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Flora and Phytogeographical History of Ledges State Park, Boone County, Iowa

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The Ledges State Park flora includes 437 species of vascular plants, several of which are unusual for central Iowa. The flora is surprisingly diverse considering its western location. The current distributions and occurrences of plants in the Ledges suggest the influence of historic plant migrations. The Ledges flora is composed of three elements, eastern mesophytic species, southern zerophytic species and northern boreal species. The dissected topography of the Ledges State Park has allowed boreal species, relicts of northern forests, to persist in the protected canyon habitats.

INDEX DESCRIPTORS: Ledges State Park, Iowa vascular flora, phytogeography

The Ledges State Park in central Iowa consists of 447 hectares (1,117 acres) along the east side of the Des Moines River, T83N, , R26W, sections 9, 10, 15, 16, 20 and 21 in Boone County (Figure 1). Pease Creek drains into the Des Moines River from the northeast, forming a deep (73 m) sandstone cliff-lined canyon. The Pennsylvanian sandstone ledges, for which the park was named, are the most prominent geological feature of the main canyon. Several smaller drainages empty into Pease Creek and the Des Moines River. Reindeer Ridge, a narrow, steep-sided, east-west trending ridge formed by the cutting of two adjacent streams, is the site of many northern species.

Early descriptions of the park flora include brief notes regarding the most unusual plants. Pammel (1895; 1903; 1905) noted the occurrence of *Ulmus thomasii* and *Prunus pensylvanica* in the Ledges, considering the latter to be a relict species. Diehl (1915) published an extensive species list of the Ledges and sampled a small belt transect in which he noted *Dirca palustris*, also considered to be a northern relict.

In 1919, just prior to the establishment of the park, Pammel noted that the Ledges was one of the few places in Iowa where the reindeer lichen (*Cladonia* spp.) occurs. Reindeer Ridge was identified as a site which contained several plants (including *Cladonia* spp.) rare to central Iowa (Pammel, 1924).

In addition to supporting rare species, the Ledges was known to have two of the largest elm trees (*Ulmus americana*) in the state (Trenk, 1925; Iowa State Board of Conservation, 1926; Pammel 1925; Pammel et al. 1928; Harlan, 1943). More recently when Duvick and Blasing (1983) dated several oaks from various sites throughout Iowa, they found the largest number of old trees to be in the Ledges State Park.

The flora of the Ledges can not be understood without examining the influence of historic plant migrations on current plant distributions. Peck's work (1980) provides extensive evidence on the origin of the flora of Woodman Hollow, Webster County, 55 km north of the Ledges. Numerous other studies have considered to some extent the influence of historic plant migrations on the flora of Iowa and the upper midwest (see FLORA ANALYSIS).

An ecological analysis of the communities of Ledges State Park was conducted concurrently with the present floristic analysis (Johnson-Groh, 1985). Seven major vegetation types were described: *Quercus alba, Quercus alba-Quercus rubra, Quercus rubra, Quercus rubra-Tilia americana, Tilia americana,* slump forest, and bottomland. A vegetation map of the park was constructed using field data and aerial photography (see centerfold map, Johnson-Groh, 1985).

This paper describes the flora of the Ledges State Park, assesses its floristic uniqueness, and relates this to the topography and historic phytogeography of the park.

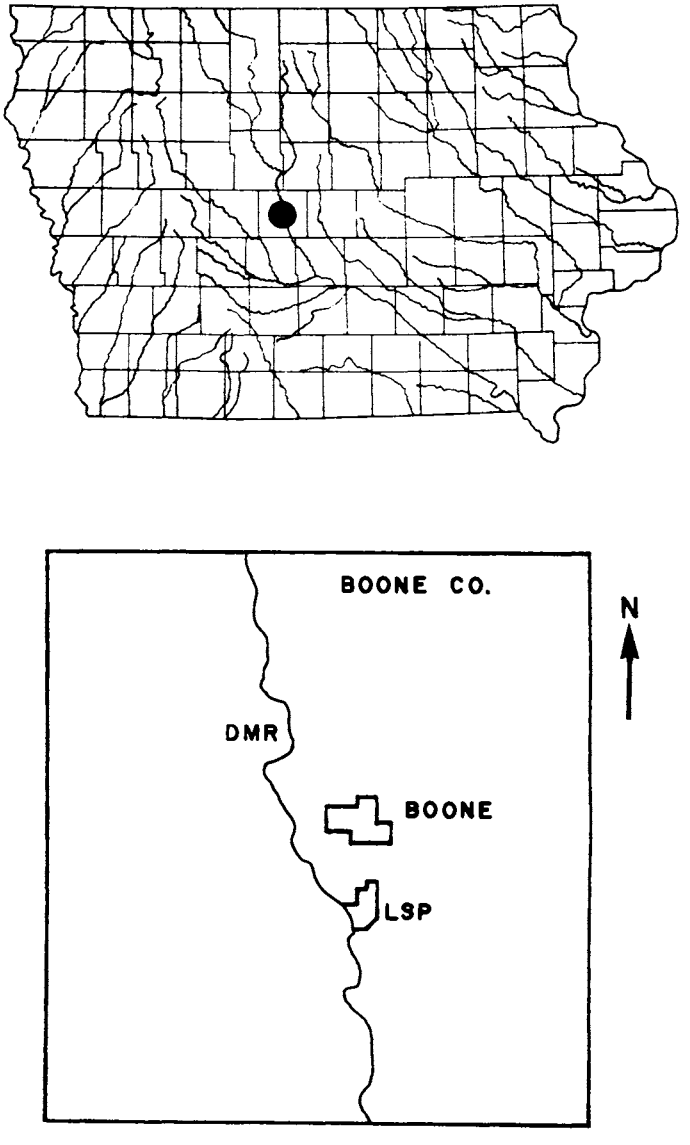

Fig. 1 Location of Ledges State Park in Iowa and Boone County, Ledges State Park (LSP), Des Moines River (DMR).

METHODS

Field work was conducted from March, 1981 through October,

1982. Voucher collections were made and deposited in the Iowa State University (ISU) Herbarium. In addition the ISU Herbarium was searched for Ledges collections. All collections were checked against the species list generated by Diehl for the Ledges in 1915. A list of native and naturalized species for the park was compiled from these three sources. Binomials and common names were selected to follow Fernald (1950), Gleason and Cronquist (1963), Mickel (1979), and Pohl (1978). Species represented by herbarium vouchers collected during the present study are represented by the letter "J" after the binomial, and species which were not vouchered for various reasons (e.g. rare) are indicated by the letter "O" after the binomial. Species which are listed in Diehl's (1915) flora are indicated by the letter "D" after the binomial, and species represented by herbarium vouchers from collections other than the present study are indicated by the letter "H" after the binomial. Additional information on the collection and the habitat of each species is included in the thesis by Johnson-Groh (1983).

FLORA ANALYSIS

Four hundred thirty-seven species of vascular plants have been identified in the Ledges State Park. A number of species cited by Diehl (1915) were not found in this study. Since no vouchers exist for these species, they are not included in the above total. Of the 437 species recorded for the Ledges, 372 are native and 65 are naturalized (Table 1). Two unusual species, *Prunus pensylvanica* and *Hybanthus concolor,* were not found in this survey but are represented by vouchers in the ISU Herbarium. *Prunus pensylvanica,* a northern species collected in the north slope area of Reindeer Ridge, is frequently referred to in older literature on the park. *Hybanthus concolor,* a southern species, had been found at the upper end of the main canyon.

