators finally agreed to set aside funds to purchase land on the Wisconsin side of the Dalles of the St. Croix River. On September 20, 1900, the State of Wisconsin acquired the first parcel of land here, officially establishing Interstate State Park as Wisconsin's oldest state park (Baker, unpublished letter 1961).

Approximately 30 hectares (a little more than 72 acres) of land was purchased in 1900, mostly from within the city limits of St. Croix Falls. In 1907 and 1908, more than 200 additional hectares (500 acres) were purchased. These purchases included what are now the Dalles of the St. Croix and the Lake o' the Dalles areas. Over the next several years lands were acquired bit by bit from several adjacent landowners, thereby providing protection for the more sensitive areas of the Park (Interstate State Park acquisition files, unpublished).

Despite land acquisition, little development took place within the Park until the 1930s and the creation of the Civilian Conservation Corps (CCC). In the summer of 1935 the barracks of CCC Camp Interstate were constructed not far from Lake o' the Dalles. In November, 1935, CCC Company 633 arrived from Grafton, Illinois, to begin work in the Park. Development projects included extension and improvement of the park road; construction of stone buildings, shelters, and other structures; and construction of 16 kilometers (10 miles) of hiking trails (Pond 1937). Late in 1937 Camp Interstate was abandoned until the following year when CCC Company 4610 arrived to continue the work until they were disbanded in 1940. Many of the stone structures and nine miles of the hiking trails built by the CCC are still in use today.

Additional land acquisitions included approximately 100 hectares (240 acres) purchased in Osceola Township from the Riegel family in 1964 and about 80 hectares (196 acres) purchased from the Mills family in 1970, the latter of which nowconstitutes the Silverbrook area (Interstate State Park acquisition files, unpublished).

Significant to further protection of the natural and cultural resources of the Park was the passage of two acts of Congress. In 1968 the Upper St. Croix River

was one of eight original rivers protected by the National Wild and Scenic Rivers Act. In 1972 that act was amended to include the Lower St. Croix. In 1971 another act of Congress created the Ice Age National Scientific Reserve, established to preserve Wisconsin's glacial heritage. Interstate State Park is one of nine units of the Reserve. As a result, federal funding was received to aid in new development at the Park. In 1982 a new park entrance and office, a maintenance building, and the Ice Age Interpretive Center were completed.

METHODS

Study Area

Interstate State Park is a 538 hectare park located along the east edge of the St. Croix River, south of St. Croix Falls in Polk County, Wisconsin (Figure 2). This area was well known throughout history and was often referred to as the "Falls of the St. Croix". The actual falls were a series of rapids where the St. Croix River dropped about 12 meters (40 feet) in elevation over the course of 9.6 kilometers (6 miles). Today, most of these rapids are hidden underwater because of a hydroelectric dam that was completed in 1906.

There are a number of places within the Park referenced by nicknames used to describe the different features and places. Eagle Peak, a basalt exposure, is 274 meters (900 feet) above sea level. It is one of the highest points in the Park. Geographically, it is located in the center of the Park. Summit Rock, another basalt rock feature, is 250 meters (830 feet) above sea level. It is the highest point in the Park located along the St. Croix River gorge (the area described as the Dalles). Observation Rock is a third basalt feature nicknamed for the panoramic view it provides of the St. Croix River Valley. It is found on the last 1.5 kilometers (ca 1 mile) of the Ice Age Trail.

The lakes observed within the Park are connected to the St. Croix River. Lake o' the Dalles is a spring fed lake centrally located within the Park, just south of Summit Rock. A small stream flows from this lake along a former river channel to the St. Croix River. Folsom Lake is on the southern boundary of the Park and is backwater slough.

Also found at the southern end of the Park is an area referred to as the Silverbrook Mansion. When it was in private ownership, the estate developed the area. A downhill ski slope was cleared, and several trout ponds were created by berming natural springs near the home site. The mansion was razed in 1974, and now only foundational ruins remain.

Data for this flora project were collected during the growing seasons of 2011 to 2013. Seven hundred twenty-two voucher specimens representing 612 taxa were collected, identified, and deposited in the Robert W. Freckmann Herbarium of the University of Wisconsin–Stevens Point in Stevens Point, Wisconsin (UWSP). These are listed in Appendix I. An additional 40 taxa that were previously documented at the Park and represented by collections at UWSP or the Wisconsin State Herbarium of the University of Wisconsin–Madison (WIS) but not located during the present survey are also included in this list. The following sources were used for plant identification: Fassett (1951, 1978), Gleason and Cronquist (1998), Holmgren (1998), Hipp (2008), Crow and Hellquist (2000), Smith (2008), and Voss and Reznicek (2012). Nomenclature follows Reznicek et al. (2011) for the ferns and fern allies and Voss and Reznicek (2012) for the seed plants. Six taxa not included in Voss and Reznicek (2012) follow the nomenclature of the Flora of North America (1993+). These are *Antennaria plantaginifolia, Delphinium carolinianum, Phemeranthus rugospermus, Rubus alumnus, Tradescantia occidentalis,* and *Vernonia fasciculata*.

General species composition was noted for plant communities in the Park. We visited each community throughout the Park recording the dominant plants in each stratum (canopy, understory and ground layers) if present. This information was used to describe the basic composition of the plant communities. The nomenclature for the plant communities follows that used by the Wisconsin DNR Natural Heritage Inventory (Wisconsin Department of Natural Resources 2012b). One or two visits were made to the Park each week during the growing season. An extra effort was placed on visiting forested communities in the spring to capture ephemerals, while later-season survey effort was focused on wetlands and other more open communities. Meander surveys to locate rare species (Goff et al. 1982) were undertaken in the more uncommon communities of the Park.

A list of target species to search for while conducting surveys was compiled from several re-

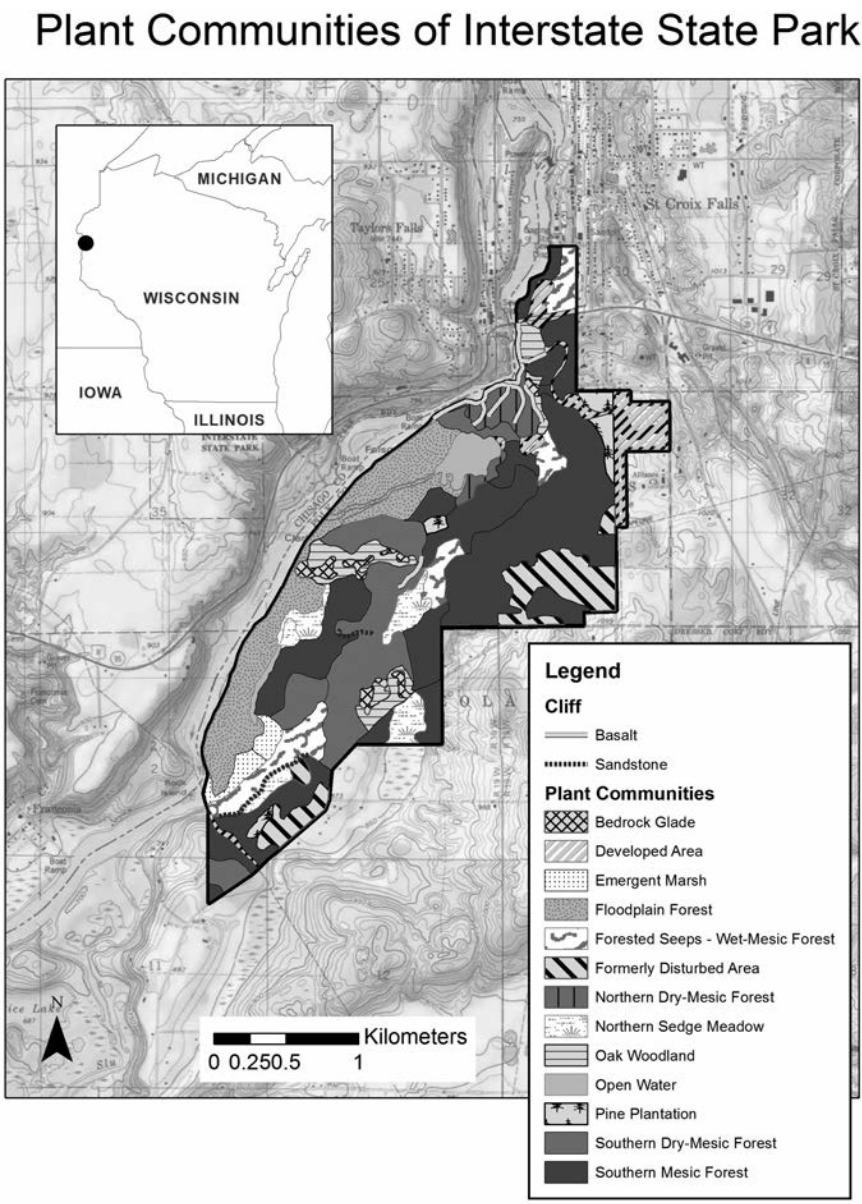

FIGURE 2. Map of the major plant communities of Interstate State Park.

sources. These included databases of previous collections from the Park housed at Wisconsin herbaria (Robert W. Freckmann Herbarium 2015; Wisconsin State Herbarium 2015) and previously prepared flora checklists on file at the Park (Crawford 1987, unpublished; Delaney 2000, unpublished). These unpublished checklists were based on observation rather than the collection of specimens preserved in an herbarium. Effort was placed on surveying plant communities that would likely provide habitat for the species on these lists.

The map of native plant communities was created using ESRI ArcGIS 9.3 software. Plant community boundaries were drawn using US Geologic Survey topographic quadrangle maps (1:24,000), the 2008 Farm Service Agency's National Agriculture Imagery Program (NAIP) color and color infrared aerial images of Minnesota, and notes collected during ground surveys.

RESULTS

A total of 652 vascular plant taxa representing 366 genera and 118 families were documented from the Park (see Appendix I). Ferns and fern allies were represented by 35 taxa, gymnosperms by 9 taxa, and angiosperms by 608 taxa. Of the angiosperms, 184 taxa were monocots and 424 were dicots. The predominant plant families were Asteraceae with 68 taxa, Poaceae with 67 taxa, Cyperaceae with 57 taxa, and Rosaceae with 33 taxa. These totals include two rare species listed as Threatened and five species listed as Special Concern by the Wisconsin Department of Natural Resources, Bureau of Endangered Resources (Wisconsin Department of Natural Resources 2011c) (Table 2). In addition, three of the species were previously tracked by the Bureau of Endangered Resources, but were removed from the state's endangered species list during the course of the survey. These are *Carex assiniboinensis, Juglans cinerea,* and *Taxus canadensis*. Ninety-four of the species are introduced, some of which are ecologically invasive.

