2

ERIGENIA BULBOSA

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

NUMBER 2 ISSUED: APRIL 1983

CONTENTS: SOUTHERN ILLINOIS GEOLOGY

The SINPS is dedicated to the preservation, conservation, and study of the native plants and vegetation of southern Illinois.

Membership includes subscription to ERIGENIA as well as to the quarterly newsletter THE HARBINGER. ERIGENIA , the official journal of the Southern Illinois Native Plant Society, is published occasionally by the Society. Single copies of this issue may be purchased for $3.50 (including postage). For current subscription rates or information concerning the Society write:

So. Ill. Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, IL 62901

Make checks payable to S.I.N.P.S.

TO CONTRIBUTE: See inside back cover for guidelines.

EDITORIAL

– MARK W. MOHLENBROCK

Imagine a warm, shallow sea teaming with marine life, including sharks and coral reefs. Inland from the sandy beaches, were swamps with numerous clubmoss-like trees, giant horsetails, and many fern and fern-like plants. Does this sound like southern Illinois to you? Well it was, for millions of years ago the climate of southern Illinois was like that of a tropical forest. Through the millenia, the area now known as southern Illinois has undergone numerous changes: from a tropical paradise as described above, to an area covered by seas or glaciers. The various forms of life and climate during Paleozoic time of southern Illinois is the topic of our first article.

A field trip log of Jackson and Union counties, southern Illinois, is presented next. This 150 mile journey guides you to various aspects of the geologic history of southern Illinois by viewing its physical record, the rock strata.

Next is an examination of the landforms occuring in southern Illinois. Causes for the varying topography of southern Illinois are revealed through use of the rock record. These landforms play a substantial role in the type of plant communities present, as do the soils of a particular area. As various as is the topography of the region, so are its soils. A characterization of the soils of southern Illinois is presented as our concluding article of this issue.

We are continually interested in producing a journal of improved quality and on this note several changes and additions have been made. First, is the addition of a co-editor position which has been filled by Margaret Gallagher of Arizona State University. Second, is the formation of an Editorial Review Board composed of four professors of botany from around the country. This board will help us maintain the publication of high quality articles. We have also modified our requirements for contribution to the journal in order to maintain quality, establish uniformity, and speed production. We are confident that you will be pleased with these changes.

ERIGENIA: 2, (1983), p. 2-18

PALEOZOIC LIFE AND CLIMATES OF SOUTHERN ILLINOIS

by

Dr. George Fraunfelter[1]

Southern Illinois is located in the southwestern part of the Illinois Basin. The Illinois Basin has been in existence since early Paleozoic times as evidenced by the presence of Cambrian age rocks. It is a broad, rather gentle, structural depression which is oval in outline, oriented northwest-southeast, and occupies much of Illinois, southwestern Indiana and western Kentucky. The Illinois Basin is bordered on the southwest by the Ozark Dome, on the northwest by the Mississippi Arch, on the north and northeast by the Wisconsin and Kankakee Arches, and on the southeast by the Cincinnati Arch (Fig. 1). The Basin was open to the south until late Paleozoic time. Between early Paleozoic and late Paleozoic times the Illinois Basin was filled with a sequence of sediments more than three miles in thickness. During much of that time the Basin was covered by warm, shallow seas, but it was drained more than fifty times and its margins emerged as dry land more than one hundred times. The deepest part of the Basin shifted from the northern end of the Mississippi Embayment in early Paleozoic times to the Fairfield area in early middle Paleozoic times (Fig. 1). This "deep" was surrounded on the west, north, and east by a shallow shelf which sloped gently toward the Fairfield "deep" (Fig. 2).

In southern Illinois the oldest rocks that occur within the Illinois Basin are of Cambrian age, the oldest Paleozoic time period. The Cambrian lasted from about 500 million years ago to 600 million years ago. During the early and middle stages of this period of time the weathering and erosion of the high, granite knobs exposed in the Ozarks to the west produced sediments in the form of debris flows and alluvial fan deposits that were laid down adjacent to the granitic knobs and in the adjacent shallow seas along the southwestern margin of the Illinois Basin by means of gravity sliding and streams resulting from torrential rainfall.

The depostion of these sediments initiated the formation of the western shelf of the Illinois Basin by infilling the marginal areas of the subsiding Basin. These early deposits are made up of conglomerates, sandstones and mudstones or shales. In places, these sandstones and mudstones contain marine brachiopods. As upper Cambrian seas encroached upon the area, marginal marine deposits in the form of interbedded conglomerates, sandstones and mudstones were laid down on top of the earlier sandstones and mudstones. These younger sandstones and mudstones also contain marine brachiopods and some trace fossils in the form of trails.

---

[1] Professor of Geology, Southern Illinois University, Carbondale, IL 62901

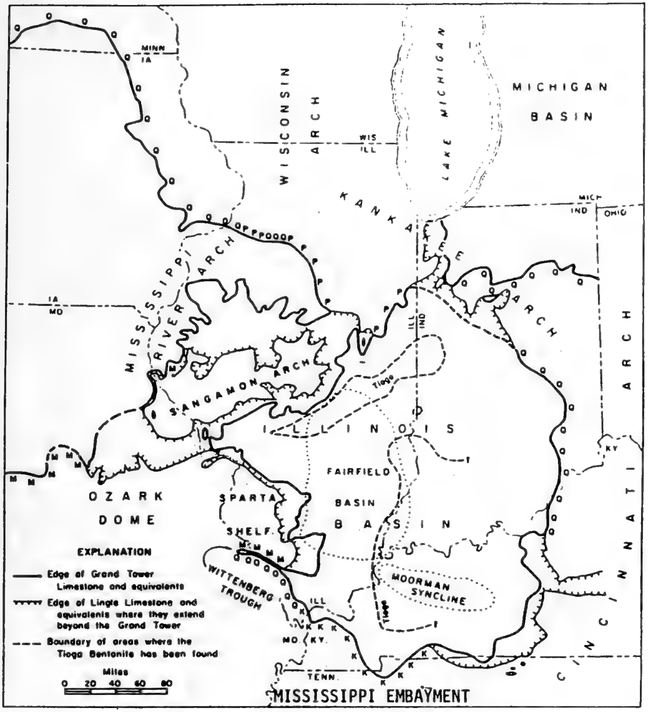


Figure 1. Map snowing location of the Illinois Basin and associated structural features.The heavy black line indicates the extent of the middle Devonian Grand Tower Limestone and correlative limestone formations in the Illinois Basin and the age of truncating deposits by letters, Q - Quaternary, K - Cretaceous, P - Pennsylvanian, M - Mississippian and Upper Devonian. The dashed line shows the distribution of the Tioga Bentonite. (Modified from Meents and Swann, 1965).

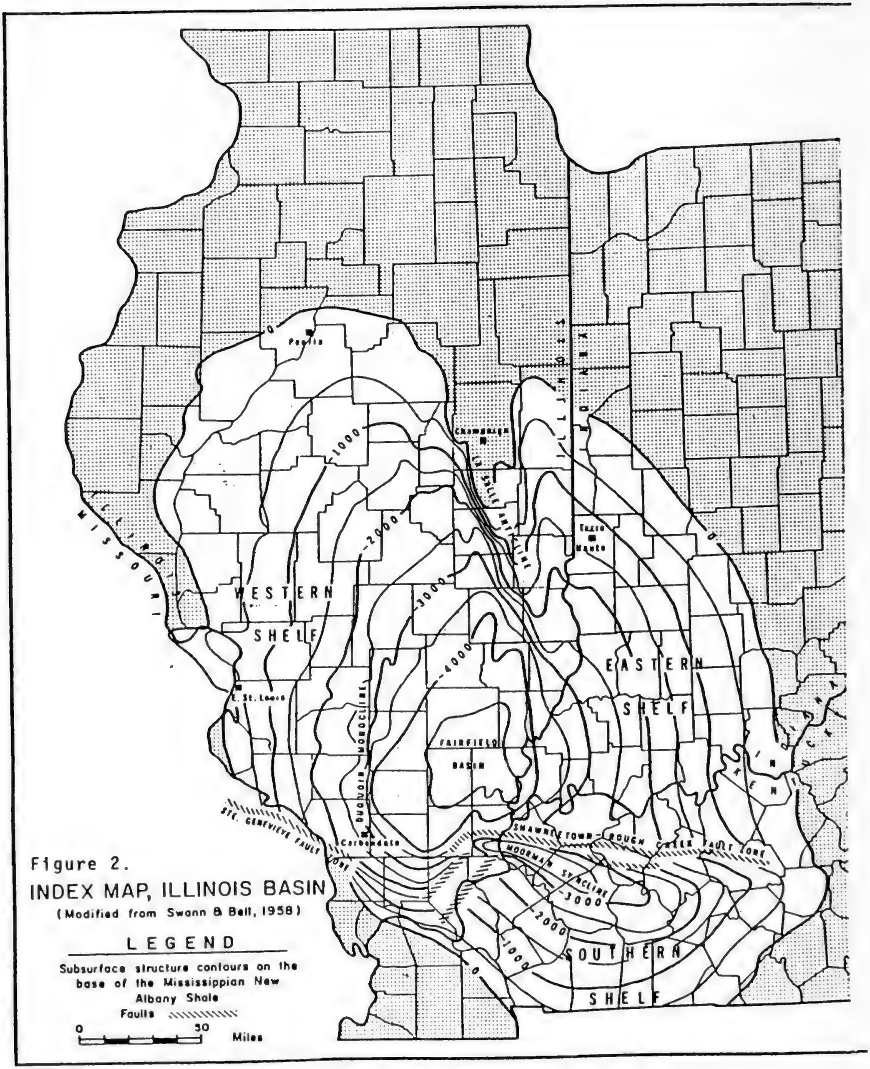


Figure 2.
INDEX MAP, ILLINOIS BASIN
(Modified from Swann & Bell, 1958)

LEGEND

Subsurface structure contours on the base of the Mississippian New Albany Shale

Faults

0 30 Miles

The sediments in these sandstones and mudstones were brought into the area from the north and northeast from the southern part of the Canadian Shield and the northern Appalachians by some southwest flowing Cambrian river system. These beds like the ones beneath them are not exposed in the adjacent Illinois Basin because there they are buried under thousands of feet of younger sedimentary rocks.

Further encroachment by the late Cambrian seas produced the deposition of thick sequences of carbonate rocks, limestones, a large portion of which were later dolomitized, with interbedded shales and sandstones. Dolomites are today being formed in shallow marine waters in the supratidal zone especially in subtropical and tropical climates. These late Cambrian carbonate rocks contain abundant algal mat and digital algal structures, stromatolites, as scattered masses and as banks of reefs, one set of which nearly encircles the present day Ozarks. Similar algal mat and digitate structures occur today in places like Shark's Bay in western Australia, the Bahamas, and in the Persian Gulf, where they have formed and are forming in the intertidal and supratidal zones, for the most part, in shallow, warm, hypersaline seas. These late Cambrian dolomites also contain marine brachiopods and trilobites, in places, while the interbedded shales at one locality contain large, 2 foot and more in diameter, rounded, "algal" heads, and in other places concentrations of trilobites and the brachiopod Billingsella which is characteristic of shallow water, marine communities (Fig. 6). Trilobites and brachiopods are the characteristic fossils found in Cambrian age rocks worldwide.

The debris flows and alluvial fan deposits of early and middle Cambrian age are indicative of torrential rainfall falling at scattered intervals. Late Cambrian sandstones are lacking in feldspar or contain well-weathered feldspar, unlike their older counterparts. This latter condition suggests a warm, humid climate for the area that was conductive to chemical weathering,ie., the "breakdown" of feldspar. The thick sequence of upper Cambrian limestones and dolomites is suggestive of warm seas.

Cambrian times were followed by those of the Ordovician. An interval that spanned the period of about 440 million to 500 million years ago. Like the rocks of Cambrian age, most of the rocks of Ordovician age are not exposed in southern Illinois, but are exposed along the rim of the Illinois Basin adjacent to the Ozarks. They are also present in the southern part of the Basin. These beds dip gently towards the center of the Illinois Basin, their deposition adding to the "buildup" of the western shelf as well as to the eastern shelf of the Illinois Basin. The only beds of Ordovician age exposed in southern Illinois are of late Ordovician age in the Thebes area (Fig. 3). In the Ozarks, the strata of lower and middle Ordovician age are composed largely of limestones and dolomites (like those of the late Cambrian of the area) and are well-exposed. The contained fauna consist of trilobites, many kinds of brachiopods, very large nautiloid cephalopods, and many gastropods and clams. In addition, these beds also contain abundant, well-developed algal stromatolites similar to those found in the late Cambrian. This flora and fauna is indicative of supratidal to onshore shelf and offshore shallow marine

Figure 3.

GEOLOGIC MAP OF ILLINOIS

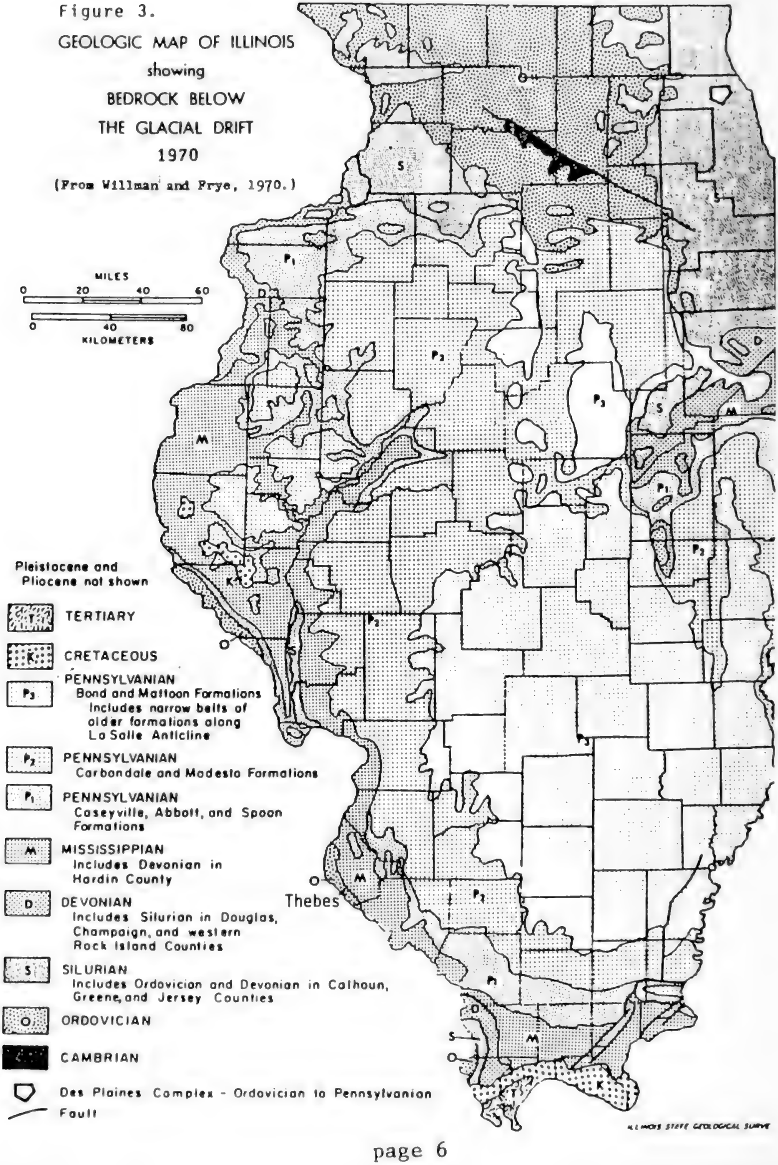
showing

BEDROCK BELOW

THE GLACIAL DRIFT

1970

(From Willman and Frye, 1970.)



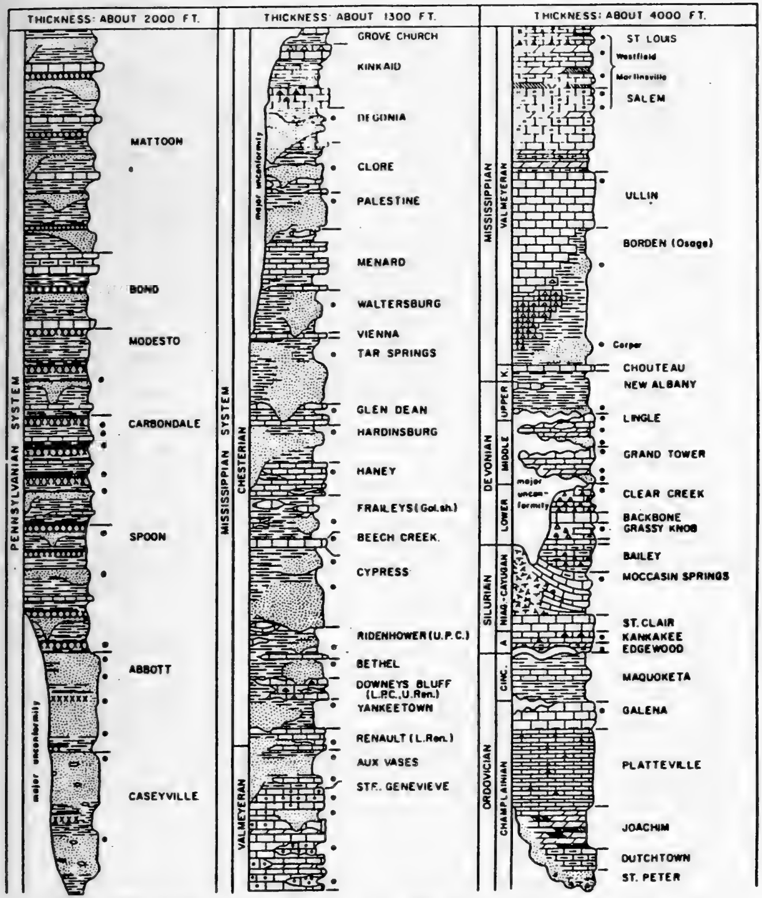


Figure 4. Generalized Geologic Column showing age, formations, and rock types exposed in southern Illinois. Black dots indicate oil or gas pay zones. (Original prepared by David H. Swann)

This column shows all of the Paleozoic rock units exposed in the southern part of the Illinois Basin.

areas, while the dolomites are indicative, once again, of shallow, supratidal, warm, marine conditions.

The middle Ordovician is characterized by dolomites that locally contain many cephalopods and other mollusks and algal stromatolites. However, this period of shallow, marine conditions is followed by a major regression of the seas which is evidenced by the presence of the St. Peter Sandstone, a very well-sorted, pure, quartz sandstone (Fig. 4). The St. Peter is characterized by alternating thick and thin cross-beds. The good sorting of materials, ie., most of the sand grains fit into a very narrow size range, is characteristic of modern windblown sands. The thick cross-bed sets are characteristic of modern dune sands, and the small cross-bed sets are suggestive of modern beach sands. Thus, the St. Peter Sandstone is indicative of sands deposited largely on land as dunes, backbeach dunes, and beach sands. No fossils have been found in the St. Peter. The remainder of the middle Ordovician is made up of a thick sequence of limestones and dolomites, for the most part, indicative of transgressing seas. The fauna of this latter sequence consists of abundant brachiopods and mollusks, along with bryozoans, crinoids, corals (including colonial types that built reefs or occurred in thickets), sponges, and trilobites (some very large), plus algal stromatolites. Again, the dolomites are indicative of very shallow, warm, marine, nearshore conditions, while the stromatolites are indicative of intertidal to supratidal, warm, shallow, hypersaline, and marine conditions. A typical brachiopod, Rafinesquina (Fig. 6), is usually found in shallow shelf faunas, while the brachiopod Hebertella is indicative of offshore communities in somewhat deeper waters. Because the southern Illinois area was still close to the Equator, at about 15° latitude, during Ordovician times, it is likely that warm weather prevailed over the entire area. However, it must be noted that some rather thick bentonite (volcanic ash) beds occur in middle Ordovician beds in the area. These beds suggest that explosive volcanic eruptions occurred in the area not unlike those of Mt. St. Helens and Chicon of recent vintage that apparently have had and will have a cooling effect on the weather because they "belched" large amounts of ash into the atmosphere. A similar cooling may have taken place in southern Illinois during the middle Ordovician. A few reworked plant fossils, other than algae, have been found in the upper middle Ordovician limestones of the area, indicating near-shore deposition. The coral thickets are indicative of very warm, clear, normal marine waters.

The upper Ordovician of the area is characterized by limestones and shales. These limestones contain rich brachiopod faunas with elements that are indicative of both onshore and offshore marine shelf communities, along with bryozoans and trilobites (Fig. 6). The shales exhibit diverse faunas that are also indicative of onshore and offshore shelf communities. A rather thick sandstone with small sets of cross-bedding and containing horizontal, filled burrows along with other trace fossils is evidence of another period of sea withdrawal from the area and shallow marine conditions. The characteristic fossil of the Ordovician in this area is Receptaculites (Figure 5).


ALGAE
Receptaculites
(Ord.-Dev.)
Cryptozoan
(Camb.-Ord.)
PROTOZOAN
Schwagerina
(Permian)
CORALS
Streptelasma
(Ord.-Dev.)
Favistella
(Ord.-Dev.)
Halysites
(Ord.-Sil.)
Favosites
(Ord.-Perm.)
Hexagonaria
(Devonian)
Heliophyllum
(Devonian)
Lithostrotionella
(Mississippian)
Lophophyllidium
(Penn.-Perm.)
SPONGES
Astraeospongia
(Silurian)
Hindia
(Ord.-Dev.)
WORMS
Spirorbis
(Ord.-Recent)
Arabellites
(Ord.-Dev.)
GRAPTOLITES
Cyrtograptus
(Silurian)
Dendrograptus
(Camb.-Sil.)

Figure 5.

The time interval that covered the span from about 400 million to 440 million years ago is called the Silurian. Again, as between the Cambrian and Ordovician, there does not seem to be any break in the rock record between the Ordovician and the Silurian in southern Illinois. And again, as with the Ordovician strata, Silurian rock exposures are confined to the Thebes area in this part of the Basin. However, the Silurian rock section is well-developed in the subsurface. The strata are primarily limestones and dolomites with some interbedded shales, some of which are very dark colored. The oldest Silurian strata in the southern part of the Illinois Basin are characteristically oolitic, ie., they are made up of tiny lime spheres about 1.5 to 2 mm. in diameter. These small spheres or oolites are forming today along the western edge of the Bahama Platform in warm, very shallow, marine waters. The overlying limestones contain a diverse fauna consisting of sponges, corals, crinoids, brachiopods, graptolites, gastropods, clams, nautiloid cephalopods and trilobites (Fig. 5-8). Among the brachiopods are elements that are common to the onshore and offshore shelf areas. By middle Silurian time the rock section becomes more shaly, and the oolitic and dolomitic limestones of the early Silurian are replaced in late lower Silurian and middle Silurian times by cherty limestones and fine-grained limestones. These limestones are shallow marine in origin, but were deposited in deeper water, for the most part, than their older Silurian dolomitic counterparts. Again, these limestones contain a diverse invertebrate fauna consisting of some sponges, corals (some of which are colonial), cystoids, crinoids, abundant brachiopods, gastropods, cephalopods, and trilobites. The dark interbedded shales contain an abudance of graptolites, Cyrtograptus. These shales are indicative of restricted conditions, ie., anaerobic bottom conditions with little or no currents as evidenced by the abundant presence in the shales of black organic material that has not been oxidized and the lack of bentonic fossils like brachiopods that require oxygen and the presence of planktonic forms, the graptolites, that floated near the sea surface or on it and upon death fell to the bottom. The brachiopods present are representative of both onshore and offshore shallow, marine conditions, and the coral reefs in the northwestern part of southern Illinois in the subsurface are indicative of shallow, well-lighted, clear, very warm, shallow marine water. Much of the limestone around these reefs has been dolomitized, once again suggesting deposition in warm marine seas at the shoreline. In other areas the first land plants appear in rocks of this age as does the first land animal, the scorpion, but no fossils of either one have been found in the southern Illinois area.

The Devonian strata in southern Illinois are exposed in fault blocks along the Ste. Genevieve Fault System, for the most part (Fig. 2). The Devonian spanned the time period from 350 to 400 million years ago. The lower rock units in this series consist mainly of limestones, some of which have been silicified. The contained faunas include sponges, corals, cystoids, blastoids, crinoids, bryozoans, brachiopods, clams, gastropods, nautiloid cephalopods, and trilobites, among the invertebrates. The brachiopod fauna contains elements that are characteristic of both onshore and offshore shelf communities. The beds of middle Devonian age in the area are also largely made up of limestones with some intervening sandstones and interbedded shales and siltstones. These limestones become more shaly and dolomitic upsection, and contain an invertebrate fauna similar to that of the lower beds plus remains of bushy graptolites, sharks, and

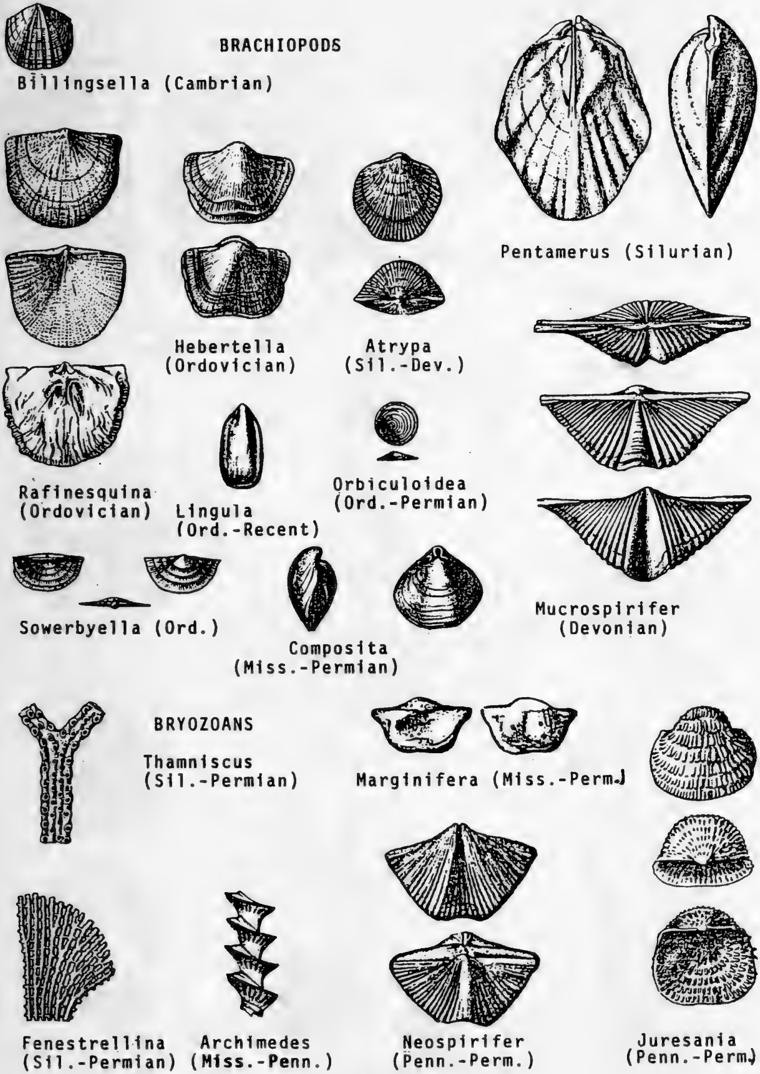

BRACHIOPODS
Billingsella (Cambrian)
Pentamerus (Silurian)
Hebertella
(Ordovician)
Atrypa
(Sil.-Dev.)
Rafinesquina
(Ordovician)
Lingula
(Ord.-Recent)
Orbiculoidea
(Ord.-Permian)
Sowerbyella (Ord.)
Composita
(Miss.-Permian)
Mucrospirifer
(Devonian)
BRYOZOANS
Thamniscus
(Sil.-Permian)
Marginifera (Miss.-Perm.)
Fenestrellina
(Sil.-Permian)
Archimedes
(Miss.-Penn.)
Neospirifer
(Penn.-Perm.)
Juresania
(Penn.-Perm.)

Figure 6.

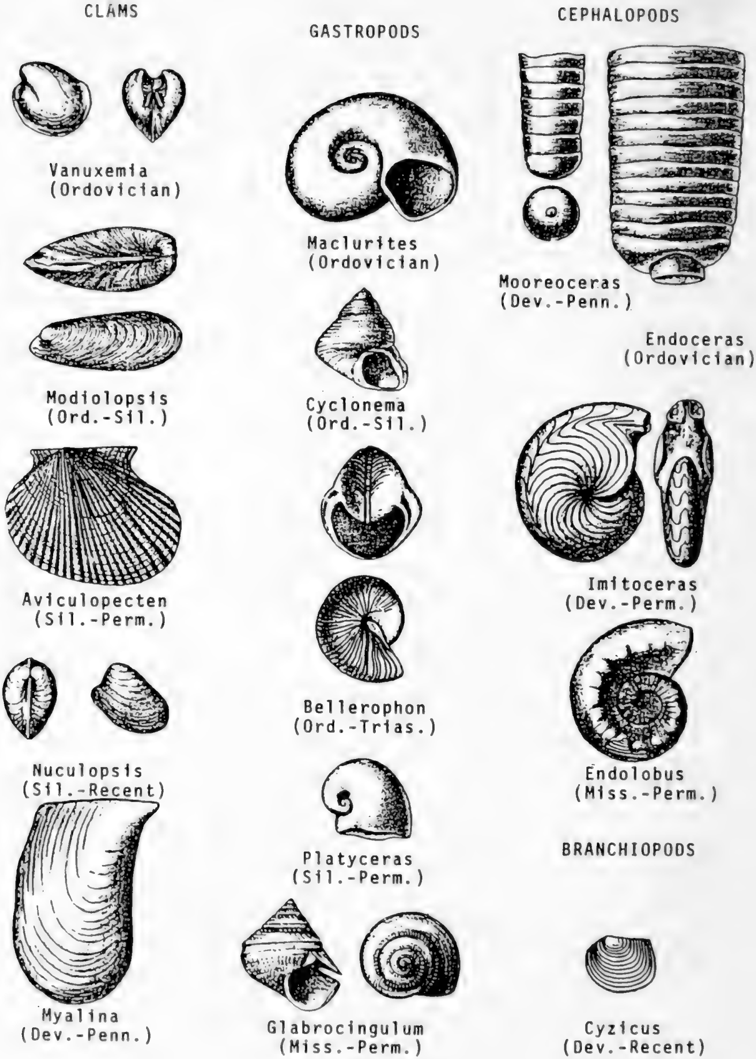

CLAMS
GASTROPODS
CEPHALOPODS
Vanuxemia
(Ordovician)
Maclurites
(Ordovician)
Mooreoceras
(Dev.-Penn.)
Endoceras
(Ordovician)
Modiolopsis
(Ord.-Sil.)
Cyclonema
(Ord.-Sil.)
Aviculopecten
(Sil.-Perm.)
Imitoceras
(Dev.-Perm.)
Bellerophon
(Ord.-Trias.)
Nuculopsis
(Sil.-Recent)
Endolobus
(Miss.-Perm.)
Platyceras
(Sil.-Perm.)
BRANCHIOPODS
Myalina
(Dev.-Penn.)
Glabrocingulum
(Miss.-Perm.)
Cyzicus
(Dev.-Recent)

Figure 7.

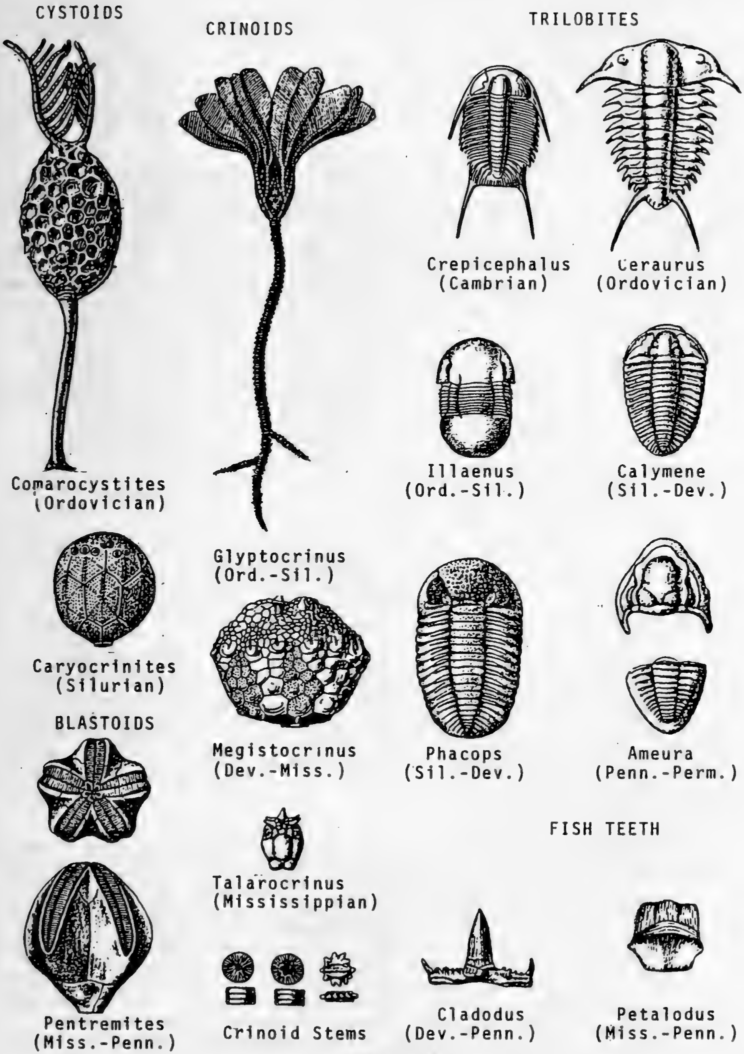

CYSTOIDS
CRINOIDS
TRILOBITES
Crepicephalus
(Cambrian)
Ceraurus
(Ordovician)
Illaenus
(Ord.-Sil.)
Calymene
(Sil.-Dev.)
Comarocystites
(Ordovician)
Glyptocrinus
(Ord.-Sil.)
Caryocrinites
(Silurian)
BLASTOIDS
Megistocrinus
(Dev.-Miss.)
Phacops
(Sil.-Dev.)
Ameura
(Penn.-Perm.)
FISH TEETH
Talarocrinus
(Mississippian)
Pentremites
(Miss.-Penn.)
Crinoid Stems
Cladodus
(Dev.-Penn.)
Petalodus
(Miss.-Penn.)

Figure 8.

armored fishes, the latter of which appear as early as middle Ordovician times elsewhere. Thickets of large colonial corals are also abundant in parts of this section.

The brachiopod faunas include both onshore and offshore elements, while the concentrations of colonial corals are again indicative of shallow, warm, clear seas. As was true during middle Ordovician times, a bentonite, the Tioga Bentonite (Fig. 1), which is present in the southern part of the Illinois Basin and along the eastern shelf of the Basin in the subsurface and can be traced eastward into the Appalachians, is indicative of another explosive volcanic eruption that blew much ash into the atmosphere and probably caused some temporary lowering of surface temperatures during middle Devonian times throughout eastern North America. To my knowledge no evidence of plant or terrestrial animal life has been found in middle Devonian rocks in the southern part of the Illinois Basin. However, rocks of lower and middle age are well-developed in the subsurface in the Basin and contain rich colonial coral as well as other invertebrate fossil faunas. The shales and siltstones of the middle Devonian have a more nektonic fauna than the limestones. The only upper Devonian strata exposed in the southern Illinois area are small patches of black shale which contain no mega-invertebrate fossils, but like some of the middle Devonian shales do contain amber to red colored "fungal capsules" of microscopic size. Black shales such as these usually represent sedimentation in restricted areas of the sea were water circulation is poor or nearly non-existent and where bottom conditions are therefore anaerobic. The characteristic fossils of this area in rocks of Devonian age are the various kinds of colonial corals and the fish fossils, most of which occur as pieces of armor plate and teeth. The Devonian is known as the "Age of Fishes".

Shaling upward of the section along with beds that contain no fossils except the nearshore species Lingula, indicate shallowing of the seaways towards the end of Devonian times. During late Devonian times the Ste. Genevieve fault system was active, causing rocks of Devonian and older ages in southwestern Illinois to be tilted and broken. The regression of the seas and faulting brought on a long period of erosion and/or non-deposition which left a large gap or unconformity in the rock record of late Devonian and early Mississippian times.

Rocks of Mississippian age (310 to 350 million years ago) are well-exposed in southern Illinois along the southwestern and southern "rims" of the Illinois Basin. Except for a basal shale sequence, most of the rocks of lower and middle Mississippian age in the area are limestones. The lower shales are apparently of marine origin as indicated by local concentrations of brachiopods. The lower limestones are somewhat cherty with some interbedded shales, while the upper middle beds are oolitic and somewhat dolomitic. On the other hand, the upper Mississippian strata are made up of alternating limestones, sandstones and shales. The limestones in this part of the section are also somewhat cherty. The invertebrate faunas of all of these limestones are diverse and consist of sponges, corals (including colonial), bryozoans, brachiopods, graptolites, clams, gastropods, nautiloid and goniatite cephalopods, blastoids, crinoids, echinoids, asteroids, worms, trilobites, and among the vertebrates, sharks. Plant fossils become rather abundant in area rocks by late Mississippian time, especially Lepidodendron (Fig. 9).

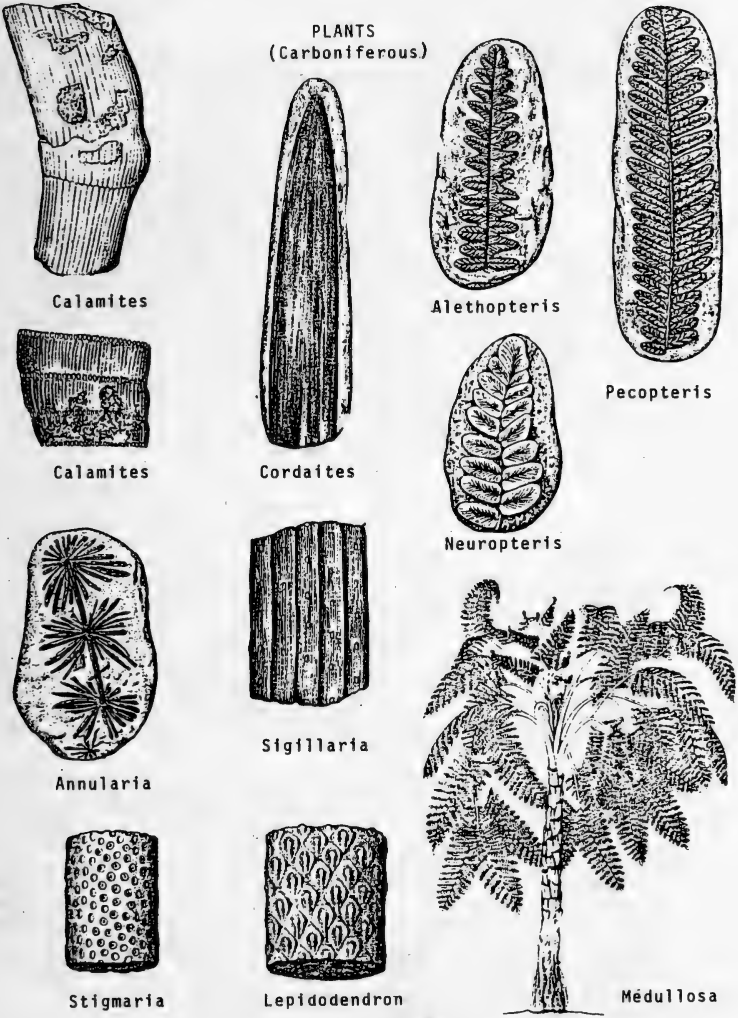

PLANTS
(Carboniferous)
Calamites
Alethopteris
Pecopteris
Calamites
Cordaites
Neuropteris
Annularia
Sigillaria
Stigmaria
Lepidodendron
Médullosa

Figure 9.

The characteristic fossils for this period of time in the Illinois Basin were the blastoids, particularly Pentremites and the crinoids, such as Platycrinites and Talarocrinus. The thick limestone sequences that are typical of the middle Mississippian in the upper Mississippi River valley are indicative of warm seas, and in addition, the evaporites that are present in some of these limestones in south central Illinois in the subsurface are usually indicative of restricted, very shallow arms of the sea where the climate is very hot and dry with evaporation exceeding precipitation. The brachiopod faunas contain both onshore and offshore shelf elements. The sandstones and shales in the upper part of the Mississippian are largely the product of deposition in deltaic and nearshore marine environments. The thin coals present in several of these sandstone units represent organic accumulations in swamp environments where the climate was probably warm and humid. The interbedded limestone units contain a diverse fauna containing elements typically found on shallow marine shelves. In addition, the sandstone units contain plant fossils such as Lepidodendron, one of the coal-forming plants of the period. The late Mississippian was characterized by fluctuation of the shoreline of the sea from north central Illinois to south of the Illinois Basin area (Fig. 10). Deep river channels cut in late Mississippian and early Pennsylvanian rocks suggest a sharp drop in sea level that left another extensive gap in the rock record of the area for that time.

During the Pennsylvanian period, about 270 to 310 million years ago, the youngest Paleozoic rocks still remaining in the Illinois Basin were deposited. Hence, much of the bedrock exposed at the surface in the Illinois Basin is Pennsylvanian in age. The oldest beds of this period are largely sandstones and shales of deltaic and shallow marine origin. These beds contain some thin coal seams. Further upsection similar sandstone beds alternate with marine and non-marine shales and limestones, along with thick and thin coal beds. The non-marine sandstones and shale beds contain plant fossils, while the marine limestones and shales contain a diverse marine invertebrate fauna consisting of foraminifera (fusulinids), sponges, corals (some colonial), bryozoans, brachiopods, clams, gastropods, cephalopods (nautiloid and goniatite), crinoids, edrioasteroids, echinoids, asteroids, trilobites, crustaceans, worms, and among the vertebrates, shark and other fish. These marine faunas contain onshore and offshore shelf elements.

The thick, extensive coal beds present indicate widespread swamp conditions with lush vegetation. Such lush vegetation requires warm, humid, climatic conditions as a rule. The small amount of wood, especially in Sigillaria and Lepidodendron, and the over-developed cortex and pith is an indication of rapid growth which is usually possible only in very moist, warm climates. In addition, the lack of annual rings, or near lack thereof, in these plants is indicative of uniform climate with little or no seasonal change and lack of wet and dry seasons. The characteristic fossils during this time period were the plants such as Lepidodendron, Sigillaria, Calamites, Stigmaria, and Cordaites (Fig. 9). During the Pennsylvanian in the Illinois Basin, the land surface was low with little or almost no relief, and the alternating marine and non-marine rock units, especially in the middle and upper part of this section indicate that the seas advanced and retreated over and away from the area many times. During the late Paleozoic, as during the early Paleozic, this area was

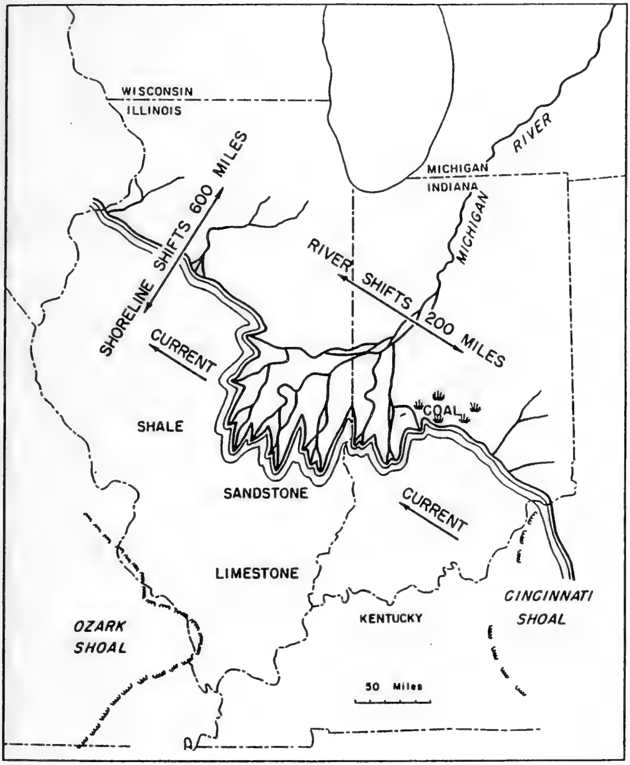


Figure 10. Paleogeography at intermediate stage of Upper Mississippian (Chesterian) deposition. (From Swann, 1963)

located near the Equator, and therefore, was relatively warm. Five major groups of plants lived in the peat-forming swamps of this time period: the lycopods, ferns, pteridosperms (seed ferns), Cordaites, and sphenopsids. Each is represented by tree forms that contributed the bulk of the plant constituents of the Pennsylvanian coals in the Illinois Basin. During early Pennsylvanian times various types of lycopods were dominant. By late Atokan and early Desmoinesian times the ferns were abundant and Calamites reached their zenith. Somewhat later in the early Desmoinesian the lycopods again became dominant with Cordaites and the ferns as secondary elements in the coals of the Spoon Formation and the lower part of the Carbondale Formation. During later Desmoinesian time lycopods still dominated the younger floras, but the ferns and the pteridosperms were second and third in abundance. At the Desmoinesian-Missourian boundary the lepidodendrids (lycopods) abruptly disappeared while in late Pennsylvanian times tree ferns were dominant. In a few coals Sigillaria and Polysporia were dominant and seed ferns and Calamites were subdominant. These rather abrupt floral changes were probably caused by broad climatic changes. Pennsylvanian deposition was followed by a long period of uplift and/or withdrawal of the seas and consequent erosion, so that the latest Paleozoic time, the Permian, is not represented by a rock record in southern Illinois.

ERIGENIA: 2, (1983), p. 19-40

FIELD LOG TO THE DEVONIAN, MISSISSIPPIAN, AND PENNSYLVANIAN SYSTEMS OF JACKSON AND UNION COUNTIES, ILLINOIS

by Mark W. Mohlenbrock[1]

Jackson and Union counties, Illinois, are situated in the southwestern quarter of the state. To the west, they are bounded by the Mississippi River; to the east, are Williamson and Johnson counties. Maps of the counties can be found in Figures 1 and 2.

Jackson and Union counties are within two physiographic divisions. Most of Jackson and the western section of Union County are within the Shawnee Hills Section. The topography is rolling hills with a number of resistant sandstone exposures. The western portion of this two-county area south of Grand Tower is included within the Ozark Plateau Region. This area is characterized by steeply sloped hills with very well developed drainage patterns. The interface between these two divisions is denoted best by a natural line which is the faulting area of the Rattlesnake Ferry Fault. The fault line enters Illinois at Grand Tower, heads southeast to near Jonesboro, and then heads south. The presence of this and associated faults provide a number of exposed geologic units within the two-county area. The Pennsylvanian System covers much of Jackson County and the northwest section of Union County. The Mississippian System is exposed to the south of this. It runs along the Mississippi River discontinously through Jackson County, and at Grand Tower it cuts inland to Jonesboro and then south to Alexander County. The Devonian and Silurian systems are represented in bands to the west of this, with the Ordovician System exposed in the southwestern corner of Union County, and in a few other isolated sites within that general area. Very isolated locations representing the Cretaceous System are also present. Figure 3 represents an overall view of these systems in Jackson and Union counties.

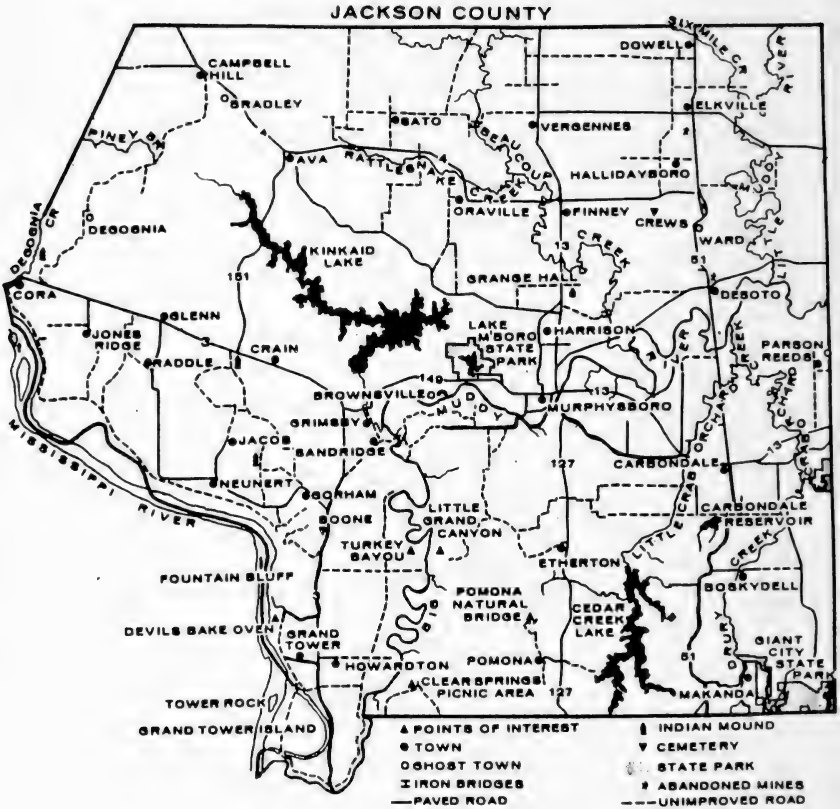
This field log does not cover the following systems: the Modesto Formation of the Pennsylvanian, the Silurian, the Ordovician, and the Cretaceous. The field trip logged in this paper begins and ends at the intersection of Route 51 and Lincoln Drive (SIU). Its overall length is 150.7 miles and covers 36 stops. Each stop includes a discussion of the geologic unit(s) exposed. A geologic column can be found in Figure 4. It is recommended that this trip be taken in several smaller trips because of its overall length.

The author would like to thank Mr. Gary Bender and Mr. David Mueller for assistance in the field.

---

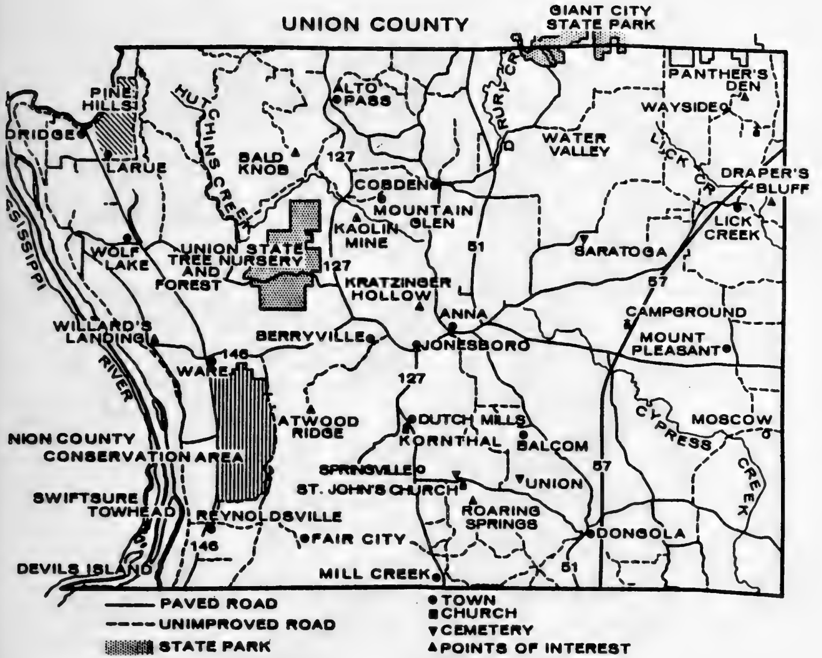
[1]Department of Botany and Microbiology, Arizona State University, Tempe, Arizona 85287

Figure 1. Map of Jackson County, Illinois



From: R. H. Mohlenbrock. 1974. A new geography of Illinois: Jackson County. Outdoor Illinois 12(2): 15-38.

Figure 2. Map of Union County, Illinois



From: R. H. Mohlenbrock. 1974. A new geography of Illinois: Union County. Outdoor Illinois 12(6): 11-42.

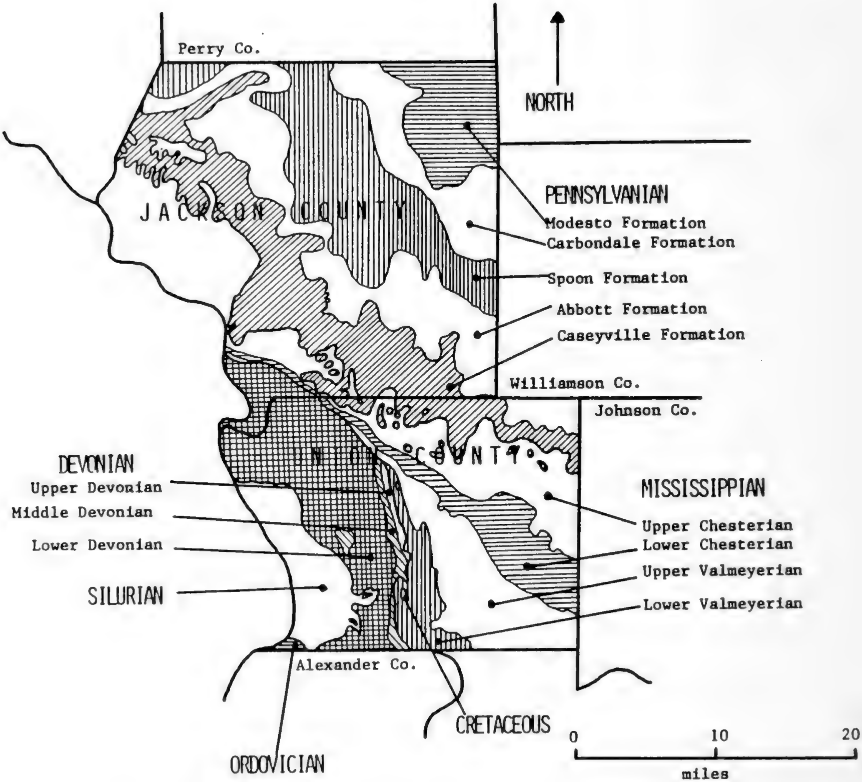


Figure 3. Geologic map of Jackson and Union counties, Illinois.

0.0	0.0	Intersection. Lincoln Drive and Route 51 (at Southern Illinois University). Turn right (south) on Rt. 51.
1.0	1.0	Traffic light. Pleasant Hill Road intersection. Continue south on Rt. 51.
2.3	3.3	Boskydell Road on left (east). Continue on Rt. 51.
0.3	3.6	Intersection. Rt. 51 turns left (south). Turn left here.
4.0	7.6	Intersection. Makanda and Giant City State Park road. Giant City State Park is an area where fantastic exposures of Pounds Sandstone occur. Continue south on Rt. 51.
1.2	8.8	Union County line.
2.3	11.1	Outcrop of Kinkaid Limestone in road cut on left and right. Do not stop.
0.4	11.5	Bridge over railroad tracks.
0.7	12.2	STOP 1. Road cut. Notice the sandstone dipping into the limestone. This sandstone is Pennsylvanian in age and is probably Wayside Sandstone. The limestone is Kinkaid Limestone and is Mississippian in age. The Kinkaid is named for Kinkaid Creek, Jackson County, Illinois, where it is also exposed. One of the thicker Chesterian units, the Kinkaid is limestone with some shaly layers. One of these layers can be noted below the massive blocks of limestone in the cut before you. Here the Kinkaid is partially eroded by the Pennsylvanian, and in many places the Kinkaid is absent. The fossils of the Kinkaid are mainly brachiopods, bryozoans, and blastoids.
0.7	12.9	STOP 2. Road cut on right is Degonia Sandstone. The Degonia Sandstone derives its name from the Degonia Township, Jackson County, Illinois, where it is exposed in the bluffs of the Mississippi River. It is generally sandstone, and is comprised of two massive beds shaped like double-convex lenses. These are white to light colored and fine grained. Most of the shales which occur are gray to dark gray; however, there is a red shale which occurs at the top of the formation.
0.1	13.0	Road to Cobden. Turn right (west).
1.8	14.8	Stop sign at Joseph St. Continue straight on Poplar St.
0.1	14.9	Poplar St. makes an "S" curve to the left, then right. Remain on Poplar St.

0.1 15.0 Stop sign at Front St. Turn right (north).

0.1 15.1 Cross bridge over railroad. Then continue straight (west).

1.1 16.2 Turn left (west) on road to Alto Pass. You are now driving on part of a Pennsylvanian escarpment in which the Battery Rock Sandstone is exposed.

3.0 19.2 Alto Pass watertower on right. Continue in a westerly direction.

0.7 19.9 STOP 3. Cliff View Park. Battery Rock Sandstone is exposed very well here. Looking south, one can see the low Tar Springs escarpment and beyond it the high Devonian escarpments. The valley between these two marks the approximate crossing of the Rattlesnake Ferry Fault. The cross in the distance is the Bald Knob Cross which is perched on a "bald" cherty knob. The knob is one of the highest points in the state and is the highest point in southwestern Illinois.

The Battery Rock Sandstone member of the Caseyville Formation of the Pennsylvanian System is named for Battery Rock, Hardin County, Illinois, where it forms a massive sandstone bluff on the bank of the Ohio River. The Battery Rock Sandstone is light brown in color, medium-grained or occasionally coarse, and somewhat micaceous. It is often slightly conglomeratic, having well rounded quartz pebbles present. The sandstone is bonded by silica and iron oxide and thus becomes an important cliff former. The lower 6 to 8 feet of the bluffs here is considered to be Wayside Sandstone. This unit is named for Wayside, Johnson County, Illinois, where it outcrops. In this area, it is the lowest unit of the Pennsylvanian. It is characterized by lenses of sandstone (up to 50 feet thick) which are separated by silty and sandy shales.

Continue west to Alto Pass and Route 127.

0.7 20.6 Old Alto Pass Grade School.

0.1 20.7 Intersection with Rt. 127. Turn right (north).

1.7 22.4 Cross Jackson County line.

2.0 24.4 Road to Pomona on left (west). Continue north on Rt. 127.

2.5 26.9 Begin downgrade of Tom Cat Hill.

0.5 27.4 STOP 4. Road cut on left (west) is of Pounds Sandstone and is underlain by Drury Shale.

The Pounds Sandstone member is also a part of the Caseyville Fromation, as is the Drury Shale. The

Pounds is named for Pounds Hollow, Gallatin County, Illinois, where its massive bluffs are exposed. It is quite similar in its lithology to the Battery Rock member. At this location, the Pounds Sandstone overlays the shale exposures along Drury Creek, Jackson County, Illinois, south of Makanda. The Drury member is composed of sandy and silty shales and double-convex lenses of sandstone. Here it is a dark gray fragile shale.

0.1	27.5	Driveway to left. Turn around. Head south to Pomona road.
3.1	30.6	Turn right (west) on Pomona Road.
0.8	31.4	Turn right (north) on gravel road (Forest Service Road 750) at the Pomona General Store. Continue north. Do not cross railroad tracks yet.
0.8	32.2	Cross Clear Creek.
0.1	32.3	Cross railroad tracks. Ascend hill and continue on ridge top, then through a pine plantation.
1.5	33.8	STOP 5. Natural Bridge parking lot. Take trail to the Pomona Natural Bridge (¼ mile). The Natural Bridge was formed from Battery Rock Sandstone which is the first resistant bluff forming sandstone above the Mississippian System. Turn around and return to Rt. 127.
3.2	37.0	Intersection. Pomona road and Rt. 127. Turn right (south) on Rt. 127. Head toward Alto Pass.
3.9	40.9	Bridge over railroad (at Alto Pass). Continue on Rt. 127.
0.6	41.5	STOP 6. The exposure immediately to your left is Menard Limestone. The Palestine Sandstone is exposed northeast of here through the woods above. Both are Mississippian System units of the Chesterian Series. The Menard Limestone is named for Menard, Randolph County, Illinois, at a quarry. Here the Menard is a dark gray, fossiliferous, oolitic calcarenite. There are some gray-green shales present which are very fossiliferous. These shale beds separate the three limestone units associated with the Menard. While at this stop, comb the embankment for the many fossils which are present, including brachiopods, bryozoans, and crinoids.

The Palestine Sandstone is named for Palestine Township, Randolph County, Illinois. It consists of sandstone, shale, and siltstone. The sandstone is gray, fine-grained, and somewhat shaly. On occasion, the sandstone is light-colored and is coarser grained. This is usually the case in the thicker units. Fossils are present, the most common being the trunks of the extinct tree Lepidodendron.

Continue south on Rt. 127.

0.3 41.8 STOP 7. Waltersburg Sandstone exposed in the road cut on left. The Waltersburg Sandstone is directly overlain by the Menard Limestone. Both are of the Chesterian Series. The Waltersburg received its name from Waltersburg, Pope County, Illinois. It consists mainly of shale; however, beds of siltstone and sandstone do occur. Here, a sandstone bed is exposed. The sandstone bodies are often strongly linear, gray to white, very fine to fine-grained, and well jointed. The shales are dark gray or sometimes green, and are silty or sandy.

0.3 42.1 Gravel road to right (west). Continue ahead on Rt. 127.

1.4 43.5 STOP 8. Cypress Sandstone exposed on the right in the road cut. Note the ripple marks. The Cypress Sandstone is named for a bluff exposure along Cypress Creek, Union County, Illinois. Along with the Tar Springs Sandstone, this sandstone is one of the thickest and most persistant formations to be found in the Chesterian Series. It consists of massive bodies of sandstone, shale, sandy shale, and beds of shale with thin layers of sandstone. The sandstone is white to light gray, fine to medium grained, angular, and easily crumbled. The shale is generally dark green-gray (occasionally reddish). Lepidodendron trunks can be found in the Cypress. The tilting of the rock here is due to a nearby fault zone.

Continue up the hill (southeast).

0.4 43.9 Turn around on the road to left (east). Note the large sink hole ponds on the west side of Rt. 127. These sink holes are overlying the Ste. Genevieve Limestone. Head north on Rt. 127 toward Alto Pass.

1.8 45.7 Turn left on gravel road, cross bridge, then immediately veer left.

0.4 46.1 STOP 9. Tar Springs Sandstone appears on left (south) underlain by black shale. The Tar Springs Sandstone derived its name from a bluff exposure at Tar Springs, Breckenridge County, Kentucky. As mentioned at Stop 8, the Tar Springs is one of the major sandstone formations of the Chesterian Series. It consists of massive beds of sandstone along with beds of shale. The sandstone is very similar to the Cypress with the exception that it may be friable or well cemented. One to three of these sandstone bodies are developed. The remainder of the formation includes dark gray, slightly carbonaceous shale. The shaly layer here is probably of the Glen Dean Limestone.

0.1	46.2	Tar Springs Sandstone bluffs on right and left.
0.3	46.5	STOP 10. Stay in car. Note Glen Dean Limestone on the hillside to the left. The Glen Dean Limestone, which is basically a limestone-shale unit, is named for exposures at Glen Dean, Breckenridge County, Kentucky. There are often three units of limestone separated by shale. The limestone is brownish-gray, coarse, and fossiliferous. Oolitic and cherty beds can be found. The shales are dark greenish-gray and are fossiliferous. Bryozoans and blastoids are typical of the Glen Dean.
0.5	47.0	Bridge across Clear Creek.
0.5	47.5	Turn left on gravel road and cross bridge. Immediately the road becomes blacktop.
0.5	48.0	STOP 11a. Clear Creek Chert exposed on the left. Note the layers of resistant limestone sandwiched between cherty layers. The Clear Creek Chert is named for Clear Creek, Union County, Illinois. This creek is just south of here and was crossed at the last bridge. The thickness of Clear Creek Chert is not easy to determine. Here we are looking at the upper layers of the formation. To our left (west) is Bald Knob and its cross. It is beleived that Bald Knob is entirely Clear Creek Chert. It is known that the Clear Creek Chert will achieve thicknesses of up to 600 feet. Typical of the top of the formation, there is a large proportion of limestone of the predominant unit, chert. The solution of the limestone units and the fracturing of chert units cause changes in the character of the formation, including the forming of tripoli. Tripoli is used in abrasives and is composed of "vein-like" bodies of fine particles of silica. We will see an outcrop of Clear Creek later which is partially tripoli. Tripoli is mined in Alexander County, Illinois, just south of the Union County line. As mentioned above, chert is the predominant unit in this formation. It is white or at least quite light in color. The limestone is gray, very finely grained, and siliceous.
0.1	48.1	STOP 11b. Clear Creek Chert, Dutch Creek Sandstone, and Grand Tower Limestone exposed on left. The Clear Creek Chert is only exposed here at the lower west end of this cut. The Dutch Creek member of the Grand Tower Limestone rests directly above it. The Dutch Creek will be discussed further at Stop 13. All three units are Devonian in age. The Grand Tower Limestone is generally coarse-grained, light gray, cross-bedded,

and pure. Its thickness is quite variable. It is very fossiliferous. The base of the Grand Tower Formation (base of the Dutch Creek member) marks the base of the Kaskaskia Sequence. Thus the Clear Creek Chert is of the Lower Devonian Series and the Grand Tower is of the Middle Devonian Series.
Continue east to Rt. 127.

1.1	49.2	Turn right (south) on Rt. 127.
3.2	52.4	Intersection. Union County Forest and Nursery road to right (west). Turn left on gravel road (east) opposite the Union County Forest and Nursery road.
0.05	52.45	STOP 12. Across the stream an exposure of Clear Creek Chert with its typical striations of chert and limestone are apparent. The Clear Creek Chert is exposed all along this stream to the west. Notice the gravelly nature of the stream. This Devonian cherty gravel is very typical of the Ozark Plateau Region which we are in. Intermixed with the gravels are fragments of black shale of the New Albany Shale Group. These shales represent the Upper Devonian Series and are probably of the Grassy Creek Formation which will be discussed at Stop 19.
0.05	52.5	Turn left (south) toward Jonesboro on Rt. 127.
0.2	52.7	STOP 13. Dutch Creek exposure on right (west). The Dutch Creek Sandstone, as mentioned earlier, is the lowest member of the Grand Tower Limestone Formation and thus the lowest member of the Middle Devonian Series. It is named for Dutch Creek, Union County, Illinois. It is a calcareous, well-rounded, medium- to fine-grained sandstone. In addition, it is fossiliferous and includes brachiopods and mounds of corals. The Dutch Creek tends to turn brown when it is exposed to the elements.
1.0	53.7	Intersection with Rt 146. Turn left (east) on Rt. 146
0.5	54.2	Turn left on blacktop road (this is just east of a sawmill). Immediately cross railroad tracks; in 1/10 mile cross bridge and turn left. Road eventually turns to gravel.
0.7	54.9	Turn right on gravel road at water works. Continue straight (east) to spillway.
0.2	55.1	STOP 14. Bluff south of spillway is composed of the State Pond member of the Springville Shale. The State Pond member of the Springville Shale is named for this locality. It is greenish-gray, soft, and glauconitic. Fossils of conodonts and ostracods

are present. The State Pond member is probably a deep-water deposit.
Return to Rt. 146.

0.9 56.0 Turn left (east) on Rt. 146 toward Jonesboro.

0.4 56.4 STOP 15. Alto Limestone exposed on the right. This area is near a fault which exposes this outcrop. The Alto Limestone Formation is named for Alto Township, Union County, Illinois, where it is exposed along a creek. The lower unit of the Alto is dolomitic and calcareous. It may be in the form of shale or siltstone. The upper unit is a silty, cherty, gray to dark gray dolomite. The chert is white, gray, or black. Only a few microfossils are known from the Alto Formation.

1.7 58.1 City square of Jonesboro. Continue straight (east) on Rt. 146 to Anna.

1.5 59.6 Cross railroad tracks (downtown Anna); turn right on Rt. 146. Continue on Rt. 146 to Rt. 51 north.

1.2 60.8 Turn left (north) on Rt. 51 north.

0.5 61.3 STOP 16. Small pull-off on left (west). View of the Anna Limestone Quarry (beyond russian olive hedge). This quarry produces limestone for construction and agriculture purposes. The pit which you are now viewing is the second pit dug at this quarry. The original pit is slightly west of here. The bulk of the stone quarried here is of the Ste. Genevieve Formation which is named for Ste. Genevieve, Missouri, where it forms the bluffs of the Mississippi River. At this part of Union County, it is a subsurface formation and is exposed only in mines such as the one here. However, it does outcrop in the southeastern portion of the county. It is usually light gray, but there are oolitic beds present which often appear almost white. Chert is abundant and is generally gray or black. These cherty areas cause problems for the quarry as they are less desirable. The Ste. Genevieve Limestone has three members. These are the Fredonia Limestone, the Spar Mountain Sandstone, and the Karnak Limestone. There are abundant fossils embedded in the Ste. Genevieve, including crinoid fragments.

The St. Louis Limestone, named for exposures at St. Louis, Missouri, is exposed at the deepest part of the quarry. It is also exposed in outcrops in the southeastern portion of Union County. The St. Louis is a fine-grained, micritic to lithographic, cherty limestone. Dolomite, crystalline limestone, fossiliferous limestone, and evaporites are also present in the St. Louis. The rugose coral Lithostrotionella is characteristic of the formation.
Turn around and return to Jonesboro city square.

3.2	64.5	Go 3/4 around the square and south on Rt. 127.
4.9	69.4	Turn left (east) on the Dongola road. STOP 17. Note the Salem Limestone in the ditch at left. The Salem Limestone is named for locations where it is quarried at Salem, Washington County, Indiana. It is composed of fossil fragments as well as whole fossils and is often banded with "oolitic-like" outgrowths. The Salem is classified as a biocalcarenite. Continue east on Dongola road.
1.4	70.8	Stop 18. St. John's Lutheran Church. Stop in the parking lot. South and west of the church can be seen the abandoned quarry were Harrodsburg Limestone was mined for marble production. The Harrodsburg Limestone, which is a member of the Ullin Limestone, is named for exposures near Harrodsburg, Monroe County, Indiana. It is composed of bryozoan and crinoid debris and is light-colored. Turn around and return to Rt. 127.
1.4	72.2	Turn left (south) on Rt. 127.
2.5	74.7	Bridge across creek.
0.2	74.9	Bridge across creek. Turn right (very sharp) on gravel road.
0.1	75.0	Cross railroad tracks.
0.5	75.5	STOP 19. Springville Shale and Grassy Creek Shale on the right (north). Of major importance here is the Grassy Creek Shale. The Springville will be discussed at Stop 20. The Grassy Creek Shale is named for Grassy Creek, Pike County, Missouri. It is a blackish shale which is brittle and contains conodonts.
0.7	76.2	Cross bridge. Road veers southwest.
0.1	76.3	Cross bridge. Road turns right (west).
0.8	77.1	Cross bridge. "Y" intersection. Turn left.
0.3	77.4	STOP 20. Ford. Bluff on left is Springville Shale. The top section is composed of the "calico shale". The Springville Shale is the lowest formation of the Valmeyeran Series of the Mississippian System. It is named for Springville, Union County, Illinois, where outcrops are located in a nearby creek. The shale is clayey and is greenish-gray to dark brownish-gray. Portions of the upper unit of the shale are splotched with red and green and are known colloquially as "calico shale". Higher up this cliff is exposed the Hartline Chert which is the lower unit of the "Burlington-Keokuk" Limestone.

0.7	78.1	STOP 21. Ford. Lingle Shale and Limestone exposed to left. The Lingle Formation is named for Lingle Creek, Union County, Illinois. It contains both limestone and shale. It differs from the Grand Tower Limestone which lies directly below it by being more argillaceous, more shaly, darker in color, and finer grained. The shale exposed here is from the Misenheimer Shale member. It is named for Misenheimer Creek, Union County, Illinois. We are in the general area of major outcropping. It is calcareous and its color ranges from dark gray to gray-brown. Other than spores, very few fossils are to be found. At the top of the hill which the creek is cutting into are outcrops of oolitic Lingle Limestone, This is probably of the Walnut Grove Limestone member which is named for Walnut Grove Church, Union County, Illinois. The Walnut Grove is a silty, cherty, galauconitic, fine-grained limestone. Crinoids, coral, brachiopods, and sporangites are fossils that can be found in this member. Near the base is a distinctive oolitic bed which characterizes the Walnut Grove member. Turn around at the farm (north of the ford) and return to the "Y" intersection.
1.0	79.1	"Y" intersection. Turn left (north).
0.2	79.3	STOP 22. Ford. Note "calico shale" in the stream cut to the left and the dipping or sagging of the layers toward the center of the exposure. This sagging is due to weaker rocks underlying those exposed.
0.1	79.4	STOP 23. Fault in the Springville Shale. To the right side of the fault zone, the Upper Springville Shale is exposed. This fault zone, which is about 2 to 3 feet wide, is filled with blocks of shale and chert. To the left of this zone, the Lower Springville Shale is exposed.
3.5	82.9	Cross bridge. Continue straight (north).
0.4	83.3	Turn right on blacktop road. This road is known as the Plank Road. At one time it was one of only three routes that went across the bluffs and hills to the west, eventually reaching the Mississippi River and Cape Girardeau, Missouri.
0.1	83.4	STOP 24. Exposure of New Albany Group shale, Sylamore Sandstone, and Alto Limestone on the right (east) side of the road. Here over 50 feet of shale of the New Albany Group (probably Springville Shale) overlies a thin bed of Sylamore Sandstone. Below this unit lies less than 20 feet of Alto Limestone.

The Sylamore Sandstone is named for Sylamore Creek, Stone County, Arkansas. It is very thin, less than five feet thick, and is discontinuous. It is characterized by rounded, fine- to medium-grained, friable to well cemented sandstone.

0.4	83.8	Turn right (east) on road to Kornthal Church.
0.3	84.1	STOP 25. Abandoned limestone quarry exposing Salem Limestone. It is located less than 100 yards south of Kornthal Church. It can be reached by crossing the grown-up area or by heading south down the creek and turning right when the concrete ruins of a bridge are reached. Kornthal Church was constructed in 1860 by a group of Austrians who immigrated to this country. The settlement, known as Kornthal (valley of grain), was mainly a farming community, but it did have a grist mill, general store, and a box factory. Turn around and return to the Plank Road.
0.3	84.4	Intersection with the Plank Road. Turn right (north).
0.1	84.5	Turn left (west) on gravel road just before reaching a bridge.
0.4	84.9	Note minor exposure of Springville shale on left (south).
0.5	85.4	Bridge over Dutch Creek.
1.6	87.0	"T" intersection at Lockard Chapel. Turn right (north).
1.7	88.7	Intersection with Rt. 146. Turn left (west).
1.5	90.2	Intersection with Rt. 127. Turn right (north).
1.2	91.4	Turn left on road to Union County Forest and Nursery.
0.6	92.0	Note Clear Creek Chert exposure in the creek bank to the left across the field. Here the chert is partially weathered to tripoli.
1.0	93.0	STOP 26. Road cut through Clear Creek Chert. Here red clay soils have extensively stained the normally light-colored chert. Careful examination of these rocks will uncover many fossil casts and molds, including crinoids, brachiopods, and borings of marine animals.
1.4	94.4	Exposure of Clear Creek Chert in the creek bank on the left (south).
1.0	95.4	Bridge across creek. Continue west.
3.2	98.6	Turn right (north) on gravel road to Pine Hills. Immediatedly cross a ford.

3.0 101.6 Note Grassy Knob Chert in ravines.

0.8 102.4 McGee Hill picnic grounds.

0.1 102.5 STOP 27. Overlook to left. Rock exposed here is Grassy Knob Chert. Looking below, one can see the La Rue Swamp. It occupies what was at one time the river channel of the Big Muddy River. Today the Big Muddy River cuts across the Mississippi River bottom and joins the Mississippi slightly north of here.
Continue on to Saddle Hill overlook. Note the extreme steepness of the hills.

1.5 104.0 "Y" intersection. Veer left.

0.3 104.3 Saddle Hill overlook. Rock exposed here is Grassy Knob Chert.

1.1 105.4 STOP 28. Old Trail Point. From here can be seen the expansive Mississippi River bottom, Fountain Bluff (far right), Walker Hill (right), and the Devil's Backbone (right, and somewhat behind Walker Hill).

1.3 106.7 "T" intersection. Turn right (north) on Forest Service Road 345. Rock at left of intersection is Bailey Limestone. Note Bailey Limestone bluffs on right all along the road.

1.3 108.0 Road veers right (east). Hill straight ahead is part of Grassy Knob, the type locality of Grassy Knob Chert. The Grassy Knob Chert is characterized by being somewhat light in color and containing many thick beds of solid chert. Fossils are very uncommon in the Grassy Knob.

1.3 109.3 "Y" intersection. Turn left. This is the approximate location of the crossing of the Rattlesnake Ferry Fault.

0.1 109.4 STOP 29. Pull-out on left. Note the extreme dipping of the rocks on the western hill. This is the result of the Rattlesnake Ferry Fault. The Rattlesnake Ferry Fault is also known as the Ste. Genevieve Fault from Ste. Genevieve, Missouri. In Illinois it cuts across Jackson and Union counties in a northwest to southeast direction. To the north of the fault, Mississippian and Pennsylvanian formations are exposed, whereas on the southern side, Devonian strata are exposed. This exposure of Devonian strata to the south and later strata to the north has created two natural physiographical divisions. The south makes up part of the Ozark Plateau Region, and the north is part of the Shawnee Hills Section. The Ozark Plateau differs from the Shawnee Hills in that there are many cherty streams which run generally year-round, steep, well-developed drainage systems, and cherty soil layers.
Turn around and return to "Y" intersection.

0.1	109.5	"Y" intersection. Turn right (southwest).
2.6	112.1	Road to left ascends the Pine Hills. Continue straight.
0.2	112.3	STOP 30. Bailey Limestone. Bluffs of the Pine Hills. The Pine Hills is one of the best exposures of the Bailey Limestone. Here the bluffs tower some 400 feet above the river bottoms below. The limestone shows weathering along major joints in its construction and a well-developed talus slope at its base. The Bailey is named for Bailey's Landing, Perry County, Missouri, along the Mississippi River. It is characterized by being gray to greenish-gray, silty, cherty, thin-bedded, and very hard. The chert is found in either nodules or beds and is black to dark gray. The upper unit of the Bailey Limestone is less cherty and is white and coarsely crystalline.
0.2	112.5	Levee road. Turn right (west). Continue on levee road to Rt. 3.
0.6	113.1	STOP 31. View of the cliffs of Bailey Limestone directly behind. Big Muddy River to the right (north), La Rue Swamp to the left (south).
2.2	115.3	Intersection with Rt. 3. Turn right (north). You are now driving across the Mississippi River floodplain.
0.1	115.4	Jackson County line.
4.7	120.1	Turn left (west) on road to Grand Tower.
1.1	121.2	Front St. Levee straight ahead. Road turns to right.
0.5	121.7	"Y" intersection. Veer left onto levee.
0.2	121.9	South end of Devil's Backbone. Road turns right.
0.1	122.0	STOP 32. Abandoned quarry on left. This quarry is a remnant of the Works Progress Administration of the 1940's. Exposed here is Backbone Limestone. The upper 25-30 feet of the rock cut is Clear Creek Chert. The Backbone Limestone derived its name from this isolated ridge known as the Devil's Backbone. This is the type location of the formation. It is characterized by being light gray, crystalline, and pure. Fossils are abundant. These include crinoids, gastropods, bryozoans, conodonts, and trilobites. About 2/5 the distance north from the southern end of the Backbone, the Rattlesnake Ferry Fault crosses. Thus, exposures ahead are of Middle Devonian age or younger.

PUBLICATIONS

AVAILABLE THROUGH THE SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

FOREST TREES OF ILLINOIS R. H. Mohlenbrock, 330p. $2.00 + $1 p&h

PRAIRIE PLANTS OF ILLINOIS R. H. Mohlenbrock and J. Voigt, 272p. $2.00 + $1 p&h

GIANT CITY STATE PARK: AN ILLUSTRATED HANDBOOK R. H. Mohlenbrock, 181p. $5.00 + $1 p&h

SPRING WOODLAND WILDFLOWERS OF ILLINOIS R. H. Mohlenbrock, 248p. $5.00 + $1 p&h

WILDFLOWERS OF FIELDS, ROADSIDES, AND OPEN AREAS R. H. Mohlenbrock, 226p. $5.00 + $1 p&h

EXPLORING THE LAND AND ROCKS OF SOUTHERN ILLINOIS Harris, Horrell, and Irwin, Paper $5.95 + $1 p&h; cloth $11.95 + $2 p&h

RECOLLECIONS OF THE LAST TEN YEARS IN THE VALLEY OF THE MISSISSIPPI Flint, $9.95 + $2 p&h

LAND BETWEEN THE RIVERS Horrell, Piper, and Voigt, Paper $16.95 + $2 p&h

PLANT COMMUNITIES OF SOUTHERN ILLINOIS R. H. Mohlenbrock and J. Voigt, 202p. $8.95 + $2 p&h

GUIDE TO THE VASCULAR FLORA OF ILLINOIS R. H. Mohlenbrock, 498p. $10.95 + $2 p&h

DISTRIBUTION OF ILLINOIS VASCULAR PLANTS R. H. Mohlenbrock and D. Ladd, $9.85 + $2 p&h

FLORA OF SOUTHERN ILLINOIS R. H. Mohlenbrock and J. Voigt, 390p.

$1.25 postage included

THE ILLUSTRATED FLORA OF ILLINOIS. . . by R. H. Mohlenbrock

Volumes completed	Price*	SINPS member price*
FERNS 191p.	$15.00	$13.50
RUSH TO RUSHES 272p.	22.95	20.65
LILIES TO ORCHIDS 288p.	22.95	20.65
GRASSES: BROMUS-PASPALUM 332p.	22.95	20.65
GRASSES: PANICUM-DANTHONIA 378p.	22.95	20.65
SEDGES: CYPERUS-SCIERIA 192p.	22.95	20.65
HOLLIES TO LOASAS 315p.	22.95	20.65
MAGNOLIAS TO PITCHER PLANTS 261p.	22.95	20.65
WILLOWS TO MUSTARDS 286p.	22.95	20.65
BASSWOODS TO SPURGES 234p.	22.95	20.65

* plus $2 p&h per volume ordered

ERIGENIA 1 August 1982: PLANT COLLECTOR'S GUIDE (Why Collect Plant Specimens; Where to Collect Plants; The Ethics of Plant Collecting; Collecting Plant Specimens, An Outline; An Illustrated Glossary of Botanical Terms) 44p. PRICE $2.50 including postage

ERIGENIA 2 April 1983: GEOLOGY OF SOUTHERN ILLINOIS (Paleozoic Life and Climates of Southern Illinois; Field Log to the Devonian, Mississippian, and Pennsylvanian Systems of Jackson and Union Counties, Illinois; Landforms of the Natural Divisions of Illinois; The Soils of Southern Illinois) 68p. PRICE $3.50 postage included

TO ORDER:

LIST TITLES DESIRED AND SEND TO: SOUTHERN ILLINOIS NATIVE PLANT SOCIETY, DEPARTMENT OF BOTANY, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, ILLINOIS 62901 BE SURE TO INCLUDE YOUR ADDRESS AND THE POSTAGE FEES. MAKE CHECKS PAYABLE TO: S.I.N.P.S. ALLOW FOUR TO FIVE WEEKS FOR DELIVERY.

0.4 112.4 "T" intersection. Turn left, then right once past the Backbone. STOP 33. Grand Tower Limestone overlain by Lingle Limestone. Here one may find corals and brachiopods in abundance at and near the cap of Lingle Limestone and thin-bedded units.

0.3 122.7 Veer right to the base of the pipeline bridge. STOP 34. Rock outcrop to the left is the Devil's Bake Oven. The Devil's Bake Oven is the type locality for the Grand Tower Limestone. Note the angle in which the rock of the Bake Oven rests. This is due to the Rattlesnake Ferry Fault. Exposed at the Bake Oven, beginning at its base, is the top unit of Clear Creek Chert (remember that this was at the top of the rock cut at the quarry at the southern end of the Backbone due to the presence of the fault). Above the Clear Creek Chert lies the Dutch Creek Sandstone member. Overlying the Dutch Creek is the Grand Tower Limestone which is capped by Lingle Limestone.

Leave the Bake Oven by turning east.

0.2 122.9 Cross railroad tracks. Continue east on 20th St.

0.2 123.1 "T" intersection. Straight ahead is the northern end of Walker Hill. Like the Devil's Backbone, Walker Hill is on the upthrown side of the Rattlesnake Ferry Fault and is composed of Salem and St. Louis Limestone.

Turn left (north) on Third Ave. Straight ahead is Fountain Bluff. Fountain Bluff is on the downthrown side of the Rattlesnake Ferry Fault.

1.0 124.1 "T" intersection. Turn right (east) at the base of Fountain Bluff.

1.3 125.4 "T" intersection. Turn left (north) on Rt. 3.

1.7 127.1 Road on right (east) to Oakwood Bottoms.