The flora of the Ledges State Park is rich considering its location in the state and its small size relative to forests of eastern Iowa. The Ledges has 79 more species than Woodman Hollow (Niemann and Landers, 1974) in Webster County and 42% as many species as Allamakee County (Peck, et al., 1980) in northeastern Iowa (Table 2). Woodman Hollow (32 hectares) is smaller than the Ledges but contains a similar diversity of habitats. Allamakee county (163,584 hectares) has the greatest habitat diversity in the state.

The current distribution and occurrence of plants in the Ledges State Park reflect current microhabitats and the degree of their persistence through historical climatic changes. The Ledges flora is composed primarily of three elements: eastern mesophytic species, southern xerophytic species, and northern boreal species. The time of establishment of these elements is of considerable interest and controversy.

The last Pleistocene glaciation (about 14,000 years ago) extended approximately to Des Moines, where the Des Moines Lobe of the Wisconsin glaciation reached its maximum extent (Ruhe, 1959; Ruhe et al., 1957; Wright and Ruhe, 1965). Osolin (1983) postulates that the Ledges main canyon was formed within the first 3000 years after the glacier receded, reaching nearly its present form during that time.

Following the retreat of the glacier, the Iowa landscape was soon dominated by *Picea* with lesser amounts of *Abies* and *Larix* (Baker and Van Zant, 1980; Baker et al., 1980; Brush, 1967; Durkee, 1971; Lane, 1931; Van Zant and Hallberg, 1976; Walker, 1966; Walker and Brush, 1963). Around 8,000 years ago this spruce dominated forest was replaced by a deciduous forest predominately of oak, elm, and hickory. Deciduous tree pollen decreased in abundance around 7,000 years ago, with a corresponding increase in grass pollen. Eastern spread of prairie is thought to be associated with a warmer and drier period, called the hypsithermal, which extended from about 8,000 to about 4,000 years ago (Wright, 1976).

It is plausible that the goat or hill prairies at the Ledges originated during the dry hypsithermal interval, becoming established on steep, south-facing slopes which were too dry for trees. During the hypsithermal, woodlands in central Iowa presumably became restricted to ravines where the dissected topography provided protection from prairie fires and from drying sun and wind. Survival of mesic forests in these protected areas throughout the hypsithermal interval is suggested by the Ledges vegetation.

Table 1. Ledges flora summary.

TAXON	FAMILIES	GENERA	SPECIES Native	SPECIES Naturalized
Pteridophyta	6	11	15	1
Spermatophyta				
Pinophyta	2	3	1	6
Magnoliophyta				
Liliatae	10 (11)[a]	50 (54)	81 (95)	13 (16)
Magnoliatae	71 (72)	206 (232)	275 (333)	45 (66)
Total	89	270	372	65

[a]Totals in parenthesis include Diehl's unvouchered 1915 collections.

Species at the Ledges such as *Dirca palustris* (Leatherwood), *Cornus rugosa* (Round-leaved Dogwood), *Elymus riparius* (River Wild Rye) and *Galium boreale* (Northern Bedstraw) are at the southern edge of their distributions (Figure 2). The occurrence of such species here suggests that the Ledges and similar habitats along the Des Moines River have functioned as mesic refuges for northern and eastern species. Whether such species have in fact existed here since shortly after glaciation or whether they have migrated recently over long distances is a question that has received considerable attention.

Most of the work relating to the origin of the Ledges flora has been floristic and phytogeographic, along with a few studies of affect of microclimate. Pammel (1905), Pammel and King (1901), Gleason (1922), Conard (1952), Niemann (1975), and Plouffe (1977) have all viewed the northern disjunct communities of central Iowa as relicts. Shimek (1948) and Eilers (1965) have maintained on the contrary that enough time has elapsed since glaciation for long distance dispersal to have effected dissemination of northern species to central Iowa.

Microclimate studies documenting the differences between sheltered ravines and exposed uplands have shown that these canyons have moderated climates. Kucera (1950; 1952) studying microclimates at the Ledges, found that maximum temperatures of air and soil surface were consistently higher in open woods of upland and south-facing slopes than in closed stands of north-facing slopes. Peck (1980) found that temperatures on steep north slopes of Woodman Hollow, 55 km north of the Ledges, averaged about 5.5 °C cooler in summer than the surrounding area.

Peck (1980) pointed out that most of the mesic species at Woodman Hollow were small plants. He attributed this to the greater

Table 2. Comparison of Ledges flora to Woodman Hollow flora (Niemann and Landers, 1974) in central Iowa, and Allamakee County flora (Peck et al., 1980) in northeast Iowa.

LOCATION	FAMILIES	GENERA	SPECIES
Ledges State Park	89	270	437
Woodman Hollow State Preserve	77	234	358
Allamakee County	124	444	1040