When comparing the species we collected with species previously documented by collections in the State's herbaria (UWSP, WIS), we identified 59 species not previously reported from Polk County (Table 3). These include 25 species that are introduced and naturalized in the state of Wisconsin.

TABLE 2: Documented rare plant species at Interstate State Park (Wisconsin Department of Natural Resources 2012c). Species indicated as a "New Record" were not previously known from the Park. "Not Actively Tracked" indicates species that were formerly tracked by the Bureau of Endangered Resources at the start of this survey but are no longer included in the department's database.

Species	New Record	State Status
Besseya bullii		Threatened
Carex assiniboinensis		Not Actively Tracked
Carex backii	X	Special Concern
Cystopteris laurentiana	X	Special Concern
Dryopteris fragrans		Special Concern
Juglans cinerea		Not Actively Tracked
Opuntia fragilis		Threatened
Panax quinquefolius	X	Special Concern
Phemeranthus rugospermus		Special Concern
Taxus canadensis	X	Special Concern

TABLE 3: New Polk County Records (an asterisk indicates introduced species).

Species	
Abies balsamea	*Iris pseudacorus
*Acer ginnala	Lactuca biennis
Actaea pachypoda	Liparis liliifolia
*Alliaria petiolata	*Malus pumila
Anemone cylindrica	*Matricaria discoidea
*Berberis thunbergii	*Medicago lupulina
Carex backii	Menispermum canadense
Carex buxbaumii	Mertensia virginica
Carex haydenii	Oxalis dillenii
Carex hirtifolia	Panax quinquefolius
Carex lurida	Poa annua
Carex muhlenbergii	Prunus pumila
Carex radiata	Quercus alba
Carex stricta	Ranunculus hispidus var. nitidus
Carex typhina	*Robinia pseudoacacia
*Convallaria majalis	*Rumex crispus
Cystopteris laurentiana	Salix petiolaris
*Dianthus armeria	*Salix ×rubens
Dicentra cucullaria	*Sedum acre
Dichanthelium linearifolium	*Sorbus aucuparia
*Draba verna	*Stellaria media
*Elaeagnus angustifolia	*Tanacetum vulgare
Fragaria vesca	Tsuga canadensis
*Galinsoga quadriradiata	*Ulmus pumila
Gaylussacia baccata	Vaccinium myrtilloides
*Gypsophila muralis	*Veronica officinalis
*Hieracium caespitosum	*Veronica verna
Hierochloë hirta	*Vicia cracca
Hypoxis hirusta	Zannichellia palustris
Impatiens pallida	

PLANT COMMUNITIES

The location of the Park within the tension zone described by Curtis (1959) makes it difficult to distinguish plant communities with southern and with northern affinities (in particular, the forests) from each other. The following descriptions of plant communities within the Park indicate, among other things, the dominant species observed in each community. The map in Figure 2 highlights the major plant communities found within the Park, generated on the basis of a field survey and the examination of aerial photographs.

Southern Mesic Forest

Southern mesic forest, together with southern dry-mesic forest, comprises the majority of the acreage of the Park. These two communities grade into one another with changes in topography, slope aspect, and soil composition. The southern mesic forest is most commonly encountered in the eastern half of the Park. It is found on gentle to steep slopes, and there is little or no influence from the underlying bedrock on its composition. The southern mesic forests within the Park

FIGURE 3. Typical forest community on south-facing slopes and ridge tops that lack bedrock near the surface. The forest is dominated by red oak (*Quercus rubra*) and basswood (*Tilia americana*). Sugar maple (*Acer saccharum*) is common in the understory, and there is a diverse ground layer. Photograph by Derek Anderson, May 10, 2012.

are dominated by *Acer saccharum*. Occasionally *Quercus rubra*, *Tilia americana*, *Carya cordiformis*, *Fraxinus americana*, and *F. pennsylvanica* are canopy co-dominants. The understory is dominated by *Acer saccharum* and *Ostrya virginiana*. The ground layer is diverse and consists of *Trillium grandiflorum, T. cernuum*, *Hepatica americana, H. acutiloba*, *Hydrophyllum virginianum*, *Adiantum pedatum*, *Athyrium filix-femina*, *Caulophyllum thalictroides*, and many other spring ephemerals.

Southern Dry-Mesic Forest

As noted above, southern dry-mesic forests in the Park are often found in close association with southern mesic forest. Dry-mesic forest often occurs near ridge tops with moderate to well-drained soils (Figure 3) and on south-facing slopes. It also occurs near oak woodland communities where bedrock outcrops are more prevalent. The canopy is dominated by *Quercus rubra* and *Tilia americana*. The understory is often dominated by *Acer saccharum*. The ground layer is usually diverse. The more common ground species observed include *Geranium maculatum*, *Aralia nudicaulis*, *Hylodesmum glutinosum*, and *Arisaema triphyllum*.

FIGURE 4. The floodplain forest along the St. Croix River in early spring. The forest is dominated by silver maple (*Acer saccharinum*); hackberry (*Celtis occidentalis*) and cottonwood (*Populus deltoides*) are also present. Water begins to pool in old channels as the snow and ice begin to melt. The water in this area of the Park can easily rise an additional 3 to 6 meters (10 to 20 feet) as spring rain and seasonal snowmelt occurs in the greater watershed. Photograph by Derek Anderson, April 2, 2011.

Floodplain Forest

A well-developed example of floodplain forest in northern Wisconsin can be observed on the western edge of the Park. This riparian zone is dominated by *Acer saccharinum*, and *Populus deltoides*, *Celtis occidentalis*, and *Acer negundo* are occasional co-dominants (Figure 4). Spring floods inundate the area for several weeks each year, and there are several natural, well-developed channels throughout the area of this community. Species common in the herbaceous layer include *Viola sororia*, *Laportea canadensis*, *Matteuccia struthiopteris*, and *Rudbeckia laciniata*. *Lobelia cardinalis* is one of the more striking species observed in this community in late summer, especially along the seasonal water channels. As these channels dry out over the course of the summer, they are dominated by *Eleocharis acicularis, E. obtusa, E. ovata, Cyperus erythrorhizos, C. odoratus*, and *C. strigosus*.

Forested Seeps (with Southern Wet-Mesic Forest Inclusions)

A number of forested seeps can be found along the steep slopes above the St. Croix River. This is especially true in the southern reaches of the Park where the more porous sandstone facilitates the movement of groundwater. The seepage

FIGURE 5. A forested seep located along the slopes above the St. Croix River. The canopy is patchy and dominated by black ash (*Fraxinus nigra*). The ground layer is dominated by skunk cabbage (*Symplocarpus foetidus*). Photograph by Derek Anderson, May 12, 2012.

zones in these areas underlie a patchy canopy dominated by *Fraxinus nigra*, with *Ulmus americana* and *Betula allegheniensis* as occasional co-dominants. Slight rises in the topography surrounding the seepage areas tend to support *Acer saccharum* and *Tilia americana*. In the areas of ground water seepage, *Symplocarpus foetidus* is dominant (Figure 5), and there is a continuous cover in the ground layer. Other species present in the seeps include *Impatiens capensis*, *Hydrocotyle americana*, *Viola sororia*, *Poa palustris*, *Packera aurea*, and *Micranthes pensylvanica*. Many of these seeps feed small streams that eventually reach the St. Croix River.

Dry and Moist Cliffs

There are several cliffs throughout the Park, which are composed of one of two basic lithologies, basalt or sandstone. The many exposures of these cliffs provide a full spectrum of moisture conditions. Several of these cliffs are directly exposed to the sun, whereas others are completely shaded by well-developed forest canopies (for example, some of the largest individuals of *Pinus strobus* in the Park can be found growing from the cliffs). Several of the cliffs are wet from groundwater seepage. The most prominent area occupied by this plant community is the Dalles of the St. Croix River. Basalt cliffs rise 30 meters (100 feet) above the river. Smaller basalt cliffs of 5–15 meters (15–50 feet) can be found a few hundred meters from the St. Croix River and along abandoned

FIGURE 6. The state special concern fragrant fern (*Dryopteris fragrans*) has long been documented in the area of the Park. It is typically found growing from the cracks of basalt near the St. Croix River. Photograph by Derek Anderson, 2007.

river channels, such as in the area of Meadow Valley. At the bases of some of these cliffs are large talus slopes and fields where the basalt has weathered from the cliffs. The sandstone cliffs are most prominent in the southern region of the Park west of the Silverbrook Mansion and are not readily accessible by trail.

Vegetation is sparse on these cliffs, and both types of cliffs tend to be dominated by a wide variety of pteridophytes. The most common of these include *Polypodium virginianum*, *Woodsia ilvensis*, and *Cystopteris fragilis*. Three ferns that are rare in the state of Wisconsin, *Dryopteris fragrans* (Figure 6), *Cystopteris laurentiana*, and *Woodsia oregana*, are found in this community. *Woodsia oregana* had been previously documented at the Park but was not relocated during the course of this survey. Herbaceous species that are also found along these cliffs include *Aquilegia canadensis*, *Campanula rotundifolia*, *Corydalis aurea*, and *Capnoides sempervirens*.

Northern Dry-Mesic Forest

This community occupies a fairly small portion of the overall acreage of the Park. It is associated with draws and ravines of the basalt cliffs along the St. Croix River. The canopy is dominated by *Pinus strobus* with occasional *P. resinosa*, *Quercus rubra* and *Q. ellipsoidalis*. The shrub layer contains *Vaccinium angustifolium*, and the ground layer contains *Maianthemum canadense*, *Aralia nudicaulis*, *Cornus canadensis*, and *Trientalis borealis*.

Oak Woodland

The oak woodland plant community is found between the bedrock glades and the dry-mesic forests throughout the Park. It is also found as an inclusion within the mesic forests where large portions of bedrock are exposed. Typically, this community has an interrupted or patchy canopy, dominated by *Quercus macrocarpa, Q. alba,* and *Q. ellipsoidalis*. *Juniperus virginiana* is an associate in some stands. Shrubs are sparse, but include *Corylus americana*, *C. cornuta*, *Rhus typhina*, *R. glabra*, and *Zanthoxylum americanum*. The ground layer includes *Elymus hystrix, Andropogon gerardii*, *Solidago* spp., *Toxicodendron rydbergii*, and *Galium boreale*. This community also provides habitat for the state Threatened *Besseya bullii* (Figure 7).