1.4 128.5 STOP 35. Left (west) are bluffs of Battery Rock Sandstone. Fountain Bluff is a resistant "island" of Battery Rock Sandstone. At one time in the past, the Mississippi River went around Fountain Bluff on its north side and through the river bottom we are in now. Exposures dip to the north, thus exposing some Mississippian formations on its south facing bluffs. The Rattlesnake Ferry Fault lies south of Fountain Bluff and the Pomona Fault bounds its northern bluffs.

0.5 129.0 Railroad overpass. Note Battery Rock Sandstone exposed in the road cut on the road to the left across the railroad tracks.

1.7 130.7 Turn right (east) on the road to Sand Ridge just south of the railroad tracks.

1.8	132.5	Sand Ridge was named for the sand dune remnants of this area. To the right (south) is one of these remnants.
0.8	133.3	Bridge over the Big Muddy River.
0.5	133.8	Pounds Sandstone exposed in the road cut to the left. Road veers to the left.
3.6	137.4	Outcrop in creek to the left is of the Spoon Formation.
1.0	138.4	Cross Big Muddy River. Enter Murphysboro.
0.4	138.8	Turn right (east) on Shomaker Drive.
0.2	139.0	Cross railroad tracks.
0.8	139.8	Intersection with Bridge St. (Rt. 127). Turn right (east).
0.2	140.0	Cross Big Muddy River.
0.5	140.5	Intersection. Turn right (south) on Rt. 127.
0.5	141.0	Turn right (west) on blacktop road.
0.9	141.9	STOP 36. Spoon Formation of the Pennsylvanian System. The shale which is exposed in the gullies on the left side of the road is covered with an abundance of plant fossils. These shales are associated with the Murphysboro Coal member of the Spoon Formation which was extracted from nearby mines. They are characterized by being light brown to light gray, quite fragile, and containing carbon imprint plant fossils. Turn around and return to Rt. 127.
0.9	142.8	Intersection with Rt. 127.
0.5	143.3	Intersection. Turn right (east) toward Carbondale (Old Rt. 13).
4.8	148.1	Intersection with Rt. 13. Turn right (east).
1.6	149.7	Intersection with Rt. 51. Turn right (south) (University Ave.).
1.0	150.7	Intersection with Lincoln Drive on right (west).

END OF FIELD TRIP

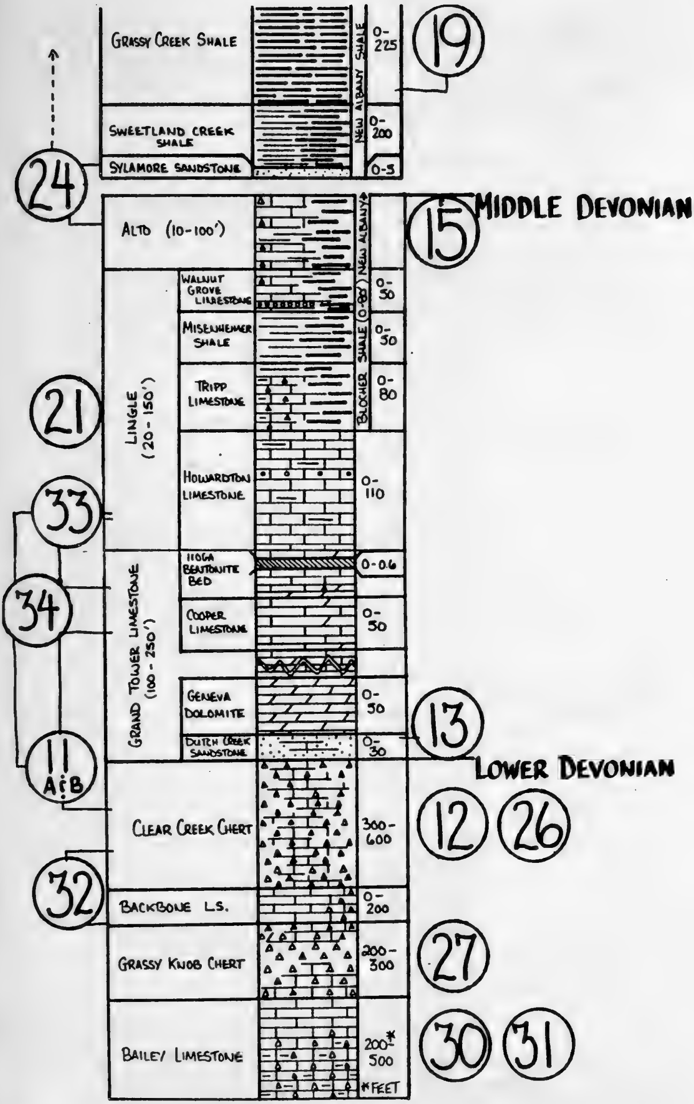


Figure 4. Geologic column of southern Illinois (part 1).

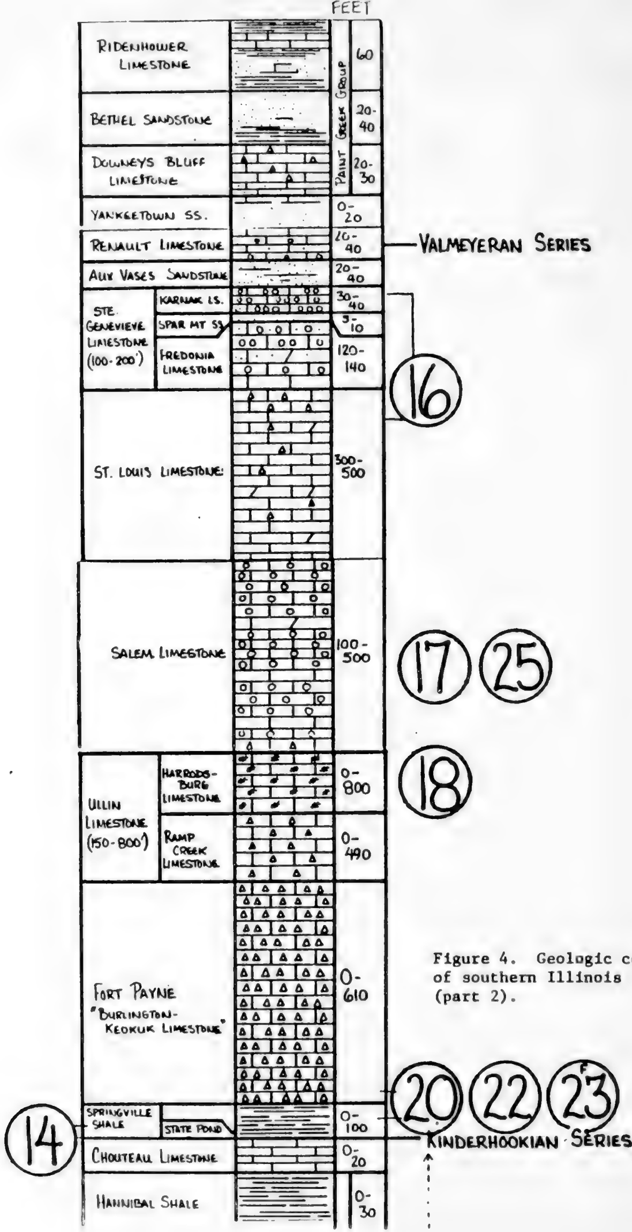


Figure 4. Geologic column of southern Illinois (part 2).

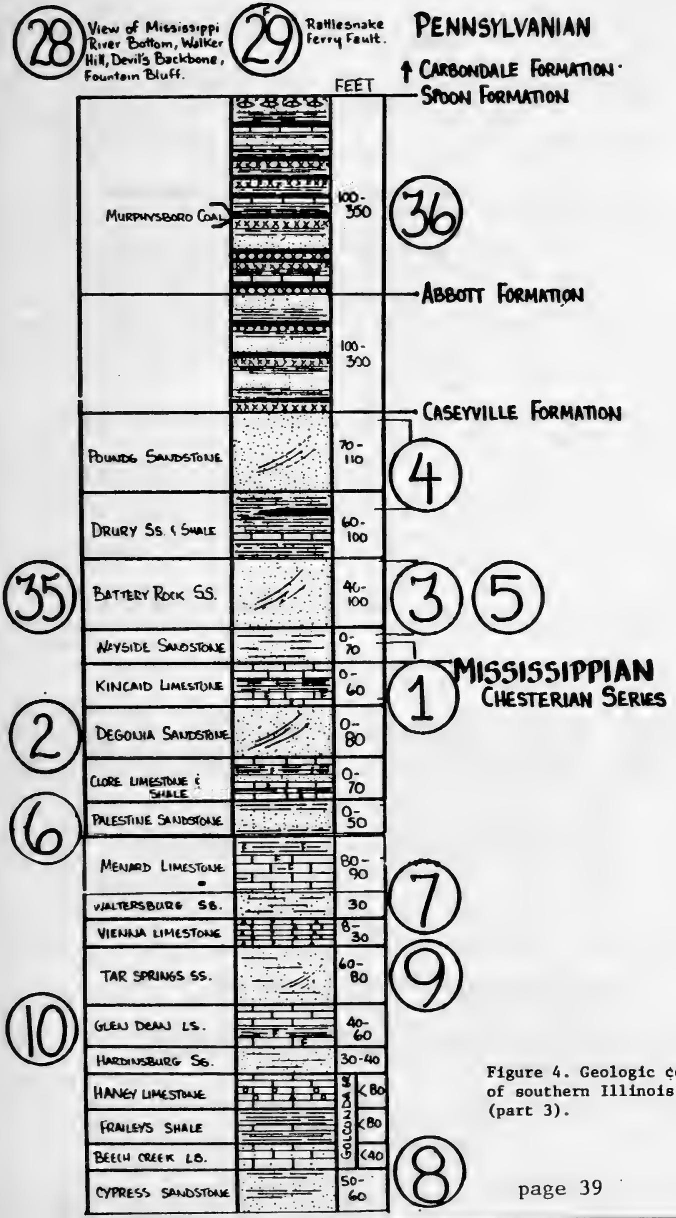


Figure 4. Geologic column of southern Illinois (part 3).

REFERENCES

Cote, William E., et al. 1965. Geological Science Field Trip Guide Leaflet: Alto Pass Area. ISGS, Urbana, Illinois, 19p.

Desborough, George A. 1961. Geology of the Pomona Quadrangle, Illinois. ISGS Circular 320. Urbana, Illinois, 16p.

Harris, Stanley E., Jr., et al. 1963. Guide Leaflet: Pine Hills Area. ISGS, Urbana, Illinois, 16p.

Lamar, J. E. 1925. Geology and Mineral Resources of the Carbondale Quadrangle. ISGS Bulletin 48. Urbana, Illinois, 172p.

Mohlenbrock, Robert H. 1974. A New Geography of Illinois: Union County. Outdoor Illinois, Vol. 12, No. 6. Benton, Illinois p. 11-42.

Odom, Ed. 1964. Geological Science Field Trip Guide Leaflet: Jonesboro Area. ISGS, Urbana, Illinois, 14p.

Raasch, Gilbert O. 1951. Guide Leaflet 51-F: Anna-Jonesboro Area. ISGS, Urbana, Illinois, 14p.

Satterfield, Ira. 1965. Devonian of Jackson and Union Counties, Illinois, Southern Illinois University, Carbondale, Illinois 19p.

Savage, T. E. 1925. Oriskany Rocks in Illinois. American Journal of Science, Ser. 5, Vol 10, No. 56, p. 139-144.

Weller, J. M. and G. E. Exblaw. 1940. Preliminary Geologic Map of Parts of the Alto Pass, Jonesboro, and Thebes Quadrangles, Union County, Illinois. ISGS Report of Investigation 70, 26p.

Willman, H. B., et al. 1975. Handbook of Illinois Stratigraphy. ISGS Bulletin 95. Urbana, Illinois, 261p.

ERIGENIA: 2, (1983), p. 41-56

LANDFORMS OF THE NATURAL DIVISIONS OF SOUTHERN ILLINOIS

by
Stanley E. Harris, Jr.[1]

I suppose most botanists become interested in the geologic character of a region just as geologists, concerned with the Earth's surface, become intrigued with the distribution and composition of the vegetation. This essay seeks to give some insight into the character of the topographic form and the surface and near-surface materials of Southern Illinois. To do so it is necessary to consider the earth processes which are at work or have been at work and some aspects of the long geologic history. I am sure the reader will understand that the story here given is sketchy indeed, on two counts: first, I have had to leave out so much and second, there is so much still to be learned.

Southern Illinois lies at the junction of four major physiographic divisions of North America: the Central Lowlands, the Interior Low Plateaus (Shawnee Hills Section), the Ozark Section of the Interior Highlands and the Mississippi Embayment of the Coastal Plains (Fig. 1). In addition, the bottom lands and valley-side borders of the Mississippi, Ohio and Wabash rivers occupy large and distinctive areas (Fig. 2). This provides endless diversity of scenery and unlimited opportunities for geologic and ecologic studies and research.

Central Lowlands

The largest physiographic subdivision of our region lies within the Central Lowlands. It is a province characterized by low topographic relief and a veneer of surficial deposits related to Pleistocene glaciation.

The topography is typified by the extensive nearly flat upland Effingham plain, traversed by I-70, and the somewhat more rolling topography of Mt. Vernon Hill Country. Several streams of moderate size, such as the Kaskaskia and Saline rivers, with their many tributaries dissect this plain. The valley walls are steep in some places, especially where the river comes against them, but do not rise high above the valley floor. Bottomlands are broad with terraces. Stream channels tended to be meandering, some strongly so, but many have been straightened since settlement. When driving cross-country one drives across a flat upland, descending now and again into the valleys. Should the road extend along the upland near a valley (i.e., State Highway 51 north of Pinckneyville), the crossing of many short tributaries gives an impression of a hilly countryside.

Low hills do rise above this flat upland in some localities, such as Lebanon and Carlyle. Probably the hills in St. Clair County are related to an end moraine while those to the north and east are more sandy and may be crevasse fills. The latter accumulated as meltwaters

---

[1] Emeritus Professor of Geology, Dept. of Geology, Southern Illinois University, Carbondale, Illinois 62901

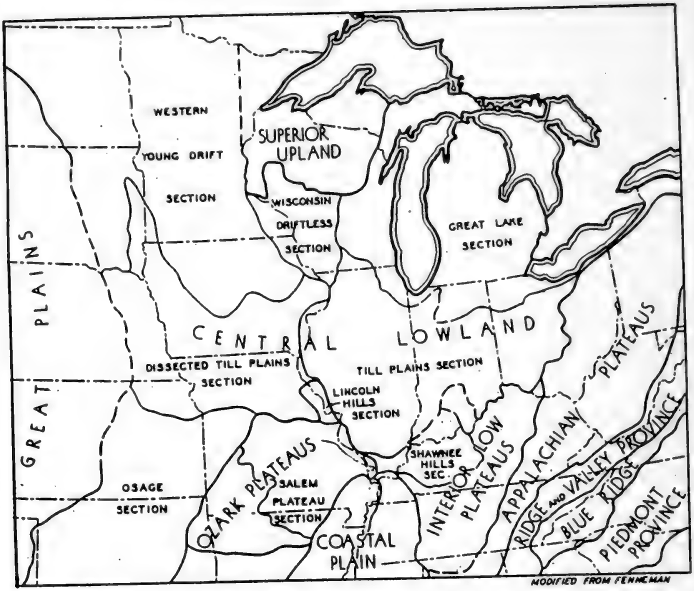


Fig. 1 Major physiographic divisions in central United States.

from the stagnating Illinois glacial ice sheet left debris in the widening fractures in the ice.

The Illinoian glaciation of Southern Illinois was much earlier than those of central Illinois -- older than can be measured by the C^{14}/C^{12} method, some 60,000 years. Furthermore, studies of the Illinoian glacial deposits of central Illinois suggest a very complex history this must be expected in our region as well.

In point of fact, one looks in vain for the classic topographic forms one would expect from lessons learned in Principles of Geology. Northeastern Illinois and adjacent Wisconsin represent the classic form with irregular moraines, kame hills, lakes and swamps, outwash plains, etc. These were formed 14,000 to 12,000 years ago; modification by other surficial processes has been initiated. The Mid-Wisconsin

THE NATURAL DIVISIONS OF ILLINOIS

1 Wisconsin Driftless Division

2 Rock River Hill Country Division
- a Freeport Section
- b Oregon Section

3 Northeastern Morainal Division
- a Morainal Section
- b Lake Michigan Dunes Section
- c Chicago Lake Plain Section
- d Winnebago Drift Section

4 Grand Prairie Division
- a Grand Prairie Section
- b Springfield Section
- c Western Section
- d Green River Lowland Section
- e Kankakee Sand Area Section

5 Upper Mississippi River and Illinois River Bottomlands Division
- a Illinois River Section
- b Mississippi River Section

6 Illinois River and Mississippi River Sand Areas Division
- a Illinois River Section
- b Mississippi River Section

7 Western Forest-Prairie Division
- a Galesburg Section
- b Carlinville Section

8 Middle Mississippi Border Division
- a Glaciated Section
- b Driftless Section

9 Southern Till Plain Division
- a Effingham Plain Section
- b Mt Vernon Hill Country Section

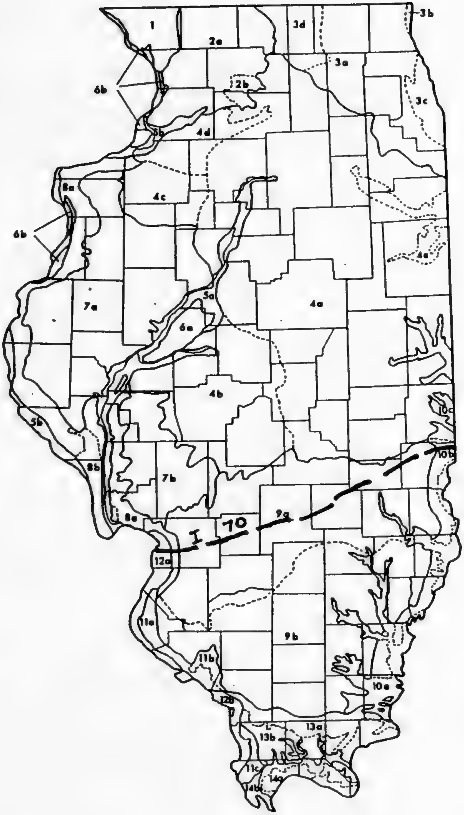
10 Wabash Border Division
- a Bottomlands Section
- b Southern Uplands Section
- c Vermilion River Section

11 Ozark Division
- a Northern Section
- b Central Section
- c Southern Section

12 Lower Mississippi River Bottomlands Division
- a Northern Section
- b Southern Section

13 Shawnee Hills Division
- a Greater Shawnee Hills Section
- b Lesser Shawnee Hills Section

14 Coastal Plain Division
- a Cretaceous Hills Section
- b Bottomlands Section



The natural divisions are described in detail in "Comprehensive Plan for the Illinois Nature Preserves System, Part 2, The Natural Divisions of Illinois", published by the Illinois Nature Preserves Commission, 1973.

Fig. 2

region around Champaign represents a second stage of some 20,000 to 18,000 years. First, the small features disappeared by sheet wash erosion, and sediment filling of the low places. Second, an integrated stream system was gradually formed, draining lakes and swamps. Third, wind-blown silts (loess) blanketed the area.

For southern Illinois the alterations must extend over at least 180,000 years. The topography no longer has the look of a glaciated depositional area. The clearest evidence of glaciation lies in the till veneer above the bedrock. It consists of a heterogeneous mixture of all textures and rock compositions, including crystalline pebbles and boulders whose nearest source is Canada.

Of particular interest to botanists is the nature of the soils which have developed. Since melting of Illinoian glaciers, there have been repeated changes in climate, affecting both rainfall and temperature. Furthermore, soils formed in at least four superimposed materials: 1) on the bedrock 2) on the glacial till 3) on Mid-Wisconsinan loess (Roxana) and 4) on the late Wisconsinan loess (Peorian) which may itself be compound. The modern fragipan soils have a heavy clay B-zone inhibiting water and root penetration.

Distribution of vegetation at time of settlement is intriguing as most of the flat uplands were dominantly prairie while the valley slopes and bottomlands were forested (some marshes existed). This is not the place for speculation, but perhaps prairie survived as much because of standing water as fire. The flat uplands are lacking in waterways of concentrated flow so that snow melt and rainfall did not run off, and the tight subsoil permitted very slow percolation.

Another important topographic feature is the extensive terrace surfaces representing backwater lake deposits in the basins of the Big Muddy and Saline rivers. The headwaters of those rivers do not reach back to the Wisconsinan glaciated plain so they did not receive meltwaters as did the Kaskaskia, Little Wabash and Embarras. However, Wisconsinan glacial meltwaters carried such a large load of sediment that the main valleys aggraded. The tributaries were dammed causing backwater deposits to accumulate in the lower part of the basins. At the junction of these nearly level deposits and the modern flood plains there are extensive swamps (north of West Frankfort, northeast corner of Jackson County).

Bedrock is not exposed widely in the Central Lowland except in the hilly portion of the Mt. Vernon Hill Country in Jefferson and Hamilton counties. The rock is all of Pennsylvanian age and dominantly shale. A table of bedrock units will be found on page 45. Some sandstone units which are locally 40 or 50 feet thick form ridges, though the relationship is not easily recognized. All the commercial coals in the state occur in this province. In our area they tend to be quite continuous in underground extent but are mined in an arc from the St. Louis area south-eastward to Marion and Shawneetown. The coal layers come to the surface in outcrop bands dipping downward toward the east and north into the center of the Illinois Basin in Wayne County. The coals are strip mined where they lie within 100 feet or so of the surface, and by slope or shaft mines at greater depths.

Shawnee Hills

The Shawnee Hills is a complex of cuestaform hills extending across southern Illinois from Randolph County at the Mississippi River to Gallatin County on the Ohio River. Massive sandstone layers belonging to the lower Pennsylvanian/upper Mississippian systems rise 300 to 700 feet above the Central Lowalnds. In contrast to the gentle relief of the Central Lowlands the Shawnee Hills is a maturely dissected region mostly in slope, with rather narrow upland divides. Some parts of the Lesser Shawnee Hills are more open with lesser slopes. The Illinoian glaciers pushed into the hills from the north but did not cross them.

The higher elevation and topographic form result from the greater resistance to erosion of the massive Caseyville sandstones which outcrop here, not to a massive pile up of glacial deposits or to some tectonic upheaval. It is in this province where the structure of the bedrock most obviously affects the topography. The diagram (Fig. 3) represents the attitude of the sedimentary rocks which compose the bedrock of the Shawnee Hills. The rock layers rise at an angle of only about 1° (92 ft/mi) from beneath the Central Lowlands.

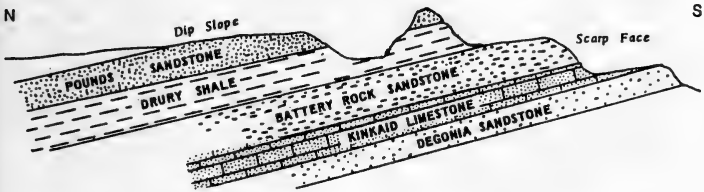


Fig. 3 Cross-section profile of cuestas of Shawnee Hills Section.

Each successively older bedrock unit reaches the surface in an east-west band, one after another. The more resistant sandstones rise gradually higher forming a gently rising backslope, but the eroded edges form scarps marked by high cliffs as at Draper's Bluff and Garden of the Gods. From the escarpment crest (as above Cobden) one may look southward across lowlands formed in weaker rocks and occupied in many places by strike streams (Harris, et.al., 1977, p. 110-1170. No streams cross the escarpment.

Several streams rise near the crest and flow southward, transecting a series of these sandstone units. They provide the unique cliff and shelter bluff environments of Lusk Creek, Hayes Creek, Bay Creek, Happy Hollow in Ferne Clyffe State Park, etc. Other streams have eroded valleys sloping northward. The headwaters of these streams likewise have cliffs, waterfalls, and rocky stream channels, i.e., Pounds Hollow, Burden Falls, Panthers Den, Giant City, Pamona Natural Bridge. A variety of ecologic environments are juxtaposed ranging from mesic, relatively cool alluviated valley floors to dry, sunny cliff-tops with little or no soil cover.

The ridge crests and upper slopes have a thick cover of loess with relatively well-drained soils. Under natural vegetation cover they must have been relatively stable, but cultivation has exposed them to severe sheet and gully erosion. The ridges are nearly continuous along the main cuesta crests, so most roads and dwellings are on the upland. These ridges are famous for their orchards, while the alluviated bottomlands yielded cucumber, pepper and tomato crops. No natural areas are known from the ridges, but are numerous along the canyons and cliffs because they were sites difficult to cultivate or timber.

Faults with large displacements cause sharp discontinuities in the topography. Ste. Genevieve (Rattlesnake Ferry) Fault crosses the Mississippi River just north of Grand Tower. It brings up cherty Devonian rocks on the south so they lie against the Mississippian Chester sequence, a displacement of about 2500 feet. This also forms part of the boundary between the Shawnee Hills and the Ozarks (see map Fig. 2). On the east, Gold Hill and Cave Hill rise sharply above the Central Lowlands. Their north face is a fault line with about 2000 feet of displacement. Slices of Devonian rocks have been turned vertically and can be seen in an old quarry at Horseshoe. Faults are most numerous in the fluorspar district (Fig. 2). Some were highly mineralized and supported rich mines. Others apparently served as channelways for mineralizing solutions but were not themselves the loci of mineralization.

The southern portion of the Shawnee Hills is underlain by thick limestones. Some units are cavernous. Their outcrop contains many sinkholes with sinking streams and springs but few surface streams -- karst topography. It is a westward extension of the Pennyroyal Plateau of Kentucky.

Loess deposits veneer the Shawnee Hills. The silt cover is as much as 15 feet thick on the upland near the Mississippi bluff. The loess thins gradually eastward to about 4 feet, but thickens again near the Ohio River. The source was the aggrading and nearly barren fluvio-glacial sediments of the valley.

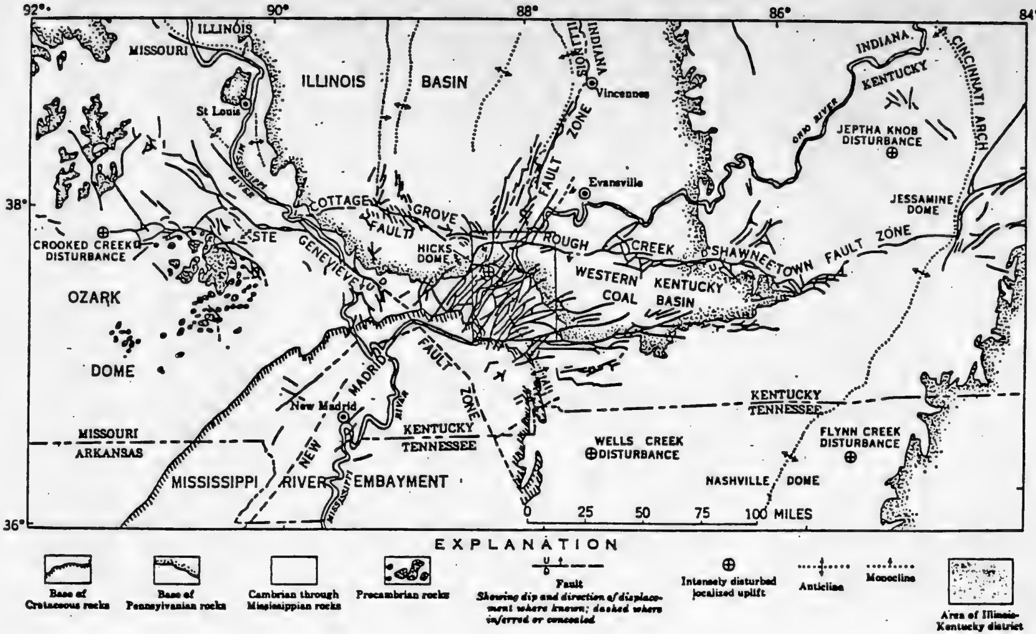


Fig. 4 Map centered on southern Illinois showing regional structures.

Bedrock is extensively exposed in the Shawnee Hills. Sandstones form cliffs along the escarpments and in the deeply entrenched valleys both on the scarp and backslope. Limestone cliffs occur along the Ohio River. Rock is exposed in many places in stream channels and on valley sides. Loess is thick on the upland ridge crests, but is thin on many slopes. Rapids and waterfalls are common in the midcourse of streams, whereas broad silt-covered floodplains characterize the downstream portions. Silts eroded from the loess of the uplands form most of the alluvium.

The Pleistocene glaciers were stopped by the Greater Shawnee Hills, though they must have been playing out anyway as a result of warming at lower latitudes. In fact, the glaciers did send fingers up the north sloping valleys and spread over the upland to an elevation of at least 600 feet. Glacial till may be seen in the roadcut at the Williamson-Johnson County line on I-57 just south of the junction with I-24. Jackson (1977) made a study of a rich plant accumulation in terminal glacial deposits in Jackson County. This is the locale of southernmost penetration of continental glaciers in North America.

The Lesser Shawnee Hills section is underlain by the Chester Series of alternating limestone-shale and sandstone-shale units and by more massive Mid-Mississippian limestones. The Chester sandstones likewise form cuesta ridges but they have been transected by streams so as to form rocky water gaps (Harris, et.al., 1977, p. 6). The topography of the sandstone ridges is similar to those of the Greater Shawnee Hills but on a lesser scale and with a thinner cover of loess. Backslope streams are short, not very deeply incised, but very rocky. The lowlands areas are underlain by the limestone-shale and tend to be much more open than in Greater Shawnee Hills. Some areas have many sinkholes, springs and caves. Two karst areas are prominent: one southeast of Jonesboro, the other in south-central Hardin County. These, too, provide special environments within sinks, small caves, and collapse gulfs. The moderating influence of underground temperatures and moisture are clearly visible in the vegetation. It is an exciting experience to come upon the green vegetation of the Roaring Springs area after traversing snow-covered pasture and forest.

If one happens to be interested in fossils, excellent opportunities for study of marine assemblages are provided by the shaly limestones and plant remains in the coaly layers of the shaly sandstone units of the Chester Series.

Ozarks

A small segment of the Ozark Physiographic Province forms a half-moon-shaped area along the Mississippi Valley from the Ste. Genevieve Fault to the western end of the Cache Lowland (Fig. 2). This is a maturely-dissected region of very steep slopes and very narrow ridge crests. Valley bottoms are mostly narrow. The stream channels alternate between pools and riffles. The riffles are formed by gravel bars of chert pebbles.

A cover of 10 to 15 feet of loess mantles the ridges but erosion has removed much of the silt from the slopes. Bare rock or cherty rubble is exposed on many steep slopes, especially close to the Mississippi Valley as at Pine Hills and Atwood Ridge. Quite a contrast in erosion --

is apparent between north-facing and south-facing slopes. South and west-facing slopes tend to be hotter and drier in the summer and suffer repeated freeze-thaw during the winter. Erosion is, therefore, more severe and soil thin. On north slopes soils are better developed in loess.

Stream characteristics of the Ozarks are very different from those of the Shawnee Hills. The cavernous limestone bedrock of the Ozarks takes in much of the rainfall, releasing it slowly through springs and seeps. The cherty residual veneer also favors infiltration. In the Shawnee Hills lesser infiltration means more rapid runoff but lesser discharge between rains. Though the waters of both become muddy after rains, Ozark waters soon clear up. There is a two-fold explanation: 1) the large contribution of filtered underground water, 2) the filtering effect of the chert gravels.

Stream channels in the Ozarks have an alternation of pools and chert-pebble bars. During high water much gravel is carried downstream but is deposited as the flow decreases, accumulating at one of the gravel bars. The open pores between pebbles become an efficient filter for the fine-grained fraction of the sediment load -- and the water clears up. The filter bed is maintained by scour during flood and deposition at declining discharge.

Bedrock in the Ozarks is dominated by limestones of Devonian and Silurian age. Over much of the area they have been so silicified that the residuum consists largely of chert. On steep slopes where loess is eroded the chert fragments form active talus. In some areas considerable clay matrix is present. No doubt the very angular, "spongy" character of the residual chert is partly responsible for the steepness of the slopes. The oldest bedrock is Ordovician in age exposed in Thebes Gap in the railroad cut and in the bed of the Mississippi River itself.

At the south end of the Ozark Division the consolidated bedrock is covered on the uplands by gravel deposits and remnants of Coastal Plain sands. Stream dissection penetrates these deposits so that the topography has an aspect similar to the area farther north.

A disjunct segment of the Ozark Section is present above the Mississippi bluffs largely in Monroe County (Fig. 2). The bedrock is massive limestone belonging to the Mississippian System. Some units, notably the Ste. Genevieve and St. Louis formations, tend to be cavernous. The topography is pockmarked by sinkholes and an absence of surface streams. Caves, springs, sinking streams, and "rises" are numerous.

The karst area is terminated on the west by the dissected Mississippi Valley bluffs and border section. Fountain Creek is an interesting through stream channel, much of it with a rock floor. Continuous stream flow exists only in rainy periods.

Bedrock has a thick cover of loess near the Mississippi Valley. Scattered erratic crystalline pebbles suggest that Illinoian glaciers reached the valley but thick glacial till deposits are not known west of the boundary as shown on the Quaternary Map of Illinois (Lineback, 1979).

Coastal Plain

Just north of the Ohio River unconsolidated sands and clays form the substrata. These represent the northern-most extremity of deltaic and marine deposits laid down in a marine embayment in the middle of the continent during the late Cretaceous and early Tertiary period (Fig. 4). Subsequent retreat of the seas left a coastal plain continuous with that around the Gulf of Mexico.

This division has moderate relief but is actually very hilly with steep, unstable slopes. Erosion by sheetwash and gullying is severe; cultural activities have had a severe impact on a naturally dynamic landscape.

The Ohio River, forming the Illinois-Kentucky border, joins the Cumberland and Tennessee rivers as they turn westward to meet the Mississippi River (see Fig. 5). The river, below the junction of the Tennessee, lies against the bluffs of the north side of the valley so that no floodplain exists on the Illinois side.

Paleozoic bedrock is exposed by streams at the base of the ridge in the eastern portion of the area. Some of the limestones are cavernous with springs issuing from solution passages. The Coastal Plain sediments were deposited on the erosional unconformity which can be seen in some of the limestone quarries. The unconsolidated coastal plain sediments lie on the ridge, but are veneered by thick loess deposits. These consist of white chert gravels, very fine-grained white sands and silts and clays. They are of marine and non-marine origin. The Porter's Creek Clay is famous for its plant fossils (see Table 1).

CAIRO, LA CENTER, AND THEBES QUADRANGLES

	SYSTEM AND SERIES		GROUP OR FORMATION	GENERALIZED ROCK COLUMN	THICKNESS IN FEET
FORMATIONS EXPOSED	QUATERNARY	Pleistocene	loesses and valley fill		0 - 250
	TERTIARY	Pliocene	"Lafayette" Gravel		5 - 50
		Eocene	Wilcox		50 - 250
		Paleocene	Porters Creek Clayton		50 - 170
	CRETACEOUS	Gulfian	Owl Creek McNairy Levings Mbr Tuscaloosa		25 - 470

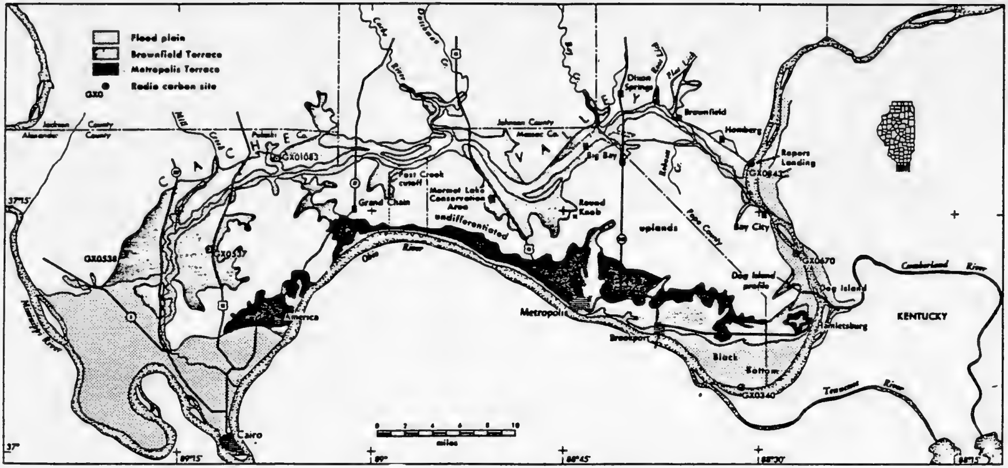


Fig. 5 Distribution of alluvial features along the Cache and Lower Ohio valleys in southern Illinois. From Alexander and Prior (1968).

On many ridge tops, gravel pits expose a distinctive brown chert gravel. The gravel lies beneath the loess and unconformably above the Coastal Plain sediments. They have been used extensively in road construction. The gravels are remnant parts of a great river-laid sheet deposit which extends across western Kentucky, the Commerce Hills and Crowley's Ridge in Missouri (Potter, 1955). Remnant outliers are found in the Ozarks and on bluff tops along all the major rivers. These chert gravels are probably late Tertiary in age; at least they contain no glacial erratics. The conditions of their origin is unknown. Interbedded sands and clays have yielded meagre plant fossils. The gravels, themselves, consist of pebbles derived from the weathering of the Paleozoic cherty limestones. They have many of the characteristics of the alluvial cherts which form the gravel bars in the rivers of the Ozarks.

One of the interesting features of the division is the presence of many springs and groundwater seeps (Schwegman, 1969; Harris, et.al., 1977). Some springs with a single orifice and a considerable discharge yield water from the cavernous underlying limestone. Others discharge from sands which overlie impervious materials. These springs and seepages commonly support a very distinctive flora.

Schwegman (1973) has placed the extensive lowland called the Cache-Bay Creek bottomland with the Coastal Plain. It nearly follows the junction between the Paleozoic upland and the Coastal Plain sediments.

Originally this bottomland was largely swamp interrupted by elongate sandy ridges. The gentle surface gradient is westward from the Ohio River, between Golconda and the mouth of the Cumberland River to the Mississippi River between Thebes Gap and the junction with the Ohio. Ohio River water now flows through it only at times of highest floods, as in 1927 and 1937. Two small underfit streams "drain" it: the Cache entering through Little Black Slough and Heron Pond and flowing westward, and Bay Creek entering near Columbia and flowing eastward. Bay Creek has barbed tributaries which are consequent on the alluvial surface. Bay Creek channel has worked headward from the somewhat entrenched modern Ohio River channel in a direction opposite to the gradient of the lowland.

This bottomland must once have been similar in character to Little Black Slough with great canopy trees of cypress and tupelo. During the spring it must have been largely covered by water, as is the lower Cache today. By late summer much of it must have been dried out. Once the forest was cut, the landowners wished to farm it and the numerous drainage ditches have lowered the water table so that cultivation is successful in all but the lowest portions. Today "the scatters" retains a feeling of the original swamp; steps have been taken to preserve the best which remains.

The geologic story of the origin of this great valley has not been established. Certainly the Ohio River once flowed through it, but whether it was also the course of the Cumberland and/or Tennessee has not been ascertained. The bedrock valley was once nearly 200 feet deeper than the present alluvial surface. The great load of sediments carried by meltwater during the waning of the Wisconsinan glacial stage resulted in aggradation of the valley. It is probable that this aggradation was also responsible for overflow of the Ohio into the Cumberland-Tennessee valleys and establishment of a more southerly course to the Mississippi River.

This aggradation was also responsible for filling the lower courses of the tributaries from the north. Thus, the extensive wetlands along Mill Creek and upper Cache and Bay Creeks were caused by backwater accumulations of fine sediment. Cores taken from these sediments should yield a fascinating story of the vegetation history since the late Pleistocene.

The River Valleys and Their Borders

Schwegman's classification recognized the distinctive nature of the alluvial bottomlands. In addition he separated the bordering dissected bluffs with their cliffs and short, steep tributary valleys (see Fig. 2). Geomorphically and ecologically these areas are affected by quite a different set of processes from the adjacent uplands. Thus, the soils and vegetation differ in kind and in association.

The three great valleys, Mississippi, Ohio and Wabash (the Illinois, too), are subject to extensive flooding. Flooding occurs within the natural or manmade levees at time or extended rain periods of 6 to 9 inch downpours even without levee breaks. Backwater floods also occur due to regional rainy periods when the main channels are overfull. Water backs up all the tributaries and lower portions of the floodplain. Furthermore backwater areas tend to have tight, fine-grained soils, which inhibit downward percolation even when flood conditions do not exist. Thus, the vegetation must be able to endure periods when the soil is saturated.

Floodplains are not flat. Abandoned meander bends are prominent features with swampy, clay-filled channels. Sandy natural levees border the outside of the bends and swell and swale point bars parallel the inside of the curve. The levees near the river channel commonly are a barrier to access by the tributaries. Thus, the Big Muddy flows next to the east bluff of the valley for 11 linear miles before reaching an intersecting now abandoned meander of the Mississippi; Clear Creek and Dutch Creek don't join until the Mississippi enters Thebes Gap. Great meanders are more numerous on the Wabash than on the Mississippi.

Alluvial lowlands commonly contain "second bottoms", i.e. terrace remnants and alluvial fans which flood less frequently or are currently above even the maximum flood levels. They have been aggraded somewhat by repeated deposits of sediment left by receding floodwaters. These surfaces are favored for agriculture as their soils tend to be moderately well-drained and contain the beginnings of a soil profile. Terraces are the remains of alluviated surfaces now partly removed by erosion of a deepening river channel. Terraces in the main valley of the Mississippi have been removed except for a few remnants protected by Fountain Bluff and Walker Hill; terraces are more common in the tributaries. Terraces are extensive on the Wabash. Alluvial fans are accumulations of material deposited where the steep gradient of small tributaries meet the nearly level alluvial valley. An excellent example of a compound alluvial fan is found along the east side of Fountain Bluff. It is traversed by Highway Rt. 3 and is occupied by a very productive farm. A smaller fan forms higher ground at the deboucher of Glen Creek between two abandoned Mississippi River meanders (see Fig. 6).

The Wabash valley does not have high bluffs at the valley wall.

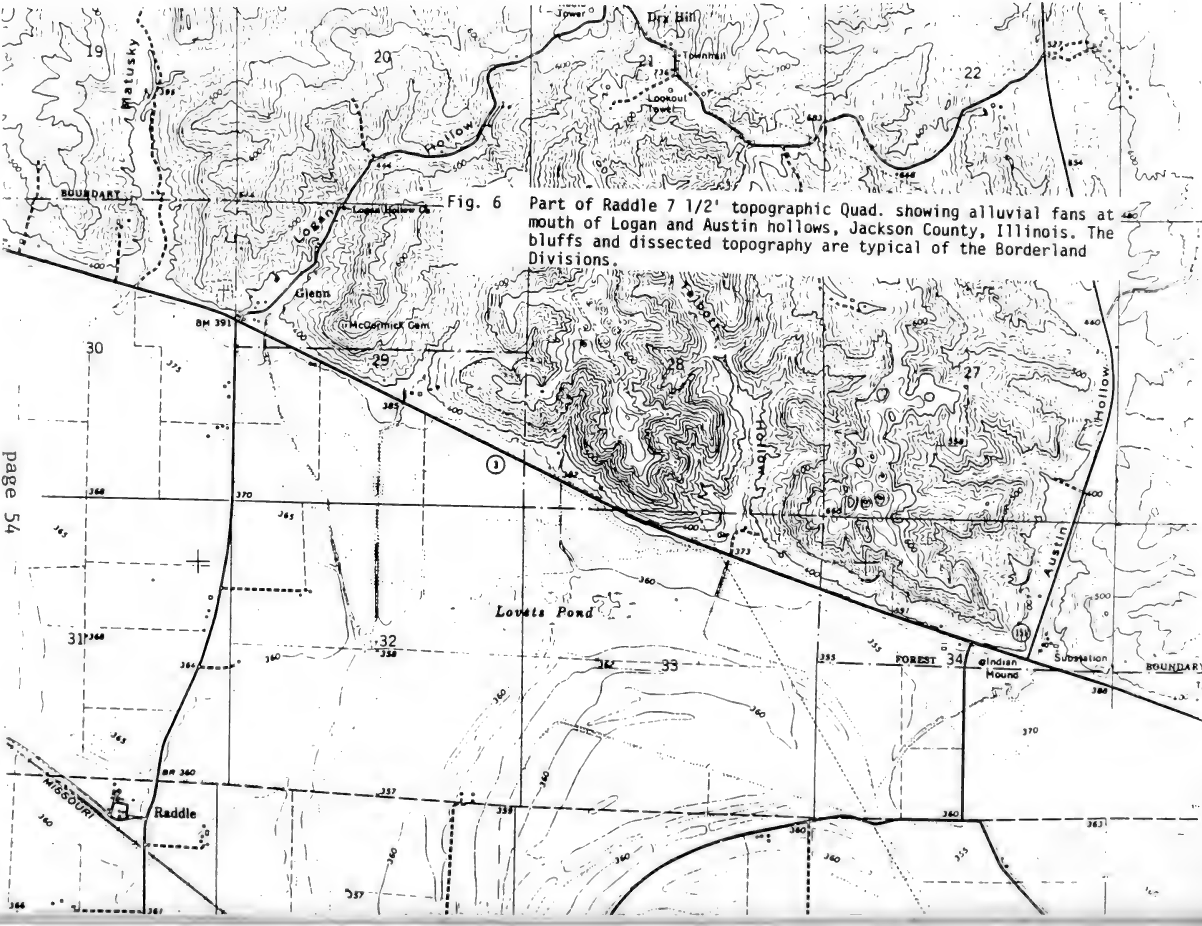


Fig. 6 Part of Raddle 7 1/2' topographic Quad. showing alluvial fans at mouth of Logan and Austin hollows, Jackson County, Illinois. The bluffs and dissected topography are typical of the Borderland Divisions.

This is because the underlying rocks are weak. In fact the glaciated upland seems to grade into lowland terrace deposits, and boundaries are masked by loess deposition and colluvial wash. The Wabash and its tributaries have extensive Pleistocene valley train and backwater deposits. Sandy soils, even sand dunes, are widely distributed. Near the junction with the Ohio River the meander belt is broad and frequently flooded. Oxbow lakes and swamps occupy abandoned meanders. Remnants of cypress swamps still exist on the Indiana side, and Beall Woods near Mt. Carmel preserves giant trees of a more mesic bottomland forest.

The Valley Bluff borderlands are characterized by great cliffs which are intersected by small tributaries at intervals of every mile or two. The tributaries have steep gradients and commonly rise within a mile or two of the bluffs. The tributaries may also be lined with cliffs. Side streams may be rocky with waterfalls and chutes.

The borderlands are therefore maturely dissected with very steep slopes. The interfluve ridge crests are narrow with a thick cover of loess. Crop yields are surprisingly high but erosion of the fields is severe. North-facing slopes are relatively cool with lesser evaporation than south-facing counterparts. The lower course of the tributaries generally contains a floodplain, some of which possess mature woodlands.

Bedrock of limestone or sandstone form the cliffs but the crest of the bluffs has a cap of thick loess. The narrow ridges between tributaries, especially their "noses", are very dry and commonly support hill prairies. Even the casual observer will note the variation in plant associations according to slope, orientation and substrate.

Of all the divisions the borderlands are most diverse and seem to call for further subdivision on the basis of their physical relationships almost on a microscale.

The varied landform of southern Illinois offer great opportunities for those of us who open our senses and minds to the land and rocks, water and air around us. Scenic beauty on both macro and mini scales surrounds us. Seasonal changes in aspect of the vegetation, presence of standing and flowing water, and in the active geomorphic processes provide ever-changing conditions even at the same geographic locality. Wherever we go we can speculate about the "native vegetation" and search out "natural areas" to represent a wide range of ecologic conditions. Conditions are dynamic, readily altering in response to fluctuating climatic cycles or people's activities. Also continual are the dynamic processes of weathering, masswasting and the work of running water, ground water movement, the wind, etc. Response of vegetation to the effects of these processes is slower and less noticeable, but not hard to recognize with careful observation. The more we learn the more we see, and the more we want to learn.

As a geologist I am more likely than most to speculate about the past and look for clues which identify events and long-term interacting processes which formed this land we call southern Illinois. The botanist contributes much to this understanding. In the short term, plant composition indicates stability or change; in the long term, plant fossils and especially pollen, indicate successions of climatic change.

Literature Cited

Harris, S.E., Jr., Horrell, C.W. and Irwin, D. (1977) Exploring the land and rocks of Southern Illinois: A geological guide, So. Ill. Univ. Press, Carbondale.

Jackson, S.T. (1977) A middle Illinoian florule from southeastern Jackson County, Illinois: Master's thesis, Southern Illinois University, Carbondale.

Lineback, J.A. (1979) Quaternary deposits of Illinois: Illinois State Geological Survey Map.

Potter, P.E. (1955) The petrology and origin of the Lafayette Gravel Pt 1 - Mineralogy and petrology: Jour. Geology, v. 63, p. 1-38; Pt 2 - Geomorphologic history; Jour. Geology, v. 63, p. 115-132.

Schwegman, J.E. (1969) Vegetation of some seep springs in the Cretaceous Hills of Southern Illinois: Master's thesis, Southern Illinois University, Carbondale.

Schwegman, J.E. (1973) Natural divisions of Illinois: Comprehensive plan for the Illinois Nature Preserves System Pt II, III. Nature Preserves Commission, Rockford, IL.

Willman, H.B. (1968) Geologic map of Illinois: Illinois State Geologic Survey Map.

Willman, H.B. and Frye, J.C. (1970) Pleistocene Stratigraphy of Illinois: Ill. Geol. Survey Bull. 94, 204 p.

ERIGENIA: 2, (1983), p. 57-67.

THE SOILS OF SOUTHERN ILLINOIS

by Dr. B. Klubek[1], Dr. J. Jones[1], and Dr. E. C. Varsa[1]

The soils of southern Illinois, lying roughly south of a line from St. Louis, Mo. to Terre Haute, In., are generally characterized as moderately sloping to sloping land dominated by forest vegetation. These soils are not as productive as those of central and northern Illinois, but an estimated 14,549,950 acres or 44.3 percent of the total arable acres are under cultivation (Fehrenbacher et al., 1971).

At the present time, there are approximately 375 different soil series mapped in Illinois which have been grouped into 57 soil associations (Fehrenbacher et al., 1967; 1982). Of this total, 40% or 23 soil associations (21 upland and 2 bottomland soils) are known to occur in southern Illinois (Fehrenbacher et al., 1982). The factors affecting the development of southern Illinois soils, and the characteristics of its soil associations are varied.

FACTORS AFFECTING SOIL FORMATION IN SOUTHERN ILLINOIS SOILS

The development of soils are a result of the sum total of all biological, chemical and physical processes on parent and rock materials. The origin and nature of the parent material, climatic factors, type of vegetative cover, topography and time all contribute to a soil's unique characteristics.

For southern Illinois soils, loess, alluvium and outwash are the main parent materials (Fig. 1). Loess deposits are generally the greatest on the leeward side of major rivers or streams due to southwesterly winds. The total thickness of loess deposits vary from less than 36 inches to greater than 300 inches (Fehrenbacher et al., 1968).

Alluvium deposits occur throughout the stream valleys of Illinois, but are more extensive in southern Illinois. These soils are not strongly developed, light in color, acidic and vary from sand to clay in texture, although many characteristics are inherited by flood water sediments and deposits (Fehrenbacher et al., 1968).

Outwash deposits within Illinois were predominately developed during the Wisconsinian age. In southern Illinois, these areas are most extensive along the Wabash and Ohio Rivers, and vary in texture from gravel to clay (Fehrenbacher et al., 1968).

---

[1] Department of Plant and Soil Science, Southern Illinois University, Carbondale, IL 62901

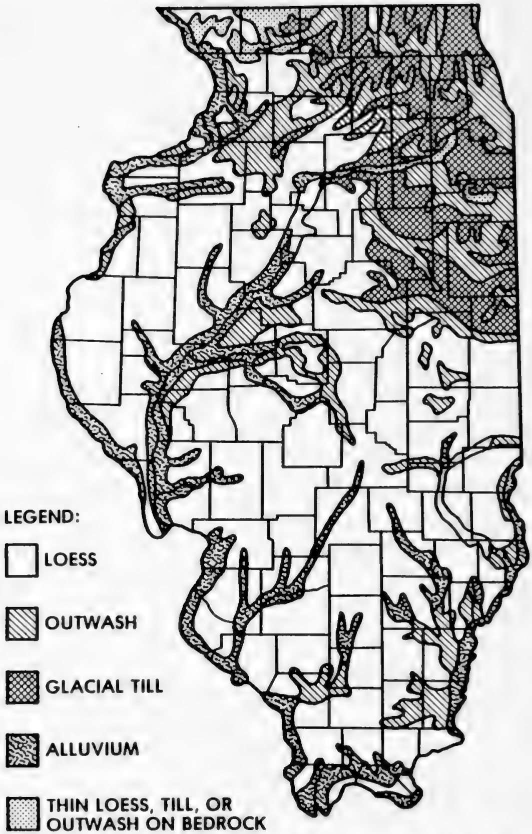


Figure 1. The extent of the primary types of soil parent materials in Illinois (after Fehrenbacher et al., 1967).

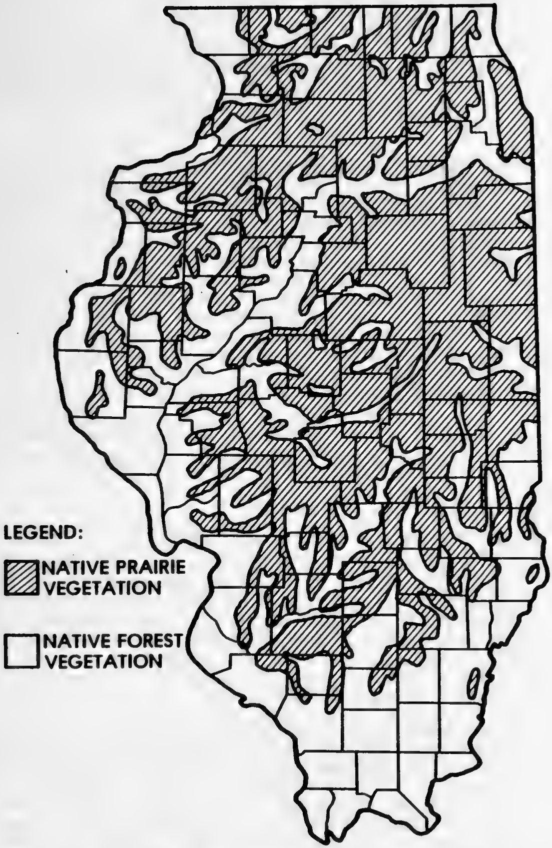


Figure 2. Native vegetation in Illinois (after Fehrenbacher et al., 1967).

Another major component affecting southern Illinois soil development was the presence of vegetative cover, primarily forest and secondarily prairie. The significance of vegetative cover in soil development is related to the input of organic matter to the soil. Soils developed under prairie vegetation are moderately dark to dark colored soils, high in organic matter content; whereas soils developed under forest vegetation are light colored and low in organic matter content. Figure 2 illustrates the distribution of grassland and forest vegetation within Illinois (Fehrenbacher et al., 1968). It is interesting to note the existence of moderately dark colored soils under forest vegetation along prairie-forest borders. The history and characteristics of these soils suggests the encroachment of the forest vegetation on the prairie (Bailey et al., 1964; Jones and Beavers, 1964).

The moisture status of any soil under any given climate is dependent upon the topography and slope. Water infiltration, runoff and erosion are affected by topography. Indirectly, the amount of water within a soil is also affected by topography or slope, and in turn, will affect the rate of the weathering of the soil and the movement of its end products. Hence, these end products usually leach out of the A horizon and reside at some variable depth within the B horizon depending on soil porosity, permeability, and/or the presence of flocculating agents. Southern Illinois soils vary from nearly level land to sloping uplands. Most of the soil associations are composed of similar soil types differing primarily in internal drainage and moisture characteristics (Fehrenbacher et al., 1968).

SOIL ASSOCIATIONS OF SOUTHERN ILLINOIS

A. UPLAND SOILS DEVELOPED UNDER FOREST VEGETATION

Alford - Goss - Baxter Soils

The Alford - Goss - Baxter soil association borders the Mississippi and Ohio River Valleys, and are characterized by loess parent material (12 to 20 ft. thick) on limestone (Alford) or loess deposits less than 10 in. thick (Goss and Baxter) on limestone at a depth of 60 in. or greater. These soils are silt loam in texture, with moderate permeability (Fehrenbacher et al., 1982).

Alford - Muren - Iva Soils

The Alford - Muren - Iva association borders the Mississippi and Wabash River Valleys, and are characterized by loess parent material greater than 60 in. thickness with calcareous deposits (5 to greater than 20 ft. thick) at or below a soil depth of 42 in. (Fehrenbacher et al., 1982). These soils are dark grayish brown in color with silt loam A horizons and silty clay loam B horizons. The permeability of these soils vary from well drained (Alford) to somewhat poorly drained (Iva). The topography also varies from flat to sloping land. Yield potentials for corn, soybeans and wheat are estimated to be 93, 33, and 40 bu/a respectively (Fehrenbacher et al., 1967).

Alford - Wellston Soils

The Alford - Wellston association borders the Mississippi and Ohio River Valleys, and have developed from thin to thick loess or loamy materials, with or without residuum on interbedded sandstone, siltstone or shale. The Alford soils are light colored soils with moderate development and drainage. Loess deposits vary from 12 to 20 ft. thick on sandstone, siltstone or shale. Wellston soils are also light colored soils with moderate development and drainage. However, for this soil series, loess deposits are thinner (20 to 40 in. thick) on acid residuum overlying sandstone, siltstone or shale at a depth of 40 to 72 in. There are no yield estimates for this soil association (Fehrenbacher et al., 1967; 1982).

Ava - Bluford - Wynoose Soils

These strongly developed soils are common throughout southern Illinois and have developed from loess deposits (1½ to 4 ft.) on Illinoian till. The surface A horizon is dark grayish brown in color with a silt loam texture. The B horizon varies in texture, silty clay loam to heavy silty clay, and usually extends into the glacial till. The moderately well drained Ava and the poorly drained Bluford soils have some evidence of fragipan development in the lower regions of the B horizon, thus restricting water movement and root penetration. The Wynoose soil has a very slowly permeable claypan present in the B horizon and drainage may be accomplished by furrows or open ditches. Fertility and erosion control are additional problems for this soil association. Applications of limestone, nitrogen, potash and phosphate have resulted in significant crop responses. Erosion control may be achieved by contouring farming, terracing, long rotations of hay or pasture, or grass waterways. Corn, soybean and wheat yields are estimated to be 67, 26, and 36 bu/a (Fehrenbacher et al., 1967).

Clinton - Keomak - Rushville Soils

This soil association occurs in southwest Illinois and occupies 2,804,600 acres or 7.9 percent of the total state acreage (Fehrenbacher et al., 1982). These soils are dark grayish brown in color with silt loam A horizons and heavy silty clay loam B horizons. The permeability of these soils vary from moderately slow (Clinton) to very slow (Rushville). Tile drainage is sometimes used to remove excess water, however a few well placed ditches function more satisfactorily. Topography is variable, ranging from level to sloping land. Erosion control is required for the sloping lands and may be accomplished via contouring, terracing, long rotations including hay or pasture, and grass waterways. The estimated yields for corn, soybeans, and wheat are 83, 28, and 32 bu/a (Fehrenbacher et al., 1967).

Fayette - Rozetta - Stronghurst Soils

These soils are predominately found in a narrow belt bordering the Mississippi River Valley. They are moderately developed soils, dark grayish in color with silt loam A horizons and silty clay loam B horizons. The texture of the parent material is silt loam. Permeability varies from well drained (Fayette) to somewhat poor drainage (Stronghurst). Corn, soybeans, and wheat yields are estimated to be 93, 31, and 39 bu/a respectively (Fehrenbacher et al., 1967, 1982).

Grantsburg - Zanesville - Wellston Soils

The Grantsburg - Zanesville - Wellston association primarily occurs in Johnson, Pope and Hardin counties, on gently sloping to very strongly sloping lands, often on narrow ridges bordered by deep ravines. These soils are light colored, moderately slow to moderately drained soils, with silt loam A horizons and silty clay loam to clay loam B horizons. The parent material for the Grantsburg series is a thin loess deposit (48 to 80 in. thick) on sandstone, siltstone and shale. Zanesville soils of this association has loess parent material (24 to 48 in. thick) on acid residuum overlying sandstone, shale and siltstone at a depth of 40 to 80 in. The Wellston series of this association, also has loess deposits (20-40 in. thick) on acid residuum overlying sandstone, shale, and siltstone at a depth of 40 to 72 in. The yield potential of the Grantsburg series for corn, soybeans and wheat is estimated to be 62, 23, and 32 bu/a respectively (Fehrenbacher et al., 1967, 1982).

Hosmer - Stoy- Weir Soils

The Hosmer - Stoy - Weir soil association are light colored, strongly developed soils developed from either loess deposits (4 to 10 ft. thick) on Illinoian till or loess deposits (7 ft. thick) on bedrock residuum. These soils occur on nearly level to very strongly sloping lands and account for 3.4 percent of the total state acreage. The A horizon is characterized by dark grayish brown color with a silt loam texture; whereas the B horizon varies in texture from a silty clay loam to a heavy silty clay loam. Permeability also varies from moderately slow to slow. The Hosmer, and to some extent the Stoy, has a fragipan in the lower region of the B horizon thus restricting water movement and root penetration. The corn, soybean and wheat yield potentials are estimated to be 76, 28, and 35 bu/a respectively (Fehrenbacher et al., 1967).

Hosmer - Zanesville - Berks Soils

The Hosmer - Zanesville - Berks association primarily occurs in extreme southern Illinois, and formed from thin to thick loess or loamy materials on interbedded sandstone, siltstone or shale (Fehrenbacher et al., 1982). The Hosmer soil series is light colored with strong development, but moderately well drained. Loess deposits, 7 to 12 ft. thick, occur on sandstone, siltstone, and shale. Zanesville soils of this association are light colored soils with moderately strong development and moderate drainage. Thin loess deposits (24 to 48 in. thick) occur on acid residuum overlying sandstone, shale and siltstone at a depth of 40 to 80 in. The Berks series are light colored, well drained soils with weak profile development. The parent material of these soils are a channery shale, siltstone, and sandstone residuum, or an acid shale, sandstone, and siltstone, at a depth of 20 to 40 in. Estimated yield for wheat is 25 bu/a (Fehrenbacher et al., 1967; 1982).

Markland - Colp - Del Rey Soils

The Markland and Colp soils of the Markland - Colp - Del Rey associations occur mainly adjacent to the Big Muddy, Ohio and the Wabash Valleys respectively. These soils are dark grayish- brown in color with silt loam A horizons and silty clay loam to clay B horizons, developed from lacustrine deposits. Markland soils are slightly acid with carbonate deposits at shallower depths (2 to 3½ ft.), whereas Colp soils tend to be more acidic. These soils are characterized by slow to very slow drainage, and ditches are required for drainage since tile drainage is inadequate. Erosion control is an additional problem due to sloping to strongly sloping lands. Contouring and terracing are difficult due to short slopes. Many of the steeper locations are only used as pasture or forest lands. Yield potential for corn, soybeans, and wheat are estimated to be 63, 26, and 33 bu/a (Fehrenbacher et al., 1967).

Martinsville - Sciotoville Soils

The Martinsville - Sciotoville soil association occurs in the Ohio and Wabash River Valleys. These soils are dark grayish-brown in color with silt loam A horizons and silty clay loam B horizons. The Martinsville soil was formed from loess or silty material less than 20 in. thick above a loamy material on calcareous glacial outwash. Limestone deposits are present at a depth of 40 in. or greater. The Sciotoville soils developed from silt loam material, 30 to 50 in. thick, on stratified micaceous silt loam to loam glacial outwash. The permeability varies from well drained to moderately slow drained soils. The topography is also variable with moderately sloping to sloping lands. The estimated yields for corn, soybeans, and wheat is 80, 26, and 34 bu/a (Fehrenbacher et al., 1967, 1982).

Oakville - Lamont - Alvin Soils

These soils mainly occur along the Wabash River Valley, but also in the Big Muddy River Valley. They are light to dark grayish-brown in color, with sandy loam to fine sandy loam A horizons and sandy loam to sandy clay loam B horizons. Oakville soils have very weak development or no B horizon to a depth of 60 in., and were formed from parent material of fine sand or loamy fine sand greater than 60 in. thick. Lamont and Alvin soils developed from sandy loams or fine sandy loams, 20 to 40 in. thick, on leached sand to loamy fine sand parent material. Lamont soils have weak B horizons 15 to 30 in. thick, while Alvin soils have moderately developed B horizons, 15 to 30 in. thick. These soils are all characterized by moderately rapid to rapid drainage on nearly level to strongly sloping lands. Major problems associated with these soils are drouthiness, low fertility, wind and water erosion. Applications of limestone, nitrogen, phosphorus, and potash are required and may be needed frequently. Wind erosion may be controlled by cover crops, although reforestation offers a better means of management. Water erosion may be controlled by the use of hay and pasture crops in long rotations. The yield potential for corn, soybeans, and wheat are estimated to be 68, 25, and 29 bu/a (Fehrenbacher et al., 1967, 1982).

St. Charles - Camden - Drury Soils

The St. Charles - Camden - Drury soil association is characterized by a dark grayish brown color with silt loam A horizons and silt loam to clay loam B horizons. These soils developed from silt loam loess material over glacial outwash. The permeability of these soils is moderate on nearly level to sloping land. The estimated yields for corn, soybeans, and wheat are 89, 33, 41 bu/a (Fehrenbacher et al., 1967).

B. BOTTOMLAND SOILS DEVELOPED UNDER FOREST VEGETATION

Haymond - Petrolia - Karnak Soils

Haymond - Petrolia - Karnak soils are characterized by acid bottomland soils developed from sandy to clayey alluvial sediments and are widely distributed over southern Illinois. This soil association accounts for 4.9 percent of the total state acreage. These soils are dark gray to grayish brown in color, with silt loam to silty clay top soils and silty clay loam to clayey subsoils. The permeability of these soils vary from very slow to moderate drainage on level to nearly level land. Haymond soils have no profile development and were formed from medium acid to medium alkaline silt loam parent material (greater than 40 in. thick) overlying silt loam deposits with sand lenses. Petrolia soils, like the Haymond series, has no profile development. These soils were developed from medium acid to mildly alkaline silty clay loam parent material, greater than 40 in. thick. Karnak soils have weak profile development, and were formed from strong to medium acid silty clay or clay parent material (45 to 60% clay), greater than 40 in. thick. Tile or open ditches supplimenting tile drainage is used to remove excess water. The yield potential for corn, soybeans, and wheat is estimated to be 85, 30, and 35 bu/a respectively (Fehrenbacher et al., 1967, 1982).

C. UPLAND SOILS DEVELOPED UNDER PRAIRIE VEGETATION

Harco - Patton - Montgomery Soils

The Harco - Patton - Montgomery association is moderately developed which primarily occur on the high terraces in the Wabash River Valley (Fehrenbacher et al., 1967). These soils are characterized by a very dark gray color, and silt loam or silty clay loam A horizons with silty clay loam B horizons. Harco and Patton soils are moderately permeable, while Montgomery soils are slowly permeable. Carbonates are found at a depth between 2 to 3½ feet. The yield potential for corn, soybeans and wheat is estimated to be 95, 35, and 40 bu/a (Fehrenbacher et al., 1967).

Herrick - Virden - Piasa Soils

This soil association is found to occur in southwestern and western Illinois. These soils developed from loess as the parent material. The topography of these soils varies from nearly level (0 to 2% slope) to sloping lands (3-7% slope), and are characterized by a moderately slow to moderate permeability. The soils are black to very dark gray or brown in color with a silty to silty clay texture. The subsoils vary from dark gray to brown in color, and a silty clay to heavy silty clay in texture. The potential yields for corn, soybeans and wheat are estimated to be 110, 35, and 45 bu/a respectively (Fehrenbacher et al., 1967).

Hoyleton - Cisne - Huey Soils

The Hoyleton - Cisne - Huey soil association is found on the uplands of south-central and southern Illinois, and occupies 4.2 percent of the total state acreage (Fehrenbacher et al., 1982). These soils have developed from loess deposits on weathered Illinoian glacial till. They are acidic soils with strong to very strong development, and gray to grayish-brown in color. These soils are also characterized by silt loam A horizons, light colored A_2 horizons, and silty clay to heavy silty clay B horizons which extend to the glacial till. The permeability of these soils vary from very slow to moderately slow thus requiring erosion control on sloping uplands. Contouring, terracing or sod crop rotations are practiced. On level areas of land, drainage is required and is achieved by shallow ditches. Drainage tile do not function satisfactorily. Mean yield potential for corn, soybeans and wheat are estimated to be 74, 28, and 35 bu/a respectively (Fehrenbacher et al., 1967).

Jasper - La Hogue - Selma Soils

Jasper - La Hogue - Selma soils are commonly found in northern and central Illinois, but are also found to occur in the Wabash River Valley. These soils are very dark gray to black in color, with loam A horizons and clay B horizons moderately developed from medium textured parent material of sand or silty sand outwash. The permeability of these soils are moderate on nearly level to moderately sloping lands. The yields for corn, soybeans, and wheat are estimated to be 93, 34, and 38 bu/a (Fehrenbacher et al., 1967).

Lorenzo - Warsaw - Wea Soils

The Carmi and Omaha soils are members of this soil association and are most common in the Wabash River Valley. These dark colored soils have moderate to weak development, derived from medium textured material on gravel, and B horizons characterized by a clay loam to gravelly clay loam texture. Non-calcarious gravel also underlies the B horizon at depths of 2 to 3½ feet. The topography of these soils vary from nearly level to moderately sloping uplands, or may be found on stream terraces. The well drained Carmi and imperfectly drained Omaha are subject to drouthiness and fertility problems. Due to the thinness of the surface soil to gravel, moisture storage capacities are low. Hence, winter wheat is a major crop since growth is completed by June before soil moisture becomes deficient. Generally crops respond to additions of limestone, and nitrogen, potash and phosphate fertilizers with moderate to moderately high yields. Estimated yields for corn, soybeans and wheat under a high level of management is 83, 31, and 38 bu/a respectively (Fehrenbacher et al., 1967).

Oconee - Cowden - Piasa Soils

Oconee - Cowden - Piasa soils are found to occur in southcentral and southwestern Illinois and occupy 1.7 percent of the total state acreage (Fehrenbacher et al., 1982). These soils have developed on loess deposits over weathered Illinoian glacial till (Fehrenbacher et al., 1967). The topography varies from nearly level (1 to 2% slope) to sloping (4 to 8% slope) land. The A_1 horizon is strongly developed and is characterized by a moderately dark gray to grayish brown color due to inherent acidity. The A_2 horizon is also grayish in color. The top soil of this soil association is classified as silty in texture, while the subsoil soil varies from a silty clay to heavy silty clay texture. Hence, the permeability of these soils range from slow to moderately slow. Piasa is a unique member of this association. It is known as a "slick spot" soil because of its high sodium content and dispersed soil structural state. Very poor drainage, difficulty in tillage and reduced crop growth are all characteristics of such soils. Drainage, erosion control and fertility are the major concerns for this association. Substantial amounts of applied limestone, potash and phosphate have secured good yields. Erosion control on the upland areas may be achieved by contouring, terracing, no-till crop rotations or grass waterways. Nearly level areas require drainage due to the slow permeability of these soils and may best be achieved via surface ditches (Fehrenbacher et al., 1967). The potential yields for corn, soybeans and wheat are rated as good, and estimated to be 96, 30, and 40 bu/a respectively (Fehrenbacher et al, 1967).

Plano - Proctor - Worthen

This soil association is most extensive in northern and central Illinois although Worthen soils are known to occur in strips along the Mississippi and Wabash River Valleys. These soils are weakly developed with a silt loam texture in both the A and B horizons. The topography varies from nearly level to moderately sloping land with moderate drainage. The estimated yields for corn, soybeans and wheat are 102, 34 and 40 bu/a (Fehrenbacher et al., 1967).

Tama - Muscatine - Sable Soils

The Tama - Muscatine - Sable soil association is most common to central Illinois. However, this soil association also occurs in a narrow belt along the Mississippi River Valley (Fehrenbacher et al., 1982). These soils are weakly developed and are characterized by silt loam A horizons and silt loam to heavy silt loam B horizons (Fehrenbacher et al., 1967). The drainage classification of these soils is moderate. The estimated yield potential for corn, soybeans and wheat are 100, 34, and 40 bu/acre respectively (Fehrenbacher et al., 1967).

D. BOTTOMLAND SOILS DEVELOPED UNDER PRAIRIE VEGETATION

Lawson - Sawmill - Darwin Soils

This soil association is a member of the bottomland soils occupying the Mississippi and Wabash River Valleys (Fehrenbacher et al., 1967, 1982). These soils are characterized by a very dark gray to black color, with silt loam, silty clay loam, or silty clay A horizons, and silt loam, silty clay loam or silty clay to clayey B horizons. The topography varies from nearly level to gently sloping land with slow to moderate drainage. The soil reaction also varies from slightly acidic to neutral, thus requiring some additions of limestone, phosphate and potash. The estimated yields for corn, soybeans and wheat are 96, 33, and 37 bu/a (Fehrenbacher et al., 1967).

References

Bailey, L. W., R. T. Odell, and W. R. Boggess. 1964. Properties of selected soils developed near the forest-prairie border in east-central Illinois. Soil Sci. Soc. Am. Proc. 28: 257-267.

Fehrenbacher, J. B., J. D. Alexander, I. J. Jansen, R. A. Pope, M. A. Flock, W. F. Andrews, L. J. Bushue, J. W. Scott, and E. E. Voss. 1982. General soil map of Illinois. Ill. Agr. Exp. Sta. in coop. with Soil Conservation Service, USDA. Univ. of Ill., Urbana-Champaign.

Fehrenbacker, J. B., R. T. Hendrickson, J. D. Alexander, and W. R. Oschwald. 1971. Productivity indexes of soil associations in Illinois. Univ. of Ill. Col. Ag. Coop. Exten. Ser. Circular 1041.

Fehrenbacher, J. B., B. W. Ray, and J. D. Alexander. 1968. Illinois soils and factors in their development. Symposium on the Quaternary of Illinois. Univ. Ill. Special Pub. No. 14.

Fehrenbacher, J. B., G. O. Walker, and H. L. Wascher. 1967. Soils of Illinois. Ill. Agr. Exp. Sta. in coop. with Soil Conservation Service, USDA. Ill. Agr. Exp. Sta. Bul. 725.

Jones, R. L., and A. H. Beavers. 1964. Variation of opal phytolith content among some great soil groups in Illinois. Soil Sci. Soc. Am. Proc. 28:711-712.

OUR CONTRIBUTORS:

DR. GEORGE H. FRAUNFELTER received his Ph.D. in Geology from the University of Missouri at Columbia, with a specialization in Invertebrate Paleontology. Middle Paleozoic invertebrate fossils have been his principal research interest. Currently, he is Professor of Geology at Southern Illinois University, Carbondale.

MARK MOHLENBROCK received his B.S. in Botany at Southern Illinois University. He is currently working toward his Ph.D. in Botany at Arizona State University. Cactaceae of Baja California is his major area of work. Currently, he is serving as Editor of this journal.

DR. STANLEY HARRIS, JR. is an Emeritus Professor of Geology at Southern Illinois University, Carbondale. He is coauthor of Exploring the Land and Rocks of Southern Illinois.

DR. B. KLUBEK is Assistant Professor of Soil Microbiology in the Department of Plant and Soil Science at Southern Illinois University, Carbondale. After receiving his Ph.D. from Utah State University, he became a research associate professor in the Department of Soil Science at North Carolina State University. Dr. Klubek has been in charge of the introductory soil science and soil microbiology courses at SIU-C since 1978.

DR. J. JONES is Professor of soil physics in the Department of Plant and Soil Science at Southern Illinois University, Carbondale. He received his Ph.D. from Ohio State University, and has been teaching soil physics, soil morphology and classification, and soil and water conservation at SIU since 1964.

DR. E. C. VARSA is Assistant Professor of Soil Fertility in the Department of Plant and Soil Science at Southern Illinois University, Carbondale. After receiving his Ph.D. from Michigan State University in 1970, he has been active in teaching soil fertility and soil management, and research on nitrogen fertilizer management.

IN OUR NEXT ISSUE . . .

ERIGENIA 3 will be the first of the Society's special issues to be published annually on the UPDATE OF THE ILLINOIS FLORA. These issues are designed to update the 1978 publication, Distribution of Illinois Vascular Plants ("Dot Map Book") by R. Mohlenbrock and D. Ladd.

HELP THE SOCIETY GROW . . . TELL A FRIEND

GUIDELINES FOR MANUSCRIPTS SUBMITTED TO ERIGENIA FOR PUBLICATION

Manuscripts conforming to one of the selected themes (see ERIGENIA 1, page 1) are accepted free of charge. Manuscripts should by typed single-spaced with 1½ inch margins on all sides. Paragraphs should be double-spaced. Paragraphs are not to be indented. Pages are to be numbered, but in pencil only. Tables and figures should be numbered consecutively and an indication should be made as to where the author would like them placed. Either "Literature Cited" of "References" may be used. Use of the Harvard style for citing literature is recommended. If at all possible, please use an IBM Selectric typewriter and indicate which element was used as the editor can correct the copy much easier this way. Illustrations and maps are printed at no cost to the author. Margins of illustrations and maps are also to be 1½ inches on all sides. Four-by-five inch black and white photos are also accepted (not too contrasty please). Cost of each photo to author is $5.00. Two copies of each manuscript must be included. Title and author's name should be typed on the first page of the manuscript in a manner as found in ERIGENIA 2. A one paragraph biographical sketch of the author must also accompany manuscripts submitted.

Each manuscript received by the editor will be sent out for review to one (or more) of the members of the editorial review board. Authors will be notified of any revisions judged necessary and will, if necessary, return the manuscript to the author for revision. The editorial staff reserves the right to reject any manuscript which does not comply to the above guidelines.

As a special service, floristic studies and related topics of areas in Illinois and the states which border Illinois will be accepted for publication. Guidelines are as those for above manuscripts. The author of the study shall be required to cover the printing cost by remitting $5.00 per page of manuscript (including illustration and map pages). The membership shall receive these special issues at no additional cost.

If return of materials submitted for publication is requested, a self addressed stamped envelope is required and should accompany the manuscript. One copy of the manuscript will be retained by the Society.

Copy ready manuscripts and/or questions concerning publication should be sent to:

Mark W. Mohlenbrock
Editor - ERIGENIA
Department of Botany and Microbiology
Arizona State University
Tempe, Arizona 85287

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

department of botany, southern illinois university

carbondale, illinois 62901

No. 3

Illinois Flora Update 1983

3

ERIGENIA BULBOSA

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

NUMBER 3 ISSUED: DECEMBER 1983

CONTENTS: ILLINOIS FLORA UPDATE

The SINPS is dedicated to the preservation, conservation, and study of the native plants and vegetation of southern Illinois.

Membership includes subscription to ERIGENIA as well as to the quarterly newsletter THE HARBINGER. ERIGENIA, the official journal of the Southern Illinois Native Plant Society, is published occasionally by the Society. Single copies of this issue may be purchased for $4.50 (including postage). For current subscription rates or information concerning the Society write:

So. Ill. Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, IL 62901

Make checks payable to S.I.N.P.S.

TO CONTRIBUTE: See inside back cover for guidelines.

In accordance with our original plan to devote one issue of Erigenia each year to the Illinois flora, we are pleased that Erigenia 3 contains three articles that add to the continuing amount of information being accumulated on the Illinois flora. The leadoff article provides a county-by-county update of new records for the Illinois flora that have been verified through the end of 1980. The records supplement those found in Mohlenbrock and Ladd's 1978 atlas of Illinois plants entitled Distribution of Illinois Vascular Plants. New records verified during 1981, 1982, and 1983 will be recorded in one of Erigenia's issues next year.

This issue's second article is devoted to new taxa of ferns for Illinois and is the second fern update to be published since Mohlenbrock's Ferns of Illinois appeared in 1967. Since the format for the fern update series follows the original publication, there are detailed descriptions and illustrations provided for the thirteen new ferns covered by this article.

One of the most difficult and certainly most confusing and often controversial problems with keeping abreast of a flora is the nomenclature of the taxa that comprise the flora. Since Mohlenbrock's publication in 1975, Guide to the Vascular Flora of Illinois, two major publications have appeared in an attempt to standardize the scientific names of North American vascular plants. The third article in Erigenia 3 summarizes the nomenclatural difference of the Illinois monocots among the Guide to the Vascular Flora of Illinois and the two new "standards." The dicots will be treated in similar fashion in an Erigenia issue next year.

Please note that in our book advertisements included in this issue, Distribution of Illinois Vascular Plants, Ferns of Illinois, and Guide to the Vascular Flora of Illinois are available at a special price from SINPS.

Note: The trinomials that appear in the list below are without the designation of var. or ssp. since these designations were also omitted from the maps in Mohlenbrock & Ladd (1978) due to the limited space available next to each map. To ascertain whether the trinomial refers to a variety or a subspecies, consult the Phylogenetic List of Illinois Vascular Plants that begins on page 258 of Mohlenbrock & Ladd (1978).

NEW DISTRIBUTION DATA FOR ILLINOIS VASCULAR PLANTS

Douglas M. Ladd and Robert H. Mohlenbrock

Abstract

A comprehensive summary of new county distribution data for Illinois vascular plants since the publication of Mohlenbrock and Ladd (1978) until the end of 1980 is presented, based on field and herbarium research. New county records (2,327) of previously reported taxa as well as 29 new taxa for the state are included in the paper. Six taxa are deleted from the Illinois flora, and several distribution and nomenclature revisions are presented.

Introduction

Intensive field and herbarium research since the publication of Mohlenbrock and Ladd (1978) has resulted in considerable Illinois vascular flora distribution data. It is the aim of this work to update the county by county distributions presented in Mohlenbrock and Ladd (1978). It is based on collections made through 1980. The following discussion is divided into two sections: a listing of additions and revisions to the distribution maps presented in our book, and a list of taxa new to Illinois since its publication. Following the previously established format, all listings in each section are alphabetized generically. Unless otherwise indicated, species concepts and nomenclature follow Mohlenbrock and Ladd (1978). All records and revisions listed herein have been confirmed by the authors. It should be emphasized that the distribution records reiterated in Henry, Scott, and Shildneck (1978) solely on the basis of previously published records were omitted because no confirming specimens could be located. Many records reported since 1978 have been found to be erroneous and are not included here.