VEGETATION TYPES

LEDGES STATE PARK, BOONE COUNTY, IOWA

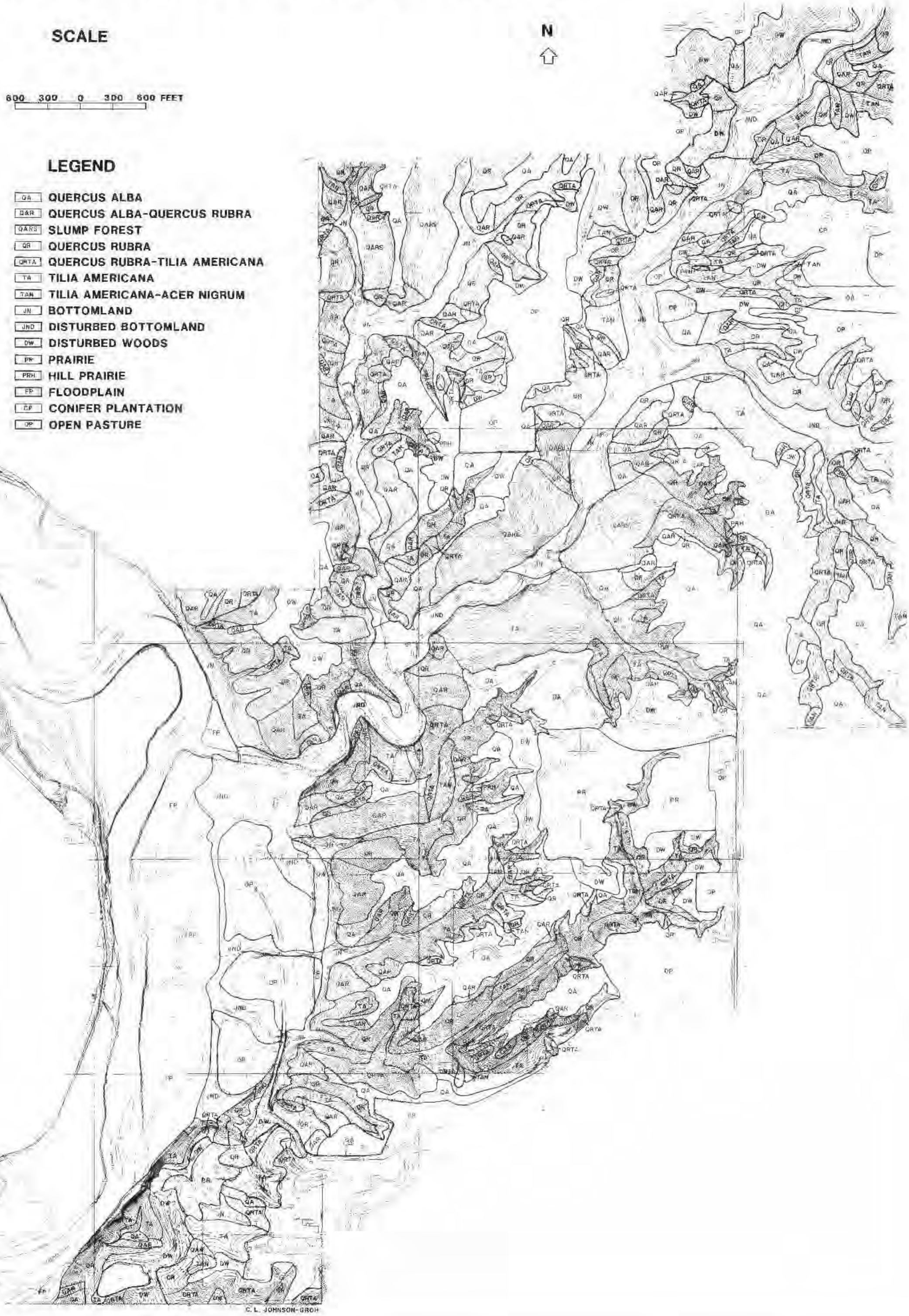

Fig. 2. Distributions of shrubs and herbaceous species based on specimens in the Iowa State University Herbarium. Star represents Ledges State Park, Boone County. A. *Dirca palustris*, B. *Cornus rugosa*, C. *Galium boreale*, D. *Elymus riparius* (distribution from Gabel, 1979).

moderation of temperature in small ground level microhabitats. Trees are subject to the greatest climatic extremes. Coincidentally, few northern tree species are present at the Ledges, either having been unable to survive past changes in climate or to return to the Ledges under the present climate. *Ulmus thomasii* and *Fraxinus nigra*, perhaps the most common representatives of more northern tree species, occur throughout Iowa and are not disjunct at the Ledges. Several Ledges shrubs, *Dirca palustris*, *Cornus rugosa*, and *Prunus pensylvanica*, are not typical of central Iowa woodlands. These species and the herbaceous species, *Galium boreale* and *Elymus riparius*, have distributions which are distinctly more northern.

The bryophytes and lichens, because of their size, can grow in areas that are most highly modified and thus can avoid extremes of heat or drought more effectively than larger plants. Peck (1980) found the bryoflora of Woodman Hollow to be a sensitive indicator of microhabitat moderation with seventy-nine percent (112 of 142) of the bryophyte species either disjunct or on the western border of eastern and northern ranges. Peck agreed that part of this flora may be recent but asserted that the development of such a large bryoflora by long-distance dispersal in the 4,000 years since the hypsithermal is unlikely. Dunlap (1979) noted that the Ledges, along with Hardin County, Dolliver State Park, and Woodman Hollow, are the richest lichenological areas in central Iowa. He too felt that these habitats contain relicts of past deciduous and boreal forests. Although a bryoflora analysis of the Ledges was not undertaken, northern species such as *Pleurozium schreberi* and *Rhytidiadelphus triquetrus* were noted. *Cladonia* spp., *Polytrichum juniperinum* and *Polytrichum commune*, characteristic of the forest floor community of well-drained acidic sites in northern Minnesota and Wisconsin, form large mats on Reindeer Ridge and several other areas in the park. These species, though occurring in similar habitats as far south as Arkansas, may also be relicts of the post-glacial flora.

Microclimate moderation in ravines of central Iowa must have been present during the hypsithermal to the same relative degree as exists today. It seems likely that in the cool, wet microclimates of a north slope mesic species would have had little difficulty surviving the hypsithermal. Species of smaller stature would have benefitted most from microclimate moderation and would have survived in the greatest numbers. It seems less likely that long-distance dispersal can fully account for the diverse and large number of unusual species occurring in the moderated ravines of the Ledges and Woodman Hollow.

It seems probable then that the northern species of the Ledges represent relicts of the northern forests which were in Iowa shortly after deglaciation. As the climate changed, most of the boreal plants of the spruce-fir forest did not survive. The remaining boreal plants persisted where microclimate was favorable as the deciduous forest moved in and as the hypsithermal passed. It seems plausible that some

boreal species which became established early after the glacier retreated are still present in the protected canyon habitats of the Ledges State Park.

SPECIES LIST

EQUISETOPHYTA

EQUISETACEAE (Horsetail Family)

Equisetum arvense L. (Field Horsetail) O, D, H
Equisetum x ferrissii Clute (Hybrid Scouring-rush) H
Equisetum hyemale L. (Common Scouring-rush) J, D, H
Equisetum laevigatum A. Braun (Smooth Scouring-rush) H
Equisetum sylvaticum L. (Woodland Horsetail) H

POLYPODIOPHYTA

ADIANTACEAE (Maidenhair Fern Family)

Adiantum pedatum L. (Northern Maidenhair Fern) J, D, H

ASPLENIACEAE (Common Fern Family)

Athyrium filix-femina (L.) Roth (Lady Fern) J, D, H
Camptosorus rhizophyllus (L.) Link (Walking Fern) O, D, H
Cystopteris fragilis (L.) Bernh. (Fragile Fern) O, D, H
Cystopteris protrusa (Weath.) Blasdell (Creeping Fragile Fern) J, H
Dryopteris spinulosa (O. F. Muell.) Watt (Spinulose Shield-fern) H
Matteuccia struthiopteris (L.) Tod. (Ostrich Fern) O
Woodsia obtusa (Spreng.) Torr. (Blunt-lobed Woodsia) J, D, H

OPHIOGLOSSACEAE (Adder's Tongue Fern Family)

Botrychium virginianum (L.) SW. (Rattlesnake Fern) J, D, H

OSMUNDACEAE (Royal Fern Family)

Osmunda claytoniana L. (Interrupted Fern) O

POLYPODIACEAE (Common Fern Family)

Polypodium virginianum L. (Common Polypody) J, D, H

PINOPHYTA

CUPRESSACEAE (Cypress Family)

Juniperus virginiana L. (Eastern Red Cedar) J, D, H

PINACEAE (Pine Family)

Picea glauca (Moench.) Voss (White Spruce) J
Pinus banksiana Lamb. (Jack Pine) J
Pinus nigra Arnold (Austrian Pine) D
Pinus resinosa Ait. (Norway Pine) J
Pinus strobus L. (White Pine) J
Pinus sylvestris L. (Scotch Pine) J

MAGNOLIOPHYTA: LILIATAE

ALISMATACEAE (Water-plantain Family)

Alisma plantago-aquatica L. (Water-plantain) D
Sagittaria engelmanniana J. G. Smith (Arrow-head) H
Sagittaria latifolia Willd. (Arrow-head) D, H

AMARYLLIDACEAE (Amaryllis Family)

Hypoxis hirsuta (L.) Cov. (Star-grass) J, D, H

ARACEAE (Arum Family)

Arisaema dracontium (L.) Schott (Green Dragon) O, D, H
Arisaema triphyllum (L.) Schott (Jack-in-the-pulpit) J, D, H

COMMELINACEAE (Spiderwort Family)

Tradescantia bracteata Small (Prairie Spiderwort) D, H

CYPERACEAE (Sedge Family)