FIGURE 7. Kitten tails (*Besseya bullii*) in an oak woodland near a transition between woodland and bedrock glade. This species is listed as threatened in Wisconsin. Photograph by Derek Anderson, June 2, 2013.

FIGURE 8. One of several bedrock glades found throughout the Park. Lichen and moss covered basalt is in the foreground. Prairie vegetation and oak woodlands with *Quercus macrocarpa, Q. ellipsoidalis,* and *Q. alba* surround the exposed bedrock. Photograph by Derek Anderson, July 23, 2011.

Bedrock Glade

The bedrock glade community in the Park is found where basalt bedrock is exposed or is near the surface. These sites tend to be dry, and they support a unique assemblage of plants adapted to xeric conditions, such as *Selaginella rupestris*, lichens, and mosses. Where soil has developed and accumulated, prairie, savanna, and barrens species can be observed (Figure 8). These species include *Schizachyrium scoparium*, *Andropogon gerardii*, *Sorghastrum nutans*, *Coreopsis palmata*, *Lespedeza capitata*, *Liatris aspera*, and *Quercus ellipsoidalis*. *Opuntia fragilis* (Figure 9) and *Phemeranthus rugospermus* are two rare species that are found within this community. Bedrock glades are found throughout the Park; the largest areas are west of Eagle Peak and in the southern reaches of the Park. Smaller inclusions of this community occasionally occur within mesic forests where basalt bedrock is exposed.

Northern Sedge Meadow

There are a number of sedge meadows throughout the Park, the largest approaching five hectares (12 acres) in area. The majority of the sedge meadow communities in the Park are dominated by *Phalaris arundinacea.* Closer examination reveals a few diverse, intact remnants of native vegetation within the

FIGURE 9. The brittle prickly pear cactus (*Opuntia fragilis*) is listed as threatened in Wisconsin. This species is restricted to areas of bedrock glade habitat within the Park. Photograph by Derek Anderson June 28, 2011.

larger context of *Phalaris arundinacea*. These remnants tend to be dominated by *Carex lacustris*, although a few are dominated by *Carex stricta*. Other graminoids found in this community include *Glyceria canadensis, G. striata*, *Poa palustris*, *Calamagrostis canadensis*, and several species of *Carex* and *Scirpus*. Several forbs are also present, including *Doellingeria umbellata*, *Eutrochium maculatum*, *Epilobium ciliatum, E. leptophyllum*, *Asclepias incarnata*, and *Campanula aparinoides*.

Emergent Marsh and Submergent Aquatic

Aquatic communities are found in a few locations within the Park. A large emergent marsh is present in the backwaters of the St. Croix River, in the area of Folsom Lake. This backwater is inundated most of the year with 15–100 cm (6–40 inches) of water (Figure 10). In drought years mud flats become exposed. The emergent marsh is dominated by *Bolboschoenus fluviatilis*, and lesser amounts of *Sagittaria latifolia* and *S. rigida* are present.

Submerged aquatic communities are present in the areas of Folsom Lake and of Lake o' the Dalles. In these bodies of water, *Potamogeton nodosus* and *P. pusillus* are common. *Elodea canadensis*, *E. nuttallii*, and *Ceratophyllum demersum* are present in pockets within these lakes. *Zannichellia palustris* is found in water channels running through the emergent marsh in Folsom Lake. This is a new discovery for the Park and for Polk County. *Potamogeton crispus*, an invasive non-native species, occurs in both Lake o' the Dalles and Folsom Lake.

FIGURE 10. The north end of the river backwater named Folsom Lake. River bulrush (*Bolboschoenus fluviatilis*) dominates in the right center area of the photograph. The open water contains long-leaved pondweed (*Potamogeton nodosus*) and slender pondweed (*P. pusillus*). Photograph by Derek Anderson, July 27, 2012.

DISCUSSION

The forest flora at the Park has been affected by about 100 years of secondary successional regeneration of forest in northwestern Wisconsin. The diverse flora of the site is also influenced by its location in the tension zone and by such abiotic factors as bedrock, topography, and groundwater seepage. The high diversity of plant species found in the Park becomes evident when comparing this site with Amnicon Falls State Park, approximately 150 km northeast, which was the subject of a previous floristic study. Hlina et al. (2008) identified a total of 400 taxa at Amnicon Falls State Park. The two parks share 297 species in common. One hundred three of the species at Amnicon Falls State Park have not been documented at Interstate State Park. These include several species with cooler climate (or northern) affinities, including *Carex castanea, C. ormostachya, Halenia deflexa, Petasites frigidus* var. *sagittatus, Rubus parviflorus, Shepherdia canadensis,* and *Sparganium angustifolium*. In contrast, Interstate State Park has 355 species that were not documented at Amnicon Falls State Park. Several of these species, including *Boechera canadensis, Carex blanda, Ludwigia polycarpa, Ranunculus fascicularis, Staphylea trifolia,* and *Trillium flexipes*, have not been documented north of the tension zone described by Curtis (1959).

A total of 163 species were documented for the Park for the first time and, of those, 59 were also newly documented for Polk County. It is evident from these

numbers that gaps still remain in our knowledge of plant distributions within the state, particularly in those regions located the farthest from the state's universities. The myth of a well-catalogued flora is not unique to the Park, and, as Ertter (2000) points out, there are several examples to the contrary throughout North America. Although many new species records were discovered for the Park and for Polk County, 40 taxa previously collected from the Park were not relocated during this three-year study. There is no evident correlation between the individual taxa and the inability to relocate them within the Park (such as the disappearance of northern species that may have been lost to a changing climate or the loss of a given community). Instead, they may actually no longer be found within the Park, or they may have been simply overlooked.

The diverse landscape of the Park supports several rare species (Table 2). One of these species, *Besseya bullii* (Figure 7), was rediscovered during the course of the survey. An older collection of the species from 1959 did not include a specific location in the Park. As a result, it is uncertain whether the new record is from the same population as the older collection. Another species of particular interest is the fern, *Dryopteris fragrans* (Figure 6), which was first collected at the "Falls of St. Croix" by Charles Parry in 1848. According to correspondence between Parry and Dr. John Torrey, this was the first time the species was documented within the limits of the United States. Parry (1852) indicated that the plant was "quite abundant." This species now appears to be quite rare in the Park. Between 2011 and 2013, only a few small populations were discovered on the extensive cliffs. Iltis and Judziewicz (1994) did not locate this species during their rare plant survey of the St. Croix National Scenic Riverway. They noted that extensive collections were made dating back to 1861 and that over-collecting at this site had likely contributed to the decline.

In addition to rare species, other surprise discoveries were made during the course of this survey. One was of a lone eastern hemlock (*Tsuga canadensis*) discovered in a mesic hardwood forest in the north end of the Park in the region that was first acquired in 1900. The tree was growing a few meters from a long-abandoned hiking trail. This hemlock tree had a diameter at breast height of 17.5 cm (6.8 in.). By comparing this measurement to the average diameters of trees in Michigan as documented by Burns and Honkala (1990), we conclude that this tree is most likely between forty and sixty years old. Its origins remain a bit of a mystery, since the nearest known site is approximately one hundred kilometers to the east.

Invasive species are another factor that impacts the diversity and abundance of native plant species in forests. Many of the non-native species in the Park are not particularly invasive and are restricted to previously disturbed land, such as the gas pipeline right-of-way, roadways, trails, and campgrounds. However, one of the more aggressively invasive species discovered at the Park in the course of the survey was garlic mustard (*Alliaria petiolata*). This species should be monitored and managed, particularly since Knight et al. (2009) found that the presence of white-tailed deer can lead to a significant divergence in plant community structure, and to an increase in the relative cover of garlic mustard. In addition, the non-native honeysuckles, *Lonicera tatarica* and *L.* ×*bella*, and common buckthorn, *Rhamnus cathartica*, were observed in populations ranging from

scattered individuals to dense patches throughout the Park. Management activities have been directed toward these species when funding allows. *Phalaris arundinacea* has become a dominant species in several larger wetlands that were likely sedge meadows prior to the invasion.

As similarly reported in an earlier floristic study of Amnicon Falls State Park (Hlina et al. 2008), Interstate State Park has become a refuge for white-tailed deer (*Odoceoileus virginianus*), despite a large portion of the Park being open to hunting. Evidence of deer browse and winter deer yards can be observed throughout. The white-tailed deer appear to be impacting the forests within the Park, as reported in a number of studies examining such impacts (Graham 1954; Stoeckeler et al. 1957; Beals et al. 1960; Alverson et al. 1988; Balgooyen and Waller 1995; Mudrak et al. 2009). It appears that some woody species such as *Thuja occidentalis* and *Taxus canadensis* are not regenerating. Impacts are not restricted to woody species, however; the herbaceous layer in these forests has also been impacted in plant communities of northern Wisconsin with high deer populations (Rooney et al. 2004; Holmes et al. 2008).

The documentation of the flora at Interstate State Park sets the stage for future research and management activities at the Park. Follow-up activities could include: 1) monitoring and removal of invasive plant populations; 2) monitoring rare plant populations; 3) monitoring impacts of the white-tailed deer population on plant species and communities; 4) assessing comparisons of phenological shifts in certain species over time; and 5) using the results of this study as a baseline for future floristic work in the Park and the surrounding area.

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APPENDIX I: INTERSTATE STATE PARK FLORA LIST

The following list is organized alphabetically, first by family, then by genus, and finally by species, in each major group of plants. Non-native species are indicated with an asterisk. All collections in the course of this survey were made by Anderson and are deposited in the Robert W. Freckmann Herbarium at the University of Wisconsin–Stevens Point (UWSP). The name of each species is followed by a common name and, in parentheses, Anderson's collection numbers. This list also contains forty species collected in the past but not relocated during the course of our study. Each of these species is followed by a common name, the collector's name in italics, their collection number, year of collection and the herbarium acronym. Nomenclature follows Reznicek et al. (2011) for the ferns and fern allies and Voss and Reznicek (2012) for the seed plants. Six taxa not included in Voss and Reznicek (2012) follow the nomenclature of the Flora of North America (1993+). These are *Antennaria plantaginifolia, Delphinium carolinianum, Phemeranthus rugospermus, Rubus alumnus, Tradescantia occidentalis,* and *Vernonia fasciculata* as they are not known to occur in Michigan.