Additional Distribution Records for Mapped Taxa

Acalypha gracilens: DEWITT, EFFINGHAM, MCLEAN, PIATT, SHELBY. Acalypha ostryaefolia: CHRISTIAN, JOHNSON. Acalypha virginica: MOULTRIE. Acer barbatum: JOHNSON. Acer nigrum: KANE, POPE. Acer platanoides: IROQUOIS, KENDALL, LAKE. Achillea millefolium lanulosa: KANE. Acorus calamus: IROQUOIS, MASSAC, MOULTRIE. Aesculus glabra: DEWITT, LAKE, SHELBY. Aesculus hippocastanum: LAKE. Agastache nepetoides: MASSAC, VERMILION. Agastache scrophulariaefolia: FAYETTE. Agrimonia gryposepala: JASPER. Agrimonia parviflora: CARROLL, DUPAGE, KNOX. Agrimonia rostellata: VERMILION, WILL. Agropyron repens: ALEXANDER, FAYETTE, GALLATIN. Agropyron smithii: GRUNDY, KANKAKEE, VERMILION. Agrostis alba palustris: DEKALB, WILL. Agrostis elliottiana: UNION. Agrostis hyemalis: DEKALB, IROQUOIS, KANKAKEE, KNOX. Agrostis perennans: EFFINGHAM, FAYETTE, KANKAKEE, LAKE. Agrostis scabra: JACKSON. Ailanthus altissima: FULTON, PEORIA. Ajuga reptans: KANE, WILL. Albizia julibrissin: ALEXANDER, PULASKI, RANDOLPH, ST. CLAIR, WILLIAMSON. Aletris farinosa: GRUNDY. Alisma plantago-aquatica americana: CARROLL, HENDERSON, HENRY. Alisma subcordatum: JODAVIESS, KNOX. Alliaria officinalis: DEWITT, MASON. Allium ampeloprasum atroviolaceum: JACKSON. Allium cernuum: BOONE. Allium mutabile: RANDOLPH. Allium sativum: GRUNDY. Alnus glutinosa: JACKSON, VERMILION. Alopecurus aequalis: KENDALL. Alopecurus carolinianus: DEWITT, FAYETTE, GRUNDY, HAMILTON, JEFFERSON, LOGAN, SALINE, VERMILION. Alopecurus pratensis: GRUNDY, JACKSON, MCHENRY, WILL. Althaea rosea: IROQUOIS, KNOX. Amaranthus albus: GALLATIN, JOHNSON, SHELBY. Amaranthus ambigens: IROQUOIS. Amaranthus cruentus: GRUNDY, IROQUOIS. Amaranthus graecizans: DEWITT, FAYETTE, IROQUOIS, JOHNSON, SHELBY, WILLIAMSON. Amaranthus hybridus: CHRISTIAN, FAYETTE, IROQUOIS, KANE, MOULTRIE, SALINE. Amaranthus powellii: IROQUOIS, JACKSON, PEORIA. Amaranthus retroflexus: CHRISTIAN, FULTON, IROQUOIS, VERMILION. Amaranthus spinosus: CHRISTIAN, DEWITT, PIATT, SHELBY. Amaranthus tamariscinus: DEWITT, FAYETTE, MOULTRIE, SANGAMON, SHELBY, WILL. Ambrosia psilostachya: DUPAGE. Amelanchier arborea: FAYETTE, KANE, KNOX, MOULTRIE. Amelanchier humilis: KANE. Amelanchier laevis: GRUNDY. Amorpha canescens: BOONE, LAKE, MCHENRY. Ampelopsis cordata: WILLIAMSON. Amphicarpa bracteata: KNOX, WILLIAMSON. Amphicarpa bracteata comosa: KNOX, UNION. Anagallis arvensis: FRANKLIN, JERSEY, LAKE, SHELBY. Andropogon virginicus: CHRISTIAN, MACON, MOULTRIE, SHELBY, VERMILION. Androsace occidentalis: GREENE, IROQUOIS. Anemonella thalictroides: SHELBY. Angelica atropurpurea: IROQUOIS. Antennaria neglecta: EFFINGHAM, FULTON, SHELBY, WILLIAMSON. Antennaria neglecta attenuata: KENDALL. Antennaria plantaginifolia: KNOX. Anthemis tinctoria: KENDALL. Aplectrum hyemale: MOULTRIE. Apocynum androsaemifolium: FULTON, MARION, VERMILION. Apocynum sibiricum: UNION. Aquilegia canadensis: WILL. Arabis canadensis: WILL. Arabis hirsuta pycnocarpa: DUPAGE, GRUNDY. Arabis lyrata: CARROLL, LEE, OGLE, WHITESIDE; delete ALEXANDER, MASSAC, MONROE, ST. CLAIR, UNION (clerical error). Arabis shortii: DEWITT, MOULTRIE, SHELBY. Aralia racemosa: DEKALB, MASSAC, RANDOLPH, VERMILION, WILL.

Arctium lappa: GRUNDY, WILL. Arctium minus: ALEXANDER, FULTON, GRUNDY, KNOX, MASON, MASSAC. Arctostaphylos uva-ursi coactilis: no dot in KANKAKEE (printer's error). Arenaria lateriflora: KNOX. Arenaria serpyllifolia: FAYETTE, IROQUOIS, WILLIAMSON. Aristida basiramea: CARROLL, KANKAKEE, WINNEBAGO. Aristida curtissii: RANDOLPH. Aristida dichotoma: FAYETTE, GRUNDY. Aristida longespica: MONTGOMERY, MOULTRIE. Aristida oligantha: EFFINGHAM, FAYETTE, IROQUOIS, SHELBY, WARREN, WOODFORD. Aristida purpurascens: GRUNDY, IROQUOIS, SALINE. Armoracia aquatica: GRUNDY, JOHNSON, MACON, VERMILION. Aronia prunifolia: LAKE. Arrhenatherum elatius: JACKSON, KANE. Artemisia absinthium: DUPAGE, JACKSON. Artemisia annua: MONROE. Artemisia ludoviciana: KANE. Arundinaria gigantea: GREENE. Arundo donax: ALEXANDER. Asclepias amplexicaulis: UNION. Asclepias hirtella: DEKALB. Asclepias perennis: WILLIAMSON. Asclepias purpurascens: KNOX. Asclepias viridiflora: KENDALL, MOULTRIE. Asparagus officinalis: FULTON, IROQUOIS, KNOX. Asplenium platyneuron: DEWITT, IROQUOIS, VERMILION. Asplenium resiliens: ALEXANDER. Asplenium X ebenoides: UNION. Asplenium trichomanes X pinnatifidum is now Asplenium X herbwagneri Taylor & Mohlenbr., see Taylor and Mohlenbrock (1977). Aster anomalus: BOND, JOHNSON. Aster azureus: KNOX, MCLEAN. Aster dumosus: JACKSON. Aster ericoides: BUREAU, FAYETTE. Aster junciformis: KANE. Aster laevis: KNOX. Aster lateriflorus: CHRISTIAN, EDGAR, EFFINGHAM. Aster linearifolius: IROQUOIS. Aster ontarionis: DEKALB, DUPAGE, FAYETTE. Aster praealtus: KANE. Aster prenanthoides: KENDALL. Aster puniceus lucidulus: DEWITT, VERMILION. Aster sagittifolius: KNOX, PULASKI, SHELBY. Aster schreberi: KNOX. Aster shortii: EDGAR. Aster simplex: CHRISTIAN, DEWITT. Aster turbinellus: MOULTRIE. Aster undulatus: POPE. Aster vimineus: MONROE, RANDOLPH. Astragalus canadensis: FAYETTE, IROQUOIS. Athyrium felix-femina rubellum: DEWITT. Athyrium pycnocarpon: KANE. Atriplex patula: DEWITT, FAYETTE, VERMILION. Avena fatua: WILL. Avena sativa: CARROLL, IROQUOIS, LEE, LIVINGSTON, MARSHALL, MONTGOMERY, STARK, WOODFORD. Azolla mexicana: CARROLL, POPE, WHITESIDE.

Bacopa rotundifolia: FAYETTE. Baptisia australis: COOK, DUPAGE. Baptisia minor: DUPAGE. Barbarea vulgaris arcuata: DEWITT, MOULTRIE. Bartonia virginica: RANDOLPH. Berteroa incana: WINNEBAGO. Berula pusilla: COOK. Betula populifolia: KANE, MCHENRY. Bidens aristosa retrorsa: KNOX. Bidens bipinnata: EFFINGHAM, IROQUOIS, PEORIA. Bidens comosa: CHRISTIAN, FAYETTE, JACKSON. Bidens connata: MASSAC. Bidens coronata: DEWITT. Bidens dioscoidea: MCDONOUGH. Bidens vulgata: FAYETTE, MASSAC, VERMILION. Blephilia ciliata: IROQUOIS. Blephilia hirsuta: MASSAC. Boehmeria cylindrica: KNOX. Boehmeria cylindrica drummondiana: DUPAGE, KANE, MCHENRY. Boltonia asteroides: DEKALB, KNOX. Bothriochloa saccharoides: CLARK. Botrychium biternatum: UNION. Botrychium dissectum: EDGAR, EFFINGHAM, KANE, MASSAC, RICHLAND, VERMILION. Botrychium dissectum obliqum: EFFINGHAM, FAYETTE, FULTON, KENDALL, KNOX, PEORIA. Botrychium simplex: LEE. Bouteloua curtipendula: IROQUOIS, PERRY, VERMILION. Bouteloua gracilis: HENRY. Brachyelytrum erectum: BROWN, IROQUOIS, JEFFERSON, JERSEY, KENDALL, LASALLE, PUTNAM, WASHINGTON. Brassica hirta: IROQUOIS. Brassica juncea: JACKSON, KENDALL. Brassica kaber pinnatifida: RANDOLPH. Brickellia eupatorioides: CRAWFORD, EDGAR. Bromus arvensis: KNOX. Bromus ciliatus: JASPER, MASON. Bromus commutatus: BROWN, BUREAU, DEWITT, EFFINGHAM, FULTON, KNOX, LIVINGSTON, ROCK ISLAND, WARREN, WHITE. Bromus japonicus: CALHOUN, CARROLL, CLAY, CLINTON, CRAWFORD, EDWARDS, EFFINGHAM, GREENE, IROQUOIS, JEFFERSON, MADISON, MARION, MASON, MERCER, RICHLAND, ST. CLAIR, SALINE, SCHUYLER, SHELBY, WABASH. Bromus kalmii: CARROLL. Bromus purgans: FAYETTE, IROQUOIS, JASPER. Bromus racemosus: FRANKLIN. Bromus secalinus: IROQUOIS. Buchloe dactyloides: KNOX, LAWRENCE, WILL. Bulbostylis capillaris: UNION, WILLIAMSON. Bumelia lanuginosa oblongifolia: HARDIN, ST. CLAIR.

Cacalia atriplicifolia: DEKALB, DUPAGE, MASSAC. Cacalia muhlenbergii: MASSAC. Cacalia tuberosa: KENDALL, MONTOGOMERY. Calamagrostis canadensis: BOND, BROWN, CARROLL, LASALLE, WARREN. Calamagrostis inexpansa brevior: DUPAGE, KANE. Calamovilfa longifolia: BUREAU, TAZEWELL. Callitriche heterophylla: DUPAGE, MASSAC. Caltha palustris: DEWITT, JACKSON. Calystegia sepium americana: BUREAU, CARROLL, CRAWFORD, CUMBERLAND, FAYETTE, LEE, MASSAC, PUTNAM, SCOTT, SHELBY, WASHINGTON. Calystegia spithamea: KNOX, MACON, SCHUYLER. Campanula americana: JASPER, KNOX. Campsis radicans: DUPAGE, KNOX. Caragana arborescens: PERRY. Cardamine bulbosa: KNOX, SHELBY, WAYNE, WHITESIDE. Cardamine hirsuta: MASSAC. Cardamine parviflora arenicola: KANKAKEE. Cardamine pensylvanica: KNOX. Carduus nutans: MASON. Carex albolutescens: BOONE, GRUNDY. Carex amphibola: KANE, VERMILION. Carex annectens: FULTON, IROQUOIS, VERMILION. Carex annectens xanthocarpa: KANE. Carex artitecta: CHRISTIAN, DEWITT, FAYETTE, FULTON, KNOX, SANGAMON, VERMILION. Carex bebbii: VERMILION. Carex bicknellii: FULTON. Carex brevior: IROQUOIS, KNOX. Carex bromoides: DUPAGE, VERMILION. Carex bushii: UNION. Carex careyana: JOHNSON. Carex cephalophora: KNOX. Carex communis: VERMILION. Carex comosa: JOHNSON. Carex conjuncta: CASS, FAYETTE, JACKSON, KNOX, VERMILION. Carex conoidea: GRUNDY. Carex crinita: DUPAGE. Carex crus-corvi: FAYETTE. Carex davisii: DUPAGE, EFFINGHAM, KNOX. Carex digitalis: SALINE, UNION. Carex emoryi: IROQUOIS. Carex frankii: CHRISTIAN. Carex glaucodea: VERMILION. Carex granularis: FULTON, IROQUOIS, KNOX. Carex gravida: UNION. Carex grisea: IROQUOIS. Carex haydenii: DUPAGE, LAKE. Carex hitchcockiana: FAYETTE, VERMILION. Carex hystricina: FAYETTE, GRUNDY, KNOX. Carex interior: VERMILION. Carex jamesii: FAYETTE, WILLIAMSON. Carex lacustris: DUPAGE, FAYETTE. Carex laevivaginata: LAKE, VERMILION. Carex lanuginosa: EFFINGHAM, FULTON. Carex laxiflora: JACKSON. Carex leavenworthii: DUPAGE, KNOX, VERMILION, WILLIAMSON. Carex leptalea: FAYETTE. Carex lupuliformis: DEKALB. Carex lurida: JOHNSON. Carex meadii: EFFINGHAM, KANE. Carex molesta: EFFINGHAM. Carex muskinguamensis: KENDALL, RANDOLPH, ST. CLAIR. Carex normalis: FULTON, KNOX. Carex pensylvanica: CHRISTIAN, MOULTRIE, SANGAMON. Carex physorhyncha: JACKSON. Carex praegracilis: COOK. Carex prairea: COOK, KANE. Carex retroflexa: MACON. Carex retrorsa: KANE. Carex richardsonii: COOK, KANE, MCHENRY. Carex rosea: KNOX. Carex rostrata utriculata: DUPAGE. Carex sartwellii: KANE. Carex scoparia: DUPAGE, UNION. Carex socialis: delete JACKSON (misidentification). Carex sparganioides: JOHNSON. Carex spicata: delete CHAMPAIGN; previous reports are based upon a misidentification (C. spicata is not presently known from Illinois). Carex squarrosa: LAKE. Carex stipata: DEWITT, KNOX. Carex striatula: JACKSON. Carex suberecta: CHRISTIAN, DUPAGE. Carex substricta: DUPAGE, KANE. Carex swanii: FAYETTE. Carex tenera: KENDALL. Carex texensis: JOHNSON. Carex tribuloides: IROQUOIS, KNOX. Carex trichocarpa: GRUNDY, KENDALL. Carex tuckermanii: DUPAGE. Carex umbellata: CHRISTIAN, DEWITT, FAYETTE, MOULTRIE, SANGAMON, SHELBY. Carum carvi: WILL. Carya aquatica: JACKSON. Carya laciniosa: SHELBY. Carya tomentosa: VERMILION. Cassia hebecarpa: DUPAGE. Cassia marilandica: BUREAU. Cassia tora: COOK. Castanea mollissima: JACKSON. Castilleja coccinea: FAYETTE, KNOX. Castilleja sessiliflora: STEPHENSON. Catalpa speciosa: ST. CLAIR, WILL, WILLIAMSON. Caulophyllum thalictroides: FAYETTE. Ceanothus americanus: FULTON, JASPER. Celastrus orbiculatus: LAKE. Celastrus scandens: KNOX. Cenchrus longispinus: EDWARDS, EFFINGHAM, KNOX, MERCER, WILLIAMSON, WOODFORD. Centaurea cyanus: MASSAC, WILLIAMSON. Centaurea diffusa: DUPAGE. Centaurea jacea: KANE, LAKE. Centaurea maculosa: FAYETTE, POPE. Centaurea nigra: KANE. Centaurea repens: WILLIAMSON. Cerastium brachypodum: BOONE, DEKALB. Cerastium viscosum: FRANKLIN, FULTON, VERMILION, WILLIAMSON. Ceratophyllum echinatum: JACKSON. Chaerophyllum procumbens: DEKALB, DEWITT, FULTON, KNOX. Chamaesyce maculata: MASON. Chelidonium majus: CARROLL. Chelone glabra: DEWITT. Chenopodium ambrosioides: KANE. Chenopodium gigantospermum: KNOX, VERMILION. Chenopodium pallescens: JACKSON. Chenopodium standleyanum: DEWITT, FULTON, MOULTRIE. Chloris verticillata: ADAMS, IROQUOIS. Chrysanthemum leucanthemum: IROQUOIS, KNOX. Cimicifuga racemosa: COOK, KENDALL. Cimicifuga rubifolia: GALLATIN, JOHNSON. Cinna arundinacea: STEPHENSON. Circaea quadrisulcata canadensis: COOK. Cirsium arvense: CARROLL, FULTON. Citrullus vulgaris: CALHOUN, LAWRENCE, MASSAC, PULASKI, WHITE. Cleome spinosa: map for this species should be combined with C. hassleriana. Collinsia verna: IROQUOIS. Collinsonia canadensis: JOHNSON. Comandra richardsiana: IROQUOIS, KNOX. Commelina communis: KNOX. Conium maculatum: ALEXANDER, WILLIAMSON. Conopholis americana: BUREAU. Convallaria majalis: IROQUOIS. Convolvulus arvensis: CALHOUN, MASSAC. Corallorhiza odontorhiza: LAKE, RANDOLPH. Coreopsis palmata: WILLIAMSON. Coreopsis tinctoria: WILL. Coreopsis tripteris: WILLIAMSON. Cornus drummondii: IROQUOIS. Cornus foemina: JASPER. Cornus racemosa: EFFINGHAM. Cornus stolonifera: KENDALL, SALINE. Coronilla varia: IROQUOIS, JERSEY, KNOX, LAKE. Corydalis aurea: KANKAKEE. Corydalis halei: POPE. Corydalis micrantha: KNOX. Crataegus calpodendron: DUPAGE, KANE, MACON, RANDOLPH. Crataegus crus-galli: BOONE, DEWITT, FULTON, RANDOLPH. Crataegus engelmannii: RANDOLPH, WILLIAMSON. Crataegus holmesiana: KANE. Crataegus margaretta: KENDALL. Crataegus punctata: FULTON. Crataegus succulenta: KENDALL. Crataegus viridis: RANDOLPH. Crotalaria sagittalis: IROQUOIS. Croton capitatus: KANE. Croton glandulosus septentrionalis: IROQUOIS, KNOX. Crotonopsis elliptica: MASSAC. Crypsis schoenoides: MONROE, WILL. Cucumis sativus: HANCOCK. Cucurbita foetidissima: CHRISTIAN, TAZEWELL. Cucurbita pepo ovifera: CALHOUN, LAWRENCE, PULASKI. Cuscuta cephalanthi: COOK. Cuscuta coryla: JACKSON. Cuscuta gronvii: KENDALL. Cycloloma atriplicifolia: IROQUOIS. Cynodon dactylon: EDWARDS, GALLATIN. Cynoglossum virginianum: VERMILION. Cyperus acuminatus: UNION. Cyperus densicaespitosus: JACKSON. Cyperus diandrus: COOK, DUPAGE, KANE, KANKAKEE, LAKE, WOODFORD. Cyperus erythrorhizos: DEKALB. Cyperus ferruginescens: DEKALB, RANDOLPH, UNION (CRAWFORD should be fully dotted). Cyperus filiculmis: CARROLL. Cyperus filiculmis macilentus: ADAMS, WILLIAMSON. Cyperus grayioides: JERSEY, MONTGOMERY, PEORIA. Cyperus ovularis: FULTON, MENARD, MONTGOMERY, MORGAN, PIKE, SANGAMON, SCOTT. Cyperus rivularis: FULTON, HENDERSON, UNION. Cyperus schweinitzii: KANE. Cystopteris fragilis mackayi: CARROLL.

Danthonia spicata: ADAMS, BOONE, BROWN, COOK, DEKALB, DUPAGE, GRUNDY, IROQUOIS, JASPER, JODAVIESS, KANE, KENDALL, LAKE, LASALLE, MCDONOUGH, MCHENRY, OGLE, PEORIA, STARK, TAZEWELL, WAYNE, WILL, WINNEBAGO. Datura innoxia: CASS, SCOTT. Datura stramonium: FULTON, KNOX, MASON. Delphinium ajacis: FRANKLIN. Delphinium consolida: COOK, HENDERSON, MARION. Delphinium tricorne: SHELBY. Dennstaedtia punctilobula: OGLE. Dentaria laciniata: CLAY. Descurania sophia: KNOX. Desmodium canadense: BOND. Desmodium canescens: FULTON, VERMILION. Desmodium ciliare: BOND, EFFINGHAM. Desmodium cuspidatum: KNOX. Desmodium cuspidatum longifolium: KANKAKEE, KENDALL, WILL. Desmodium marilandicum: FAYETTE, VERMILION. Desmodium paniculatum: KENDALL, WILL. Dianthus armeria: IROQUOIS, KNOX, MASSAC. Diarrhena americana obovata: BROWN, KNOX. Dicentra canadensis: SHELBY. Diervilla lonicera: KANE. Digitaria filiformis: JACKSON. Digitaria ischaemum: BOND, BROWN, CARROLL, CLINTON, COOK, EFFINGHAM, GREENE, KNOX, LASALLE, LEE, LIVINGSTON, MACOUPIN, MERCER, MONROE, PIKE, ROCK ISLAND, WABASH, WARREN, WHITESIDE. Diodia teres: WILL. Dioscorea quaternata: JASPER, MARION. Diospyros virginiana: MENARD. Dipsacus laciniatus: IROQUOIS, JOHNSON, KENDALL, MCLEAN. Dirca palustris: KANKAKEE. Distichlis stricta: BOONE. Dodecatheon amethystinum: CALHOUN, JERSEY. Dodecatheon meadia: EDWARDS, FRANKLIN. Draba brachycarpa: CHRISTIAN. Draba cuneifolia: MADISON. Draba cuneifolia foliosa: RANDOLPH; delete MONROE (locality error). Draba verna: GRUNDY, IROQUOIS, VERMILION. Dryopteris carthusiana: DUPAGE, HENRY. Dryopteris cristata: HENRY, KENDALL. Dryopteris goldiana: DUPAGE. Duchesnea indica: KANE, LAKE. Dulichium arundinaceum: HANCOCK, HENDERSON.

Echinacea pallida: KNOX. Echinacea purpurea: JASPER. Echinochloa colonum: JACKSON. Echinochloa walteri: MARSHALL, PIKE. Echinocystis lobata: BUREAU, IROQUOIS, WOODFORD. Echinodorus berteroi lanceolata: KNOX, LAWRENCE. Eclipta alba: DUPAGE. Elaeagnus angustifolia: ADAMS, FULTON, MENARD. Elaeagnus umbellata: JACKSON, RANDOLPH. Eleocharis elliptica: KANE. Eleocharis erythropoda: JACKSON, KNOX, MCHENRY. Eleocharis intermedia: misplaced dot should be in KANE. Eleocharis obtusa: DEKALB, KANE, KNOX. Eleocharis obtusa detonsa: VERMILION. Eleocharis obtusa ovata: COOK, DUPAGE, GRUNDY, KENDALL, LAKE. Eleocharis olivacea: LAKE. Eleocharis palustris: GRUNDY, KENDALL, WOODFORD. Eleocharis parvula: EFFINGHAM. Eleocharis rostellata: COOK, KENDALL. Eleusine indica: BOND, CARROLL, IROQUOIS, MARSHALL, WHITESIDE. Ellisia nyctelea: CLAY, KNOX, MADISON, RANDOLPH. Elymus riparius: BOONE, BUREAU, EDGAR, FAYETTE, POPE, VERMILION. Equisetum fluviatile: DEKALB, HANCOCK, JODAVIESS. Equisetum laevigatum: EDWARDS, JASPER, SCHUYLER. Equisetum variegatum: KENDALL. Eragrostis capillaris: CRAWFORD, MORGAN. Eragrostis frankii: ADAMS, BROWN, BUREAU, CALHOUN, CLINTON, GALLATIN, LAWRENCE, MADISON, PIKE, RANDOLPH. Eragrostis hypnoides: CLAY, MARSHALL, SHELBY, WARREN. Eragrostis poaeoides: IROQUOIS. Eragrostis reptans: RANDOLPH. Eragrostis trichodes: WHITESIDE. Eragrostis trichodes pilifera: DOUGLAS, HENRY, JOHNSON, MASSAC. SCOTT. Erechtites hieracifolia: EFFINGHAM, RANDOLPH. Erianthus alopecuroides: GALLATIN; delete FRANKLIN (misidentification). Erianthus ravennae: ROCK ISLAND. Erigenia bulbosa: FAYETTE. Erigeron divaricatus: CHRISTIAN. Erigeron pulchellus: JOHNSON, KNOX. Eriochloa contracta: EDWARDS, RANDOLPH, WHITE. Erucastrum gallicum: WILL. Erysimum cheiranthoides: KANE. Erysimum repandum: CHRISTIAN. Erythronium americanum: DEWITT, FAYETTE, VERMILION. Euonymus alatus: KANE, LAKE, WILL. Euonymus americanus: JACKSON. Euonymus europaeus: DUPAGE. Eupatorium maculatum: DEWITT. Eupatorium sessilifolium: MACON. Euphorbia cyparissias: CARROLL, EFFINGHAM, IROQUOIS, KNOX. Euphorbia esula: KNOX. Euphorbia helioscopia: UNION. Euphorbia marginata: DEKALB, FULTON.

Fagopyrum esculentum: ALEXANDER, RANDOLPH. Festuca obtusa: CARROLL, CLINTON. Festuca ovina duriuscula: UNION. Festuca paradoxa: JASPER, JEFFERSON, RICHLAND. Festuca rubra: MORGAN, VERMILION. Fimbristylis annua: ALEXANDER. Fimbristylis autumnalis: HANCOCK, ST. CLAIR. Floerkea proserpinacoides: IROQUOIS, KNOX. Forestiera acuminata: WILLIAMSON. Fragaria virginiana: EFFINGHAM, FULTON, IROQUOIS. Fraxinus nigra: FAYETTE. Fraxinus pennsylvanica subintegerrima: WILLIAMSON. Fraxinus quadrangulata: VERMILION. Fraxinus tomentosa: JACKSON, WILLIAMSON. Froelichia gracilis: RANDOLPH.

Galeopsis tetrahit: DEKALB, KANE, LAKE. Galinsoga ciliata: CARROLL, KNOX. Galium asprellum: COOK. Galium circaezans: IROQUOIS, MASSAC. Galium mollugo: MCHENRY. Galium pilosum: IROQUOIS. Galium tinctorium: KANE. Galium trifidum: KANE, KNOX. Galium triflorum: CHRISTIAN, IROQUOIS. Gaura longiflora: JACKSON. Gaura parviflora: GRUNDY, KANKAKEE, KENDALL, WILL, WILLIAMSON. Gentiana flavida: IROQUOIS. Gentiana procera: WILL. Gentiana quinquefolia occidentalis: MACON. Gentiana saponaria: RANDOLPH. Gerardia fasciculata: UNION. Gerardia gattingeri: KNOX. Gerardia skinneriana: LASALLE. Geum laciniatum: KNOX. Geum vernum: FRANKLIN, IROQUOIS. Geum virginianum: RANDOLPH. Glecoma hederacea micrantha: FRANKLIN, IROQUOIS. Glyceria grandis: KANE. Glyceria septentrionalis: LEE, ST. CLAIR. Glycine max: IROQUOIS, RANDOLPH. Gratiola neglecta: WILLIAMSON. Grindelia lanceolata: delete WILL; based on misidentification of Haplopappus ciliatus (G. lanceolata is not presently known from Illinois). Gymnocarpium dryopteris: CARROLL, JODAVIESS, STEPHENSON. Gymnocladus dioica: DEWITT. Gypsophila perfoliata: COOK.

Habenaria clavellata: WILL. Habenaria hyperborea huronensis: WILL. Hamamelis virginiana: LASALLE. Haplopappus ciliatus: DUPAGE, KNOX, WILL. Hedeoma hispida: FULTON. Hedeoma pulegioides: DEWITT. Helenium flexuosum: DUPAGE. Helianthemum bicknellii: DUPAGE, FULTON, IROQUOIS. Helianthemum canadense: ROCK ISLAND. Helianthus angustifolius: WAYNE. Helianthus decapetalus: KENDALL. Helianthus divaricatus: PERRY. Helianthus giganteus: WASHINGTON. Helianthus hirsutus: KENDALL. Helianthus mollis: KNOX, WILLIAMSON. Helianthus occidentalis: JOHNSON, KNOX, UNION. Helianthus tuberosus subcanescens: GALLATIN, HARDIN, SALINE, WILLIAMSON. Heliopsis helianthoides: EFFINGHAM, GALLATIN, MARION, MASSAC, SALINE, WILLIAMSON. Hemerocallis fulva: EDGAR, EFFINGHAM, IROQUOIS, KNOX, PEORIA. Hemerocallis lilio-asphodelus: JACKSON. Hepatica nobilis acuta: MOULTRIE. Heracleum maximum: IROQUOIS. Hesperis matronalis: FRANKLIN. Heterotheca latifolia: KANE, KNOX. Hibiscus militaris: IROQUOIS, ST. CLAIR, WILLIAMSON. Hibiscus trionum: CARROLL, WILLIAMSON. Hieracium aurantiacum: KANE. Hieracium canadense: GRUNDY. Hieracium gronovii: EFFINGHAM, FAYETTE, PEORIA. Hieracium longipilum: GREENE. Hieracium pratense: VERMILION, WILL. Hieracium scabrum: DEWITT, MARION, SHELBY. Holcus lanatus: KNOX, PULASKI. Holosteum umbellatum: GALLATIN. Hordeum jubatum: FRANKLIN. Hordeum pusillum: IROQUOIS, ROCK ISLAND, WARREN. Hordeum vulgare: FRANKLIN, IROQUOIS, MARION, PERRY, POPE, WASHINGTON. Hosta lancifolia: COOK. Houstonia minima: SHELBY. Humulus japonicus: DUPAGE, KNOX. Hydrangea arborescens: JASPER. Hydrastis canadensis: JEFFERSON, MONROE, PERRY. Hydrophyllum appendiculatum: IROQUOIS, KNOX. Hydrophyllum canadense: MACON. Hydrophyllum virginianum: FULTON. Hypericum adpressum: RANDOLPH. Hypericum canadense: KANE, JEFFERSON. Hypericum densiflorum: MASSAC. Hypericum denticulatum: MASSAC. Hypericum drummondii: GALLATIN. Hypericum gentianoides: CALHOUN, JEFFERSON, LASALLE, MASSAC. Hypericum majus: HENDERSON, IROQUOIS, WHITESIDE, WILL. Hypericum mutilum: CALHOUN, CHRISTIAN, WAYNE. Hypericum perforatum: CARROLL, LASALLE, PUTNAM, WASHINGTON. Hypericum punctatum pseudomaculatum: MACON. Hypericum pyramidatum: FAYETTE, KENDALL. Hypericum spathulatum: SCHUYLER. Hypericum sphaerocarpum: ADAMS, BUREAU, FULTON, HENRY, KNOX, LASALLE, MADISON, MARSHALL, MASSAC, MORGAN, PEORIA, PIKE, PULASKI, PUTNAM, SCOTT, STARK, TAZEWELL, WARREN, WOODFORD.

Ilex decidua: FAYETTE. Ilex verticillata: DUPAGE, IROQUOIS. Impatiens biflora: FULTON, IROQUOIS, KNOX. Inula helenium: WILL. Iodanthus pinnatifidus: CALHOUN, KANE. Ipomoea coccinea: JASPER, RANDOLPH. Ipomoea hederacea: DEWITT, IROQUOIS. Ipomoea pandurata: IROQUOIS, JASPER. Ipomoea purpurea: DEWITT, MOULTRIE, SHELBY, WILLIAMSON. Iris brevicaulis: CALHOUN, WABASH. Iris fulva: JACKSON. Iris pseudacorus: LASALLE, MCHENRY, MACON. Iris shrevei: DEWITT. Isanthus brachiatus: DUPAGE. Isoetes melanopoda: WHITE. Isopyrum biternatum: COOK, DEWITT, PERRY. Iva annua: FAYETTE.

Jeffersonia diphylla: JOHNSON. Juglans cinerea: DEWITT, VERMILION. Juglans nigra: FULTON, KNOX. Juncus acuminatus: KANE. Juncus brachycephalus: DUPAGE. Juncus bufonius: IROQUOIS. Juncus diffusissimus: POPE. Juncus effusus solutus: IROQUOIS. Juncus interior: GREENE. Juncus nodosus: COOK. Juncus secundus: JACKSON. Juniperus virginiana: KNOX. Jussiaea decurrens: JASPER.

Kickxia elatine: RANDOLPH, WILLIAMSON. Kochia scoparia: FULTON, GREENE, MORGAN, WILLIAMSON. Koeleria macrantha: FAYETTE, GALLATIN, IROQUOIS, MCLEAN, PUTNAM. Krigia biflora: KNOX. Krigia oppositifolia: FRANKLIN. Krigia virginica: IROQUOIS.

Lactuca ludoviciana: MACOUPIN. Lactuca saligna: CHRISTIAN, IROQUOIS, KNOX, PEORIA. Lamium amplexicaule: KNOX, RANDOLPH. Lamium purpureum: CHRISTIAN, FAYETTE, MASSAC, WILLIAMSON. Laportea canadensis: IROQUOIS. Lathyrus latifolius: JERSEY, MACON, RANDOLPH. Lathyrus palustris: MACON. Lechea mucronata: BROWN, IROQUOIS, LASALLE, MONROE. Lechea tenuifolia: CLINTON, FRANKLIN, JODAVIESS. Leersia lenticularis: GALLATIN, HAMILTON, KANKAKEE, RANDOLPH, WHITE. Leersia oryzoides: BROWN, DOUGLAS, GALLATIN, HARDIN, KNOX, MARION, RANDOLPH, ST. CLAIR, SCHUYLER, SHELBY, WHITE. Lemna minor: JOHNSON, WILLIAMSON. Lemna obscura: JACKSON. Lemna trisulca: JACKSON. Leontodon autumnalis: CHRISTIAN. Leonurus cardiaca: KNOX. Lepidium campestre: EFFINGHAM, WILLIAMSON. Leptochloa attenuata: CALHOUN, GALLATIN, HARDIN, JERSEY, MADISON, MONROE, POPE, RANDOLPH, ST. CLAIR, WHITE. Leptochloa fascicularis: ADAMS, ALEXANDER, CALHOUN, FAYETTE, IROQUOIS, KANE, MCDONOUGH, MACON, MADISON, RANDOLPH, RICHLAND. Leptochloa filiformis: MONROE, WHITE. Leptoloma cognatum: CALHOUN, CLARK, DEKALB, IROQUOIS, KANE, SALINE, VERMILION. Lespedeza cuneata: DOUGLAS, WASHINGTON. Lespedeza intermedia: CRAWFORD, DUPAGE. Lespedeza procumbens: BOND, EFFINGHAM. Lespedeza repens: RANDOLPH. Lespedeza striata: CLARK, CRAWFORD, UNION, WASHINGTON. Lespedeza thunbergii: JOHNSON. Lespedeza violacea: DUPAGE, IROQUOIS, KANKAKEE, MOULTRIE. Lespedeza virginica: KNOX. Liatris aspera: ALEXANDER, BUREAU, KNOX. Liatris scabra: EFFINGHAM. Liatris squarrosa: UNION, WILLIAMSON. Ligustrum obtusifolium: JACKSON. Ligustrum vulgare: DUPAGE, MACON, PEORIA, RANDOLPH. Lilium michiganense: KNOX. Limnobium spongia: PULASKI. Linaria canadensis: WILLIAMSON. Linaria vulgaris: JERSEY. Lindera benzoin: JASPER. Lindera benzoin pubescens: JACKSON. Lindernia anagallidea: KNOX, RANDOLPH. Linum sulcatum: BUREAU, FULTON. Linum usitatissimum: BOONE. Lippia lanceolata: KNOX. Lobelia spicata leptostachys: DEKALB. Lolium multiflorum: KANE, STEPHENSON, VERMILION. Lolium perenne: CALHOUN, EDGAR, GREENE, SHELBY, WARREN, WHITESIDE, WOODFORD. Lonicera japonica: PEORIA. Lonicera maackii: IROQUOIS, POPE, ST. CLAIR, WILL. Lonicera prolifera: DEWITT, FULTON. Lonicera tatarica: WILL. Lonicera xylosteum: DUPAGE. Lonidera X bella: BOONE, DUPAGE, JACKSON, KNOX, MCHENRY, ST. CLAIR, VERMILION. Lotus corniculatus: CLARK, CRAWFORD, DOUGLAS, EDGAR, HENDERSON, KNOX, LASALLE, MERCER, MOULTRIE, SCHUYLER, WARREN, WILLIAMSON. Ludwigia alternifolia: GRUNDY. Ludwigia glandulosa: JACKSON. Ludwigia palustris americana: BOND, MACON. Luzula multiflora: IROQUOIS. Lychnis alba: FULTON, KNOX. Lychnis dioica: KANE. Lycium halamifolium: MCHENRY. Lycopersicon esculentum: ADAMS, CALHOUN, CRAWFORD, RANDOLPH, SCHUYLER, WABASH, WHITE, WILL. Lycopodium adpressum: delete WINNEBAGO; no confirming specimen located (L. adpressum is not presently known from Illinois). Lycopodium flabelliforme: HARDIN, LEE, MONTGOMERY, WINNEBAGO. Lysimachia ciliata: EDWARDS, JASPER, MASSAC, SCOTT, WAYNE, WHITE. Lysimachia clethroides: SANGAMON. Lysimachia lanceolata lanceolata: CARROLL, CRAWFORD, FRANKLIN, JASPER, PIKE, ROCK ISLAND. Lysimachia lanceolata hybrida: HENDERSON, JACKSON, JOHNSON, LASALLE, MCDONOUGH, MACOUPIN, MENARD, PEORIA, PIKE, ST. CLAIR, STARK, TAZEWELL, UNION, WABASH, WHITESIDE, WINNEBAGO. Lysimachia nummularia: BOND, EFFINGHAM, HENRY, KNOX, ROCK ISLAND, WAYNE, WILLIAMSON. Lysimachia quadriflora: JACKSON, LAWRENCE. Lysimachia terrestris: HENRY. Lysimachia thyrsiflora: MERCER, ROCK ISLAND, UNION. Lysimachia vulgaris: WOODFORD. Lysimachia X commixta: MASON. Lythrum salicaria: FULTON.

Maclura pomifera: CARROLL. Malus coronaria lancifolia: ST. CLAIR. Malus pumila: GRUNDY, IROQUOIS, KANE, KENDALL, WILL. Malva neglecta: IROQUOIS, KNOX, WARREN. Matelea decipiens: JACKSON. Matricaria chamomilla: KNOX. Matricaria maritima: BOONE, LAKE. Matricaria matricarioides: IROQUOIS. Matteuccia struthiopteris: LAKE. Medicago falcata: MCHENRY. Melica mutica: ST. CLAIR. Melica nitens: PIKE, PUTNAM. Melothria pendula: UNION. Mentha arvensis villosa: FAYETTE, KNOX. Mentha crispa: COOK, LAKE. Mentha spicata: GRUNDY, JERSEY, KENDALL. Mentha X alopecuroides: KANKAKEE. Mentha X piperita: DEKALB, GRUNDY, KENDALL. Mertensia virginica: SHELBY. Mimulus glabratus fremontii: PUTNAM. Miscanthus sacchariflorus: HENRY, KNOX, WHITESIDE. Miscanthus sinensis: CASS, FRANKLIN, MASSAC, SALINE, WAYNE. Mitchella repens: LAKE, VERMILION. Mitella diphylla: KANE. Mollugo verticillatus: IROQUOIS. Monarda bradburiana: MASSAC. Monarda clinopodia: FAYETTE. Monarda fistulosa: KANKAKEE, MASSAC. Monotropa hypopithys: IROQUOIS. Monotropa uniflora: CALHOUN, EDGAR, KANE, KNOX. Morus alba: SHELBY. Muhlenbergia asperifolia: ST. CLAIR. Muhlenbergia bushii: JACKSON, SHELBY. Muhlenbergia cuspidata:

UNION. Muhlenbergia frondosa: ALEXANDER, BUREAU, FAYETTE, GALLATIN, LEE, MCLEAN, MACON, MONROE, PIKE, RICHLAND, SHELBY, WHITE, WHITESIDE. Muhlenbergia glabrifloris: RICHLAND, SALINE. Muhlenbergia mexicana: BROWN, CARROLL, COLES. Muhlenbergia racemosa: CARROLL, CASS, KANE, LIVINGSTON, MONROE, UNION. Muhlenbergia schreberi: ALEXANDER, CARROLL, DEWITT, FRANKLIN, SHELBY, WHITESIDE, WILLIAMSON, WINNEBAGO. Muhlenbergia sobolifera: CARROLL, CLINTON, COLES, FRANKLIN, JASPER, KNOX, MADISON, RICHLAND, VERMILION. Muhlenbergia sylvatica: COOK, DUPAGE. Muhlenbergia tenuiflora: FAYETTE, JOHNSON, PUTNAM, SALINE, SCHUYLER, SCOTT. Myosotis stricta: COOK. Myosoton aquaticum: LASALLE. Myosurus minimus: DEWITT, IROQUOIS. Myriophyllum verticillatum pectinatum: RANDOLPH.

Najas quadalupensis should be spelled Najas guadalupensis. Nasturtium officinale: CARROLL. Nicandra physalodes: COLES. Nuphar luteum variegatum: GRUNDY, MCHENRY. Nymphaea tuberosa: KNOX. Nyssa sylvatica: IROQUOIS, VERMILION.

Oenothera biennis canescens: CARROLL. Oenothera laciniata: IROQUOIS. Oenothera pilosella: MACON, WILLIAMSON. Oenothera serrulata: MCHENRY. Ophioglossum engelmannii: UNION. Ophioglossum vulgatum pseudopodum: CLARK, IROQUOIS, LEE, MCHENRY, RICHLAND, WILL, WINNEBAGO. Opuntia macrorhiza: delete dot on CALHOUN/PIKE border (printer's error). Ornithogalum umbellatum: IROQUOIS, KENDALL. Orobanche uniflora: KNOX. Oryzopsis racemosa: KANE, LAKE. Osmunda cinnamomea: ADAMS, BROWN, MCHENRY, RICHLAND, SCHUYLER. Osmunda claytoniana: IROQUOIS. Osmunda regalis spectabilis: MCHENRY.

Panax quinquefolius: KNOX. Panicum boscii: CLINTON, EDGAR, FRANKLIN, JASPER, PERRY, SCHUYLER, WAYNE. Panicum capillare: CLINTON, EDWARDS, MARION, MARSHALL, MOULTRIE, PUTNAM. Panicum clandestinum: ADAMS, BOND, EFFINGHAM, GRUNDY, JASPER, PUTNAM, SHELBY. Panicum commutatum: GALLATIN, PULASKI. Panicum depauperatum: ALEXANDER, CARROLL, EFFINGHAM, FAYETTE, WHITE, WILLIAMSON. Panicum dichotomiflorum: JASPER, MARSHALL, ROCK ISLAND. Panicum dichotomum: COLES. Panicum gattingeri: LASALLE. Panicum joori: UNION. Panicum lanuginosum implicatum: KANE, MENARD. Panicum latifolium: GREENE, LASALLE, PIKE. Panicum laxiflorum: IROQUOIS, LEE. Panicum leibergii: BROWN, MCLEAN. Panicum linearifolium: ALEXANDER, CLINTON, GALLATIN, LEE. Panicum malacophyllum: UNION, WILLIAMSON. Panicum meridionale: ADAMS, ALEXANDER, LASALLE, LEE, MARSHALL, MONROE, POPE, PUTNAM, RANDOLPH. Panicum microcarpon: FAYETTE. Panicum miliaceum: IROQUOIS, RANDOLPH. Panicum oligosanthes oligosanthes: DUPAGE, KENDAL WOODFORD. Panicum oligosanthes schribnerianum: DUPAGE, EFFINGHAM, JASPER, MCLEAN. Panicum perlongum: CLARK, ROCK ISLAND, SCHUYLER. Panicum philadelphicum: HARDIN. Panicum polyanthes: FRANKLIN, WAYNE. Panicum praecocius: EFFINGHAM, JACKSON, UNION. Panicum rigidulum: EFFINGHAM, FAYETTE, MACON. Panicum rigidulum condensum: JACKSON. Panicum sphaerocarpon: EFFINGHAM, FAYETTE, FRANKLIN, MONROE. Panicum villosissimum villosissimum: JOHNSON, KENDALL, MCHENRY. Panicum villosissimum pseudopubescens: KANKAKEE, MERCER, SCOTT. Panicum virgatum: JASPER, KNOX, MARION. Panicum wilcoxianum: POPE. Panicum yadkinense: UNION. Papaver somniferum: WILL. Parietaria pensylvanica: WILLIAMSON. Paronychia canadensis: GREENE, IROQUOIS, KENDALL, PUTNAM. Paronychia fastigiata: MACON. Parthenium integrifolium: KENDALL, WILLIAMSON. Parthenocissus vitacea: IROQUOIS, KNOX. Paspalum ciliatifolium: CASS, EFFINGHAM, MASON, SHELBY. Passiflora lutea: CLINTON. Pedicularis canadensis: KNOX. Peltandra virginica: JACKSON. Penstemon alluviorum: JOHNSON. Penstemon calycosus: KANE. Penstemon digitalis: KANE, KNOX. Penstemon pallidus: KNOX. Penstemon tubaeflorus: DUPAGE. Perideridia americana: IROQUOIS. Petalostemum candidum: MCLEAN. Petunia X hybrida: LAKE. Phacelia bipinnatifida: RANDOLPH, RICHLAND. Phalaris arundinacea: CALHOUN, CARROLL, CLAY, FRANKLIN, JODAVIESS, KNOX, LEE, MONROE, PIKE, RANDOLPH, RICHLAND, UNION, WOODFORD. Phlox pilosa: KNOX. Phragmites australis: FULTON, GALLATIN, HAMILTON, KNOX, LAWRENCE. Physalis heterophylla: EDGAR. Physalis ixocarpa: COOK, LAKE. Physocarpus opulifolius: IROQUOIS. Phytolacca americana: KNOX. Pisum sativum: KANE. Plantago aristata: IROQUOIS. Plantago major: IROQUOIS, MASON. Plantago purshii: IROQUOIS, KANE. Plantago virginica: KNOX. Poa alsodes: LAKE. Poa angustifolia: delete JACKSON (misidentification). Poa annua: BUREAU, CLAY, DEWITT, IROQUOIS, KENDALL, MASON, MERCER, MOULTRIE, SHELBY. Poa autumnalis: delete JACKSON (misidentification). Poa bulbosa: HARDIN. Poa chapmaniana: STARK. Poa languida: LAKE. Poa palustris: HARDIN, JERSEY, VERMILION. Poa sylvestris: BOND, EDWARDS, FAYETTE, KNOX, MERCER, MONTGOMERY, PIKE, WARREN. Poinsettia cyanthophora: CASS, MACON, MADISON, SCOTT. Poinsettia dentata: MASSAC. Polanisia dodecandra: FAYETTE, KNOX. Polygala sanguinea: KNOX, MASSAC. Polygonella articulata: MASON. Polygonum achoreum: MONROE. Polygonum aviculare: CHRISTIAN, DEWITT. Polygonum caespitosum longisetum: LAKE, WILLIAMSON. Polygonum coccineum: JERSEY. Polygonum convolvulus: FULTON, WILLIAMSON. Polygonum erectum: MACON. Polygonum hydropiper: FAYETTE. Polygonum hydropiperoides: KNOX, VERMILION. Polygonum opelousanum: WILL. Polygonum persicaria: CHRISTIAN. Polygonum sagittatum: KNOX. Polygonum scandens: EFFINGHAM, MCHENRY, MOULTRIE, SHELBY. Polygonum tenue: BUREAU. Polygonum virginianum: DEWITT, MCHENRY. Polymnia canadensis: JASPER. Polymnia uvedalia: JERSEY. Polystichum acrostichoides: DEWITT, LAKE. Polytaenia nuttallii: IROQUOIS. Populus alba:

DEWITT, IROQUOIS. Populus balsamifera: MCHENRY. Populus canescens: LAKE. Populus grandidentata: DEWITT, FULTON, SHELBY. Populus tremuloides: COOK, FULTON. Potamogeton crispus: JACKSON, KANE. Potamogeton diversifolius: GRUNDY, WILL. Potamogeton illinoensis: KNOX. Potamogeton nodosus: KANE. Potamogeton pusillus: GRUNDY. Potamogeton vaseyi: WILL. Potentilla argentea: IROQUOIS. Potentilla canadensis: delete DEKALB; based on a specimen of P. reptans (P. canadensis is not presently known from Illinois). Potentilla norvegica: MASSAC. Prenanthes altissima: MASSAC, MONROE. Proboscidea louisianica: KANE. Prunus americana: JASPER. Prunus americana lanata: GREENE, JERSEY, KNOX. Prunus angustifolia: FAYETTE, GREENE, GRUNDY. Prunus cerasus: JACKSON. Prunus hortulana: GREENE. Prunus mahaleb: GRUNDY, JERSEY. Prunus munsoniana: COLES, EDWARDS, MOULTRIE. Prunus persica: IROQUOIS. Prunus susquehanae: WILL. Prunus virginiana: IROQUOIS, JOHNSON. Psoralea onobrychis: IROQUOIS, POPE. Puccinellia distans: IROQUOIS. Pycnanthemum pilosum: UNION. Pycnanthemum pycnanthemoides: WILLIAMSON. Pycnanthemum torreyi: POPE.

Quercus bicolor: SHELBY. Quercus falcata: JASPER, MADISON. Quercus palustris: SHELBY. Quercus phellos: JOHNSON. Quercus stellata: delete GRUNDY (no confirming specimen located).

Ranunculus abortivus: GRUNDY. Ranunculus carolinianus: JACKSON. Ranunculus fascicularis: FAYETTE. Ranunculus hispidus: DUPAGE. Ranunculus micranthus: FAYETTE, MACOUPIN, VERMILION. Ranunculus trichophyllus: GRUNDY. Raphanus raphanistrum: DuPAGE. Ratibida pinnata: ALEXANDER, FRANKLIN. Rhexia mariana: JACKSON. Rhus aromatica: MACON. Rhus copallina: MACON, SHELBY, WILLIAMSON. Rhus typhina: MASON. Ribes missouriense: IROQUOIS. Ribes sativum: KNOX. Robinia pseudoacacia: CARROLL, DEWITT. Rorippa islandica fernaldiana: FULTON. Rorippa islandica hispida: LAKE. Rorippa sinuata: JACKSON. Rorippa sylvestris: CHRISTIAN, JACKSON. Rosa multiflora: FULTON, KNOX, MASSAC. Rosa setigera: IROQUOIS. Rubus allegheniensis: JASPER. Rubus enslenii: UNION. Rubus flagellaris: EFFINGHAM, MASSAC. Rubus laciniatus: LAKE. Rubus occidentalis: IROQUOIS, KNOX, RANDOLPH. Rubus occidualis: JACKSON, UNION. Rubus odoratus: DEKALB. Rubus pensylvanicus: DEKALB, FULTON, GRUNDY, KANE, KENDALL, LAKE, MONROE. Rubus procerus: JACKSON. Rubus pubescens: DUPAGE. Rubus schneideri: WILL. Rubus strigosus: DUPAGE. Rubus trivialis: ST. CLAIR. Rudbeckia subtomentosa: BUREAU. Rumex altissimus: WILLIAMSON. Rumex crispus: FULTON. Rumex maritimus fueginus: KENDALL. Rumex obtusifolius: EDGAR, JERSEY, ST. CLAIR. Rumex orbiculatus: VERMILION. Rumex verticillatus: FAYETTE, KNOX.

Sabatia angularis: FRANKLIN. Sabatia campestris: BOND. Sagittaria brevirostra: DEKALB, WILL. Sagittaria graminea: DEKALB, WILL. Sagittaria latifolia: KNOX. Salix alba: KANE. Salix amygdaloides: FULTON, KANE. Salix discolor: GRUNDY, KENDALL, MCHENRY. Salix eriocephala: MASON. Salix fragilis: GRUNDY. Salix glaucophylloides glaucophylla: DUPAGE, MCHENRY. Salix humilis: EFFINGHAM, FULTON, KNOX. Salix interior: SHELBY. Salix purpurea: DUPAGE. Salix sericea: FAYETTE, VERMILION. Salsola kali: IROQUOIS, LEE, WILLIAMSON. Sanguisorba minor: COOK. Sanicula canadensis: JASPER. Sanicula gregaria: KNOX. Sanicula trifoliata: VERMILION. Saponaria vaccaria: WILL. Saxifraga pensylvanica: FAYETTE. Schizachyrium scoparium: KNOX, LOGAN, MCLEAN, MONTGOMERY, PULASKI. Scirpus acutus: GRUNDY, KNOX. Scirpus americanus: MOULTRIE. Scirpus cyperinus: HENDERSON, MARION, RANDOLPH. Scirpus fluviatilis: CALHOUN. Scirpus georgianus: MASSAC. Scirpus koilolepis: JOHNSON, SALINE; delete BOND record. Scirpus micranthus: UNION. Scirpus pendulus: FULTON. Scirpus validus: CALHOUN, JERSEY. Scleria triglomerata: HANCOCK. Scutellaria ovata: KNOX. Map labelled Scutellaria ovata versicolor is actually the distribution map for Scutellaria parvula; map labelled Scutellaria parvula is actually the distribution map for Scutellaria parvula australis. Scutellaria ovata versicolor is mapped with Scutellaria ovata. Scutellaria parvula australis: UNION. Secale cereale: FULTON, HANCOCK, SCHUYLER. Sedum acre: IROQUOIS. Sedum purpureum: DUPAGE. Sedum ternatum: IROQUOIS. Selaginella: Buck (1977) has revised the taxonomy of the S. apoda complex. Selaginella apoda (<u>sensu stricto</u>) is now known from WABASH, ST. CLAIR, and all counties southward that are dotted. Delete COLES, COOK, DOUGLAS, FULTON, KANE, KANKAKEE, KENDALL, LAKE, MCHENRY, MENARD, PEORIA, TAZEWELL, VERMILION, WILL; These are referrable to S. eclipes; see part II of this article. Senecio glabellus: FRANKLIN, WILLIAMSON. Senecio pauperculus: KNOX. Senecio plattensis: WILL. Sesbania exaltata: JACKSON. Setaria geniculata: CASS, MORGAN. Setaria italica: RANDOLPH, WASHINGTON. Setaria verticillata: IROQUOIS, LIVINGSTON, PIKE. Seymeria macrophylla: MASSAC. Sibara virginica: DEWITT, MOULTRIE. Sicyos angulatus: CLINTON, MERCER, WHITE, WHITESIDE, WINNEBAGO. Sida spinosa: KNOX. Silene antirrhina: FRANKLIN. Silene cserei: FAYETTE, GRUNDY, KANKAKEE, KENDALL, MACON, WILL. Silene cucubalus: IROQUOIS. Silene dichotoma: KENDALL, MASON. Silene nivea: FAYETTE, KNOX. Silene stellata: JASPER. Silene virginica: EDWARDS, KANE, MACON. Sisymbrium officinale: CHRISTIAN, COOK, DEKALB, DUPAGE, KANE, KENDALL. Sisyrinchium albidum: FULTON, SCOTT. Sisyrinchium angustifolium: BROWN, KANE, SCOTT. Sisyrinchium atlanticum: POPE, UNION. Sisyrinchium campestre: JASPER. Sium suave: FRANKLIN, KNOX. Smilax hispida: IROQUOIS. Smilax pulverulenta:

MCDONOUGH, TAZEWELL. Solanum dulcamara: KNOX. Solanum rostratum: FULTON. Solidago bicolor: MARION. Solidago flexicaulis: FAYETTE, MACON. Solidago gigantea: CHRISTIAN. Solidago graminifolia: UNION. Solidago juncea: JOHNSON. Solidago nemoralis: BUREAU. Solidago patula: COOK, LAKE. Solidago riddellii: KANKAKEE, KENDALL, WILL. Solidago speciosa: KNOX. Solidago uliginosa: DUPAGE. Sonchus asper: EFFINGHAM, FULTON. Sonchus oleraceus: CALHOUN. Sorbus aucuparia: WILL. Sorghum bicolor: ADAMS, HARDIN, HENDERSON, LAWRENCE, MARION, MERCER, POPE, RANDOLPH, WAYNE. Sorghum halepense: CUMBERLAND, PIKE, WILL. Sparganium chlorocarpum: KANE, MCHENRY. Sparganium eurycarpum: JACKSON, MONROE. Spartina pectinata: PERRY. Specularia perfoliata: EDGAR, KANKAKEE, KNOX. Sphenopholis nitida: ALEXANDER. Sphenopholis obtusata obtusata: ALEXANDER, BOND, BROWN, CALHOUN, FRANKLIN, HARDIN, HENDERSON, LAKE, MACOUPIN, MADISON, MONTGOMERY. Sphenopholis obtusata major: BOND, BUREAU, CARROLL, CLAY, EFFINGHAM, IROQUOIS, JERSEY, KANKAKEE, LEE, PUTNAM, WAYNE, WHITESIDE, WINNEBAGO. Spiraea alba: BOONE. Spiranthes cernua: MASSAC. Spiranthes gracilis: MASSAC. Spiranthes lacera: WILL. Spiranthes magnicamporum: CHRISTIAN, MCHENRY. Spiranthes ovalis: KNOX, PEORIA. Spiranthes romanzoffiana: MCHENRY. Spiranthes vernalis: UNION. Sporobolus asper: CLINTON, EFFINGHAM, JERSEY, MERCER, PUTNAM, ROCK ISLAND. Sporobolus clandestinus: IROQUOIS, JERSEY, MONROE. Sporobolus cryptandrus: ADAMS, CALHOUN, LEE, MADISON, TAZEWELL, VERMILION. Sporobolus heterolepis: ADAMS, BUREAU, JERSEY, MCLEAN, MARSHALL, PIKE. Sporobolus neglectus: GREENE, JERSEY, KNOX, MACOUPIN, MONROE, ST. CLAIR. Sporobolus vaginiflorus: ADAMS, FAYETTE, FRANKLIN, JERSEY, KNOX, LEE, MARSHALL, MOULTRIE, ROCK ISLAND, WARREN. Stachys tenuifolia: JASPER. Stachys tenuifolia hispida: JACKSON, KANKAKEE. Stellaria graminea: UNION. Stellaria longifolia: KENDALL. Stipa spartea: HENDERSON, KNOX, MACOUPIN, ST. CLAIR. Strophostyles leiosperma: IROQUOIS, KANE. Styrax americana: CLINTON. Symphoricarpos albus: KANE, LASALLE. Symphoricarpos occidentalis: KNOX. Symphoricarpos orbiculatus: VERMILION. Symphytum officinale: KNOX. Symplocarpus foetidus: KANKAKEE.

Taenidia integerrima: DEWITT, IROQUOIS. Talinum rugospermum: IROQUOIS, KANKAKEE. Tamarix gallica: MACOUPIN. Tanacetum vulgare: FRANKLIN. Taxodium distichum: JACKSON. Thaspium barbinode: KNOX. Thelypteris hexagonoptera: HENRY, RICHLAND. Thelypteris palustris pubescens: FAYETTE, LASALLE. Thlaspi arvense: EFFINGHAM. Tilia americana: KENDALL. Tofieldia glutinosa: KANE. Torilis japonica: EFFINGHAM, KANE, WILLIAMSON. Toxicodendron vernix: KANE. Tradescantia ohiensis: EFFINGHAM, SHELBY, WILLIAMSON. Tradescantia subaspera: FAYETTE, FULTON. Tragopogon dubius: JACKSON, KNOX, WILLIAMSON. Tragopogon pratensis: FULTON, IROQUOIS. Triadenum fraseri: DUPAGE, WILL. Triadenum tubulosum: GALLATIN, WILLIAMSON. Triadenum walteri: WILLIAMSON. Tribulus terrestris: CARROLL, DUPAGE, KANE. Tridens flavus: LEE, OGLE, WHITESIDE. Tridens strictus: JEFFERSON. Trientalis borealis: MCHENRY. Trifolium dubium: KANKAKEE. Trifolium procumbens: BOONE, IROQUOIS, KNOX. Triglochin palustris: WILL. Trillium sessile: IROQUOIS. Triosteum illinoense: DEKALB, DEWITT, FULTON. Triosteum perfoliatum: KANKAKEE. Triplasis purpurea: LASALLE, LEE, MENARD, MORGAN. Tripsacum dactyloides: RANDOLPH, WILLIAMSON. Triticum aestivum: IROQUOIS, KNOX, MONTGOMERY. Typha angustifolia: GALLATIN, IROQUOIS, KNOX.

Ulmus pumila: FULTON, IROQUOIS, JACKSON, KNOX, RANDOLPH, WILLIAMSON. Urtica chamaedryoides: JACKSON; delete MASSAC (no specimen located). Urtica dioica: CLARK, UNION. Utricularia cornuta: MCHENRY. Utricularia vulgaris: WILL. Uvularia grandiflora: MARION.

Vaccinium angustifolium laevifolium: IROQUOIS, WILL. Vaccinium arboreum: JERSEY. Vallisneria americana: CARROLL. Verbascum blattaria: ALEXANDER, CARROLL, FAYETTE, FULTON, WILLIAMSON. Verbascum phlomoides: FRANKLIN. Verbascum pulverulentum: delete LAKE; based on a specimen of Verbascum speciosum (V. pulverulentum is not presently known from Illinois). Verbena bracteata: JERSEY. Verbena canadensis: COOK, IROQUOIS. Verbena stricta: DUPAGE. Verbena X blanchardii: DUPAGE. Verbena X illicita: KANKAKEE. Verbesina alternifolia: JACKSON, MASSAC. Vernonia baldwinii: LAKE, VERMILION. Vernonia gigantea: MCHENRY. Vernoica comosa: WILL. Viburnum acerifolium: MCHENRY. Viburnum lantana: LAKE. Viburnum molle: ST. CLAIR. Viburnum opulus: JACKSON, KNOX, MACON. Viburnum prunifolium: FULTON. Viburnum recognitum: KANKAKEE. Viburnum rufidulum: WILLIAMSON. Viburnum trilobum: LAKE. Vicia americana: KANKAKEE. Vicia dasycarpa: MASSAC. Vicia villosa: MASSAC. Vinca minor: IROQUOIS. Viola affinis: BOONE, JACKSON, VERMILION. Viola cucullata: BOONE. Viola lanceolata vittata: COOK, LAKE. Viola missouriensis: DUPAGE, FRANKLIN. Viola nephrophylla: CHAMPAIGN, HENRY, KANE, LEE, PIATT, STARK, WINNEBAGO. Viola pedata: FULTON, GALLATIN, HARDIN. Viola pedatifida: IROQUOIS, LEE. Viola pubescens: HENRY. Viola pubescens eriocarpa: SHELBY, WAYNE. Viola rafinesquii: CHRISTIAN, DEWITT, FULTON, MOULTRIE. Viola striata: FULTON. Vitis aestivalis: KANE, LAKE. Vitis palmata: RANDOLPH. Vitis rupestris: JACKSON. Vulpia octoflora octoflora: CARROLL, CLINTON, EDWARDS, FRANKLIN, MONTOGOMERY, WHITE. Vulipia octoflora glauca: CASS, WILLIAMSON. Vulpia octoflora tenella: IROQUOIS, MADISON, WHITESIDE.

Wolffia columbiana: GRUNDY, KANKAKEE, KENDALL, WILL. Woodsia ilvensis: LASALLE.

Xanthoxylum americanum: BOONE.

Yucca filamentosa smalliana: GRUNDY.

Zanichellia palustris: KNOX, MCHENRY. Zea mays: CARROLL, CHAMPAIGN, DEKALB, IROQUOIS, JEFFERSON, RANDOLPH, ST. CLAIR. Zizania aquatica aquatica: KANE, KENDALL, LAKE, MADISON. Zizania aquatica interior: UNION. Zizea aurea: KNOX.

Taxa New to Illinois

Some of the following records have been previously reported, mostly in Swink and Wilhelm (1979), but the following listing will serve as a complete updated catalog of all new vascular plants confirmed in Illinois since the publication of Mohlenbrock and Ladd (1978) until the end of 1980. New Illinois records collected during 1981, 1982, and 1983 will be reported in the Erigenia Flora of Illinois update in 1984.

Acer pseudoplatanus L.: DEKALB (MORT).

Agrostis interrupta L.: Although reported from MACON by Henry, Scott, and Shildneck (1978), there is strong evidence this colony grew from seed spilled during botanical activities. Since it only persisted for one year, and, in the strict sense was not spontaneous, it is excluded from the Illinois flora.

Amelanchier sanguinea (Pursh) DC.: COOK (MORT).

Anthriscus scandescina (Weber) Mansfeld: DUPAGE (MORT).

Anthriscus sylvestris (L.) Hoffm.: KANE (MORT).

Aralia elata (Miq.) Seem.: DUPAGE (MORT).

Bromus carinatus Hook.: DUPAGE (MORT).

Cerastium semidecandrum L.: IROQUOIS (private herbarium).

Croton lindheimerianus Scheele: MADISON (MO).

Dryopteris filix-mas (L.) Schott.: COOK (F).

Gymnocarpium robertianum (Hoffm.) Newm.: CARROLL (UWLC).

Lathyrus tuberosus L.: KANE (MORT).

Lonicera Xminutiflora Zabel: DUPAGE (MORT).

Lonicera Xmuendensis Rehd.: BOONE, COOK, DEKALB, DUPAGE, GRUNDY, KANE, KANKAKEE, KENDALL, MCHENRY, WILL (MORT).

Lonicera Xmuscaviensis Rehd.: DUPAGE (MORT).

Lonicera Xxylosteoides Tausch: DUPAGE, GRUNDY (MORT).

Lunaria annua L.: CHAMPAIGN (ILL).

Mirabilis jalapa L.: GRUNDY (MORT).

Paspalum dilatatum Poir.: JACKSON (SIU).

Phyllanthus urinaria L.: JACKSON (SIU).

Pluchea purpurascens (Swartz) DC. var. _succulenta_ Fern.: COOK (MORT).

Potentilla reptans L.: DEKALB (MORT).

Prunus padus L.: DUPAGE (MORT).

Psoralea argophylla Pursh: DUPAGE (MORT).

Pyrus calleryana Decne.: DUPAGE (MORT).

Rhodotypos scandens (Thunb.) Makino: DUPAGE (MORT).

Rumex dentatus L.: MADISON (ILL).

Salsola collina Pall.: MADISON (ISM).

Selaginella eclipes Buck: COLES, COOK, DOUGLAS, FULTON, KANE, KANKAKEE, KENDALL, LAKE, MCHENRY, MENARD, PEORIA, TAZEWELL, VERMILION, WILL. See Buck (1977).

Verbascum speciosum Schrader: LAKE (SIU).

Acknowledgments

The authors wish to thank the following individuals for their assistance during the course of this work: John Ebinger, Marc Evans, Erwin Evert, Ed Hedborn, Deborah Ladd, Beverly Mohlenbrock, Paul Nelson, Paul Shildneck, Ray Schulenburg, Mary Kay Solecki, James Solomon, Floyd Swink, and Gerould Wilhelm.

Literature Cited

Buck, W. R. 1977. A new species of *Selaginella* in the *S. apoda* complex. Can. Journ. Bot. 55:366-371.

Henry, R. D., A. R. Scott, and Paul Shildneck. 1978. Additions to the distribution of Illinois vascular plants. Trans. Ill. State Acad. Sci. 71:51-61.

Mohlenbrock, R. H. and D. M. Ladd. 1978. Distribution of Illinois vascular plants. Southern Illinois University Press, Carbondale. 282 pp.

Swink, F. and G. Wilhelm. 1979. Plants of the Chicago region ed. 3. Morton Arboretum, Lisle, Illinois. 922 pp.

Taylor, W. C. and R. H. Mohlenbrock. 1977. *Asplenium* X *herbwagneri*, a collective epithet for *A. pinnatifidum* X *trichomanes*. Am. Fern. Journ. 67:65-67.

BACK ISSUES AVAILABLE

ERIGENIA: 1 August 1982: PLANT COLLECTOR'S GUIDE (Why Collect Plant Specimens; Where to Collect Plants; The Ethics of Plant Collecting Plant Specimens, An Outline; An Illustrated Glossary of Botanical Terms) 44p.

PRICE: $2.50 including postage

ERIGENIA: 2 April 1983: GEOLOGY OF SOUTHERN ILLINOIS (Paleozoic Life and Climates of Southern Illinois; Field Log to the Devonian, Mississippian, and Pennsylvanian Systems of Jackson and Union Counties, Illinois; Landforms of the Natural Divisions of Illinois; The Soils of Southern Illinois) 68p

PRICE: $3.50 including postage

ERIGENIA: 3 December 1983: ILLINOIS FLORA UPDATE
Additional copies of this issue are available for:

PRICE: $4.50 including postage

Make checks payable to: S.I.N.P.S. and send to: Southern Illinois Native Plant Society, Dept. of Botany, Southern Illinois University, Carbondale, Illinois 62901.

Additions to the Illustrated Flora of Illinois

II. Ferns

Robert H. Mohlenbrock

Abstract

This paper reports additional records for ferns found in Illinois since 1970. In addition to a number of county records, the following taxa are reported new for Illinois during that period: Lycopodium clavatum var. clavatum, Lycopodium clavatum var. magastachyon, Selaginella eclipes, Botrychium oneidense, Botrychium matricariaefolium, Botrychium simplex, Dryopteris celsa, Dryopteris filix-mas, Gymnocarpium robertianum, Asplenosorus X herb-wagneri, Asplenosorus X shawneensis, Asplenium trichomanes ssp. quadrivalens, and Cystopteris X illinoensis.

The first volume of the Illustrated Flora of Illinois (Mohlenbrock, 1967) was devoted to the ferns and fern allies and included eighty-one species and six additional varieties, distributed among twenty-eight genera and ten families. A total of 1714 county records were recorded.

It was intended to make periodic reports to update the Illustrated Flora of Illinois, using basically the same format that appeared in the original volume.

In 1970, the first update to the ferns was published (Mohlenbrock, 1970). In that work, three additional species and one form were added to the Illinois flora, bringing the total to eight-four species and seven infraspecific taxa. The 121 new county records also reported in 1970 brought to 1835 the number of county vouchers for Illinois ferns.

In this second update, an additional thirteen taxa are added to the fern flora of Illinois. One species, Isoetes butleri Engelm., is deleted. The total of ferns and fern allies known from Illinois at the time of this writing is 95 species and nine recognized lesser taxa. The 305 new county records, less six for Isoetes butleri and nine other deletions, give 2125 county vouchers for Illinois ferns. The illustrations are by Jon Howe and Mark W. Mohlenbrock.

Taxa New to the State

1. *Lycopodium clavatum* L. Sp. Pl. 1101. 1753.
Creeping plant with forked, prostrate stems, producing simple or dichotomously branched ascending branches up to 30 (-35) cm long; foliage leaves linear, usually tipped with a hair-like bristle, ascending or spreading, up to 8 mm long; leaves of the peduncle linear, subulate-tipped, up to 5 mm long; gemmae absent; sporangia borne in strobili; strobili 1-6 per peduncle, up to 10 cm long, 3-5 mm thick, stramineous, the bracts jagged at the tip.
Two varieties occur in Illinois, distinguished by the following key:

1. Strobili 2-6 per peduncle; leaves of the upright branches spreading------------------------L. clavatum var. clavatum

1. Strobilus 1 per peduncle; leaves of the upright branches ascending---------------------L. clavatum var. megastachyon

1a. *Lycopodium clavatum* L. var. *clavatum* Fig. 1.
Leaves of the upright branches spreading; strobili 2-6 per peduncle.

Common Name: Common Clubmoss.

Habitat: North-facing slope of sandy soil, below outcrops of St. Peter sandstone, and seepage stream banks draining from loess bluff.

Range: Newfoundland to Alaska, south to Washington, Montana, Iowa, northern Illinois, northern Ohio, and North Carolina.

Illinois Distribution: Ogle Co.: near head of Annie's Canyon, Castle Rock State Park, T23N, R10E, Sect. 18, September 29, 1975, M. Bowles s.n.; Carroll Co.: 5 miles NE of Thomson, Peck 77-188 (UWL). Recently collected in Rock Island County.

This northern clubmoss is distinguished from all other species of Lycopodium in the state by its ascending, usually unbranched sterile branches and its pedunculate strobili with jagged-tipped bracts. It differs from var. megastachyon by the presence of 2 or more strobili per peduncle and by its spreading leaves.

Fig. 1. Lycopodium clavatum var. clavatum (Common Clubmoss). Habit, X 1/3.

At the Ogle County station, this species grows in association with Liparis loeselii, Aquilegia canadensis, Goodyera pubescens, Fragaria virginiana, and Equisetum hyemale.

1b. *Lycopodium clavatum* L. var. *megastachyon* Fern. & Bissell, Rhodora 12:53. 1910. Fig. 2.
Leaves of the upright branches ascending; strobilus 1 per peduncle.

Common Name: Common Clubmoss.

Habitat: Along edge of small ditch.

Range: Newfoundland to Ontario, south to northern Illinois, New York, and Massachusetts.

Illinois Distribution: Will Co.: 4/5 mile west of West River Road, T32N, R9E, Sect. 11, July 29, 1976, K. Wilson & M. Madeny s.n. (SIU).

This variety possesses a single stout strobilus on each peduncle. The upright branches bear ascending leaves. The Illinois specimen has remarkable long, twisted bristle tips on the leaves.

Species associated with L. clavatum var. megastachyon at the Will County station include Lespedeza capitata, Viola fimbriatula, Osmunda regalis var. spectabilis, Helianthus mollis, Schizachyrium scoparium, Panicum virgatum, Solidago nemoralis, Solidago juncea, Andropogon gerardii, Parthenium integrifolium, Spiraea tomentosa, Aletris farinosa, Liatris spicata, and Bartonia virginica.

2. *Selaginella eclipes* Buck, Can. Journ. Bot. 55:366. 1977. Fig. 3.
Long-creeping plants with irregular branching; leaves membranous, 4-ranked, the larger ones oblong-ovate, serrate, 1.2-2.0 mm long, 0.5-1.3 mm broad, the smaller ones ovate to ovate-lanceolate, serrate, long-attenuate, frequently hyaline, 1.1-1.8 mm long, 0.4-0.8 mm broad; cone spike-like, appearing sessile, 1-4 cm long; sporophylls ovate, irregularly serrate; megaspores bone-white, reticulate and pitted, 0.3-0.4 mm in diameter; microspores orange.

Common Name: Small Clubmoss.

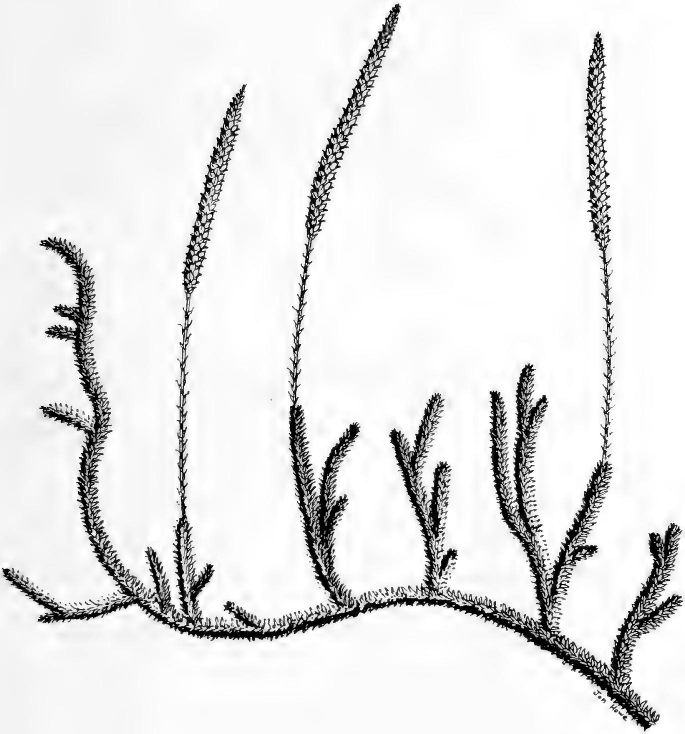


Fig. 2. Lycopodium clavatum var. megastachyon (Common Club-moss). Habit, X 1/3.

Habitat: Moist to wet, often calcareous habitats.

Range: Southern Ontario and northern New York, west to Michigan, northern Indiana, southeastern Wisconsin, northern Illinois, southern Missouri, northwestern Arkansas, and northeastern Oklahoma.

Illinois Distribution: Apparently confined to the northern two-thirds of Illinois.

All Illinois specimens of _S. eclipes_ have been assigned previously to _S. apoda_. Following study of the _S. apoda_ complex, Buck (1977) concluded that the traditional _S. apoda_ is actually comprised of two species, the widespread _S. apoda_, mainly in the southeastern United States, and _S. eclipes_, a species primarily of the midwest and Great Lakes states.

The major differences between _S. eclipes_ and _S. apoda_, as indicated by Buck (1977), are given in the following key:

1. Smaller (dorsal) leaves long-attenuate, with the apex costate; megaspores shiny, laxly reticulate----------_S. eclipes_

1. Smaller (dorsal) leaves acute or, if long-attenuate, not costate; megaspores dull, closely reticulate--------_S. apoda_

Buck (1977) states that the differences between the two species are subtle, with mature megaspores giving the most reliable characteristics.

A re-examination of Illinois material revealed that specimens collected in the northern two-thirds of Illinois are probably referable to _S. eclipes_, while those in the southern one-third of the state (north to and including St. Clair and Wabash counties) are _S. apoda_.

3. *Botrychium matricariaefolium* A. Br. ex Koch, Syn. Fil. Germ. ed. 2, 972. 1845. Fig. 4.
Plants from fleshy roots; common stalk erect, glaucous, nearly entirely above ground; sterile blade to 9 cm long, short-petiolate, pinnate or bipinnatifid, the pinnae oblong, obtuse, crenately lobed; fertile stalk usually branched, up to 8 cm long; sporangia spherical, up to 1 mm in diameter; spores muricate.

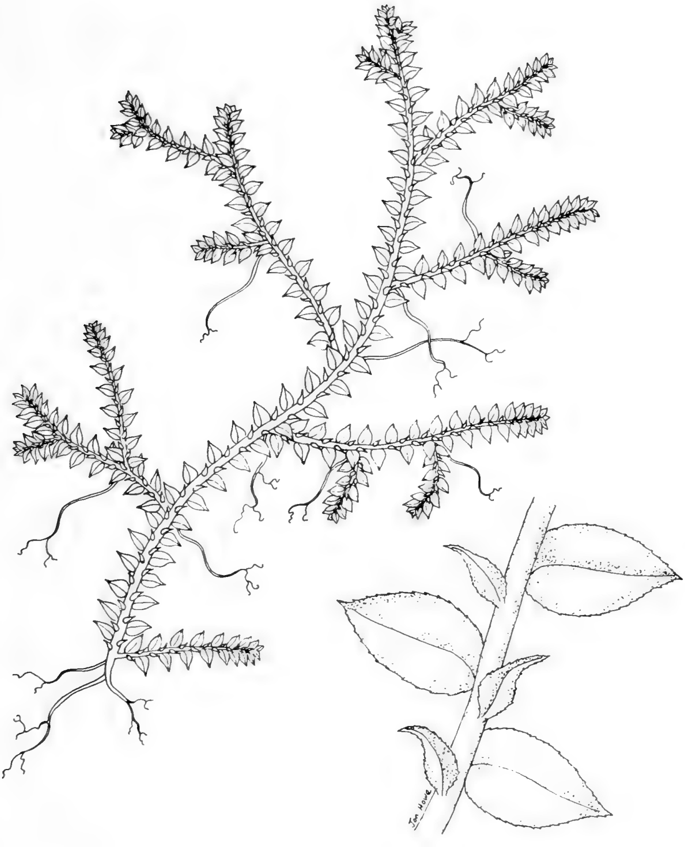


Fig. 3. Selaginella eclipes (Small Clubmoss). Habit, X 2. Close-up, X 15.

Common Names: Daisy-leaf Grape Fern; Moonwort.

Habitat: Young, second growth, upland Acer saccharum woods.

Range: Newfoundland to British Columbia, south to Idaho, South Dakota, northern Illinois, Ohio, and Virginia.

Illinois Distribution: Winnebago Co.: Rock Cut State Park, June 15, 1970, D. McFall & M. Jones s.n. (ILL).

This species and B. simplex were found growing in the same area at Rock Cut State Park in Winnebago County (McFall & Jones, 1972). The nearly sessile, pinnate or bipinnatifid sterile blade distinguishes this species from B. simplex.

4. *Botrychium simplex* E. Hitchc. Am. Journ. Sci. 6:310. 1823. Fig. 5.
Plants from fleshy roots; common stalk arching or ascending or erect, partly below the ground; sterile blade to 4 cm long, petiolate, usually pinnately divided, the pinnae often lunate, variable, often crenulate; fertile stalk simple or short-branched, up to 5 cm long; sporangia spherical, up to 1.2 mm in diameter; spores reticulate.

Common Name: Least Moonwort.

Habitat: Woods and adjacent thicket overtopped by Ulmus rubra.

Range: Newfoundland to British Columbia, south to California, New Mexico, northern Illinois, northern Indiana, Pennsylvania, and New Jersey.

Illinois Distribution: Winnebago Co.: Rock Cut State Park, June 15, 1970, D. McFall & M. Jones s.n. (ILL). subsequently found in Cook and Lee counties.

In its overall range, this species exhibits remarkable blade variability, ranging from entire to pinnately cleft.

McFall and Jones (1972) report this inconspicuous species common at the Rock Cut State Park site. Also at this site are Botrychium matricariaefolium, B. dissectum var. dissectum, B. dissectum var. obliquum, B. multifidum ssp. silaifolium, and Ophioglossum vulgatum.

Fig. 4. Botrychium matricariaefolium (Daisy-leaf Grape Fern). Habit (left), X 1. Habit (center), X 1. Leaf (lower right), X 1 1/2. Sporangia, X 10.

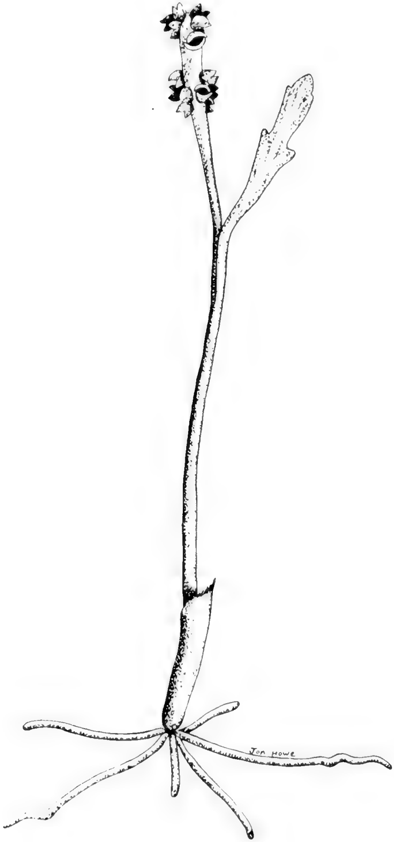


Fig. 5. Botrychium simplex (Least Moonwort). Habit, X 1.

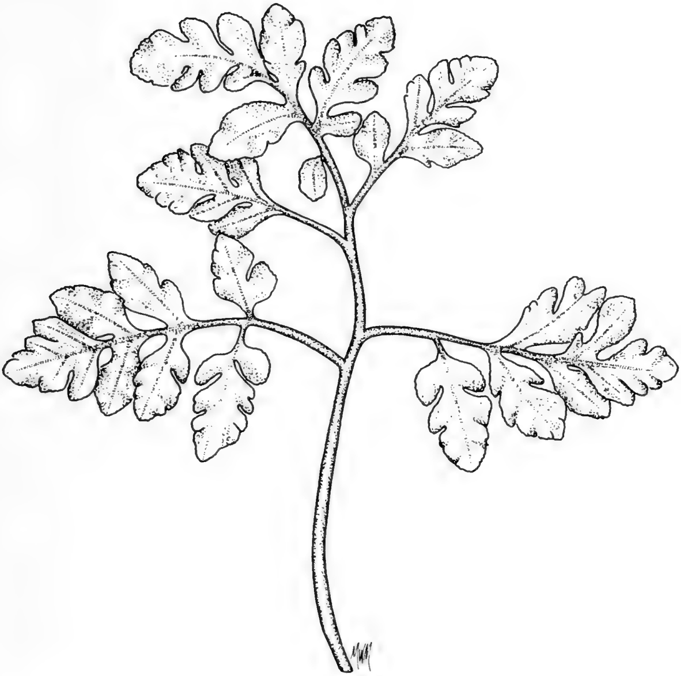


Fig. 6. Botrychium oneidense (Oneida Grape Fern). Leaf, X 1.

5. *Botrychium oneidense* (Gilb.) House, Am. Midl. Nat. 7:126. 1931. Fig. 6.

Botrychium ternatum var. oneidense Gilb. Fern. Bull. 9:27. 1901.

Botrychium dissectum var. oneidense (Gilb.) Farw. Papers Mich. Acad. Sci. 3:89. 1924.

Fern with overwintering green fronds, the segments broadly ovate and rounded, otherwise as in B. dissectum.

Common Name: Oneida Grape Fern.

Habitat: Woods, in sandy soil.

Range: New Brunswick to Minnesota, south to Illinois, Indiana, Ohio, and North Carolina.

Illinois Distribution: Ogle Co.: Camp Louden, 6 miles south of Oregon, December 2, 1948, E. W. & G. B. Fell f48-450. (ISM).

The Illinois specimen, originally identified as B. multifidum, has been corrected to B. oneidense by Dr. W. H. Wagner, Jr., a conclusion concurred in by this author.

Although some botanists consider this taxon to be merely a variant of B. dissectum, others believe that B. oneidense is a valid species.

6. *Dryopteris celsa* (Wm. Palmer) Small, Ferns Southeastern States 284. 1938. Fig. 7.

Dryopteris goldiana (Hook.) Gray ssp. celsa Wm. Palmer, Proc. Biol. Soc. Wash. 13:65. 1899.

Evergreen fern from a slender rhizome; frond rather firm, up to 1 m long, less than half as broad, gradually narrowed in the upper half, the basal pinnae subequal to the middle ones; stipe with brown scales; sori close to the midvein.

Common Name: Log Fern.

Habitat: Along railroad adjacent to a cypress swamp (in Illinois).

Range: Scattered in the eastern United States.