Carex assiniboinensis W. Boott. (Sedge) D
Carex cephalophora Muhl. H
Carex crawei Dewey. D
Carex cristatella Britt. H
Carex davisii Schwin and Torr. H
Carex eburnea Boott. D, H
Carex gravida Bailey D, H
Carex grisea Wahl. D
Carex hystricina Muhl. H
Carex laxiflora Lam. D, H
Carex lupulina Muhl. H
Carex oligocarpa Schk. D, H
Carex panicea L. D
Carex pedunculata Muhl. H
Carex pensylvanica Lam. O, D, H
Carex rosea Schk. D, H
Carex subereca (Olney) Britt. H
Cyperus esculentus L. (Yellow Nut-grass) D, H
Eleocharis palustris (L.) R. & S. (Spike Rush) D
Scirpus atrovirens Willd. (Bulrush) H
Scirpus validus Vahl. (Great Bulrush) D, H

IRIDACEAE (Iris Family)

Sisyrinchium campestre Bickn. (Blue-eyed Grass) J, H

JUNCACEAE (Rush Family)

Juncus tenuis Willd. (Path Rush) J, H

LILIACEAE (Lily Family)

Allium canadense L. (Wild Onion) J, D, H
Allium tricoccum Ait. (Wild Leek) J, H
Erythronium albidum Nutt. (Dog-tooth Violet) J, D, H
Lilium philadelphicum L. (Wood-lily) O, D
Polygonatum biflorum (Willd.) Ell. (Solomon's Seal) J
Polygonatum commutatum (R. & S.) Dietr. (Solomon's Seal) D
Polygonatum pubescens (Willd.) Pursh (Solomon's Seal) J
Smilacina racemosa (L.) Desf. (False Spikenard) J, D, H
Smilacina stellata (L.) Desf. (False Solomon's Seal) J
Smilax ecirrhata (Engelm.) Wats. (Greenbrier) D, H
Smilax herbacea L. (Carrion-flower) O, D, H
Smilax hispida Muhl. (Greenbrier) O, D, H
Trillium cernuum L. (Nodding Trillium) O
Trillium nivale Riddell (Snow Trillium) J, D, H
Uvularia grandiflora Sm. (Bellwort) J, D, H

ORCHIDACEAE (Orchid Family)

Corallorhiza odontorhiza (Willd.) Nutt. (Coral-root) J
Cypripedium calceolus L. (Yellow Lady-slipper) J
Cypripedium candidum Muhl. (White Lady-slipper) D
Cypripedium reginae Walt. (Showy Lady-slipper) D, H
Habenaria viridis (L.) R. Br. (Bracted Orchid) J, D, H
Orchis spectabilis L. (Showy Orchis) J, D, H

POACEAE (Grass Family)

Agropyron repens (L.) Beauv. (Quack Grass) O, H
Agrostis hyemalis (Walt.) B.S.P. (Tickle Grass) D, H
Agrostis perennans (Walt.) Tuckerm. (Upland Bentgrass) J, D, H
Agrostis stolonifera L. (Redtop) D, H
Andropogon gerardii Vitman (Big Bluestem) J, D, H
Bouteloua curtipendula (Michx.) Torr. (Side-oats Grama) J, H
Bromus inermis Leyss. (Smooth Brome) J, H
Bromus pubescens Muhl. (Brome Grass) H
Bromus purgans L. (Brome Grass) D
Cenchrus longispinus (Hack.) Fern. (Sandbur) J, D
Cinna arundinacea L. (Woodreed) D, H
Dactylis glomerata L. (Orchard Grass) J
Danthonia spicata (L.) Beauv. (Poverty-grass) D, H
Diarrhena americana Beauv. J. H
Digitaria ischaemum (Schreb.) Muhl. (Smooth Crabgrass) D, H
Digitaria sanguinalis (L.) Scop. (Hairy Crabgrass) J, D, H
Echinochloa crusgalli (L.) Beauv. (Barnyard Grass) D
Echinochloa muricata (Beauv.) Fern. (Barnyard Grass) J
Elymus canadensis L. (Canada Wild Rye) J, D
Elymus riparius Wieg. (River Bank Wild Rye) J
Elymus villosus Muhl. (Slender Wild Rye) J
Elymus virginicus L. (Virginia Wild Rye) J, D, H
Eragrostis capillaris (L.) Nees (Lacegrass) D, H
Eragrostis cilianensis (All.) Link (Stink Grass) D
Eragrostis frankii C. A. Meyer (Lovegrass) D, H
Eragrostis hypnoides (Lam.) BSP. (Lovegrass) D, H
Eragrostis pilosa (L.) Beauv. (Pony Grass) D
Festuca arundinacea Schreb. (Alta Fescue) J
Festuca obtusa Biehler (Nodding Fescue) H
Glyceria striata (Lam.) Hitchc. (Fowl Meadow Grass) J, D, H
Hordeum jubatum L. (Squirrel-tail Barley) J, H
Hystrix patula (L.) Moench. (Bottlebrush Grass) J, D, H
Leersia oryzoides (L.) Sw. (Curgrass) D, H
Leersia virginica Willd. (Whitegrass) J, D, H
Muhlenbergia frondosa (Poir.) Fern. (Muhly Grass) J
Muhlenbergia mexicana (L.) Trin. (Muhly Grass) J, D
Muhlenbergia racemosa (Michx.) BSP. (Muhly Grass) J, D, H
Muhlenbergia schreberi Gmel. (Nimblewill) H
Muhlenbergia sobolifera (Muhl.) Trin. (Muhly Grass) H
Muhlenbergia tenuiflora (Willd.) BSP. (Muhly Grass) D
Oryzopsis racemosa (J. E. Smith) Ricker J
Panicum capillare L. (Witchgrass) D
Panicum lanuginosum Ell. (Panic Grass) D, H
Panicum latifolium L. (Broad-leaved Panic Grass) J, D, H
Panicum praecocius Hitchc. and Chase (Early Panicum) H
Panicum scribnerianum Nash (Small Panic Grass) J
Panicum villosissimum Nash (Panic Grass) D
Panicum virgatum L. (Switchgrass) J, D
Phalaris arundinacea L. (Reed Canary Grass) J
Phleum pratense L. (Timothy) O, D, H
Poa annua L. (Annual Bluegrass) H
Poa pratensis L. (Kentucky Bluegrass) J, D, H
Schizachyrium scoparium (Michx.) Nash (Little Bluestem) J
Setaria faberi Herrm. (Nodding Foxtail, Giant Foxtail) J
Setaria lutescens (Weigel) F. T. Hubb (Yellow Foxtail) D
Setaria verticillata (L.) Beauv. (Bristly Foxtail) H
Setaria viridis (L.) Beauv. (Green Foxtail) J, D
Sorghastrum nutans (L.) Nash (Indian Grass) J, D, H
Sphenopholis obtusata (Michx.) Scribn. (Wedge Grass) D, H
Sporobolus vaginiflorus (Torr.) Wood (Poverty Grass) H

TYPHACEAE (Cat-tail Family)

Typha latifolia L. (Common Cat-tail) D

MAGNOLIOPHYTA: MAGNOLIATAE

ACERACEAE (Maple Family)

Acer negundo L. (Box Elder) J
Acer nigrum Michx.f. (Black Maple) O, D, H
Acer saccharinum L. (Silver Maple) J, D, H

AMARANTHACEAE (Amaranth Family)

Amaranthus graecizans L. (Prostrate Pigweed) D
Amaranthus retroflexus L. (Pigweed) D

ANACARDIACEAE (Cashew Family)

Rhus glabra L. (Smooth Sumac) J, D, H
Rhus radicans L. (Poison-ivy) J, D

APIACEAE (Parsley Family)