PTERIDOPHYTES

ASPLENIACEAE (Spleenwort Family)

Asplenium rhizophyllum L., walking fern (1576)

ATHYRIACEAE (Lady Fern Family)

Athyrium filix-femina (L.) Roth, common lady fern (1498)

CYSTOPTERIDACEAE (Brittle Fern Family)
Cystopteris bulbifera (L.) Bernh., bladder fern (1839, 1842)
Cystopteris fragilis (L.) Bernh., brittle bladder fern (1555)
Cystopteris laurentiana (Weath.) Blasdell, Laurentian bladder fern (1554)
Cystopteris tenuis (Michx.) Desv., MacKay's brittle fern (1618)
Gymnocarpium dryopteris (L.) Newman, oak fern (1586)

DENNSTAEDTIACEAE (Bracken Fern Family)
Pteridium aquilinum (L.) Kuhn. var. *latiusculum* (Desv.) A. Heller, bracken fern (1647)

DRYOPTERIDACEAE (Wood Fern Family)
Dryopteris carthusiana (Vill.) H. P. Fuchs, spinulose wood fern (1532)
Dryopteris cristata (L.) A. Gray, crested shield fern (1522)
Dryopteris fragrans (L.) Schott, fragrant fern (1553)

EQUISETACEAE (Horsetail Family)
Equisetum arvense L., field horsetail (1720, 1721)
Equisetum hyemale L., common scouring rush (1531, 1624)
Equisetum pratense Ehrh., meadow horsetail (1961)
Equisetum scirpoides Michx., dwarf scouring rush (1620)
Equisetum sylvaticum L., wood horsetail (2226)
Equisetum ×*ferrissii* Clute, Ferris' horsetail; *Fassett* 15557, 1927 (WIS)

LYCOPODIACEAE (Club-Moss Family)
Dendrolycopodium obscurum (L.) A. Haines, princess'-pine (1934)
Diphasiastrum digitatum (A. Braun) Holub, southern ground-cedar (1443, 1935)
Huperzia lucidula (Michx.) Trevis., shining club moss (1933)

ONOCLEACEAE (Ostrich Fern Family)
Matteuccia struthiopteris (L.) Todaro, ostrich fern (1958)
Onoclea sensibilis L., sensitive fern (1869)

OPHIOGLOSSACEAE (Adder's-Tongue Family)
Botrypus virginianus (L.) Michx., rattlesnake fern (1598)
Sceptridium dissectum (Spreng.) Lyon, cut-leaved grape fern (810, 1468, 1936)

OSMUNDACEAE (Royal Fern Family)
Osmunda cinnamomea L., cinnamon fern (1612)
Osmunda claytoniana L., interrupted fern (1611)
Osmunda regalis L., royal fern (1672, 1676)

POLYPODIACEAE (Polypody Fern Family)
Polypodium virginianum L., common polypody fern (1641)

PTERIDACEAE (Maidenhair Fern Family)
Adiantum pedatum L., maidenhair fern (1575)

SELAGINELLACEAE (Spikemoss Family)
Selaginella rupestris (L.) Spring, rock spikemoss (1473)

THELYPTERIDACEAE (Marsh Fern Family)
Phegopteris connectilis (L.) Slosson, northern beech fern; *Fassett* 15506, 1927, (WIS)
Thelypteris palustris Schott var. *pubescens* (Lawson) Fernald (1870)

WOODSIACEAE (Woodsia Fern Family)
Woodsia ilvensis (L.) R. Br., rusty cliff fern (1971)
Woodsia obtusa (Spreng.) Torr., blunt-lobed cliff fern (1523)
Woodsia oregana D. C. Eaton subsp. *cathcartiana* (B. L. Rob.) Windham, Oregon cliff fern, *Tyrone* 4143, 1938 (WIS)

GYMNOSPERMS

CUPRESSACEAE (Cypress Family)
Juniperus communis L., common juniper (1748)

Juniperus virginiana L., eastern red-cedar (1743)
Thuja occidentalis L., northern white cedar (1719)

PINACEAE (Pine Family)
Abies balsamea (L.) Mill., balsam fir (2138)
Picea glauca (Moench) Voss, white spruce (1938)
Pinus resinosa Aiton, red pine (1986)
Pinus strobus L., white pine (1977)
Tsuga canadensis (L.) Carrière, eastern hemlock (2139, 2140)

TAXACEAE (Yew Family)
Taxus canadensis Marshall, American yew (1441)

DICOTYLEDONS

ADOXACEAE (Moschatel Family)
Sambucus canadensis L., American elderberry (1804)
Sambucus racemosa L., red-berried elder (1473)
Viburnum lentago L., nannyberry (1565, 1573)
Viburnum rafinesquianum Schult., downy arrow-wood (1584)
Viburnum trilobum Marshall, American cranberry bush (1984)

AMARANTHACEAE (Amaranth Family)
Amaranthus retroflexus L., rough pigweed (2051)
Amaranthus tuberculatus (Moq.) J. D. Sauer, rough-fruited amaranth (2245)
Chenopodium album L., common lamb's quarters (1983)
Chenopodium simplex (Torr.) Raf., maple-leaved goosefoot (1774)

ANACARDIACEAE (Cashew Family)
Rhus glabra L., smooth sumac (2000)
Rhus typhina L., staghorn sumac (2030)
Rhus ×*pulvinata* Green, hybrid sumac; *Patman* s.n., 1959 (WIS)
Toxicodendron rydbergii (Rydb.) Greene, western poison ivy (2127)

APIACEAE (Parsley Family)
Angelica atropurpurea L., purple-stem angelica (1764)
Cicuta maculata L., water hemlock (1707)
Cryptotaenia canadensis (L.) DC., honewort (1596, 1648)
Osmorhiza claytonii (Michx.) C. B. Clarke, bland sweet cicely (1621)
Osmorhiza longistylis (Torr.) DC., anise-root (1528)
Sanicula marilandica L., black snakeroot (1604, 1619)
Sanicula odorata (Raf.) Pryer & Phillippe, clustered black snakeroot (1599)
Zizia aurea (L.) W. D. J. Koch, golden alexanders (1546)

APOCYNACEAE (Dogbane and Milkweed Family)
Apocynum androsaemifolium L., spreading dogbane (1640)
Apocynum cannabinum L., Indian-hemp (2009)
Asclepias exaltata L., poke milkweed (1791)
Asclepias incarnata L., swamp milkweed (1750)
Asclepias syriaca L., common milkweed (2020)
Asclepias tuberosa L., butterfly weed (1776)
Asclepias verticillata L., whorled milkweed (2070)

AQUIFOLIACEAE (Holly Family)
Ilex verticillata (L.) A. Gray, winterberry (1671)

ARALIACEAE (Ginseng Family)
Aralia nudicaulis L., wild sarsaparilla (1510)
Aralia racemosa L., American spikenard (1809)
Hydrocotyle americana L., marsh pennywort (1841)
Panax quinquefolius L., American ginseng (1990)

ARISTOLOCHIACEAE (Birthwort Family)

Asarum canadense L., wild ginger (1457)

ASTERACEAE (Sunflower Family)

Achillea millefolium L., yarrow (1710)
Ageratina altissima (L.) R. M. King & H. Rob., white snakeroot (1901)
Ambrosia artemisiifolia L., common ragweed (1813)
Antennaria neglecta Greene, field pussy-toes (1480, 1488)
Antennaria plantaginifolia (L.) Hook., plantain pussy-toes (1469)
**Arctium minus* (Hill) Berhn., common burdock (2028)
Artemisia campestris L. subsp. *caudata* (Michx.) H. M. Hall & Clem, field wormwood (1899)
Artemisia ludoviciana Nutt. subsp. *ludoviciana*, white sage (1854)
Artemisia serrata Nutt., saw-toothed sagebrush (1867)
Bidens cernua L., nodding beggar-ticks (2116)
Bidens comosa (A. Gray) Wiegand, straw-stem beggar-ticks (2113)
Bidens connata Willd., purple-stem beggar-ticks; *Koch* 7158, 1971 (UWSP)
Bidens frondosa L., common beggar-ticks (2112)
**Centaurea stoebe* L., spotted knapweed (1897)
**Cirsium arvense* (L.) Scop., Canada thistle (2071)
Cirsium discolor (Willd.) Spreng., field thistle (2075)
Cirsium muticum Michx., swamp thistle (1887)
**Cirsium vulgare* (Savi) Ten., bull thistle (2050)
Conyza canadensis (L.) Cronquist, Canadian horseweed (1843)
Coreopsis palmata Nutt., prairie coreopsis (1775)
**Crepis tectorum* L., hawk's beard (1635)
Doellingeria umbellata (Mill.) Nees, flat-topped aster (1871)
Erechtites hieraciifolius (L.) DC., American burnweed (2059)
Erigeron philadelphicus L., common fleabane (1614, 2006)
Erigeron strigosus Willd., daisy fleabane (2189)
Eupatorium perfoliatum L., boneset (1860)
Eurybia macrophylla (L.) Cass., big-leaved aster (1824)
Euthamia graminifolia (L.) Nutt., grass-leaved goldenrod (2076)
Eutrochium maculatum (L.) E. E. Lamont, spotted Joe-Pye weed (1825)
Eutrochium purpureum (L.) E. E. Lamont, purple-node Joe-Pye weed (1429)
**Galinsoga quadriradiata* Cav., common quickweed (1928)
Gnaphalium uliginosum L., marsh cudweed (2115)
Helenium autumnale L., common sneezeweed (1922)
Helianthus giganteus L., giant sunflower; *Pohl* 560, 1936 (WIS)
Helianthus pauciflorus Nutt., stiff sunflower (1434)
Helianthus strumosus L., woodland sunflower (1821, 1915)
Helianthus tuberosus L., Jerusalum-artichoke (2033)
Heliopsis helianthoides (L.) Sweet, ox-eye (1755)
**Hieracium aurantiacum* L. orange hawkweed (1605)
**Hieracium caespitosum* Durmot., yellow king-devil (1663)
Hieracium umbellatum L., northern hawkweed (1919, 2069)
Lactuca biennis (Moench) Fernald, tall blue lettuce (2233)
Lactuca canadensis L., Canada lettuce (2065)
**Leucanthemum vulgare* Lam., ox-eye daisy (1715)
Liatris aspera Michx., rough blazing star (1855)
**Matricaria discoidea* DC., pineapple-weed (2012)
Packera aurea (L.) A. Löve & D. Löve, golden ragwort (1627)
Prenanthes alba L., white-lettuce (2141)
Rudbeckia hirta L. var. *pulcherrima* Farw., black-eyed Susan (1757)
Rudbeckia laciniata L., cut-leaved coneflower (1828)
Solidago canadensis L., Canada goldenrod (2052)
Solidago flexicaulis L., zig-zag goldenrod (1918)
Solidago gigantea Aiton, giant goldenrod (1820)