Illinois Distribution: Johnson Co.: Heron Pond Natural Area, Jack White s.n. (SIU).

Fig. 7. Dryopteris celsa (Log Fern). Habit, X 1/2. Pinna, X 1. Pinnules, X 5.

7. *Dryopteris filix-mas* (L.) Schott, Gen. Fil. 67. 1834. Fig. 8.

Polypodium filix-mas L. Sp. Pl. 1090. 1753.

Evergreen fern from a woody rootstock; fronds erect, spreading, up to 1 m long, about 1/3 as broad, narrowed at the base, twice pinnate; stipe chaffy; sori closer to the midvein than to the margin.

Common Name: Male Fern.

Habitat: Steep, relatively undisturbed northwest-facing slope of a ravine.

Range: Newfoundland to Alaska, south to California, Arizona, northern Illinois, Michigan, and Vermont; Mexico; Greenland; Iceland; Africa.

Illinois Distribution: Cook Co.: Glencoe, 400 feet west of Lake Michigan, December 14, 1979, E. F. Evert 1651, (MORT).

At the Illinois locality, Dryopteris filix-mas grows in association with Acer saccharum, Aralia nudicaulis, Hamamelis virginiana, Quercus rubra, and Trillium grandiflorum.

Evert (1980) has given arguments for believing that the Illinois collection of Dryopteris filix-mas is native.

8. *Gymnocarpium robertianum* (Hoffm.) Newm. Phytologist 4:app. xxiv. 1851. Fig. 9.

Polypodium robertianum Hoffm. Deutschl. Fl. 2:20. 1795.

Dryopteris robertiana (Hoffm.) C. Chr. Ind. Fil. 289. 1905.

Deciduous fern from slender, creeping rhizomes; fronds up to 20 cm long, triangular-ovate, glandular, the basal pinnae the largest, the uppermost segments merely pinnatifid; stipes stramineous, not scaly; sori submarginal.

Common Name: Scented Oak Fern.

Habitat: Steep bluff overlooking Carroll Creek.

Range: Newfoundland to Alaska, south to Idaho, Iowa, northern Illinois, and northern Michigan.

Illinois Distribution: Carroll Co.: 1 mile west of Mt. Carroll, July 28, 1980, J. H. Peck 80-572, (U. Wisc., Lacrouse).

Fig. 8. Dryopteris filix-mas (Male Fern). Leaf, X 1/3. Pinna, X 1.

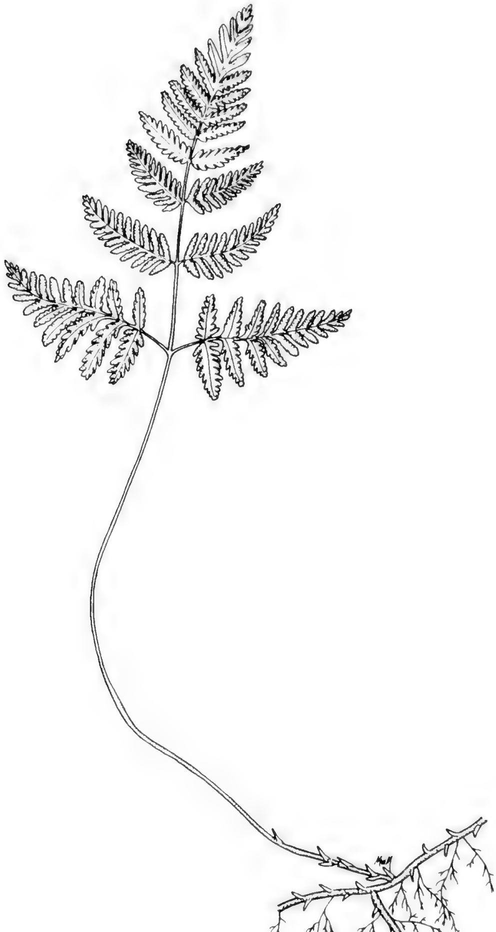


Fig. 9. Gymnocarpium robertianum (Scented Oak Fern). Habit, X 1/3.

Fig. 10. Asplenosorus X herb-wagneri (Wagner's Spleenwort). Habit, X 1/2.

The collection of this northern species in Illinois extends the range of this fern to the southeast.

9. *Asplenosorus Xherb-wagneri* (Taylor & Mohlenbr.) Mickel, Am. Fern. Journ. 64:119. 1974. Fig. 10.

Asplenium X herb-wagneri Taylor & Mohlenbr. Am. Fern Journ. 67:66. 1977.

Perennial with short-creeping to erect rhizome; scales clathrate; fronds spreading, linear, pinnate below, pinnatifid to crenate-serrate toward the apex, up to 17 cm long, up to 1.8 cm broad, membranaceous, caudate-attenuate at the apex; stipes slender, shiny, black-purple; rachis black-purple below the middle, green toward the apex; pinnae crowded to remote, with up to 15 subopposite or alternate pairs of leaflets, the leaflets suborbiculate to ovate to flabellate, up to 9 mm long, up to 0.9 mm broad, obtuse at the apex, denticulate-serrulate or crenulate, cuneate at the base, with the veins free; sori up to 2.5 mm long; spores abortive.

Common Name: Wagner's Spleenwort.

Habitat: Crevice of chert outcrop.

Range: Union County, Illinois; Martin County, Indiana.

Illinois Distribution: Near McGee Hill Overlook, Pine Hills.

This taxon is reputed to be the hybrid between Asplenosorus pinnatifidum and Asplenium trichomanes. It possesses the distinct lower leaflets of Asplenium trichomanes and the tapering frond of Asplenosorus pinnatifidum. Both parents were found where Asplenosorus X herb-wagneri occurred.

This hybrid was first found at McGee Hill, Union County, Illinois, on October 12, 1967, by W. H. Wagner, Jr., in the company of Robert H. Mohlenbrock, William Hopkins, and Joe Vaughan. Subsequently, it has been found in Martin County, Indiana. Union Co, Ill: Pine Hills, October 12, 1967, W. H. Wagner, Jr. 67024 (MICH).

10. *Asplenosorus Xshawneensis* R. C. Moran, Am. Fern. Jour. 71:87. Fig. 11.

Perennial with short, creeping rhizome; scales clathrate, blackish; fronds low-spreading, tufted, evergreen, to 6 cm long, pinnate below, pinnatifid-crenate at the middle, long-

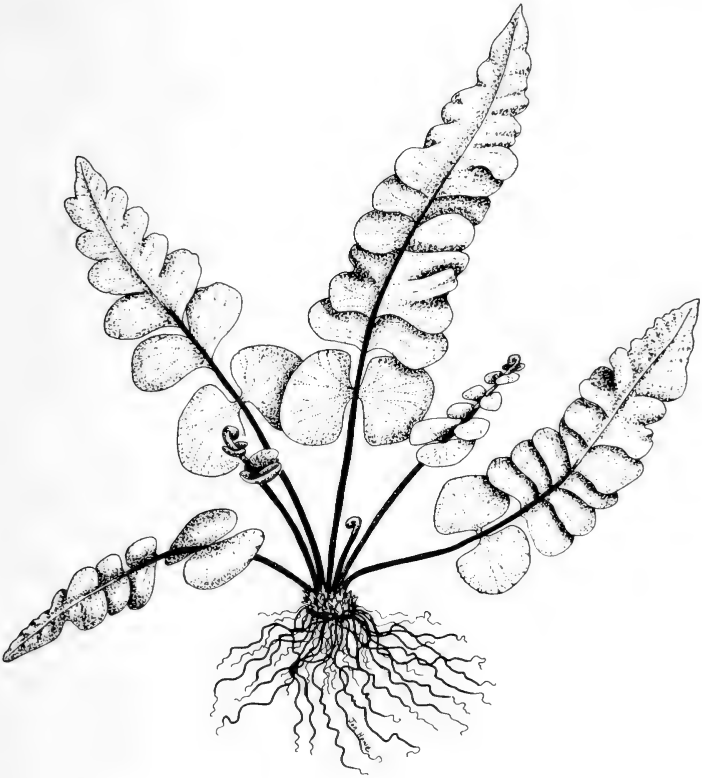


Fig. 11. *Asplenosorus* X *shawneensis* (Shawnee Spleenwort). Habit, X 1.

attenuate at the apex, with the nerves anastomosing at the middle and the apex; basal pinnae 2-4, opposite, overlapping, subglobose to very broadly ovate, up to 1 cm wide, the margins shallowly crenate, the nerves dichotomous, free; rachis dark brown at the base for 1 cm, green above; sori unknown.

Common Name: Shawnee Spleenwort.

Habitat: Crevice of sandstone outcrop.

Range: Known only from Williamson County, Illinois.

Illinois Distribution: East of Devil's Kitchen Lake, October 21, 1979, R. Moran 1269 (MICH).

This taxon is the hybrid between Camptosorus rhizophyllus and Asplenium trichomanes. The long-tapering fronds are reminiscent of the former species, while the separate basal pinnae resemble those of the latter. Both parents occur with the hybrid.

11. *Asplenium trichomanes* L. ssp. *quadrivalens* D. E. Meyer emend. Lovis, Brit. Fern Gaz. 9:155. 1964. Not illustrated. Delicate, evergreen fern with the general appearance of typical A. trichomanes, growing on limestone; scales of rhizomes up to 5 mm long; stipe blackish-brown; fronds once-pinnate, the pinnae mostly opposite, oblong; sori 4-9 (-12), up to 3 mm long; spores 34-43 μm in diameter; guard cell length 41-49 μm; tetraploid.

Common Name: Maidenhair Spleenwort.

Habitat: Limestone rocks.

Range: Quebec and Vermont to northern Michigan and northeastern Wisconsin, south to southwestern Ohio and Virginia; southern Illinois; Washington; Oregon; British Columbia.

Illinois Distribution: Union Co.: Pine Hills, east of Wolf Lake, October 2, 1948, G. S. Winterringer 1934 (ILL).

Moran (1982a) is the most recent author to discuss the Asplenium trichomanes complex, verifying earlier workers' findings that both diploid and tetraploid cytotypes occur in the United States and Canada. Although some morpholog-

Fig. 12. Cystopteris X illinoensis (Hybrid Fragile Fern). Habit, X 1/3. Pinna, X 1 1/4.

ical differences between the diploids and tetraploids can usually be observed in living specimens, the greatest difference exhibited is in spore size, the spores of the tetraploid measuring from 34-43 µm, while those of the diploid measuring somewhat smaller. Moran has also found that the diploid plants are mostly on sandstone, while the tetraploid plants are primarily on limestone.

In Illinois, all populations examined by Moran are the typical diploid cytotype except for a single collection from Union County, where a specimen was found growing on limestone. Interestingly, the Illinois collection is nearly 300 miles from the nearest known station in southwestern Ohio, and approximately 450 miles south of the nearest Wisconsin station.

Because most of the morphological differences exhibited by ssp. quadrivalens are best observed in the field, the tetraploid taxon is not illustrated in this paper.

12. *Cystopteris Xillinoensis* R. C. Moran, Am. Fern Jour. 72: 43. 1982. Fig. 12.
Deciduous fern on calcareous substrate; fronds bipinnate-pinnatifid, up to 50 cm long, some of them long-tapering at the tip, apparently with a few small bulblets; stipes reddish black to brown; spores aborted.

Common Name: Hybrid Fragile Fern.

Habitat: Old quarry.

Range: Known so far only from Illinois.

Illinois Distribution: Winnebago Co.: Old quarry, R. Benedict s.n. (ILL, ILLS, SIU).

Moran (1982b) reports that the collection cited above is a hybrid, with the parents being Cystopteris bulbifera and C. fragilis var. mackayi. Both parents were growing with the hybrid. The fronds of C. X illinoensis are intermediate between those of the two parents.

The only known collection of this hybrid was transplanted by Benedict to his garden in Rockford. The Benedict home has been razed, and the garden no longer exists.

Revisions and Corrections

The following revisions and corrections should be made in the Ferns of Illinois (Mohlenbrock, 1967).

Delete Carroll, Coles, DeWitt, Knox, Sangamon, Warren, and Whiteside records for *Equisetum variegatum* Schleich.

Delete Cook County record for *Lycopodium porophilum* Lloyd & Underw.

Delete the following counties for *Selaginella apoda*, since they are now considered to be for *S. eclipes*: Cass, Coles, Cook, Fulton, Kane, Kankakee, Lake, McHenry, Peoria, Tazewell, Vermilion, Will.

Recent scanning electron microscope studies of *Isoetes* spores from Illinois material have revealed that the Shawnee Hills species formerly reported as *Isoetes butleri* Engelm. is actually *Isoetes melanopoda* Gay & Dur. (Taylor, Mohlenbrock, & Murphy, 1975).

Delete Jackson County record for *Thelypteris noveboracensis*.

Additional Records for Taxa Previously Reported from Illinois

Lycopodium porophilum Lloyd & Underw.: LAKE. *Lycopodium lucidulum* Michx. var. *lucidulum*: CARROLL, JO DAVIESS, LAKE, RANDOLPH. *Lycopodium inundatum* L.: OGLE. *Lycopodium dendroideum* Michx.: COOK, IROQUOIS, SCHUYLER, WINNEBAGO. *Lycopodium flabelliforme* (Fern.) Blanch. (now *L. digitatum* A. Braun): CARROLL, CRAWFORD, EDGAR, GALLATIN, JO DAVIESS, JOHNSON, McDONOUGH, RANDOLPH, RICHLAND, SALINE, VERMILION, WILL, WILLIAMSON.

Selaginella apoda (L.) Spring.: JACKSON.

Isoetes melanopoda Gay & Dur.: GALLATIN, HANCOCK, JOHNSON, POPE, SALINE, UNION, WILLIAMSON.

Equisetum variegatum Schleich.: KNOX, SANGAMON, WHITESIDE. *Equisetum X nelsonii* (A. A. Eaton) Schaffner: LAKE. *Equisetum laevigatum* A. Br.: CHRISTIAN, CLARK, FORD, HARDIN, JO DAVIESS, KNOX. *Equisetum palustre* L.: TAZEWELL. *Equisetum X ferrissii* Clute: ADAMS, CASS, CHAMPAIGN, CLARK, CUMBERLAND, EDWARDS, FORD, FULTON, HANCOCK, HARDIN, IROQUOIS, JACKSON, JO DAVIESS, MACON, MARSHALL, McHENRY, McLEAN, MENARD, MORGAN,

OGLE, PEORIA, PIATT, SANGAMON, SCHUYLER, STEPHENSON, UNION, VERMILION, WABASH, WHITESIDE. Equisetum X litorale Kuhl: CARROLL, HANCOCK, JO DAVIESS, LEE, WOODFORD. Equisetum pratense Ehrh.: OGLE. Equisetum fluviatile L.: GRUNDY, JO DAVIESS, KANE, KENDALL, STEPHENSON.

Botrychium multifidum (Gmel.) Rupr. ssp. silaifolium (Presl) Clausen: CARROLL, JO DAVIESS, LAKE, STEPHENSON. Botrychium dissectum Spreng. var. dissectum: CARROLL, JO DAVIESS, McDONOUGH, STEPHENSON. Botrychium dissectum Spreng. var. obliquum (Muhl.) Clute: CARROLL, CLARK, COOK, CRAWFORD, DOUGLAS, DuPAGE, JO DAVIESS, KANE, KANKAKEE, McDONOUGH, McHENRY, PEORIA, RICHLAND, WABASH. Botrychium biternatum (Sav.) Underw.: JOHNSON, POPE.

Ophioglossum vulgatum L.: BROWN, CHRISTIAN, CRAWFORD, EDGAR, FRANKLIN, MACON, MONROE, PIATT, ST. CLAIR. Ophioglossum engelmannii Prantl: JACKSON, UNION.

Osmunda regalis L. var. spectabilis (Willd.) Gray: CRAWFORD, JO DAVIESS, JOHNSON. Osmunda cinnamomea L.: CARROLL, GALLATIN, HAMILTON, HARDIN, JACKSON, McDONOUGH, MONROE, RANDOLPH, UNION. Osmunda claytoniana L.: CRAWFORD, GRUNDY, LAKE, RANDOLPH.

Trichomanes boschianum Sturm: HARDIN.

Dennstaedtia punctilobula (Michx.) Moore: OGLE.

Pteridium aquilinum (L.) Kuhn var. latiusculum (Desv.) Underw.: BROWN, COLES, DOUGLAS, GRUNDY, PULASKI, SCHUYLER, WASHINGTON, WAYNE.

Pellaea glabella Mett.: DuPAGE, JACKSON, KANE, KENDALL.

Cheilanthes lanosa (Michx.) D. C. Eaton: MONROE.

Polypodium vulgare L. var. virginianum (L.) Eaton (now P. virginianum L.): CARROLL, CLARK, GRUNDY, JO DAVIESS, McDONOUGH, MONROE. Polypodium polypodioides (L.) Watt var. michauxianum Weatherby: ALEXANDER, RANDOLPH.

Polystichum acrostichoides (Michx.) Schott: CARROLL, COLES, JO DAVIESS, McHENRY.

Onoclea sensibilis L.: BOONE, DuPAGE, JO DAVIESS, KANE, KENDALL, LOGAN, MACON, McHENRY, PIATT, SHELBY, WILL.

Woodwardia areolata (L.) Moore: HARDIN, MASSAC.

Gymnocarpium dryopteris (L.) Newm.: CARROLL, JO DAVIESS, STEPHENSON, WINNEBAGO.

Thelypteris phegopteris (L.) Slosson (now Phegopteris connectilis (Michx.) Watt): McDONOUGH. Thelypteris hexagonoptera (Michx.) Weatherby (now Phegopteris hexagonoptera (Michx.) Fee: DOUGLAS. Thelypteris palustris Schott var. pubescens (Laws.) Fern.: ALEXANDER, DeKALB, GRUNDY.

Dryopteris carthusiana (Villars) H. P. Fuchs: GRUNDY, HANCOCK, KANE, MASON, MASSAC, McDONOUGH, WILL. Dryopteris intermedia (Muhl.) Gray: DuPAGE, MACON, McDONOUGH, PIATT. Dryopteris cristata (L.) Gray: CARROLL, DuPAGE, MASON, McDONOUGH, TAZEWELL, WILL. Dryopteris goldiana (Hook.) Gray: CARROLL, JO DAVIESS, JOHNSON, UNION, WILLIAMSON. Dryopteris marginalis (L.) Gray: CASS.

Athyrium pycnocarpon (Spreng.) Tidestrom: EDGAR, KENDALL, McDONOUGH, WABASH. Athyrium thelypterioides (Michx.) Desv.: CALHOUN, EFFINGHAM, McLEAN, STEPHENSON. Athyrium filix-femina (L.) Roth var. rubellum Gilb. (now A. angustum (Willd.) Presl): CRAWFORD, DOUGLAS, GRUNDY, MASON, MONTGOMERY.

Asplenium rhizophyllum L. (now Camptosorus rhizophyllus (L.) Link): FRANKLIN, HAMILTON, MACOUPIN, WAYNE. Asplenium bradleyi D.C. Eaton: SALINE. Asplenium trichomanes L.: RANDOLPH. Asplenium platyneuron (L.) Oakes: COOK, DuPAGE, GRUNDY, KENDALL, MACON, McHENRY, WILL.

Woodsia obtusa (Spreng.) Torr.: CLINTON, EDGAR, EDWARDS, HAMILTON, LAWRENCE, LOGAN, MADISON, MASON, MERCER, MONTGOMERY, PERRY, STEPHENSON, WASHINGTON, WAYNE, WHITESIDE. Woodsia ilvensis (L.) R. Br.: LaSALLE, LEE.

Cystopteris bulbifera (L.) Bernh.: BOONE, DuPAGE, KANE, KENDALL, McDONOUGH, McHENRY, POPE. Cystopteris fragilis (L.) Bernh. var. fragilis: JACKSON, LEE. Cystopteris fragilis (L.) Bernh. var. mackayi Laws.: CARROLL, JACKSON, JO DAVIESS. Cystopteris X tennesseensis Shaver: ADAMS, BROWN, CALHOUN, CARROLL, CLARK, COOK, DuPAGE, HANCOCK, HARDIN, JACKSON, JERSEY, JO DAVIESS, JOHNSON, KNOX, LaSALLE, LAWRENCE, McDONOUGH, MENARD, MONROE, PEORIA, PIKE, POPE, RANDOLPH, ROCK ISLAND, ST. CLAIR, STEPHENSON, WABASH, WILLIAMSON.

Azolla mexicana Presl: WHITESIDE.

Annotated List of Illinois Ferns

Since publication of Mohlenbrock's Ferns of Illinois (1967) and Mohlenbrock's Guide to the Vascular Flora of Illinois (1975), considerable nomenclatural changes for Illinois taxa of ferns have taken place. The following annotated list of Illinois ferns brings the nomenclature more in line with that recognized by most American pteridologists. For hybrids, the reputed parents are indicated in parentheses. For taxa whose binomials have been changed since publication of Ferns of Illinois (1967), the binomial used in that work is given between square brackets.

Lycopodiophyta

Lycopodiaceae

Lycopodium clavatum L.
Lycopodium clavatum L. var. megastachyon Fern. & Bissell
Lycopodium dendroideum Michx.
Lycopodium digitatum A. Br. [L. flabelliforme (Fern.) Blanch.]
Lycopodium inundatum L.
Lycopodium lucidulum Michx.
Lycopodium lucidulum Michx. var. tryonii Mohlenbr.
Lycopodium porophilum Lloyd & Underw.
Lycopodium Xhabereri House (L. digitatum Xtristachyum)

Selaginellaceae

Selaginella apoda (L.) Fern.
Selaginella eclipes Buck
Selaginella rupestris (L.) Spring.

Isoetaceae

Isoetes melanopoda Gay & Dur.
Isoetes engelmannii A. Br.

Equisetophyta

Equisetaceae

Equisetum arvense L.
Equisetum fluviatile L.
Equisetum hyemale L. var. affine (Engelm.) A.A. Eaton
Equisetum laevigatum A. Br.
Equisetum palustre L.
Equisetum pratense Ehrh.

Equisetum scirpoides Michx.
Equisetum variegatum Schleich.
Equisetum Xferrissii Clute (E. hyemale X laevigatum)
Equisetum Xlitorale Kuhl. (E. arvense X fluviatile)
Equisetum Xnelsonii (A.A. Eaton) Schaffn. (E. laevigatum X variegatum)
Equisetum Xtrachyodon A. Br. (E. hyemale X variegatum)

Polypodiophyta

Ophioglossaceae

Botrychium biternatum (Sav.) Underw.
Botrychium dissectum Spreng. f. dissectum
Botrychium dissectum Spreng. f. obliquum (Muhl.) Fern.
Botrychium matricariaefolium A. Br.
Botrychium multifidum (Gmel.) Rupr. ssp. silaifolium (Presl) Clausen
Botrychium oneidense (Gilb.) House
Botrychium simplex E. Hitchc.
Botrychium virginianum (L.) Sw.
Ophioglossum engelmannii Prantl
Ophioglossum vulgatum L. var. pseudopodum (Black) Farw.
Ophioglossum vulgatum L. var. pycnostichum Fern.

Osmundaceae

Osmunda cinnamomea L.
Osmunda claytoniana L.
Osmunda regalis L. var. spectabilis (Willd.) Gray

Hymenophyllaceae

Trichomanes boschianum (Bosch) Sturm

Adiantaceae

Adiantum pedatum [Tourn.] L.
Cheilanthes feei Moore
Cheilanthes lanosa (Michx.) D. C. Eaton
Cryptogramma stelleri (S.G. Gmel.) Prantl
Pellaea atropurpurea (L.) Link
Pellaea glabella Mett. ex Kuhn

Polypodiaceae

Polypodium polypodioides (L.) Watt var. michauxianum Weatherby
Polypodium virginianum L. [P. vulgare L. var. virginianum (L.) A.A. Eaton]

Dennstaedtiaceae

Dennstaedtia punctilobula (Michx.) Moore
Pteridium aquilinum (L.) Kuhn var. latiusculum (Desv.) Underw.
Pteridium aquilinum (L.) Kuhn var. pseudocaudatum (Clute) Heller

Thelypteridaceae

Phegopteris connectilis (Michx.) Watt [Thelypteris phegopteris (L.) Slosson]
Phegopteris hexagonoptera (Michx.) Fee [Thelypteris hexagonoptera (Michx.) Weatherby]
Thelypteris noveboracensis (L.) Nieuwl.
Thelypteris palustris Schott. var. pubescens (Laws.) Fern.

Aspleniaceae

Asplenium bradleyi D.C. Eaton
Asplenium platyneuron (L.) BSP.
Asplenium resiliens Kunze
Asplenium ruta-muraria L.
Asplenium trichomanes L. ssp. trichomanes
Asplenium trichomanes L. ssp. quadrivalens D.E. Meyer emend. Lovis
Asplenosorus Xebenoides (R.R. Scott) Wherry (Asplenium platyneuron X Camptosorus rhizophyllus) [Asplenium Xebenoides R.R. Scott]
Asplenosorus Xgravesii (Maxon) Mickel (Asplenium bradleyi X Asplenosorus pinnatifidus) [Asplenium Xgravesii Maxon]
Asplenosorus Xherb-wagneri (Taylor & Mohlenbr.) Mickel (Asplenium trichomanes X Asplenosorus pinnatifidus) [Asplenium Xherb-wagneri Taylor & Mohlenbr.]
Asplenosorus Xkentuckiense (McCoy) Mickel (Asplenium platyneuron X Asplenosorus pinnatifidus) [Asplenium Xkentuckiense McCoy]
Asplenosorus Xpinnatifidus (Nutt.) Mickel (Asplenium montanum X Camptosorus rhizophyllus) [Asplenium pinnatifidum Nutt.]
Asplenosorus Xshawneensis Moran (Asplenium trichomanes X Camptosorus rhizophyllus)
Asplenosorus Xtrudellii (Wherry) Mickel (Asplenium montanum X Asplenosorus pinnatifidus) [Asplenium Xtrudellii Wherry]
Athyrium angustum (Willd.) Presl [A. filix-femina (L.) Roth var. rubellum Gilb.]
Athyrium asplenioides Michx. [A. filix-femina (L.) Roth var. asplenioides (Michx.) Farw.]
Athyrium pycnocarpon (Spreng.) Tidestrom
Athyrium thelypterioides (Michx.) Desv.

Camptosorus rhizophyllus (L.) Link [Asplenium rhizophyllum L.]
Cystopteris bulbifera (L.) Link
Cystopteris fragilis (L.) Bernh. var. fragilis
Cystopteris Xtenuis (Michx.) Desv. [C. fragilis (L.) Bernh. var. mackayi Laws.] (C. protrusa X reevesiana Lell.)
Cystopteris protrusa (Weatherby) Blasdell [C. fragilis (L.) Bernh. var. protrusa Weatherby]
Cystopteris Xillinoensis Moran (C. bulbifera X fragilis var. mackayi)
Cystopteris Xtennesseensis Shaver (C. bulbifera X protrusa)
Dryopteris celsa (Wm. Palmer) Small
Dryopteris clintoniana (D.C. Eaton) Dowell
Dryopteris cristata (L.) Gray
Dryopteris filix-mas (L.) Schott
Dryopteris goldiana (Hook.) Gray
Dryopteris intermedia (Muhl.) Gray
Dryopteris marginalis (L.) Gray
Dryopteris carthusiana (Villars) H.P. Fuchs
Dryopteris Xboottii (Tuckerm.) Underw. (D. cristata X intermedia)
Dryopteris Xneo-wherryi W.H. Wagner (D. goldiana X marginalis)
Dryopteris Xtriploidea Wherry (D. intermedia X carthusiana)
Gymnocarpium dryopteris (L.) Newm.
Gymnocarpium robertianum (Hoffm.) Newm.
Matteuccia struthiopteris (L.) Todaro var. pensylvanica (Willd.) Mart.
Onoclea sensibilis L.
Onoclea sensibilis L. f. obtusilobata (Schkuhr) Gilb.
Polystichum acrostichoides (Michx.) Schott
Woodsia ilvensis (L.) R. Br.
Woodsia obtusa (Spreng.) Torr.
Woodwardia areolata (L.) Moore
Woodwardia virginica (L.) Sm.

Azollaceae

Azolla caroliniana Willd.
Azolla mexicana Presl

Marsileaceae

Marsilea quadrifolia L.

Literature Cited

BUCK, W. R. 1977. A new species of Selaginella in the S. apoda complex. Canadian Journal of Botany 55:366-371.

EVERT, E. F. 1980. A range extension for Dryopteris filix-mas. American Fern Journal 70:113-114.

McFALL, D. & M. JONES. 1972. Some interesting fern finds and records in northern Illinois. American Fern Journal 62:47-48.

MICKEL, J. 1974. The status and composition of Asplenosorus. American Fern Journal 64:119.

MOHLENBROCK, R. H. 1967. The Illustrated Flora of Illinois. Ferns. Southern Illinois University Press, Carbondale. 191 pp.

__________. 1970. Additions to the Illustrated Flora of Illinois. I. Transactions of the Illinois Academy of Science 63:42-50.

__________. 1975. Guide to the Vascular Flora of Illinois. Southern Illinois University Press, Carbondale. 394 pp.

MORAN, R. 1981. X Asplenium shawneensis, A New Natural Fern Hybrid Between Asplenium trichomanes and Camptosorus rhizophyllus. American Fern Journal 71:85-89.

__________. 1982a. The Asplenium trichomanes Complex in the United States and Adjacent Canada. American Fern Journal 72: 5-11.

__________. 1982b. Cystopteris X illinoensis: A New Natural Fern Hybrid from Cystopteris bulbifera X C. fragilis var. mackayi. American Fern Journal 72:41-45.

__________. 1983. Equisetum X ferrissii (Equisetaceae) in Illinois. Castanea 48:79-82.

TAYLOR, W. C., R. H. MOHLENBROCK, & J. A. MURPHY. 1975. The spores and taxonomy of Isoetes butleri and I. melanopoda. American Fern Journal 65:33-38.

THE ILLUSTRATED FLORA OF ILLINOIS

FERNS

Robert H. Mohlenbrock

Including keys, discriptions, full page illustrations, distribution maps, common names, notes, and synonomy to the ferns and "fern allies" of Illinois, 191p. hardback. PRICE: $15.00 + $2 postage.

member price

~~**$15.00**~~ now $13^{50} thru June '84

post free

Please send me ___ copies of The Illustrated Flora of Illinois: Ferns. Enclosed is a check for $_____ including postage and made out to S.I.N.P.S.

SHIP TO:
Name________________________________

Address______________________________

City__________________State__________

Zip Code_________

Send check and order form to: Southern Illinois Native Plant Society, Department of Botany, Southern Illinois University, Carbondale IL 62901

Nomenclatural Equivalencies in the Illinois Flora

I. Monocots

Robert H. Mohlenbrock

Since this author's publication in 1975 of Guide to the Vascular Flora of Illinois, two works have appeared which attempt to standardize the scientific names of the vascular plants of the United States. Kartesz and Kartesz (1980) published a check-list designed "to account as accurately and completely as possible for the multiplicity of pertinent names of all known native and naturalized vascular plant taxa" in the United States, Canada, and Greenland. After completing their list, they submitted portions of it to more than 250 specialists for their criticism before final publication. In 1982, the Soil Conservation Service published its two-volume National List of Scientific Plant Names, based on information supplied to the Smithsonian Institution by a group of 222 specialists.

Many nomenclatural changes for plants in the Illinois flora were suggested by both of these works as a result of more recent systematic treatment of various plant groups. Not only are there substantial changes from the nomenclature used in 1975 in the Guide to the Vascular Flora of Illinois, the two more recent works by Kartesz and Kartesz and the Soil Conservation Service differ considerably from each other.

In this first article on monocots, the author presents the nomenclatural changes between his work in 1975 and the two later check-lists. In the format below, if there is a blank in either columns II or III, it indicates that the nomenclature used in that work is identical with the one used in Guide to the Vascular Flora of Illinois. If the term synonym appears in Column I, it means that the taxon in either or both Columns II and III was considered synonymous and therefore not recognized as valid in the Guide to the Vascular Flora of Illinois.

Column I lists the nomenclature used in Guide to the Vascular Flora of Illinois; Column II lists the nomenclature accepted by Kartesz and Kartesz (1980); Column III enumerates the nomenclature recognized by the Soil Conservation Service (1982).

I	II	III
Najas guadalupensis (Spreng.) Magnus		N. guadalupensis (Spreng.) Morong
Synonym	Potamogeton pusillus L. var. tenuissimus Mert. & Koch	P. pusillus L. var. tenuissimus Mert. & Koch
Potamogeton X hagstromii Benn.	P. X hagstroemii Benn.	P. X hagstroemii Benn.
Potamogeton X spathulaeformis (Robbins) Morong	P. X spathuliformis (Robbins) Morong	P. X spathuliformis (Robbins) Morong
Juncaginaceae	Scheuchzeriaceae	
Triglochin maritima L.		T. maritimum L.
Triglochin palustris L.	T. palustre L.	T. palustre L.
Scheuchzeria palustris L. var. americana Fern.	S. palustris L. ssp. americana (Fern.) Hulten	
Echinodorus tenellus (Mart.) Buchenau var. parvulus (Engelm.) Fassett		E. parvulus Engelm.
Echinodorus berteroi (Spreng.) Fassett var. lanceolatus (Wats. & Coult.) Fassett	E. rostratus (Nutt.) Engelm.	E. rostratus (Nutt.) Engelm. var. lanceolatus Engelm. ex Wats. & Coult.
Sagittaria longirostra (Micheli) J.G.Sm.	S. australis (J.G.Sm.) Small	S. engelmanniana J.G.Sm. ssp. longirostra (Micheli) Bogin

I	II	III
Alisma plantago-aquatica L. var. americanum Roem. & Schultes	A. plantago-aquatica L. var. americana Schultes & Schultes	A. plantago-aquatica L. var. americanum Schultes
Alisma subcordatum Raf.	A. plantago-aquatica L. var. parviflorum (Pursh) Torr.	
Elodea densa (Planch.) Caspary	Egeria densa Planch.	Egeria densa Planch.
Elodea canadensis Michx.	E. canadensis L.C. Rich	
Poaceae		Gramineae
Bromus marginatus Nees		Syn. of B. carinatus Hook. & Arn.
Bromus willdenovii Kunth	Syn. of B. catharticus Vahl	B. willdenowii Kunth
Bromus brizaeformis Fisch. & Mey.	B. briziformis Fisch. & Mey.	B. briziformis Fisch. & Mey.
Bromus mollis L.	B. hordaceus L.	
Bromus purgans L.	B. altissimus Pursh	B. latiglumis (Shear) Hitchc.
Bromus pubescens Muhl.		B. pubescens Willd.
Syn. of Bromus ciliatus L.		B. ciliatus L. var. intonsus Fern.
Vulpia octoflora (Walt.) Rydb. var. tenella (Willd.) Fern.		Syn. of V. octoflora (Walt.) Rydb.

I	II	III
Vulpia dertonensis All.	V. bromoides (L.) S.F.Gray	V. bromoides (L.) S.F.Gray
Festuca capillata Lam.	F. tenuifolia Sibth.	F. tenuifolia Sibth.
Festuca ovina L. var. duriuscula (L.) Koch	F. duriuscula L.	
Festuca pratensis Huds.	F. elatior L.	
Festuca obtusa Bieler	F. obtusa Biehler	F. obtusa Biehler
Lolium multiflorum Lam.		L. perenne L. var. multiflorum (Lam.) R. Parnell
Puccinellia distans (L.) Parl.	P. distans (Jacq.) Parl.	
Puccinellia pallida (Torr.) Clausen	Torreyochloa pallida (Torr.) Church	
Poa autumnalis Muhl.	P. autumnalis Ell.	P. autumnalis Ell.
Poa angustifolia L.	P. pratensis L. ssp. angustifolia (L.) Gaudin	
Koeleria macrantha (Ledeb.) Spreng.	K. cristata (L.) Pers.	K. nitida Nutt.
Aira caryophyllaea L.	A. caryophyllea L.	A. caryophyllea L.
Arrhenatherum elatius (L.) Presl	A. elatius J. & C. Presl	A. elatius J. & K. Presl

I	II	III
Calamagrostis inexpansa Gray var. brevior (Vasey) Stebbins	C. neglecta (Ehrh.) Gaertn Mey. & Schreb.	
Calamagrostis epigeios L.		C. epigejos L.
Agrostis alba L.	A. stolonifera L. var. major (Gaudin) Farw.	
Agrostis alba L. var. palustris (Huds.) Pers.	A. stolonifera L. var. palustris (Huds.) Farw.	
Agrostis tenuis Sibth.	A. capillaris L.	
Cinna latifolia (Trev.) Griseb.	C. latifolia (Trev. & Goepp.) Griseb.	
Syn. of Elymus arenarius L.		E. arenarius L. ssp. mollis (Trin.) Hulten
Elymus hystrix L.	Hystrix patula Moench	
Elymus hystrix L. var. bigeloviana (Fern.) Mohlen-brock	Hystrix patula Moench var. bigeloviana (Fern.) Deam	Recognizes both E. hystrix and H. patula
Elymus virginicus L. var. glabriformis (Vasey) Bush	Syn. of E. virginicus L.	
Syn. of Elymus virginicus L.		E. virginicus L. var. hirsutiglu-mis Hitchc.

I	II	III
Syn. of Elymus virginicus L.		E. virginicus L. var. jejunus (Ramaley) Bush
Elymus villosus Muhl. f. arkansanus (Scribn. & Ball) Fern.	Syn. of E. villosus Muhl.	E. villosus Muhl. var. arkansanus Scribn. & Ball
Hordeum brachyantherum Nevski		H. brachyantherum Nevskii
Hordeum X montanense Scribn.	Elyhordeum X montanense (Scribn.) Bowden	Elyhordeum X montanense (Scribn.) Bowden
Agropyron desertorum (Fisch.) Schult.	A. desertorum (Link) Schult.	A. desertorum (Link) Schult.
Agropyron subsecundum (Link) Hitchc.	A. trachycaulum (Link) Lewis var. unilaterale (Vasey) Malte	A. trachycaulum (Link) Lewis var. unilaterale (Vasey) Malte
Agropyron trachycaulum (Link) Malte	A. trachycaulum (Link) Lewis	A. trachycaulum (Link) Lewis
Agropyron smithii Rydb. var. molle (Scribn. & Smith) Jones	Syn. of A. smithii Rydb.	
Melica nitens (Scribn.) Nutt.	M. nitens (Scribn.) Piper	M. nitens (Scribn.) Piper
Glyceria arkansana Fern.		G. septentrionalis Hicks. var. arkansana (Steyerm.) Kucera

I	II	III
Glyceria striata (Lam.) Hitchc. var. stricta (Scribn.) Fern.	Syn. of G. striata (Lam.) Hitchc.	
Glyceria grandis S. Wats.		G. maxima (Hartm.) Holmberg ssp. grandis (S. Wats.) Hulten
Oryzopsis racemosus (J.E.Sm.) Ricker		O. racemosus (J.E.Sm.) Hitchc.
Oryzopsis pungens (Torr.) Hitchc.	O. pungens (Spreng.) Hitchc.	O. pungens (Spreng.) Hitchc.
Diarrhena americana Beauv. var. obovata Gleason		Syn. of D. americana Beauv.
Digitaria sanguinalis (L.) Scop. var. ciliaris (Retz.) Parl.	D. ciliaris (Retz.) Koel.	D. ciliaris (Retz.) Koel.
Trichachne insularis (L.) Nees	Digitaria insularis (L.) Ekman	D. insularis (L.) Mez
Leptoloma cognatum (Schult.) Chase	Digitaria cognatum (Schult.) Pilger	
Eriochloa gracilis (Fourn.) Hitchc.	E. lemmonii Vasey & Scribn. var. gracilis (Fourn.) Gould	
Paspalum pubiflorum Rupr. var. glabrum (Vasey) Vasey	P. pubiflorum Fourn. var. glabrum Scribn.	P. pubiflorum Fourn. var. glabrum Scribn.

I	II	III
Syn. of Paspalum floridanum Michx.	P. floridanum Michx. var. glabratum Vasey	P. floridanum Michx. var. glabratum Vasey
Syn. of Paspalum laeve Michx.	P. laeve Michx. var. circulare (Nash) Fern.	P. laeve Michx. var. circulare (Nash) Fern.
Paspalum lentiferum Lam.	P. praecox Walt.	P. praecox Walt. var. curtisianum (Steud.) Vasey
Paspalum ciliatifolium Michx.	P. setaceum Michx. var. ciliatifolium (Michx.) Vasey	P. setaceum Michx. var. ciliatifolium (Michx.) Vasey
Syn. of Paspalum ciliatifolium Michx.	P. setaceum Michx. var. muhlenbergii (Nash) D.Banks	P. setaceum Michx. var. muhlenbergii (Nash) D.Banks
Syn. of Paspalum ciliatifolium Michx.	P. setaceum Michx. var. stramineum (Nash) D.Banks	P. setaceum Michx. var. stramineum (Nash) D.Banks
Paspalum bushii Nash	Syn. of P. setaceum Michx. var. stramineum (Nash) D.Banks	Syn. of P. setaceum Michx. var. stramineum (Nash) D.Banks
Panicum dichotomiflorum Michx. var. geniculatum (Muhl.) Fern.	Syn. of P. dichotomiflorum Michx.	P. dichotomiflorum Michx. var. geniculatum (Wood) Fern.
Panicum rigidulum Bosc	P. rigidulum Nees	P. rigidulum Nees
Panicum rigidulum Bosc var. condensum (Nash) Mohlenbrock	Syn. of P. rigidulum Nees	Syn. of P. rigidulum Nees
Panicum stipitatum Nash	Syn. of P. rigidulum Nees	Syn. of P. rigidulum Nees

I	II	III
Panicum hians Ell.		Steinchisma hians (Ell.) Nash
Panicum depauperatum Muhl.	Dichanthelium depauperatum (Muhl.) Gould	D. depauperatum (Muhl.) Gould
Panicum perlongum Nash	Syn. of Dichanthelium lineari-folium (Scribn.) Gould	Syn. of D. linearifolium (Scribn.) Gould
Panicum linearifolium Scribn.	Dichanthelium linearifolium (Scribn.) Gould	D. linearifolium (Scribn.) Gould
Panicum linearifolium Scribn. var. werneri (Scribn.) Fern.	Syn. of Dichanthelium lineari-folium (Scribn.) Gould	Syn. of D. linearifolium (Scribn.) Gould
Panicum laxiflorum Lam.	Dichanthelium laxiflorum (Lam.) Gould	D. laxiflorum (L.) Gould
Panicum microcarpon Muhl.	Syn. of Dichanthelium dichoto-mum (L.) Gould	Syn. of D. sphaerocarpon (Ell.) Gould var. isophyllum (Scribn.) Gould & C. A. Clark
Panicum nitidum Lam.	Syn. of Dichanthelium dichoto-mum (L.) Gould	Syn. of Dichanthelium dichotomum (L.) Gould
Panicum boreale Nash	Dichanthelium boreale (Nash) Freckmann	D. boreale (Nash) Freckmann
Panicum dichotomum L.	Dichanthelium dichotomum (L.) Gould	D. dichotomum (L.) Gould
Panicum dichotomum L. var. barbulatum (Michx.) Wood	Syn. of Dichanthelium dichoto-mum L.	Syn. of D. dichotomum (L.) Gould

I	II	III
Panicum mattamuskeetense Ashe	Syn. of Dichanthelium dichotomum (L.) Gould	Syn. of D. dichotomum (L.) Gould
Panicum yadkinense Ashe	Syn. of Dichanthelium dichotomum (L.) Gould	Syn. of D. dichotomum (L.) Gould
Panicum meridionale Ashe	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark var. implicatum (Scribn.) Gould & Clark	Syn. of D. acuminatum (Sw.) Gould & Clark var. implicatum (Scribn.) Gould & Clark
Panicum meridionale Ashe var. albemarlense (Ashe) Fern.	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark var. implicatum (Scribn.) Gould & Clark	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark var. implicatum (Scribn.) Gould & Clark
Panicum lanuginosum Ell.	Dichanthelium acuminatum (Sw.) Gould & Clark	D. acuminatum (Sw.) Gould & Clark
Panicum lanuginosum Ell. var. implicatum (Scribn.) Fern.	Dichanthelium acuminatum (Sw.) Gould & Clark var. implicatum (Scribn.) Gould & Clark	D. acuminatum (Sw.) Gould & Clark var. implicatum (Scribn.) Gould & Clark
Panicum lanuginosum Ell. var. lindheimeri (Nash) Fern.	Dichanthelium acuminatum (Sw.) Gould & Clark var. lindheimeri (Nash) Gould & Clark	D. acuminatum (Sw.) Gould & Clark var. lindheimeri (Nash) Gould & Clark
Panicum lanuginosum Ell. var. septentrionale (Fern.) Fern.	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark	Syn. of D. acuminatum (Sw.) Gould & Clark

I	II	III
Panicum praecocius Hitchc. & Chase	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark var. villosum (Gray) Gould & Clark	Syn. of D. acuminatum (Sw.) Gould & Clark var. villosum (Gray) Gould & Clark
Panicum subvillosum Ashe	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark	Syn. of D. acuminatum (Sw.) Gould & Clark
Panicum villosissimum Nash	Dichanthelium acuminatum (Sw.) Gould & Clark var. villosum (Gray) Gould & Clark	D. acuminatum (Sw.) Gould & Clark var. villosum (Gray) Gould & Clark
Panicum villosissimum Nash var. pseudopubescens (Nash) Fern.	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark var. villosum (Gray) Gould & Clark	Syn. of D. acuminatum (Sw.) Gould & Clark var. villosum (Gray) Gould & Clark
Panicum scoparioides Ashe	Syn. of Dichanthelium acuminatum (Sw.) Gould & Clark	Syn. of D. acuminatum (Sw.) Gould & Clark
Panicum columbianum Scribn.	Dichanthelium sabulorum (Lam.) Gould & Clark var. thinium (Hitchc. & Chase) Gould & Clark	D. sabulorum (Lam.) Gould & Clark
Panicum sphaerocarpon Ell.	Dichanthelium sphaerocarpon (L.) Gould	D. sphaerocarpon (L.) Gould
Panicum polyanthes Schult.	Dichanthelium sphaerocarpon (L.) Gould var. isophyllum (Scribn.) Gould & Clark	D. sphaerocarpon (L.) Gould var. isophyllum (Scribn.) Gould & Clark

I	II	III
Panicum wilcoxianum Vasey	Dichanthelium oligosanthes (Schult.) Gould var. wilcoxianum (Vasey) Gould & Clark	D. oligosanthes (Schult.) Gould var. wilcoxianum (Vasey) Gould & Clark
Panicum malacophyllum Nash	Dichanthelium malacophyllum (Nash) Gould	D. malacophyllum (Nash) Gould
Panicum oligosanthes Schult.	Dichanthelium oligosanthes (Schult.) Gould	D. oligosanthes (Schult.) Gould
Panicum oligosanthes Schult. var. scribnerianum (Nash) Fern.	Dichanthelium oligosanthes (Schult.) Gould var. scribnerianum (Nash) Gould	D. oligosanthes (Schult.) Gould var. scribnerianum (Nash) Gould
Panicum oligosanthes Schult. var. helleri (Nash) Fern.	Syn. of Dichanthelium oligosanthes (Schult.) Gould var. scribnerianum (Nash) Gould	Disposition unclear
Panicum ravenelii Scribn. & Merr.	Dichanthelium ravenelii (Scribn. & Merr.) Gould	D. ravenelii (Scribn. & Merr.) Gould
Panicum leibergii (Vasey) Scribn.	Dichanthelium leibergii (Vasey) Freckm.	D. leibergii (Vasey) Freckm.
Panicum scoparium Lam.	Dichanthelium scoparium (Lam.) Gould	D. scoparium (Lam.) Gould
Panicum commutatum Schult.	Dichanthelium commutatum (Schult.) Gould	D. commutatum (Schult.) Gould

I	II	III
Panicum commutatum Schult. var. ashei Fern.	Syn. of Dichanthelium commutatum (Schult.) Gould	Syn. of D. commutatum (Schult.) Gould
Panicum joori Vasey	Syn. of Dichanthelium commutatum (Schult.) Gould	Syn. of D. commutatum (Schult.) Gould
Panicum clandestinum L.	Dichanthelium clandestinum (L.) Gould	D. clandestinum (L.) Gould
Panicum latifolium L.	Dichanthelium latifolium (L.) Gould & Clark	D. latifolium (L.) Gould
Panicum boscii Poir.	Dichanthelium boscii (Poir.) Gould & Clark	D. boscii (Poir.) Gould & Clark
Panicum boscii Poir. var. molle (Vasey) Hitchc. & Chase	Syn. of Dichanthelium boscii (Poir.) Gould & Clark	Syn. of D. boscii (Poir.) Gould & Clark
Echinochloa colonum (L.) Link	E. colona (L.) Link	E. colona (L.) Link
Echinochloa frumentacea (Roxb.) Link	E. crus-galli (L.) Beauv. var. frumentacea (Roxb.) W.Wight	E. crus-galli (L.) Beauv. var. frumentacea (Roxb.) W.Wight
Echinochloa pungens (Poir.) Rydb.	E. muricata (Beauv.) Fern.	E. muricata (Beauv.) Fern.
Echinochloa pungens (Poir.) Rydb. var. microstachya (Wieg.) Fern. & Grisc.	E. muricata (Beauv.) Fern. var. microstachya Wieg.	E. muricata (Beauv.) Fern. var. microstachya Wieg.

I	II	III
Echinochloa pungens (Poir.) Rydb. var. wiegandii Fassett	E. muricata (Beauv.) Fern. var. wiegandii Fassett	Syn. of E. muricata (Beauv.) Fern. var. microstachya Wieg.
Setaria lutescens (Weigel) Hubb	S. glauca (L.) Beauv.	S. glauca (L.) Beauv.
Sorghum almum Parodi	S. almum L.	S. X almum Parodi
Sorghum bicolor (L.) Moench var. drummondii (Nees) Mohl.	S. bicolor (L.) Moench ssp. drummondii (Steud.) deWet & Harlan	Disposition unclear
Sorghum bicolor (L.) Moench var. caffrorum (Retz.) Mohl.	Syn. of S. bicolor (L.) Moench	Disposition unclear
Sorghum bicolor (L.) Moench var. saccharatum (L.) Mohl.	Syn. of S. bicolor (L.) Moench	Disposition unclear
Syn. of Andropogon virginicus L.	Not given	A. praematurus Fern.
Microstegium vimineum (Trin.) A.Camus		Eulalia viminea (Trin.) Kuntze
Eragrostis trichodes (Nutt.) Wood var. pilifera (Scheele) Fern.		Syn. of E. trichodes (Nutt.) Wood
Eragrostis poaeoides Beauv.	E. minor Host	E. minor Host
Eragrostis neomexicana Vasey		Syn. of E. mexicana (Hornem.) Link

I	II	III
Eragrostis diffusa Buckl.	Syn. of E. pectinacea (Michx.) Nees	Syn. of E. pectinacea (Michx.) Nees
Eragrostis frankii C.A.Meyer var. brevipes Fassett	Syn. of E. frankii C.A. Meyer	Syn. of E. frankii C.A. Meyer
Muhlenbergia asperifolia (Nees & Meyer) Parodi		M. asperifolia (Trin.) Parodi
Muhlenbergia cuspidata (Torr.) Rydb.		M. cuspidata (Hook.) Rydb.
Muhlenbergia sobolifera (Muhl.) Trin.		M. sobolifera (Willd.) Trin.
Muhlenbergia glabrifloris Scribn.	M. glabriflora Scribn.	M. glabriflora Scribn.
Muhlenbergia sylvatica (Torr.) Torr.	M. sylvatica (Torr.) Gray	M. sylvatica Gray
Sporobolus vaginiflorus (Torr.) Wood	S. vaginiflorus (Gray) Wood	S. vaginiflorus (Gray) Wood
Dactyloctenium aegyptium (L.) Beauv.	.	D. aegyptium (L.) Willd.
Leptochloa attenuata (Nutt.) Steud.	Syn. of L. filiformis (Lam.) Beauv.	L. filiformis (Lam.) Beauv. var. attenuata (Nutt.) Steyerm. & Kucera

I	II	III
Leptochloa fascicularis (Lam.) Gray	Diplachne fascicularis (Lam.) Beauv.	
Leptochloa acuminata (Nash) Mohlenbr.	Diplachne acuminata Nash	L. fascicularis (Lam.) Gray var. acuminata (Nash) Gleason
Leptochloa panicoides (Presl) Hitchc.	Diplachne panicoides (Presl) McNeill	
Bouteloua gracilis (HBK.) Lag.	B. gracilis (HBK.) Steud.	B. gracilis (HBK.) Griffiths
Distichlis stricta (Torr.) Rydb.	D. spicata (L.) Greene var. stricta (Torr.) Scribn.	D. spicata (L.) Greene var. stricta (Torr.) Beetle
Aristida intermedia Scribn. & Ball	Syn. of A. longespica Poir. var. geniculata (Raf.) Fern.	Syn. of A. longespica Poir. var. geniculata (Raf.) Fern.
Aristida necopina Shinners	A. glauca (Nees) Walp.	Syn. of A. longespica Poir. var. geniculata (Raf.) Fern.
Aristida ramosissima Engelm.	A. ramosissima Gray	A. ramosissima Gray
Aristida basiramea Engelm.	A. basiramea Vasey	A. basiramea Vasey
Arundinaria gigantea (Walt.) Chapm.	A. gigantea (Walt.) Muhl.	A. gigantea (Walt.) Muhl.
Phragmites australis Trin.	P. australis (Cav.) Steud.	P. australis (Cav.) Steud.
Danthonia spicata (L.) Beauv.	D. spicata (L.) Roem. & Schultes	D. spicata (L.) Roem. & Schultes

I	II	III
Cyperus densicaespitosus Mattf. & Kukenth.		C. tenuifolius (Steud.) Dandy
Cyperus flavescens L.	C. flavescens L. var. poaeformis (Pursh) Fern.	C. flavescens L. var. poaeformis (Pursh) Fern.
Syn. of Cyperus ovularis (Michx.) Torr.		C. ovularis (Michx.) Torr. var. sphaericus Boeckl.
Cyperus grayioides Mohlenbr.		Not mentioned
Cyperus filiculmis Vahl var. macilentus Fern.		Syn. of C. filiculmis Vahl
Cyperus lancastriensis Porter		C. lancastriensis Gray
Cyperus esculentus L. var. leptostachyus Boeckl.	Not mentioned	Not mentioned
Cyperus ferruginescens Boeckl.	C. odoratus L.	
Eleocharis obtusa (Willd.) Schultes var. ovata (Roth) Drap. & Mohlenbr.		E. ovata (Roth) Roem. & Schultes
Eleocharis wolfii (Gray) Patterson	E. wolfii Gray	E. wolfii (Gray) Britt.
Eleocharis tenuis (Willd.) Schult. var. verrucosa (Svenson) Svenson	E. verrucosa (Svenson) L. Harms	

I	II	III
Eleocharis elliptica Kunth		E. tenuis (Willd.) Schultes var. borealis (Svenson) Gleason
Eleocharis elliptica Kunth var. compressa (Sull.) Drap. & Mohlenbr.	Syn. of E. elliptica Kunth	E. compressa Sull.
Eleocharis intermedia (Muhl.) Schultes	E. intermedia Schultes	E. intermedia Schultes
Fimbristylis puberula (Michx.) Vahl var. drummondii (Boeckl.) Ward	Syn. of F. puberula (Michx.) Vahl	F. caroliniana (Lam.) Fern.
Fimbristylis baldwiniana (Schultes) Torr.	F. annua (All.) Roem. & Schultes	F. annua (All.) Roem. & Schultes
Fuirena scirpoides Michx.	F. scirpoidea Michx.	F. scirpoidea Michx.
Scirpus acutus Muhl.	S. acutus Bigel.	S. acutus Bigel.
Scirpus validus Vahl	S. tabernaemontanii K.C.Gmel	
Scirpus micranthus Vahl	Hemicarpha micrantha (Vahl) Britt.	H. micrantha (Vahl) Pax
Scirpus micranthus Vahl var. drummondii (Nees) Mohlenbr.	Hemicarpha drummondii Nees	H. drummondii Nees
Scirpus paludosus A.Nels.	S. maritimus L.	S. robustus Pursh

I	II	III
Scirpus microcarpus Presl		S. microcarpus J. & K. Presl
Scirpus cespitosus L. var. callosus Bigel.	Syn. of S. caespitosus L.	Syn. of S. cespitosus L.
Eriophorum viridi-carinatum (Engelm.) Fern.	E. viridicarinatum (Engelm.) Fern.	E. viridicarinatum (Engelm.) Fern.
Rhynchospora macrostachya Torr.	R. macrostachya Gray	
Scleria pauciflora Muhl.	S. pauciflora Willd.	S. pauciflora Willd.
Scleria verticillata Muhl.	S. verticillata Willd.	S. verticillata Willd.
Carex stenophylla Wahlenb. var. enervis (C.A.Mey.) Kukenth.		Syn. of C. eleocharis L.H. Bailey
Carex foenea Willd. var. enervis Evans & Willd.	Not mentioned	Not mentioned
Carex retroflexa Muhl.	C. retroflexa Willd.	C. retroflexa Willd.
Carex texensis (Torr.) Bailey	C. retroflexa Willd. var. texensis (Torr.) Fern.	
Carex convoluta Mack		C. flaccidula Steud.
Carex rosea Schk.	C. rosea Willd.	C. flaccidula Steud.
Carex cephalophora Muhl.	C. cephalophora Willd.	C. cephalophora Willd.

I	II	III
Carex muhlenbergii Schk.	C. muhlenbergii Willd.	
Carex austrina (Small) Mack.		C. austrina Mack.
Carex cephaloidea Dewey	C. cephaloidea (Dewey) Dewey	
Carex sparganioides Muhl.	C. sparganioides Willd.	C. sparganioides Willd.
Carex annectens Bickn.	C. annectens (Bickn.) Bickn.	C. annectens (Bickn.) Bickn.
Carex annectens Bickn. var. xanthocarpa (Bickn.) Wieg.	Syn. of C. annectens (Bickn.) Bickn.	C. annectens (Bickn.) Bickn. var. xanthocarpa (Kukenth.) Wieg.
Carex stipata Muhl.	C. stipata Willd.	C. stipata Willd.
Carex crus-corvi Shuttlew.	C. crus-corvi Kunze	C. crus-corvi Kunze
Carex bromoides Schk.	C. bromoides Willd.	
Carex incomperta Bickn.	C. atlantica Bailey var. incomperta (Bickn.) F.J. Hermann	C. atlantica Bailey var. incomperta (Bickn.) F.J. Hermann
Carex scoparia Schk.	C. scoparia Willd.	C. scoparia Willd.
Carex richii (Fern.) Mack.	C. straminea Willd.	Not mentioned
Carex bebbii Olney	C. bebbii (Bailey) Fern.	C. bebbii (Bailey) Fern.
Carex festucacea Schk.	C. festucacea Willd.	C. festucacea Willd.

I	II	III
Carex cumulata (Bailey) Mack.	C. cumulata (Bailey) Fern.	
Carex brevior (Dewey) Mack.	C. brevior (Dewey) Lunell	C. brevior (Dewey) Lunell
Carex molesta Mack.		C. X molesta Mack.
Carex alata Torr. & Gray	C. alata Torr.	C. X alata Torr.
Carex pensylvanica Lam. var. distans Peck		Syn. of C. heliophila Mack.
Carex abdita Bickn.	Syn. of C. umbellata Schk.	Syn. of C. umbellata Schk.
Carex pedunculata Muhl.	C. pedunculata Willd.	C. pedunculata Willd.
Carex crinita Lam. var. brevicrinis Fern.	Syn. of C. crinita Lam.	Syn. of C. crinita Lam.
Carex substricta (Kukenth.) Mack.	C. aquatilis Wahl.	C. aquatilis Wahl.
Syn. of Carex stricta Lam.	C. stricta Lam. var. strictior (Dewey) Carey	C. stricta Lam. var. strictior (Dewey) Carey
Carex virescens Muhl.	C. virescens Willd.	C. virescens Willd.
Carex sprengelii Dewey	C. sprengelii Spreng.	C. sprengelii Spreng.
Carex granularis Muhl.	C. granularis Willd.	C. granularis Willd.
Carex conoidea Schk.	C. conoidea Willd.	

I	II	III
Carex conoidea Schk.	C. conoidea Willd.	
Syn. of Carex amphibola Steud.	C. amphibola Steud. var. rigida (Bailey) Fern.	C. amphibola Steud. var. rigida (Bailey) Fern.
Carex grisea Wahl.	C. amphibola Steud. var. turgida Fern.	C. amphibola Steud. var. turgida Fern.
Carex glaucodea Tuckerm.	C. flaccosperma Dewey var. glaucodea (Tuckerm.) Kukenth.	
Carex oligocarpa Schk.	C. oligocarpa Willd.	
Carex careyana Torr.	C. careyana Dewey	
Carex X fulleri Ahles	Not mentioned	Not mentioned
Carex trichocarpa Muhl.	C. trichocarpa Schk.	C. trichocarpa Willd.
Carex hystricina Muhl.	C. hystricina Willd.	C. hystricina Willd.
Syn. of Carex grayi Carey		C. grayi Carey var. hispidula Gray
Carex lupulina Muhl.	C. lupulina Willd.	C. lupulina Willd.
Carex lupuliformis Sartwell	C. lupuliformis Dewey	C. lupuliformis Dewey
Carex rostrata Stokes var. utriculata (Boott) Bailey		Syn. of C. rostrata Stokes

I	II	III
Carex tuckermanii Boott	C. tuckermanii Dewey	
Acorus calamus L.	A. americanus (Raf.) Raf.	
Symplocarpus foetidus (L.) Nutt.		S. foetidus (L.) Salisb.
Peltandra virginica (L.) Kunth	P. virginica (L.) Schott	
Arisaema triphyllum (L.) Schott var. pusillum Peck	A. triphyllum (L.) Schott var. pusillum (Peck) Huttlest.	A. triphyllum (L.) Schott var. pusillum (Peck) Huttlest.
Spirodela oligorhiza (Kurtz) Hegelm.	S. punctata (Mey.) C.H.Thompson	
Lemna minima Phil.	L. minuta HBK.	
Wolffiella floridana (J.D.Sm.) Thompson	W. gladiata (Hegelm.) Hegelm.	
Wolffia papulifera Thompson	W. braziliensis Weddell	
Tradescantia bracteata Small		T. bracteata Britt. & A.Br.
Syn. of Commelina erecta L.	C. erecta L. var. angustifolia (Michx.) Fern.	C. erecta L. var. angustifolia (Michx.) Fern.
Syn. of Commelina erecta L.	C. erecta L. var. deamiana Fern.	C. erecta L. var. deamiana Fern.

I	II	III
Zosterella dubia (Jacq.) Small	Heteranthera dubia (Jacq.) Small	
Luzula multiflora (Retz.) Lej.		L. multiflora (Hoffm.) Lej.
Luzula multiflora (Retz.) Lej. var. echinata (Small) Mohlenbr.	L. echinata (Small) F.J. Hermann	L. echinata (Small) F.J. Hermann
Syn. of Luzula multiflora (Retz.) Lej.	L. bulbosa (Wood) Rydb.	L. bulbosa (Wood) Rydb.
Juncus bufonius L. var. congestus Wahlenb.		Syn. of J. bufonius L.
Juncus dudleyi Wieg.	J. tenuis Willd. var. uniflorus (Farw.) Farw.	J. tenuis Willd. var. dudleyi (Wieg.) F.H.Hermann
Veratrum woodii Robbins		Melanthium woodii (Wood) Bodkin
Zigadenus glaucus Nutt.	Z. venenosus S. Wats. var. gramineus (Rydb.) M.E.Peck	
Syn. of Stenanthium gramineum (Ker) Morong		S. gramineum (Ker) Morong var. robustum (S. Wats.) Fern.
Lilium lancifolium Thunb.		Not mentioned

I	II	III
Lilium michiganense Farw.		L. canadense L. ssp. michiganense (Farw.) B.Boivin & Cody
Lilium superbum L.		Syn. of L. canadense L. ssp. michiganense (Farw.) B.Boivin & Cody
Hemerocallis fulva L.	H. fulva (L.) L.	H. fulva (L.) L.
Hemerocallis lilio-asphodelus L.		H. lilioasphodelus L.
Muscari comosum (L.) Mill.		M. comosum Mill.
Muscari atlanticum Boiss. & Reut.		M. racemosum (L.) Mill.
Muscari armeniacum Leicht.		Syn. of M. racemosum (L.) Mill.
Camassia angusta (Engelm. & Gray) Blankinship	Syn. of C. scilloides (Raf.) Cory	Syn. of C. scilloides (Raf.) Cory
Erythronium americanum Ker		E. umbilicatum C.R.Parks & Hardin
Polygonatum commutatum (Schult.) A.Dietr.	P. biflorum (Walt.) Ell. var. commutatum (Schult. f.) Morong	P. commutatum (Schult. & Schult.) A.Dietr.
Allium tricoccum Ait. var. burdickii Hanes	A. burdickii (Hanes) A.G. Jones	Not mentioned

I	II	III
Allium mutabile Michx.	A. canadense L. var. mobilense (Regel) Ownbey	Syn. of A. canadense L.
Nothoscordum bivalve (L.) Britt.		Allium bivalve (L.) Kuntze
Trillium cernuum L. var. macranthum Eames & Wieg.		Syn. of T. cernuum L.
Yucca filamentosa L. var. smalliana (Fern.) Ahles	Y. flaccida Haw.	
Narcissus pseudo-narcissus L.	N. pseudonarcissus L.	N. pseudonarcissus L.
Hymenocallis occidentalis (LeConte) Kunth	H. caroliniana (L.) Herbert	
Polianthes virginica (L.) Shinners	Manfreda virginica (L.) Rose	M. virginica (L.) Rose
Smilax bona-nox L. var. hederaefolia (Beyrich) Fern.	Syn. of S. bona-nox L.	Syn. of S. bona-nox L.
Smilax hispida Muhl.		S. hispida Torr.
Smilax illinoensis Mangaly	S. illinoiensis Mangaly	Disposition unclear
Smilax ecirrata (Engelm.) S. Wats.	S. echirrata (Kunth) S.Wats.	S. ecirrata (Kunth) S.Wats.

I	II	III
Syn. of Dioscorea quaternata (Walt.) J.F.Gmel.		D. quaternata (Walt.) J.F.Gmel. var. glauca Fern.
Syn. of Dioscorea villosa L.	D. villosa L. var. glabrifolia (Bartl.) Fern.	
Iris germanica L.	I. X germanica L.	I. X germanica L.
Iris shrevei Small	I. virginica L. var. shrevei (Small) E. Anders.	
Iris cristata Ait.	I. cristata Soland.	
Gladiolus X colvillei Sweet		Not mentioned
Sisyrinchium montanum Greene var. crebrum Fern.		Syn. of S. montanum Greene
Cypripedium calceolus L. var. parviflorum (Salisb.) Fern.	C. parviflorum Salisb.	
Cypripedium calceolus L. var. pubescens (Willd.) Correll	C. pubescens Willd.	
Cypripedium candidum Muhl.	C. candidum Willd.	C. candidum Willd.
Orchis spectabilis L.	Galearis spectabilis (L.) Raf.	G. spectabilis (L.) Raf.
Habenaria orbiculata (Pursh) Torr.	Platanthera orbiculata (Pursh) Lindl.	P. orbiculata (Pursh) Lindl.

I	II	III
Habenaria hookeri Torr.	Platanthera hookeri (Torr.) Lindl.	P. hookeri (Torr.) Lindl.
Habenaria clavellata (Michx.) Spreng.	Platanthera clavellata (Michx.) Luer	P. X clavellata (Michx.) Luer
Habenaria viridis (L.) R.Br. var. bracteata (Muhl.) Gray	Coeloglossum viride (L.) Hartm. var. virescens (Willd.) Luer	C. viride (L.) Hartm. var. virescens (Willd.) Luer
Habenaria flava (L.) R.Br.	Platanthera flava (L.) Lindl.	P. flava (L.) Lindl.
Habenaria flava (L.) R.Br. var. herbiola (R.Br.) Ames & Correll	Platanthera flava (L.) Lindl. var. herbiola (R.Br.) Luer	P. flava (L.) Lindl. var. herbiola (R.Br.) Luer
Habenaria hyperborea (L.) R.Br. var. huronensis (Nutt.) Farw.	Platanthera hyperborea (L.) Lindl. var. huronensis (Nutt.) Luer	P. hyperborea (L.) Lindl. var. huronensis (Nutt.) Luer
Habenaria dilatata (Pursh) Hook.	Platanthera dilatata (Pursh) Beck	P. dilatata (Pursh) Beck
Habenaria ciliaris (L.) R.Br.	Platanthera ciliaris (L.) Lindl.	P. ciliaris (L.) Lindl.
Habenaria blephariglottis (Willd.) Hook.	Platanthera blephariglottis (Willd.) Lindl.	P. blephariglottis (Willd.) Lindl.
Habenaria lacera (Michx.) Lodd.	Platanthera lacera (Michx.) G.Don	P. lacera (Michx.) G.Don

I	II	III
Habenaria leucophaea (Nutt.) Gray	Platanthera leucophaea (Nutt.) Lindl.	P. leucophaea (Nutt.) Lindl.
Habenaria peramoena Gray	Platanthera peramoena (Gray) Gray	P. peramoena Gray
Habenaria psycodes (L.) Spreng.	Platanthera psycodes (L.) Lindl.	P. psycodes (L.) Lindl.
Liparis liliifolia (L.) Rich.	L. lilifolia (L.) Lindl.	L. liliifolia (L.) Ker
Malaxis monophylla (L.) Sw. var. brachypoda (Gray) F.Morris	M. brachypoda (Gray) Fern.	M. monophyllos (L.) Sw. var. brachypoda (Gray) F.Morris
Spiranthes gracilis (Bigel.) Beck	S. lacera (Raf.) Raf. var. gracilis (Bigel.) Luer	Syn. of S. gracilis (Bigel.) Beck
Spiranthes tuberosa Raf.		S. grayi Ames
Pogonia ophioglossoides (L.) Ker	P. ophioglossoides (L.) Juss.	P. ophioglossoides (L.) Juss.
Corallorhiza maculata Raf.	C. maculata (Raf.) Raf.	C. maculata (Raf.) Raf.
Corallorhiza wisteriana Conrad		C. wisterana Conrad
Aplectrum hyemale (Muhl.) Torr.	A. hyemale (Willd.) Nutt.	A. hyemale (Willd.) Torr.

Literature Cited

Kartesz, J. T. & R. Kartesz. 1980. A synonymized checklist of the vascular flora of the United States, Canada, and Greenland. The University of North Carolina Press, Chapel Hill. 500 pp.

Mohlenbrock, R. H. 1975. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale and Edwardsville. 494 pp.

United States Department of Agriculture. 1982. National list of scientific plant names. Volumes I & II. Soil Conservation Service SCS-TP-159. 416 and 438 pp.

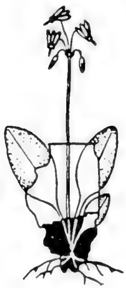
OUR CONTRIBUTORS:

MR. DOUGLAS M. LADD received his master's degree from Southern Illinois University-Carbondale, specializing in taxonomy. His master's research was on the Flora of Washington County, Vermont, Mr. Ladd's home area. Currently, Doug is park naturalist at Bennett Springs State Park, Lebanon, Missouri. He is a major contributor to the Missouri Botanical Record, an update on new plant records for Missouri

DR. ROBERT H. MOHLENBROCK is Professor of Botany at Southern Illinois University-Carbondale, where he has been for 27 years following the granting of his doctorate from Washington University (St. Louis). He has been active in the flora of Illinois beginning with his junior year in high school when he rediscovered the West Point stand of shortleaf pine and the Olive Branch grove of yellowwoods.

IN OUR NEXT ISSUE . . .

ERIGENIA 4 will feature articles on the prairie, including: prairie areas of southern Illinois, prairie restorations, and the meaning and dimensions of the prairie.

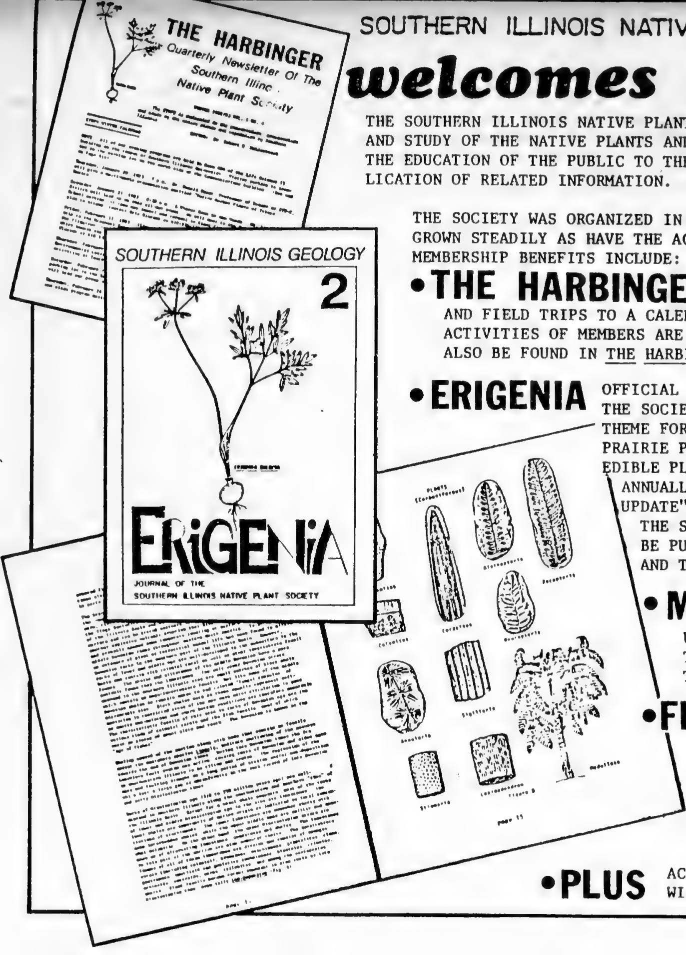


HELP THE SOCIETY GROW . . . TELL A FRIEND

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

welcomes your membership

THE SOUTHERN ILLINOIS NATIVE PLANT SOCIETY IS DEDICATED TO THE PRESERVATION, CONSERVATION, AND STUDY OF THE NATIVE PLANTS AND VEGETATION OF SOUTHERN ILLINOIS. IT IS ALSO PLEDGED TO THE EDUCATION OF THE PUBLIC TO THE VALUE OF THE NATIVE FLORA AND ITS HABITAT, AND THE PUBLICATION OF RELATED INFORMATION.



THE SOCIETY WAS ORGANIZED IN FEBRUARY 1982. SINCE ITS INCEPTION, THE MEMBERSHIP HAS GROWN STEADILY AS HAVE THE ACTIVITIES AND BENEFITS AVAILABLE TO THE MEMBERS. MEMBERSHIP BENEFITS INCLUDE:

- **THE HARBINGER** NEWSLETTER OF THE SOCIETY, IS PUBLISHED QUARTERLY AND INCLUDES SUCH ITEMS AS HIGHLIGHTS OF MEETING PROGRAMS AND FIELD TRIPS TO A CALENDAR OF UPCOMING ACTIVITIES. OTHER SOCIETY NEWS AND ACTIVITIES OF MEMBERS ARE COVERED AND SPECIAL ARTICLES ON S.I. NATIVE PLANTS MAY ALSO BE FOUND IN THE HARBINGER.

- **ERIGENIA** OFFICIAL JOURNAL OF THE SOCIETY, IS PUBLISHED OCCASIONALLY BY THE SOCIETY (1 TO 4 ISSUES/YEAR). ARTICLES FOLLOW A PARTICULAR THEME FOR EACH ISSUE, INCLUDING: PLANT COLLECTING, S.I. GEOLOGY, PRAIRIE PLANTS OF S.I., S.I. NATURAL AREAS, WILDFLOWER GARDENING, EDIBLE PLANTS OF S.I., AND ORCHIDS OF S.I. IN ADDITION, PUBLISHED ANNUALLY AMONG THE ISSUES OF ERIGENIA IS THE "ILLINOIS FLORA UPDATE" WHICH LISTS ALL NEW STATE AND COUNTY FLORA RECORDS FOR THE STATE OF ILLINOIS. SPECIAL ISSUES OF ERIGENIA WILL ALSO BE PUBLISHED FOR FLORISTIC AND RELATED STUDIES OF ILLINOIS AND THE SURROUNDING STATES.

- **MEETINGS** THE SOCIETY HOLDS MONTHLY MEETINGS WITH PROGRAMS ON THE CAMPUS OF SOUTHERN ILL. UNIVERSITY. PROGRAMS INCLUDE PREVIEWS OF UPCOMING FIELD TRIPS, SLIDE PRESENTATIONS ON PLANTS FROM S.I. AND AROUND THE WORLD, AND RELATED TOPICS. ALL ARE WELCOME TO ATTEND.

- **FIELD TRIPS** THE SOCIETY OFFERS FIELD TRIPS EACH MONTH TO NATURAL AREAS ALL OVER S.I. ANYONE WHO ENJOYS PLANTS, ANIMALS, AND BEAUTIFUL SCENERY IS WELCOME.

- **DISCOUNTS** THE SOCIETY OFFERS ITS MEMBERS DISCOUNTS ON MANY OF THE BOOKS AVAILABLE THROUGH ITS BOOK LIST.

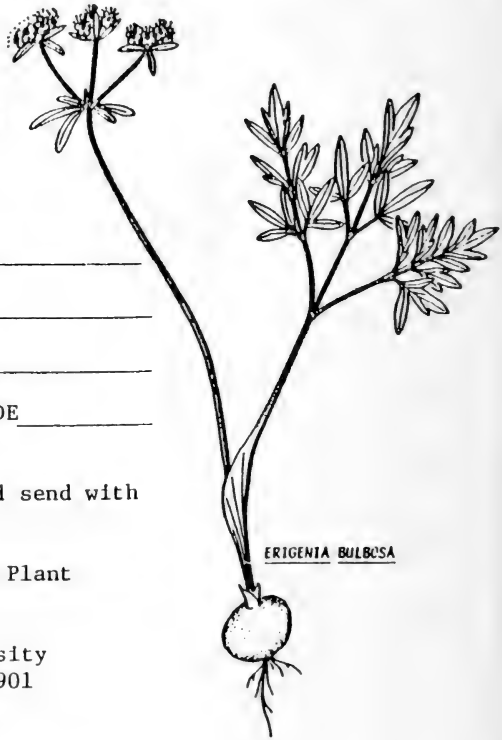
- **PLUS** ACCESS TO THE SOCIETY'S RARE PLANT HERBARIUM, LIBRARY, AND WILDFLOWER GARDEN.

MEMBERSHIP APPLICATION

All memberships run for the calendar year (January thru December). Dues received after November 1 of a given year are put toward the following year unless otherwise specified.

MEMBERSHIP CATEGORIES

STUDENT $5
REGULAR $10
SUPPORTING $20
PATRON $25



Dr./Mr./Mrs./Ms./Miss
NAME______________________________

ADDRESS______________________________

CITY______________________________

STATE______________ZIP CODE__________

Clip this application and send with check to:

Southern Illinois Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, Illinois 62901

Make checks payable to S.I.N.P.S.

GUIDELINES FOR MANUSCRIPTS SUBMITTED TO ERIGENIA FOR PUBLICATION

Manuscripts conforming to one of the selected themes (see ERIGENIA 1, page 1) are accepted free of charge. Manuscripts should by typed single-spaced with 1½ inch margins on all sides. Paragraphs should be double-spaced. Paragraphs are not to be indented. Pages are to be numbered, but in pencil only. Tables and figures should be numbered consecutively and an indication should be made as to where the author would like them placed. Either "Literature Cited" or "References" may be used. Use of the Harvard style for citing literature is recommended. If at all possible, please use an IBM Selectric typewriter and indicate which element was used as the editor can correct the copy much easier this way. Illustrations and maps are printed at no cost to the author. Margins of illustrations and maps are also to be 1½ inches on all sides. Four-by-five inch black and white photos are also accepted (not too contrasty please). Cost of each photo to author is $5.00. Two copies of each manuscript must be included. Title and author's name should be typed on the first page of the manuscript in a manner as found in ERIGENIA 2. A one paragraph biographical sketch of the author must also accompany manuscripts submitted.

Each manuscript received by the editor will be sent out for review to one (or more) of the members of the editorial review board. Authors will be notified of any revisions judged necessary and will, if necessary, return the manuscript to the author for revision. The editorial staff reserves the right to reject any manuscript which does not comply to the above guidelines.

As a special service, floristic studies and related topics of areas in Illinois and the states which border Illinois will be accepted for publication. Guidelines are as those for above manuscripts. The author of the study shall be required to cover the printing cost by remitting $5.00 per page of manuscript (including illustration and map pages). The membership shall receive these special issues at no additional cost.

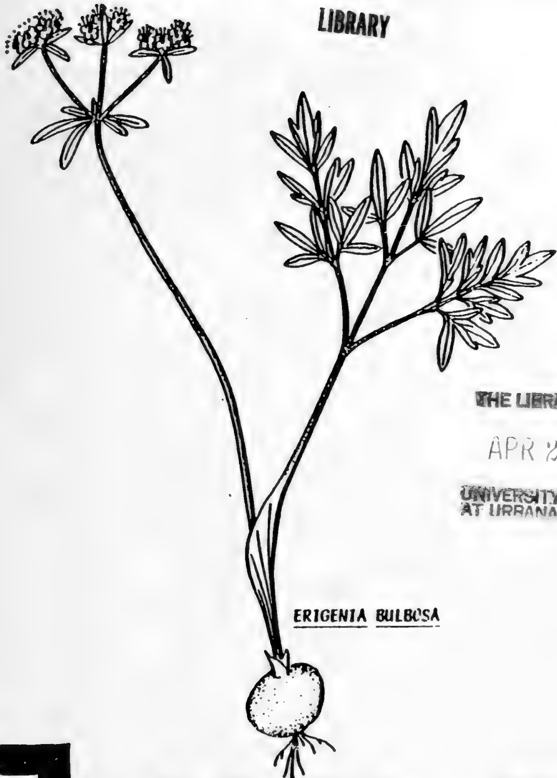
If return of materials submitted for publication is requested, a self addressed stamped envelope is required and should accompany the manuscript. One copy of the manuscript will be retained by the Society.

Copy ready manuscripts and/or questions concerning publication should be sent to:

Mark W. Mohlenbrock
Editor - ERIGENIA
Department of Botany and Microbiology
Arizona State University
Tempe, Arizona 85287

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

department of botany, southern illinois university
carbondale, illinois 62901



ERIGENIA BULBOSA

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

NUMBER 1 ISSUED: AUGUST 1982

The SINPS is dedicated to the preservation, conservation, and study of the native plants and vegetation of Southern Illinois.

Membership includes subscription to ERIGENIA *as well as to the quarterly newsletter* THE HARBINGER. ERIGENIA, *the official journal of the Southern Illinois Native Plant Society, is published occasionally by the Society. Single copies of this issue may be purchased for $2.50 (including postage). For current subscription rates or information concerning the Society write:*

So. Ill. Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, IL 62901

Make checks payable to S.I.N.P.S.

The SINPS annually publishes among its ERIGENIA issues an "UPDATE ON THE ILLINOIS FLORA". County and state record contributions are requested and should be sent to:
Dr. R. H. Mohlenbrock
SINPS Flora Update Project
Dept. of Botany, SIU
Carbondale, IL 62901

CONTENTS: PLANT COLLECTOR'S GUIDE

TO CONTRIBUTE:

Manuscripts are accepted free of charge*. Manuscripts should be typed single, spaced with 1½ inch side margins. Page numbers should be in pencil only. Black and white, glossy, 4x5" photos are also accepted (not too contrasty). Cost of each photo to author - $5.00.
*Floristic studies of Illinois and states bordering Illinois are accepted for publication but require a charge of $5.00 per typed page with a maximum length of 20 pages. Floristic studies will be published in groups when sufficient copy is in hand. Contributions or inquiries concerning contribution should be sent to:

Mark W. Mohlenbrock
Editor - ERIGENIA
1865 E. Broadway, #233
Tempe, Arizona 85282

EDITORIAL

— MARK W. MOHLENBROCK

Welcome to the fact-filled pages of ERIGENIA! *I would like to take a few lines at this time to introduce you to* ERIGENIA. *The goal of this journal is to inform its readers in a topical manner of the many aspects pertaining to the native plants of the Southern Illinois region. Each issue will be centered around a particular theme thus making a handy set of references. A glance at the table of contents on the facing page indicates a "Plant Collector's Guide" theme for this issue.*

Sooner or later most native plant enthusiasts find the need to collect one or more plant specimens. It is important that when one collects plants one does so in a proper way, thus making the collection useful. The following pages present guide lines for plant collecting and offer tools to assist in plant identification.