Chaerophyllum procumbens (L.) Crantz (Prostrate Chervil) D, H
Cicuta maculata L. (Spotted Cowbane) D
Cryptotaenia canadensis (L.) DC. (Honewort) J, D, H
Heracleum lanatum Michx. (Cow-parsnip) D, H
Osmorhiza claytoni (Michx.) Clarke (Sweet Cicely) J, D, H
Osmorhiza longistylis (Torr.) DC. (Anise-root) D
Pastinaca sativa L. (Wild Parsnip) J, D, H
Sanicula canadensis L. (Canadian Black Snakeroot) H
Sanicula gregaria Bickn. (Common Snakeroot) J, H
Sanicula marilandica L. (Black Snakeroot) D
Taenidia integerrima (L.) Drude (Yellow Pimpernel) J, D, H
Zizia aptera (Gray) Fern. (Golden Alexanders) D
Zizia aurea (L.) Koch (Golden Alexanders) J, D, H

APOCYNACEAE (Dogbane Family)

Apocynum androsaemifolium L. (Dogbane) D
Apocynum cannabinum L. (Indian Hemp) J, D, H

ARALIACEAE (Ginseng Family)

Acanthopanax sieboldianus Makino J
Aralia nudicaulis L. (Wild Sarsaparilla) J, D, H
Aralia racemosa L. (Spikenard) J, D, H
Panax quinquefolium L. (Ginseng) J, D, H

ARISTOLOCHIACEAE (Birthwort Family)

Asarum canadense L. (Wild Ginger) J, D, H

ASCLEPIADACEAE (Milkweed Family)

Asclepias incarnata L. (Swamp Milkweed) D, H
Asclepias purpurascens Nutt. (Purple Milkweed) H
Asclepias syriaca L. (Common Milkweed) J, D
Asclepias verticillata L. (Whorled Milkweed) J, D

ASTERACEAE (Aster Family)
Achillea millefolium L. (Common Yarrow) J, D, H
Ambrosia artemisiifolia L. (Common Ragweed) J, D
Ambrosia psilostachya DC. (Western Ragweed) H
Ambrosia trifida L. (Great Ragweed) J, H
Antennaria neglecta Greene (Field Pussytoes) J
Antennaria plantaginifolia (L.) Richards (Pussytoes) D, H
Arctium minus Schk. (Common Burdock) D
Aster azureus Lindl. (Sky Blue Aster) J
Aster cordifolius L. (Blue Wood Aster) J, D, H
Aster laevis L. (Smooth Aster) H
Aster lateriflorus (L.) Britt. (Side-flowered Aster) J
Aster novae-angliae L. (New England Aster) H
Aster praealtus Poir. (Willow Aster) J
Aster prenanthoides Muhl. (Aster) H
Aster ptarmicoides (Nees) T. & G. (Aster) J
Aster sagittifolius Willd. (Arrow-leaved Aster) D
Aster simplex Willd. (Panicled Aster) J
Bidens cernua L. (Stick-tight) J, D, H
Bidens discoidea (T. & G.) Britt. (Beggar-ticks) D
Bidens frondosa L. (Beggar-ticks) J, D
Boltonia asteroides (L.) L'Her (Boltonia) D
Cacalia tuberosa Nutt. (Tuberous Indian-plantain) D
Cirsium altissimum (L.) Spreng. (Tall Thistle) D
Cirsium discolor (Muhl.) Spreng. (Field Thistle) J, D, H
Cirsium vulgare (Savi) Tenore (Bull Thistle) D
Conyza canadensis (L.) Cronq. (Horseweed) D, H
Coreopsis palmata Nutt. (Stiff Tickseed) D, H
Coreopsis tripteris L. (Tickseed) H
Dyssodia papposa (Vent.) Hitchc. (Fetid Marigold) O
Echinacea pallida Nutt. (Purple Coneflower) H
Erigeron annuus (L.) Pers. (Daisy Fleabane) J, D, H
Erigeron philadelphicus L. (Common Fleabane) J, D, H
Eupatorium perfoliatum L. (Thoroughwort, Boneset) D
Eupatorium purpureum L. (Sweet Joe-pye-weed) J, D
Eupatorium rugosum Houtt. (White Snakeroot) J, D
Gnaphalium obtusifolium L. (Sweet Everlasting) J
Helenium autumnale L. (Sneezeweed) D
Helianthus grosseserratus Martens (Serrate Sunflower) J, D
Helianthus strumosus L. (Pale-leaved Wood Sunflower) D, H
Helianthus tuberosus L. (Jerusalem-artichoke) J, D, H
Heliopsis helianthoides (L.) Sweet (Ox Eye) D, H
Hieracium scabrum Michx. (Rough Hawkweed) H
Iva xanthifolia Nutt. (Marsh-elder) H
Kuhnia eupatorioides L. (False Boneset) D
Lactuca canadensis L. (Wild Lettuce) D
Lactuca floridana (L.) Gaertn. (Blue Lettuce) D
Lactuca serriola L. (Prickly Lettuce) D
Liatris aspera Michx. (Rough Blazing Star) J, H
Liatris pycnostachya Michx. (Prairie Blazing Star) D
Matricaria matricarioides (Less.) Porter (Pineapple-weed) D, H
Prenanthes alba L. (White Lettuce) J, D, H
Ratibida pinnata (Vent.) Barnh. (Prairie Coneflower) J
Rudbeckia hirta L. (Black-eyed Susan) J, D, H
Rudbeckia laciniata L. (Green-headed Coneflower) H
Rudbeckia subtomentosa Pursh (Coneflower) J
Rudbeckia triloba L. (Thin-leaved Coneflower) J
Senecio pauperculus Michx. (Balsam Ragwort) D
Silphium laciniatum L. (Compass-plant) D
Silphium perfoliatum L. (Cup-plant) J, D, H
Solidago canadensis L. (Tall Goldenrod) D
Solidago flexicaulis L. (Zigzag Goldenrod) J, D
Solidago gigantea Ait. (Late Goldenrod) H
Solidago hispida Muhl. (Hairy Goldenrod) J
Solidago missouriensis Nutt. (Missouri Goldenrod) J
Solidago nemoralis Ait. (Gray Goldenrod) J, H
Solidago radula Nutt. (Goldenrod) D
Solidago rigida L. (Stiff Goldenrod) D, H
Solidago speciosa Nutt. (Showy Goldenrod) H
Solidago ulmifolia Muhl. (Elm-leaved Goldenrod) J, D, H
Sonchus asper (L.) Hill (Sow-thistle) J
Sonchus oleraceus L. (Common Sow-thistle) D
Tanacetum vulgare L. (Tansy) D, H
Taraxacum officinale Wiggers (Common dandelion) J, D
Tragopogon dubius Scop. (Goat's-beard) J
Verbesina alternifolia (L.) Britt. (Crownbeard) J
Vernonia fasciculata Michx. (Bunched Ironweed) H
Xanthium strumarium L. (Cocklebur) D, H