Solidago hispida Willd. var. *hispida*, hairy goldenrod (1435)
Solidago juncea Aiton, early goldenrod (1436)
Solidago nemoralis Aiton, gray goldenrod (1856)
Symphyotrichum laeve (L.) A. Löve & D. Löve, smooth aster; *Sayre* s.n., 1937 (WIS)
Symphyotrichum lanceolatum (Willd.) G. L. Nesom, panicled aster (2053, 2077)
Symphyotrichum novae-angliae (L.) G. L. Nesom, New England aster (1879)
Symphyotrichum oolentangiense (Riddell) G. L. Nesom, sky-blue aster (1929)
Symphyotrichum puniceum (L.) A. Löve & D. Löve, swamp aster (2064)
Symphyotrichum sericeum (Vent.) G. L. Nesom, silky aster (2126)
Symphyotrichum urophyllum (DC.) G. L. Nesom, arrow-leaved aster (1917, 1932)
**Tanacetum vulgare* L., common tansy (2049)
**Taraxacum officinale* F. H. Wigg., common dandelion (1954)
**Tragopogon dubius* Scop., goat's beard (1592, 1609)
Vernonia fasciculata Michx., ironweed (1851, 1852)
Xanthium strumarium L., common cocklebur (2107)

BALSAMINACEAE (Touch-Me-Not Family)
Impatiens capensis Meerb., orange jewelweed (1859)
Impatiens pallida Nutt., yellow jewelweed (1878)

BERBERIDACEAE (Barberry Family)
**Berberis thunbergii* DC., Japanese barberry (1654)
Caulophyllum thalictroides (L.) Michx., blue cohosh (1693)

BETULACEAE (Birch Family)
Alnus incana (L.) Moench subsp. *rugosa* (Du Roi) R. T. Clausen, speckled alder (1682)
Betula alleghaniensis Britton, yellow birch (1477)
Betula papyrifera Marshall, paper birch (1795)
Carpinus caroliniana Walter, American hornbeam (1941)
Corylus americana Walter, American hazelnut (1937)
Corylus cornuta Marshall subsp. *cornuta*, beaked hazelnut (1940)
Ostrya virginiana (Mill.) K. Koch, ironwood (1763)

BORAGINACEAE (Borage Family)
Hackelia deflexa (Wahlenb.) Opiz var. *americana* (A. Gray) Fernald and I. M. Johnst., cliff stickseed (1792)
Hackelia virginiana (L.) I. M. Johnst., beggar's-lice (1752)
Hydrophyllum virginianum L., Virginia waterleaf (1533)
Mertensia virginica (L.) Pers. ex Link, Virginia bluebells (1967)

BRASSICACEAE (Mustard Family)
**Alliaria petiolata* (M. Bieb.) Cavara & Grande, garlic mustard (1481)
Arabidopsis lyrata (L.) O'Kane & Al-Shehbaz, sand cress (1474, 1497)
**Barbarea vulgaris* Aiton, yellow rocket (1517)
**Berteroa incana* (L.) DC., hoary-alyssum (2001)
Boechera canadensis (L.) Al-Shehbaz (1652, 1653)
Boechera grahamii (Lehmann) Windham & Al-Shebaz (1513, 1534)
**Capsella bursa-pastoris* (L.) Medik., shepherd's-purse (1560)
Cardamine bulbosa (Muhl.) Britton, Sterns & Poggenb., spring cress (1559)
Cardamine parviflora L. var. *arenicola* (Britton) O. E. Schulz, dry-land bitter-cress (1494)
Cardamine pensylvanica Willd., Pennsylvania bitter-cress (1527)
**Draba verna* L., spring whitlow grass (1496)
**Erysimum cheiranthoides* L., worm-seed mustard (1798)
**Hesperis matronalis* L., dame's rocket (1995)
**Lepidium densiflorum* Schrad., prairie pepper-weed (2247)
**Nasturtium officinale* R. Br., watercress (1610)
Rorippa palustris (L.) Besser subsp. *palustris*, marsh cress (2015)
Sisymbrium altissimum L., tall tumble mustard; *Patman* s.n., 1959 (WIS)
Turritis glabra L., tower mustard (1651)

CACTACEAE (Cactus Family)
Opuntia fragilis (Nutt.) Haw., brittle prickly pear (1738)

CAMPANULACEAE (Bellflower Family)
Campanula aparinoides Pursh, marsh bell flower (1758)
**Campanula rapunculoides* L., European bell flower (1891)
Campanula rotundifolia L., harebell (1630)
Lobelia cardinalis L., cardinal flower (1836)
Lobelia inflata L., Indian tobacco (1872, 1895)
Lobelia siphilitica L., great blue lobelia (1428)

CANNABACEAE (Hemp Family)
Humulus lupulus L., common hops (1868)
Celtis occidentalis L., hackberry (1681)

CAPRIFOLIACEAE (Honeysuckle Family)
Lonicera dioica L., red honeysuckle (1970)
**Lonicera tatarica* L., Tatarian honeysuckle (1536, 1563)
**Lonicera* ×*bella* Zabel, showy honeysuckle (1978)
Symphoricarpos albus (L.) S. F. Blake, snowberry (1639)
Triosteum aurantiacum E. P. Bicknell, early horse gentian (1507)

CARYOPHYLLACEAE (Pink Family)
**Cerastium fontanum* Baumg., common chickweed (1666)
**Dianthus armeria* L., Deptford pink (1823)
**Gypsophila muralis* L., cushion baby's breath (2013)
Moehringia lateriflora (L.) Fenzl, sandwort (1495)
**Myosoton aquaticum* (L.) Moench, giant chickweed (1543, 2183)
**Saponaria officinalis* L., bouncing-bet (2043)
Silene antirrhina L., sleepy catchfly (2186)
**Silene latifolia* Poir, bladder campion (1646)
Stellaria longifolia Willd., long-leaved stichwort (1594)
**Stellaria media* (L.) Vill., common chickweed (2184)

CELASTRACEAE (Bittersweet Family)
Celastrus scandens L., American bittersweet (1862)

CERATOPHYLLACEAE (Hornwort Family)
Ceratophyllum demersum L., coon's tail (1803,1908)

CISTACEAE (Rock-Rose Family)
Crocanthemum bicknellii (Fernald) Janch., hoary frostweed (2230)
Lechea intermedia Britton, intermediate pinweed (1814)

CONVOLVULACEAE (Morning Glory Family)
Calystegia sepium (L.) R. Br., hedge bindweed (1754)
Cuscuta gronovii Roem. & Schult. var. *gronovii*, common dodder (1877)

CORNACEAE (Dogwood Family)
Cornus alternifolia L.f., pagoda dogwood (1617)
Cornus amomum Mill. (blue-fruited dogwood); *Pohl* 550, 1936 (WIS)
Cornus canadensis L., bunchberry (1582)
Cornus foemina Mill. subsp. *racemosa* (Lam.) J. S. Wilson, gray dogwood (1667, 1670)
Cornus rugosa Lam., round-leaved dogwood (1648)
Cornus sericea L., red osier dogwood (1762)

CRASSULACEAE (Sedum Family)
**Sedum acre* L., gold-moss stonecrop (1686)

CUCURBITACEAE (Gourd Family)
Echinocystis lobata (Michx.) Torr. & A. Gray, wild cucumber (2072)

DIERVILLACEAE (Bush-honeysuckle Family)
Diervilla lonicera Mill., northern bush-honeysuckle (1628)

ELAEAGNACEAE (Oleaster Family)
**Elaeagnus angustifolia* L., Russan olive (1987)

ERICACEAE (Heath Family)
Arctostaphylos uva-ursi (L.) Spreng., bearberry (1746, 1955)
Chimaphila umbellata (L.) W. P. C. Barton, pipsissewa (1962)
Gaylussacia baccata (Wangenh.) K. Koch, black huckleberry (1972)
Monotropa uniflora L., Indian-pipe (1893)
Pyrola elliptica Nutt., large-leaved shin-leaf (1973)
Vaccinium angustifolium Aiton, early low blueberry (1472)
Vaccinium myrtilloides Michx., velvet-leaved blueberry (1585)

EUPHORBIACEAE (Spurge Family)
Acalypha rhomboidea Raf., three-seeded mercury (1838, 1914)
Euphorbia corollata L., flowering spurge (1784)
Euphorbia cyparissias L., cypress spurge (1601)
Euphorbia glyptosperma Engelm., ridge-seeded spurge; *Pohl* 583, 1936 (WIS)
Euphorbia maculata (L.) Small, milk purslane (1927, 2074)
Euphorbia nutans Lag., nodding spurge; *Fassett* 5483, 1927 (WIS)

FABACEAE (Bean or Pea Family)
Amorpha canescens Pursh, leadplant (1745)
Amorpha fruticosa L., false indigo (1649)
Amphicarpaea bracteata (L.) Fernald, hog peanut (1921)
Apios americana Medik., common groundnut (1866)
Dalea purpurea Vent., purple prairie clover (1911)
Desmodium canadense (L.) DC., showy tick-trefoil (2191)
Hylodesmum glutinosum (Willd.) H. Ohashi & R. R. Mill, pointed tick-trefoil (1787)
Lathyrus ochroleucus Hook., white pea (1539)
Lathyrus venosus Willd., forest pea (1564)
Lespedeza capitata Michx., round-headed bush clover (1873)
**Lotus corniculatus* L., bird's-foot trefoil (1714)
**Medicago lupulina* L., black medick (1669)
**Melilotus albus* Medik., white sweet clover (1744)
**Melilotus officinalis* (L.) Pall., yellow sweet clover (1633)
**Robinia pseudoacacia* L., black locust (2192)
**Securigera varia* L., crown-vetch (1713)
**Trifolium arvense* L., rabbit's-foot clover (1778)
**Trifolium campestre* Schreb., field clover (1779)
**Trifolium hybridum* L., alsike clover (2193)
**Trifolium pratense* L., red clover (1615)
**Trifolium repens* L., white clover (1623)
Vicia americana Willd., American vetch (1580)
**Vicia cracca* L., cow vetch (1997)

FAGACEAE (Beech Family)
Quercus alba L., white oak (1709)
Quercus ellipsoidalis E. J. Hill, northern pin oak (1718)
Quercus macrocarpa Michx., bur oak (1874)
Quercus rubra L., northern red oak (1991)
Quercus ×bebbiana C. K. Schneid., Bebb's oak; *Fassett* 15552, 1927 (WIS)

GENTIANACEAE (Gentian Family)
Gentiana andrewsii Griseb., bottle gentian (1923, 1924)