Looking at the months and ERIGENIA *issues ahead, contributors are needed for every upcoming issue, save* ERIGENIA 2: Southern Illinois Geology *which is being prepared for press. Below is a list of potential* ERIGENIA *themes not necessarily printed here in their order of eventual publication:*

Rare and Local Plants of Southern Illinois, The Natural Divisions of Southern Illinois, Wetlands Guide to Southern Illinois, Shrubby Plants of Southern Illinois, Illinois Native Edibles, Scenic Routes of Southern Illinois, Southern Illinois Prairies, Gardening with Southern Illinois Native Plants, Unique Natural areas of Southern Illinois, A Historic Summary of Southern Illinois Botany, Southern Illinois Fern Facts, Orchids of Southern Illinois, A Primer on Nature Photography, (ideas for additional themes are welcomed)

Each theme will require several contributions so start putting pen to paper. I should point out, if return of materials sent to me is requested, a self addressed stamped envelope is required. There is no specific order in which the potential themes will be dealt. When sufficient copy on a particular theme is obtained it will be placed on the "to be published next list". Manuscripts conforming to one of these themes are accepted at no cost to the author unless photos are included (see inside front cover). Illustrations and maps are welcomed and are printed at no cost to the author. Side margins must also be 1½ inches. *[Continued on page 44.]*

ERIGENIA: 1, (1982), p. 2-6

Why Collect Plant Specimens? *

Illinois has, over the years, been blessed with many outstanding plant collectors. The eminent French botanist, Andre Michaux, was the first to collect Illinois plants during his visit in 1795. Many people have continued the botanical exploration begun by Michaux. They have come from the state's fine system of universities and from other institutions such as the Illinois Natural History Survey, Illinois State Museum, Morton Arboretum, Chicago Natural History Museum and many more. Tremendous contributions have also been made by people who were not professional botanists. Virginius Chase and Frederick Brendel collecting in Peoria County, Samuel Mead in Hancock County, Elihu Hall in Menard County, Jacob Schneck in Wabash County, Julian Neill in St. Clair County, and Paul Shildneck collecting in many central Illinois counties, are among many dedicated amateurs who have furthered our knowledge of Illinois plants.

With all this activity it would seem that the state would be thoroughly explored botanically, but such is not the case. Numerous areas exist in every county that have never been seen by a botanist much less thoroughly collected. Even areas that have been thoroughly collected produce new records. For example, Dr. Mohlenbrock of Southern Illinois University and his students have been collecting plants from Lake Murphysboro State Park for nearly thirty years, and new species continue to be found. Well explored areas like Lake Murphysboro are the exception rather than the rule even on public land.

Certain counties have been fairly well botanized including eleven counties in the Chicago area, Champaign, Jackson, Sangamon, St. Clair and Winnebago. Many of the other counties have been collected in only a cursory manner. Much is left to be discovered. The author documented well over 200 county records for Perry County in just one collecting season. Still, many more species need documenting for this county.

How does one know what has been collected before? Our knowledge of Illinois plant distributions down to the county level is available in a readily usable form. The book, entitled "Distribution of Illinois Vascular Plants" by Mohlenbrock and Ladd (1978), records the distribution of every species of vascular plant known from the state. Each species of plant found in Illinois is represented by a county outline map. A dot has been placed in each county from which the plant has been documented by the deposition of a dryed, pressed specimen in an herbarium. By glancing through this

** Contributed by Jay Raveill*

book, one quickly becomes aware that many species have counties that look as if they should be dotted, but are not. For example, one can theorize that if a species is dotted for all the counties in the south half of the state except one or two, the species must occur in those counties also. This, however, one does not know for sure. Plants often have unexplained gaps in their ranges. Many of these gaps are a result of inadequate collecting, but areas representing other gaps have been searched and the species just does not seem to be there. One can not always take ranges for granted until the herbarium specimens exists. This raises another point, the need for specimens instead of photographs or sight records.

Herbarium specimens are the only method by which plant identifications can be verified. When thousands of plants are identified, it is inevitable that a few errors will be made even by the best botanists. Another reason that botanists may disagree on the identity of a specimen is that some species are not well separated. Some botanists may lump together as one species what other botanists call several species. Photographs just do not show the very fine detail necessary to separate these very close "species". An exception is when one is dealing with rare plants such as orchids, bog plants and a few others. They should be well photographed and the photos sent to an herbarium were they will be treated like regular herbarium specimens. Sight records are of little value to science since they can not be corroborated without revisiting the reported location.

Collecting plants is one of the very few ways that the average person can make a significant contribution to the advancement of science. Plant collections aid the field of phytogeography which attempts to make some sense out of plant distributions. Many of us have made observations about where certain plants grow. One notes that some plants occur only in wet areas while others can be found only in rich wooded ravines. But why are some plants so common in one part of the state and yet absent from identical looking habitat in other parts of the state? Great progress has been made in explaining the distribution patterns of certain well collected species such as Giant Cane (Arundinaria gigantea), but most species' ranges are not well known enough at the county level to see any patterns.

Another reason to search for plants is that the discovery of certain rare plants in natural areas within the state may prompt state or private officials to preserve such areas as is done frequently by the Illinois Nature Conservancy. The documentation of such species plays a role in bringing these plants and areas to the attention of agencies which can help preserve our natural heritage.

Most of the vegetation of Illinois bares little resemblance to what it was like in presettlement times. Our once expansive prairies have been converted into rich farm land. The magnificent trees of our bottomland forests have been replaced by rows of soybeans. The wet meadows of our lake shore are now beneath the towering buildings of a thriving metropolis. Plant species adapted to the intense interspecific competition of the prairie have been replaced by species adapted to the yearly plowing of a corn field.

These species that are adapted to disturbed areas, often called weeds, have plagued mankind from the beginning of recorded history. Some of the weeds around us now, were here when the first white settlers came and found the settler's fields to their liking. Many new weeds have invaded the state since. The Nodding Foxtail (Setaria faberi) was first found in the state in 1938. Now it is in every county and is one of our worst weeds. Weeds continue to invade the state every year. They are usually first found along docks, railroad tracks, highways or recently around airports. The exotic seed is usually inadvertently bought in and just happens to fall were conditions are right for germination and growth. Many of these new species will occur as just single individuals and will not persist. Other species may persist for several years at a single location but will not spread. Still other species are first found as isolated individuals only to spread to become ubiquitous weeds. One does not know into which category a new species will fit when the species is first encountered. All to often, weeds are ignored until they are too common and widespread to ever be eliminated from the state. But if we can keep watch on these invading plants, we may be able to identify the plants which could become serious weeds in time to control them.

The flora of the state is dynamic. Every year plants are found for the first time in the state and others are extirpated. At the county level the changes are even more pronounced. But we do not yet know many of the counties in which some species grow. Some of these species have always been common in certain counties but no one has ever collected them and so we still do not know that they are there. Once all the counties are well collected, then we can track the spread of species and possibly explain why species grow where they do.

The distribution information collected is raw scientific data, the uses of which are limited only by the imagination of the investigator. Several professional botanists are actively gathering this data but field work is so time consuming and the state is so large and botanists so few. It is time to join the efforts of the enthusiastic amateur with the professional and finally, after nearly 200 years of botanical exploration, obtain an accurate knowledge of the distribution of the plants of our state.

Where to Collect Plants

Many previous collectors have concentrated their efforts on their home counties. This is a good idea since it will save both travel time and costly gasoline. To make a comprehensive collection of the plants of a county, one must collect from each of the habitats represented in that county. Wooded ravines, prairie remnants, barren blufftops, floodplain forests, cultivated fields, swamps, lawns, and woodlots are a few of the habitats that should be covered. Each of these has unique species of woody and herbaceous plants. Areas retaining some natural quality should get special attention. Wetlands plants have tended to be ignored, especially those growing completely submerged in water, and so still need collecting. Another habitat whose plants are not always well documented are lawns. Some longstanding lawn weeds, for example the Red-seeded Dandelion (*Taraxacum laevigatum*), are still not well collected. Several aggresive lawn weeds are currently sweeping across the state and need to be tracked as they spread. It is something to think that county records can be documented without ever leaving ones own yard.

Topographic maps, besides just aiding in getting around in the field, can aid in the location of some habitats. Areas of sharp relief, like ravines and bluffs, can be quickly located from the comfort of ones own home. Topographic maps, except for the oldest ones, have the forested areas shaded with green. This locates forests, though it gives no indication of what the woods are like. When the green shading is combined with such things as steep topography or proximity to a river or stream, it may indicate an area unsuited to human activities and therfore with some semblance of native conditions. Topographic maps also give place names, some of them obscure. When a name such as "Six Mile Prairie" is found, then one may be able to locate prairie remnants along nearby railroad tracks or roads.

The larger libraries will have every topographic map for the state (or even the country!). Smaller libraries may have maps for the local area. County road maps may also prove helpful in planning routes for collecting trips and can be found at many libraries. The addresses to order personal copies of topographic and county highway maps can be found below.

Comprehensive county collections are the most valuable, but take many years of hard work to assemble. However, every county record is valuable. If one's collecting time is limited one may wish to concentrate on just a single prairie remnant or woodland. One may prefer to collect in the lawns, gardens and parks of one's community. Where ever the collecting is done in the lesser botanized counties, new and much needed records will be discovered.

****

To send herbarium specimens:

Curator of the Herbarium
Department of Botany
Southern Illinois University
Carbondale, IL 62901

To order county highway maps:

Department of Transportation
2300 S. Dirksen Parkway
Springfield, IL 62706

To order topographic maps:

Branch of Distribution
U.S. Geological Survey
1200 South Eads Street
Arlington, VA 22202

To order aerial photographs:

Aerial Photography Field Office
ASCS-USDA
2222 West 2300 South, PO Box 30010
Salt Lake City, UT 84130

ERIGENIA: 1, (1982), p. 7-8

The Ethics of Plant Collecting

by

Lawrence R. Stritch

The pleasures that people derive from our native plants are numerous and varied. Many people enjoy the photographing of plants, the creation of a wildflower garden, the construction of a prairie restoration or small arboretum, and the collecting of plants for scientific purposes. Unfortunately, indiscriminate collecting of plants has led to their extirpation or total extinction. The best example of this occurred in New Jersey where 80% of the orchids once native to the state are now extirpated. Our natural heritage is a precious resource that can deliver great pleasure to our populace. However it is not a renewable or recyclable resource, therefore we must take great care to use it wisely so that future generations might derive those pleasures that we have partaken of.

The profession or hobby of plant collecting carries with it a few responsibilities. Plants belong, by law, to the landowner, whether that might be an individual, a corporation, or government agency. Animals on the other hand, have traditionally been owned by the government, with strong precedents passed on from British common law. It is necessary, therefore, to obtain permission from the landowner before removing any plants. In the case of federally or state owned land it is best to obtain a written permit from the agency responsible for the land's management. If you plan on collecting on privately owned land, oral permission will generally suffice.

Indiscriminate collecting of plants without the knowledge of whether they are threatened or endangered is highly unethical. It is your responsibility to know those plants that are federally or state listed as endangered or threatened in an area where you intend to collect plants. If you find a threatened or endangered plant species in the field, you are prohibited from collecting the plant unless you have the proper permits. It would be highly recommended that you report the finding of a threatened or endangered species to the appropriate governmental agency, so that they can confirm the siting and take appropriate action. If you are collecting plants for a wildflower garden or plant arrangement take only those that are common. If you are attempting to update a county flora or any other regional flora you should research the literature to determine what plants are already known from the area and therefore should not be recollected. In some cases professional as well as amateur plant enthusiasts have been responsible for the extirpation and in a few cases the extinction of some plant species. This problem has been created from two directions. First, there are those people who would collect endangered or threatened species. Some unscrupulous businessmen, even run ads offering payment for the reporting of locations of rare plants. In some cases that involve state lines, payment for the plant itself is offered. Each year some florists in Vermont run newspaper ads in New York offering payment for bittersweet (*Celastrus scandens* and *C. Orbiculatus*). *Celastrus scandens* is an endangered species in New York and is protected. The second part of the problem involves the collecting of plants that are rare but have not as yet received protected status. If you know a plant to be exceedingly rare it is best left in its native habitat. Unfortunately the answer to whether to collect a specimen or not is not so easily decided. There will come the time when there will be the possible need to collect a rare plant, such as a state record. Hopefully if this dilema presents itself to you there will be more than one plant present or only a portion of the plant will be needed to verify the identification of the plant. In a few cases even a photograph might do. Whatever the decision all that is asked of us is to remember:

"Many that live deserve death.

And some that die deserve life.

Can you give it to them?

Then be not to eager to

deal out death...

Even the wise can not see

all ends".

J.R.R. Tolkein

ERIGENIA: 1, (1982), p. 9-21

COLLECTING PLANT SPECIMENS
(An Outline with Appendices)

by
Wanda Oskins

Introduction

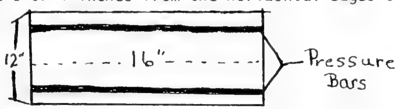
The method of making herbarium specimens originated in Italy around the year 1530. Specimens dating from that century are still remarkably preserved! Properly prepared herbarium specimens are permanent records.

The following outline is designed to provide the basic information that will allow any person to properly collect and prepare lasting plant specimens.

I. The Necessary Equipment

A. Plant Presses
Standard plant presses measure 12 by 16 inches. This is the exact same size as standard herbarium paper. The usual press consists of two lattice-type frames bound together by two straps that fasten with alligator clips. Slightly larger (12"x18") or smaller plant presses can be constructed for special uses(eg. to carry in a backpack).

Plant presses may be purchased from biological and forestry suppliers. Ropes and cords are usually inefficient binders, so plant press straps are almost always purchased from the suppliers. It is however, rather easy and inexpensive to construct your own plant press frames. Use well seasoned and light plywood or masonite cut to the correct or desirable press size. Simply add two pressure bars on each frame by placing a 16"x1"x½" piece of wood 3 or 4 inches from the horizontal edges of the frame.



For construction of a lattice-type plant press, see the design given in Appendix E, part B.

B. Newspaper Folds, Blotters, and Corrugate Cardboard
Plants will be dried in the press in what a botanist descibes as the plant press sandwich:

corrugate
blotter
newsprint(with plant inside)
blotter
corrugate

Corrugates are pieces of cardboard cut down to the standard 12"x16" size. Blotting paper is usually purchased from biological suppliers. Both of these items are dried out and used again and again. None of these items need to be purchased. Alternatively, thick pads of newspapers(St. Louis Post-Dispatch, the Kansas City Star, or the Chicago Tribune) make suitable substitutes, and they can also be dried and used again and again.

C. Digging and Cutting Implements
Some favorites are pocketknives, kitchen butcher knives, machetes, camp shovels, trowels, and pruning shears.

D. The Field Notebook and Field Labels
These are for recording specific and detailed notes on the habitat, associated plants, location and date of collection, and the appearance of the specimen. Especially important is to note any characteristics which may become inapparent when the plant is pressed. For example, the color of flowers often changes or fades upon pressing.

All of the information in the field notebook is written next to a collection number that correlates to a tag or label on the plant specimen bearing the same number. Every plant collected during an entire career will be given a <u>different</u> collection number. (An easy way to label specimens is to write the number on the newspaper fold that contains the plant in the press.) The collection number plus the collector's last name will identify the specimen for all future reference to the plant.

Never rely upon memory for field notes. Record the vital information while in the field. Botanists write the date of collection by placing the day first, the month, and then the year (eg. 27 April 1982).

E. Optional(but useful) Equipment
Camera
Magnifying Lens
Vials--for storing seeds and other plant parts
Coin envelopes--storing seeds, etc.
Folded Paper Packets--storing seeds, etc.
Plastic Trash Bag--transporting plants from the field
Vasculum--transporting plants from the field

II. A Short Guide to Preparing A Herbarium Specimen
See the paper from Agric. Bull. 348 in the appendices.

III. Comments on What and How to Collect
A. Collect Plants
Big, little, herbaceous, woody, aquatic,etc.

B. The Practice of Top-Snatching

For the most part, entire plants need to be collected to produce scientifically sound voucher specimens. Top-snatching, grabbing only the upper blooming portions of plants, has been regarded with disdain among botanists. The rule to follow is that whenever feasible, collect the complete plant. This is necessary to aid in the eventual identification of the specimen, to facilitate accurate and complete botanical descriptions, and to provide complete reference material for future studies on the species, genus, or family.

Today, many botanists are beginning to accept a more liberal point of view concerning top-snatching. The preservation of particularly rare plants is a good reason for not collecting a complete plant.

C. Collecting Unusual, Rare, or Endangered Plants

An ironic, perplexing situation exists because science demands that a voucher specimen be filed to verify the plant's correct taxonomic identification and existence in a locality. Unfortunately, collecting the specimen may further endanger the plant's existence.

Sound common sense and good judgement is important. Follow these rules:

1. Become familiar with the rare plants of the region.
2. Never collect when only one specimen can be found.
3. If rarity is suspected, take photographs, make sketches, or if it can be done without harm, remove a tiny piece that will aid in identification. If the plant turns out to be common or if the population of a rare species is large enough, then the plant or only its verifying parts may be collected to make the necessary voucher specimen.

D. How Much to Collect

Try to collect enough to 3/4 of the standard herbarium sheet(3/4 of the newsprint fold). If the plants are tiny, collect several from the same population in order to fill the herbarium sheet. When specimens are large, selectively cut parts that represent the flower, upper and lower leaves, stems, roots, and fruit(if present). Grasses, sedges, and some other plants may be bent or folded(always in V's) so that they will fit into the newspaper fold.

E. Consider Plant Condition

ALWAYS CHOOSE TYPICAL SPECIMENS THAT REPRESENT THE POPULATION!

Frequently, it is helpful to know something about the plants being collected in order to get the necessary parts for identification. For beginning collectors, this is a hit and miss affair. Generally, it is wise to collect mature flowering and/or fruiting plants. If recognition of the plant family is possible,Table 24 from Smith's Vascular Plant Families is useful.(see appendix)

F. Putting Plants in the Press

All collected plants need to go into the press as soon as possible. Presses are often carried into the field by serious botanists and the plant is pressed as it is cut or dug from the ground. Other botanists may elect to transport the specimen from the field in a relatively humid atmosphere by using a plastic bag or vasculum. Pressing takes place that evening or the next day. By storing the specimens in a cool place(refrigerator), they will stay fairly fresh for about one day.

The "rip-and-cram" method of placing plants in the newspaper folds is deplorable. Poor specimens result. The specimens, in a way, represent the competence of the collector and some care should thus be taken to properly arrange the specimen. Arrange the plant so that some leaves are up and others are facing down, Leaves should be unrolled and without unnecessary folds. The whole specimen is pressed to show all parts in their natural arrangement, in so far as possible. Take special care that the flowers and fruits will be showing for observation. Excess and unneeded parts may be cut away and discarded.

G. Drying the Plants

Tighten the plant press straps and place the press in a warm dry spot with circulating air. Concrete blocks or other heavy weights can be set upon the plant press.

Within 24 hours, open the press and exchange the wet blotters(or paper pads) for dry ones. Make any final arrangement of the plant. Tighten the straps again and return the press to the drying area. Check the press every 24 hours, tightening the straps each time.

When plants are dry to the touch, test for incompletely dried specimens. They will feel slightly cool and the ends will droop when lifted from the newsprint fold. Most plants will dry within one week.

Plants receiving no attention, or those that do not dry completely, are often attacked by mold and eventually decay.

Many models of expensive metal encased, electric plant driers are available for purchase. If it is desired, small driers can be made inexpensively(see the plans in the appendix). Historically, warm spots such as the hood of a car and tops of radiators have been used. Electric fans have been used to circulate the air.

H. Storing and Mailing Specimens
Specimens are always given the greatest care. Protect specimens from insect damage by placing moth crystals in the storage area. When mailing, bind specimens together with thick corrugates(see the figure in the appendix) and add additional padding to the box in which the specimens are being shipped.

I. Special Techniques
Succulent(juicy) plants: cut strips of tissue out of the back of stems and leaves. This is invisible when plants are mounted and yet it aids in the drying process.

Thickened parts: cut in half.

Aquatics: float them in a pan of water and lift the specimen onto a piece of paper from beneath. Place the plant and the wet paper into the newsprint fold. Due to increased moisture, blotters will need to be changed more often.

Woody plants: Collect nuts or other fruits in coin envelopes and attach to herbarium sheet. Be sure the correct collection number correlating to the leafy specimen and field notes is included on the packet.
Slice open a section of the woody twig so that the pith may be easily examined.

IV. Plant Labels

A. Design
Examples of permanent labels are included in the appendix. They are variable in size and may include maps, emblems, or artistic illustrations. These permanent labels are placed in the lower right corner of the herbarium sheet when the plant is mounted.

B. Information on the Label
When plants are deposited at a herbarium, permanent labels will be provided if the collector does not provide one. However, the collector must include the necessary data from his field notebook.
The information on permanent labels includes:

1. Location where plant was collected
2. Scientific Name

3. Habitat description and notable ephemeral plant characteristics.
4. Family and common name.
5. Collector's name and collection number
6. Collection date.

V. Permanent Record

A final topic for the serious collector is the permanent record. It is a file of your endeavors and may prove significant in future inventories or when receiving requests about your plant collecting activities.

Keep the record so that it includes the final species determinations, where and when the plant was collected, and with what herbarium it was deposited.

Arrange headings in a record book as illustrated below:

Coll.#	Scientific Name	Misc. info.	Loc./date	Herb. dep.

Leave a space between each entry to insert information that you may receive in the future about the plant specimen.

****

Literature Cited

Hale,A. 1976. A Portable Electric Herbarium Drier. Rhodora v.78. p.132.

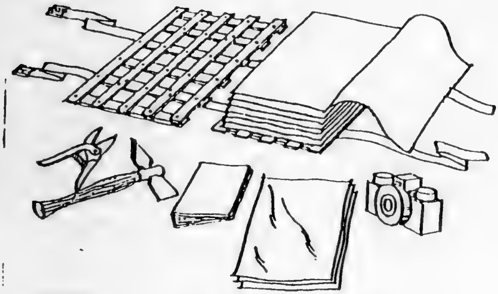
Smith, C.E.,Jr. 1971. Preparing Herbarium Specimens of Vascular Plants. Agric. Info. Bull. #348. USDA. Washington DC.

Smith, J.P., Jr. 1977. Vascular Plant Families. Mad River Press, Inc., Eureka, Calif.

****

APPENDICES
(following pages)

Appendix A. A short Guide to Preparing an Herbarium Specimen
(extracted from Smith, C.E. 1971. Ag. Bull. #348)

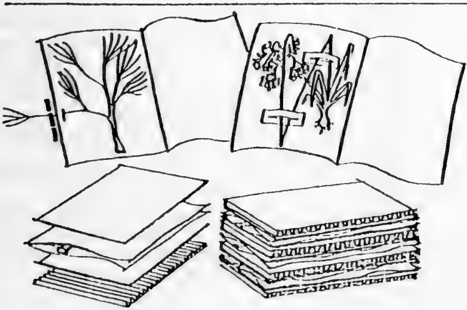


A. Assemble the equipment.

1. Prepare the press with folds of newspapers to receive the specimens.
2. Gather tools and supplies: cutting tools, digging tool, note book, plastic bags to hold unpressed specimens, and a camera to record difficult-to-describe plant parts.

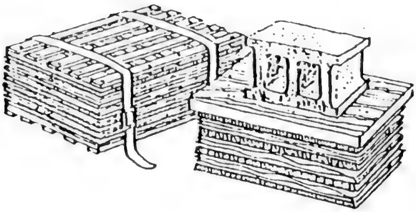
B. Collect the specimen and record the data.

1. Survey the plants to be collected to find the most representative specimens.
2. Cut or dig the selected plant parts.
3. Make detailed notes of observations that may be forgotten.
4. Place the specimens in a container for transport or in the press. If notes are made and separate parts collected, give the same identifying number to portions so they can be associated later.



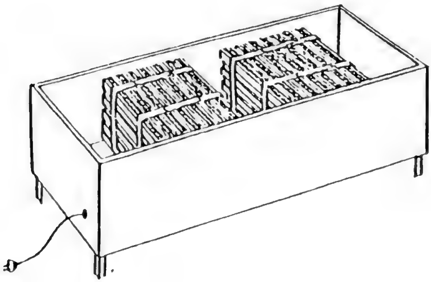
C. Prepare the specimen for pressing.

1. Place specimen in numbered newspaper fold.
2. Cut away excess parts, arrange leaves and flowers.
3. Write notes beside number in notebook; describe area, habit of plant, colors that may change, odors, and any special details.
4. Place fold between driers (adsorbent blotting paper) and corrugates (corrugated cardboard with channels running the width of the 12- by 17-inch piece) or heavy pads of newspaper.



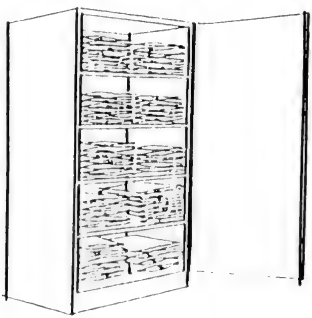
D. Press the specimen.

1. Press the specimen with its driers and corrugates tightly between press frames or weight heavily beneath board or books.



E. Dry the specimen.

1. Change driers or newspaper pads in 24 hours and thereafter as they become moist. Do not disturb the specimens in the newspaper folds.
2. When dry to the touch, test for incompletely dried specimens (incompletely dried specimens will feel cooler and ends will droop when lifted from the fold).



F. Store the specimen.

1. Store dried specimens in their folds tied between corrugates or mount on stiff 12- by 16-inch paper with bookbinder's Holland tape strips, casein, or plastic glue.
2. Label all specimens before storage or mounting.
3. Store only in insect-resistant furniture.

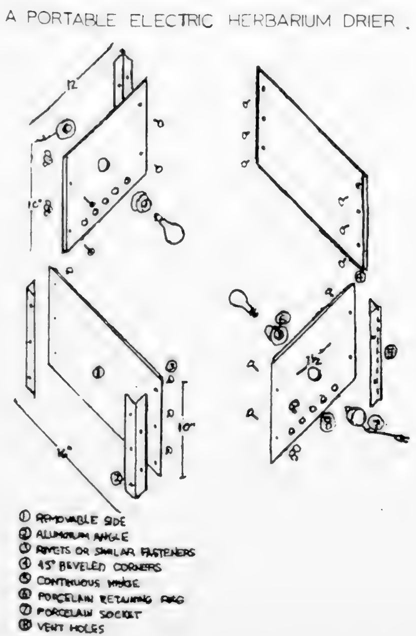
Additional, detailed information on preparing herbarium specimens can be found in the rest of this bulletin.

Appendix B. copied by permission from Smith, J.P. 1977.

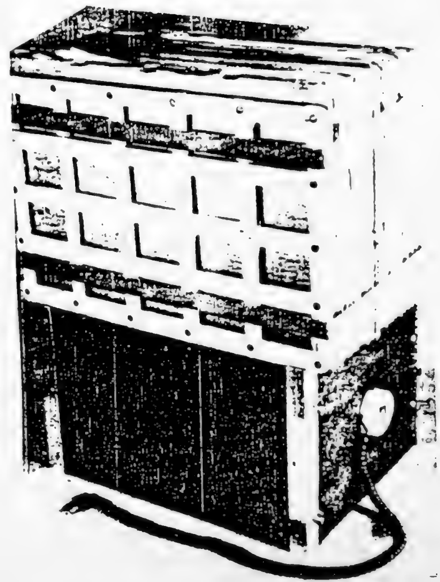
Table 24. Features emphasized in the identification of common flowering plant families

Family	Underground Parts	Leaves	Flowers	Fruits	Take Note Of
Amaranthaceae				X	Monoecious or dioecious
Araceae	X	X		X	
Araliaceae	X		X	X	
Asclepiadaceae			X	X	Position fruiting pedicel
Betulaceae				X	
Boraginaceae	X		X	X	
Cactaceae			X		Spines and glochids
Campanulaceae			X		Corolla shape
Caprifoliaceae				X	
Caryophyllaceae			X	X	Style number
Chenopodiaceae					
Commelinaceae			X		Very delicate flowers
Compositae	X	X	X	X	Ray flower color
Cornaceae				X	Branchlet color
Crassulaceae		X	X		Basal rosette
Cruciferae		X	X	X	
Cucurbitaceae				X	Monoecious or dioecious
Cyperaceae	X			X	
Ericaceae			X	X	Fruit surface
Euphorbiaceae			X	X	Watery or milky sap
Fagaceae		X		X	Growth form
Geraniaceae			X	X	
Gramineae	X	X		X	Mature Spikelets
Hydrophyllaceae	X		X	X	
Iridaceae	X		X	X	Flws. very delicate
Juglandaceae		X		X	Nature of pith
Juncaceae			X	X	Flat or terete leaves
Labiatae	X		X	X	Flw. color & markings
Leguminosae	X	X	X	X	
Liliaceae	X		X	X	Bulb morphology
Loranthaceae			X	X	Host plant
Malvaceae			X	X	Flower color
Nyctaginaceae	X			X	
Oleaceae		X		X	
Orchidaceae			X		Flw. color & markings
Plantaginaceae		X	X		
Polemoniaceae	X		X	X	Flower color
Polygonaceae	X			X	
Portulacaceae				X	
Potamogetonaceae		X		X	Stipule morphology
Ranunculaceae	X	X	X	X	
Rhamnaceae			X	X	
Rosaceae	X	X	X	X	Flwing & sterile stems
Rubiaceae				X	
Salicaceae		X		X	
Scrophulariaceae			X	X	Flw. color & markings
Solanaceae			X	X	
Ulmaceae		X		X	
Umbelliferae	X	X		X	
Violaceae		X	X		Flw. color & markings

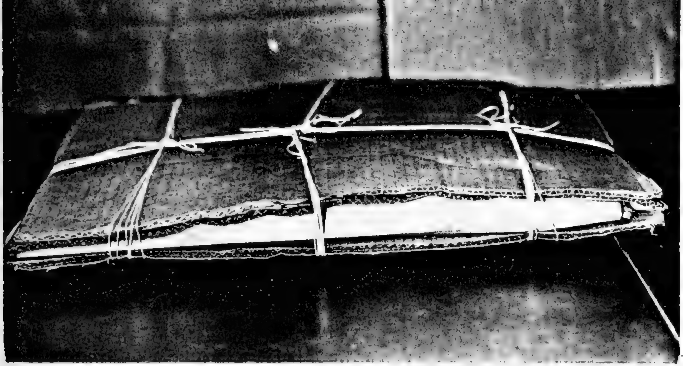
Appendix C. Designs for a Portable Plant Drier
(copied by permission from Hale, A. 1976.)



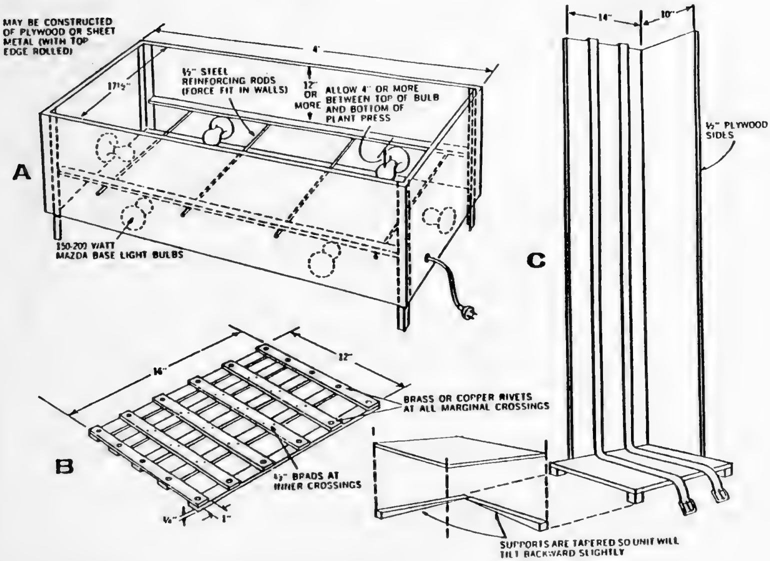
1. Dimensions and materials needed for drier construction.



2. Completed and assembled plant drier in use.

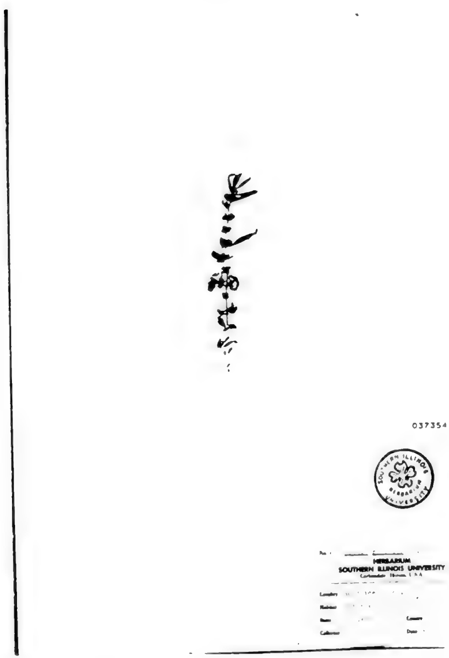


Appendix D. Herbarium Specimens Bundled and Tied Between Sturdy Corrugates for Storage or Mailing.



Appendix E. Designs for constructing: A. Heated Drying Rack B. Lattice-type Plant Press C. Stacking Corner

Appendix F. Prepared and Mounted Herbarium Specimens



Poorly Prepared Specimen

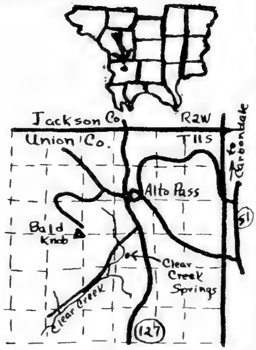
Properly Prepared Specimen

Appendix G. Examples of Permanent Herbarium Label Designs

FLORA OF SOUTHERN ILLINOIS

Vegetation of fresh-water springs

UNION COUNTY



Clear Creek Springs
T11S R2W Sec. 22 N1/2

Christine Ott No.

No.

HEPATICAE OF NORTH AMERICA

Southern Illinois University Herbarium

Carbondale, Illinois 62901, U.S.A.

Locality

Habitat

State County

Collector Det.

Date

ERIGENIA: 1, (1982), P. 22-43

AN ILLUSTRATED GLOSSARY OF BOTANICAL TERMS

written and illustrated by Mark W. Mohlenbrock

Having read the preceding articles, one should now possess the whys, wheres, whats, and hows of plant collecting. Hopefully, this new or renewed information will spur the reader to make plant collections for the advancement of science or for the enjoyment of searching for that specimen which represents an additional dot for the species range map. However, as an ever increasing stack of specimens begins to occupy a corner of one's office, desk, or (more than likely) long since used ping-pong table, the need to begin the task of identification becomes apparent. Unless you are a botanical whiz kid, or are a well-seasoned professional who can identify a specimen without the use of a botanical key, it will be necessary to open a plant manual covering your area. Technical, botanical terms are often among the keys and may hinder the interpretation of the keys. Most plant manuals contain a glossary of these botanical terms, but often the English definitions are equally confusing. Presented on the following pages is "An Illustrated Glossary of Botanical Terms" which I hope will be helpful in the identification of one's plant collections.

TO USE THIS GLOSSARY:
An alphabetical listing of the terms follows this paragraph. With each entry is a reference number which corresponds to the illustration of the term. To locate the illustration, large index numbers found on each plate are provided. A brief definition also accompanies each entry.

ABAXIAL. 156. Away from the stem (as with leaf petioles and branches); also, the lower surface of a leaf.
ACCESSORY FRUIT. 251. Comprised of a fleshy receptacle in which carpels are attached to the outside (as in Fragaria).
ACHENE. 261. Dry, indehiscent, single-seeded fruit, having the seed coat not attached to the mature ovary wall.
ACORN. 280. Dry, woody, drupe-like fruit of Quercus.
ACUMINATE. 67. Tapering gradually to a point with the sides concave.
ACUTE. 52. Coming to a point (especially with leaves and perianth).
ADAXIAL. 153. Toward the stem (as with leaf petioles and branches); also, the upper surface of a leaf.
AGGREGATE FRUIT. 255. Fruit where several separate carpels form a cluster from a single flower.
ALTERNATE. 14. Singly produced at a node (as with leaves).
AMENT. 213. Catkin; a spike comprised of unisexual flowers (as in Salix).
ANTHER. 228, 244. Part of a stamen which bears the pollen.
ANTRORSE. 96. Pointing toward the top (especially with hairs).
APICULATE. 44. Abrupt, short-pointed tip (as with leaves).
ARCHING. 173. Pointing upward but bending like a bow.
AREOLE. 84. Structure bearing spines and flowers (as in cacti); also, area between small veins in leaves.
ARIL. 270. An appendage (often fleshy) attached to a seed coat at or near the hilum of the seed, partially or totally covering the seed (as in Taxis, Juniperus, Celastrus).
ASCENDING. 174. Pointing upward in a somewhat concave manner.
ASYMMETRICAL. 29. Not symmetrical; halves not alike (as in leaf bases and flower parts.

ATTENUATE. 89. Gradually tapering to a point (as with leaf tips and bases).
AURICULATE. 62. With ear-like lobes (especially leaf bases).
AWN. 124. A sharp appendage (bristle) near or at the tip of a structure (as with glumes and lemmas of grasses).
AXILLARY. 194. At the axil; i.e., at the angle formed by leaf and stem.

BEARD. 137. A tuft of bristles.
BERRY. 269. Fruit in which seeds are surrounded only by fleshy pulp (as a tomato).
BIDENTATE. 95. Having two teeth (as leaf of Ambrosia bidentata).
BIFID. 190. Two-cleft (as petal of Phlox bifida).
BILABIATE. 200. Having two lips (as in many Lamiaceae flowers).
BLADE. 108. The broad portion of a leaf.
BRACT. 191. A modified (often reduced) leaf associated with flowers and inflorescences.
BRISTLE. 114. A stiff hair.
BUD SCALE. 150. Structure subtending and often partially surrounding a bud.
BULB. 148. Swollen bud with fleshy scales and leaf bases (as with Allium).
BUNDLE TRACES. 159. Scars left from attachment of a leaf petiole's vascular tissue.

CALLUS. 138. Hard, thickened area at the base of some lemmas (in grasses).
CALYX. 250. Collective term for the sepals.
CAMPANULATE. 183. Bell-shaped (as with flowers of Campanulaceae).
CANESCENT. 105. Covered with a dense layer of short, fine, grayish hairs.
CAPILLARY. 13. Elongated, threadlike (as with some leaves and hairs).
CAPITULAUM. 214. Head; a dense cluster of sessile or subsessile flowers from the same point of the peduncle (as in Asteraceae).
CAPSULE. 259. Fruit with many seeds composed of a number of carpels which dehisces at maturity.
CARUNCLE. 281. A wartlike appendage near the hilum (point of attachment) of a seed (as with castor bean seeds).
CATKIN. 213. Ament; spike comprised of unisexual flowers (as with Salix).
CAUDATE. 119. Having a tail-like tip.
CAULINE. 85. Pertaining to structures attached to a stem (esp. leaves).
CILIATE. 71. Having cilia (marginal hairs) around the edge of a structure.
CIRCINATE. 8. Spiraled (as fern fiddleheads).
CIRCUMSCISSILE. 265. Dehiscing horizontally like a cap.
CLASPING. 61. Having the base of a leaf partially surrounding the stem.
CLAWED. 180. Having a narrowed base of the petal (as with Cleome, Silene).
CLEISTOGAMOUS. 167. Flower which self-fertilizes without opening, usually not showy (as in Violaceae).
CLIMBING. 175. Scandent; twining stem supported by clinging.
COLUMN. 219. A tubular structure surrounding the pistil which is composed of fused stamen filaments (as in Malvaceae); the fusion of style and filament(s) (as in Orchidaceae).
COMA. 278. A tuft of hairs at the end of a seed (as in Asclepias).
COMPOUND. 20, 27, 31. Composed of two or more similar parts (as with leaves, inflorescences, and pistils).
CONE. 1. Strobilus; reproductive structure composed of a branch bearing a cluster of sporophylls.
CONNECTIVE. 241. Extension of the stamen filament which occurs between and often above the anther.
CONVOLUTE. 201. Rolled up lengthwise (often twisted) (as in Phlox flower buds).

CORDATE. 36. Heart-shaped (as leaf-base of Cercis canadensis).
CORM. 164. Underground, bulblike stem which has papery scale leaves.
COROLLA. 249. Collective term for the petals; often used when petals are fused at least part way.
CORONA. 192. Modified appendages derived from the corolla.
CORYMB. 198. Flat-topped inflorescence whose branches arise from different locations on the peduncle, thus having the outermost flowers blooming first.
CRATERIFORM. 17. Swollen, cone-shaped structure, with a depressed apex (as with nectariferous glands in Fabaceae).
CREEPING. 171. Having a horizontal stem which grows along the ground, sometimes rooting at the nodes.
CRENATE. 60. Having rounded teeth (especially margins of leaves).
CRISPED. 86. Ruffled, curled.
CUCULLATE. 195. Hood-shaped (as with flowers).
CULM. 136. Hollow stem of grasses.
CUNEATE. 79. Wedge-shaped (as with leaf bases).
CUPULAR. 224. Cuplike.
CUSPIDATE. 112. Having a sharply pointed tip which is firmer than the remaining portion of the blade.
CYME. 208. Alternate-branching inflorescence which is generally flat-topped, the central flowers blooming first.
SCORPIOID CYME. 207. Specialized cyme which is coiled and the flowers are borne on one side of the axis, resembles a coiled raceme or spike.

DECLINED. 173. Bending, similar to arching.
DECUMBENT. 170. Parallel to substrate except at apex which is erect or suberect.
DECURRENT. 59. Gradually tapering base often resulting in a winged petiole (as with leaves).
DEHISCENT. 267. Splitting open at maturity (as with fruits and anthers).
DELTOID. 33. Triangular, with attachment at the middle of one of the sides.
DICHOTOMOUS. 168. Forking, usually into two equal branches.
DIFFUSE. 176. Spreading in all directions.
DIGITATE. 212. Arranged in a fingerlike manner.
DISC. 243. Fleshy appendage of the receptacle which surrounds the ovary.
DISC FLOWER. 216. Flower of Asteraceae which has a tubular corolla with no showy, elongated lobes; usually found interior to the edge of a head.
DRUPE. 253. Fruit with a fleshy exocarp and stony endocarp inside which is found the seed.

ECHINATE. 276. Covered with spines or prickles.
ELLIPTIC. 56. Broadest at the middle, tapering at both ends (as with leaves).
EMARGINATE. 57. Having a shallow, broadly notched tip.
ENTIRE. 34, 70. Without lobes, divisions, or teeth (as with leaves).
ERECT. 169. Upright.

FALCATE. 256. Sickle-shaped.
FIBROUS. 143. Having several major roots of similar size, i.e., no tap root.
FIDDLEHEAD. 9. Juvenile, curled leaf of a fern.
FILAMENT. 233, 246. Stalk of a stamen which supports the anther.
FILIFORM 100. Long, narrow, almost threadlike.
FIMBRIATE. 184. Fringed.

FLABELLATE 75. Fan-shaped (as with leaves of Ginkgo).
FLEXUOUS. 16. Zig-zagged (as with stems).
FLORET. 139. In grasses, the small flowers including palea and lemma.
FOLLICLE. 268. Dry fruit which splits at maturity only on one side.
FROND. 3. Leaf blade of a fern.
FUNNELFORM. 186. Funnel-shaped (as with flowers).
FUSIFORM. 145. Widest in middle, tapering to both ends, 3-dimensional (as with swollen roots of Panax).

GALEA. 203. A hood formed from fused or modified petals or sepals.
GENICULATE. 90. Bent backwards.
GIBBOUS. 92. Swollen on one side (as with Utricularia bladders).
GLAND. 17, 222. A swollen secretory structure.
GLOCHID. 83. Sharp minute bristle with a barbed tip (as with Opuntia).
GLUME. 134. Empty (sterile) scale subtending a grass spikelet, usually two per spikelet.
GRAIN. 126. Fruit of a grass, dry, one-seeded.

HASTATE. 64. Arrowhead-shaped with basal lobes spreading perpendicular to the tip of the leaf.
HEAD. 214. A dense cluster of sessile or subsessile flowers from the same point of the peduncle (as in Asteraceae).
HIRSUTE. 106. Covered with coarse stiff hairs.
HISPID. 107. Covered with rigid spinelike hairs.
HOOD. 188. A modified, generally concave petal or sepal.
HORN. 187. An elongated floral appendage especially with Asclepias.
HYPANTHIUM. 245. Cup-shaped receptacle in which the carpels are situated (as in Rosa).

IMBRICATE. 88, 205. With one edge overlapping like shingles.
INDEHISCENT. 262. Not splitting open at maturity (as with fruits).
INDUSIUM. 6. Flaplike covering of a sorus (as with ferns).
INFERIOR. 238. Having the ovary surrounded by the attached floral tube or embedded in the receptacle.
INFLEXED. 96. Pointing downward.
INTERNODE. 152. Area between two nodes.
INVOLUCRE. 215, 277. Cluster of bracts subtending the flower cluster.
INVOLUTE. 77, 125. Rolled inward.

LACINIATE. 91. Composed of narrow, pointed lobes or segments, thus appearing lacerated.
LANCEOLATE. 50. Widest below the middle of the leaf, tapering in both directions, longer than broad.
LATERAL BUD. 154. Bud not found at the tip of the stem, but rather along the stem.
LEAFLET. 24. Segment of a compound leaf attached to rachis at one point, i.e., not a lobe.
LEGUME. 255A. Dry fruit which splits on both margins (pertaining to most fruits of Fabaceae).
LEMMA. 129, 141. Lower of the two bracts which immediately subtend the grass floret.
LENTICEL. 151. Corky spots found on stems and branches.
LENTICULAR. 161. Lens-shaped; convex on both sides.
LIGULE. 2, 121. Collarlike appendage found at juncture of blade and sheath (as with grass leaves).
LINEAR. 22. Having a long, narrow shape in which the side margins are parallel for much of their length (as in Salix).
LIP. 202. Modified petals which oppose each other, forming a lip-like structure.
LOBE. 25, 32. Having indentations only partially to the midrib of a leaf.

LOCULE. 247. Cavity of the pistil or stamen.
LODICULE. 133. Rudimentary scales at the base of a grass flower which represent the perianth.
LOMENT. 254. A legume which is divided into one-seeded segments.
LONG TAPERING. 19. Gradually coming to a point.
LYRATE. 38. Pinnately lobed with large, rounded terminal lobe.

MONILIFORM. 260. Resembling a string of beads (as with some Fabaceae fruits).
MUCRONATE. 37. With an abrupt, short-pointed apex (as with leaf tips).

NEEDLE. 26. Modified, narrow, vertually cylindrical leaf which is acutely tipped (associated with conifers).
NODE. 155. Area of stem which bears leaves, flowers, and branches.
NUT. 272. Woody, indehiscent, single-seeded fruit.

OBLANCEOLATE. 51. Broadest near the apex, tapering to the base.
OBLIQUE. 29. Having unequal sides; asymmetrical.
OBOVATE. 49. Egg-shaped except having the point of attachment at the smaller end.
OBTUSE. 46. Rounded, blunt, not pointed.
OCREA. 117. Membranaceous, tubular, stipular sheath (as in Polygonaceae).
OPPOSITE. 87. Two structures which are attached to an axis at the same level but on either side.
ORBICULAR. 39. Circular.
OVARY. 231, 238, 242. Swollen, basal, ovule-bearing portion of the pistil (as with flowers).
OVATE. 55. Round base with tapering tip, length not a great deal longer than width.
OVULE. 248. Female reproductive product which, upon fertilization, develops into a seed.

PALEA. 131, 140. Upper of the two bracts which immediately subtend the grass floret.
PALMATE. 20, 32. Arranged like fingers on a hand.
PANDURIFORM. 15. Fiddle-shaped.
PANICLE. 218. Inflorescence in which several axes lined with pedicelate flowers are grouped together.
PAPPUS. 209. Modified bristly calyx (as in Asteraceae).
PARALLEL. 69. Having veins or leaf margins arranged such that they could not bisect.
PECTINATE. 94. Resembling a comb.
PEDICEL. 206, 230, 239. Stalk subtending a flower.
PEDUNCLE. 210 Stalk of an inflorescence.
PELTATE. 41. Having the leaf stalk (petiole) attached to the blade inward from the margin (like an umbrella and its handle).
PERFOLIATE. 58. Having the leaf encircling the stem as if the stem pierces the leaf.
PETAL. 223, 232. Membranaceous often showy structure, a number of which are arranged around the pistil and stamens and inside of the calyx.
PETALIFEROUS. 163. Flower which has petals.
PETIOLE. 42. Leaf stalk.
PETIOLULE. 28. Stalk which attaches leaflet blade to the rachis (in compound leaves).
PILOSE. 109. Surface covered with long, fine, soft hairs.
PINNA. 45. Primary division of a compound leaf.
PINNATE. 25, 27. Arranged along the axis like a feather.
PINNULE. 43. Smallest segment of a compound leaf.

PISTIL. 226. Female (ovule-producing) structure of a flower composed of ovary, style, and stigma.
PLANO-CONVEX. 80. Having a flat upper surface and a convex lower surface.
PLICATE. 74, 130. Folded, forming a "v" in cross-section.
PLUMOSE. 252. Having fine hairs arranged like a plume of a feather.
POME. 263. Fruit composed mainly of a fleshy receptacle which surrounds the inferior ovary (as with apples).
PRICKLE. 160. A sharp outgrowth of the epidermis of stem or leaf (as in Rosa).
PROCUMBENT. 172. Lying flat (on the ground) (as in Chamaesyce).
PROSTRATE. 172. Lying flat on the ground (as in Chamaesyce).
PUBESCENT. 104. Surface covered with fine, short, soft hairs; also, used as a general term for hairiness.
PUNCTATE. 197. Having spots or dots on the surface (as with Hypericum punctatum).
PYRIFORM. 275. Pear-shaped.

QUADRATE. 120. Four-sided in cross-section.

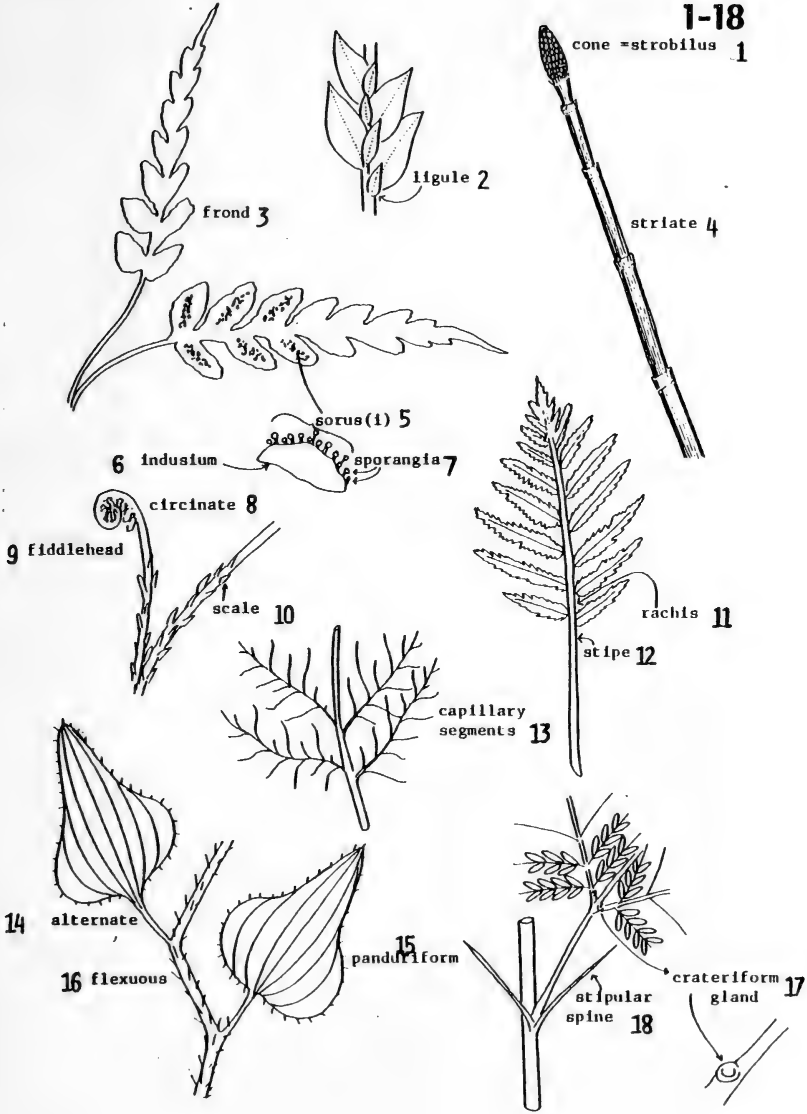
RACEME. 199. Inflorescence in which pedicelate flowers are arranged along an axis.
RACHILLA. 135. Secondary axis (such as a grass spikelet axis).
RACHIS. 11, 47. Primary axis of a leaf or inflorescence.
RAY FLOWER. 217. Outer flower of a head which bears one large, often showy corolla lobe (as in Asteraceae).
RECEPTACLE. 229. Common point of attachment in flower of calyx, corolla, stamens, and pistil.
RENIFORM. 53. Kidney bean-shaped.
REPENT. 171. Creeping along the ground, rooting at the nodes.
REPLUM. 271. False partition found between the two valves of Brassicaceae fruits.
RESUPINATE. 204. Positioned upside down (as with flowers of Orchidaceae).
RETICULATE. 68. Netlike, interlocking (as with vein pattern of most dicot leaves).
RETRORSE. 99. Pointed downward.
RETUSE. 72. Having a shallow, narrow notch at the apex.
REVOLUTE. 76. Having the margins rolled backward.
RHIZOME. 142. A horizontal underground stem which produces both shoots and roots.
RHOMBIC. 97. Diamond-shaped.
ROSETTE. 166. Having the leaves clustered around the base of the stem at ground level.
ROTATE. 189. Open widely, wheellike (as with flowers of Physalis).
ROUNDED. 54. Curved such that there are no angles.
RUGOSE. 110. Having a wrinkled surface.

SACCATE. 182. Sac or slipper-shaped (as with lady's-slipper orchid).
SAGITTATE. 63. Arrowhead-shaped.
SALVERFORM. 181. Tubular corolla with lobes abruptly spreading.
SAMARA. 266. Fruit which is dry, indehiscent, and winged (as with Acer and Ulmus).
SCABROUS. 103. Rough, with the texture of sandpaper.
SCALE. 10. Thin, membranaceous, or succulent bract which generally represents a rudimentary leaf; flat, thin, membranaceous outgrowth on the surface of a leaf.
SCANDENT. 175. Climbing; twining stem supported by clinging.
SCAPE. 165. Leafless flower stalk.
SCAR. 158. Mark left on a stem where a leaf petiole was once attached.

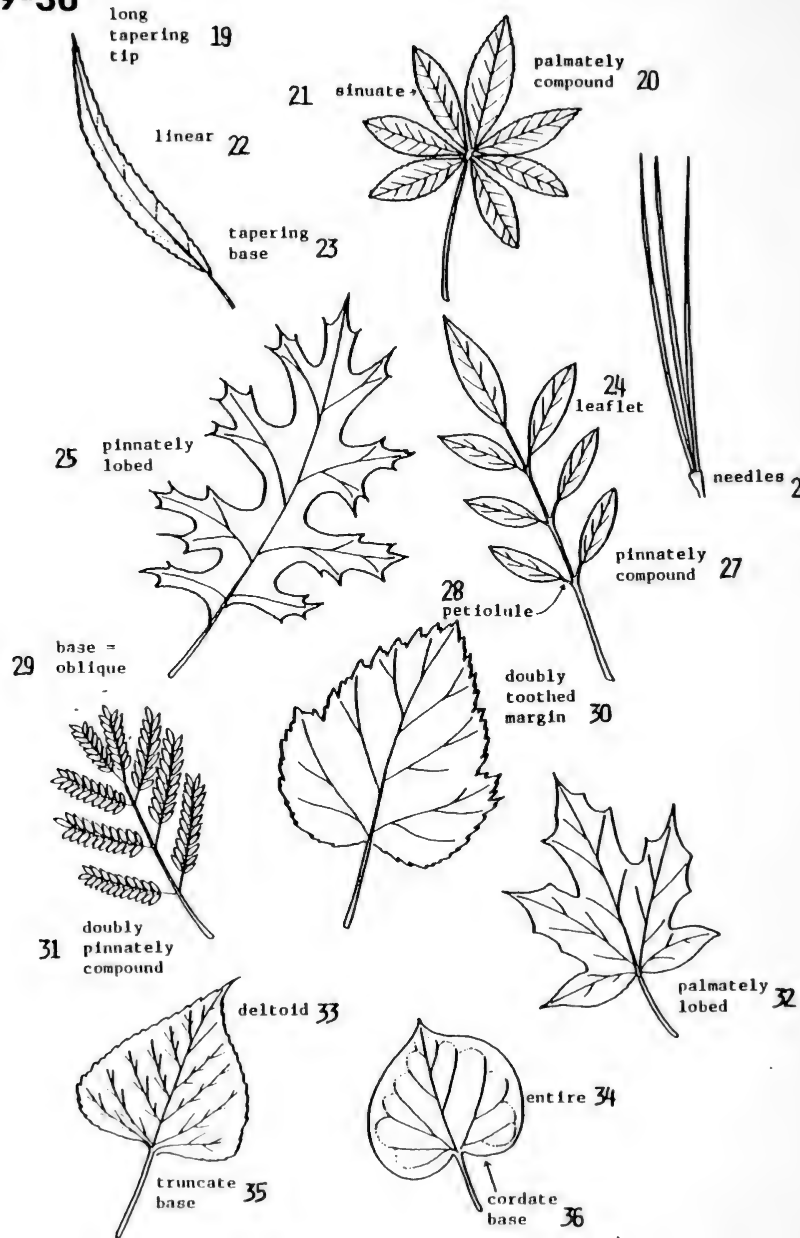
SCURFY. 102. Having a scaly surface.
SECUND. 132. Borne on one side (as with inflorescences of Bouteloua).
SEPAL. 227, 236. Outer flower part, often green, which subtend the petals.
SERRATE. 78. Having upward pointing, sawtoothlike teeth.
SERRULATE. 81. Having miniature serrate teeth.
SESSILE. 115. Having a structure attached directly; lacking a stalk.
SHEATH. Tubular part of a grass leaf which encircles the stem;
OPEN SHEATH. 122. With edges not overlapping.
CLOSED SHEATH. 123. With edges overlapping.
SILICLE. 273. A silique which is nearly as broad as tall (as with Brassicaceae fruits).
SILIQUE. 274. An elongated capsule which has a replum separating the two valves (as with Brassicaceae fruits).
SINUATE. 21. Wavy.
SINUS. 40. The recessed portion of a lobed structure.
SOLITARY. 193. Occurring singly.
SORUS(I). 5. A cluster of sporangia found on the fronds of ferns.
SPADIX. 179. A flower spike which has a succulent axis and is generally enclosed by a spathe (as with Arisaema).
SPATHE. 177. Bract which encloses (or subtends) an inflorescence (as with Arisaema).
SPATULATE. 185. Spatula to spoon-shaped.
SPIKE. 196. Inflorescence with sessile flowers positioned along the rachis.
SPINE. 18, 82. Sharp, hard outgrowth of a leaf or replacing the leaves and stipules entirely.
SPORANGIUM(A). 7. Case or saclike structure which produces spores.
SPUR. 178. A slender, saclike, modified petal or sepal.
STAMEN. 127, 225, 234. Male reproductive component of a flower composed of filament, and anther in which pollen is produced.
STANDARD. 220. A large, modified petal, often called a banner (as in Fabaceae).
STELLATE. 101. Star-shaped (especially with surface hairs or scales).
STIGMA. 128, 237. Area terminating the pistil which is receptive to the pollen grain.
STIPE. 12. Stalk (often associated with leaf stalk of ferns).
STIPULE. 18, 48. One of a pair of appendages (often leaflike) which arise from the base of the petiole of a leaf.
STOLON. 147. Horizontal, thin stem which runs along the surface of the ground.
STRIATE. 4. Having longitudinal grooves.
STROBILUS(I). 1. Cone; reproductive structure composed of a branch bearing a cluster of sporophylls.
STYLE. 240. Tubular portion of the pistil which lies between the stigma at the tip and the swollen ovary below.
SUBULATE. 93. Coming to a narrow, drawn out point.
SUPERIOR. 231. Pertaining to an ovary in which the pistil is elevated above the receptacle.

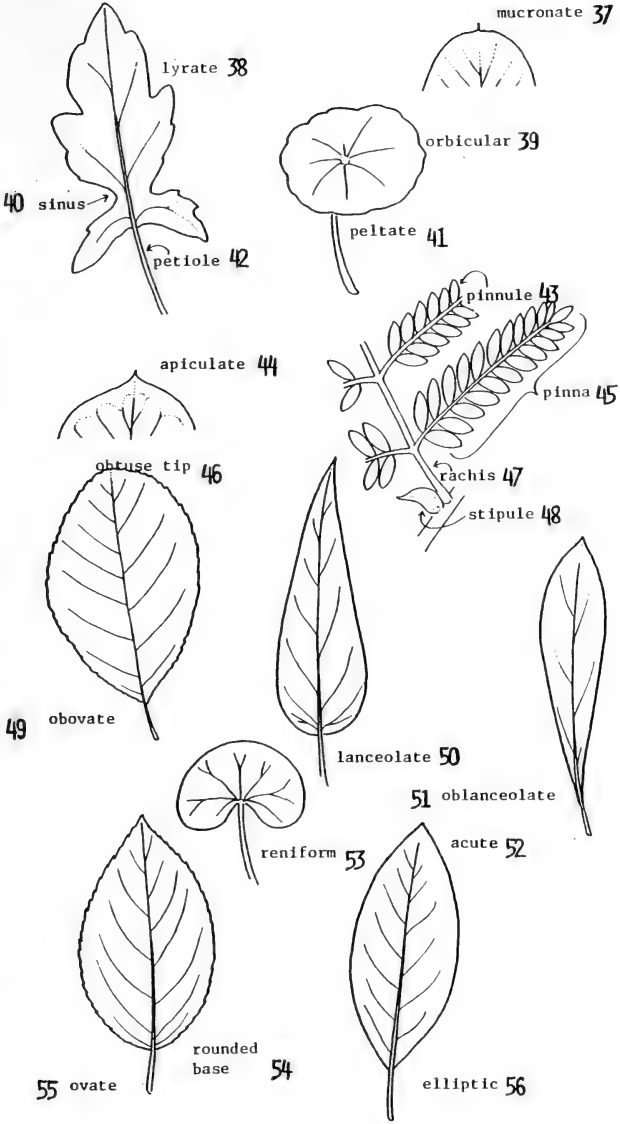
TAP ROOT. 144. Primary root which is larger than the other roots.
TAPERING. 23. Gradually coming together.
TENDRIL. 98. Twining extension of leaf or stem which is used to help support the plant (especially vines as with Vitus).
TERETE. 116. Circular in cross-section (as with stems and petioles).
TERMINAL BUD. 149. Bud which is located at the apex of shoot or stem.
THORN. 162. Short, modified, sharp-tipped branch.
TOMENTOSE. 111. Woolly; matted hairs.
TOOTHED. 30. Dentate; having angular teeth on the margin (as with leaves).

CONTINUED ON PAGE 43.

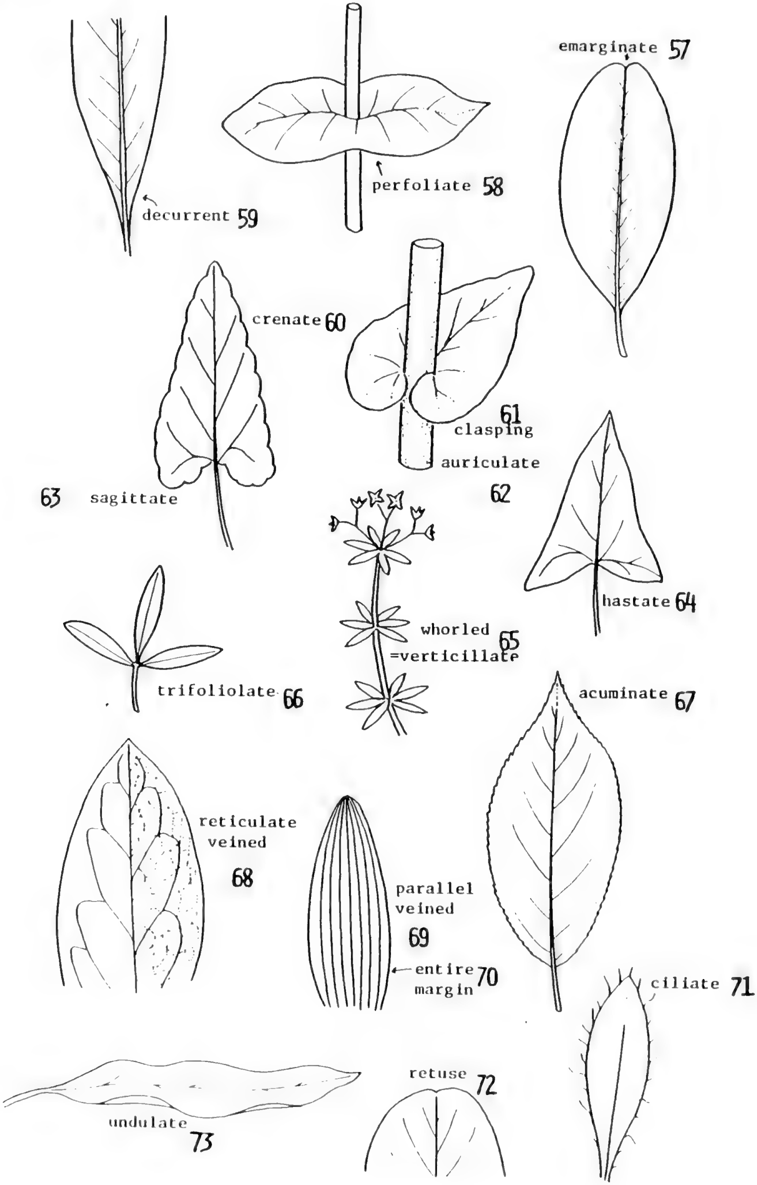

1-18
cone =strobilus 1
ligule 2
frond 3
striate 4
sorus(i) 5
6 indusium
sporangia 7
circinate 8
9 fiddlehead
scale 10
rachis 11
stipe 12
capillary segments 13
14 alternate
15 panduriform
16 flexuous
crateriform gland 17
stipular spine 18

19-36


long
tapering
tip
19
palmately
compound
20
21
sinuate
linear
22
tapering
base
23
24
leaflet
25
pinnately
lobed
needles
26
pinnately
compound
27
28
petiolule
base =
oblique
29
doubly
toothed
margin
30
doubly
pinnately
compound
31
palmately
lobed
32
deltoid
33
entire
34
truncate
base
35
cordate
base
36

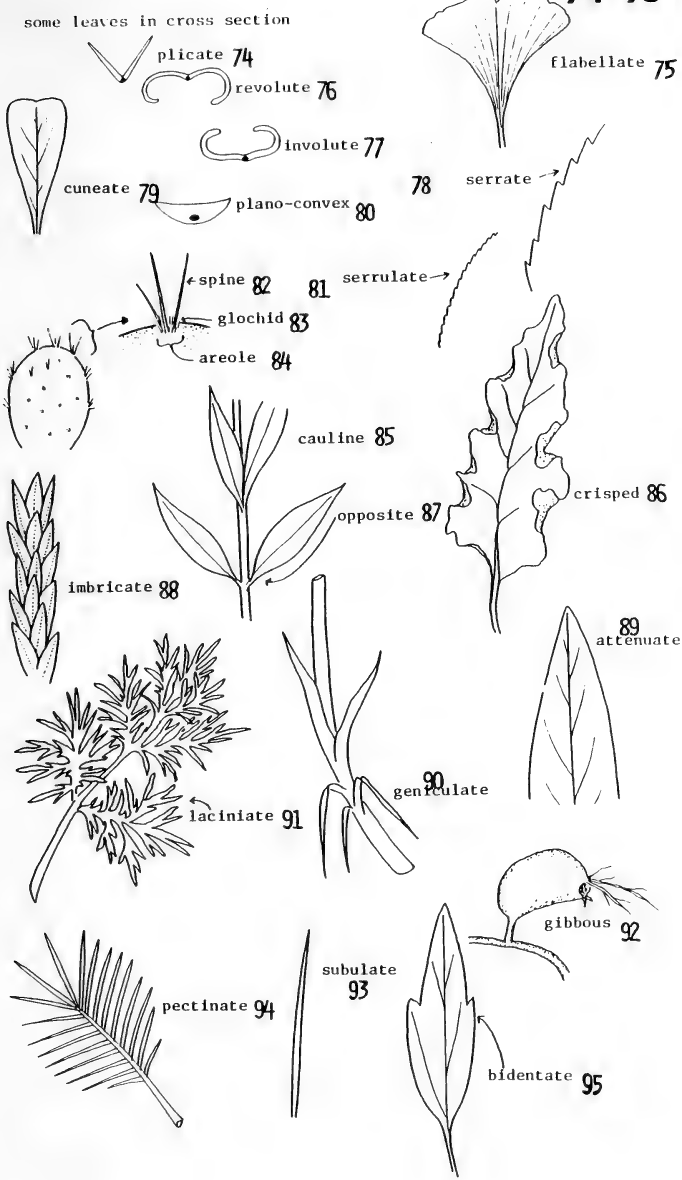

mucronate 37
lyrate 38
orbicular 39
40 sinus
peltate 41
petiole 42
pinnule 43
apiculate 44
pinna 45
obtuse tip 46
rachis 47
stipule 48
49 obovate
lanceolate 50
51 oblanceolate
acute 52
reniform 53
rounded base 54
55 ovate
elliptic 56

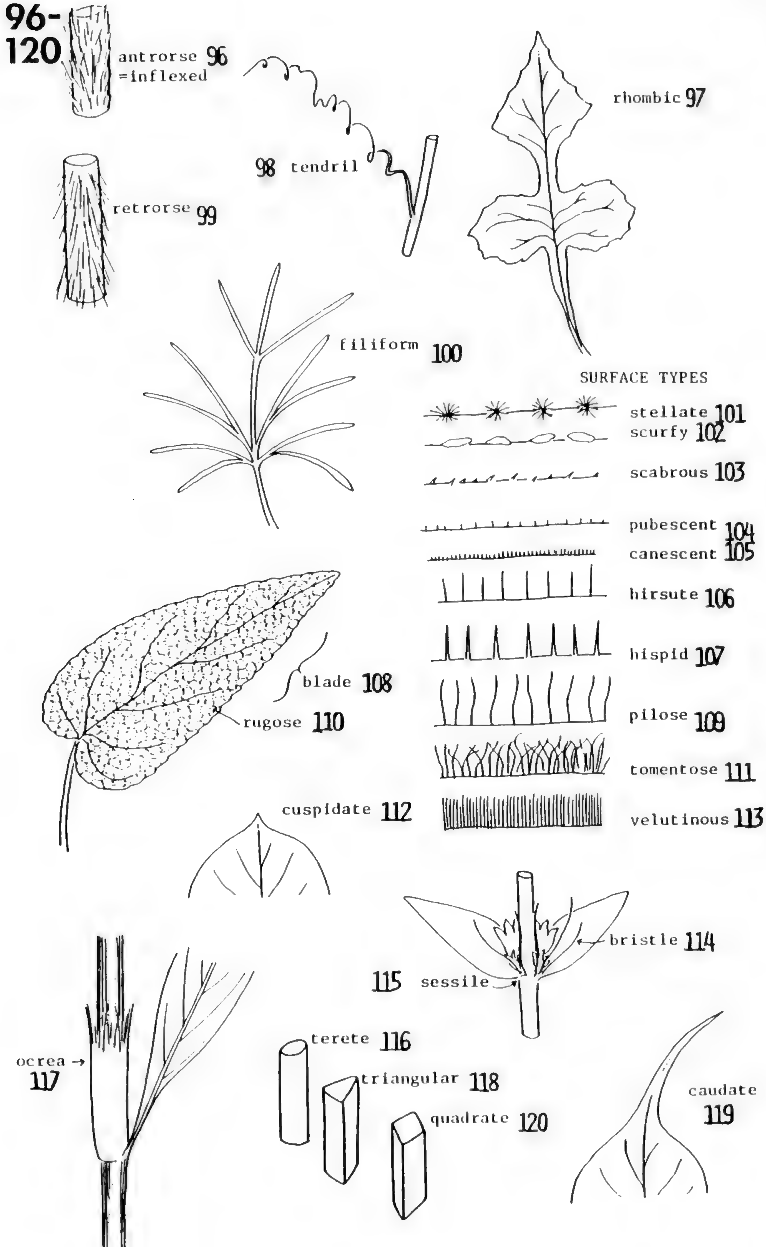
57-73

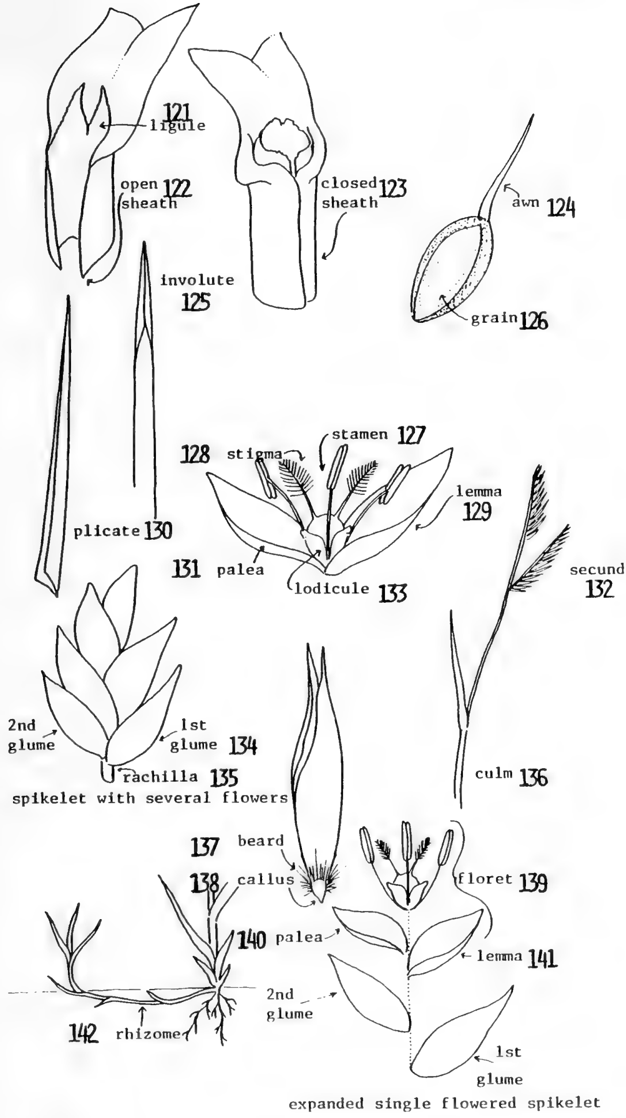


emarginate 57
perfoliate 58
decurrent 59
crenate 60
61 clasping
auriculate
62
63 sagittate
hastate 64
whorled 65
=verticillate
trifoliolate 66
acuminate 67
reticulate
veined
68
parallel
veined
69
entire
margin 70
ciliate 71
retuse 72
undulate
73

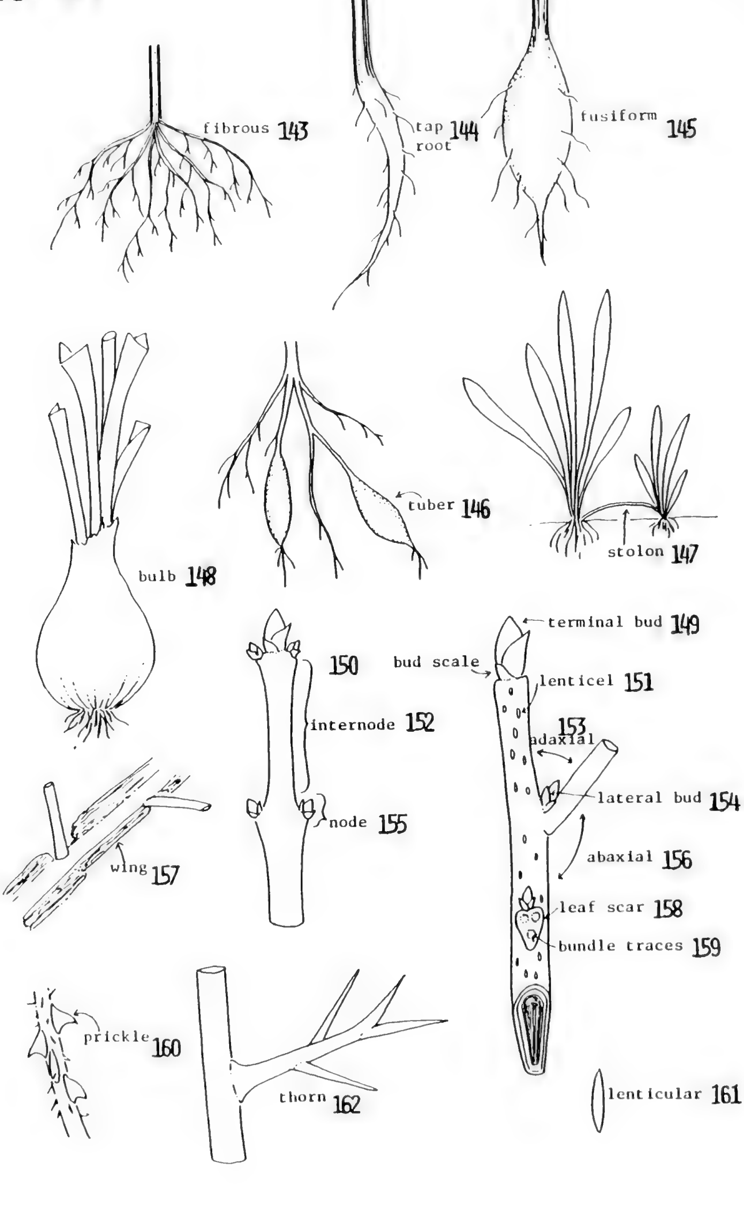
74-95


some leaves in cross section
plicate 74
flabellate 75
revolute 76
involute 77
cuneate 79
plano-convex 80
78
serrate
serrulate
81
spine 82
glochid 83
areole 84
cauline 85
crisped 86
opposite 87
imbricate 88
89
attenuate
90
geniculate
laciniate 91
gibbous 92
subulate
93
pectinate 94
bidentate 95

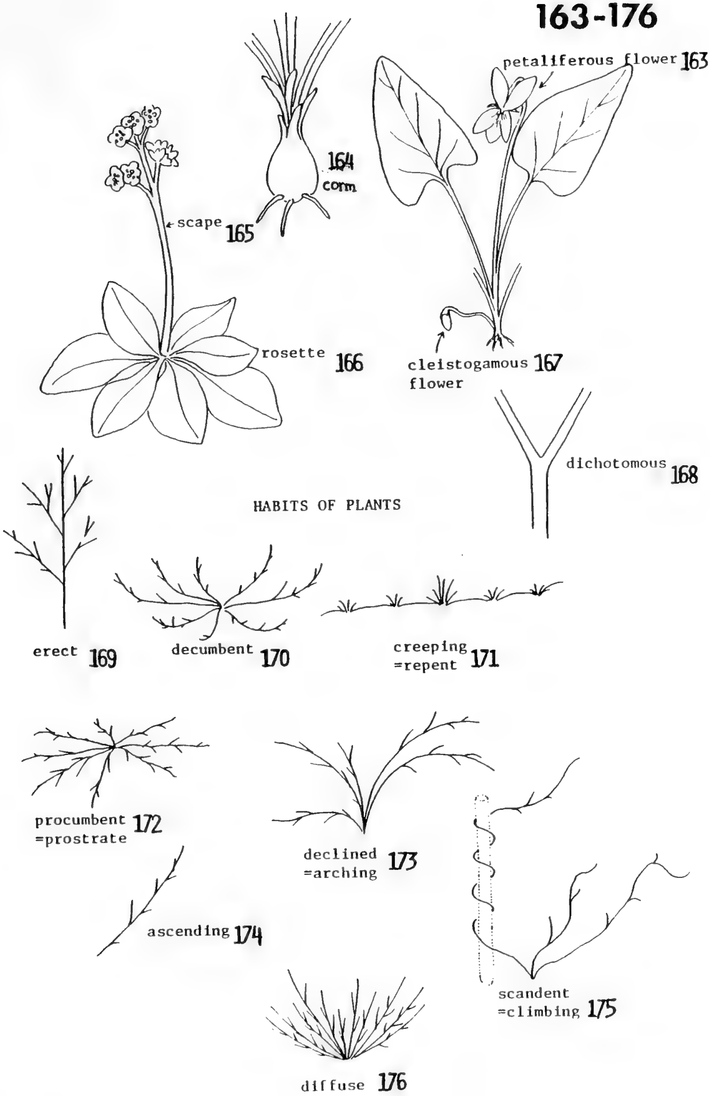

96-120
antrorse 96
=inflexed
rhombic 97
98 tendril
retrorse 99
filiform 100
SURFACE TYPES
stellate 101
scurfy 102
scabrous 103
pubescent 104
canescent 105
hirsute 106
hispid 107
blade 108
rugose 110
pilose 109
tomentose 111
cuspidate 112
velutinous 113
bristle 114
115 sessile
terete 116
ocrea
117
triangular 118
quadrate 120
caudate
119


121 ligule
open 122
sheath
closed 123
sheath
awn 124
involute
125
grain 126
stamen 127
128 stigma
lemma
129
plicate 130
131 palea
lodicule 133
secund
132
2nd
glume
1st
glume 134
rachilla 135
spikelet with several flowers
culm 136
137 beard
138 callus
floret 139
140 palea
lemma 141
2nd
glume
142 rhizome
1st
glume
expanded single flowered spikelet

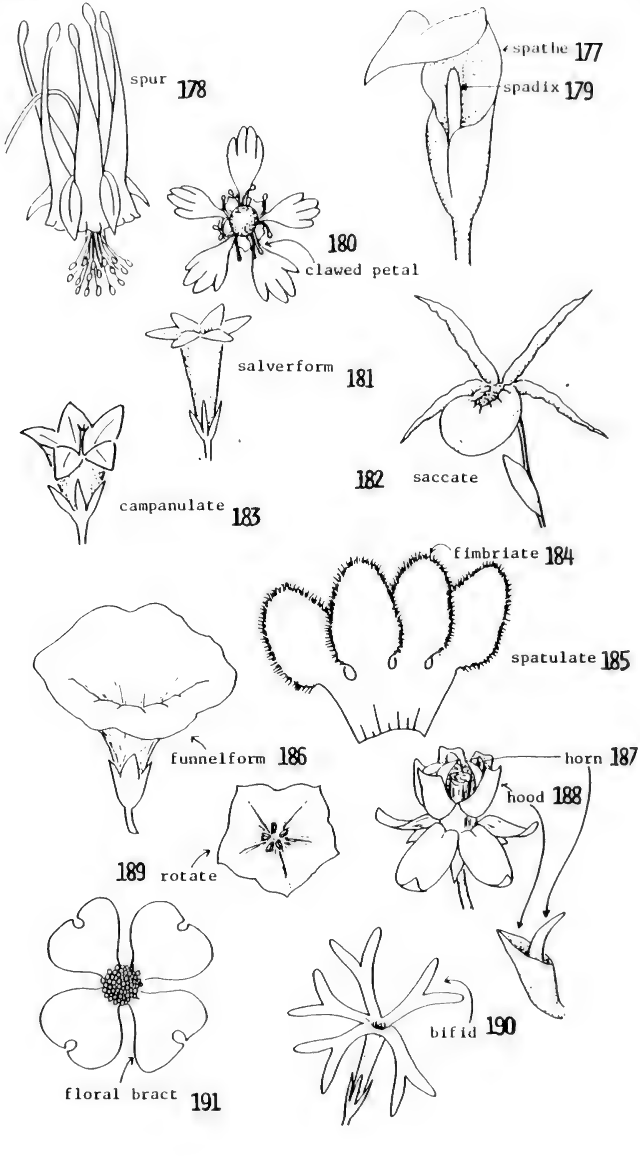
143-162

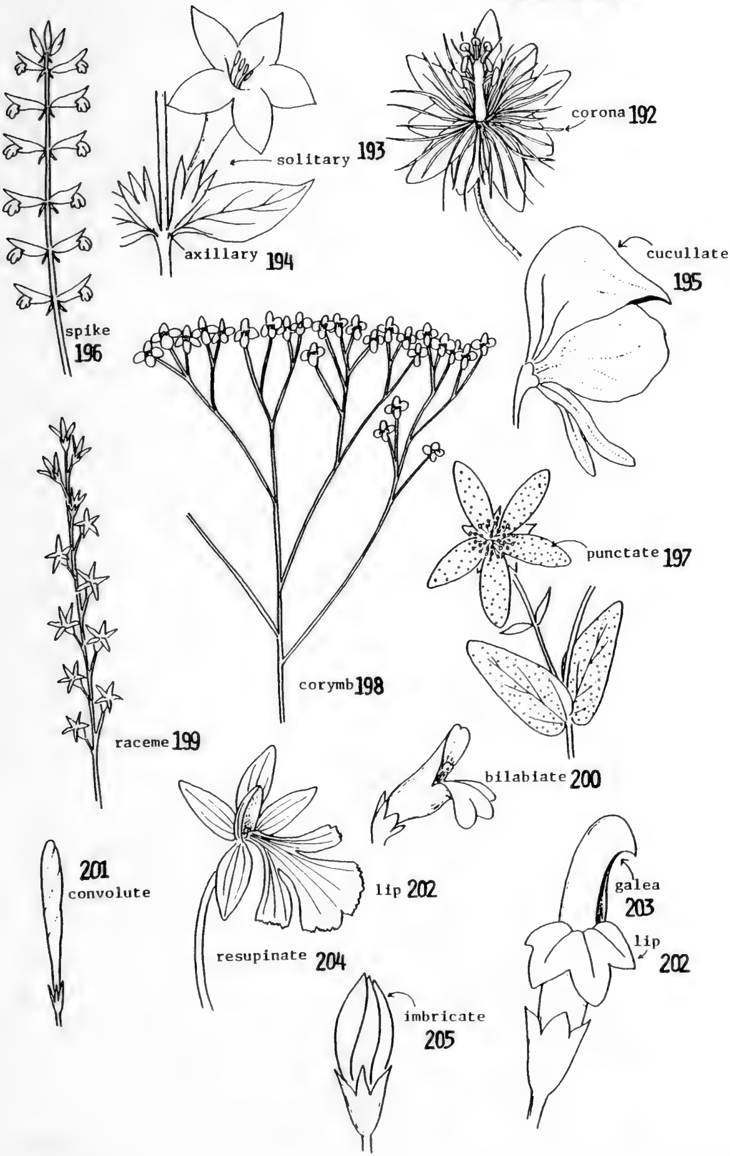

fibrous 143
tap root 144
fusiform 145
tuber 146
stolon 147
bulb 148
terminal bud 149
150
bud scale
lenticel 151
internode 152
153
adaxial
lateral bud 154
node 155
abaxial 156
wing 157
leaf scar 158
bundle traces 159
prickle 160
lenticular 161
thorn 162