BALSAMINACEAE (Touch-Me-Not Family)
Impatiens biflora Walt. (Spotted Touch-me-not) J, D
Impatiens pallida Nutt. (Pale Touch-me-not) D, H
BERBERIDACEAE (Barberry Family)
Berberis thunbergii DC. (Barberry) J
Caulophyllum thalictroides (L.) Michx. (Blue Cohosh) J
Podophyllum peltatum L. (May-apple) J, D, H
BETULACEAE (Birch Family)
Carpinus caroliniana Walt. (Blue-beech) J, D, H
Corylus americana Walt. (American Hazel) J, D, H
Ostrya virginiana (Mill.) K. Koch (Hop Hornbeam, Ironwood) J, D, H
BIGNONIACEAE (Trumpetcreeper Family)
Catalpa speciosa Warder (Cigar Tree) J
BORAGINACEAE (Borage Family)
Cynoglossum boreale Fern. (Northern Wild Comfrey) D
Cynoglossum officinale L. (Common Hound's-tongue) D
Hackelia virginiana (L.) Johnst. (Stickseed) D, H
Lithospermum canescens (Michx.) Lehm. (Hoary Puccoon) J, D, H
Lithospermum incisum Lehm. (Narrow-leaved Puccoon) H
Lithospermum latifolium Michx. (Broad-leaved Puccoon) D, H
Mertensia virginica (L.) Pers. (Bluebell) D, H
Onosmodium occidentale Mackenz. (Western Marble-seed) D
Symphytum officinale L. (Comfrey) D
BRASSICACEAE (Mustard Family)
Arabis canadensis L. (Sickle-pod) J, D, H
Arabis laevigata (Muhl.) Poir. (Smooth Rock Cress) D
Brassica campestris L. (Field Mustard) J
Brassica nigra (L.) Koch (Black Mustard) D, H
Capsella bursa-pastoris (L.) Medic. (Shepard's-purse) J, D
Cardamine bulbosa (Schreb.) BSP. (Spring Cress) D, H
Cardamine hirsuta L. (Bitter Cress) D
Cardamine pensylvanica Muhl. (Bitter Cress) J, D
Dentaria laciniata Muhl. (Toothwort) J, D, H
Descurainia pinnata (Walt.) Britt. (Tansy-mustard) D, H
Draba reptans (Lam.) Fern. (Whitlow Grass) D, H
Draba verna L. (Whitlow Grass) D
Erysimum cheiranthoides L. (Wormseed Mustard) D
Lepidium densiflorus Schrad. (Peppergrass) D, H
Lepidium virginicum L. (Peppergrass) D
Rorippa islandica (Oeder) Borbas (Yellow Cress) D, H
Sisymbrium officinale (L.) Scop. (Hedge-mustard) D, H
CAMPANULACEAE (Bluebell Family)
Campanula americana L. (Tall Bellflower) J, D, H
Lobelia inflata L. (Indian-tobacco) J, H
Lobelia siphilitica L. (Great Lobelia) J, D, H
Lobelia spicata Lam. (Pale Spike Lobelia) D
CANNABINACEAE (Hemp Family)
Cannabis sativa L. (Hemp) D
Humulus lupulus L. (Common Hops) D, H
CAPRIFOLIACEAE (Honeysuckle Family)
Lonicera dioica L. (Wild Honeysuckle) J, D, H
Lonicera japonica Thunb. (Japanese Honeysuckle) J
Lonicera tatarica L. (Tartarian Honeysuckle) J
Sambucus canadensis L. (Common Elder) J, D, H
Symphoricarpos occidentalis Hook. (Wolfberry) O
Symphoricarpos orbiculatus Moench. (Coralberry) J
Triosteum perfoliatum L. (Tinker's-weed) J, H
Viburnum dentatum L. (Arrow-wood) H
Viburnum lentago L. (Nannyberry) J
Viburnum rafinesquianum Schult. (Downy Arrow-wood) J, D, H
CARYOPHYLLACEAE (Pink Family)
Paronychia canadensis (L.) Wood (Forked Chickweed) H
Saponaria officinalis L. (Bouncing Bet) J, H
Silene cucubalus Wibel (Bladder-campion) J
Silene nivea (Nutt.) Otth (Snowy Campion) D, H
Silene stellata (L.) Ait.f. (Starry Campion) D, H
CELASTRACEAE (Staff-tree Family)
Celastrus scandens L. (Bittersweet) J, D, H
Euonymus atropurpureus Jacq. (Wahoo) J, D, H
CERATOPHYLLACEAE (Hornwort Family)
Ceratophyllum demersum L. (Coontail) H
CHENOPODIACEAE (Goosefoot Family)
Chenopodium album L. (Lamb's-quarters) J, D
Chenopodium standleyanum Aellen (Standley's Goosefoot) J
Salsola kali L. (Russian-thistle) D, H
CISTACEAE (Rockrose Family)
Helianthemum bicknellii Fern. (Bicknell's Frostweed) H
Lechea stricta Leggett (Upright Pinweed) H
Lechea villosa Ell. (Pinweed) D
CONVOLVULACEAE (Morning-glory Family)
Convolvulus sepium L. (Wild Morning-glory) D
Ipomoea hederacea (L.) Jacq. (Morning-glory)D, H
CORNACEAE (Dogwood Family)
Cornus alternifolia L.f. (Pagoda Dogwood) J, D, H
Cornus amomum Mill. (Red Willow) D
Cornus drummondii C. A. Meyer (Hairy Dogwood) J, D, H
Cornus mas L. (Cornelian Cherry) J
Cornus racemosa Lam. (Gray Dogwood) J, H
Cornus rugosa Lam. (Round-leaved Dogwood) O, D, H
Cornus stolonifera Michx. (Red Dogwood) J
CUCURBITACEAE (Gourd Family)
Echinocystis lobata (Michx.) T. & G. (Wild Cucumber) H
Sicyos angulatus L. (Bur Cucumber) J, D, H
ELAEAGNACEAE (Oleaster Family)
Elaeagnus umbellata Thunb. J
EUPHORBIACEAE (Spurge Family)
Acalypha rhomboidea Raf. (Three-seeded Mercury) J, D
Acalypha virginica L. (Three-seeded Mercury) D
Euphorbia corollata L. (Flowering Spurge) J, D, H
Euphorbia heterophylla L. (Fire-on-the-mountain) J
Euphorbia maculata L. (Eyebane, Wartweed) J
Euphorbia preslii Guss. (Spurge) D
Euphorbia serpyllifolia Pers. (Spurge) J
Euphorbia supina Raf. (Milk-purslane) H
FABACEAE (Bean Family)
Amorpha canescens Pursh (Leadplant) J, D
Amphicarpa bracteata (L.) Fern. (Hog-peanut) J, D
Astragalus canadensis L. (Milk-vetch) J, D
Astragalus crassicarpus Nutt. (Ground Plum) D
Baptisia leucophaea Nutt. (Cream Wild Indigo) D
Cercis canadensis L. (Redbud) J
Crotalaria sagittalis L. (Rattlebox) H
Desmodium canadense (L.) DC. (Showy Tick Trefoil) O, D, H
Desmodium cuspidatum (Willd.) Loud. (Tick Trefoil) J
Desmodium dillenii Darl. (Tick Trefoil) D
Desmodium glutinosum (Muhl.) Wood (Pointed Tick Trefoil) J, D, H
Desmodium paniculatum (L.) DC. (Tick Trefoil) H
Desmodium perplexum Schubert (Tick Trefoil) J
Gleditsia triacanthos L. (Honey Locust) J, D
Gymnocladus dioicus (L.) K. Koch (Kentucky Coffee-tree) J, D, H
Lathyrus ochroleucus Hook. (Pale Vetchling) J, D, H
Lespedeza capitata Michx. (Bush Clover) J, D, H
Medicago lupulina L. (Black Medick) J
Medicago sativa L. (Alfalfa) D
Melilotus alba Desr. (White Sweet Clover) J, D, H
Melilotus officinalis (L.) Lam. (Yellow Sweet Clover) O, D
Petalostemum candidum (Willd.) Michx. (White Prairie Clover) D, H
Petalostemum purpureum (Vent.) Rydb. (Purple Prairie-clover) D
Robinia pseudoacacia L. (Black Locust) J, D, H
Strophostyles helvola (L.) Ell. (Wild Bean) D
Trifolium pratense L. (Red Clover) J, D
Vicia americana Muhl. (Vetch) J, D, H
Vicia caroliniana Walt. (Vetch) D
FAGACEAE (Beech Family)
Quercus alba L. (White Oak) J, D, H
Quercus rubra L. (Red Oak) J, D, H
Quercus macrocarpa Michx. (Bur Oak) J, D, H
Quercus muehlenbergii Englem. (Yellow Oak, Chinkapin Oak) J, D, H
FUMARIACEAE (Fumitory Family)
Corydalis micrantha (Engelm.) Gray (Corydalis) J
Dicentra canadensis (Goldie) Walp. (Squirrel-corn) O, H
Dicentra cucullaria (L.) Bernh. (Dutchman's Breeches) J, D, H
GENTIANACEAE (Gentian Family)
Gentiana flavida Gray (Yellowish Gentian) J, H
Gentiana flavida Gray X *G. clausa* Raf. J
Gentiana quinquefolia L. (Stiff Gentian) J