GERANIACEAE (Geranium Family)
Geranium maculatum L., wild geranium (1524)

GROSSULARIACEAE (Gooseberry Family)
Ribes cynosbati L., prickly wild gooseberry (1504)
Ribes hirtellum Michx., swamp gooseberry (1518)

HAMAMELIDACEAE (Witch Hazel Family)
Hamamelis virginiana L., American witch hazel (2134)

HYPERICACEAE (St. John's Wort Family)
Hypericum ascyron L., giant St. John's wort (1766)
Hypericum majus (A. Gray) Britton, larger St. John's wort; *Pohl* 571, 1936 (WIS)
**Hypericum perforatum* L., common St. John's wort (1655)
Triadenum fraseri (Spach) Gleason, marsh St. John's wort (2061)

JUGLANDACEAE (Walnut Family)
Carya cordiformis (Wangenh.) K. Koch, bitternut hickory (1679)
Juglans cinerea L., butternut (1688)
Juglans nigra L., black walnut (1595)

LAMIACEAE (Mint Family)
Agastache scrophulariaefolia (Willd.) Kuntze, purple giant hyssop (1827, 1853)
**Galeopsis tetrahit* L., common hemp-nettle (2029)
**Glechoma hederacea* L., creeping Charlie (1471)
Hedeoma hispida Pursh., rough false pennyroyal (1625)
**Leonurus cardiaca* L., motherwort (1756)
Lycopus americanus W. P. C. Barton, American water-horehound (1840)
Lycopus uniflorus Michx., northern bugleweed (2036)
Mentha canadensis L., wild mint (2040)
Monarda fistulosa L., bee balm (1770)
Physostegia virginiana (L.) Benth. subsp. *virginiana*, false-dragonhead (1903)
Prunella vulgaris L., heal-all (1694)
Pycnanthemum virginianum (L.) B. L. Rob & Fernald, Virginia mountain mint (1704, 1822)
Scutellaria lateriflora L., skullcap (1425, 2035)
Scutellaria parvula Michx. var. *missouriensis* (Torr.) Goodman & C. A. Lawson, smooth small skullcap (1637)
Stachys arenicola Britton., marsh hedge-nettle (2045)
Teucrium canadense L., American germander (1767, 1896)
Trichostema brachiatum L., false-pennyroyal (1817, 2232)

LIMNANTHACEAE (Meadow-Foam Family)
Floerkea proserpinacoides Willd., false mermaid (1530)

LINDERNIACEAE (False Pimpernel Family)
Lindernia dubia (L.) Pennell, false pimpernel (2114)

MALVACEAE (Mallow Family)
**Malva neglecta* Wallr., cheeses (1785)
Tilia americana L., basswood (1780)

MENISPERMACEAE (Moonseed Family)
Menispermum canadense L., Canada moonseed (2045)

MOLLUGINACEAE (Carpetweed Family)
**Mollugo verticillata* L., carpetweed (1910)

MONTIACEAE (Blinks Family)
Claytonia virginica L., spring beauty (1460)

MYRSINACEAE (Myrsine Family)
Lysimachia ciliata L., fringed loosestrife (1742, 2027)
Lysimachia hybrida Michx., river loosestrife (2042)
Lysimachia terrestris (L.) Britton, Sterns & Poggenb., swamp loosestrife (2235)
Trientalis borealis Raf., American starflower (1538)

NYCTAGINACEAE (Four-O'clock Family)
Mirabilis nyctaginea (Michx.) MacMill., wild four-o'clock (1797)

NYMPHAEACEAE (Water-Lily Family)
Nymphaea odorata Aiton, fragrant water-lily (2047)

OLEACEAE (Olive Family)
Fraxinus americana L., white ash (2137)
Fraxinus nigra Marshall, black ash (1574)
Fraxinus pennsylvanica Marshall, green ash (1683)

ONAGRACEAE (Evening-Primrose Family)
Chamerion angustifolium (L.) Holub, fireweed (1760)
Circaea canadensis (L.) Hill subsp. *canadensis*, enchanter's nightshade (1741)
Epilobium ciliatum Raf., American willow-herb (1427, 1876, 2067, 2228)
Epilobium leptophyllum Raf., American marsh willow-herb (2066)
Ludwigia palustris (L.) Elliot, marsh purslane (1837)
Ludwigia polycarpa Short & R. Peter, false-loosestrife (2237)
Oenothera biennis L., evening-primrose (1831)
Oenothera perennis L., small sun-drops (1650, 1703, 2190)

OROBANCHACEAE (Broom-rape Family)
Agalinis tenuifolia (Vahl) Raf., common false foxglove (1920)
Aureolaria pedicularia (L.) Raf., false foxglove; *Pohl* 588, 1936 (WIS)
Pedicularis canadensis L., wood-betony (1501)
Pedicularis lanceolata Michx., swamp lousewort (1898)

OXALIDACEAE (Wood-Sorrel Family)
Oxalis dillenii Jacq., southern yellow wood-sorrel (1998)
Oxalis stricta L., common wood-sorrel (1662)
Oxalis violacea L., violet wood-sorrel (1515)

PAPAVERACEAE (Poppy Family)
Capnoides sempervirens (L.) Borkh., pale corydalis (1540)
Corydalis aurea Willd. subsp. *aurea*, golden corydalis (1556)
Dicentra cucullaria (L.) Bernh., Dutchman's breeches (1458)
Sanguinaria canadensis L., bloodroot (1447)

PENTHORACEAE (Stonecrop Family)
Penthorum sedoides L., ditch stonecrop (2025, 2236)

PHRYMACEAE (Lopseed Family)
Mimulus ringens L. var. *ringens,* monkey-flower (2110)
Phryma leptostachya L., American lop-seed (1753)

PLANTAGINACEAE (Plantain Family)
Besseya bullii (Eaton) Rydb., kittentails (2142)
Chelone glabra L., turtlehead (1861)
Gratiola neglecta Torr., clammy hedge-hyssop (2111, 2118)
**Linaria vulgaris* Mill., butter and eggs (1992)
**Plantago major* L., common plantain (2129)
Plantago rugelii Decne., American plantain (1890)
Veronica beccabunga L. var. *americana* Raf., American brooklime (1607)
**Veronica officinalis* L., common speedwell (1613)
**Veronica serpyllifolia* L., thyme-leaved speedwell (1590)
**Veronica verna* L., spring speedwell (1508)
Veronicastrum virginicum (L.) Farw., culver's root (1830)

POLEMONIACEAE (Phlox Family)
Phlox divaricata L., forest phlox (1492)
Phlox pilosa L., prairie phlox (1591)

POLYGALACEAE (Milkwort Family)
Polygala sanguinea L., field milkwort (1886, 2231)

POLYGONACEAE (Buckwheat Family)
Fallopia cilinodis (Michx.) Holub, fringed bindweed (1658, 1690)
**Fallopia convolvulus* (L.) A. Löve, black-bindweed (2185)
Persicaria amphibia (L.) A. Gray, water smartweed (1912)

**Persicaria hydropiper* (L.) Delarbre (marsh-pepper knotweed); Fassett 12756, 1927 (WIS)
Persicaria pensylvanica (L.) Gómez, Pennsylvania smartweed (1863, 2194)
Persicaria punctata (Elliot) Small, dotted smartweed; *Pohl* 572, 1936 (WIS)
Persicaria sagittata (L.) H. Gross, arrow-leaved tear-thumb (1888)
Persicaria virginiana (L.) Gaert., jumpseed (1844)
Polygonum tenue Michx., pleat-leaf knotweed (1818)
**Rumex acetosella* L., sheep sorrel (1514)
Rumex altissimus A. W. Wood, pale dock (2026)
**Rumex crispus* L., curly dock (2018)
**Rumex obtusifolius* L. (bitter dock); Pohl 594, 1936 (WIS)
Rumex orbiculatus A. Gray, great water dock (2062)

PORTULACACEAE (Purslane Family)
Phemeranthus rugospermus (Holz.) Kiger, prairie fame-flower (1812)
**Portulaca oleracea* L., common purselane (2032)

PRIMULACEAE (Primrose Family)
Androsace occidentalis Pursh, rock-jasmine (1948)

RANUNCULACEAE (Buttercup Family)
Actaea pachypoda L., white baneberry (1439)
Actaea rubra (Aiton) Willd., red baneberry (1519)
Anemone canadensis L., Canada anemone (1578)
Anemone cylindrica A. Gray, thimbleweed (2182)
Anemone quinquefolia L., wood anemone (1451)
Anemone virginiana L., tall anemone (1593)
Aquilegia canadensis L., wild columbine (1509)
Caltha palustris L., marsh marigold (1452)
Clematis virginiana L., virgin's bower (1829)
Delphinium carolinianum Walter subsp. *virescens* (Nutt.) R. E. Brooks, Carolina larkspur (2181)
Enemion biternatum Raf., false rue-anemone (1953)
Hepatica acutiloba (DC.) G. Lawson, sharp-lobed hepatica (1449)
Hepatica americana (DC.) H. Hara, round-lobed hepatica (1446)
Ranunculus abortivus L., little-leaf buttercup (1535)
**Ranunculus acris* L., tall buttercup (1685)
Ranunculus fascicularis Muhl., thick-root buttercup (1448)
Ranunculus hispidus Michx. var *nitidus* (Champ.) T. Duncan, bristly buttercup (1476, 1969)
Ranunculus pensylvanicus L. f., bristly buttercup; *Fassett* 8265, 1936 (WIS)
Ranunculus recurvatus Poir. var. *recurvatus*, hooked buttercup (1519)
Thalictrum dasycarpum Fisch. & Avé-Lall., tall meadow-rue (1687)
Thalictrum dioicum L., early meadow-rue (1500)
Thalictrum thalictroides (L.) A. J. Eames & B. Boivin, rue-anemone (1445)

RHAMNACEAE (Buckthorn Family)
Ceanothus americanus L., New Jersey tea (2019)
**Rhamnus cathartica* L., common buckthorn (1989)

ROSACEAE (Rose Family)
Agrimonia gryposepala Wallr., common agrimony (1826)
Amelanchier laevis Wiegand, Allegheny serviceberry; *Pohl* 489, 1936 (WIS)
Amelanchier sanguinea (Pursh) DC., New England serviceberry (1463, 1487, 1944, 1951)
Comarum palustre L., marsh cinquefoil; *Pohl* 504, 1936 (WIS)
Drymocallis arguta (Pursh) Rydb., prairie cinquefoil (1699)
Fragaria vesca L. subsp. *americana* (Porter) Staudt, thin-leaved wild strawberry (1493)
Fragaria virginiana Mill., wild strawberry (1525)
Geum aleppicum Jacq., yellow avens (1749)
Geum canadense Jacq., white avens (1659)
Geum triflorum Pursh, prairie smoke (1700)
**Malus pumila* Mill., apple (1516)