163-176

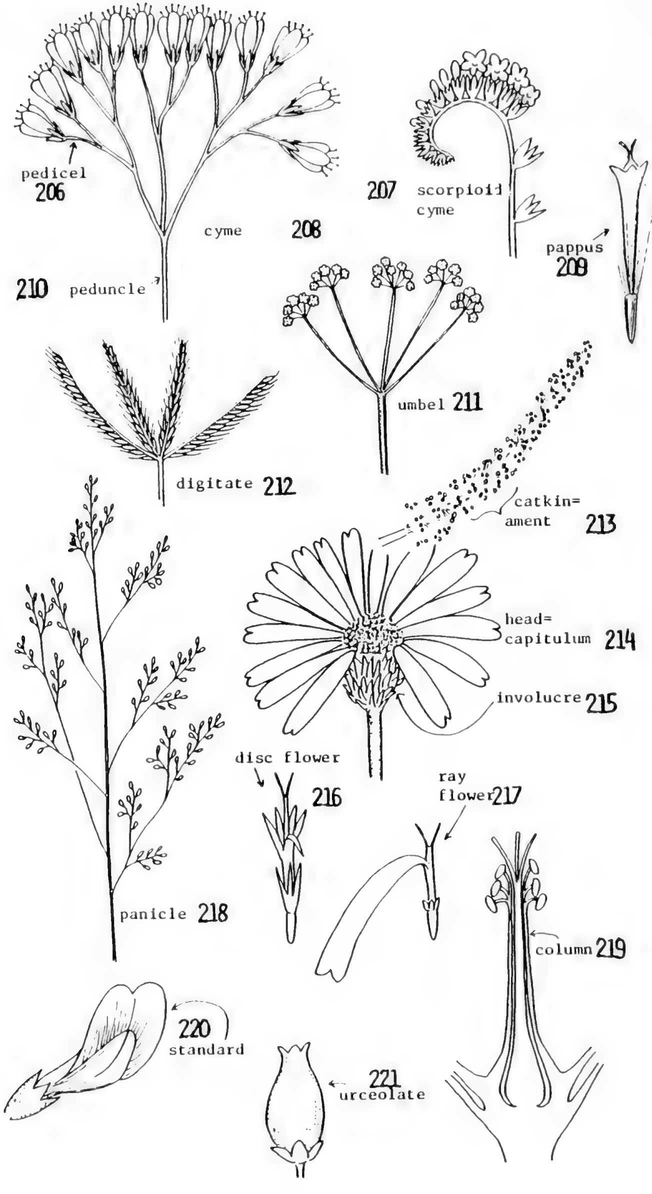

petaliferous flower 163
164 corm
scape 165
rosette 166
cleistogamous flower 167
dichotomous 168
HABITS OF PLANTS
erect 169
decumbent 170
creeping =repent 171
procumbent =prostrate 172
declined =arching 173
ascending 174
scandent =climbing 175
diffuse 176

177-191

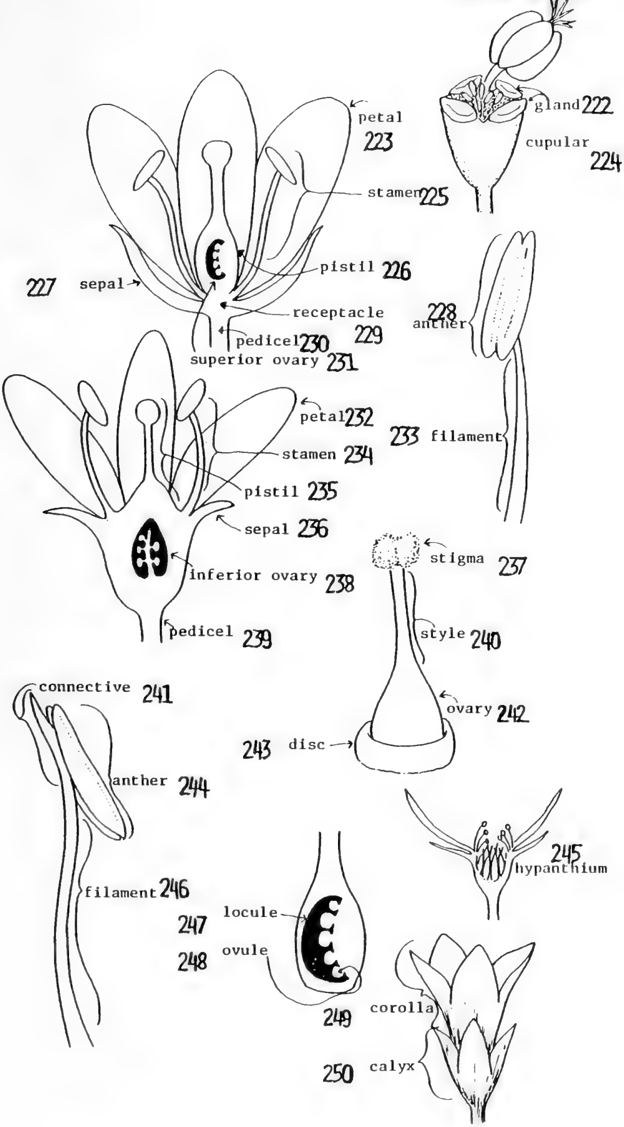

spathe 177
spur 178
spadix 179
180
clawed petal
salverform 181
182 saccate
campanulate 183
fimbriate 184
spatulate 185
funnelform 186
horn 187
hood 188
189 rotate
bifid 190
floral bract 191


corona 192
solitary 193
axillary 194
cucullate
195
spike
196
punctate 197
corymb 198
raceme 199
bilabiate 200
201
convolute
lip 202
galea
203
lip
202
resupinate 204
imbricate
205

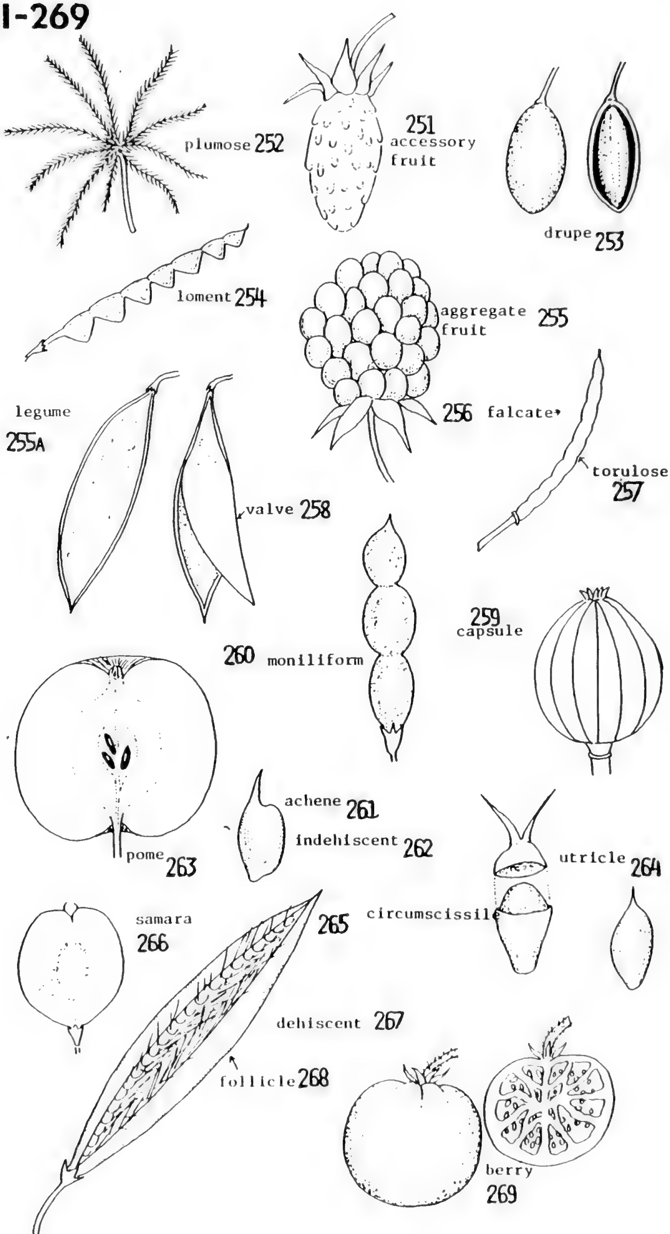
206-221


pedicel
206
207
scorpioid
cyme
cyme
208
pappus
209
210
peduncle
umbel 211
digitate 212
catkin=
ament
213
head=
capitulum
214
involucre 215
disc flower
216
ray
flower 217
panicle 218
column 219
220
standard
221
urceolate

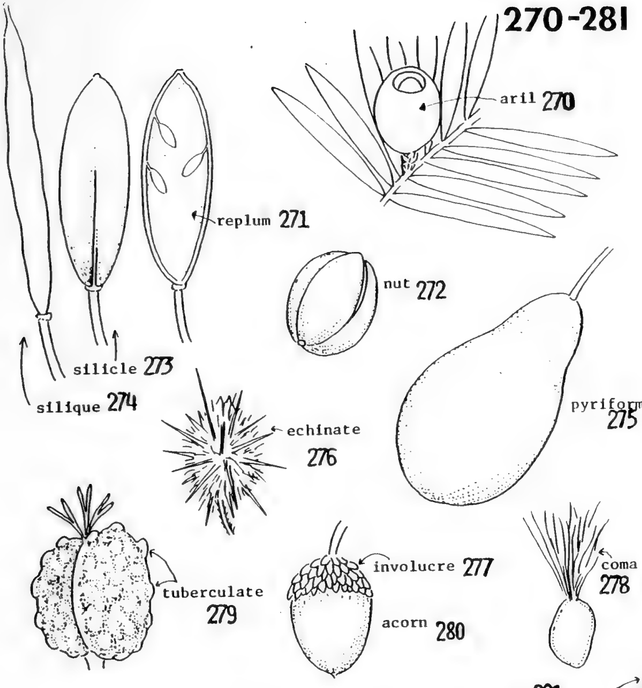
222-250


gland 222
petal 223
cupular 224
stamen 225
pistil 226
227 sepal
228 anther
receptacle 229
pedicel 230
superior ovary 231
petal 232
233 filament
stamen 234
pistil 235
sepal 236
stigma 237
inferior ovary 238
pedicel 239
style 240
connective 241
ovary 242
243 disc
anther 244
245 hypanthium
filament 246
247 locule
248 ovule
249 corolla
250 calyx

251-269


plumose 252
251
accessory fruit
drupe 253
loment 254
aggregate fruit 255
legume
255A
256 falcate
torulose
257
valve 258
259
capsule
260 moniliform
achene 261
indehiscent 262
pome 263
utricle 264
samara
266
265
circumscissile
dehiscent 267
follicle 268
berry
269

270-281



(Continued from page 28.)

TORULOSE. 257. Slightly constricted between seeds (as with some Brassicaceae fruits).
TRIANGULAR. 118. 3-sided.
TRIFOLIOLATE. 66. Having three leaflets (as with Trifolium).
TRUNCATE. 35. Ending abruptly as if chopped off.
TUBER. 146. Thickened, underground stem which serves as a storage organ.
TUBERCULATE. 279. Having a warty surface.

UMBEL. 211. Inflorescence type in which the pedicels are attached at the same point (as in Apiaceae).
UNDULATE. 73. Having a wavy margin (as with leaves).
URCEOLATE. 221. Urn-shaped (as with flowers of many Ericaceae).
UTRICLE. 264. Small, single-seeded, thin walled fruit which is indehiscent or splits horizontally (circumscissile).

VALVE. 258. Segment of a dehiscent fruit (especially associated with legumes).
VELUTINOUS. 113. Hairs arranged like velvet.
VERTICILLATE. 65. In a whorl.

WHORL. 65. Arrangement of 3 or more like parts from the same point.
WING. 157. A thin, woody, corky, or membranaceous extension (as with stems in Ulmus and fruits in Dioscorea).

EDITORIAL

(Continued from page 1)

As a special service, floristic studies of areas in Illinois and the states which border Illinois will be accepted for publication. Since membership dues cannot possibly be stretched far enough to cover these additional issues, the author of the study shall be required to cover this expense by remitting $5.00 per page of the manuscript. The membership shall receive these issues at no additional cost.

Beginning with ERIGENIA 3, *the SINPS will publish annually among its issues an* "Update on the Illinois Flora". *The first update will cover 1978-1980. Data published here may be used to keep your copy of* DISTRIBUTION OF ILLINOIS VASCULAR PLANTS - Mohlenbrock and Ladd (1978) *up to date. [For those who do not own this book it is offered by the SINPS. Details may be obtained from the inside back cover of this issue.] If you would like to contribute to this annual state-wide issue please read the note on the inside front cover.*

Finally, I hope you enjoy these pages. Your comments and contributions are welcomed. Help YOUR society grow by showing ERIGENIA *to your friends!*

OUR CONTRIBUTORS:

JAY RAVEILL - is a native of Independence, Missouri. He received his bachelor's degree at Northwest Missouri State University. He is currently completing his master's program at Southern Illinois University - Carbondale. Jay has done much herbarium work for the Missouri Department of Conservation and has been a teaching assistant at SIU. His main interests lie in surveying the colonization of drastically disturbed land.

LAWRENCE STRITCH - is a native of upstate New York. He received his bachelor's degree from Illinois Benedictine College and master's from Southern Illinois University - Carbondale. Lawrence is presently working on his doctorate. His main interest is in plant taxonomy.

WANDA OSKINS - is a graduate student in plant taxonomy at Southern Illinois University - Carbondale. She is originally from Independence, Missouri, and holds a bachelor's degree in biology from Central Missouri State University. Since 1978, Wanda has worked as a research intern and seasonal naturalist with the Missouri Department of Natural Resources. While in Missouri, she has collected plants on floristic projects at Knob Noster State Park, Schell-Osage Wildlife Refuge, and Mark Twain State Park. Her current master's thesis work includes a floristic survey of Big Oak Tree State Park in Missouri. Wanda helped organize the Southern Illinois Native Plant Society and was elected as the Society's first president.

MARK MOHLENBROCK - is a graduate student in plant taxonomy and systematics at Arizona State University. He received his bachelor's degree in botany at Southern Illinois University - Carbondale. Mark is editor of ERIGENIA and is also American Representative for the Mammillaria Society, a cactus society based in England. His main interest is with the cactus family and is also fond of the western U.S. flora. He is a professional botanical illustrator.

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

department of botany, southern illinois university
carbondale, illinois 62901

PUBLICATIONS AVAILABLE THROUGH THE SOCIETY

BOOKS:

FOREST TREES OF ILLINOIS-R.H. Mohlenbrock, 330 p. $2.00 *
★ PRAIRIE PLANTS OF ILLINOIS-R.H. Mohlenbrock, 272 p. $2.00 *
GIANT CITY STATE PARK: AN ILLUSTRATED HANDBOOK-R.H. Mohlenbrock, 181p. $5.00 *
SPRING WOODLAND WILDFLOWERS OF ILLINOIS- R.H. Mohlenbrock, 248 p. $5.00 *
WILDFLOWERS OF FIELDS, ROADSIDES, AND OPEN AREAS
OF ILLINOIS-R.H. Mohlenbrock, 226p. $5.00 *

* plus $1.00 postage and handling

HUNTERS GUIDE TO ILLINOIS FLOWERING PLANTS-R.H. Mohlenbrock, 35p. $1.00
★ PLANT COMMUNITIES OF SOUTHERN ILLINOIS-R.H. Mohlenbrock, 202p. $8.95 + $2.00 p&h
GUIDE TO VASCULAR FLORA OF ILLINOIS-R.H. Mohlenbrock, 498p. $10.95 + $2.00 p&h
DISTRUIBUTION OF ILLINOIS VASCULAR PLANTS-R.H. Mohlenbrock, $9.85 + $2.00 p&h
★ FLORA OF SOUTHERN ILLINOIS-R.H. Mohlenbrock, 390p. $3.95 + $1.00 p&h
★ jointly authored with John Voigt

THE ILLUSTRATED FLORA OF ILLINOIS ** R.H. Mohlenbrock

	Price	SINPS member price
FERNS 191p.	$15.00	$13.50
RUSH TO RUSHES 272p.	22.95	20.65
LILIES TO ORCHIDS 288p.	22.95	20.65
GRASSES: Bromus-Paspalum 332p.	22.95	20.65
GRASSES: Panicum-Danthonia 378p.	22.95	20.65
SEDGES: Cyperus-Scleria 192p.	22.95	20.65
HOLLIES TO LOASAS 315p.	22.95	20.65
MAGNOLIAS TO PITCHER PLANTS 261p.	22.95	20.65
WILLOWS TO MUSTARDS 286p.	22.95	20.65
BASSWOODS TO SPURGES 234p.	22.95	20.65

** plus $2.00 postage and handling per volume ordered

REPRINTS:

A number of reprints dealing with Southern Illinois and the plants of the region are available from the Society from25-50¢ each. Write for list.

To Order:

List titles desired and send to the above address. Be sure to include your address and the postage fees. Make checks payable to SINPS.

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

department of botany, southern illinois university
carbondale, illinois 62901

SOUTHERN ILLINOIS PRAIRIES

4

ERIGENIA BULBOSA

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

Layout, graphics and design by Mark W. Mohlenbrock's AART-WERK providing science and business with original illustrations and graphics.

The SINPS is dedicated to the preservation, conservation, and study of the native plants and vegetation of southern Illinois.

Membership includes subscription to ERIGENIA as well as to the quarterly newsletter THE HARBINGER. ERIGENIA , the official journal of the Southern Illinois Native Plant Society, is published occasionally by the Society. Single copies of this issue may be purchased for $3.00 (including postage). For current subscription rates or information concerning the Society write:

So. Ill. Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, IL 62901

Make checks payable to S.I.N.P.S.

TO CONTRIBUTE: See inside back cover for guidelines.

Number 4 Issued: August 1984

CONTENTS

EDITORIAL

– MARK W. MOHLENBROCK

Illinois, "The Prairie State", gained its nickname from the expansive areas of prairie vegetation historically found in the midsection to northern parts of the state. The southern region of the state, with its rolling wooded hills, is less noted for its prairies. Yet, the southern part of the state is home to many prairie taxa which occupy remnants of prairie habitat. These remnants occur commonly as hill prairies and as strips of prairie vegetation along railroad rights-of-way. Don't expect to find bison grazing in the tall stands of big blue stem, but you will find a very good representation of prairie plant life of this part of our natural heritage.

Our regular readers will notice several changes in this issue which marks the completion of the second year of publication of Erigenia. First, we are now printing the journal in larger type, a step which should allow for easier reading of our articles. Second, we have added two more referees to the Editorial Review Committee: Dr. Gerald Coorts, Professor and Chairman of the Department of Plant and Soil Science, Southern Illinois University-Carbondale, and Dr. John Ebinger, Professor of Botany, Eastern Illinois University. The addition of these new reviewers, plus the creation of one more reviewer position which is vacant at this time will help to assure quality articles on our pages. We have also redesigned the opening pages of the journal and we now offer reprints of articles to authors. Although none appear in this issue, we will also publish book reviews. These changes should enable Erigenia to start the third year of publication with even higher quality that we trust you will enjoy.

THE MEANING, EXPERIENCE AND DIMENSIONS OF PRAIRIE

by
John W. Voigt[1]

Most people living in the present have never seen prairie. Most school children think it is a land form, like a flat plain, rather than a description of vegetation. Even looking at prairie as a kind of vegetation long ignored the aspect of its many parts which function together in unified steady state economy.

It has taken ecology the better part of a century to arrive at a systems approach to the study of living organisms and environment. Most studies claiming a systems approach fall short in circumscribing or fulfilling the ecosystem. Perhaps such completeness is never possible.

The prairie, one of our seemingly more simple ecosystems, has long been a fascination. The ways in which prairie has been presented are many. Usually these studies focus upon a particular part of the system. The present essay is an attempt to circumscribe the prairie....to show its many faces and to help toward the unified view of it as an ecosystem even if only in a broad and subjective manner.

Before there were human eyes to see it and human ears to hear its sounds, or before there was human emotion to feel it, there was a great grassland in the heart of North America. This grassland was millions of years in its development. It was born out of a forest which was continent wide and which was made dry on its immediate eastern flank by the rise of the Rocky Mountains. The grass life form came into being and successfully massed itself in conditions not suited to trees. What the primal grassland was like can only be guessed from fossil animal life and extrapolations of what animals fed upon because the fossil remains of grasses are skimpy indeed.

[1] Professor of Botany and Assoc. Dean, College of Science, Southern Illinois University, Carbondale, Illinois 62901.

In the presettlement era of human life, the grasses grew, matured, and the unharvested productivity left by grazing animal life accumulated year by year. Periodically this deepening residue was burned away by naturally occurring fires or those set by the aborigines. Burning supplied mineral ash causing local new surges of growth. Grasses extended widely and billowed in an ever present breeze which swept the sky and carried wild fowl up and down their migration routes. Summer thermal currents lifted raptors to a patrol of the skies.

Below were many millions of ungulates rhythmically migrating northward in summer and back southward again in winter. Their hooves drummed upon the earth in a stacatto tattoo as they started and stampeded from danger. These grasslands were otherwise relatively quiet; only at intervals of danger or the proclamation of territories or other breeding rituals were there noises to punctuate the silence.

Almost as awesome as the ungulate numbers were the multitudes of ducks, geese, sandhill and whooping cranes. The prairie chickens and sharp tailed grouse were also of unbelievable numbers. Upland plovers, golden plovers, marbled godwits, eskimo curlew and sandpipers were common. Meadowlarks trilled over the grass; red tailed hawks, Swainson hawks and marsh hawks patrolled the skies. Bobolinks and redwing blackbirds guarded the reeds in their considerable numbers. The dickcissel, grasshopper sparrow, and Henslow's sparrows animated the scene near to the ground.

Among the insects the grasshoppers and spiders were easiest to see. Small mammals were abundant. The mice, rabbits and prairie dogs were busily cutting the grass stems and leaves and aiding decomposition as well as turning grass into a ready supply of protein for the many predators. Most of the birds were ground nesting in habit; others were adapted to either running or burrowing.

Anyone who has viewed a great expanse of grassland will agree that it is an emotional experience. Poets have described grasslands in terms of an endless sea. The movement of grasses before the wind was seen as ripples or waves. The level to rolling topography was seen as the heave and swell of the oceans. Early settlers alluded to their crossing of the grassland in "Prairie Schooners".

Upon seeing the mid-continental grasslands of North America the French explorers called them "prairie". There is nothing unusual in the French word prairie. It simply has the meaning of natural meadow (Betz, 1977). Some languages have more expressive words; such is the Hungarian word "Putsza". In human point of view it describes a grassland as an empty place, e.g., in terms of houses and towns. Emptiness in this context in North American prairie had been conceived by others.

Asahel Gridley, an early settler of the central Illinois prairie near Bloomington in McLean County saw the prairie as a blank page upon which he would write his bit of history.[2] Charles Dickens, visiting the Illinois prairie in 1842 near Lebanon, described "Looking Glass Prairie"....

> "a vast expanse of level ground, unbroken, save by one thin line of trees which scarcely amounted to a scratch upon the great blank; until it met the glowing sky wherein it seemed to dip. There it lay, a tranquil sea or lake without water....with the day going down upon it....it was lovely and wild, but oppressive in its barren monotony."[3]

Ask different ones about the meaning of prairie and you will receive as many answers as the number of whom you ask the question. Some will see beauty while others see drabness. Some will find interest and change with every step forward into the prairie, but others see only sameness and feel monotony. Some will feel fear because they will not understand the prairie, but others will at once feel a kindred attachment to a special kind of

[2] Schlenker, Alice McCarty, 1979. The Resurrection of Asahel Gridley, Illinois, July - August, p. 11.

[3] Eifert, Virginia, 1953. Picnic on Looking Glass Prairie, The Living Museum, The Illinois State Museum, Springfield, Illinois, Vol XV, No. 3, pp. 398-399.

land. Some have described the prairie as the "bottom of an ocean of sky". Others have described it as "Where the Sky Began."[4] Prairie is indeed a boundary between heaven and earth and that is perceived by some as a heavenly place is seen in the following....

> "The beholder strains his eyes to take in the extent, until the effort becomes painful, while its beauty and richness fail the powers of expression. It is a new and wonderful revelation. Strange sights and sounds greet the senses on every side. The piping note of the prairie squirrel, as he drops from his erect posture, and seeks the protection of his hole on his first alarm; the shrill notes of the plover, scattered about in countless numbers, fitfully starting and running over the meadow; the booming of the prairie cock; the mad scream of the crooked-bill curlew as you approach its nest; the distant whoop of the crane; the pump-sounding note of the bittern; the lithe and graceful form of the deer in companies of three to five, lightly bounding over the swells of the prairie; the beautiful harmony of color and rich profusion of flowers....it all seems like a new creation, an earthly paradise."[5]

With nothing to see but endless grass and sky all manner of dread crept into the mind. As there were no markers by which one could navigate in the sea of grass it was almost a certainty that one would lose his way. The general directions given to prairie travelers was that you should keep the northeast wind in your face. "The wind was like old uncle Jack's compass....no matter how he held it; it would diddle-daddle to the southwest everytime."[6] The wind however could usually be depended upon to blow in all directions.

[4] Madson, John, 1982. <u>Where the Sky Began: The Land of the Tallgrass Prairie</u>, Houghton Mifflin Co., New York & Boston.

[5] Battle, J. H. 1884. First Sight of Prairie, History of Douglass County, Illinois, F.A. Battey & Co., Chicago, Ill. p.81.

[6] Niles, H.C., 1884. "Ancient Prairie Travel" in History of Douglas County, Ill., F.A. Battey & Co., Chicago, p. 293.

There were other terrifying aspects of early prairie life. There was the threat of uncontrolled fires. The incessant blowing of the wind rubbed the nerves raw. The loneliness to man, a social animal, was so great as to be nearly unbearable, and even total strangers were eagerly welcomed.

The attack upon the prairie sod with the plow embodied both conquest and fear. The destruction of the prairie created a deepening uncertainty and uneasiness. It ran counterwise to thousands of years of evolution and it made one feel strangely alone and on one's own entirely. It was something final, like burning a bridge behind you.

When viewing a prairie landscape, one is hauntingly reminded of its age. Prairie is an entity with a very long history. It has undergone many changes in time. It is comprised of many parts which have been sorted by the environment and improved upon through time. The present set of parts of the prairie represent those which "learned" best to cope with the problems of a harsh environment, and thus prairie plants and animals do indeed represent an accumulated biological wisdom of the ages.

One can quickly learn the important prairie grasses for there are only about a dozen which are of greatest importance. These along with a few dozen forbs in any of the seasons affords one a quick recognition of a remnant of prairie. Bluestems, Indian grass, wildrye, needlegrass, dropseeds, side-oats grama, Junegrass, coneflowers, prairie clovers, bush lespedeza, resinweeds, or blazing stars to name a few, are enough to force a closer examination. Upon making such an examination and upon finding the exclusion of the common Eurasian weeds, one can realize that he is viewing a piece of prairie. When only native species are present, the prairie integrity has been emphasized by the term "closed community," a connotation that the environmental resources are efficiently and effectively used so as to leave nothing for the nurture or sustenance of foreign, invading species (Weaver 1954).

One develops a deep feeling for the small, enduring, isolated prairie remnants. A friend called them "little pieces of America." They could as appropriately be termed "little pieces of Illinois" depending upon our level of political organization. One certainly cannot look upon them without being transcended in time. It is as if in some way the ghosts of the prairie past.... the Indians, the bison, the early settlers are being passed through ones being. There is a feeling that one has been there before and yet it is for the first time.

Early naturalists saw relationships between climate, the grass life form, protracted seasonal dryness and a vulnerability to naturally occurring fires and fires set by the aborigines. The prairie was seen in terms of a simple and characteristic grass flora dominated by the bluestem grasses. The prairie was seen in terms of scores of wildflowers whose appearance was geared to blooming in season at the general height level of the grasses. The bulk of the wildflowers were found in the families of legumes, composites, mints and roses (Weaver 1954). The total flora was generally below 300 species.

There is a feeling of closeness for the elements of the present. The emotions are gripped by the great vault of blue sky, the pervading quietness, the whisper of the wind, the immensity, and the emphasis in the landscape of the horizontal. It invokes a sense of reverence. One cannot fully comprehend the prairie, but one can feel it and draw some of its strength into one's own being. Prairie people seem to have a quality of strength, health, honesty and integrity that parallels the land in which they live.

The essence of the prairie is its spaciousness and its quietude. One is able to collect one's thoughts and to reason well in such a place. One is able to listen closely, to notice the slightest motion on the still horizon, and yet to focus well upon the things which are close at hand. The motion of the prairie is swaying, rolling and rustling. The animals show grace and economy in their movement. One of the most graceful and beautiful of these movements is a landing of the upland plover. The wings are momentarily lifted after landing and then gently folded.

Some personal feelings about the prairie are deserving of mention. There is the ever present and abundant sunshine and heat, the breezes, dry air, distance, solitude and the motion of the waves of grass before the wind. One will always feel the isolation in Willa Cather's words.... "I had the feeling that the world was left behind, that we had got over the edge of it."[7]

[7] Willa Cather, 1954. <u>My Antonia</u>, Houghton-Mifflin Co., New York & Boston, 266 p.

Prairie has been written about from many points of view. There were many historical and literary accounts of life on the prairie frontier. These chronicled such things as doctors visits to patients, circuit riding lawyers, homesteading, cattle drives, crop failures, prairie fires, drought, and insect epidemics or "cowboys and Indians". The rigor and flavor of prairie life and environment were richly presented in My Antonia; April twilights; The Buffalo Hunters; Old Jules; The Home Place; The Buffalo Wallow: A Prairie Boyhood; Deserts on the March; Grapes of Wrath, among others.

The history, literature, art, music, and architecture all contribute to the ecological fulfillment of the prairie ecosystem. Woody Gutherie's songs of the thirties captures an element of prairie life in pieces such as "Dust Bowl Refugees" and in "Dust Pneumonia Blues (Brewer, 1979). An enduring strength and simplicity is shown in the prairie school of architecture by Frank Lloyd Wright. Iowa artist Grant Woods' well known painting entitled "American Gothic" portrays the simplicity of landscape, of structures, plain life and people.

One did not have to await the quadrat studies of ecology to realize, though in less quantitative ways, that the bluestems dominated the prairies or that wild strawberries were probably the most abundant herb on most lowland prairies. Early descriptive accounts told of the massed, endless bluestem sod and that the fetlocks were stained red by wild strawberries as horses were ridden through the low prairies. The frequency, abundance, dominance or other structural, qualities of prairie were often revealed though not in statistical or quantitive numerical ways. The more quantitative measurements which came later strengthened science, but did little more toward improvement upon the "minds eye" view provided by the subjective description.

The original prairie covered nearly two-thirds of Illinois. It spread over the land like a giant tapestry. The warp of this tapestry was created from a north to south temperature gradient, and the weft by a moisture gradient which declined in an east-west direction. The prairie tapestry included several patterns or variations. The patterns changed with the interplay of several factors such as topography, soils, fires and others. Along the eastern, northern and southern edges the prairie interfingered with the forest to give the effect of a tattered edge.

Two main forces unravelled the prairie tapestry. The railroads cut into the prairie sward. The gashes the rail lines made crossed many times, dividing the main body into pieces and patches of prairie. Points of thousands of steel plow shares wielded by energetic farmers picked at the prairie fabric. The patches were made threadbare by the overgrazing of livestock. The unravelling of the prairie was speeded with each passing year. It never stopped until the barest of threads were left. Hardly a trace of the prairie is left in an amount which would suggest what it was once like can now be found.

In our newfound ecological awareness we now seek to locate and preserve bits of our prairie heritage for future generations. Our greatest success in locating these has been in places inaccessible to farming and in neglected cemetaries. A few remnants have come from old unsettled estates. A perusal of old county histories has been useful in gaining general information about the place and extent of prairies in southern Illinois. An organized statewide effort to reconstruct the presettlement vegetation from the original land surveys county by county will be valuable and may possibly provide leads to still other present day remnants.

The preservation of our prairie heritage is of great value. Prairie has made those of us in the heartland what we are, and we owe it to those who follow that they should also know this heritage.

Prairie is more than grass-covered land. It is a lot of things. It is a place, a type of vegetation, a condition, and an emotional experience. It is a unique kind of landscape, and a valuable resource of stored biological experience and information. It has been said that "one cannot confine its whole meaning....one can describe it, but no one could circumscribe it".[8]

Prairie is an entity of special quality and mood which appeals strongly to certain kinds of people. Once smitten with love of the prairie, the feeling probably endures forever. It is a voice which calls to some as the mountains, the forest or the sea or shore does for others.

[8] Rose, Elsie, 1975. What is Prairie (in Prairie, a Multiple View) Ed. M.K. Wali, University of North Dakota Press pp., 3-6.

Literature Cited

Aldrich, Bess Streeter, 1925. The Rim of the Prairie, A.L. Burt Company, Chicago, Ill. 352 p.

Betz, Robert, 1977. What is Prairie? The Nature Conservancy News, Spring, p. 14.

Brewer, Richard, 1979. Principles of Ecology, W. B. Saunders Co., Philadelphia/London/Toronto, p. 177.

Cather, Willa, 1954. My Antonia, Houghton-Mifflin Co., New York & Boston, 266 p.

______, 1968, Rev. ed. April Twilights 1903. University of Nebraska Press, Lincoln, Nebr., 88 p.

Jackson, Charles Tenney, 1953. The Buffalo Wallow: A Prairie Boyhood, Bobbs - Merrill, Indianapolis, Ind., 253 p.

Madson, John, 1982. Where the Sky Began: Land of the Tallgrass Prairie, Houghton-Mifflin Co., New York and Boston.

Sandoz, Mari, 1935. Old Jules, Little Brown and Co., Boston, 424 p.

______, 1961. A Love Song to the Plains, Harper, New York 303 p.

______, 1954. The Buffalo Hunters: The Story of the Hide Men, Hastings House, New York, 372 p.

______, 1978. The Cattlemen, Hastings House, New York, 527 p.

Sears, Paul B. Deserts on the March. Univ. of Oklahoma Press, Norman 178p.

Steinbeck, John, 1939. Grapes of Wrath, Viking Press, New York, 622 p.

Searle, R. Newell, 1977. Saving Pieces of Prairie Nature Conservancy News, Spring, p. 14.

Thomas, Dorothy, 1936. The Home Place, University of Nebraska Press, Lincoln, Nebr., 236 p.

Weaver, John E., 1954. North American Prairie, Johnsen Publishing Co., Lincoln, Nebr., 348 p.

THE PRAIRIES OF SOUTHERN ILLINOIS

by
John W. Voigt[1]

The origin of the grass life form in North America has generally been held to be related to the rise of the Rocky Mountains and the induced climatic dryness which followed. The influence of climate on the origin and development of grasslands was strongly held for many years.

Early students of prairie vegetation also postulated that the wet prairies originated on old lake bottoms and that the soils of such places were important in the development of the prairie (Woodard, 1923). Others pointed out that fire of natural occurrence or those set deliberately by the aborigines was also important in maintaining the tallgrass prairies in humid areas along the forest border. Prairies are usually presented as having migrated from the dry climatic rain shadow area of the east slope of the Rockies to the edge of the Eastern Deciduous forest and that coevolution of grasses and grazing types took place in the Eocene period. Animal fossils from western areas showed animals with low crowned teeth were replaced by those with high crowned teeth and that the later characterized the grazing types (Clements and Chaney, 1938).

The main body of the prairie in Illinois was north of a line beyond its borders from Terre Haute, Indiana toward St. Louis, Missouri to the southwest. The prairies south of this line show an increased interfingering with the forest and finally the prairie becomes islands within the forest which grow smaller and smaller in the extreme south of Illinois (Fig. 1). Prairie plants are found in virtually all of the 102 counties of Illinois and prairie remnants of varying size may have also existed in all the Illinois Counties (Schwegman, 1983).

---

[1] Professor of Botany and Assoc. Dean, College of Science, Southern Illinois University, Carbondale, Illinois 62901.

Fig. 1. Prairie border in southern Illinois

Adapted from <u>Guide to the Vascular Flora of Illinois</u>, R.H. Mohlenbrock, 1975.

Adapted from Anderson, 1972

The Eastern Deciduous forest of the present still harbors many species of plants which are common in prairies. The bluestem grasses particularly may be mentioned. They dominate in many prairie types today; they had their origin and dispersal from Central America and southeast United States. Among others the following species which are characteristic of prairies are found also in the eastern forest of the United States: *Ruellia humilis*, *Rhus aromatica*, *R. copallina*, *R. glabra*, *Toxicodendron radicans*, *Asclepias tuberosa*, *Lobelia syphilitica*, *Specularia perfoliata*, *Tradescantia aspera*, *Antennaria campestris*, *Aster ericoides*, *Coreopsis tripteris*, *Erigeron strigosus*, *E. annuus*, *Helianthus grosseseratus*, *H. tuberosa*, *Rudbeckia hirta*, *Silphium terebinthinaceum*, *S. perfoliatum*, *Solidago canadensis*, *Vernonia missourica*, *Cornus drummondii*, *Carex vulpinoidea*, *Carex pennsylvanica*, *Equisetum arvense*, *Euphorbia corollata*, *Sisyrinchium angustifolium*, *S. albidum*, *Hedeoma pulegioides*, *Monarda fistulosa*, *Pycnanthemum tenuifolium*, *P. pilosum*, *Teucrium canadense*, *Cassia fasciculata*, *Lespedeza virginica*, *Psoralia psoralioides*, *Tephrosia virginiana*, *Oxalis stricta*, *O. violacea*, *Agrostis alba*, *Andropogon gerardii*, *Schizachyrium scopoarium*, *Aristida oligantha*, *Cinna arundinacea*, *Elymus villosus*, *Eragrostis spectabilis*, *Leersia oryzoides*, *Muhlenbergia racemosa*, *Panicum capillare*, *P. virgatum*, *Poa pratensis*, *Sphenopholis obtusata*, *Vulpia octoflora*, *Phlox pilosa*, *Lysimachia ciliata*, *Ceanothus americana*, *Fragaria virginiana*, *Malus ioensis*, *Rosa setigera*, *R. carolina*, *Gerardia tennuifolia*, *Zizea aurea*, *Polytaenia nuttallii*, *Viola pedatifida*, and *Vitis vulpina*.

The prairies of southern Illinois were increasingly smaller as one progressed southward. Mostly these smaller prairies were upland situations. On the extreme upland these have become known as hill prairies. These prairies are characterized by steep slopes or bluffs abutting floodplains. The bedrock is of limestone, dolomite, sandstone or shale ranging in age from Ordovician to Pennsylvanian. Bluffs are frequently 200 feet above the valley floors. Often the soil covering is loess over the bedrock; sometimes the soil is gravelly or cherty with a slope aspect which is mostly south and southwest. The exposure of the hill prairie results in high temperatures in summer, lowered humidity, and a drainage made extreme by the steep slopes and sometimes the cracks in the bedrock.

The presence of only a few dominant species and an increased number of forbs has given some of the thin soil areas a somewhat different look than the hill prairies generally. A thinner compositional look is manifested by a lower basal area than the more grassy looking hill prairie. This has resulted in the term glade sometimes being applied though the typical hill prairie species are usually present. It becomes a matter of emphasis and purpose as to what terminology one chooses to designate such areas.

The dominants of the hill prairies are usually little bluestem, side-oats-grama, big bluestem, Indiangrass, and sometimes, Junegrass. In sandy or cherty places will be found sand dropseed, and tall dropseed. A wide variety of forbs may be found on different prairies. The forb societies change from one hill prairie location to another. Thus each prairie has a subtle difference of look due to the variation in composition.

The invention of the steel plow by John Deere in 1837 followed by the building of the railroads in the next few decades facilitated marketing of agricultural produce. These events caused an expansion of agriculture and fore-doomed the prairies. Today less than 2,352 acres of prairie found in a recent natural areas inventory compares to 21 million acres of original prairie in Illinois. This is 0.01 of a percent of the original prairie (Schwegman, 1983).

An enumeration of the Illinois Native Prairie Preserves may be found in Schwegman, 1983; thirty eight prairie preserves are listed in 27 counties. This paper presents a brief account of those preserves in southern Illinois. Included is information on location, size, ownership, and main features.

Cave Creek Prairie

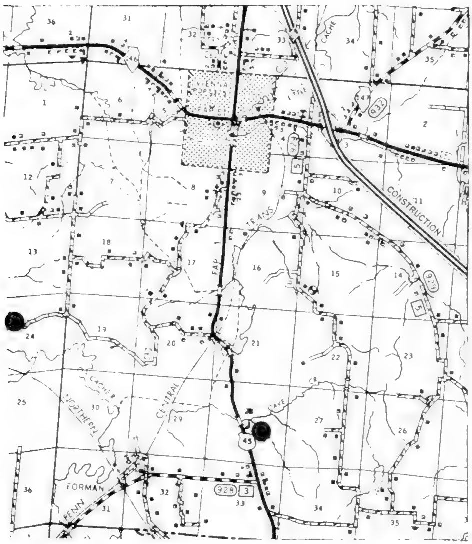
Location: (Sec 28, T 13 S, R 3 E, NE 1/4) Mermet Quadrangle, Johnson County.

Origin of Name: After Cave Creek which flows at the south foot of prairie area.

Size: Two acres within a twenty acre Natural Area.

Ownership: State of Illinois Department of Conservation.

Features: An upland prairie over cherty limestone. The flora consists of Andropogon gerardii, Sorghastrum nutans, Schizachyrium scoparium, Bouteloua curtipendula, Silphium terebinthinaceum, Physostegia virginiana, Onosmodium occidentale, and Salvia azurea among others.



Wildcat Bluff Glade (left dot)
Cave Creek Prairie (right dot)

Wildcat Bluff Glade (Prairie)

Location: (Sec 24, T 13 S, R 3 E, 4 miles southwest of Vienna), Mermet Quadrangle, Johnson County.

Origin of Name: Presumed from presence of bobcat in the area in the early days.

Size: Five and nine tenths of an acre (within 1861 acre nature preserve known as the Heron Pond-Little Black Slough Nature Preserve).

Ownership: State of Illinois Department of Conservation.

Features: Cherty gentle dry hilltop. Often called a glade in preference to a designation of prairie. Andropogon scoparius, Bouteloua Curtipendula, Silphium terebinthinaceum, Liatris aspera among others. Somewhat similar to the Cave Creek area above.

DeSoto-Hallidayboro Railroad Strip Prairie

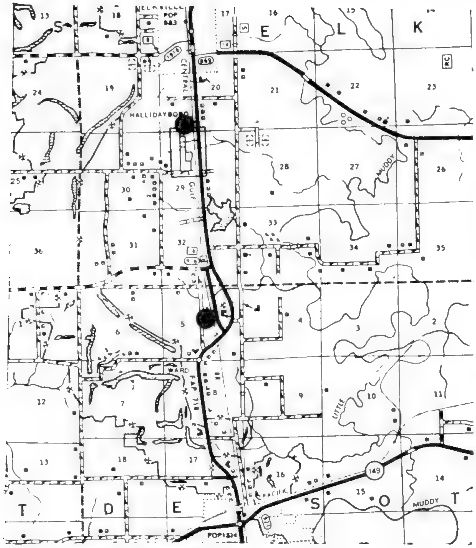
Location: (Parts of Sec 5, T 8 S, R 1 W, DeSoto Quadrangle; Sec 32, Sec 29, 20, T 7 S, R 1 W, Elkville Quadrangle). North of DeSoto, but south of Elkville. Near an old highway route 51 cut-off.

Origin of Name: After the town of DeSoto, and an old mining town of Hallidayboro which is virtually gone. The area is a highway-railroad right-of-way strip.

Size: A right-of-way strip 3.2 miles long.

Ownership: Illinois Central Gulf Railroad...leased to Southern Illinois University Botany Department for study purposes.

Features: Tallgrass dominants on lowland somewhat disturbed habitat. Soils are poorly drained, acid reaction and belong to the Bonnie Silt Loam series. Common plants include: Sisyrinchium albidum, Tradescantia virginiana, Parthenium integrifolium, Polytaenia nuttallii, Asclepias tuberosa, Petalostemon candidum, Psoralea psoralioides, Liatris aspera, Liatris pycnostachya, Helianthus mollis, Silphium terebinthinaceum, Lespedeza capitata, Eryngium yuccifolia, among others. Uncommon species include: Habenaria lacera, Rhexia virginica, Gaura longiflora (Thompson and Heinecke, 1977). A typical composition is shown in Table 1.



DeSoto-Hallidayboro Railroad
Strip Prairie (dots)

Government Rock Hill Prairie

Location: (Sec 9, T 11 S, R 2 W, ME 1/4), Union County, about 1 1/2 miles south of McCann Spring along the bluff-top road.

Origin of Name: Presumed to be from the rocky headland upon which the prairie rests and the government ownership.

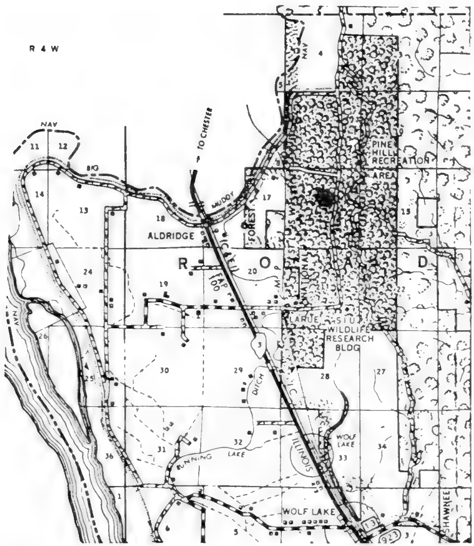
Size: A fraction of an acre.

Features: An upland hill prairie over limestone bedrock; the soil thickness is a foot more or less; the slope aspect is south and west making for a dry environment. Surrounding the hill prairie are various oaks and hickories. The Southern Yellow

Table 1.
Percentage Composition of species in mesic prairie at Hallidayboro Railroad Prairie Strip. Data from seven meter^2 quadrats.

Acalypha virginiana	0.01	0.01	2.76		3.4		0.6
Aster pilosus				0.10		0.41	
Baptisia leucantha	0.75	0.8					
Cassia fasciculata			3.06		3.0		
Carex sp	1.41	1.7					
Cirsium discolor	0.50	0.55					
Crotalaria sagittalis			0.31		0.3		1.35
Euphorbia corallata	1.10	1.2	1.22	0.20	1.2	0.22	
Eryngium yuccifolium	2.55	2.8					
Helianthus mollis	4.64	5.1		11.75		12.52	6.4
Juncus tenuis	0.50	0.55	1.53		1.5		
Kuhnia eupatorioides	0.30	0.30	0.66		0.6		
Lespedeza virginica							0.31
Melilotus alba							0.05
Oenothera biennis			1.53	3.0	1.5		
Oxalis			1.07	0.31	1.0	0.32	
Panicum scribnerianum	0.36	0.4	11.92	0.36	11.9		
Pycnanthemum tenuifolium	9.72	10.7	8.94	1.95	8.9	2.11	1.3
Physalis pubescens	0.25	0.27					
Potentilla simplex	0.02	0.02					
Rosa carolina	0.01	0.01					
Ruellia humilis		1.1					
Rubus allegheniensis	1.00		4.29	6.00	4.2	1.24	3.1
Schizachyrium	57.94	63.3	53.46	46.69	53.3	52.98	38.9
Solidago canadensis	7.94	8.9		1.85		2.11	15.3
Sorghastrum nutans			9.26	22.54	9.2	23.55	33.0
Verbesina alternifolia				4.01			

Pine (*Pinus echinata*) is found on the south slopes to near the crest. Immediately surrounding the hill prairie are *Malus ioensis*, *Rhus aromatica*, *Rhus glabra*, and *Cornus drummondii*. The prairie flora consists of the following; *Andropogon gerardii*, *Sorghastrum nutans*, *Bouteloua curtipendula*, *Verbena canadensis*, *Aster oblongifolius*, *Petalostemon purpureum*, *Ruellia humilis*, *Pycnanthemum tenuifolium*, *Euphorbia corollata*, and *Echinacea*



Government Rock Hill Prairie (dot)

pallida, among others. In recent years the prairie has become overrun by the sumac. Infrequent burning of the area has failed to maintain the prairie aspect of this vegetation.

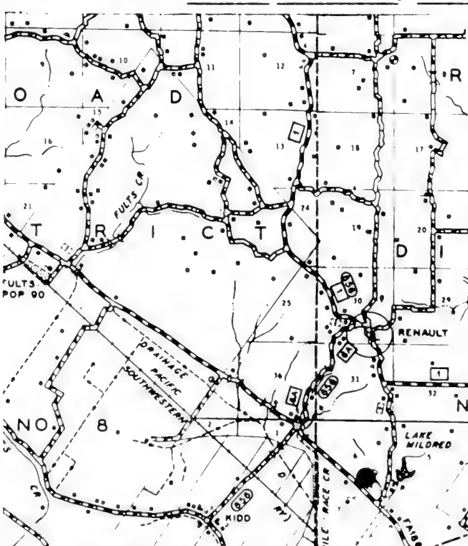
Lake Mildred Road Prairie

Location: (Sec 32, T 5 S, R 9 W) about 3 miles north of the village of Prairie Du Rocher at the Lake Mildred Road. Randolph County.

Origin of Name: From the bluff road along the floodplain at the foot of the limestone bluff where the road is intersected by the road east to Lake Mildred.

Ownership: Private and now posted.

Features: Massive limestone bluff with a height above the valley floor exceeding 200 feet. The bedrock is covered with loess. The slope aspect is west and southwest. Ravines dissect the slopes and these ravines run in an east-west direction. Such ravines harbor *Cornus drumondii*, *Fraxinus* spp., *Rhus glabra*, *R. copallina*, *R. aromatica*, *Ptelia trifoliata*. Surrounding the prairie at the crest are *Cornus drumondii*, *Juniperus*

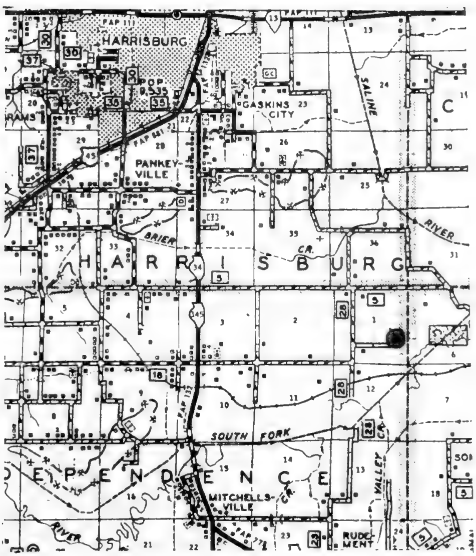


Lake Mildred Road Prairie (dot)

Features: A limestone bluff-top with a deposit of loess, steep slopes which face mostly west or southwest. The flora features Schizachyrium scoparium, Andropogon gerardii, Sorghastrum nutans, Bouteloua curtipendula, Sporobolus cryptandrus, S. asper, Senecio platensis, Echinacea pallida, Psoralea tenuifolia, Petalostemon purpureum, P. candidum, Liatris aspera, Solidago drumondii, Solidago speciosa, Aster azureus, Aster sericea, Aster oblongifolius, and Buchnera americana, among others. The general composition is indicated in table 3.

Old Stone Face

Location: (Sec 16, T 10 S, R 7 E), Harrisburg Quadrangle, Saline County.



Old Stone Face (dot)

virginiana, and *Carya buckleyi*. *Schizachyrium scoparium* makes up about 70 percent of the composition. *Bouteloua curtipendula*, *Andropogon gerardii* and *Sorghastrum nutans* are conspicuous. *Muhlenbergia capillaris* and *Muhlenbergia cuspidata* are present here along with *Koeleria macrantha*. A good variety of forbs is present. The composition is shown in table 2.

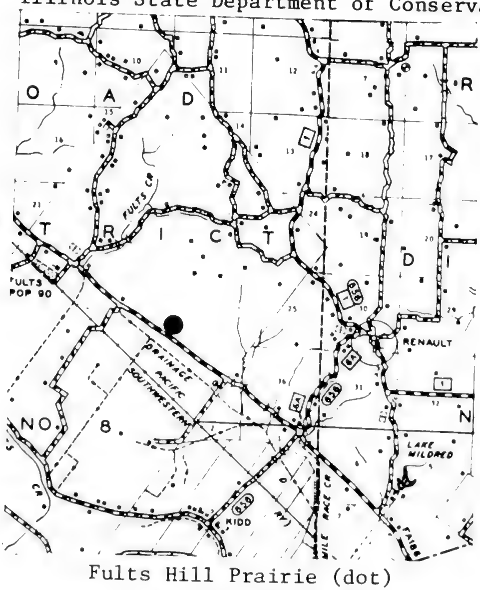
Fults Hill Prairie

Location: (Sec 9, T 5 S, R 9 W), about 3 miles north of Prairie Du Rocher; about 1 mile south of Fults along the bluff Road, atop a high limestone bluff.

Origin of Name: From the proximity to the village of Fults.

Size: 532 acres

Ownership: Illinois State Department of Conservation.



Fults Hill Prairie (dot)

Table 2.
Percentage Composition of Species in a Hill Prairie located between Fults and Prairie Du Rocher.
Data from 10 meter square quadrats.

Species	Percentage Composition									
Andropgon gerardii				4.46				21.6		
Aristida dichotoma					3.30					
Aster oblongifolius				2.00		0.02				
Cassia fasciculata			2.00	2.00					1.43	
Cercis canadensis			1.70							
Crotalaria sagittalis					2.70					
Cunilla origanoides								1.74		
Dodecatheon meadia						0.29				
Diodia terres						1.40		0.85		
Elymus villosus	3.47									
Fragaria virginiana	0.87									
Gerardia aspera	0.30				5.02	0.38		1.38		
Helianthus divaricata	0.53							11.50		
Koeleria macrantha	1.60	3.50			22.60	30.32			70.40	9.22
Heuchera						1.79			0.05	
Lechia tenuifolia		0.90								
Lespedeza virginica		4.20			8.51	0.43				
Liatris aspera					0.89			8.16	0.13	
Muhlenbergia capillaris										6.18
Muhlenbergia sobolifera								0.85		
Petalostemon candidum	1.09		4.59	7.14		10.00		3.41		
Petalostemon purpureum						7.37				
Rosa carolina					3.19			2.92		
Solidago speciosa		0.30	1.22		5.15					
Sporobolus asper	1.04									0.20
Sporobolus vaginiflorus					0.71					
Sorghastrum nutans	22.70	4.04	2.14							
Schizachyrium scoparium	36.30	87.00	90.00	82.40	51.13	48.00	77.90	46.6	27.90	84.30
Tephrosia virginica							22.50			
Verbesina alternifolia	32.10									

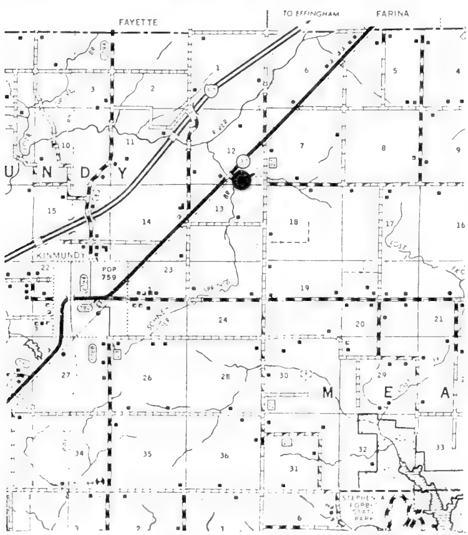
Table 3.
Percentage Composition of Species in the Fults Hill Prairie. Data from 10-meter square Quadrats.

Species	Percentage Composition									
Andropogon gerardii									1.41	
Aster oblongifolius		0.20	6.3	0.30	7.20	2.63	2.46	1.75	1.20	0.24
Bouteloua curtipendula				1.63			1.43	34.28	69.90	
Cassia fasciculata						0.07				
Carex sp							0.41			
Croton monanthogynus									0.12	
Echinacea pallida	1.34	11.20	1.76				1.38			0.47
Euphorbia corallata	0.12				0.54			0.23		
Gerardia aspera	7.65	10.44	2.53	1.70	4.25	9.14				3.88
Houstonia nigricans									1.20	
Kuhnia eupatoriodes								0.66		
Lespedeza capitata	0.10			7.09	1.08	0.67				0.47
Lespedeza virginica					13.16	2.29	4.30	2.55		8.22
Liatris aspera	1.04								0.12	
Linum sulcatum	0.72		14.50	1.27	1.19		1.38			
Muhlenbergia cuspidata									12.32	
Petalostemon purpureum				0.48	8.50	3.17	2.15	5.32		
Physostegia virginiana		0.14								
Rhus copallina						0.13				
Rudbeckia hirta var. missour	0.47	0.50								
Ruellia humilis									0.12	
Schizachyrium scoparium	81.2	72.20	64.80	86.70	63.30	61.50	81.40	44.40	2.99	84.90
Senecio platensis								0.41		
Solidago speciosa					1.13	0.34	0.51	2.31		0.59
Sorghastrum nutans	6.8	2.40			1.62	27.50				
Sporobolus asper									10.74	

Origin of Name:	After the unusual rock formation which bears the resemblance of a human head and face.
Size:	A fraction of an acre.
Ownership:	A part of the Shawnee National Forest.
Features:	An upland hill prairie over sandstone bedrock; shallow soil, gently sloping to the north. The flora consists of *Koeleria micrantha*, *Andropogon gerardii*, *Sorghastrum nutans*, *Petalostemon candidum*, *Tephrosia virginiana*, *Liatris spicata*, *Asclepias meadii*, *Lespedeza virginica*, *Muhlenbergia capillaris*, *Aster oblongifolius*, and *Polytaenia nuttallii*, among others.

Twelve Mile Prairie (Kinmundy Prairie)

Location:	(Between State Highway 37 and the ICG Railroad between Kinmundy and Watson in Marion, Effingham, and Fayette Counties.



Twelve Mile Prairie (dot)

Origin of Name: First called "Kinmundy Prairie" when first visited by the author over thirty years ago. It has since been called "Twelve Mile Prairie" because of the 12 mile distance of the prairie vegetation on the right-of-way between Kinmundy and Watson.

Size: As described above.

Ownership: ICG Railroad and the Illinois Department of Transportation for maintenance.

Features: Twelve Mile Prairie is a mesic black-soil prairie remnant. Plants found here include the following, among others: *Sporobolus heterolepis*, *Koeleria macrantha*, *Elymus canadensis*, *Sorghastrum nutans*, *Andropogon gerardii*, *Schizachyrium scoparium*, *Gentiana puberula*, *Liatris pycnostachya*, *Veronicastrum virginianum*, *Baptisia leucophaea*, *Baptisia leucantha*, and *Camassia scilloides*.

Literature Cited

Clements, F.E. & R.W. Chaney (1936) Environment and life in the Great Plants, *Carnegie Inst. Wash.*, Supl. Pub. 24.

Schwegman, J. (1983) Illinois Prairie: then and now, Illinois Department of Conservation, *Outdoor Highlights*, Jan. 17, pp. 3-13.

Thompson, R.L. & Thomas E. Heinecke (1977) Vascular flora of the DeSoto-Hallidayboro railroad prairie strips, Jackson County, Illinois, Transactions Ill. State Acad. Sci., Vol. 70, No. 2, 114-127.

Woodard, John (1923) Origin of the prairies in Illinois, Transactions of Ill. State Acad. Sci. 16:259-263.

ON THE ORIGIN AND MAINTENANCE OF LA GRANDE PRAIRIE OF ILLINOIS

By Lewis J. Stannard

First recorded knowledge of the Illinois prairie, La Grande Prairie, dates back to 1672-1673 when Joliet and Jesuit Father Jacques Marquette and later in 1679 when LaSalle and Father Hennepin entered Illinois and wrote on their observations. Parts of their journals were lost and rewritten from memory (Thwaites, 1896-1901).

According to Father Hennepin, in 1679, Illinois was composed of "boundless prairies interspersed with forests of tall trees..... The fields were covered with very good hemp, which grows there naturally to a height of six or seven feet." Where the Illinois prairie was the principal element, bison were dominant, and as many as a herd of 400 were seen by Father Marquette in June 1673.

Within 20 or so years after the French made contact with the Illinois Indians, these tribes began using guns to kill bison, probably for the first time in Illinois. Despite the new hunting pressure on bison by Indians, bison continued to be present on the Illinois prairie for over 100 years more (Imlay, 1793). By 1818, however, as Illinois began to be settled by European man, cattle and horses had replaced the bison and the prairie was being frequently burned by man (Flower, 1882).

The rate of destruction of the Illinois prairie accelerated when the railroads were built, circa 1855, and the major part of the Grande Prairie was destroyed by the early 1900s when the land was tiled, ditched, drained and plowed.

---

[1] Emeritus Taxonomist of the Illinois Natural History Survey and Emeritus Professor of Entomology, University of Illinois and Dixon Springs Agricultural Center.

Unfortunately, there are no good accounts of the composition of the original prairie. V. E. Shelford, University of Illinois, Urbana, once told me that big bluestem, *Andropogon gerardii* Vitman, usually considered to be one of the dominant grasses of the mesic prairie, was early called the "settler's grass". It is a grass that is purported to be particularly able to withstand fire and possibly when the settlers began to burn the prairie on a regular basis, this grass increased to earn the name "settler's grass".

It has been noted by others that most, if not all, of the plants and animals of the Grande Prairie also occur elsewhere in the eastern United States. All are adapted to moist conditions; certainly none could be considered 'xeric" forms. Whenever these mesic species of the Grande Prairie extend westward to the drier Plains, they retreat to the wetter northsides of slopes or along streams as can be seen, for example, in the distribution of *Andropogon gerardii* in North Dakota (Stevens, 1963) and from my own observations in Nebraska.

Several theories on the origin and maintenance of the mesic prairie have been proposed.

One of the most incongruous theories is that the Grande Prairie was part of a "dry tolerant" grassland. Transeau in 1935 proposed that the Grande Prairie of Illinois was part of a prairie peninsula that resulted from past and present xerothermic conditions. He suggested that the Rocky Mountains cast a rain shadow, causing decreased rainfall, over the mid-continent, permitting only grasses to grow where otherwise trees might have prevailed.

As is clearly apparent from our daily, televised, weather forecasts, the ample rain that falls on Illinois does not come from over the Rocky Mountains but comes up from the Gulf of Mexico. Dr. Douglas Jones, Illinois Water Survey, Urbana, recently pointed out to me that weathermen have an axiom: "When the Gulf opens up we get rain". The Rocky Mountain rain shadow influence is inapplicable to the Illinois climate.

Transeau further suggested that there was reduced atmospheric moisture in the Prairie Peninsula compared to that in the eastern forests. His calculations failed, however, to take into account the high humidity surrounding the numerous sloughs in the Grande Prairie before these sloughs were drained.

An equally improbable theory on the origin and maintenance of our Illinois prairie is that fire was the principal factor.

It is often said, but not documented, that the Illinois Indian burned these prairies to obtain game for food. To the contrary, Illinois Indians, prior to the arrival of European man, rarely took prairie animals, except occasionally prairie chickens, for food (Roper, 1979). Analysis of Indian kitchen middens, deposited over thousands of years, by Parmerlee (1962), Struever and Holton (1979), and others indicate that no bison bones were found at any Illinois archaeological site predating A. D. 1500. Lightning fires were probably rare on the Grande Prairie before the prairie was drained, or even now anywhere east of the Mississippi River. The USDA Forest Service (Main and Haines, 1974) list man as causing most of the fires in the eastern forests. At any rate, fires in areas of our natural prairie, densely interspersed with standing sloughs, would not spread far, except perhaps in winter when all the water was frozen, at a time when lightning would be extremely rare.

A number of investigators (Steyermark, 1959, Whitford and Whitford, 1971, Edwards, 1974, and Roper, 1979, and others) have downplayed fire as the natural cause of savannas and mesic prairies in Missouri, Wisconsin and Illinois and the reasons for their conclusions have much merit and should be weighted against the arguments for fire.

In my years of collecting (1946 to present), I have found that certain species of wingless, duff-inhabiting arthropods, namely species of thrips, pseudoscorpions, japygids, Collembola, etc. that live and overwinter in clumps of *Andropogon* and other plants or in hollow stems and galls of herbs and forbes are destroyed by fire. If unburnt prairie is absent around "prescribed" burnt prairie from which these wingless arthropods could repopulate the burnt site, integral and original components of the prairie are eliminated. Furthermore we have no knowledge on how long it takes for specific wingless organisms, at least not certain species of thrips, to return to burnt prairie areas. (Studies on the repopulation of animals, i.e., insects, back into burnt areas done at the familial or ordinal level, instead of species by species, are not meaningful.)

An early theory, and the best in my opinion, on the origin and maintenance of the Grande Prairie was advanced by Lesqueroux (1866).

Lesqueroux suggested that our prairie was the result of poorly drained, wet, juvenile soils unsuitable for trees, best suited for certain grasses and herbs.

Soil maps of Illinois, prepared by the Illinois Agricultural Experiment Station in cooperation with the Soil Conservation Service, USDA, University of Illinois, Urbana, support this theory. These soil maps show that the Grande Prairie was composed of low lying regions surrounding myriads of sloughs. Using these maps as guides, I have gone to areas where former sloughs occurred and found in the now drained, ploughed fields thousands of pieces of *Physa* snail shells. These sloughs must have contained permanent standing water for these snails to have survived and reproduced in times past. These soil maps also show that the forests, interspersed in the Grande Prairie, were confined to bands along the rivers and streams or on the tops of some moraines, where drainage was the best in the region. G. E. Ekblaw, Illinois Geological Survey, Urbana, once told me that after heavy rains on the prairie near Rantoul and Flatville, Illinois, his boyhood home, the sloughs overflowed to form extensive lakes that often persisted for several weeks. Even floodplain trees could not survive such standing water and swamp and bog trees (bald cypress, tupelo gum, tamarack, etc.) do not range into the Grande Prairie.

Flooding of the poorly drained prairie was a condition to which some prairie insects are well adapted. For example, chinch bugs, especially while in hibernation, can survive up to several weeks under standing water (Decker and Andre, 1938). Other insects (thrips) live off the ground in the accumulated duff of grass clumps and other insects (ants) build mounds and thus escape some flooding. Insects having larvae that inhabit wet areas, such as horse flies, were noted to be abundant and a scourge on the original prairie. It was said by Father Hennepin in 1679 that the bison retreated to the prairie groves to ruminate, presumably to escape the horse flies and deer flies as well as for shade. Also, many of the birds recorded to be on the early prairie in Illinois were water-oriented: cranes, swans, geese, ducks and shore birds. Clearly the Grande Prairie was a moist, often very wet habitat, not a dry region, some authors to the contrary notwithstanding.

Now that most of our remaining wet prairies have been reduced to very small relics surrounded by drainage ditches, alien floras and faunas, ploughed fields or paved roads, it is difficult to maintain any of them as natural sanctuaries. Many methods to care for our prairie preserves can be employed. These would include raising the water table around them, mowing the areas in the fall, and individually removing invading trees and non-native plants and animals. If fire is continued to be used as the principal management technique for our prairie sanctuaries, then these sanctuaries will become even more depauperate and will eventually become gardens of fire resistant plants and animals, lacking many of the less vagile, wingless organisms, perhaps a loss only a few entomologists or naturalists will notice, but a real loss, nevertheless, to the biota we are trying to save.

REFERENCES

Decker, G. G., and F. Andre. 1938. Winter mortality of chinch bugs in Iowa. Journal of Economic Entomology 30(6):927-934

Edwards, T. 1974. Prairie burning theory questioned. Lake and Prairie (Sierra Club), Chicago, Illinois, p. 12.

Flower, G. 1882. IN History of the English Settlement in Edwards County, Illinois, founded in 1817 and 1818, by Morris Birbeck and George Flower, Chicago, Illinois.

Imlay, G. 1793 (1797). Topographical description of the Western Territory of North American......, London, Third Edition.

Lesquereux, L. 1866. On the origin and formation of the prairies. IN A. H. Worthen Reports, Geological Survey of Illinois, Vol. 1, 504 pp.

Main, W. A. and D. A. Haines. 1974. The causes of fires on Northeastern National Forests. North Central Forest Experiment Station, St. Paul, Minnesota, Research Paper NC-102, 7 pp.

Parmalee, P. W. 1962. The faunal complex of the Fisher site, Illinois. American Midland Naturalist 68:399-408.

Roper, Donna C. 1979. Archaeological survey and settlement pattern models in Central Illinois. Midcontinental Journal of Archaeology, Special Paper Number 2, Illinois State Museum, Scientific Papers, Vol XVI, 156 pp.

Stevens, O. A. 1963. Handbook of North Dakota plants. North Dakota Institute for Regional Studies, Fargo, 237 pp.

Steyermark, J. A. 1959. Vegetational history of the Ozark Forest. University of Missouri Studies 31:50-53.

Struever, S. and Felicia A. Holton. 1979. Koster, Americans in search of their prehistoric past. Anchor Press/Doubleday, Garden City, New York. 281 pp.

Thwaites, R. G. 1896-1901. The Jesuit relations and allied documents. Burrows Bros. Company, Cleveland, Ohio.

Transeau, E. N. 1935. The Prairie Peninsula. Ecology 16(3): 423-437.

Whitford, P. B. and Kathryn Whitford. 1971. Savanna in Central Wisconsin, U.S.A. Vegetatio 23(1-2):77-78.

Notice to future contributors

This issue marks the first time in which we have printed the journal in 12-point type. Future contributors to the journal are asked to please read the guidelines for manuscripts submitted to the journal located on the inside back cover of this issue. SEVERAL CHANGES IN GUIDELINES HAVE BEEN MADE IN ORDER TO ACCOMMODATE OUR NEW PRINTING FORMAT.

In addition, this issue also marks the first time in which reprints are provided to authors. Five free reprints will be sent to each author. Additional reprints are available to the author at a charge (write the editor for details and prices). ADDITIONAL REPRINTS MAY BE ORDERED ONLY AT THE TIME THE MANUSCRIPT IS SUBMITTED.

ORIGINAL PRAIRIES IN SOUTHERN ILLINOIS

AS ENUMERATED IN COUNTY

AND OTHER HISTORICAL AND GEOGRAPHIC SOURCES

by
John W. Voigt

County histories, written before the turn of the century, recorded specific prairies in southern Illinois. Often maps and exact locations were presented. This information could be useful in the continuing search for present day prairie remnants. It is worthwhile to bring this information together in one place for the person who is interested in prairie vegetation. The histories which were available include the following: Perry, Williamson, White, Hamilton, Wayne, and Clay. These counties all feature the prairie forest border in southern Illinois.

Perry County: (from a New Geography of Perry County, Illinois, Aug-Sept., 1975, pp 19-44). Grand de Cote Prairie; Round Prairie; Hutchings Prairie; Mud Prairie; Upper Paradise Prairie; Lost Prairie; Brush Prairie; Burnt Prairie; Upper Holt's Prairie; Johnson's Prairie (a part of Paradise Prairie); Six Mile Prairie; Eaton's Prairie; Conant's Prairie; Galum Prairie; Four Mile Prairie; Lower Holt's Prairie; Nine Mile Prairie; Lower Paradise County.

Williamson County (from Williamson County Centennial Pictorial map by Nannie Gray Parks in Illinois, p. 25, Summer, 1982), also The Presettlement Vegetation of Williamson County by Roger C. Anderson & Rebecca Anderson, Castanea 40:345-363, 1975, also A New Geography of Williamson County by R. H. Mohlenbrock, Illinois Jan., 1976, pp. 13-45. Prairies enumerated as follows: Six Mile Prairie; Herrin's Prairie (also Herring's Prairie, after Jonathan Herring); Scoharrie Prairie (on Jordan's Trail from Williams Prairie to Jonathan Herring's Mill); Eight Mile Prairie near Fredonia; Phelps Prairie (NW of Marion); Poor Prairie (NE of Marion); Davis Prairie (W. of Crab Orchard); Prairie Hill (NE Williamson Co).

White County (from A History of White County, Interstate Publishing Co., Chicago, 1883): Boltinhouse Prairie (near Albion); Burnt Prairie (central and northern part of Burnt Prairie Township); Herold's Prairie; Seven Mile Prairie; Big Prairie (Hawthorne Township); Little Prairie (near center of Emma Township).

Hamilton County (from a New Geography of Hamilton County, Illinois, February, 1978) Map on page 14): Elk Prairie (central, N. part of the county, T3, R6); Little Prairie (T4, R5, north of Big Creek); Moore's Prairie (T4, R5, south of Big Creek); Belle Prairie (T4, R6); Auxier Prairie (T4, R6, NE part of township); Brushy or Eel's Prairie (T4, R6, SW part of township): Knight's Prairie (T5, R5, SW part of township); Hogg Prairie (T5, R6, East part of the township above Ten Mile Creek); Parker's Prairie (T6, R6, NE part of township north of Contrary Creek).

Wayne County (from History of Wayne County, Globe Publishing Co., Chicago, Illinois 1884): "A dividing line between the heavily timbered belt of Southern Illinois and the great prairie ranges of the central and northern parts of the State. The true prairie is found here, but in small patches and the whole extent in the county is only about 20 percent of the area," p. 15. Prairies enumerated as follows: Big Mound Prairie (near Fairfield); Seven Mile Prairie (present location of Enfield); Burnt Prairie (near township of Liberty); Turney's Prairie (about 6 miles south of Fairfield); Tom's Prairie; Brushy Prairie (Sec. 24, T25, R9E, in Leach Township); Six Mile Prairie (in Four Mile Township); Long Prairie (Four Mile Township); Round Prairie; Arrington Prairie (a church name, and also a large and beautiful prairie 10 miles long and 3 miles wide); Johnson Prairie (church location); Bear Prairie (Sec. 4, Jasper Township); Indian Prairie Township; Big Mud Prairie (Arrington Township); Garden Prairie (a small prairie in Sec. 4); Hickory Hill Prairie (about 3 miles X 2 miles); Locust Prairie (NW part of Wayne Co., Hickory Hill Township).

Clay County (from History of Wayne County, Globe Publishing Co., Chicago, Illinois 1884). "You could, by jumping up and down at times and in numerous places, shake the sod for a rod all around," p. 307. Prairie enumerated as follows: Little Prairie (west of Little Muddy Creek in Sec. 2); Hoosier Prairie (west of Little Muddy Creek, and occupies the greater portion of Hoosier Township, T4N, R7E, present site of Louisville); Lovitt's Prairie (east of Little Muddy between Cottonwood Creek and Big Muddy Creek).

Please turn to p. 48

THE SELECTION OF APPROPRIATE SPECIES FOR PRAIRIE LANDSCAPING OF THE HOME

by Rene Frasher, Gerald D. Coorts and Mevlut Canagir[1]

The benefits of landscaping with prairie plants are many. These include the natural beauty of the grasses and forbs, the attraction of wildlife, the relatively low maintenance requirements after the plants have established themselves, and the personal satisfaction that the homeowner receives as they see their prairie come to life and mature through the seasons.

In designing for such benefits the landscape professional cannot haphazardly place the prairie grasses and forbs into the home landscape. It must be carefully planned to achieve the desired effect based on the purpose of the design. One of many design considerations to achieve the desired effect is the selection of appropriate species.

Appropriate species of grasses and forbs should be selected for each residential landscape area to be developed into a prairie. There are several species of grasses and forbs that can be selected not only on how effectively they will function in the landscape, (based on the purpose of the design), but on how well they relate in form, texture, and color to other prairie species and design elements near and around them.

There are certain restrictions to be considered, that will affect plant selection, the final design solution, and the satisfaction of the homeowner. These restrictions are as follows: local ordinances, length of time and amount of money needed for establishing the prairie setting, site suitability or adaptability, and geographical location as it relates to the environment.

[1]Graduate Assistant, Professor, and Assistant Professor, respectively, Department of Plant and Soil Science, Southern Illinois University at Carbondale

First, among those should be consideration of local ordinances. This may seem unnecessary at the time. However, many local governments have height restrictions on weeds, grasses, and other plant materials growing in the lawn. For example, the city of Carbondale, Illinois, has an ordinance which forbids the growth of plant material in open areas within city limits over the height of 6 inches. This type of local control may eliminate from consideration the establishment of a prairie in the lawn, particularly in the public area.

However, there may be some alternatives worth considering which will meet the local ordinances. It is possible to select prairie grasses and/or forbs that grow to less than 6 inches in height. For example, one may use the following species: buffalo grass (Buchloe dactyloides), pasqueflower (Anemone patens), wild strawberry (Fragaria virginiana) and birdsfoot violet (Viola pedata). Another alternative may be to screen the proposed area from public view with shrubs and trees, perhaps even using prairie shrubs such as lead plant (Amorpha canescens), New Jersey tea (Ceanothus americus), Carolina rose (Rosa carolina), or prairie willow (Salix discolor).

Second, the decision by the homeowner to establish a prairie in the home landscape is no small undertaking and should not be treated as such. At least three to four years is required with as much time and effort as the typical establishment of a lawn or garden (Smith and Smith, 1980). The real beauty of the prairie will not be fully realized until well after the plants have established themselves; even then, occasional maintenance will be required to keep the desired effect.

As the first step in establishing a prairie, site selection and its preparation should begin in August with a complete turning over of the soil to eliminate existing vegetation on the site, in particular, weeds. Seed may be sown that fall or the next spring. However, it is very difficult to make specific recommendations for the amount of seed needed to establish a prairie landscape. Seeds vary greatly in germinability from year to year, particularly if collected from the wild. There is considerable variation in rainfall from year to year. Some growing seasons are dry, others are wet. All of these variables affect germination and plant survival (Smith and Smith, 1980). Table I is a list of seeding rate recommendations from several sources.

Table II is a cost comparison of establishing prairie and bluegrass sod. It is important to remember that to attain the most natural

Table 1

RECOMMENDED SEEDING RATES OF PRAIRIE GRASSES AND

FORBS FROM VARIOUS SOURCES

Recommended seeding rates of prairie grasses and forbs[z]

10 lbs. bulk grass seed yields about 30 live seeds per sq. ft. spread over 1 acre

15 lbs. bulk grass seed yields about 45 live seeds per sq. ft. over 1 acre

20 lbs. bulk grass seed yields about 60 to 70 live seeds per sq. ft. over 1 acre

Grass Seed Mixture big bluestem, Indian grass, Junegrass little bluestem, needlegrass, prairie dropseed, side-oats grama, switchgrass	12 - 15 lbs. per acre bulk weight
Cover Crop Seed perennial or wild rye or oats	1 - 2 lbs. per acre bulk weight
Forb Seed Mixture	6 - 15 lbs. per acre bulk weight

Recommended application rate for prairie grass species planted alone[y]

Big bluestem - Broadcast	20 - 30 lbs. per acre
Big bluestem - Suitable Drill	14 - 20 lbs. per acre
Blue grama - Broadcast	60 - 80 lbs. per acre
Blue grama - Suitable Drill	40 - 60 lbs. per acre
Buffalo grass - Broadcast	25 - 38 lbs. per acre
Buffalo grass - Suitable Drill	17 - 24 lbs. per acre
Indian grass - Broadcast	20 - 30 lbs. per acre
Indian grass - Suitable Drill	14 - 20 lbs. per acre
Little bluestem - Broadcast	14 - 20 lbs. per acre
Little bluestem - Suitable Drill	8 - 15 lbs. per acre
Side-oats grama - Broadcast	23 - 33 lbs. per acre
Side-oats grama - Suitable Drill	15 - 22 lbs. per acre
Switchgrass - Broadcast	10 - 20 lbs. per acre
Switchgrass - Suitable Drill	7 - 14 lbs. per acre

[y]After Ingels, Lafayette Home Nursery, Inc., 1980 Wholesale Prairie

[z]After Rock, Prairie Propagation Handbook. Milwaukee County Park System, Milwaukee, WI. Fourth Edition. 1975.

Recommended application rate of forbs planted in Illinois

1. With native Illinois strains of prairie grasses and applied with suitable drill (Nesbit): 1 lb. per acre.

2. With native Illinois strains of prairie grasses and applied with Hydro-seeder: 2 lbs. per acre

3. With more aggressive Nebraska grasses and applied with suitable drill (Nesbit): 3 lbs. per acre.

4. With more aggressive Nebraska grasses and applied with Hydro-seeder: 4 lbs. per acre.

5. With native Illinois strains of prairie grasses and applied by hand broadcasting: 8 lbs. per acre.

6. With more aggressive Nebraska grasses and applied by hand broadcasting: 16 lbs. per acre.

Recommendations for seed rates of prairie grasses[x]

Big bluestem	1 lb. per 2,200 sq. ft.
Blue grama	1 lb. per 4,000 sq. ft.
Buffalo grass	1 lb. per 1,000 sq. ft.
Indian grass	1 lb. per 2,300 sq. ft.
Little bluestem	1 lb. per 3,400 sq. ft.
Side-oats grama	1 lb. per 2,000 sq. ft.
Switchgrass	1 lb. per 4,200 sq. ft.

Recommended seeding rates for prairie grasses[w]

Big bluestem	4 lbs. per acre
Junegrass	0.5 lbs. per acre
Little bluestem	5 lbs. per acre
Needlegrass	2 lbs. per acre
Prairie dropseed	1 lbs. per acre
Side-oats grama	4 lbs. per acre
Switchgrass	1 lb. per acre

[x]After Prairie Home Seeds, 1981 Price List, Prairie Home, NB. 1981

[w]After Smith, The Prairie Garden. Univ. of Wisconsin Press, Madison, WI. 1980.

Table 2

COST COMPARISON CHART OF ESTABLISHING

PRAIRIE AND BLUEGRASS SOD

Initial Cost[z]

Native*

Site preparation	$400
Prairie grass seed and seeding	300
Wildflowers (2,000 seedlings plus planting)	2,500
First year watering and mowing	90
Total per acre	$3,290

Maintenance Costs

Mowing or burning (including cost of equipment rental)	$100
Total per acre	$100

*General estimate based on 5- to 10-acre project with 2,000 seedlings of wildflowers @ $.80 each average cost plus $.45 for planting. Wildflower planting may vary from 500 to 5,000 seedlings per acre depending on desired effect and cost. Site preparation will vary widely from site to site.