GERANIACEAE (Geranium Family)
Geranium maculatum L. (Wild Cranesbill) J, D, H
HIPPOCASTANACEAE (Horse Chestnut Family)
Aesculus glabra Willd. (Ohio Buckeye) H
HYDROPHYLLACEAE (Waterleaf Family)
Ellisia nyctelea L. (Waterpod) D, H
Hydrophyllum appendiculatum Michx. (Waterleaf) J, D, H
Hydrophyllum virginianum L. (John's Cabbage) J, D, H
HYPERICACEAE (St. John's-wort Family)
Hypericum punctatum Lam. (Spotted St. John's-wort) H
JUGLANDACEAE (Walnut Family)
Carya cordiformis (Wang.) K. Koch (Bitternut Hickory) J, D, H
Carya ovata (Mill.) K. Koch (Shagbark Hickory) J, D
Juglans cinerea L. (Butternut) J, D, H
Juglans nigra L. (Black Walnut) J, D
LAMIACEAE (Mint Family)
Agastache nepetoides (L.) Kuntze (Giant Hyssop) D
Blephilia hirsuta (Pursh.) Benth. (Wood Mint) J, D
Glechoma hederacea L. (Ground-ivy) J, D, H
Hedeoma hispida Pursh (Mock Pennyroyal) D, H
Hedeoma pulegioides (L.) Pers. (American Pennyroyal) H
Lycopus americanus Muhl. (Common Water Horehound) H
Mentha spicata L. (Spearmint) D
Monarda fistulosa L. (Wild Bergamot) J, D, H
Nepeta cataria L. (Catnip) D
Physostegia parviflora Nutt. (False Dragonhead) H
Prunella vulgaris L. (Heal-all) J, D, H
Pycnanthemum virginianum (L.) Durand & Jackson (Mountain Mint) H
Stachys hispida Pursh (Hedge-nettle) H
Stachys palustris L. (Woundwort) D
Stachys tenuifolia Willd. (Hedge-nettle) J, H
Teucrium canadense L. (American Germander) J, D, H
MALVACEAE (Mallow Family)
Abutilon theophrasti Medic (Velvet-leaf) J, H
MENISPERMACEAE (Moonseed Family)
Menispermum canadense L. (Moonseed) J, D
MONOTROPACEAE (Indian-pipe Family)
Monotropa uniflora L. (Indian Pipe) J, D, H
MORACEAE (Mulberry Family)
Morus alba L. (White Mulberry) J
Morus rubra L. (Red Mulberry) O, D, H
OLEACEAE (Olive Family)
Fraxinus americana L. (White Ash) J, D, H
Fraxinus nigra Marsh. (Black Ash) J, D, H
Fraxinus pennsylvanica Marsh. (Green Ash) O, D, H
ONAGRACEAE (Evening-Primrose Family)
Circaea quadrisulcata (Maxim.) Franch. & Sav. (Enchanter's Nightshade)
Oenothera biennis L. (Evening Primrose) J, D
OROBANCHACEAE (Broom-rape Family)
Orobanche uniflora L. (Cancer-root) H
OXALIDACEAE (Wood-sorrel Family)
Oxalis corniculata L. (Wood-sorrel) D
Oxalis stricta L. (Yellow Wood-sorrel) J, H
Oxalis violacea L. (Violet Wood-sorrel) D
PAPAVERACEAE (Poppy Family)
Sanguinaria canadensis L. (Bloodroot) J, D
PHRYMACEAE (Lopseed Family)
Phryma leptostachya L. (Lopseed) J, D, H
PLANTAGINACEAE (Plantain Family)
Plantago major L. (Common Plantain) J, D
PLATANACEAE (Plane-tree Family)
Platanus occidentalis L. (Sycamore) J
POLEMONIACEAE (Polemonium Family)
Phlox divaricata L. (Blue Phlox) J, D, H
Phlox pilosa L. (Prairie Phlox) J, D, H
POLYGALACEAE (Milkwort Family)
Polygala sanguinea L. (Field Milkwort) D, H
Polygala senega L. (Seneca-snakeroot) J, D, H
Polygala verticillata L. (Whorled Milkwort) D, H
POLYGONACEAE (Buckwheat Family)
Fagopyrum esculentum Moench. (Buckwheat) D
Polygonum aviculare L. (Knotweed) D
Polygonum coccineum Muhl. (Water Smartweed) H
Polygonum convolvulus L. (Black Bindweed) D
Polygonum erectum L. (Knotweed) H
Polygonum pensylvanicum L. (Pinkweed) H
Polygonum persicaria L. (Lady's-thumb) J
Polygonum punctatum Ell. (Knotweed) J
Polygonum scandens L. (Climbing False Buckwheat) J, H
Polygonum virginianum L. (Jumpseed) J, D, H
Rumex acetosella L. (Sheep-sorrel) D
Rumex altissimus Wood (Pale Dock) D, H
Rumex crispus L. (Curly Dock) D
PORTULACACEAE (Purslane Family)
Claytonia virginica L. (Spring Beauty) J, D, H
PRIMULACEAE (Primrose Family)
Androsace occidentalis Pursh (Western Rock Jasmine) J, H
Dodecatheon meadia L. (Prairie Shooting-star) J
Lysimachia ciliata L. (Fringed Loosestrife) J, D
PYROLACEAE (Wintergreen Family)
Pyrola elliptica Nutt. (Shinleaf) H
RANUNCULACEAE (Crowfoot Family)
Actaea rubra (Ait.) Willd. (Red Baneberry) J, D, H
Anemone canadensis L. (Meadow Anemone) J, H
Anemone quinquefolia L. (Wood Anemone) J, D, H
Anemone virginiana L. (Thimbleweed) J, D, H
Anemonella thalictroides (L.) Spach (Rue-anemone) O
Aquilegia canadensis L. (Wild Columbine) J, D
Clematis virginiana L. (Virgin's-bower) J, D, H
Hepatica acutiloba DC. (Liverleaf) J, D, H
Isopyrum biternatum (Raf.) T. & G. (False Rue-anemone) J, D
Ranunculus abortivus L. (Kidneyleaf Buttercup) J, D, H
Ranunculus aquatilis L. (White Water-crowfoot) D
Ranunculus longirostris Godr. (White Water-crowfoot) H
Ranunculus rhomboideus Goldie (Prairie Buttercup) D
Ranunculus septentrionalis Poir. (Swamp Buttercup) J, D, H
Thalictrum dasycarpum Fisch. & Ave-Lall. (Purple Meadow-rue) J, H
Thalictrum dioicum L. (Early Meadow-rue) J, D, H
RHAMNACEAE (Buckthorn Family)
Ceanothus americanus L. (New Jersey Tea) D, H
Rhamnus lanceolata Pursh J, D, H
ROSACEAE (Rose Family)
Agrimonia pubescens Wallr. (Downy Agrimony) J
Agrimonia striata Michx. (Agrimony) D
Amelanchier arborea (Michx. f.) Fern. (Serviceberry) J, D, H
Crataegus calpodendron (Ehrn.) Medic. (Urn-tree Hawthorn) D
Crataegus mollis (T. & G.) Scheele (Red Hawthorn) D, H