Physocarpus opulifolius (L.) Maxim., ninebark (1629, 2145)
Potentilla argentea L., silvery cinquefoil (1661)
Potentilla norvegica L., rough cinquefoil; *Patman* s.n., 1959 (WIS)
**Potentilla recta* L., sulpher cinquefoil (1772)
Potentilla simplex Michx., common cinquefoil (1673)
Prunus americana Marshall, wild plum (1947, 1950)
Prunus nigra Aiton., Canada plum (1464)
Prunus pumila L., sand cherry (1483)
Prunus serotina Ehrh., black cherry (1572)
Prunus virginiana L. var. *virginiana*, chokecherry (1512)
Rosa acicularis Lindl., bristly rose (1632)
Rosa arkansana Porter, prairie rose; *Patman* s.n., 1959 (WIS)
Rosa blanda Aiton, smooth rose (1602)
Rubus allegheniensis Porter, common blackberry (2187)
Rubus alumnus L. H. Bailey, old field blackberry (1603)
Rubus occidentalis L., black raspberry (1668)
Rubus pubescens Raf., dwarf red raspberry (1936)
Rubus strigosus Michx., red raspberry (1660)
Rubus superioris L. H. Bailey, Superior blackberry; *Pohl* 529, 1936 (WIS)
**Sorbus aucuparia* L., Eurasian mountain-ash (1552)
Sorbus decora (Sarg.) C. K. Schneid., northern mountain-ash; *Pohl* 506, 1936 (WIS)
Spiraea alba Du Roi var. *alba*, white meadowsweet (1805)

RUBIACEAE (Madder Family)
Cephalanthus occidentalis L., buttonbush (1833)
Galium aparine L., cleavers (1505)
Galium asprellum Michx., rough bedstraw (1562)
Galium boreale L., northern bedstraw (1583)
Galium concinnum Torr. & A. Gray, pretty bedstraw (1581)
Galium obtusum Bigelow subsp. *obtusum*, blunt-leaf bedstraw (1678)
Galium triflorum Michx., sweet-scented bedstraw (1544)
Houstonia longifolia Gaertn., long-leaved bluets (1549, 1664)
Mitchella repens L., partridgeberry (1747, 1974)

RUTACEAE (Rue Family)
Zanthoxylum americanum Mill., prickly ash (1680)

SALICACEAE (Willow Family)
Populus deltoides Bartram. ex Marshall subsp. *monilifera* (Aiton) Eckenw., cottonwood (1751)
Populus grandidentata Michx., big-toothed aspen (2128)
Populus tremuloides Michx., quacking aspen (1988)
Salix discolor Muhl., pussy willow (1485, 1486, 1939)
Salix eriocephala Michx., diamond willow (2037)
Salix interior Rowlee, sandbar willow (2068)
Salix petiolaris Sm., slender willow (1484)
**Salix* ×*rubens* Schrank, hybrid crack willow (1952)

SANTALACEAE (Sandalwood Family)
Comandra umbellata (L.) Nutt., bastard toadflax (1542)

SAPINDACEAE (Soapberry Family)
**Acer ginnala* Maxim., amur maple (2008)
Acer negundo L., boxelder (1949)
Acer rubrum L. var. *rubrum*, red maple (1959)
Acer saccharinum L., silver maple (2022)
Acer saccharum Marshall var. *saccharum*, sugar maple (1964)

SAXIFRAGACEAE (Saxifrage Family)
Chrysosplenium americanum Hook., American golden saxifrage (1980)

Heuchera richardsonii R. Br., prairie alum root (1511)
Micranthes pensylvanica (L.) Haw., swamp saxifrage (1616)
Mitella diphylla L., two-leaved miterwort (1470)

SCROPHULARIACEAE (Figwort Family)
Scrophularia lanceolata Pursh, American figwort (1631)
**Verbascum thapsus* L., common mullein (2031)

SOLANACEAE (Nightshade Family)
Solanum dulcamara L., bittersweet nightshade (1716)
Solanum ptycanthum Dunal, black nightshade (1796)

STAPHYLEACEAE (Bladdernut Family)
Staphylea trifolia L., American bladdernut (1945)

THYMELAEACEAE (Mezereum Family)
Dirca palustris L., leatherwood (1942)

ULMACEAE (Elm Family)
Ulmus americana L., American elm (1943)
**Ulmus pumila* L., Siberian elm (1946)
Ulmus rubra Muhl., red elm (2023)
Ulmus thomasii Sarg., rock elm (1993)

URTICACEAE (Nettle Family)
Boehmeria cylindrica (L.) Sw., small spike false nettle (1777, 1833)
Laportea canadensis (L.) Wedd., wood nettle (1875)
Parietaria pensylvanica Muhl. ex Willd., Pennsylvania pellitory (1608)
Pilea pumila (L.) A. Gray, clearweed (1864)
Urtica dioica L. subsp. *gracilis* (Aiton) Selander, stinging nettle (1865)

VERBENACEAE (Vervain Family)
Verbena hastata L., blue vervain (1806)
Verbena urticifolia L., white vervain (1849)

VIOLACEAE (Violet Family)
Viola labradorica Schrank, American dog violet (1461)
Viola macloskeyi F. E. Lloyd subsp. *pallens* (DC.) M. S. Baker, small white violet (1454, 1956)
Viola pedatifida G. Don, prairie violet (2143)
Viola pubescens Aiton, yellow forest violet (1491)
Viola sagittata Aiton, arrow-leaved violet (1541)
Viola sororia Willd., door-yard violet (1475, 1478)

VITACEAE (Grape Family)
Parthenocissus inserta (A. Kern.) Fritsch, grape woodbine (2234)
Vitis riparia Michx., riverbank grape, frost grape (2055)

MONOCOTYLEDONS

ACORACEAE (Sweet Flag Family)
Acorus americanus (Raf.) Raf., sweet flag; *Pohl* 490, 1936 (WIS)

ALISMATACEAE (Water-Plantain Family)
Alisma triviale Pursh, northern water-plantain (2039)
Sagittaria latifolia Willd., broad-leaved arrow-head (1902)
Sagittaria rigida Pursh, stiff arrow-head (1808, 2241)

ALLIACEAE (Onion Family)
Allium canadense L., wild onion (1579)
Allium stellatum Ker Gawl., prairie onion (1811)
Allium tricoccum Aiton, wild leek (1521)

ARACEAE (Arum Family)
Arisaema triphyllum (L.) Schott subsp. *triphyllum*, Jack-in-the-pulpit (1561)
Calla palustris L., wild calla (1727)
Lemna trisulca L., forked duckweed (1957)
Lemna turionifera Landolt, Turion duckweed (1905)
Spirodela polyrrhiza (L.) Shleid., greater duckweed (1906)
Symplocarpus foetidus (L.) W. P. C. Barton, skunk cabbage (1444)

ASPARAGACEAE (Asparagus Family)
**Asparagus officinalis* L., asparagus (1577)

COMMELINACEAE (Spiderwort Family)
Tradescantia occidentalis (Britton) Smyth var. *occidentalis,* prairie spiderwort (1773)

CONVALLARIACEAE (Lily-of-the-valley Family)
Clintonia borealis (Aiton) Raf., blue-bead lily (1588)
**Convallaria majalis* L. var. *majalis*, European lily-of-the-valley (1979)
Maianthemum canadense Desf., wild lily-of-the-valley (1537)
Maianthemum racemosum (L.) Link, false Solomon's-seal (1587)
Polygonatum biflorum (Walter) Elliott, giant Solomon's-seal (1638)
Polygonatum pubescens (Willd.) Pursh, hairy Solomon's-seal (1790)
Uvularia grandiflora Sm., bellwort (1490)
Uvularia sessilifolia L., sessile bellwort (1467)

CYPERACEAE (Sedge Family)
Bolboschoenus fluviatilis (Torr.) Soják, river bulrush (1900)
Bulbostylis capillaris (L.) C. B. Clarke, hair sedge; *Fassett* 17705, 1934 (WIS)
Carex assiniboinensis W. Boott, Assiniboine sedge (1551)
Carex backii W. Boott, Rocky Mountain sedge (1976)
Carex bicknellii Britton, Bicknell's oval sedge (1636)
Carex blanda Dewey, common wood sedge (1499, 1545)
Carex brevior (Dewey) Mack. Ex Lunell, fescue sedge (1994)
Carex bromoides Willd., brome-like sedge (1453)
Carex buxbaumii Wahlenb., Buxbaum's sedge (1548)
Carex cephalophora Willd., oval-headed sedge; *Fassett* 7382, 1927 (WIS)
Carex crinita Lam. var. *crinita*, fringed sedge (1622)
Carex cristatella Britton, crested oval-sedge (1737)
Carex deweyana Schwein., Dewey's sedge (1571)
Carex emoryi Dewey, Emory's sedge; *Pohl* 484, 1936 (WIS)
Carex gracillima Schwein., graceful sedge (1506)
Carex haydenii Dewey, Hayden's sedge (1568, 2146)
Carex hirtifolia Mack., hairy sedge (1982)
Carex intumescens Rudge, greater bladder sedge (1574)
Carex lacustris Willd., lake sedge (2010)
Carex lupulina Willd., common hop sedge (804, 1732)
Carex lurida Wahlenb., shallow sedge (1769)
Carex muhlenbergii Willd., Muhlenberg's sedge (2005)
Carex normalis Mack., greater straw sedge (1567)
Carex pedunculata Willd., long-stalk sedge (1455, 1965)
Carex pellita Willd., broad-leaved woolly sedge (1600, 1708)
Carex pensylvanica Lam., Pennsylvania sedge (1450)
Carex projecta Mack., loose-headed oval sedge (1569, 1701)
Carex radiata (Wahlenb.) Small, eastern star sedge (1507)
Carex retrorsa Schwein., deflexed bottlebrush sedge (524)
Carex sprengelii Spreng., Sprengel's sedge (1503)
Carex stipata Willd. var. *stipata*, common fox sedge (1597)
Carex stricta Lam., tussock sedge (2147)
Carex tribuloides Wahlenb., awl-fruited oval sedge (1782)
Carex tuckermanii Dewey, Tuckerman's sedge (1705, 1706)