Initial Cost

Bluegrass sod:

Site preparation	$500
Sod ($1.00 sq. yd. installed)	4,840
First year watering	100
First year mowing (8 times)	200
Total per acre	$5,640

Maintenance Costs

Mowing	$400
Watering	200
Fertilizing (2 applications)	100
Equipment, maintenance, fuel	250
Total per acre	$950

[z]After Smith, The Prairie Garden. Univ. of Wisconsin Press, Madison, WI. 1980.

effect in a prairie landscape based on local remnants, it is recommended to order or collect seed locally. Dormant plants may be transplanted on the site in autumn or spring. Transplanting in autumn (October or November) usually is more successful because a plant is fully dormant and will not be ready to grow until exposed to winter cold and spring warmth.

During establishment years competition in the newly planted prairie will occur either from invaders or among the prairie plants themselves. Annual weeds prove to be the biggest problem in the first few years, thus requiring special attention. Such weeds and other invaders can be lessened by handpulling, burning, or the use of a companion crop.

Weeding by hand is one of the most effective but time consuming methods, requiring a thorough knowledge of plant species of both the weed and prairie plants since an over-zealous weeder may remove the wrong plant!

Mowing can be done with a rotary mower set at its highest setting (4 to 6 inches), or high enough so that it will not injure the prairie species. Mowing may have to be done two or three times during the first growing season or whenever the weeds appear to be taking over. Mowing shreds the tops of the weeds, removes shade allowing the prairie plants a chance to grow, and destroys the weed seed crop if done early enough (Smith and Smith, 1980).

Burning is used as a tool of maintenance with non-residential prairie plantings as it is one of nature's forces that has acted upon the prairie for thousands of years and to which the prairie has become accustomed through evolution. Burning is recommended every 3 to 4 years, from mid-March to mid-April with a wind velocity of not greater than 25 mph. Burning serves to kill cool-season and woody invaders, release nutrients for plant uptake, and heats the soil for germination of prairie seed (Rock, 1975; Smith and Smith, 1980). This maintenance tool has severe limitations in residential situations. Firebreaks may be required on the site, and no prairie plantings should be located dangerously near the home if burning is to be used. It is also imperative that the homeowner and the landscape professional know the local ordinances governing the burning out-of-doors within the city limits. Where burning is not permitted by law, mowing in the early spring and raking the clippings is a suggested alternative (Smith and Smith, 1980). Obviously, many consider mowing a preferable alternative due to the hazards involved with burning.

Some prairie species are aggressive and will take over where sown, but they can be isolated and companion planted with equally aggressive species. The dominant grasses of the prairie, as their name implies, are quite competitive and aggressive. This characteristic should be kept in mind when determining the forb to grass ratio for planting, because the ratio will, over a period of years, shift in favor of the grasses. Recommendations for forbs to grass ratio are 70 to 30 and 80 to 20 (Smith and Smith, 1980), but this may be reduced as determined by the purpose of the design and the homeowner's preference for extensive forb plantings.

Third, site suitability or adaptability is based on the amount of sunlight, type of soil, topography, and size of area to be landscaped as factors which might affect the individual species or group of habitat- related species to be used.

Most species of prairie grass or forbs require 70 to 100 percent exposure to sunlight for adequate growth (Smith and Smith, 1980). This growth requirement may alone determine whether the site can accomodate prairie plants and where on the site they can be placed. It does not, however, preclude planting shrubs and trees in conjunction with the prairie plantings to add variety and contrast to the home landscape.

Prairie plants are found growing on a variety of soils from the fertile soils of America's agricultural lands to infertile sandy ridges and rocky bluffs. Therefore, it is difficult to make recommendations about soil requirements for the individual prairie species or related species. It is important that the landscape professional determine under what soil conditions local ecotypes grow.

Variations in the slope of the home landscape are most desirable because they provide the opportunity to use a wide variety of prairie plants. If, for example, a low-lying area exists where water collects after a rain, the landscape professional would suggest lowland or wet prairie species, and, conversely, if a hilltop or a swell is in the landscape, species of mesic (moderately moist) or upland (dry) environments may be suggested. Of course, for the greatest variety and enjoyment, a combination of lowland, mesic, and upland species is ideal (See Fig. 1).

In addition to knowing the amount of sunlight, soil type and slope, the size of the area to be landscaped is also of importance in determining site suitability and adaptability. It should be no less than 2,500 square feet. If the complete lawn is being considered, larger and more coarse species of prairie grasses and forbs

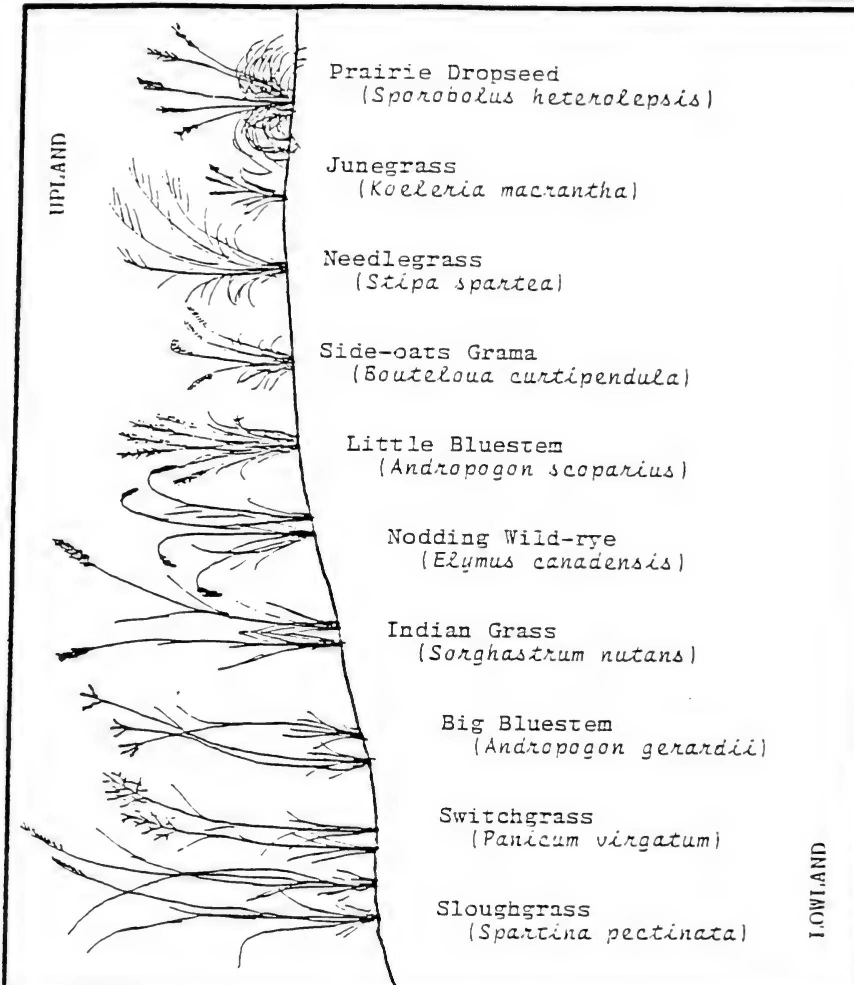


Figure 1. *The Major Dominants*

[After Voigt and Mohlenbrock, *Prairie Plants of Illinois*. Department of Conservation, State of Illinois, 1980.]

may be considered as long as the planting will not dwarf the site resulting in an unbalanced composition. Species of smaller size and finer texture are suggested for the smaller site, with judicious and sparse use of the larger prairie species in the design composition.

Fourth, geographical location is most readily understood as the range of a plant, that is, in what geographical area or region can the plant species be found growing successfully. Prairie plants originally inhabited a vast area of the United States differing greatly in topography, soils, climate, etc. However, no real information exists as to the true limit of their ability to grow "anywhere" in the United States. It is quite possible that prairie grasses and forbs can grow, or perhaps did grow, in many more areas than have been recognized. For example, little bluestem has been occupying space in a "natural area", where it was planted, in the Mattheis Tract of the Connecticut Arboretum in New London, Connecticut, for a number of years (Gotthrer, 1978). This is out of its native range. Therefore, it is difficult to state precisely the geographical region best suited to any individual species or group of habitat-related species. There is evidence suggested by the survival of little bluestem in Connecticut that the range of prairie forbs and grasses has not been fully realized.

To conclude, establishing a prairie landscape requires time and a great deal of patience to appreciate its long-term effects. A sense of self-satisfaction is eminent for the homeowner and the landscape professional as they realize the accomplishment of their efforts. It is hoped that this brief discussion of prairie landscaping will provide the necessary information and encouragement to be daring with a new and fresh approach.

The homeowner wanting a prairie in the residential landscape places a great deal of responsibility upon the landscape professional. And, if indeed, the landscape professional wants to be a "purist" in this endeavor, it requires a mastery of the ecology of the prairie and the principles of design. Furthermore, a thorough knowledge of the materials and methods of establishing a prairie are also required.

Prairie landscaping is still a very new practice and much remains to be seen of its potential in residential landscaping. It continues to present itself as a challenge to the landscape professional, but it is a challenge with many worthwhile rewards.

BIBLIOGRAPHY

Gotthrer, Dean M. Natural Landscaping. New York: E. P. Dutton, 1978.

Kropp, David, "The Prairie Annual." Landscape Architecture (October 1975), pp. 410-419.

Rock, Harold W. Prairie Propagation Handbook. Fourth edition. Milwaukee, WI: Boerner Botanical Gardens, Whitnall Park, 1975.

Smith, J. Robert and Smith, Beatrice S. The Prairie Garden. Madison, WI: University of Wisconsin Press, 1980.

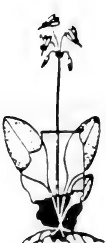
Stoffel, Robert J. Do's and Don'ts of Home Landscape Design. New York: Hearthside Press, Inc., 1968.

Voigt, John W. and Mohlenbrock, Robert A. Prairie Plants of Illinois. Springfield, Illinois. Illinois Department of Conservation. 1980.

Weaver, John E. Prairie Plants and Their Environment. Lincoln, Nebraska. University of Nebraska Press. 1968.

Continued from p. 38

Jefferson County (from A New Geography of Jefferson County, by L. A. Dearinger, Illinois, pp 15-38, Oct., 1974) Elk Prairie Township (T4S, R2E); Moores Prairie Township (T4S, R4E); Grand Prairie Township (T1S, R1E).



In Our Next Issue

Erigenia announces the intent to publish the first issue devoted to floristics later this year. Erigenia will publish floristics studies from Illinois and the states which border Illinois.

"WHERE HAVE ALL THE WILDFLOWERS GONE? is a sad and wonderful book. It is like being introduced to some beautiful friends whose faces are familiar but whose names and stories we did not know."
-Charles Osgood, CBS News Correspondent

"In captivating acecdotes and thorough research, Robert Mohlenbrock not only writes an excellent field and reference guide on our vanishing wildflowers, but he also pinpoints the undeniable need to preserve one of our country's most beautiful and neglected resources. WHERE HAVE ALL THE WILDFLOWERS GONE? should be appreciated by anyone interested in America's natural heritage."
-Senator Charles H. Percy, Illinois

"An outstanding guide to the threatened and endangered plants of the U.S. - beautifully written, scientifically accurate, easily read and understood by everyone with an interest in the out-of-doors."
-Dr. Peter H. Raven, Director, Missouri Botanical Garden

a special book at a special price $13.00*

* includes postage. This offer only available through the Southern Illinois Native Plant Society. List price for this volume is $15.95.

WHERE HAVE ALL THE WILDFLOWERS GONE?
A Region-by-Region Guide to Threatened or Endangered U.S. Wildflowers

By: Dr. Robert Mohlenbrock
Illustrated by:
Mark Mohlenbrock
256 pages, 40 color photos
80 line drawings
Published by:
Macmillan Publishing Co., Inc.
New York, N.Y.

YES, please send me ___ copies of this new book WHERE HAVE ALL THE WILDFLOWERS GONE? by Robert H. Mohlenbrock for the price of $13.00 each (which includes postage). I have enclosed a check/money order payable to S.I.N.P.S. for the total of $______.

PLEASE SHIP TO:

Name ______________________________

Address ______________________________

City ________________ State ____ Zip ______

Clip this order form and send with payment to:
Southern Illinois Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, Illinois 62901

(Allow 6 weeks for delivery.)

Our Contributors

DR. JOHN W. VOIGT, professor of Botany at SIUC, is a graduate of Eastern Illinois University, and holds a Masters and Ph.D. from the University of Nebraska. He studied grassland ecology under ecologist J.E. Weaver. For the past thirty three years he has taught and written about grasslands of Illinois and neighboring mid-western states.

DR. LEWIS J. STANNARD, JR. is an Emeritus Taxonomist of the Illinois Natural History Survey and Emeritus Professor of Entomology, University of Illinois and Dixon Springs Agricultural Center, Simpson, IL. He is a specialist on the systematics of the insect order Thysanoptera, or thrips.

RENE FRASHER received her M.S. degree in Plant and Soil Science at Southern Illinois University with specialization in landscape horticulture. She is currently employed as a landscape designer in Oklahoma City, Oklahoma.

DR. GERALD D. COORTS is Professor of floriculture and ornamental horticulture and Chairman of the Department of Plant and Soil Science at Southern Illinois University, Carbondale. After receiving his Ph.D. from the University of Illinois at Urbana, he became Assistant Professor of Horticulture at the University of Rhode Island subsequent to joining the faculty at SIU in 1968. He has been active in teaching greenhouse management, floriculture and garden flowers, and in research with plant growth regulators.

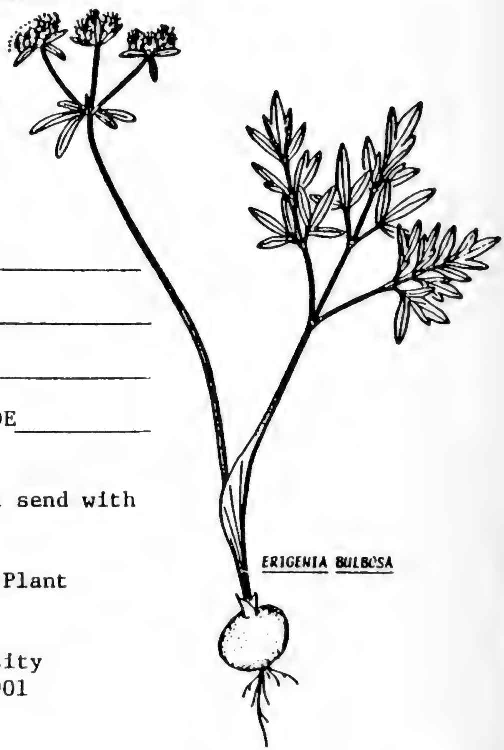
DR. MEVLUT CANAGIR is Assistant Professor of Landscape Horticulture in the Department of Plant and Soil Science at Southern Illinois University, Carbondale. After receiving his M.L. A. in 1977 and the Ph.D. in 1980, both from the University of Michigan, he has been active in teaching landscape horticulture and design at SIU.

MEMBERSHIP APPLICATION

All memberships run for the calendar year (January thru December). Dues received after November 1 of a given year are put toward the following year unless otherwise specified.

MEMBERSHIP CATEGORIES

STUDENT $5
REGULAR $10
SUPPORTING $20
PATRON $25



Dr./Mr./Mrs./Ms./Miss
NAME______________________________

ADDRESS___________________________

CITY______________________________

STATE_____________ZIP CODE__________

Clip this application and send with check to:

Southern Illinois Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, Illinois 62901

Make checks payable to S.I.N.P.S.

GUIDELINES FOR MANUSCRIPTS SUBMITTED TO ERIGENIA FOR PUBLICATION (REVISED 1984)

Manuscripts conforming to one of the selected themes (see ERIGENIA 1, page 1) are accepted for publication free of charge. Manuscripts should by typed single-spaced with 1 3/4 inch top and bottom margins and 1½ inch side margins. Paragraphs should be double-spaced. Paragraphs are not to be indented. Pages are to be numbered, but in pencil only. Tables and figures should be numbered consecutively and an indication should be made as to where the author would like them placed. Either "Literature Cited" or References" may be used. Use of the Harvard style for citing literature is recommended. If at all possible, please use an IBM Selectric typewriter and indicate which element was used as the editor can correct the copy much easier this way. Illustrations and maps are printed at no cost to the author. Margins for illustrations and maps are the same as above. Four-by-five inch black and white photos are also accepted (not to contrasty please). Cost of each photo to author is $5.00. The original manuscript and one copy must be included. Title and author's name should be typed on the first page of the manuscript in a manner as found in ERIGENIA 2. A one paragraph biographical sketch of the author must also accompany manuscripts cubmitted. Manuscripts are not returned to the author. If other materials such as photos or illustrations are requested to be returned, a self-addressed stamped envelope is required and should accompany the manuscript.

Five free reprints of articles submitted are provided to the author. Additional reprints may be ordered by the author at a charge (write to the editor for details and prices). ADDITIONAL REPRINTS MAY BE ORDERED ONLY AT THE TIME THE MANUSCRIPT IS SUBMITTED.

Each manuscript received by the editor will be sent out for review to one (or more) of the members of the editorial review board. Authors will be notified of any revisions judged necessary and will, if necessary, have the manuscripts returned for revision. The editorial staff reserves the right to reject any manuscript which does not comply to the above guidelines.

Contributors are also needed to submit book reviews to be published in the journal. Please inform the editor of the title wished to be reviewed prior to submitting it. Guidelines are the same as above except no biographical sketch is needed and the review should not exceed one page in length.

As a special service, floristic studies and related topics of areas in Illinois and the states which border Illinois will be accepted for publication. Guidelines are as those for above manuscripts except that plant lists are to be typed in double columns with ½ inch margins on the page. (Plant lists shall be printed in a slightly reduced form.) The author of the study shall be required to cover the cost of publication by remitting $5.00 per page of manuscript (including illustration and map pages). The membership shall reveive these special issues at no additional cost.

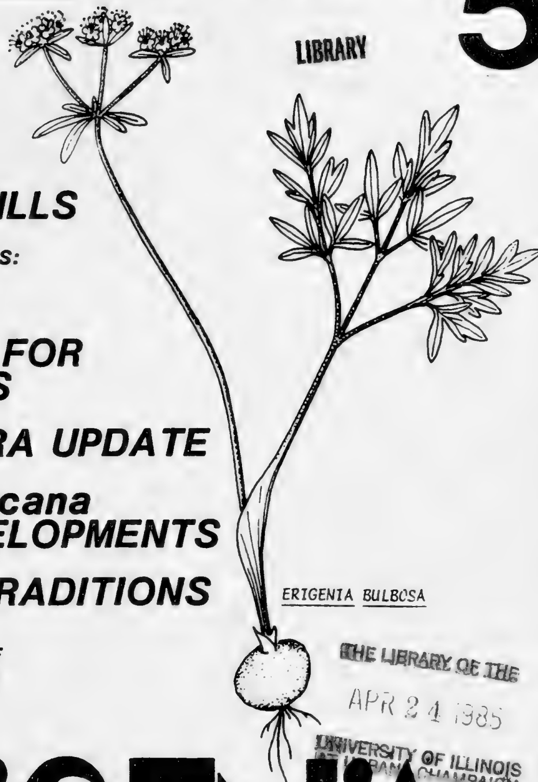
Copy ready manuscripts and/or questions concerning publication should be sent to:

Mark W. Mohlenbrock
Editor - ERIGENIA
Department of Botany and Microbiology
Arizona State University
Tempe, Arizona 85287

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY
department of botany, southern illinois university
carbondale, illinois 62901

5

- GARDENING: **HERBS**
- **FLORA OF LARUE-PINE HILLS**
- ILLINOIS NATURAL AREAS: **HOGG BLUFF**
- **SUPER SITES FOR WILDFLOWERS**
- **ILLINOIS FLORA UPDATE**
- ***Thismia americana* RECENT DEVELOPMENTS**
- **MISTLETOE TRADITIONS**
- TAXONOMIC STATUS OF ***Panicum joori***



ERIGENIA BULBOSA

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

ERIGENIA (ISSN 8755-2000)

Layout, graphics and design by Mark W. Mohlenbrock's AART-WERK, providing science and business with original illustrations and graphics

ERIGENIA

JOURNAL OF THE
SOUTHERN ILLINOIS NATIVE PLANT SOCIETY

The Southern Illinois Native Plant Society is dedicated to the preservation, conservation and study of the native plants and vegetation of southern Illinois.

Membership includes subscription to ERIGENIA as well as to the quarterly newsletter THE HARBINGER. ERIGENIA(ISSN 8755-2000), the official journal of the Southern Illinois Native Plant Society, is published occasionally (one to four issues annually) by the Society. Single copies of this issue may be purchased for $4.50 (including postage). ERIGENIA is available by subscription only. For current subscription rates or information concerning the Society write:

So. Ill. Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, IL 62901

Make checks payable to S.I.N.P.S.

TO CONTRIBUTE: See inside back cover for guidelines.

Number 5: February 1985

CONTENTS

(Continued on next page)

(Contents continued)

EDITORIAL

— MARK W. MOHLENBROCK

This issue of Erigenia marks the beginning of a new format for the journal. In previous issues articles were published according to a particular topic or theme. This format did serve a useful purpose in that information on a particular topic was readily accessible at one place. However, lengthy delays in publication occurred while waiting for enough material to publish on a particular topic.

The readership of the journal is a diverse group, ranging from professional botanists, to casual plant enthusiasts, to people who just like the outdoors. We hope the new format offers something in each issue to please every reader.

The new format consists of feature articles of both technical and general interest, plus articles in regularly occurring departments or series. Departments first appearing in this issue include: Illinois Natural Areas; Southern Illinois Gardening; Illinois Flora Update; Book Reviews; and Endangered and Threatened Plants of Illinois (a special article appears on the extinct Illinois plant *Thismia americana*). Future issues of Erigenia will include the addition of at least one more department.

(Please turn to page 39)

The One Comprehensive Guide to America's 153 National Forests

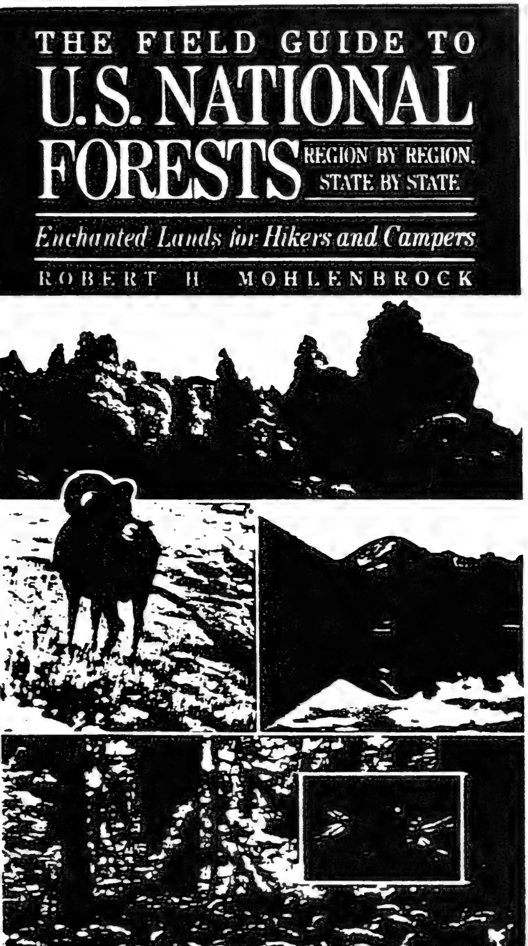
From the lush subtropical rain forests of the South to the Southwest's sunbaked deserts to the snowcapped "Alpine" timber zones of the great Northwest

*discover a dazzling variety of natural sights

*share the author's personal finds-his favorite trails, outlooks, canoe trips, picnic spots, and camping places, compiled over 25 years

324 pages, soft cover

Published by:
Congdon & Weed, Inc.
New York, New York



"It has been said that the national forests of the U.S. are a well-kept secret. With Robert Mohlenbrock's book, it is safe to say the secret is out. The recreationist can share with him the special botanical, geological, and scenic attractions of the 153 national forests he has visited across the country by car, by foot, and even by canoe. These outdoor wonders belong to all of us, and this guide book says welcome."

-R. MAX PETERSON,
Chief, U.S. Forest Service

SPECIAL PRICE $10*

regularly $11.95

*includes postage. This offer only available through the Southern Illinois Native Plant Society.

YES, please send me ___ copies of THE FIELD GUIDE TO U.S. NATIONAL FORESTS by Robert H. Mohlenbrock for the price of $10.00 each (which includes postage, Illinois residents add 60c sales tax per copy). I have enclosed a check/money order payable to S.I.N.P.S. for the total of $________.

PLEASE SHIP TO:

Name ______________________________

Address ______________________________

City ______________ State ___ Zip _____

Clip this order form and send with payment to:

Southern Illinois Native Plant Society
Director of Book Services
Department of Botany
Southern Illinois University
Carbondale, IL 62901

(Allow 6 weeks for delivery.)

Catalog #1

1985

NATURAL HISTORY BOOK CATALOG

DISCOUNT PRICES FOR EVERYONE!

A service of the:

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY
Director of Book Services
Department of Botany
Southern Illinois University
Carbondale, IL 62901

(618)-536-2331 ext. 27

IT'S HERE!

S.I.N.P.S. members will be sent a copy of the 1985 Natural History Book Catalog automatically. Others may receive a FREE copy by writing to the above address and request a copy.

VASCULAR FLORA OF THE LARUE-PINE HILLS AREA OF SOUTHERN ILLINOIS

Robert H. Mohlenbrock[1]

In 1965, Mohlenbrock and Voigt published a checklist of the vascular plants of the Southern Illinois University Pine Hills Field Station and environs in Union County, Illinois. In that work, the remarkable total of 1,003 species of vascular plants was reported for an area of approximately six square miles. Since that time, a number of significant events have happened to warrant a new look at the plants of the area.

Southern Illinois University has given up a large part of its field station property to the Shawnee National Forest. A part of the area reported on earlier which is in the Shawnee National Forest was designated the LaRue-Pine Hills Ecological Area, the first such area to receive this designation in the National Forest system.

From 1982-1984, the Federal Department of Transportation, in conjunction with the United States Forest Service, proposed several alternative road adjustments through the area as part of the Great River Road project. The author was called upon several times to make statements concerning the natural qualities in the LaRue-Pine Hills, including the fact that a total of 1,153 taxa of vascular plants has now been recorded. This article documents the complete list for the first time.

The entire area was restudied by the author from 1977 to 1984. All previously collected specimens have been re-examined, and numerous nomenclatural changes have been made to coincide with the nomenclature used in Mohlenbrock's Guide to the Vascular Flora of Illinois (1975), or in more recent monographs.

Since a brief history of the area was included in Mohlenbrock and Voigt's work in 1965, and since most of the plant communities have been described in that work, as well as in Mohlenbrock (1959) and Ashby and Kelting (1963), that material will not be repeated here.

[1]Dr. Robert H. Mohlenbrock is Professor of Botany at Southern Illinois University, Carbondale.

This paper, then, offers a revised list of taxa known from the LaRue-Pine Hills area of Union County. A more realistic look at the nomenclature, recognizing several taxa below the rank of species, has been taken. As a result, this paper reports a total of 1,153 taxa of vascular plants. This represents 35% of the taxa known from the entire state of Illinois.

Species deleted from the list of 1965 either because they were misidentified or because they have been combined with other taxa are:

Sparganium americanum Nutt. Specimen is actually S. androcladum (Engelm.) Morong.

Paspalum stramineum Nash. Not recognized as distinct from P. ciliatifolium Michx.

Luzula bulbosa (Wood) Rydb. Not recognized as distinct from L. multiflora (Retz.) Lejeune.

Trifolium arvense L. Specimen is actually T. dubium Sibth.

Acerates lanuginosa (Nutt.) Decne. Specimen is actually Asclepias viridiflora Raf.

Aster salicifolius Ait. Not recognized as distinct from A. praealtus Poir.

Taxa recognized as species in 1965 but now considered to be taxa of lesser rank are:

Sphenopholis intermedia (Rydb.) Rydb. is now S. obtusata (Michx.) Scribn. var. major (Torr.) Erdman.

Panicum scribnerianum Nash is now P. oligosanthes Schult. var. scribnerianum (Nash) Fern.

Luzula echinata (Small) F. J. Herm. is now L. multiflora (Retz.) Lejeune var. echinata (Small) Mohlenbr.

Prunus lanata (Sudw.) Mack. & Bush is now P. americana Marsh. var. lanata Sudw.

Acer drummondii H. & A. is now A. rubrum L. var. drummondii (H. & A.) Sarg.

Myosotis macrosperma Engelm. is now M. virginica (L.) BSP. var. macrosperma (Engelm.) Fern.

Fraxinus lanceolata Borkh. is now F. pensylvanica Marsh. var. subintegerrima (Vahl) Fern.

Apocynum pubescens R. Br. is now A. cannabinum L. var. pubescens (Mitchell) A. DC.

Mentha arvensis L. is now M. arvensis L. var. villosa (Benth.) S. R. Steward.

Xanthium chinense Mill. is now X. strumarium L. var. glabratum (DC.) Cronq.

Antennaria fallax Greene is now A. plantaginifolia (L.) Richards var. ambigens (Greene) Cronq.

Aster exiguus (Fern.) Rydb. is now A. ericoides L. var. prostratus (Ktze.) Blake.

Figure 1. View of the 300-foot limestone bluffs of the Pine Hills as seen from the Big Muddy River levee road.

Figure 2. Close-up view of the 300-foot limestone bluffs.

Following is the revised list of taxa known from the LaRue-Pine Hills area of Union County in southwestern Illinois. Nomenclature and the sequence of families follow Mohlenbrock's (1975) Guide to the Vascular Flora of Illinois, except for the treatment of some ferns. All taxa in the list are represented by collections in the herbarium of Southern Illinois University, except for the specimen of Apios priceana B. L. Robins. which is at the Illinois State Museum.

EQUISETACEAE

Equisetum arvense L.
Equisetum hyemale L. var. affine (Engelm.) A. A. Eaton
Equisetum laevigatum A. Br.
Equisetum Xferrissii Clute

SELAGINELLACEAE

Selaginella rupestris (L.) Spreng.

OPHIOGLOSSACEAE

Botrychium dissectum Spreng. var. dissectum
Botrychium dissectum Spreng. var. obliquum (Muhl.) Clute
Botrychium biternatum (Sav.) Underw.
Botrychium virginianum (L.) Sw.
Ophioglossum vulgatum L. var. pseudopodum (Blake) Farw.
Ophioglossum engelmannii Prantl

POLYPODIACEAE

Adiantum pedatum (Tourn.) L.
Pteridium aquilinum (L.) Kuhn var. latiusculum (Desv.) Underw.
Pellaea atropurpurea (L.) Link
Cheilanthes feei Moore
Cheilanthes lanosa (Michx.) D. C. Eaton
Polypodium virginianum (L.) Eaton
Polypodium polypodioides (L.) Watt var. michauxianum Weatherby
Polystichum acrostichoides (Michx.) Schott
Onoclea sensibilis L.
Thelypteris hexagonoptera (Michx.) Weatherby
Dryopteris carthusiana (Villars) H.P. Fuchs
Dryopteris intermedia (Muhl.) Gray
Dryopteris marginalis (L.) Gray
Athyrium pycnocarpon (Spreng.) Tidestrom
Athyrium thelypterioides (Michx.) Desv.
Athyrium angustum (Willd.) Presl
Athyrium asplenioides Michx.
Asplenium rhizophyllum L.
Asplenium pinnatifidum Nutt.
Asplenium Xgravesii Maxon
Asplenium Xkentuckiense McCoy
Asplenium Xherb-wagneri Taylor & Mohlenbr.
Asplenium bradleyi D.C. Eaton
Asplenium Xebenoides R.R. Scott
Asplenium trichomanes L.
Asplenium resiliens Kuntze
Asplenium platyneuron (L.) Oakes
Woodsia obtusa Torr.
Cystopteris bulbifera (L.) Bernh.
Cystopteris fragilis (L.) Bernh. var. fragilis
Cystopteris fragilis (L.) Bernh. var. protrusa Weatherby
Cystopteris Xtennesseensis Shaver

SALVINIACEAE

Azolla mexicana Presl

PINACEAE

Pinus echinata Mill.

TAXODIACEAE

Taxodium distichum (L.) Rich.

CUPRESSACEAE

Juniperus virginiana L.

TYPHACEAE

Typha latifolia L.

SPARGANIACEAE

Sparganium chlorocarpum Rydb.
Sparganium androcladum (Engelm.) Morong
Sparganium eurycarpum Engelm.

POTAMOGETONACEAE

Potamogeton foliosus Raf.
Potamogeton pusillus L.
Potamogeton diversifolius Raf.
Potamogeton nodosus Poir.

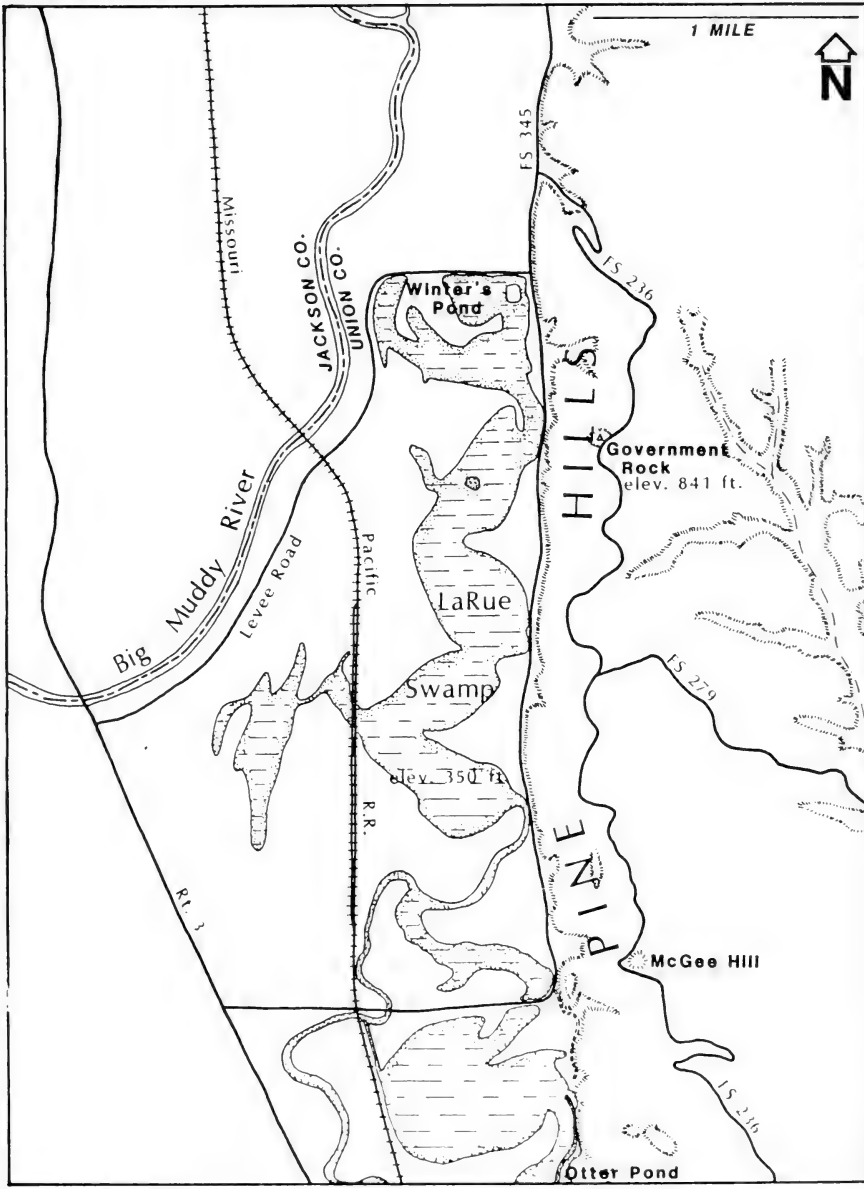
ALISMACEAE

Echinodorus berteroi (Spreng.) Fassett var. lanceolatus (Wats. & Coult.) Fassett
Echinodorus cordifolius (L.) Griseb.
Sagittaria calycina Engelm.
Sagittaria rigida Pursh
Sagittaria longirostra (Micheli) J.G. Sm.
Sagittaria latifolia Willd.
Alisma subcordatum Raf.

HYDROCHARITACEAE

Limnobium spongia (Bosc) Steud.

TO MURPHYSBORO



TO WOLF LAKE

TO UNION STATE NURSERY & FOREST

Figure 3. Map of the LaRue-Pine Hills and vicinity.

POACEAE

Bromus tectorum L.
Bromus secalinus L.
Bromus racemosus L.
Bromus commutatus Schrad.
Bromus japonicus Thunb.
Bromus inermis Leyss.
Bromus pubescens Muhl.
Bromus ciliatus L.
Vulpia octoflora (Walt.) Rydb. var. octoflora
Vulpia octoflora (Walt.) Rydb. var. tenella (Willd.) Fern.
Vulpia octoflora (Walt.) Rydb. var. glauca (Nutt.) Fern.
Festuca pratensis Huds.
Festuca obtusa Biehler
Festuca paradoxa Desv.
Lolium multiflorum Lam.
Lolium perenne L.
Puccinellia pallida (Torr.) Clausen
Poa annua L.
Poa chapmaniana Scribn.
Poa pratensis L.
Poa angustifolia L.
Poa compressa L.
Poa palustris L.
Poa sylvestris Gray
Dactylis glomerata L.
Koeleria macrantha (Ledeb.) Spreng.
Sphenopholis obtusata (Michx.) Scribn. var. obtusata
Sphenopholis obtusata (Michx.) Scribn. var. major (Torr.) Erdman
Sphenopholis nitida (Biehler) Scribn.
Avena sativa L.
Holcus lanatus L.
Agrostis elliottiana Schult.
Agrostis hyemalis (Walt.) BSP.
Agrostis perennans (Walt.) Tuckerm.
Agrostis alba L. var. alba
Agrostis alba L. var. palustris (Huds.) Pers.
Cinna arundinacea L.
Phalaris arundinacea L.
Alopecurus aequalis Sobol
Alopecurus carolinianus Walt.
Phleum pratense L.
Elumus hystrix L.
Elymus virginicus L.
Elymus villosus Muhl.
Elymus canadensis L.
Hordeum pusillum Nutt.
Hordeum jubatum L.
Triticum aestivum L.
Secale cereale L.
Melica mutica Walt.
Melica nitens (Scribn.) Nutt.
Glyceria septentrionalis Hitchcock
Glyceria arkansana Fern.
Glyceria striata (Lam.) Hitchcock
Brachyelytrum erectum (Schreb.) Beauv.
Diarrhena americana Beauv. var. obovata Gl.
Digitaria sanguinalis (L.) Scop.
Digitaria ischaemum (Schreb.) Muhl.
Eriochloa contracta Hitchcock
Paspalum fluitans (Ell.) Kunth
Paspalum pubiflorum Rupr. var. glabrum (Vasey) Vasey
Paspalum laeve Michx.
Paspalum ciliatifolium Michx.
Paspalum bushii Nash
Panicum dichotomiflorum Michx.
Panicum flexile (Gattinger) Scribn.
Panicum philadelphicum Bernh.
Panicum capillare L.
Panicum virgatum L.
Panicum rigidulum Bosc
Panicum anceps Michx.
Panicum depauperatum Muhl.
Panicum linearifolium Scribn.
Panicum laxiflorum Lam.
Panicum microcarpon Muhl.
Panicum dichotomum L.
Panicum lanuginosum Ell. var. lanuginosum
Panicum lanuginosum Ell. var. implicatum (Scribn.) Fern.
Panicum lanuginosum Ell. var. lindheimeri (Nash) Fern.
Panicum villosissimum Nash
Panicum sphaerocarpon Ell.
Panicum polyanthes Schult.
Panicum oligosanthes Schult. var. scribnerianum (Nash) Fern.
Panicum leibergii (Vasey) Scribn.
Panicum commutatum Schult.
Panicum joori Vasey
Panicum clandestinum L.
Panicum latifolium L.
Panicum boscii Poir.
Echinochloa walteri (Pursh) Heller
Echinochloa crus-galli (L.) Beauv.
Echinochloa pungens (Poir.) Rydb. var. pungens
Echinochloa pungens (Poir.) Rydb. var. wiegandii Fassett
Setaria lutescens (Weigel) Hubb.
Setaria faberi Herrm.
Setaria viridis (L.) Beauv.
Cenchrus longispinus (Hack.) Fern.
Erianthus alopecuroides (L.) Ell.
Sorghum halepense (L.) Pers.
Sorghastrum nutans (L.) Nash
Andropogon gerardii Vitman
Andropogon virginicus L.
Schizachyrium scoparium (Michx.) Nash
Tripsacum dactyloides (L.) L.
Zea mays L.
Eragrostis hypnoides (Lam.) BSP.
Eragrostis cilianensis (All.) Mosher
Eragrostis poaeoides Beauv.
Eragrostis spectabilis (Pursh) Steud.

Eragrostis pectinacea (Michx.) Nees
Eragrostis capillaris (L.) Nees
Eragrostis pilosa (L.) Beauv.
Eragrostis frankii C.A. Meyer
Tridens flavus (L.) Hitchcock
Muhlenbergia capillaris (Lam.) Trin.
Muhlenbergia cuspidata (Torr.) Rydb.
Muhlenbergia schreberi J.F. Gmel.
Muhlenbergia sobolifera (Muhl.) Trin.
Muhlenbergia bushii Pohl
Muhlenbergia frondosa (Poir.) Fern.
Muhlenbergia racemosa (Michx.) BSP.
Muhlenbergia tenuiflora (Willd.) BSP.
Muhlenbergia sylvatica (Torr.) Torr.
Muhlenbergia mexicana (L.) Trin.
Sporobolus vaginiflorus (Torr.) Wood
Sporobolus neglectus Nash
Eleusine indica (L.) Gaertn.
Leptochloa filiformis (Lam.) Beauv.
Leptochloa fascicularis (Lam.) Gray
Cynodon dactylon (L.) Pers.
Bouteloua curtipendula (Michx.) Torr.
Aristida oligantha Michx.
Aristida purpurascens Poir.
Aristida ramosissima Engelm.
Aristida longespica Poir.
Aristida dichotoma Michx.
Arundinaria gigantea (Walt.) Chapm.
Leersia lenticularis Michx.
Leersia oryzoides (L.) Swartz
Leersia virginica Willd.
Danthonia spicata (L.) Beauv.
Chasmanthium latifolium (Michx.) Yates

CYPERACEAE

Cyperus densicaespitosus Mattf. & Kükenth.
Cyperus aristatus Rottb.
Cyperus acuminatus Torr. & Hook.
Cyperus ovularis (Michx.) Torr.
Cyperus erythrorhizos Muhl.
Cyperus engelmannii Steud.
Cyperus esculentus L.
Cyperus ferruginescens Boeckl.
Cyperus strigosus L.
Eleocharis obtusa (Willd.) Schult. var. obtusa
Eleocharis obtusa (Willd.) Schult. var. detonsa (Gray) Drap. & Mohlenbr.
Eleocharis acicularis (L.) Roem. & Schultes
Fimbristylis autumnalis (L.) Roem. & Schultes
Scirpus validus Vahl
Scirpus georgianus Harper
Scirpus atrovirens Willd.
Scirpus pendulus Muhl.
Scirpus cyperinus (L.) Kunth
Scirpus verecundus Fern.
Carex retroflexa Muhl.
Carex convoluta Mack.
Carex rosea Schk.
Carex socialis Mohlenbr. & Schwegm.
Carex cephalophora Muhl.
Carex muhlenbergii Schk.
Carex cephaloidea Dewey
Carex vulpinoidea Michx.
Carex decomposita Muhl.
Carex conjuncta Boott
Carex laevivaginata (Kükenth.) Mack.
Carex crus-corvi Shuttlew.
Carex muskingumensis Schwein.
Carex scoparia Schk.
Carex normalis Mack.
Carex albolutescens Schwein.
Carex brevior (Dewey) Mack.
Carex jamesii Schwein.
Carex pensylvanica Lam.
Carex emmonsii Dewey
Carex artitecta Mack.
Carex physorhyncha Liebm.
Carex umbellata Schk.
Carex eburnea Boott
Carex crinita Lam.
Carex shortiana Dewey
Carex lanuginosa Michx.
Carex hirsutella Mack.
Carex caroliniana Schwein.
Carex bushii Mack.
Carex granularis Muhl.
Carex grisea Wahlenb.
Carex flaccosperma Dewey
Carex glaucodea Tuckerm.
Carex oligocarpa Schk.
Carex albursina Sheldon
Carex blanda Dewey
Carex gracilescens Steud.
Carex frankii Kunth
Carex squarrosa L.
Carex typhina Michx.
Carex lacustris Willd.
Carex hyalinolepis Steud.
Carex comosa Boott
Carex hystricina Muhl.
Carex lurida Wahlenb.
Carex grayi Carey
Carex louisianica Bailey
Carex lupulina Muhl.
Carex lupuliformis Sartwell
Carex gigantea Rudge
Carex retrorsa Schwein.

ARACEAE

Acorus calamus L.
Peltandra virginica (L.) Kunth
Arisaema dracontium (L.) Schott
Arisaema triphyllum (L.) Schott

LEMNACEAE

Spirodela polyrhiza (L.) Schleiden
Spirodela oligorhiza (Kurtz) Hegelm.
Lemna trisulca L.

Lemna minor L.
Lemna perpusilla Torr.
Lemna trinervis (Austin) Small
Lemna valdiviana Phil.
Lemna obscura (Austin) Daubs
Wolffiella floridana (J.D. Smith) Thompson
Wolffia papulifera Thompson
Wolffia columbiana Karst.

COMMELINACEAE

Tradescantia subaspera Ker
Tradescantia ohiensis Raf.
Tradescantia virginiana L.
Commelina communis L.
Commelina diffusa Burm. f.
Commelina virginica L.

PONTEDERIACEAE

Pontederia cordata L.
Heteranthera reniformis R. & P.

JUNCACEAE

Luzula multiflora (Retz.) Lejeune var. multiflora
Luzula multiflora (Retz.) Lejeune var. echinata (Small) Mohlenbr.
Juncus effusus L. var. solutus Fern. & Wieg.
Juncus biflorus Ell.
Juncus canadensis J. Gay
Juncus acuminatus Michx.
Juncus brachycarpus Engelm.
Juncus tenuis Willd.
Juncus dudleyi Wieg.
Juncus interior Wieg.

LILIACEAE

Lilium michiganense Farw.
Hemerocallis fulva L.
Ornithogalum umbellatum L.
Camassia scilloides (Raf.) Cory
Erythronium americanum Ker
Erythronium albidum Nutt.
Uvularia grandiflora Sm.
Uvularia sessilifolia L.
Polygonatum commutatum (Schult.) A. Dietr.
Polygonatum biflorum (Walt.) Ell.
Smilacina racemosa (L.) Desf.
Asparagus officinalis L.
Allium ampeloprasum L. var. atroviolaceum (Boiss.) Regel
Allium canadense L.
Allium stellatum Ker
Allium vineale L.
Allium cepa L.
Nothoscordum bivalve (L.) Britt.
Trillium recurvatum Beck
Trillium sessile L.
Trillium viride Beck
Trillium flexipes Raf.
Narcissus pseudo-narcissus L.
Narcissus poeticus L.
Polianthes virginica (L.) Shinners
Hypoxis hirsuta (L.) Coville

SMILACACEAE

Smilax glauca Walt. var. glauca
Smilax glauca Walt. var. leurophylla Blake
Smilax bona-nox L. var. bona-nox
Smilax bona-nox L. var. hederaefolia (Beyrich) Fern.
Smilax rotundifolia L.
Smilax hispida Muhl.
Smilax lasioneuron Hook.
Smilax pulverulenta Michx.

DIOSCOREACEAE

Dioscorea villosa L.
Dioscorea quaternata (Walt.) J.F. Gmel.

IRIDACEAE

Iris fulva Ker
Iris shrevei Small
Iris cristata Ait.
Sisyrinchium angustifolium Mill.
Sisyrinchium atlanticum Bickn.
Sisyrinchium albidum Raf.

ORCHIDACEAE

Cypripedium calceolus L. var. parviflorum (Salisb.) Fern.
Orchis spectabilis L.
Habenaria peramoena Gray
Liparis liliifolia (L.) Rich.
Spiranthes ovalis Lindl.
Spiranthes cernua (L.) Rich.
Corallorhiza wisteriana Conrad
Corallorhiza odontorhiza (Willd.) Nutt.
Aplectrum hyemale (Muhl.) Torr.

SAURURACEAE

Saururus cernuus L.

SALICACEAE

Salix nigra Marsh.
Salix interior Rowlee
Populus deltoides Marsh.
Populus heterophylla L.

JUGLANDACEAE

Juglans cinerea L.

Juglans nigra L.
Carya illinoensis (Wang.) K. Koch
Carya aquatica (Michx. f.) Nutt.
Carya cordiformis (Wang.) K. Koch
Carya texana Buckl.
Carya ovalis (Wang.) Sarg.
Carya glabra (Mill.) Sweet
Carya tomentosa (Poir.) Nutt.
Carya ovata (Mill.) K. Koch
Carya laciniosa (Michx.) Loud.
Carya pallida (Ashe) Engl. & Graebn.

BETULACEAE

Betula nigra L.
Corylus americana Walt.
Ostrya virginiana (Mill.) K. Koch
Carpinus caroliniana Walt.

FAGACEAE

Fagus grandifolia Ehrh.
Quercus imbricaria Michx.
Quercus phellos L.
Quercus marilandica Muenchh.
Quercus falcata Michx.
Quercus pagodaefolia (Ell.) Ashe
Quercus velutina Lam.
Quercus rubra L.
Quercus palustris Muenchh.
Quercus shumardii Buckley
Quercus coccinea Muenchh.
Quercus bicolor Willd.
Quercus michauxii Nutt.
Quercus muhlenbergii Engelm.
Quercus alba L.
Quercus stellata Wangh.
Quercus macrocarpa Michx.
Quercus lyrata Walt.

ULMACEAE

Ulmus rubra Muhl.
Ulmus aremicana L.
Ulmus alata Michx.
Celtis occidentalis L. var. occidentalis
Celtis occidentalis L. var. pumila (Pursh) Gray
Celtis occidentalis L. var. canina (Raf.) Sarg.
Celtis laevigata Willd.
Celtis tenuifolia Nutt.

MORACEAE

Morus rubra L.
Morus alba L.
Maclura pomifera (Raf.) Schneid.

URTICACEAE

Boehmeria cylindrica (L.) Sw.
Pilea pumila (L.) Gray
Pilea opaca (Lunell) Rydb.
Laportea canadensis (L.) Wedd.
Parietaria pensylvanica Muhl.

LORANTHACEAE

Phoradendron flavescens (Pursh) Nutt.

ARISTOLOCHIACEAE

Asarum canadense L. var. reflexum (Bickn.) Robins.
Aristolochia serpentaria L.

POLYGONACEAE

Rumex acetosella L.
Rumex obtusifolius L.
Rumex crispus L.
Rumex altissimus Wood
Rumex verticillatus L.
Rumex mexicanus Meisn.
Polygonum sagittatum L.
Polygonum convolvulus L.
Polygonum cristatum Engelm. & Gray
Polygonum scandens L.
Polygonum tenue Michx.
Polygonum aviculare L.
Polygonum exsertum Small
Polygonum ramosissimum Michx.
Polygonum erectum L.
Polygonum virginianum L.
Polygonum punctatum Ell.
Polygonum hydropiper L.
Polygonum persicaria L.
Polygonum setaceum Baldw. var. interjectum Fern.
Polygonum hydropiperoides Michx.
Polygonum opelousanum Riddell
Polygonum coccineum Muhl.
Polygonum longistylum Small
Polygonum lapathifolium L.
Polygonum pensylvanicum L. var. laevigatum Fern.

CHENOPODIACEAE

Chenopodium ambrosioides L.
Chenopodium album L.
Chenopodium gigantospermum Aellen
Chenopodium standleyanum Aellen

AMARANTHACEAE

Amaranthus spinosus L.
Amaranthus albus L.
Amaranthus graecizans L.
Amaranthus retroflexus L.
Amaranthus hybridus L.
Amaranthus tuberculatus (Moq.) Sauer
Amaranthus tamarascinus Nutt.
Froelichia gracilis (Hook.) Moq.

PHYTOLACCACEAE

Phytolacca americana L.

AIZOACEAE

Mollugo verticillatus L.

PORTULACACEAE

Portulaca oleracea L.
Claytonia virginica L.

CARYOPHYLLACEAE

Paronychia canadensis (L.) Wood
Paronychia fastigiata (Raf.) Fern.
Sagina decumbens (Ell.) Torr. & Gray
Holosteum umbellatum L.
Stellaria media (L.) Cyrillo
Cerastium vulgatum L.
Cerastium nutans Raf.
Cerastium viscosum L.
Cerastium brachypodum (Engelm.) B.L. Robins.
Dianthus armeria L.
Agrostemma githago L.
Silene stellata (L.) Ait.
Silene antirrhina L.
Saponaria officinalis L.

CERATOPHYLLACEAE

Ceratophyllum demersum L.
Ceratophyllum echinatum Gray

NYMPHAEACEAE

Nuphar luteum L. ssp. macrophyllum (Small) Beal
Nymphaea tuberosa Paine

NELUMBONACEAE

Nelumbo lutea (Willd.) Pers.

CABOMBACEAE

Brasenia schreberi Gmel.
Cabomba caroliniana Gray

RANUNCULACEAE

Ranunculus laxicaulis (Torr. & Gray) Darby
Ranunculus abortivus L.
Ranunculus micranthus Nutt.
Ranunculus flabellaris Raf.
Ranunculus hispidus Michx. var. hispidus
Ranunculus hispidus Michx. var. marilandicus (Poir.) L. Benson
Ranunculus septentrionalis Poir. var. septentrionalis
Ranunculus septentrionalis Poir. var. caricetorum (Greene) Fern.
Ranunculus carolinianus DC.
Ranunculus fascicularis Muhl.
Ranunculus sardous Crantz
Delphinium tricorne Michx.
Thalictrum revolutum DC.
Thalictrum dioicum L.
Actaea pachypoda Ell.
Hydrastis canadensis L.
Isopyrum biternatum (Raf.) Torr. & Gray
Anemonella thalictroides (L.) Spach
Anemone virginiana L.
Myosurus minimus L.
Aquilegia canadensis L.
Clematis virginiana L.
Clematis pitcheri Torr. & Gray

BERBERIDACEAE

Podophyllum peltatum L.
Caulophyllum thalictroides (L.) Michx.

MENISPERMACEAE

Calycocarpum lyonii (Pursh) Gray
Menispermum canadense L.
Cocculus carolinus (L.) DC.

MAGNOLIACEAE

Magnolia acuminata L.
Liriodendron tulipifera

ANNONACEAE

Asimina triloba (L.) Dunal.

LAURACEAE

Sassafras albidum (Nutt.) Nees var. albidum
Sassafras albidum (Nutt.) Nees var. molle (Raf.) Fern.
Lindera benzoin (L.) Blume

PAPAVERACEAE

Sanguinaria canadensis L.
Stylophorum diphyllum (Michx.) Nutt.
Dicentra cucullaria (L.) Bernh.
Dicentra canadensis (Goldie) Walp.
Corydalis flavula (Raf.) DC.

CRUCIFERAE

Dentaria laciniata Muhl.
Iodanthus pinnatifidus (Michx.) Steud.
Capsella bursa-pastoris (L.) Medic.
Arabis canadensis L.
Arabis laevigata (Muhl.) Poir.

Descurainia pinnata (Walt.) Britt. var. brachycarpa (Richards.) Fern.
Cardamine bulbosa (Schreb.) BSP.
Cardamine hirsuta L.
Cardamine pensylvanica Muhl.
Cardamine parviflora L. var. arenicola (Britt.) O.E. Schulz
Sibara virginica (L.) Rollins
Draba verna L.
Draba brachycarpa Nutt.
Arabidopsis thaliana (L.) Heynh.
Lepidium campestre (L.) R. Br.
Lepidium virginicum L.
Armoracia aquatica (Eat.) Wieg.
Armoracia lapathifolia Gilib.
Nasturtium officinale R. Br.
Thlaspi arvense L.
Barbarea vulgaris R. Br. var. arcuata (Opiz.) Fries
Erysimum repandum L.
Brassica kaber (DC.) L.C. Wheeler var. schkuhriana (Reichenb.) L.C. Wheeler
Brassica nigra (L.) Koch
Brassica juncea (L.) Coss
Sisymbrium officinale (L.) Scop.
Rorippa sessiliflora (Nutt.) Hitchc.
Rorippa islandica (Oeder) Borbas var. fernaldiana Butt. & Abbe

SAXIFRAGACEAE

Hydrangea arborescens L.
Robes cynosbati L.
Itea virginica L.
Heuchera hirsuticaulis (Wheelock) Rydb.
Penthorum sedoides L.

HAMAMELIDACEAE

Liquidambar styraciflua L.

PLATANACEAE

Platanus occidentalis L.

ROSACEAE

Prunus hortulana Bailey
Prunus mexicana S. Wats.
Prunus americana Marsh. var. americana
Prunus americana Marsh. var. lanata Sudw.
Prunus serotina Ehrh.
Amelanchier arborea (Michx. f.) Fern.
Pyrus communis L.
Malus coronaria (L.) Mill.
Malus ioensis (Wood) Britt.
Crataegus collina Chapm.
Crataegus crus-galli L.
Crataegus viridis L.
Crataegus pruinosa (Wendl.) K. Koch
Crataegus mollis (Torr. & Gray) Scheele
Rubus occidentalis L.
Rubus trivialis Michx.
Rubus flagellaris Willd.
Rubus enslenii Tratt.
Rubus allegheniensis Porter
Rubus pensylvanicus Poir.
Rubus frondosus Bigel.
Rosa multiflora Thunb.
Rosa setigera Michx.
Rosa palustris Marsh.
Rosa carolina L.
Potentilla simplex Michx.
Potentilla recta L.
Potentilla norvegica L.
Fragaria virginiana Duchesne
Aruncus dioicus (Walt.) Fern.
Gillenia stipulata (Muhl.) Baill.
Geum canadense Jacq.
Geum vernum (Raf.) Torr. & Gray
Agrimonia parviflora Ait.
Agrimonia pubescens Wallr.
Agrimonia rostellata Wallr.

LEGUMINOSAE

Cercis canadensis L.
Gymnocladus dioica (L.) K. Koch
Gleditsia triacanthos L.
Gleditsia aquatica Marsh.
Desmanthus illinoensis (Michx.) MacM.
Albizia julibrissin Duraz.
Robinia pseudoacacia L.
Crotalaria sagittalis L.
Psoralea psoralioides (Walt.) Cory var. eglandulosa (Ell.) Freeman
Vicia villosa Roth
Vicia dasycarpa Ten.
Vicia cracca L.
Vicia angustifolia Reich.
Lathyrus latifolius L.
Cassia hebecarpa Fern.
Cassia marilandica L.
Cassia fasciculata Michx.
Cassia nictitans L.
Apios americana Medic.
Apios priceana Robins.
Lotus corniculatus L.
Petalostemum candidum (Willd.) Michx.
Petalostemum purpureum (Vent.) Rydb.
Coronilla varia L.
Dalea alopecuroides Willd.
Tephrosia virginiana (L.) Pers.
Melilotus alba Desr.
Melilotus officinalis (L.) Lam.
Trifolium campestre Schreb.
Trifolium dubium Sibth.
Trifolium pratense L.
Trifolium repens L.
Trifolium hybridum L.
Medicago sativa L.
Medicago lupulina L.

Clitoria mariana L.
Stylosanthes biflora (L.) BSP.
Lespedeza striata (Thunb.) Hook. & Arn.
Lespedeza stipulacea Maxim.
Lespedeza procumbens Michx.
Lespedeza repens (L.) Bart.
Lespedeza hirta (L.) Hornem.
Lespedeza capitata Michx.
Lespedeza stuevei Nutt.
Lespedeza cuneata (Dum.-Cours.) G. Don
Lespedeza violacea (L.) Pers.
Lespedeza intermedia (S. Wats.) Britt.
Lespedeza virginica (L.) Britt.
Phaseolus polystachios (L.) BSP.
Desmodium nudiflorum (L.) DC.
Desmodium glutinosum (Muhl.) Wood
Desmodium pauciflorum (Nutt.) DC.
Desmodium sessilifolium (Torr.) Torr. & Gray
Desmodium rotundifolium DC.
Desmodium illinoense Gray
Desmodium canescens (L.) DC.
Desmodium cuspidatum (Muhl.) Loud.
Desmodium laevigatum (Nutt.) DC.
Desmodium marilandicum (L.) DC.
Desmodium ciliare (Muhl.) DC.
Desmodium rigidum (Ell.) DC.
Desmodium canadense (L.) DC.
Desmodium nuttallii (Schindl.) Schub.
Desmodium dillenii Darl.
Desmodium paniculatum (L.) DC.
Strophystyles leiosperma (Torr. & Gray) Piper
Strophostyles helvola (L.) Ell.
Strophystyles umbellata (Muhl.) Britt.
Galactia volubilis (L.) Britt. var. mississippiensis Vail
Amphicarpa bracteata (L.) Fern. var. bracteata
Amphicarpa bracteata (L.) Fern. var. comosa (L.) Fern.

LINACEAE

Linum sulcatum Riddell
Linum virginianum L.

OXALIDACEAE

Oxalis violacea L.
Oxalis dillenii Jacq.
Oxalis stricta L.

GERANIACEAE

Geranium maculatum L.
Geranium carolinianum L.

ZYGOPHYLLACEAE

Tribulus terrestris L.

RUTACEAE

Xanthoxylum americanum Mill.
Ptelea trifoliata L.

POLYGALACEAE

Polygala sanguinea L.

EUPHORBIACEAE

Croton glandulosus L. var. septentrionalis Muell.-Arg.
Croton capitatus Michx.
Croton monanthogynus Michx.
Crotonopsis elliptica Willd.
Acalypha ostryaefolia Riddell
Acalypha rhomboidea Raf.
Acalypha virginica L.
Acalypha gracilens Gray
Euphorbia corollata L. var. corollata
Euphorbia corollata L. var. mollis Millsp.
Euphorbia obtusata Pursh
Poinsettia cyanthophora (Murr.) Kl. & Garcke
Poinsettia dentata (Michx.) Kl. & Garcke
Chamaesyce serpens (HBK.) Small
Chamaesyce supina (Raf.) Moldenke
Chamaesyce humistrata (Engelm.) Small
Chamaesyce maculata (L.) Small

CALLITRICHACEAE

Callitriche heterophylla Pursh
Callitriche palustris L.
Callitriche terrestris Raf.

ANACARDIACEAE

Toxicodendron radicans (L.) Kuntze
Rhus copallina L.
Rhus glabra L.
Rhus aromatica Ait. var. aromatica
Rhus aromatica Ait. var. serotina (Greene) Rehder

AQUIFOLIACEAE

Ilex decidua Walt.
Ilex verticillata (L.) Gray

CELASTRACEAE

Euonymus atropurpureus Jacq.
Celastrus scandens L.

STAPHYLEACEAE

Staphylea trifolia L.

ACERACEAE

Acer negundo L.
Acer barbatum Michx.
Acer saccharum Marsh. var. saccharum
Acer saccharum Marsh. var. schneckii Rehder
Acer saccharinum L.
Acer rubrum L. var. rubrum
Acer rubrum L. var. drummondii (H. & A.) Sarg.

HIPPOCASTANACEAE

Aesculus discolor Pursh
Aesculus glabra Willd.

BALSAMINACEAE

Impatiens biflora Walt.
Impatiens pallida Nutt.

RHAMNACEAE

Ceanothus americanus L.

VITACEAE

Parthenocissus quinquefolia (L.) Planch.
Ampelopsis cordata Michx.
Ampelopsis arborea (L.) Koehne
Vitis aestivalis Michx.
Vitis cinerea Engelm.
Vitis rupestris Scheele
Vitis vulpina L.
Vitis riparia Michx.

TILIACEAE

Tilia americana L.

MALVACEAE

Hibiscus militaris Cav.
Hibiscus lasiocarpus Cav.
Abutilon theophrastii Medic.
Sida spinosa L.

HYPERICACEAE

Ascyrum hypericoides L. var. multicaule (Michx.) Fern.

Hypericum perforatum L.
Hypericum punctatum Lam.
Hypericum spathulatum (Spach.) Steud.
Hypericum sphaerocarpum Michx.
Hypericum mutilum L.
Hypericum gentianoides (L.) BSP.
Hypericum drummondii (Grev. & Hook.) Torr. & Gray
Triadenum walteri (Gmel.) Gl.

CISTACEAE

Lechea tenuifolia Michx.

VIOLACEAE

Hybanthus concolor (T.F. Forst.) Spreng.
Viola pedata L.
Viola pratincola Greene
Viola missouriensis Greene
Viola affinis LeConte
Viola sororia Willd.
Viola sagittata Ait.
Viola pubescens Ait. var. eriocarpa (Schwein.) Russell
Viola striata Ait.
Viola rafinesquii Greene

PASSIFLORACEAE

Passiflora lutea L. var. glabriflora Fern.
Passiflora incarnata L.

CACTACEAE

Opuntia compressa (Salisb.) Macbr.

ELAEAGNACEAE

Elaeagnus angustifolia L.
Elaeagnus umbellata Thunb.

LYTHRACEAE

Decodon verticillatus (L.) Ell.
Cuphea petiolata (L.) Koehne
Lythrum alatum Pursh
Peplis diandra Nutt.
Rotala ramosior (L.) Koehne
Ammannia coccinea Rottb.

NYSSACEAE

Nyssa sylvatica Marsh.

ONAGRACEAE

Circaea quadrisulcata (Maxim.) Franch. & Sav. var. canadensis (L.) Hara
Ludwigia palustris (L.) Ell. var. americana (DC.) Fern. & Grisc.
Ludwigia alternifolia L.
Epilobium coloratum Muhl.
Jussiaea repens L.
Jussiaea decurrens (Walt.) DC.
Oenothera speciosa Nutt.
Oenothera laciniata Hill
Oenothera pilosella Raf.
Oenothera biennis L. var. biennis
Oenothera biennis L. var. canescens Torr. & Gray
Oenothera linifolia Nutt.

HALORAGIDACEAE

Proserpinaca palustris L.

ARALIACEAE

Aralia spinosa L.
Aralia racemosa L.
Panax quinquefolius L.

UMBELLIFERAE

Thaspium trifoliatum (L.) Gray var. trifoliatum
Thaspium trifoliatum (L.) Gray var. flavum Blake
Sanicula gregaria Bickn.
Sanicula canadensis L.
Torilis japonica (Houtt.) DC.
Daucus carota L.
Ptilimnium costatum (Ell.) Raf.
Ptilimnium nuttallii (DC.) Britt.
Oxypolis rigidior (L.) Coulter & Rose
Cryptotaenia canadensis (L.) DC.
Zizia aurea (L.) Koch
Pastinaca sativa L.
Sium suave Walt.
Osmorhiza longistylis (Torr.) DC. var. longistylis
Osmorhiza longistylis (Torr.) DC. var. villicaulis Fern.
Osmorhiza claytonii (Michx.) Clarke
Anethum graveolens L.
Erigenia bulbosa (Michx.) Nutt.
Chaerophyllum procumbens (L.) Crantz
Chaerophyllum tainturieri Hook.
Taenidia integerrima (L.) Drude
Polytaenia nuttallii DC.
Cicuta bulbifera L.
Cicuta maculata L.

CORNACEAE

Cornus florida L.
Cornus stolonifera Michx.
Cornus drummondii C.A. Mey.
Cornus racemosa Lam.
Cornus obliqua Raf.
Cornus foemina Mill.

ERICACEAE

Monotropa hypopithys L.
Monotropa uniflora L.
Rhododendron prinophyllum (Small) Millais
Rhododendron periclymenoides (Michx.) Shinners
Gaylussacia baccata (Wang.) K. Koch
Vaccinium arboreum Marsh. var. arboreum
Vaccinium arboreum Marsh. var. glaucescens (Greene) Sarg.
Vaccinium vacillans Torr.

PRIMULACEAE

Dodecatheon meadia L.
Androsace occidentalis Pursh
Samolus parviflorus Raf.
Anagallis arvensis L.
Lysimachia ciliata L.
Lysimachia lanceolata Walt.
Lysimachia hybrida Michx.
Lysimachia nummularia L.
Lysimachia terrestris (L.) BSP.
Hottonia inflata Ell.

EBENACEAE

Diospyros virginiana L.

OLEACEAE

Fraxinus quadrangulata Michx.
Fraxinus pensylvanica Marsh. var. pensylvanica
Fraxinus pensylvanica Marsh. var. subintegerrima (Vahl) Fern.
Fraxinus pensylvanica Marsh. var. austinii Fern.
Fraxinus americana L. var. americana
Fraxinus americana L. var. biltmoreana (Beadle) J. Wright
Fraxinus tomentosa Michx. f.
Forestiera acuminata (Michx.) Poir.

LOGANIACEAE

Spigelia marilandica L.

GENTIANACEAE

Swertia caroliniensis (Walt.) Kuntze
Obolaria virginica L.
Sabatia angularis (L.) Pursh

APOCYNACEAE

Amsonia tabernaemontana Walt.
Vinca minor L.
Apocynum androsaemifolium L.
Apocynum cannabinum L. var. cannabinum
Apocynum cannabinum L. var. pubescens (Mitchell) A. DC.
Apocynum sibiricum Jacq.
Trachelospermum difforme (Walt.) Gray

ASCLEPIADACEAE

Asclepias tuberosa L. var. interior (Woodson) Shinners
Asclepias verticillata L.
Asclepias viridiflora Raf.
Asclepias purpurascens L.

Asclepias syriaca L. var. syriaca
Asclepias syriaca L. var. kansana (Vail) Palmer & Steyerm.
Asclepias quadrifolia Jacq.
Asclepias variegata L.
Asclepias exaltata L.
Asclepias perennis Walt.
Asclepias incarnata L.
Matelea gonocarpa (Walt.) Shinners
Cynanchum laeve (Michx.) Pers.

CONVOLVULACEAE

Convolvulus arvensis L.
Calystegia sepium (L.) R. Br. var. americana (Sims) Mohlenbr.
Ipomoea coccinea L.
Ipomoea pandurata (L.) G.F.W. Mey.
Ipomoea hederacea (L.) Jacq.
Ipomoea lacunosa L.
Ipomoea purpurea (L.) Roth
Cuscuta cuspidata Engelm.
Cuscuta compacta Juss.
Cuscuta polygonorum Engelm.
Custuta cephalanthi Engelm.
Cuscuta gronovii Willd.
Cuscuta pentagona Engelm.
Cuscuta campestris Yuncker

POLEMONIACEAE

Polemonium reptans L.
Phlox bifida Beck var. bifida
Phlox bifida Beck var. stellaria (Gray) Wherry
Phlox divaricata L. ssp. laphamii (Wood) Wherry
Phlox pilosa L.
Phlox paniculata L.
Phlox glaberrima L. ssp. interior (Wherry) Wherry

HYDROPHYLLACEAE

Hydrolea uniflora Raf.
Hydrophyllum appendiculatum Michx.
Hydrophyllum canadense L.
Hydrophyllum virginianum L.
Phacelia purshii Buckley
Phacelia ranunculacea (Nutt.) Const.
Phacelia bipinnatifida Michx.

BORAGINACEAE

Mertensia virginica (L.) Pers.
Heliotropium indicum L.
Cynoglossum virginianum L.
Cynoglossum officinale L.
Hackelia virginiana (L.) I.M. Johnston
Myosotis virginica (L.) BSP. var. virginica
Myosotis virginica (L.) BSP. var. macrosperma (Engelm.) Fern.
Lithospermum arvense L.
Lithospermum latifolium Michx.
Lithospermum canescens (Michx.) Lehm.

VERBENACEAE

Lippia lanceolata Michx.
Verbena canadensis Britt.
Verbena bracteata Lag. & Rodr.
Verbena simplex Lehm.
Verbena stricta Vent.
Verbena hastata L.
Verbena urticifolia L.
Verbena Xillicita Moldenke

PHRYMACEAE

Phryma leptostachya L.

LABIATAE

Isanthus brachiatus (L.) BSP.
Mentha arvensis L. var. arvensis
Mentha arvensis L. var. villosa (Benth.) S.R. Steward
Mentha spicata L.
Mentha Xpiperita L.
Lycopus americanus Muhl.
Lycopus virginicus L.
Lycopus rubellus Moench var. rubellus
Lycopus rubellus Moench var. arkansanus (Fries.) Benner
Teucrium canadense L. var. virginicum (L.) Eat.
Scutellaria nervosa Pursh
Scutallaria parvula Michx.
Scutellaria lateriflora L.
Scutellaria ovata Hill var. ovata
Scutellaria ovata Hill var. versicolor (Nutt.) Fern.
Scutellaria ovata Hill var. rugosa (Wood) Fern.
Scutellaria elliptica Muhl.
Scutellaria incana Biehler
Marrubium vulgare L.
Cunila origanoides (L.) Britt.
Monarda bradburiana Beck
Monarda fistulosa L.
Blephilia ciliata (L.) Benth.
Blephilia hirsuta (Pursh) Benth.
Collinsonia canadensis L.
Hedeoma hispida Pursh
Hedeoma pulegioides (L.) Pers.
Salvia lyrata L.
Pycnanthemum pycnanthemoides (Leavenw.) Fern.
Pycnanthemum incanum (L.) Michx.
Pycnanthemum albescens Torr. & Gray
Pycnanthemum tenuifolium Schrad.
Pycnanthemum pilosum Nutt.
Agastache nepetoides (L.) Ktze.
Nepeta cataria L.

Glecoma hederacea L. var. micrantha Moricand
Lamium amplexicaule L.
Lamium purpureum L.
Stachys palustris L. var. homotricha Fern.
Stachys tenuifolia Willd. var. tenuifolia
Stachys tenuifolia Willd. var. hispida (Pursh) Fern.
Stachys hyssopifolia Michx. var. ambigua Gray
Leonurus cardiaca L.
Perilla frutescens L.
Physostegia virginiana (L.) Benth.
Prunella vulgaris L. var. vulgaris
Prunella vulgaris L. var. lanceolata (Bart.) Fern.

SOLANACEAE

Solanum carolinense L.
Solanum americanum Mill.
Datura stramonium L.
Physalis angulata L.
Physalis pendula Rydb
Physalis subglabrata Mack. & Bush
Physalis pruinosa L.
Physalis virginiana Mill.
Physalis heterophylla Nees var. heterophylla
Physalis heterophylla Nees var. ambigua (Gray) Rydb.
Physalis pubescens L.
Physalis lanceolata Michx.

SCROPHULARIACEAE

Veronicastrum virginicum (L.) Farw.
Veronica peregrina L.
Veronica arvensis L.
Gratiola neglecta Torr.
Gratiola virginiana L.
Lindernia anagallidea (Michx.) Pennell
Lindernia dubia (L.) Pennell var. dubia
Lindernia dubia (L.) Pennell var. riparia (Raf.) Fern.
Penstemon tubaeflorus Nutt.
Penstemon digitalis Nutt.
Penstemon alluviorum Pennell
Penstemon calycosus Small
Penstemon pallidus Small
Penstemon hirsutus (L.) Willd.
Pedicularis canadensis L.
Gerardia flava L.
Gerardia gattingeri Small
Gerardia skinneriana Wood
Gerardia purpurea L.
Gerardia tenuifolia Vahl
Seymeria macrophylla Nutt.
Bacopa rotundifolia (Michx.) Wettst.
Mimulus alatus Ait.
Mimulus ringens L.
Scrophularia marilandica L.
Verbascum thapsus L.
Verbascum blattaria L.

BIGNONIACEAE

Campsis radicans (L.) Seem.

OROBANCHACEAE

Epifagus virginiana (L.) Bart.
Orobanche uniflora L.

LENTIBULARIACEAE

Utricularia gibba L.
Utricularia vulgaris L.

ACANTHACEAE

Justicia americana (L.) Vahl
Ruellia humilis Nutt.
Ruellia pedunculata Torr.
Ruellia strepens L.

PLANTAGINACEAE

Plantago aristata Michx.
Plantago pusilla Nutt.
Plantago lanceolata L.
Plantago virginica L.
Plantago rugelii Dcne.

RUBIACEAE

Cephalanthus occidentalis L. var. occidentalis
Cephalanthus occidentalis L. var. pubescens Raf.
Galium circaezans Michx.
Galium lanceolatum Torr.
Galium pilosum Ait.
Galium triflorum Michx.
Galium aparine L.
Galium tinctorium L.
Galium trifidum L.
Galium concinnum Torr. & Gray
Galium obtusum Bigel.
Diodia virginica L.
Diodia teres Walt.
Spermacoce glabra Michx.
Houstonia minima Beck
Houstonia pusilla Schoepf
Houstonia nigricans (Lam.) Fern.
Houstonia purpurea L. var. calycosa Gray
Houstonia longifolia Gaertn. var. longifolia
Houstonia longifolia Gaertn. var. tenuifolia (Nutt.) Wood
Houstonia canadensis Willd.

CAPRIFOLIACEAE

Sambucus canadensis L.
Lonicera japonica Thunb.

Symphoricarpos obriculatus Moench
Viburnum rufidulum Raf.
Viburnum prunifolium L.
Viburnum recognitum Fern.
Triosteum angustifolium L.
Triosteum perfoliatum L.
Triosteum illinoense (Wieg.) Rydb.

VALERIANACEAE

Valerianella radiata (L.) Dufr.

CUCURBITACEAE

Cucurbita pepo L. var. ovifera (L.) Alef.
Sicyos angulatus L.

CAMPANULACEAE

Specularia biflora (R. & P.) Fisch. & Mey.
Specularia perfoliata (L.) A. DC.
Campanula americana L.
Lobelia cardinalis L.
Lobelia siphilitica L.
Lobelia puberula Michx.
Lobelia inflata L.
Lobelia spicata Lam. var. spicata
Lobelia spicata Lam. var. leptostachys (A. DC.) Mack. & Bush

COMPOSITAE

Polymnia canadensis L.
Polymnia uvedalia (L.) L.
Silphium perfoliatum L.
Silphium integrifolium Michx.
Parthenium integrifolium L.
Iva annua L.
Ambrosia bidentata Michx.
Ambrosia trifida L.
Ambrosia artemisiifolia L.
Xanthium strumarium L. var. canadensis (Mill.) Torr. & Gray
Xanthium strumarium L. var. glabratum (DC.) Cronq.
Heliopsis helianthoides (L.) Sweet
Eclipta alba (L.) Hassk.
Rudbeckia triloba L.
Rudbeckia hirta L.
Rudbeckia bicolor Nutt.
Echinacea pallida (Nutt.) Nutt.
Ratibida pinnata (Vent.) Barnh.
Helianthus annuus L.
Helianthus rigidus (Cass.) Desf.
Helianthus microcephalus Torr. & Gray
Helianthus decapetalus L.
Helianthus divaricatus L.
Helianthus strumosus L.
Helianthus grosseserratus Martens
Helianthus mollis Lam.
Helianthus tuberosus L. var. tuberosus
Helianthus tuberosus L. var. subcanescens Gray
Helianthus hirsutus Raf.
Verbesina helianthoides Michx.
Verbesina alternifolia (L.) Britt.
Coreopsis palmata Nutt.
Coreopsis tripteris L.
Bidens cernua L.
Bidens coronata (L.) Britt.
Bidens aristosa L. var. aristosa
Bidens aristosa L. var. retrorsa (Sherff) Wunderlin
Bidens connata Muhl.
Bidens comosa (Gray) Wieg.
Bidens bipinnata L.
Bidens frondosa L.
Bidens vulgata Greene
Bidens discoidea (Torr. & Gray) Britt.
Helenium amarum (Raf.) Rock
Helenium autumnale L.
Helenium flexuosum Raf.
Solidago graminifolia (L.) Salisb.
Solidago ridiga L.
Solidago caesia L.
Solidago flexicaulis L.
Solidago bicolor L. var. bicolor
Solidago bicolor L. var. concolor Torr.
Solidago buckleyi Torr. & Gray
Solidago missouriensis Nutt.
Solidago juncea Ait.
Solidago speciosa Nutt.
Solidago gigantea Ait.
Solidago arguta Ait.
Solidago strigosa Small
Solidago boottii Hook.
Solidago ulmifolia Muhl.
Solidago drummondii Torr. & Gray
Solidago radula Nutt.
Solidago canadensis L.
Solidago nemoralis Ait.
Boltonia asteroides (L.) L'Her.
Aster anomalus Engelm.
Aster shortii Lindl.
Aster azureus Lindl.
Aster cordifolius L.
Aster sagittifolius Wedem. var. sagittifolius
Aster sagittifolius Wedem. var. drummondii (Lindl.) Shinners
Aster novae-angliae L.
Aster oblongifolius Nutt.
Aster patens Ait.
Aster laevis L.
Aster pilosus Willd.
Aster ericoides L. var. ericoides
Aster ericoides var. prostratus (Ktze.) Blake
Aster vimineus Lam.
Aster praealtus Poir.
Aster turbinellus Lindl.
Aster ontarionis Wieg.
Aster lateriflorus (L.) Britt.

Aster simplex Willd.
Erigeron pulchellus Michx.
Erigeron philadelphicus L.
Erigeron annuus (L.) Pers.
Erigeron strigosus Muhl.
Erigeron divaricatus Michx.
Erigeron canadensis L.
Anthemis cotula L.
Achillea millefolium L. var. millefolium
Achillea millefolium L. var. lanulosa (Nutt.) Piper
Matricaria matricarioides (Less.) Porter
Chrysanthemum leucanthemum L.
Artemisia annua L.
Pluchea camphorata (L.) DC.
Antennaria plantaginifolia (L.) Richards. var. plantaginifolia
Antennaria plantaginifolia (L.) Richards. var. ambigens (Greene) Cronq.
Gnaphalium purpureum L.
Gnaphalium obtusifolium L.
Erechtites hieracifolia (L.) Raf.
Cacalia atriplicifolia L.
Cacalia muhlenbergii (Sch.-Bip.) Fern.
Senecio aureus L.
Senecio glabellus Poir.
Eupatorium purpureum L.
Eupatorium coelestinum L.
Eupatorium incarnatum Walt.
Eupatorium serotinum Michx.
Eupatorium rugosum Houtt.
Eupatorium altissimum L.
Eupatorium perfoliatum L.
Eupatorium sessilifolium L.
Brickellia eupatorioides (L.) Shinners
Liatris scabra (Greene) K. Schum.
Liatris cylindracea Michx.
Liatris squarrosa (L.) Michx.
Liatris spicata (L.) Willd.
Liatris aspera Michx.
Vernonia missurica Raf.
Vernonia fasciculata Michx.
Vernonia gigantea (Walt.) Trel.
Elephantopus carolinianus Willd.
Arctium minus (Hill) Bernh.
Carduus nutans L.
Cirsium vulgare (Savi) Tenore
Cirsium discolor (Muhl.) Spreng.
Cirsium altissimum (L.) Spreng.
Centaurea cyanus L.
Cichorium intybus L.
Krigia dandelion (L.) Nutt.
Krigia biflora (Walt.) Blake
Krigia virginica (L.) Willd.
Krigia oppositifolia Raf.
Taraxacum officinale Weber
Sonchus asper (L.) Hill
Lactuca canadensis L.
Lactuca serriola L.
Lactuca saligna L.
Lactuca floridana (L.) Gaertn.
Pyrrhopappus carolinianus (Walt.) DC.
Prenanthes altissima L.
Hieracium gronovii L.

EDITOR'S NOTE: The taxa in the above list are not underlined due to the reduction in print which would make them difficult to read.

LaRue-Pine Hills Endangered and Threatened Species

Twenty-nine species that are listed as endangered and threatened in Illinois (Natural Land Institute, 1981) are known to occur in the LaRue-Pine Hills area. They are:

Apios priceana
Asplenium bradleyi
Asplenium resiliens
Botrychium biternatum
Carex decomposita
Carex gigantea
Carex physorhyncha
Carya pallida
Eupatorium incarnatum
Glyceria arkansana
Heteranthera reniformis
Hydrastis canadensis
Hydrolea uniflora
Iris fulva
Panax quinquefolius
Panicum joori
Paspalum bushii
Pinus echinata
Polygonum longistylum
Ptilimnium costatum
Ptilimnium nuttallii
Puccinellia pallida
Pycnanthemum albescens
Quercus phellos
Rubus enslenii
Sagittaria longirostra
Scirpus verecundus
Solidago arguta
Sparganium chlorocarpum

Literature Cited

ASHBY, W.C. & R.W. KELTING. 1963. Vegetation of the Pine Hills Field Station in southwestern Illinois. Trans. Illinois State Acad. Sci. 56(4):188-201.

MOHLENBROCK, R.H. 1959. A Floristic Study of a Southern Illinois Swampy Area. Ohio Journal of Science 59(2):89-100.