Crataegus pruinosa (Wendl.) K. Koch (Hawthorn) H
Crataegus punctata Jacq. (Dotted Hawthorn) J
Fragaria vesca L. (Woodland Strawberry) D, H
Fragaria virginiana Dcne. (Wild Strawberry) J, D, H
Geum canadense Jacq. (White Avens) J, H
Physocarpus opulifolius (L.) Maxim. (Ninebark) O, D, H
Potentilla arguta Pursh (Tall Cinquefoil) D
Potentilla canadensis L. (Cinquefoil) D
Potentilla norvegica L. (Rough Cinquefoil) D, H
Potentilla simplex Michx. (Old-field Cinquefoil) H
Prunus americana Marsh. (Wild Plum) J, D, H
Prunus pensylvanica L.f. (Pin-cherry) D, H
Prunus serotina Ehrh. (Black Cherry) J, D, H
Prunus virginiana L. (Choke Cherry) J, D, H
Pyrus ioensis (Wood) Bailey (Wild Crabapple) D, H
Pyrus communis L. (Pear) J
Rosa blanda Ait. (Smooth Wild Rose) J, D, H
Rosa carolina L. (Sunshine Wild Rose) H
Rosa multiflora Thunb. (Multiflora Rose) J
Rosa X *rudiuscula* Green (*R. arkansana* X *R. carolina*) H
Rosa suffulta Greene (Rose) D
Rubus allegheniensis Porter (Common Blackberry) J
Rubus flagellaris L. (Northern Dewberry) D
Rubus idaeus L. (Cultivated Red Raspberry) D, H
Rubus occidentalis L. (Black Raspberry) O, D, H
Rubus pensilvanicus Poir. (Raspberry) H
RUBIACEAE (Madder Family)
Galium aparine L. (Spring-cleavers) J, D, H
Galium boreale L. (Northern Bedstraw) O, D, H
Galium circaezans Michx. (Wild Licorice) J, D, H
Galium concinnum T. &. G. (Shining Bedstraw) H
Galium trifidum L. (Small Bedstraw) O, D
RUTACEAE (Rue Family)
Zanthoxylum americanum Mill. (Prickly-ash) J, D, H
SALICACEAE (Willow Family)
Populus deltoides Marsh. (Cottonwood) J, D, H
Populus grandidentata Michx. (Big-toothed Aspen) O, D, H
Populus tremuloides Michx. (Quaking Aspen) O, D, H
Salix amygdaloides Anderss. (Peach-leaved Willow) D, H
Salix babylonica L. (Weeping Willow) O
Salix cordata Michx. (Heart-leaved Willow) J, H
Salix discolor Muhl. (Large Pussy-willow) J, D, H
Salix humilis Marsh. (Prairie Willow) D
Salix interior Rowlee (Sandbar Willow) J, D, H
Salix nigra L. (Black Willow) O, D, H
SANTALACEAE (Sandalwood Family)
Comandra umbellata (L.) Nutt. (Bastard Toadflax) O, D, H
SAXIFRAGACEAE (Saxifrage Family)
Heuchera villosa Michx. (Alum-root) D
Mitella diphylla L. (Bishop's-cap) J, D, H
Philadelphus verrucosus Schrad. (Mock Orange) J
Ribes americanum Mill. (Wild Black Currant) D
Ribes cynosbati L. (Prickly Gooseberry) J, D, H
Ribes missouriense Nutt. (Missouri Gooseberry) J, D, H
SCROPHULARIACEAE (Figwort Family)
Chelone glabra L. (Turtlehead) D
Dasistoma macrophylla (Nutt.) Raf. (Mullein Foxglove) H
Gerardia tenuifolia Vahl. (Slender False Foxglove) J
Lindernia dubia (L.) Pennel (False Pimpernel) H
Mimulus ringens L. (Alleghany Monkey Flower) J, D, H
Pedicularis canadensis L. (Common Lousewort) J, D, H
Penstemon grandiflorus Nutt. (Beard-tongue) H
Scrophularia lanceolata Pursh (Early Figwort) J, D
Verbascum thapsus L. (Common Mullein) O, D, H
Veronica peregrina L. (Purslane Speedwell) D, H
Veronicastrum virginicum (L.) Farw. (Culver's-root) J
SIMAROUBACEAE (Quassia Family)
Ailanthus altissima (Mill.) Swingle (Tree-of-heaven) J
SOLANACEAE (Nightshade Family)
Datura stramonium L. (Jimsonweed) D, H
Lycium halimifolium Mill. (Matrimony-vine) D
Physalis heterophylla Nees (Ground-cherry) H
Physalis longifolia Nutt. (Ground-cherry) D
Physalis pruinosa L. (Strawberry-tomato) D
Physalis virginiana Mill. (Ground-cherry) H
Solanum carolinense L. (Horse-nettle) D
Solanum dulcamara L. (Bittersweet) O
Solanum nigrum L. (Black Nightshade) D, H
STAPHYLEACEAE (Bladdernut Family)
Staphylea trifolia L. (Bladdernut) J, D, H
THYMELAEACEAE (Mezereum Family)
Dirca palustris L. (Leatherwood) J, D, H
TILIACEAE (Linden Family)
Tilia americana L. (Basswood, Linden) J, D, H
ULMACEAE (Elm Family)
Celtis occidentalis L. (Hackberry) J, D
Ulmus americana L. (American Elm) J, D, H
Ulmus rubra Muhl. (Slippery Elm) J, D, H
Ulmus thomasii Sarg. (Cork Elm) O, D, H
URTICACEAE (Nettle Family)
Laportea canadensis L. Wedd. (Wood Nettle) J, D, H
Pilea pumila (L.) Gray (Clearweed) D
Urtica dioica L. (Stinging Nettle) J, H
VERBENACEAE (Vervain Family)
Phyla lanceolata (Michx.) Greene (Fog-fruit) J, D, H
Verbena bracteata Lag. & Rodr. (Bracted Vervain) D, H
Verbena hastata L. (Blue Vervain) J, D, H
Verbena stricta Vent. (Hoary Vervain) D, H
Verbena urticifolia L. (White Vervain) J, D, H
VIOLACEAE (Violet Family)
Hybanthus concolor (T. F. Forst.) Spreng. (Green Violet) H
Viola cucullata Ait. (Blue Marsh-violet) D
Viola eriocarpa Schw. (Smooth Yellow Violet) J, H
Viola missouriensis Greene (Missouri Violet) H
Viola papilionacea Pursh (Meadow-violet) J, H
Viola pubescens Ait. (Downy Yellow Violet) D
Viola sororia Willd. (Downy Blue Violet) J, D
Viola missouriensis Green X *V. sororia* Willd. H
VITACEAE (Grape Family)
Parthenocissus quinquefolia (L.) Planch. (Virginia Creeper) J, D
Parthenocissus vitacea (Knerr) Hitchc. (Woodbine) O
Vitis riparia Michx. (River-bank Grape) J, H
Vitis vulpina L. (Forest Grape) D

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