Carex typhina Michx., cattail sedge (1733, 1734, 1783, 2046)
Carex umbellata Schkuhr. ex Willd., early oak sedge (1960)
Carex vesicaria L., blister sedge (1736)
Carex vulpinoidea Michx., brown fox sedge (1735)
Cyperus bipartitus Torr., slender flat sedge (1847, 1926)
Cyperus diandrus Torr., umbrella flat sedge; *Pohl* 598, 1936 (WIS)
Cyperus erythrorhizos Muhl., red-rooted sedge (2124)
Cyperus esculentus L., yellow nut sedge (1846)
Cyperus odoratus L., flat sedge (802)
Cyperus schweinitzii Torr., Great Plains sand sedge (1794, 1857, 1894)
Cyperus squarrosus L., bearded flat sedge (2246)
Cyperus strigosus L., straw colored cyperus (1925)
Eleocharis acicularis (L.) Roem. & Schult., needle spike-rush (2123)
Eleocharis erythropoda Steud., bald spike-rush (2122)
Eleocharis intermedia Schult., matted spike-rush (2095)
Eleocharis obtusa (Willd.) Schult., blunt spike-rush (2016, 2120, 2243)
Eleocharis ovata (Roth) Roem. & Schult., oval spike-rush (2119)
Schoenoplectus tabernaemontani (C. C. Gmel.) Palla, soft stem bulrush (1807)
Scirpus atrovirens Willd., black bulrush (1765, 1845)
Scirpus cyperinus (L.) Kunth, wool-grass (2041)
Scirpus microcarpus J. Presl. & C. Presl, panicled bulrush (1644, 1645)
Scirpus pedicellatus Fernald, stalked wool-grass (1786)

DIOSCOREACEAE (Yam Family)
Dioscorea villosa L., wild-yam (1691, 1789)

HEMEROCALLIDACEAE (Day-lily Family)
**Hemerocallis fulva* (L.) L., orange day-lily (2014)

HYDROCHARITACEAE (Frog's-Bit Family)
Elodea canadensis Michx., common waterweed (1802)
Elodea nuttallii (Planch.) St. John, slender waterweed (1909)
Najas flexilis (Willd.) Rostk. Schmidt, northern water-nymph (2240)
Najas guadalupensis (Spreng.) Magnus, southern water-nymph (1800)
Vallisneria americana Michx., American eel-grass (2058)

HYPOXIDACEAE (Star-grass Family)
Hypoxis hirsuta (L.) Coville, yellow star-grass (1698, 2144)

IRIDACEAE (Iris Family)
**Iris pseudacorus* L., yellow flag (1676)
Iris virginica L., var. *shrevei* (Small) E. S. Anderson, southern blue flag (1606, 2011)
Sisyrinchium campestre E. P. Bicknell, prairie blue-eyed grass (1526)

JUNCACEAE (Rush Family)
Juncus effusus L., common rush; *Pohl* 497, 1936 (WIS)
Juncus tenuis Willd., path rush (1665, 2024)
Luzula acuminata Raf. var. *acuminata*, hairy wood rush (1462)
Luzula multiflora (Ehrh.) Lej. subsp. *multiflora*, common wood rush (1502)

LILIACEAE (Lily Family)
Erythronium albidum Nutt., white trout lily (1459)
Lilium michiganense Farw., Michigan lily (1761)

ORCHIDACEAE (Orchid Family)
Cypripedium acaule Aiton, moccasin flower (1692)
Cypripedium parviflorum Salib. var. *pubescens* (Willd.) O. W. Knight, large yellow lady's slipper (1971)
Galearis spectabilis (L.) Raf., showy orchis (1557)
Goodyera pubescens (Willd.) R. Br., downy rattlesnake-plantain (1430)
Liparis liliifolia (L.) Rich. ex Lindl., lily-leaved twayblade (1771, 2188)

Platanthera psycodes (L.) Lindl., purple fringed orchid (520)

POACEAE (Grass Family)

Agrostis perennans (Walter) Tuck. var. *perennans*, autumn bent grass (2034)
Agrostis scabra Willd., tickle grass (1730, 1731)
Andropogon gerardii Vitman, big bluestem grass (1816)
Brachyelytrum aristosum (Michx.) P. Beauv. Ex Branner & Coville, northern shorthusk (1674)
Brachyelytrum erectum (Schreb.) P. Beauv., long-awned wood grass (1432)
Bromus ciliatus L., fringed brome (534)
**Bromus inermis* Leyss., smooth brome (1697, 2002)
Bromus latiglumis (Shear) Hitchc., ear-leaved brome; *Shinners* 2858, 1940 (WIS)
Bromus pubescens L., hairy woodland brome (1696, 1810)
Calamagrostis canadensis (Michx.) P. Beauv., blue-joint grass (1832)
Cenchrus longispinus (Hack.) Fernald, sandbur (1848)
Cinna arundinacea L., common wood reed (2135, 2136, 2227)
Cinna latifolia (Gopp.) Griseb., drooping wood reed; *Fassett* 5392, 1929 (WIS)
**Dactylis glomerata* L., orchard grass (1626)
Danthonia spicata (L.) Roem. & Schult., poverty oatgrass (527, 1643, 1858)
Dichanthelium acuminatum (Sw.) Gould & C. A. Clark subsp. *fasciculatum* (Torr.) Freckmann & LeLong, western panic grass (1711)
Dichanthelium boreale (Nash) Freckmann, northern panic grass; *Freckmann* 4324, 1996 (UWSP)
Dichanthelium latifolium (L.) Harvill., broad-leaved panic grass (1656)
Dichanthelium leibergii (Vasey) Scribn., Leiberg's panic grass; *Cochrane* 5332, 1927 (WIS)
Dichanthelium linearifolium (Scribn.) Gould, linear-leaved panic grass (1712)
Dichanthelium oligosanthes (Schult.) Gould subsp. *scribnerianum* (Nash) Freckman & LeLong (1634)
Dichanthelium perlongum (Nash) Freckmann, long-stalked panic grass (1657)
Dichanthelium xanthophysum (A. Gray) Freckmann, pale panic grass; *Freckmann* 4322, 1996 (UWSP)
**Digitaria ischaemum* (Schreb.) Muhl., smooth crabgrass (2073)
Echinochloa muricata (P. Beauv.) Fernald, barnyard grass (537, 2057)
Echinochloa walteri (Pursh) A. Heller, coast barnyard grass (2108, 2117)
Elymus canadensis L., Canada wild-rye (1889)
Elymus hystrix L., bottlebrush-grass (521)
**Elymus repens* (L.) Gould, quackgrass (1717)
Elymus villosus Muhl., downy wild-rye (1819, 1852)
Elymus virginicus L. var. *virginicus*, Virginia wild-rye (1426)
Eragrostis capillaris (L.) Nees, lace grass; *Fassett* 5472, 1927 (WIS)
Eragrostis cilianensis (All.) Vignolo ex Janch., stink grass (2096)
Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb., creeping love grass (2129)
Eragrostis pectinacea (Michx.) Nees var. *pectinacea,* low love grass (2056)
Festuca subverticillata (Pers.) E. B. Alexeev, nodding fescue (526, 528, 1729)
Glyceria canadensis (Michx.) Trin., rattlesnake mannagrass (2060)
Glyceria grandis S. Watson, American mana grass; *Patman* s.n., 1959 (WIS)
Glyceria striata (Lam.) Hitchc., fowl mannagrass (529, 1675, 1724, 1725)
Hesperostipa spartea (Trin.) Barkworth, porcupine grass (1999)
Hierochloë hirta (Schrank) Borbás, hairy sweetgrass (1981)
Koeleria macrantha (Ledeb.) Schult., Junegrass (1642)
Leersia oryzoides (L.) Sw., rice cut grass (2054)
Leersia virginica Willd., white grass (1838, 1892)
Milium effusum L., American millet grass (1566, 1695)
Muhlenbergia frondosa (Poir.) Fern., common satin grass; *Shinners* 2856, 1940 (WIS)
Muhlenbergia mexicana (L.) Trin., leaft satin grass; *Shinners* 2854, 1940 (WIS)
Oryzopsis asperifolia Michx., rough-leaved rice grass (1456, 1489, 1966)
Panicum capillare L., common witch grass (2079, 2121)
Panicum philadelphicum Trin., Philadelphia panic grass (2109)

Panicum virgatum L., switchgrass (532, 535, 536)
Phalaris arundinacea L., reed canary grass (1996)
**Phleum pratense* L., subsp. *pratense*, timothy (1788)
Phragmites australis (Cav.) Trin. Ex Steud., common reed grass (2063)
Piptatherum racemosum (Sm.) Eaton, black-seeded rice grass (2094)
**Poa annua* L., annual bluegrass (2007)
**Poa compressa* L., Canada bluegrass (2003)
Poa palustris L., marsh bluegrass (1529, 1722, 1723)
**Poa pratensis* L., Kentucky bluegrass (1550)
Schizachne purpurascens (Torr.) Swallen, false melic (1482)
Schizachyrium scoparium (Michx.) Nash, little bluestem (1930)
**Setaria faberi* R. A. W. Herrm., giant foxtail (2078)
**Setaria pumila* (Poir.) Roem. & Schult. subsp. *pumila*, yellow foxtail (2038)
**Setaria viridis* (L.) P. Beauv., green foxtail (1793)
Sorghastrum nutans (L.), Nash., Indian grass (1433)
Spartina pectinata Link, prairie cord-grass (530)
Sporobolus heterolepis (A. Gray) A. Gray, prairie drop seed (2017, 2126)

POTAMOGETONACEAE (Pondweed Family)
Potamogeton crispus L., curly pondweed (1801)
Potamogeton nodosus Poir., long-leaf pondweed (1904)
Potamogeton pusillus L., slender pondweed (1799, 1907)
Zannichellia palustris L., horned-pondweed (2238, 2239)

SMILACACEAE (Catbrier Family)
Smilax ecirrhata S. Watson, upright carrion flower (1558, 1968, 1975)
Smilax hispida Raf., bristly greenbriar (1689)
Smilax lasioneura Hook., common carrion flower (1985)

TRILLIACEAE (Trillium Family)
Trillium cernuum L., nodding trillium (1589)
Trillium flexipes Raf., declined trillium (1466)
Trillium grandiflorum (Michx.) Salisb., big white trillium (1465)

TYPHACEAE (Cat-Tail Family)
Sparganium eurycarpum Englm., common bur-reed; *Pohl* 527, 1936 (WIS)
Typha angustifolia L., narrow-leaved cat-tail (1739)
Typha latifolia L., broad-leaved cat-tail (1759)
Typha ×*glauca* Godr., hybrid cat-tail (1740)