_____. 1965. Guide to the Vascular Flora of Illinois. Southern Illinois University Press, Carbondale. 394 pp.

_____ & J.W. VOIGT. 1965. An annotated Checklist of vascular plants of the Southern Illinois University Pine Hills Field Station and Environs. Trans. Illinois Acad. Sci. 58(4):268-301.

NATURAL LAND INSTITUTE. 1981. Endangered and threatened vertebrate animals and vascular plants of Illinois. Ill. Dept. Conserv. 189 pp.

NATURAL HISTORY BIBLIOGRAPHY OF LARUE-PINE HILLS

Robert H. Mohlenbrock[1]

ALTIG, R. 1967. Food of Siren intermedia nettingi in a spring-fed swamp in southern Illinois. American Midland Naturalist 76: 239-240.

ANONYMOUS. 1973. LaRue-Pine Hills Ecological Area. Outdoor Illinois 12(5):32-36.

_____. 1978. The spring cavefish. Illinois Natural History Survey Report 178:1-2.

ASHBY, W.C. & R.W. KELTING. 1963. Vegetation of the Pine Hills Field Station in southwestern Illinois. Transactions of the Illinois Academy of Science 56:188-201.

BANDONI, R.J. & J.D. PARSONS. 1966. Some aquatic phycomycetes from the Pine Hills. Transactions of the Illinois Academy of Science 59:91-94.

BOYD, J.A., B.M. BURR, L.M. PAGE, & P.W. SMITH. 1977. A study of threatened and/or unique fishes within the boundaries of the Shawnee National Forest of southern Illinois. Illinois Natural History Survey and Eastern Region, United States Forest Service. 30 pp.

BRYANT, W.S. 1969. Ecological aspects of small mammals of the Pine Hills area. Research paper, Southern Illinois University, Carbondale. 13 pp.

BURR, B.M. 1977. The bantam sunfish, Lepomis symmetricus: Systematics and distribution and life history in Wolf Lake, Illinois. Illinois Natural History Survey Bulletin 31:437-466.

[1]Robert H. Mohlenbrock is Professor of Botany at Southern Illinois University, Carbondale.

CRIM, J.A. 1961. The habitat of the woodrat in southern Illinois. Master's thesis, Southern Illinois University, Carbondale. 99 pp.

ESTES, E.T. 1970. The dendrochronology of black oak (Quercus velutina Lam.), white oak (Quercus alba L.), and shortleaf pine (Pinus echinata Mill.) in the central Mississippi valley. Ecological Monographs 40:295-316.

EVERS, R.A. & L.M. PAGE. 1977. Some unusual natural areas of Illinois. Illinois Natural History Survey Biological Notes 100. 47 pp.

GARTON, J.S., E.W. HARRIS, & R.A. BRANDON. 1970. Descriptive and ecological notes on Natrix cyclopion in Illinois. Herpetologica 26:454-461.

GORDON, W.M. 1963. The cottonmouth (Ancistrodon piscivorus leucostoma Troost) at Pine Hills, Union County, Illinois. Master's thesis, Southern Illinois University, Carbondale. 57 pp.

GRADY, M.M. 1975. Systematics and ecology of the algae of a swamp pond, LaRue Pine Hills Ecological Area, Shawnee National Forest, Illinois. Journal of Phycology 11 (Supplement):4.

GUNNING, G.E. & W.M. LEWIS. 1955. The fish population of a spring-fed swamp in the Mississippi bottoms of southern Illinois. Ecology 36:552-558.

HOLST, R.W. 1972. Studies on some aspects of the growth and nitrogen metabolism of Lemna trisulca L. in culture. Master's thesis, Southern Illinois University, Carbondale. 51 pp.

HOWELL, A.H. 1910. Notes on mammals of the Middle Mississippi valley, with a description of a new woodrat. Proceedings of the Biological Society of Washington 22:23-33.

JENIO, F. 1972. The Gammarus of Elm Spring, Union County, Illinois (Amphipoda:Gammaridae). Ph.D. dissertation, Southern Illinois University, Carbondale. 183 pp.

JENSSEN, T.A. 1968. Some morphological and behavioral characteristics of an intergrade population of the green frog, Rana clamitans, in southern Illinois. Transactions of the Illinois Academy of Science 61:252-259.

_____ & W.D. KLIMSTRA. 1966. Food habits of the green frog, Rana clamitans, in southern Illinois. American Midland Naturalist 76:169-182.

KEISER, E.D. 1958. The green water snake in Illinois. Herpetologica 13:260.

KILKUS, P.A. 1977. Cover typing a proposed research natural area for southern Illinois, with an in depth approach to method evaluation. Master's thesis, Southern Illinois University, Carbondale.

KLIMSTRA, W.D. 1959. Food habits of the cottonmouth in southern Illinois. Chicago Academy of Science Natural History Miscellany 168. 8 pp.

_____. 1969. Mammals of the Pine Hills-Wolf Lake-LaRue Swamp complex. Chicago Academy of Science Natural History Miscellany 188. 10 pp.

MCPHERSON, J.E. 1974. The first record in Illinois of Aelia americana (Hemiptera:Pentatomidae). Transactions of the Illinois Academy of Science 67:151.

_____. 1976. Notes on the biology of Cosmopepla bimaculata (Hemiptera:Pentatomidae) in southern Illinois. Transactions of the Illinois Academy of Science 69:362-366.

_____ & J.P. CUDA. 1974. The first record in Illinois of Nezara viridula (Hemiptera:Pentatomidae). Transactions of the Illinois Academy of Science 67:461-462.

_____ & R.H. MOHLENBROCK. 1976. A list of the Scutelleroidea of the LaRue-Pine Hills Ecological Area with notes on biology. Great Lakes Entomologist 9:125-169.

MOHLENBROCK, R.H. 1959. A floristic study of a southern Illinois swampy area. Ohio Journal of Science 59:89-100.

_____ & J.H. ENGH. 1964. Ferns and fern allies of the Pine Hills Field Station and environs. American Fern Journal 54(7):25-38.

_____ & J.W. VOIGT. 1965. An annotated checklist of vascular plants of the Southern Illinois University Pine Hills Field Station and environs. Transactions of the Illinois Academy of Science 58:268-301.

MORAN, R.L. 1972. Effects of a surface mat of vegetation upon the energetics of a swamp pond. Master's thesis. Southern Illinois University, Carbondale. 43 pp.

MORRISON, M. 1977. Bird finding - LaRue-Pine Hills. Illinois Audubon Bulletin 179:20-21.

NAWROT, J. 1974. The southern Illinois woodrat: an endangered species. Cooperative Wildlife Research Laboratory, Southern Illinois University, Carbondale. 101 pp.

_____ & W.D. KLIMSTRA. 1976. Present and past distribution of the endangered southern Illinois woodrat (Neotoma floridana illinoensis). Chicago Academy of Science Natural History Miscellany 196. 12 pp.

POELLOT, S.L. 1968. Vegetational analysis of the Pine Hills Field Station. Master's thesis, Southern Illinois University, Carbondale.

ROSSMAN, D.A. 1960. Herpetological survey of the Pine Hills area of southern Illinois. Quarterly Journal of the Florida Academy of Science 22:207-225.

SHADE, H.I. 1972. The characterization of the ultraviolet absorbing-dissolved matter in the Pine Hills-LaRue Swamp. Master's thesis, Southern Illinois University, Carbondale. 53 pp.

SKOREPA, A.C. 1964. A survey of the lichens of southern Illinois. Master's thesis, Southern Illinois University, Carbondale.

SMITH, P.W. & N.W. WELCH. 1978. A summary of the life history and distribution of the spring cavefish, Chologaster agassizi Putnam, with population estimates for the species in southern Illinois. Illinois Natural History Survey Bulletin Notes 104. 8 pp.

TAYLOR, C.W. & R.H. MOHLENBROCK. 1977. Asplenium x herb-wagneri: a collective epithet for A. pinnatifidum x trichomanes. American Fern Journal 67:33-67.

TURNER, L. 1936. The status of the southern short-leaf pine in the northwestern Ozark region. Transactions of the Illinois Academy of Science 28:115-116.

U. S. FOREST SERVICE. 1970. Management plan, LaRue-Pine Hills Ecological Area, Shawnee National Forest, Illinois. Shawnee National Forest, Harrisburg, Illinois. 31 pp.

WAGNER, W.H., JR. & F.S. WAGNER. 1969. A new natural hybrid in the Appalachian *Asplenium* complex and its taxonomic significance. Brittonia 21:178-186.

WEIK, K.L. 1967. A revision of the genus *Phacus* Dujardin in Illinois. Ph.D. dissertation, Southern Illinois University, Carbondale. 237 pp.

_____ & R.H. MOHLENBROCK. 1963. Notes on the algal flora of Illinois II. The genus *Trachelomonas* Ehrenberg of the Pine Hills. Union County, Illinois. Transactions of the American Microscopical Society 82:381-390.

WEISE, J.G. 1953. The life cycle and ecology of *Gammarus troglophilus* Hubricht and Mackin. Master's thesis, Southern Illinois University, Carbondale. 52 pp.

_____. 1957. The spring cave-fish, *Chologaster papilliferus*, in Illinois. Ecology 38:195-204.

WEST, K.A. 1976. Poroid fungi detrimental to pine in southwestern Illinois. Transactions of the Illinois Academy of Science 69:315-326.

WUNDERLIN, T.F.H. 1968. A survey of the freshwater algae of Union County, Illinois. Master's thesis, Southern Illinois University, Carbondale.

BACK ISSUES AVAILABLE

ERIGENIA: 1 August 1982: PLANT COLLECTOR'S GUIDE (Why Collect Plant Specimens; Where to Collect Plants; The Ethics of Plant Collecting Plant Specimens, An Outline; An Illustrated Glossary of Botanical Terms) 44p.

PRICE: $2.50 including postage

ERIGENIA: 2 April 1983: GEOLOGY OF SOUTHERN ILLINOIS (Paleozoic Life and Climates of Southern Illinois; Field Log to the Devonian, Mississippian, and Pennsylvanian Systems of Jackson and Union Counties, Illinois; Landforms of the Natural Divisions of Illinois; The Soils of Southern Illinois) 68p

PRICE: $3.50 including postage

ERIGENIA: 3 December 1983: ILLINOIS FLORA UPDATE (New Distribution Data for Illinois Vascular Plants; Additions to the Illustrated Flora of Illinois II. Ferns; Nomenclatural Equivalencies in the Illinois Flora I. Monocots) 88p.

PRICE: $4.50 including postage

ERIGENIA: 4 August 1984: SOUTHERN ILLINOIS PRAIRIES (The Meaning, Experience and Dimensions of Prairie; The Prairies of Southern Illinois; On the Origin and Maintenance of La Grande Prairie of Illinois; Original Prairies in Southern Illinois; The Selection of Appropriate Species for Prairie Landscaping of the Home) 52p.

PRICE: $3.00 including postage

ERIGENIA: 5 February 1985: Additional copies of this issue are available for:

PRICE: $4.50 including postage

Make checks payable to: S.I.N.P.S. and send to: Southern Illinois Native Plant Society, Dept. of Botany, Southern Illinois University, Carbondale, Illinois 62901.

RECENT DEVELOPMENTS IN *Thismia americana* N.E. PFEIFFER

Robert H. Mohlenbrock[1]

When I became interested in the Illinois flora as a high school junior, I was fascinated by the story about a plant called *Thismia americana*, a member of a tropical and subtropical family of flowering plants, that had been found in Chicago in 1912 and 1913 and not seen anywhere in the world since.

Later, as a doctoral student doing research at the Missouri Botanical Garden in St. Louis, I saw my first specimen of *Thismia americana* preserved in little vials and stored in a steel cabinet on the second floor of the old herbarium building. Knowing my intense interest in the Illinois flora, my major professor, Dr. Robert E. Woodson, Jr., presented me with one of the vials that contained two specimens of *Thismia americana*.

For thirty years these little plants pickled in glycerine have accompanied me on speaking engagements all across the country and have made guest appearances at every botany class I have taught at Southern Illinois University. Thousands of people have become acquainted with the story of *Thismia* that I pieced together from the literature.

I recounted the story as the lead chapter in my "Where Have All the Wildflowers Gone?" (Mohlenbrock, 1983). I repeat the story here in order to set the stage for a remarkable and unexpected development in the *Thismia* story.

> "It was overcast in Chicago when Norma Pfeiffer awoke that August 1 morning in 1912, not a suitable day for a field trip, but Miss Pfeiffer had been planning for several days to visit a patch of prairie south of the University of Chicago campus to look for material suitable for her research. Little did she know that by the time the sun would finally glide from behind the broken cloud cover at noon

[1]Robert H. Mohlenbrock is Professor of Botany at Southern Illinois University, Carbondale.

that she would make one of the most remarkable plant discoveries in the history of botany.

"By midmorning the young botanist, who had turned twenty-three earlier in the year, arrived at her destination, a flat, open prairie rather densely covered with vegetation of varying heights. She slowly made her way through waist-high tussocks of black-eyed Susan, thoroughwort, and various kinds of goldenrods, kneeling occasionally to push aside these coarse herbaceous stems to observe what lay at the surface of the soil. Several low-growing mosses were crowded close together in the shade provided by the goldenrods, and an occasional filmy strand of a small clubmoss, or Selaginella, hugged the soil. In damper areas, the handsome blue iris was giving way to the pink of the swamp milkweed.

"Suddenly Pfieffer observed an astonishing sight. Lying between several small mounds of mosses were tiny white to pastel blue-green swellings, appearing to have emerged recently from the soil. The largest of these was about one-fourth of an inch tall above the ground and of about equal size across. As she parted the stems of the nearby herbs, Norma saw several more of these nearly transparent structures, some just barely visible above the soil. There were no leaves, and nothing about the specimens was deep green, which would have indicated the presence of chlorophyll.

"Hurriedly but carefully she removed the soil from around her discovery and prepared to take some of the material back to the laboratory, where she would attempt to identify it.

"The above-ground part of the specimen narrowed abruptly where it entered the soil and merged into nearly colorless, thread-like, horizontal roots. The idea that she had found an unusual transparent moss was dispelled by the unearthing of the root system.

"At the laboratory, the excitement grew as first one fellow student and then another each in turn proclaimed his astonishment and bewilderment at this plant. Professors John M. Coulter, Charles J. Chamberlain, and W.J.G. Land, considered among the most respected botanists of the country at that time, were puzzled by the find.

"Under the microscope the blue-green transparent mystery was observed to be a flower! The flower was tubular-shaped, with a raised ring around the top. Hanging from this ring to the inside of the tube were six tiny pollen-producing stamens. Above the opening of the ring, the blue-green petals were prolonged to form an arch.

"The flower was nothing at all like any other flower known in the Chicago area. The total absence of the green pigment chlorophyll was also mystifying, because only a relatively few flowering plants are nongreen.

"A search of the botanical literature in the University of Chicago library finally revealed that the little plant from the prairie south of the campus belonged to a tropical family of plants known as the Burmanniaceae, a group closely related to orchids. More precisely, the new plant was some type of _Thismia_. Of the fifteen kinds of _Thismia_ known in the world, none had ever been found before in North America, the nearest being several thousand miles from Chicago. What's more, all fifteen previously known Thismias grew in rich-loamed primeval forests, in regions of great rainfall.

"Having made such a remarkable discovery, Norma Pfeiffer and her professors made several trips back to the prairie for additional observations. By mid-September, some of the little flowers had developed into tiny fruits with minute seeds.

"Throughout the winter of 1912, Pfeiffer studied every aspect of her specimens. On July 1, 1913, she found more of this new plant in the same prairie. She surmised that the underground parts had overwintered. Her studies indicated that she had found a new species, which she named _Thismia americana_ in 1914.

"Botanists from all over the country have tried to relocate _Thismia americana_, including prominent scientists from the Field Museum and the nearby Morton Arboretum. The prairie was replaced several years ago by an oil-tank storage area,

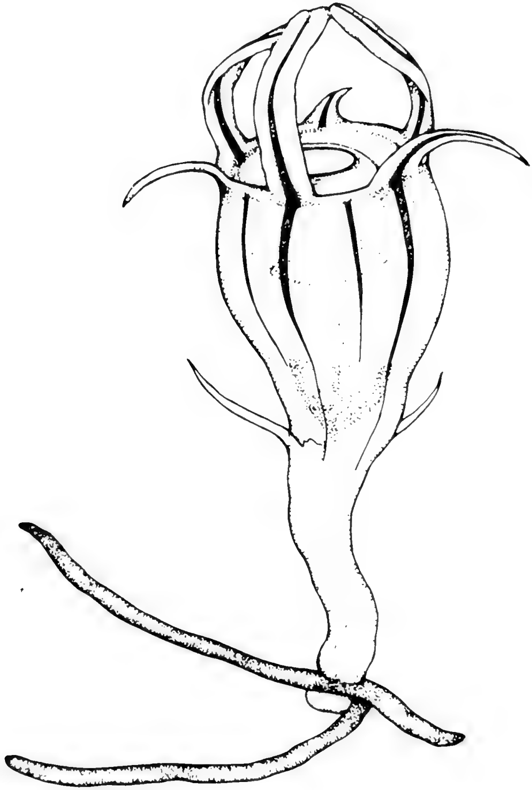


Figure 1. *Thismia americana* N. E. Pfeiffer. Habit, X5. (Illustration by Miriam W. Meyer, from *The Illustrated Flora of Illinois. Flowering Rush to Rushes*, by Robert H. Mohlenbrock, used by permission of the Southern Illinois University Press).

> yet every species of plant which Norma Pfeiffer indicated as growing with Thismia still occurs there. Less than one mile away, a similar habitat, known as Burnham Prairie, exists today, and Thismia may be hiding under the goldenrods there as well."

Early in September, 1984, while routinely reading my mail, I was astonished to open an envelope containing a letter from Norma Pfeiffer!! - yes, the same Norma Pfeiffer who made that startling discovery of Thismia back in 1912. As she said in her letter, "I bet you had no idea I was still on this side of the River Styx".

After thanking me for my "complimentary remarks on Thismia", Miss Pfeiffer offered some details of her discovery that had never before been publicized. I quote from her letter:

> "In 1912, I was planning to teach botany at the University of North Dakota. Another graduate student, Florence A. McCormick, planned to teach at an eastern college. Neither of us knew what equipment or supplies would be available at our respective openings; so we took several collecting trips together to augment out plant supplies.

> "This particular summer day, we went to 'Solvay', a location where University of Chicago classes in 'Local Flora' sometimes went for the prairie flora. As an assistant in that course, I had been there earlier. But this was the first time I was down on my hands and knees, collecting liverworts on the damp soil shaded by the prairie flora. Suddenly I saw my first specimen of Thismia, a tiny flower half imbedded in the soil. I showed it to Florence, who said, 'Let's tear it up!' I prevented that and looked for other specimens. I wanted to take an adequate supply back to the Botany Department.

> "When the knowledgeable staff members, Dr. Charles J. Chamberlain, and Dr. W. J. G. Land, said it was new to them, we agreed that a sample should be sent to Dr. John Merle Coulter who was vacationing in Indiana. The reply came promptly. With all his knowledge of world flora, he had never seen it. His response - 'Go to it' - meant a new thesis subject for me.

"I went out to Solvay several times thereafter, usually alone, but once with my sister, Wanda M. Pfeiffer, and once with E. Maris Harvey, a good friend also seeking his doctorate in botany. I knew the destruction a group could wreak. So did the botany department which ceased taking classes there, a nice courtesy.

"I looked for the plant beyond this first location, and once found a very few, about a third of a mile away, in the midst of Typha.

"This area as I recall is between beach ridges of the prehistoric lake that preceded Lake Michigan long ago.

"I collected during August that year until I was sure I had enough material for a complete study. Sometimes I took more soil than necessary, to be sure not to destroy underground parts. I prepared and imbedded material to be worked on after I started teaching. I also took some live material and tried to culture the tiny seed with methods used in germinating orchid seed. Those attempts led nowhere.

"While I was still in Chicago, photographs of the specimens, were made with the help of Dr. Land. He was expert, very patient and thorough-going, so the results were excellent.

"In North Dakota, I used all the time I was free from earning my living to make preparations and study them. At the end of the school year in June, I hurried back to Chicago. The next morning, I went to the John Crerar Library in downtown Chicago. I went through the files in this fine library and soon had a good list of books to consult. Amusingly, the young clerk at the desk, on looking at the titles, asked, 'Are you a cross-word puzzle fan?'

"In time, I narrowed the search down to the family, Burmanniaceae, and eventually to the genus Thismia. This genus was originally named by Theodore Smith who wanted to use his name in the genus, but didn't like the sound of 'Smithia', so he turned the consonants around to 'Thismia'. I once heard a botanist say, 'It sounds like a Greek goddess.'

"This same year, 1913, I went out to Solvay and found Thismia still there. I showed the location to one other person, A. G. Vestal, an ecologist working for his doctorate under Dr. Harry Chandler Cowles, at the University of Chicago.

"The following year when I went out, I found a barn had been built on this particular area. Goodbye, Thismia.

"This was long before the day of 'Nature Conservancy', or I might have thought of buying the plot as a preserve.

"After the publication of my thesis in the Botanical Gazette, I gave explicit directions to personnel at the Field Museum. No one ever found or reported finding the plant.

"I deposited all the material, including the transparency photographs, slides from which I made the drawings for my thesis, at the Field Museum, after I had prepared vials of specimens in glycerine, for the big herbaria in the World. When the herbarium in Germany was destroyed by bombing during the war, we were able to replace it. I have had very cordial relations with the Curator at the Field Museum.

"As you know, Dr. J. M. Greenman was at the Field Museum before going to the Missouri Botanical Gardens. At the University of Chicago, he gave the lectures and I the laboratory work as a teaching assistant, in the Local Flora course. I submitted my Latin and English descriptions to him before publication. I was pleased that he made no change in the description of the new Thismia americana. I am fond of languages and had enough Latin so that with a good dictionary for scientific words in Latin, I was able to do a satisfactory job."

The circumstances surrounding Dr. Pfeiffer's discovery are truly fascinating. In addition, one surprising bit of new information surfaced when she wrote "I looked for the plant beyond the first location, and once found a very few, about a third of a mile away, in the midst of Typha." This is the first evidence that Thismia americana was found in a second location and the first report of it among cat-tails. Botanists may now rush to cat-tail stands in South Chicago in an attempt to relocate Thismia americana!!

Although the rest of Norma Pfeiffer's letter is not about Thismia, I believe her comments about Professor Greenman and her recent personal life should be published for historical documentation. Therefore, the remainder of her letter of September 19, 1984, follows:

"Dr. Greenman was one of the outstanding teachers I have had - very clear in his lectures and concise in his diction. I admired him greatly. I believe he thought I would make a good taxonomist, then he suggested that I should work on Dr. Engelmann's fine collection of Isoetes plus those acquired otherwise by the Missouri Botanical Gardens. That is how I came to do the study that led to the Isoetes monograph you so kindly mentioned.

"I had difficulty getting it typed when I returned to work. Yet I was eager to get the monograph published. I believe it was between the work of two typists that my acknowledgment to Dr. Greenman for his encouragement and helpful suggestions was omitted inadvertently. To my great regret, I failed to notice it at the time.

"Another extraneous matter about which you may be curious is how I came to live in Dallas. In 1978, I was living alone in Yonkers, retired from Boyce Thompson Institute for Plant Research. I was busy gardening, growing lilies and writing a series of articles on Great Names in Lilies, which were published in the North American Lily Society Yearbook.

"A Friday afternoon in April, 1978, I went to shop in Yonkers for Sunday dinner, as I was expecting a nephew'a family (five children) to have Sunday dinner with me. I had finished shopping and was going to my bus, crossing the main street. A careless young driver forgot the amber light between red and green, as he flirted with a girl. He stepped on the gas without even looking, and threw me to the pavement on the right side of my head and right shoulder. I was in a coma until midnight, in a strange hospital. But with brain scans, etc., the edict came that I must not live alone. A sister's progeny lived in Dallas, including a niece with grown children, and it seemed logical to come here and to this superior retirement village. With increasing years and more hospitalization, I now am more dependent physically, using a wheelchair or a walker according to the need. And I keep busy."

Cordially,

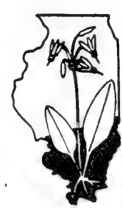
Norma E. Pfeiffer

Literature Cited

MOHLENBROCK, R. H. 1983. Where Have All the Wildflowers Gone? MacMillan Publishing Co., Inc., New York. 239 pp.

(EDITORIAL from page 2)
Two other additions occur in this issue of *Erigenia*. First, photographs appear in this issue for the first time and second, we would like to welcome Dave E. Mueller to our staff as Photography Editor.

PLEASE READ "NOTICE TO FUTURE CONTRIBUTORS" (page 69) AND "GUIDELINES FOR MANUSCRIPTS SUBMITTED TO *ERIGENIA* FOR PUBLICATION (REVISED 1985)" (inside back cover) IF YOU ARE INTERESTED IN CONTRIBUTING TO FUTURE ISSUES OF *ERIGENIA*.



BOOK REVIEW

A Guide To Prairie Restoration. William E. McClain. 1983. Illinois Department of Conservation, Springfield, Illinois. 24p. (paperback).

This is a very interesting little booklet which offers much useful information on prairie restoration. Although geared for large restorations, the hints and directions presented are useful for establishing any size restoration. Discussions of presettlement vegetation, prairie names, as well as the types of prairies, wet, mesic, and dry, lead off the booklet. Site selection is also described, suggesting that the location of a restoration be in an area which was historically prairie. Following the site selection, seed selection and storage of the seed are discussed. Two tables accompany this section, one provides propagation data for some prairie taxa while the other lists a number of prairie plants which are easily propagated from seed.

The discussion on seedbed preparation is useful on a general level but is written with the big restoration in mind. For example, the author states, "Plow and then disc the site . . ." (For smaller sites a rototiller will certainly do.)

The seeds of most prairie legumes have hard, thick coats and need to be weakened in order for germination to occur, a process known as scarification. Three methods of scarification are described, with mechanical scarification recommended. Legume seeds also should be inoculated with nitrogen-fixing bacteria. A table indicating the specific inoculum for a given prairie legume is provided.

The sections on seeding rates and planting methods discuss large scale restoration techniques and are of little use to the home prairie restoration. Transplanting techniques offered and the discussion on weed control are quite useful, however.

A good checklist and discussion of prescribed burning is presented, followed by an historical essay on the beauty of prairies in the 1840's. The "Literature Cited" and "Additional References" offer a useful list of publications for further information. A list of three commercial sources of Illinois prairie plant seeds follows.

- Mark W. Mohlenbrock

MISTLETOE AND ITS CHRISTMAS TRADITION

by Lawernce R. Stritch[1]

Christmas is a very special time of year. It is celebrated throughout the world in a myriad of ways. In the United States we are indeed fortunate that so many differing cultures have contibuted the best of their Christmas traditions to form our American Christmas celebration. The use of mistletoe (Phoradendron serotinum) is one such tradition that was brought to this land by our forefathers.

The word mistletoe comes from the Anglo-Saxon mistletan. Mistel is the diminutive of the German word mist, meaning dung, and tan is Anglo-Saxon, meaning twig. Its name is derived from its means of propagation and dispersal. Birds eat the sticky fruits, ingesting some and getting some of them stuck to their bills. Flying to another host tree the birds may either scrape their bills on a twig in order to remove the sticky fruits from their bills or they may empty their cloaca, depositing their droppings on a twig or branch. Thus the cycle will begin anew as a new tree is infected by this parasite.

In ancient times mistletoe was surrounded with superstition and mystery. As a plant that grew without roots in the tops of trees, it was treated as a divine gift from the gods. Because it was considered a divine gift it was likened to the soul. Since it remained green in winter when all the trees "died" mistletoe was considered the sign of eternal life; the spirit of the trees still lived.

Sacred to the druids of northern Europe, mistletoe was employed as an all-healer. It was used to guard homes against trolls, cure epilepsy, protected against witches and their spells, and ward off death in battle.

[1]Department of Botany, Southern Illinois University, Carbondale, Il 62901

Our tradition of hanging mistletoe throughout our homes at Christmas comes from Scandinavia. There it is considered the plant of peace. Legend has it that if enemies met under it they declared a truce for the day. From this custom has come the modern tradition of exchanging a kiss of peace with whoever is standing under a sprig of mistletoe.

American Mistletoe (Phoradendron serotinum) is the state flower of Oklahoma. During the winter months it was the only green plant the early settlers of the Cherokee Strip could find to place on the graves of their loved ones. In the southern part of the country it became part of the Christmas tradition because it could be found either in flower or fruit during late autumn and early winter. The southern tradition of using American Mistletoe to decorates one's home at Christmas spread north as emigrants from the northern United States sent sprigs of this Christmas plant back to relatives and friends to decorate their homes at Christmas.

There are two species of mistletoe found in the eastern United States and Canada. American Mistletoe, Phoradendron serotinum, is native to southern Illinois and the southeastern United States. In Illinois it is found growing in the tree tops of various bottomland hardwoods in the counties of St. Clair, Randolph, Jackson, Union, Alexander, Pulaski, Massac, Pope, Johnson, Williamson, Saline, Hardin, Galatin, White, Wayne, Wabash, Lawrence, Crawford, and Clark. Dwarf Mistletoe, Arceuthobium pusillum, is native to the boreal forest and northern hardwoods forest biomes, stretching from Newfoundland to Ontario, south to Nova Scotia, New England, northern New Jersey, northern Pennsylvania, Michigan, Wisconsin, and Minnesota.

These two species belong to the the Mistletoe family, the Loranthaceae, a family of approximately 300 tropical and temperate parasitic shrublets.

Key to the Loranthaceae of Eastern North America

1. Leaves broad, thick, greenish; drupe pulpy, globose......................1. Poradendron serotinum

1. Leaves reduced to tiny, greenish-brown scales; drupe dry, compressed.......2. Arceuthobium pusillum

1. Phoradendron serotinum (Raf.) Johnston

Dioecious shrubs, parasitic on the branches and trunks of flowering trees. Leaves evergreen, thick, leathery, opposite, simple, entire, elliptic to oblanceolate, glabrous, 2.0 to 7.0 cm long, 1.0 to 3.5 cm broad, stipules absent. Inflorescence an interupted spike, 0.5 to 6.0 cm long; flowers small, several to each fleshy bract. Calyx green, (2-) 3 (-4) lobed, united near the base; corolla absent; staminate flower: the stamen number equaling the number of calyx lobes, the sessile anther adnate to the base of each calyx lobe; pistillate flower: the calyx tube adnate to the ovary, the stigma sesille. Fruit a pulpy drupe, one-seeded, white.

2. Arceuthobium pusillum Peck

Dioecious, extremely small dwarf shrublets, parasitic chiefly upon black spruce (Picea mariana), rarely upon white spruce (Picea glauca), tamarack (Larix decidua), or white pine (Pinus strobus). Leaves evergreen, reduced to obtuse scales, opposite, 1.2 mm long, 1.0 mm broad. The inflorescences are scattered or clustered stems, 0.6 to 2.0 cm long (arising from the rhizomatous stems in the cambium of the host); flowers small, solitary in the axils of the scales. Calyx greenish-brown, 2 to 5 lobed, united near the base; corolla absent; staminate flower: stamen number equaling the number of calyx lobes, the sessile anther adnate to the base of the calyx lobe; pistillate flower: calyx 2-lobed, the lobes adnate to the ovary, stigma sessile. Fruit a dry drupe, one-seeded, greenish-brown.

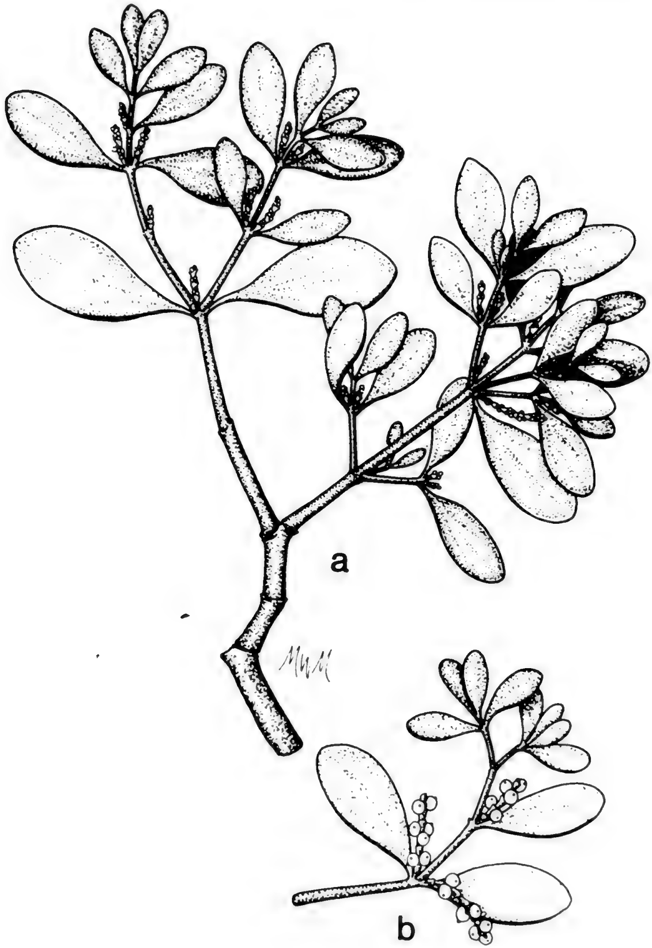


Figure 1. *Phoradendron serotinum* *(Raf.) Johnston. a. Branch of staminate plant, X 2/3. b. Branch of pistillate plant, X 2/3. (Illustrations by Mark W. Mohlenbrock).*

THE TAXONOMIC STATUS OF Panicum joori VASEY

Robert H. Mohlenbrock[1]

On August 4, 1969, while exploring in a deep cypress swamp in Johnson County in southern Illinois, John White collected a specimen of Panicum in a floodplain woods. Preliminary identification by use of Gray's Manual of Botany (Fernald, 1950) and the New Britton and Brown Illustrated Flora of the Northeastern United States (Gleason, 1952) led to Panicum commutatum Schultes. In 1976 a specimen referable to the same taxon was discovered by the author in a swampy woodland at LaRue-Pine Hills, Union County. Since Panicum commutatum in southern Illinois is a plant of dry, rocky woodlands, some doubt was cast on the identification of this lowland Panicum.

More intensive investigation of the characters of the plant revealed remarkably beaked spikelets. Specimens of P. commutatum, on the other hand, when examined in the herbarium of Southern Illinois University, were found to lack prominently beaked or even pointed spikelets. When the beaked specimens were "keyed out" in Chase (1951), they were identified as P. joori, a species previously unknown from Iliinois. Although the descriptions and illustrations in Hitchcock and Chase (1910) and Chase (1951) clearly show the beaked spikelet, no floras that were consulted utilized the beaked versus obtuse to acute spikelet to separate P. joori from P. commutatum.

Since Chase (1951), Fernald (1950), and Gleason (1952) all accord different treatments to these two taxa, an examination of material of Panicum commutatum and P. joori for a careful analysis was undertaken. Accordingly, specimens borrowed from the Missouri Botanical Garden have formed the basis of this investigation.

The type specimen of Panicum joori was collected by a physician, Dr. J. F. Joor, from along the banks of a creek near Baton Rouge, Louis-

---

[1]Robert H. Mohlenbrock is Professor of Botany at Southern Illinois University, Carbondale.

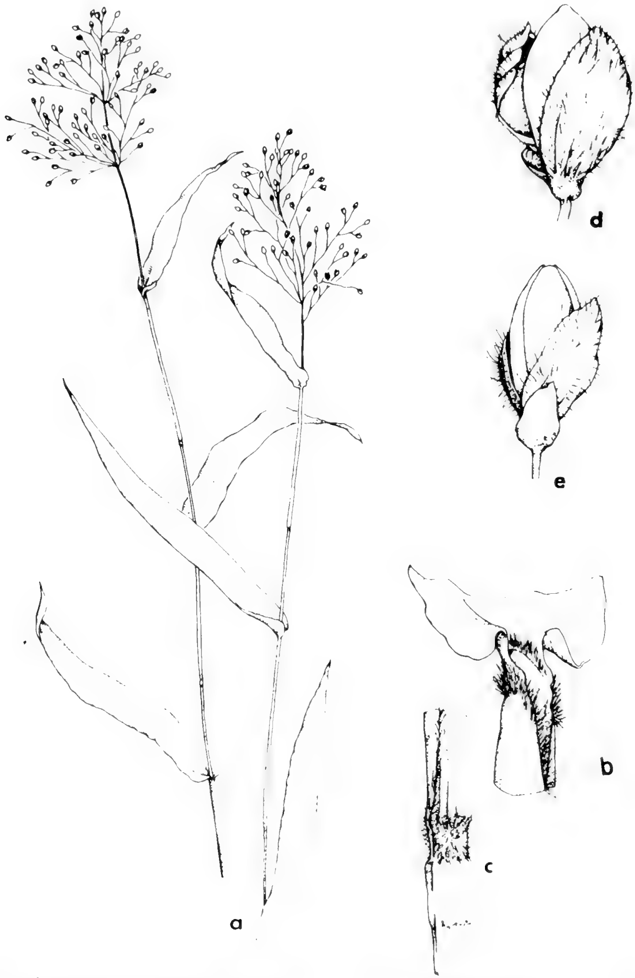


Figure 1. Panicum commutatum *Schult. var.* commutatum. *a. Upper part of plants, X ½. b. Sheath, with ligule, X 7½. c. Sheath and node, X 7½. d. Spikelet, front view, X 12½. e. Spikelet, back view, X 12½. (Illustrations by Miriam W. Meyer, from* The Illustrated Flora of Illinois. Grasses: Panicum to Danthonia, *by Robert H. Mohlenbrock, used by permission of the Southern Illinois University Press).*

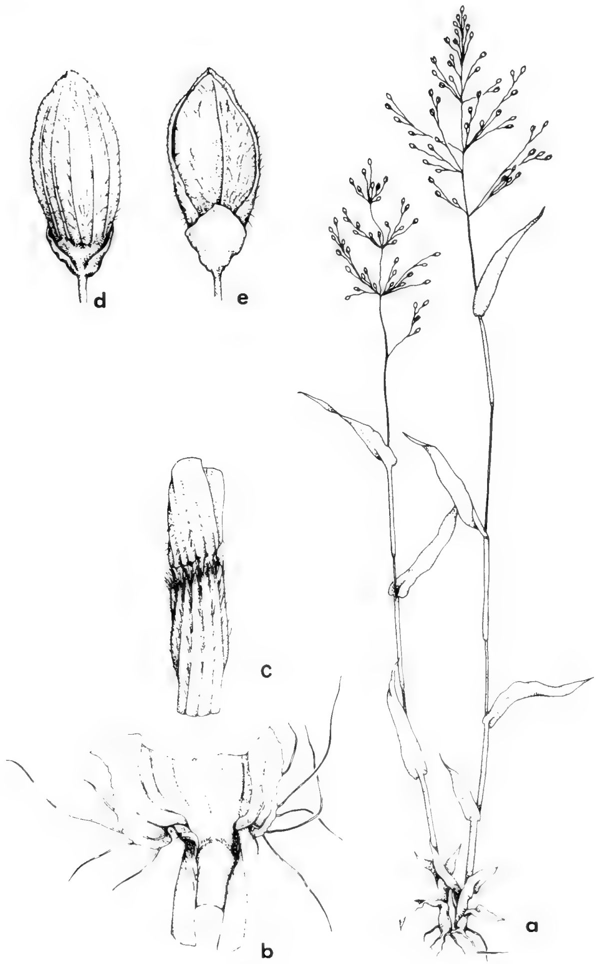


Figure 2. *Panicum commutatum* *Schult. var.* *ashei* *Fern. a. Habit, X ½. b. Sheath, with ligules, X 7½. c. Sheath and node, X 7½. d. Spikelet, front view, X 12½. e. Spikelet, back view, X12½. (Illustrations by Miriam W. Meyer, from* *The Illustrated Flora of Illinois. Grasses: Panicum to Danthonia,* *by Robert H. Mohlenbrock, used by permission of the Southern Illinois Universtiy Press).*

iana, on October 1, 1885. This, of course, is the autumnal form, but the features distinguishing this species from P. commutatum are apparent. An examination of an isotype (Joor 39) deposited in the Missouri Botanical Garden herbarium reveals the thin, falcate leaves and the abruptly acuminate-tipped spikelets about 3 mm long.

Fernald (1950) failed to place much reliance on the differences between P. commutatum and P. joori and accordingly reduced the latter to a variety of P. commutatum. In his enumeration of the differences which separate var. joori, Fernald does not mention the chief diagnostic difference of P. joori, namely the abruptly acuminate-tipped spikelets.

Gleason (1952) goes even further in his reduction of P. joori by placing it in synonymy with P. commutatum var. commutatum. Examination of material of both P. commutatum and P. joori leaves little doubt as to the distinctness of the two taxa.

It was inevitable in studying Panicum commutatum that a third taxon, known (erroneously) usually as Panicum ashei Pearson in Ashe or P. commutatum var. ashei Fern., became involved.

Chase (1951) maintains P. ashei as a distinct species, while Fernald (1950), Gleason (1952), and most other more recent workers accord it only varietal rank. An examination of the characters utilized to distinguish P. commutatum and P. ashei reveals that leaf width is the only consistently recorded difference. It is true that every specimen of P. ashei examined has a pubescent stem, while most specimens of P. commutatum have a glabrous stem, but a few hairy-stemmed plants of P. commutatum have been found.

Although there do not appear to be any very reliable characters which will distinguish P. ashei from P. commutatum, familiarity with these plants in the field indicates that P. ashei merits recognition in some rank. Since there are no good specific differences, varietal status for this taxon is recommended. Thus it should be known as P. commutatum var. ashei Fern.

On the other hand, P. joori differs from P. commutatum var. commutatum and P. commutatum var. ashei in several reliable characters - the thin, falcate, non-cordate blades and the larger, beaked spikelets, thereby substantiating the hypothesis that P. joori deserves the status of species.

Table I summarizes these taxa.

Table I. Summary of Major Characters

	P. commutatum	*P. commutatum* var. *ashei*	*P. joori*
culm	40-75 cm tall erect glabrous or puberulent	25-50 cm tall erect crisp-puberulent	20-55 cm tall spreading or ascending glabrous (rarely puberulent)
blades	firm 5-12 cm X 12-25 mm cordate-clasping base glabrous or puberulent above and below	firm 4-8 cm X 5-10 mm subcordate base glabrous above and below	thin 6-18 cm X 7-18 mm narrow to rounded base glabrous above and below
panicle	6-12 cm long	5-8 cm long	5-9 cm long
spikelets	2.6-2.8 X 1.3 mm obtuse softly puberulent	2.4-2.7 X 1.2-1.3 mm obtuse or subacute short-hairy	3.0-3.1 X 1.2-1.3 mm abruptly short-pointed pubescent
first glume	1/4 as long as spikelet acute or obtuse	1/3 as long as spikelet subacute	1/3-2/5 as long as spikelet acute
grain	2.2-2.3 X 1.2 mm ellipsoid	2.1 X 1/1 mm ellipsoid	2.4 X 1.2 mm ellipsoid

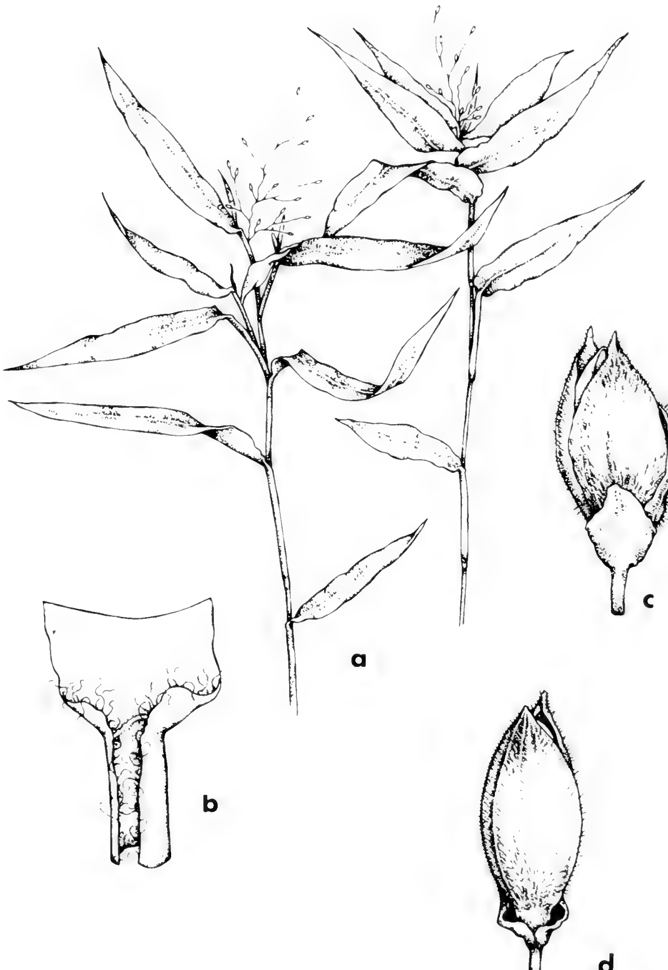


Figure 3. Panicum joori Vasey. a. Upper part of plants, X ½. b. Sheath, with ligule, X 5. c. Spikelet, front view, X 12½. d. Spikelet, back view, X 12½. (Illustrations by Miriam W. Meyer, from The Illustrated Flora of Illinois. Grasses: Panicum to Danthonia, by Robert H. Mohlenbrock, used by permission of the Southern Illinois University Press).

Key to Panicum commutatum and P. joori

1. Spikelets 2.4-2.8 mm long, obtuse to subacute; blades firm, cordate or subcordate at base. . . . . 1. P. commutatum

1. Spikelets more than 2.8 mm long, abruptly short-pointed; blades thin, narrow to slightly rounded at base. . . . . . . 2. P. joori

1. *Panicum commutatum* Schult. Mantissa 2:242. 1824.

Tufted perennial; culms erect, to 75 cm tall, glabrous to softly puberulent, usually purplish; sheaths glabrous to puberulent, short-ciliate; ligule up to 1 mm long; blades to 25 cm long, nearly as broad, loosely flowered, the branches spreading or ascending; spikelets 2.4-2.8 mm long, 1.2-1.3 mm broad, oblong-ellipsoid, obtuse to acute, glabrous to short-pubescent; second glume and sterile lemma subequal, nearly as long as the grain; grain 2.1-2.3 mm long, 1.1-1.2 mm broad, ellipsoid, minutely umbonate; autumnal form erect to reclining, branched, the blades somewhat reduced, the panicles greatly reduced.

Two varieties may be distinguished in the eastern United States.

1. Leaves to 25 mm broad, heart-shaped at base; spikelets 2.6-2.8 mm long. . . . . 1a. P. commutatum var. commutatum

1. Leaves to 10 mm broad, less heart-shaped at base; spikelets 2.4-2.7 mm long. . . . . 1b. P. commutatum var. ashei

1a. *Panicum commutatum* Schult. var. *commutatum*

Culms to 75 cm tall, glabrous or rarely softly puberulent, the nodes puberulent, often purplish; ligule less than 0.5 mm long; blades to 25 mm broad; panicle to 14 cm long; spikelets 2.6-2.8 mm long, 1.3 mm broad, obtuse; first glume 1/4 as long as the spikelet, triangular, obtuse to acute, more or less glabrous; grain 2.2-2.3 mm long, 1.2 mm broad; autumnal form erect or nearly so, the blades somewhat reduced, the panicles greatly reduced.

Panicum commutatum var. commutatum occurs primarily in dry woodlands. It ranges from Maine to Michigan, south to Texas and Florida.

This taxon is distinguished from var. ashei by its broader blades. It is distinguished from the broad-leaved P. boscii, P. ravenelii, and P. latifolium by its shorter spikelets, and from P. clandestinum by its lack of papillose pubescence.

1b. *Panicum commutatum* Schult. var. *ashei* Fern. Rhodora 36:83. 1934.

Culms wiry, to 50 cm tall, puberulent; ligule less than 1 mm long; blades to 10 mm broad, more or less cordate at the base; panicle to 8 cm long; spikelets 2.4-2.7 mm long, 1.2-1.3 mm broad, obtuse to subacute; first glume 1/3 as long as the spikelet, subacute, short-pubescent; grain 2.1 mm long, 1.1 mm broad; autumnal form erect to reclining, the blades scarcely reduced.

This variety grows predominantly in dry woodlands from Massachusetts to Michigan, south to Oklahoma and Florida.

Voss (1966) explains why this varietal name is not based on Panicum ashei Pearson in Ashe.

Although the width of the blades is strikingly different between var. ashei and var. commutatum, no other clear-cut differences can be found to merit specific segregation.

2. *Panicum joori* Vasey, U.S.D.A. Div. Bot. Bull. 8:31. 1889.

Panicum commutatum var. joorii (Vasey) Fern. Rhodora 39:388. 1937.

Tufted perennial; culms decumbent, to 50 cm tall, glabrous or nearly so, the lowest internodes purplish; sheaths glabrous, ciliate; ligule up to 1 mm long; blades to 1.5 cm broad, spreading to ascending, firm, glabrous except for some cilia near the base; panicle to 9 cm long, nearly as broad, loosely flowered, the branches spreading to ascending; spikelets 3.0-3.2 mm long, 1.2-1.3 mm broad, ellipsoid, abruptly short-pointed, pubescent; first glume about 1/3 as long as the spikelet, acute; second glume and sterile lemma papillose between the nerves, the sterile lemma conspicuously short-pointed; grain about 2.4 mm long, about 1.2 mm broad, ellipsoid, minutely umbonate; autumnal form not observed in Illinois but reportedly widely spreading with branching from all the nodes and with reduced upper blades and numerous, small, partly included panicles.

ILLINOIS FLORA UPDATE:

NEW DISTRIBUTION DATA FOR ILLINOIS VASCULAR PLANTS II

Robert H. Mohlenbrock[1]

Continued field and herbarium research following publication of Mohlenbrock and Ladd (1978) has resulted in many new vascular flora distributional data for Illinois. The records reported here are the result of research covering 1981 through 1983.

This paper is divided into two parts: a listing of additional distributional records for mapped taxa in Mohlenbrock and Ladd (1978) and a listing of taxa new to Illinois since the first report in this series (Mohlenbrock and Ladd, 1983). Species concepts and nomenclature follow Mohlenbrock and Ladd (1978). All records listed in this paper have been confirmed by the author.

Additional Distribution Records for Mapped Taxa

Acer ginnala: COOK. *Acer rubrum* var. *drummondii*: PERRY. *Achillea millefolium* var. *lanulosa*: UNION. *Acorus calamus*: ROCK ISLAND. *Agrimonia pubescens*: PERRY. *Agrimonia rostellata*: PERRY. *Agropyron subsecundum*: TAZEWELL, WINNEBAGO. *Agrostis scabra*: PERRY. *Agrostis tenuis*: PERRY. *Ailanthus altissima*: PERRY, ROCK ISLAND. *Albizia julibrissin*: PERRY. *Alnus glutinosa*: UNION. *Alopecurus aequalis*: POPE. *Amaranthus hybridus*: DEWITT, PERRY, VERMILION. *Amaranthus palmeri*: MADISON, ST. CLAIR. *Amaranthus retroflexus*: DEWITT, LOGAN. *Amelanchier interior*: JO-DAVIESS. *Ammannia auriculata*: PERRY, UNION. *Ampelopsis cordata*: PERRY. *Amphicarpa bracteata*: PERRY. *Amphicarpa bracteata* var. *comosa*: POPE. *Anagallis arvensis*: UNION. *Andropogon elliottii*: PERRY. *Antennaria neglecta*: CHRISTIAN, MOULTRIE. *Antennaria plantaginifolia*: PERRY. *Anthemis arvensis*: MADISON. *Anthriscus sylvestris*: LAKE. *Aplectrum hyemale*: MARION, PERRY. *Apocynum androsaemifolium*: SHELBY. *Aralia racemosa*: BUREAU. *Arctium minus*: MADISON. *Arctostaphylos uva-ursi* var. *coactilis*: TAZEWELL. *Arenaria serpyllifolia*: PERRY. *Aristida longespica*: PERRY.

[1]Robert H. Mohlenbrock is Professor of Botany at Southern Illinois University.

Aristida ramosissima: PERRY. Aristolochia serpentaria: PERRY. Aristolochia serpentaria var. hastata: MASSAC, UNION. Artemisia dracunculus: CASS, MASON, MORGAN. Artemisia ludoviciana: DEWITT. Asarum canadense var. reflexum: PERRY. Asclepias amplexicaulis: GREENE. Asclepias lanuginosa: LASALLE. Asclepias ovalifolia: KENDALL. Asclepias purpurascens: GREENE. Asclepias viridiflora: GREENE. Asplenium bradleyi: SALINE. Asplenium platyneuron: CHAMPAIGN. Aster anomalus: FAYETTE. Aster cordifolius: CHAMPAIGN. Aster ericoides: FULTON, MOULTRIE, SHELBY. Aster lateriflorus: CLINTON, PERRY. Aster ontarionis: GALLATIN, HARDIN, PERRY, SHELBY, WABASH. Aster praealtus: SHELBY. Aster puniceus var. lucidulus: FAYETTE. Aster sagittifolius var. drummondii: CHRISTIAN, FAYETTE. Aster schreberi: ROCK ISLAND. Aster shortii: COLES, SHELBY. Aster simplex: EDWARDS, JERSEY, MCLEAN, PERRY. Aster tataricus: VERMILION. Aster turbinellus: GALLATIN. Aster undulatus: GALLATIN. Aster vimineus: PERRY. Astragalus tennesseensis: ROCK ISLAND. Athyrium thelypterioides: STEPHENSON, VERMILION. Atriplex glabriuscula: Delete DUPAGE, add KANE. Avena fatua: JACKSON.

Bartonia paniculata: JOHNSON, POPE. Bidens bipinnata: CHRISTIAN, DEWITT, PERRY, SANGAMON. Bidens cernua: MOULTRIE, SHELBY. Bidens comosa: EFFINGHAM, SHELBY. Bidens frondosa: EFFINGHAM, FAYETTE, MOULTRIE, PERRY. Bidens vulgata: CHRISTIAN, EFFINGHAM, MOULTRIE, SANGAMON, SHELBY. Bothriochloa saccharoides: JACKSON. Botrychium biternatum: POPE. Botrychium dissectum var. dissectum: CARROLL, JODAVIESS, MCDONOUGH, PERRY, STEPHENSON. Botrychium dissectum var. obliquum: CARROLL, JODAVIESS. Botrychium multifidum var. silaifolium: CARROLL, JODAVIESS, STEPHENSON. Bouteloua curtipendula: PERRY. Brachyelytrum erectum: BUREAU. Brassica juncea: MADISON. Brassica kaber var. schkuhriana: HENDERSON. Brassica nigra: MADISON. Brassica rapa: FAYETTE. Brickellia eupatorioides: FAYETTE, MOULTRIE. Bromus japonicus: PERRY, POPE. Bromus pubescens: GREENE. Buchloe dactyloides: DUPAGE. Buchnera americana: JACKSON. Bulbostylis capillaris: FAYETTE. Bumelia lanuginosa: Delete HARDIN, PULASKI.

Cacalia atriplicifolia: SALINE, WILLIAMSON. Calamagrostis canadensis: SHELBY. Callitriche heterophylla: PERRY. Callirhoë triangulata: MADISON. Calystegia pubescens: COOK. Calystegia sepium var. americana: PERRY, WHITE. Calystegia sepium var. fraterniflorus: ST. CLAIR, WABASH. Calystegia spithamaea: EFFINGHAM, FAYETTE, SHELBY. Camassia angusta: PEORIA. Campanula aparinoides: VERMILION. Campanula rotundifolia: DUPAGE, MASON. Cardamine hirsuta: PERRY. Carduus nutans: ST. CLAIR. Carex annectens: WILLIAMSON. Carex artitecta: PERRY. Carex atherodes: OGLE. Carex aurea: WASHINGTON. Carex bebbii: PERRY. Carex blanda: PERRY. Carex communis: COLES, EFFINGHAM, FAYETTE, GALLATIN. Carex crawei: CHAMPAIGN, MCHENRY. Carex crus-corvi: PERRY. Carex davisii: PERRY. Carex festucacea: PERRY. Carex frankii: PERRY. Carex glaucodea: PERRY. Carex gravida: POPE. Carex hirtifolia: PERRY. Carex intumescens: Delete LIVINGSTON, add ALEXANDER, MASSAC. Carex jamesii: PERRY. Carex lacustris: PERRY. Carex laxiculmis: VERMILION. Carex lupulina: PERRY. Carex muskingumensis: PERRY, UNION. Carex normalis: PERRY. Carex pallescens: HANCOCK. Carex physorhyncha: JACKSON. Carex protracta: DUPAGE. Carex rosea: PERRY. Carex stenophylla var. enervis: KANE. Carex stipata: PERRY. Carex striatula: JACKSON. Carex swanii: DUPAGE, PERRY. Carex tonsa: CARROLL. Carex tribuloides: MASON. Carex trichocarpa: DUPAGE. Carex woodii: WINNEBAGO. Carya illinoensis: PERRY. Carya pallida: JACKSON. Cassia nictitans: PERRY. Cassia tora: CLINTON. Castanea dentata: HANCOCK, JODAVIESS, MASSAC, PULASKI, ST. CLAIR, WABASH. Catalpa bignonioides: POPE. Celastrus scandens: PERRY. Celtis occidentalis var. canina: UNION. Celtis tenuifolia: PERRY. Centaurea maculosa: MADISON. Centaurium pulchellum: KANE. Centunculus minimus: PERRY, WILLIAMSON. Cerastium nutans: PERRY. Cerastium pumilum: CASS. Cerastium tetrandrum: PERRY. Cerastium viscosum: PERRY. Chelone obliqua var. speciosa: PERRY. Chenopodium berlandieri var. zschackei: PERRY. Chenopodium standleyanum: PERRY. Chimaphila maculata: POPE. Chorispora tenella: HENDERSON. Chrysanthemum leucanthemum: ROCK ISLAND. Cimicifuga rubifolia: GALLATIN, JOHNSON. Circaea alpina: COOK. Cirsium arvense: VERMILION. Cirsium carolinianum: HARDIN, SALINE. Cirsium muticum: FAYETTE. Clematis viorna: WAYNE. Comandra richardsiana: POPE. Comptonia peregrina: LAKE. Conium maculatum: FAYETTE. Conobea multifida: PERRY. Convolvulus arvensis: FAYETTE. Corallorhiza wisteriana: MARION, PERRY. Coreopsis grandiflora: MCDONOUGH. Cornus canadensis: MCHENRY. Cornus obliqua: PERRY. Cornus racemosa: POPE. Corydalis flavula: PERRY. Corydalis halei: POPE. Corydalis sempervirens: STEPHENSON, WINNEBAGO. Croton glandulosus var. septentrionalis: PERRY. Croton monanthogynus: PERRY. Crotonopsis elliptica: MASON, PERRY. Crypsis schoenoides: DUPAGE. Cuscuta campestris: TAZEWELL. Cuscuta cephalanthi: GREENE, KANKAKEE, MADISON, RICHLAND, STARK, TAZEWELL. Cuscuta coryli: DUPAGE, KANKAKEE, LAWRENCE, TAZEWELL. Cuscuta cuspidata: PEORIA, PERRY. Cuscuta gronovii: PERRY. Cuscuta indecora: PEORIA. Cuscuta polygonorum: CALHOUN. Cyperus densicaespitosus: PERRY, UNION. Cyperus filiculmis var. filiculmis: POPE. Cyperus filiculmis var. macilentus: PERRY. Cyperus houghtonii: MASON. Cyperus lancastriensis: PERRY. Cypripedium acaule: OGLE. Cystopteris fragilis var. fragilis: LEE. Cystopteris fragilis var. mackayi: CARROLL, JODAVIESS. Cystopteris Xtennesseensis: ADAMS, BROWN, CALHOUN, CARROLL, CLARK, COOK, DUPAGE, HANCOCK, HARDIN, JERSEY, JODAVIESS, JOHNSON, KNOX, LASALLE, LAWRENCE, MCDONOUGH, MENARD, MONROE, PEORIA, PIKE, POPE, RANDOLPH, ROCK ISLAND, ST. CLAIR, STEPHENSON, WABASH, WILLIAMSON.

Desmodium canescens: PERRY. Desmodium cuspidatum var. longifolium: DEKALB. Desmodium dillenii: PERRY. Desmodium glutinosum: PERRY. Desmodium nudiflorum: PERRY. Desmodium pauciflorum: PERRY. Dianthus armeria: PERRY. Diarrhena americana var. obovata: DUPAGE. Dioscorea quaternata: PERRY, SALINE. Dipsacus laciniatus: ROCK ISLAND. Dodecatheon amethystinum: WHITESIDE. Draba brachycarpa: PERRY. Dryopteris carthusiana: VERMILION. Dryopteris cristata: CARROLL. Dryopteris goldiana: CARROLL, DUPAGE, JODAVIESS, KANE, UNION. Dryopteris intermedia: MCLEAN. Echinochloa colonum: MASSAC. Echinochloa pungens var. microstachya: JACKSON, POPE. Echinochloa walteri: MARION, PERRY. Echinodorus berteroi var. lanceolatus: PERRY. Eclipta alba: SHELBY. Elaeagnus angustifolia: JACKSON, UNION. Elaeagnus umbellata: MCDONOUGH, POPE, VERMILION. Eleocharis acicularis: PERRY. Eleocharis equisetoides: LAKE. Eleocharis erythropoda: JACKSON. Eleocharis rostellata: GRUNDY, WILL. Elephantopus carolinianus: FAYETTE. Epifagus virginiana: SALINE. Epilobium coloratum: PERRY. Equisetum fluviatile: STEPHENSON. Equisetum laevigatum: JODAVIESS. Equisetum palustre: TAZEWELL. Equisetum pratense: OGLE. Equisetum variegatum: Delete CARROLL. Equisetum Xferrissii: JODAVIESS. Equisetum Xlitorale: CARROLL. Eragrostis capillaris: PERRY. Eragrostis frankii: PERRY. Eragrostis pilosa: PERRY. Erechtites hieracifolia: MOULTRIE, SHELBY. Erianthus alopecuroides: PERRY. Erigenia bulbosa: DEWITT. Erigeron divaricatus: VERMILION. Erigeron philadelphicus: GREENE. Erigeron strigosus: VERMILION. Eriochloa villosa: WILL. Eriophorum virginicum: MCHENRY. Eryngium prostratum: ALEXANDER. Euonymus alatus: COOK. Euonymus americanus: MASSAC. Euonymus atropurpureus: PERRY. Eupatorium altissimum: PERRY. Eupatorium fistulosum: SALINE. Eupatorium maculatum: POPE, VERMILION. Eupatorium perfoliatum: SHELBY. Eupatorium purpureum: PERRY. Eupatorium rugosum: PERRY. Euphorbia marginata: PERRY.

Fagopyrum esculentum: ALEXANDER, BOONE, LEE, PERRY, STARK. Filipendula rubra: CASS, MARSHALL. Fimbristylis annua: ALEXANDER. Fimbristylis autumnalis: PERRY. Fragaria virginiana: PERRY.

Gaillardia pulchella: CASS. Gerardia tenuifolia: PERRY. Geum allepicum var. strictum: DEKALB. Geum vernum: PERRY. Gilia rubra: PUTNAM, WASHINGTON. Goodyera pubescens: PEORIA, SCHUYLER. Gymnocarpium dryopteris: CARROLL, JODAVIESS, STEPHENSON. Gymnocladus dioica: ROCK ISLAND.

Habenaria leucophaea: GRUNDY. Hackelia americana: CARROLL, LAKE, WINNEBAGO. Hackelia virginiana: PERRY. Hamamelis virginiana: GRUNDY. Haplopappus ciliatus: HENDERSON. Hedeoma pulegioides: PERRY. Helenium autumnale: PERRY. Helianthus grosseserratus: PERRY. Helianthus hirsutus: PERRY. Helianthus mollis: GREENE. Helianthus rigidus: FAYETTE. Helianthus tuberosus: POPE, VERMILION. Hepatica nobilis var. acuta: SALINE. Heterotheca latifolia: HENDERSON., MADISON, ST. CLAIR. Heterotheca villosa: FAYETTE. Hibiscus militaris: WILLIAMSON. Hibiscus trionum: PERRY. Hieracium gronovii: PERRY. Hosta lancifolia: COOK. Houstonia longifolia var. tenuifolia: PERRY. Houstonia purpurea: POPE. Hudsonia tomentosa: WHITESIDE. Humulus lupulus: PERRY. Hydrastis canadensis: HENRY, JEFFERSON, KNOX, MONROE, PERRY, WASHINGTON. Hydrophyllum canadense: UNION. Hymenoxys acaulis: TAZEWELL; delete MASON. Hypericum adpressum: IROQUOIS, RANDOLPH, WILL; delete ST. CLAIR. Hypericum boreale: COOK. Hypericum canadense: GALLATIN. Hypericum densiflorum: MASSAC. Hypericum drummondii: JOHNSON. Hypericum gentianoides: PERRY. Hypericum gymnanthum: BOND, GALLATIN, IROQUOIS. Hypericum majus: WHITESIDE. Hypericum muticum: IROQUOIS, WABASH.

Ilex decidua: PERRY. Iodanthus pinnatifidus: DUPAGE. Ipomoea coccinea: HAMILTON. Ipomoea lacunosa: FAYETTE, PERRY. Ipomoea pandurata: PULASKI. Ipomoea purpurea: JEFFERSON. Iresine rhizomatosa: MASSAC.

Juncus brachycarpus: MASON. Juncus brachycephalus: GRUNDY, POPE. Juncus torreyi: POPE.

Lactuca hirsuta: delete CLAY. Lactuca saligna: PERRY. Laportea canadensis: PERRY. Lappula redowskii var. occidentalis: HENDERSON. Lathyrus latifolius: POPE. Lathyrus maritimus: HENRY. Lathyrus ochroleucus: GALLATIN, ST. CLAIR; delete MCHENRY. Lathyrus palustris: POPE; delete Jackson. Lechea intermedia: LAKE. Leersia lenticularis: PERRY. Leersia virginica: SALINE. Leonurus marrubiastrum: MERCER. Lepidium ruderale: MASON. Lespedeza cuneata: GRUNDY. Lespedeza leptostachya: LEE, OGLE; delete ADAMS, ST. CLAIR. Lespedeza steuvei: SALINE. Lespedeza striata: SALINE. Lespedeza violacea: PERRY. Liatris spicata: ALEXANDER. Ligustrum obtusifolium: POPE. Linaria canadensis var. texana: MADISON, UNION. Linaria dalmatica: HENDERSON. Lindera benzoin: PERRY. Liparis liliifolia: ROCK ISLAND. Lobelia cardinalis: SHELBY, TAZEWELL. Lobelia inflata: CHRISTIAN, SALINE. Lobelia kalmii: GRUNDY. Lobelia spicata var. spicata: LASALLE. Lobelia spicata var. leptostachys: PIATT, STARK. Lobularia maritima: MCDONOUGH. Lolium multiflorum PERRY. Lonicera maackii: UNION. Lonicera sempervirens: UNION. Lonicera Xmunduensis: LAKE. Lonicera Xruprechtiana: LAKE. Lonicera Xxylosteum: GRUNDY. Lotus corniculatus: DUPAGE. Lycopodium esculentum: PERRY. Lychnis coronaria: UNION. Lycopodium clavatum: ROCK ISLAND. Lycopodium dendroideum: COOK, IROQUOIS, SCHUYLER, WINNEBAGO. Lycopodium flabelliforme: CARROLL, JODAVIESS, MCDONOUGH. Lycopodium lucidulum: BROWN, JODAVIESS, SCHUYLER. Lycopus rubellus: PERRY. Lycopus virginicus: PERRY, SALINE. Lysimachia lanceolata: PERRY. Lysimachia nummularia: PERRY. Lythrum salicaria: ROCK ISLAND, WILL.

Matelea decipiens: JACKSON. Matricaria matricarioides: PERRY. Mazus japonicus: JACKSON. Melothria pendula: UNION. Menispermum canadense: ·PERRY. Microseris cuspidata: JODAVIESS, OGLE, PUTNAM. Miscanthus sacchariflorus: MERCER. Mitella diphylla: JOHNSON. Monarda didyma: WABASH. Muhlenbergia frondosa: PERRY. Muhlenbergia racemosa: UNION. Muhlenbergia schreberi: PERRY. Muhlenbergia sobolifera: PERRY. Myriophyllum exalbescens: WILLIAMSON.

Najas minor: PERRY. Napaea dioica: ROCK ISLAND. Nicandra physalodes: JACKSON.

Oenothera linifolia: PERRY. Onoclea sensibilis: JODAVIESS. Onosmodium molle: JACKSON; delete HARDIN, POPE. Ophioglossum vulgatum var. pseudopodum: WINNEBAGO. Opuntia macrorhiza: MADISON. Orobanche fasciculata: JODAVIESS. Orobanche ludoviciana: BUREAU, HENRY, MASON, TAZEWELL. Oryzopsis racemosa: CARROLL, COOK, JODAVIESS, OGLE, STEPHENSON. Osmorhiza longistylis: LAWRENCE. PERRY. Osmunda cinnamomea: CARROLL, SALINE. Osmunda claytoniana: KANE. Osmunda regalis var. spectabilis: JODAVIESS. Oxalis grandis: delete WABASH.

Panax quinquefolia: CARROLL, CLARK, DEWITT, GRUNDY, JODAVIESS, MADISON, MARION, MCLEAN, SALINE, STEPHENSON, TAZEWELL, WILLIAMSON, WOODFORD. Panicum boscii: HENRY, PERRY. Panicum dichotomum var. barbulatum: POPE. Panicum flexile: PERRY. Panicum lanuginosum var. septentrionale: POPE. Panicum laxiflorum: IROQUOIS, LEE, PERRY. Panicum linearifolium: MASON. Panicum malacophyllum: PERRY. Panicum meridionale: ADAMS, ALEXANDER, LASALLE, LEE, MARSHALL, MONROE, POPE, PUTNAM, RANDOLPH. Panicum miliaceum: PERRY. Panicum philadelphicum: PERRY. Panicum polyanthes: PERRY. Panicum subvillosum: MASON. Panicum yadkinense: GALLATIN, UNION. Papaver dubium: CASS. Parnassia glauca: GRUNDY. Paspalum bushii: SCHUYLER. Paspalum pubiflorum var. glabrum: PERRY. Passiflora lutea var. glabriflora: PERRY. Penstemon alluviorum: POPE. Penstemon arkansanus: PERRY. Penstemon digitalis: ROCK ISLAND. Perideridia americana: FAYETTE. Petunia Xhybrida: MCDONOUGH. Phalaris arundinacea: LIVINGSTON, PERRY, ROCK ISLAND. Phaseolus polystachios: POPE. Phlox bifida ssp. stellaria: ALEXANDER, JOHNSON, UNION. Phlox glaberrima var. interior: CHAMPAIGN, STARK, WHITE. Phlox divaricata var. divaricata: BUREAU, FRANKLIN, MERCER, WARREN. Phlox maculata: STARK. Phlox paniculata: CARROLL, JODAVIESS, MARION, MCLEAN. Phryma leptostachya: PERRY. Phyllanthus caroliniensis: PERRY. Physalis heterophylla: PERRY. Physalis ixocarpa: ADAMS, FULTON, MCDONOUGH. Physalis lanceolata: COOK, MADISON, PEORIA, ST. CLAIR. Physalis pendula: PERRY. Physalis pruinosa: PERRY. Physalis subglabrata: MARION, PERRY. Pilea fontana: change all records to P. opaca. Physostegia intermedia: HENDERSON. Pinus banksiana: KENDALL. Pinus echinata: POPE. Pinus resinosa: LAKE. Pinus sylvestris: KANE. Plantago cordata: CHRISTIAN, PIATT, TAZEWELL. Poa alsodes: POPE. Poa angustifolia: POPE. Poa autumnalis: JACKSON. Poa bulbosa: HARDIN. Poa palustris: HARDIN, JERSEY, VERMILION. Poa sylvestris: PERRY. Poa trivialis: JODAVIESS. Polemonium reptans: PUTNAM, WASHINGTON. Polygala verticillata: PERRY. Polygonatum pubescens: LEE, MCHENRY. Polygonella articulata: ST. CLAIR. Polygonum achoreum: DUPAGE, GRUNDY, HARDIN, KANKAKEE, KENDALL, SCHUYLER, WILL. Polygonum amphibium: FORD. Polygonum arifolium var. pubescens: JASPER. Polygonum aviculare var. aviculare: CLARK, FORD, FRANKLIN, FULTON, GALLATIN, GRUNDY, HARDIN, HENRY, JEFFERSON, LASALLE, MARSHALL, SCOTT. Polygonum aviculare var. littorale: ADAMS, CASS, CHRISTIAN, COOK, DEWITT, HARDIN, HENRY, IROQUOIS, JODAVIESS, LAWRENCE, LOGAN, MACON, MASON, MOULTRIE, PIATT, SANGAMON, SHELBY, STARK, ST. CLAIR, WINNEBAGO. Polygonum bicorne: GALLATIN, RANDOLPH. Polygonum careyi: COOK, GRUNDY. Polygonum cespitosum var. longisetum: CALHOUN, JODAVIESS PERRY, POPE. Polygonum coccineum: PERRY. Polygonum convolvulus: DEWITT, EFFINGHAM, POPE, SCHUYLER. Polygonum cristatum: BROWN, CASS, SCHUYLER. Polygonum cuspidatum: BROWN, LOGAN, MORGAN, SANGAMON, SCHUYLER, WAYNE. Polygonum erectum: FULTON, HARDIN, LEE, MACON, MASON, ST. CLAIR, WARREN. Polygonum exsertum: TAZEWELL. Polygonum hydropiper: CALHOUN, MOULTRIE. Polygonum hydropiperoides: EFFINGHAM, MENARD, MOULTRIE, ROCK ISLAND, SANGAMON. Polygonum lapathifolium: EDWARDS, SHELBY, WARREN. Polygonum opelousanum: HAMILTON, LAWRENCE. Polygonum orientale: CHRISTIAN. Polygonum persicaria: JASPER, MENARD, PERRY, STEPHENSON, WHITE. Polygonum punctatum: CRAWFORD. Polygonum ramosissimum: DEKALB, KENDALL, LASALLE, PERRY, TAZEWELL, WOODFORD. Polygonum sachalinense: LOGAN. Polygonum sagittatum: CARROLL, IROQUOIS, MCHENRY, PERRY, WASHINGTON, WHITESIDE. Polygonum scandens: BROWN, WAYNE. Polygonum setaceum var. interjectum: ADAMS, PERRY, WABASH. Polygonum tenue: FAYETTE, LASALLE, MONTGOMERY. Polygonum virginianum: PERRY. Polypodium vulgare var. virginianum: JODAVIESS. Polystichum acrostichoides: CARROLL, JODAVIESS. Populus alba: VERMILION. Populus balsamifera: HANCOCK. Populus grandidentata: MONTGOMERY. Potamogeton gramineus: LAKE. Potamogeton illinoensis: PERRY. Potentilla millegrana: UNION. Potentilla paradoxa: MASON. Potentilla recta: ROCK ISLAND. Prenanthes altissima: SALINE. Prenanthes crepidinea: JACKSON. Prenanthes racemosa: POPE. Prunus angustifolia: PERRY, VERMILION. Prunus hortulana: PERRY. Prunus munsoniana: PERRY, UNION. Psoralea onobrychis: MADISON. Ptelea trifoliata: PERRY. Pteridium aquilinum var. pseudocaudatum: FAYETTE, JASPER. Ptilimnium costatum: PULASKI, UNION. Puereria lobata: WILLIAMSON. Pycnanthemum incanum: SALINE. Pycnanthemum torreyi: JACKSON, POPE.

Quercus muhlenbergii: ROCK ISLAND.

Ranunculus ambigens: HANCOCK, JACKSON. Ranunculus rhomboideus: MACOUPIN. Rhamnus alnifolia: delete ADAMS, BOONE, LAKE. Rhamnus davurica var. nipponica: KANE. Rhamnus lanceolata: BOONE. Rheum rhaponticum: CHAMPAIGN. Rhexia virginica: PERRY. Rhus aromatica: ROCK ISLAND. Rhynchospora alba: PEORIA. Rhynchospora capillacea: GRUNDY. Rhynchospora glomerata: COOK. Ribes hirtellum: LAKE. Ricinus communis: UNION. Rorippa islandica var. hispida: DUPAGE, IROQUOIS, PIATT. Rorippa sylvestris: UNION. Rosa multiflora: POPE, ROCK ISLAND. Rosa setigera var. tomentosa: JACKSON. Rubus allegheniensis: PERRY. Rubus enslenii: ADAMS, PERRY, POPE, UNION. Rubus laciniatus: DUPAGE. Rubus occidentalis: PERRY. Rubus occidualis: PERRY. Rubus procerus: JACKSON. Rubus pubescens: DUPAGE, VERMILION. Rudbeckia fulgida var. missouriensis: delete POPE.

Rudbeckia laciniata: PERRY. Rudbeckia triloba: PERRY. Ruellia caroliniensis var. dentata: UNION. Rumex maritimus var. fueginus: WILL. Rumex mexicanus: POPE. Rumex obtusifolius: DEKALB, PERRY.

Sabatia campestris: EFFINGHAM, MARION, MONTGOMERY, ST. CLAIR. Sagittaria calycina: CARROLL, MADISON. Sagittaria longirostra: PULASKI, UNION. Salix alba: POPE. Salix caroliniana: POPE. Salix discolor: JACKSON. Salix fragilis: POPE. Salix gracilis var. textoris: KANE. Salix rigida: PERRY. Salvia azurea: CALHOUN. Sambucus pubens: DEKALB. Samolus parviflorus: PERRY. Sanicula gregaria: PERRY. Saponaria officinalis: ROCK ISLAND. Scirpus cyperinus: CARROLL, GRUNDY, PERRY. Scirpus paludosus: LASALLE. Scirpus pedicellatus: POPE. Scirpus purshianus: delete CASS. Scirpus torreyi: LEE, WINNEBAGO. Scirpus validus: JACKSON, PERRY. Scleria pauciflora var. caroliniana: POPE. Scrophularia marilandica: PERRY. Scutellaria lateriflora: PERRY. Scutellaria nervosa: PERRY. Scutellaria ovata: PERRY. Scutellaria parvula var. leonardii: PERRY. Selaginella apoda: MARION, PERRY. Senecio pauperculus: POPE. Senecio plattensis: POPE. Setaria italica: PERRY. Seymeria macrophylla: ROCK ISLAND. Silene regia: MADISON. Silphium perfoliatum: PERRY. Sisyrinchium atlanticum: IROQUOIS, LIVINGSTON, POPE, UNION. Sisyrinchium angustifolium: PERRY. Sisyrinchium montanum: KANKAKEE. Sium suave: FAYETTE. Smilax herbacea: MASON. Smilax pulverulenta: PERRY. Solanum dulcamara: PERRY. Solanum elaeagnifolium: ST. CLAIR. Solanum nigrum: FRANKLIN. Solanum rostratum: MONTGOMERY, PERRY, RICHLAND. Solanum triflorum: MENARD. Solidago arguta: UNION. Solidago bicolor var. concolor: UNION. Solidago ohiensis: GRUNDY. Solidago rugosa: PERRY. Solidago uliginosa: GRUNDY. Sonchus asper: PERRY. Sparganium americanum: KNOX, STEPHENSON. Sparganium chlorocarpum: LEE. Specularia leptocarpa: HENDERSON. Specularia perfoliata: PIKE. Sphaeralcea angusta: ST. CLAIR. Sphenopholis obtusata var. major: PERRY, WAYNE. Spigelia marilandica: PERRY. Spiranthes cernua: PERRY, SALINE. Spiranthes gracilis: PERRY. Spiranthes lucida: LAKE. Spiranthes ovalis: PERRY, POPE. Stachys palustris var. homotricha: PERRY, POPE. Stachys tenuifolia var. hispida: HENRY, JACKSON. Strophostyles umbellata: PERRY. Styrax americana: JACKSON. Syringa vulgaris: POPE.

Taraxacum laevigatum: JACKSON, PERRY. Teucrium canadense var. occidentale: ROCK ISLAND. Thaspium barbinode: FAYETTE, SHELBY. Tilia heterophylla: PULASKI. Tofieldia glutinosa: WILL. Torilis japonica: MADISON, PERRY. Tradescantia bracteata: MADISON. Tragopogon dubius: UNION. Tragopogon pratensis: POPE. Triadenum tubulosum: WILLIAMSON. Triadenum virginianum: delete LAKE. Trichostema dichotoma: JACKSON. Tridens flavus: HENRY. Trifolium campestre: PERRY. Trifolium reflexum: GALLATIN, SHELBY, VERMILION. Triglochin maritima: TAZEWELL. Trillium flexipes: MADISON.

Ulmus alata: PERRY. Urtica chamaedryoides: JACKSON, UNION. Utricularia intermedia: COOK, KANE. Utricularia minor: CLAY, SALINE. Utricularia vulgaris: JACKSON.

Vaccinium corymbosum: LEE. Veratrum woodii: FAYETTE. Verbascum blattaria: POPE. Verbena bracteata: PERRY. Verbena Xmoechina: HARDIN. Verbena Xrydbergii: UNION. Verbesina alternifolia: PERRY. Vernonia baldwinii: PERRY. Veronica americana: LASALLE. Veronica polita: WILLIAMSON. Veronica scutellata: IROQUOIS, WOODFORD. Veronica serpyllifolia: UNION. Viburnum dentatum var. deamii: POPE. Viburnum molle: BROWN, PIKE. Viburnum opulus: MCDONOUGH. Vicia angustifolia: DUPAGE. Vicia dasycarpa: PERRY. Vicia sativa: UNION. Vicia villosa: PERRY, ROCK ISLAND. Viola conspersa: DEKALB. Viola incognita: KANE. Viola missouriensis: PERRY. Viola pallens: KANE. Viola pratincola: UNION. Viola primulifolia: GRUNDY. Viola triloba: PERRY. Vitis riparia: PERRY. Vitis vulpina: PERRY. Vulpia myuros: JACKSON, PERRY. Vulpia octoflora var. tenella: MADISON.

Woodsia ilvensis: LASALLE, LEE. Woodwardia areolata: JACKSON.

Xanthium spinosum: PULASKI.

Zigadenus glaucus: KANKAKEE. Zizia aurea: GREENE, ROCK ISLAND.

Taxa New to Illinois

Acer rubrum L. var. trilobum K. Koch: POPE (SIU).

Anthriscus cereifolium (L.) Hoffm.: DUPAGE (MORT).

Aster Xurophyllus Lindl.: JACKSON, UNION (SIU).

Calystegia sepium (L.) R. Br. ssp. angulata Brummitt: COOK, WOODFORD (MO).

Calystegia sepium (L.) R. Br. ssp. erratica Brummitt: RICHLAND (MO).

Canavalia ensiformis (L.) DC.: WHITE (SIU).

Carex pensylvanica Lam. var. distans Peck: POPE (SIU).

Chamaesyce prostrata (Ait.) Small: DUPAGE (MORT).

Chenopodium pumilio R. Br.: MCDONOUGH (WIU).

Clematis verticillaris DC.: JODAVIESS (ISM).

Convolvulus incanus Vahl: ST. CLAIR (MO).

Corispermum nitidum Kit.: WHITESIDE (ILLS).

Corylus cornuta Marsh.: JODAVIESS (ISM).

Delphinium carolinianum Walt. ssp. penardii (Huth.) Warnock: HENDERSON (WIU).

Elaeagnus multiflora L.: DUPAGE, KANKAKEE (MORT).

Euonymus kiautschovicus Loes.: JACKSON (SIU).

Euphorbia hexagona Nutt.: MERCER (WIU).

Euphorbia lathyris L.: JACKSON (SIU).

Gilia capitata Sims: PUTNAM (ILL).

Iris flavescens DC.: HENRY, LAKE (ILLS).

Lathyrus hirsutus L. ALEXANDER (SEMO), PERRY (SIU).

Leptochloa uninervia (Presl) A.S. Hitchc. & Chase: MCDONOUGH (ISM).

Lespedeza daurica Schindl.: PERRY (SIU).

Liriope spicata Lour.: JACKSON (SIU).

Nicotiana longiflora Cav.: ST. CLAIR (MO).

Oxalis illinoensis Schwegman: POPE (ISM, SIU).

Phacelia gilioides A. Brand: JERSEY, ST. CLAIR (ILLS).

Phlox subulata L.: MASON (SIU).

Physalis texana Rydb.: ST. CLAIR (MO).

Picea abies (L.) Karst.: JODAVIESS (ISM).

Rosa acicularis Lindl.: JODAVIESS (ISM).

Rosa rubrifolia Vill.: JACKSON (SIU).

Rumex cristatus DC.: MACON, MADISON, STARK (ILL).

Rumex longifolius DC.: PEORIA, RICHLAND (ILL).

Scirpus mucronatus L.: MASON (ISM).

Solidago rugosa Ait. var. *celtidifolia* (Small) Fern.: POPE (SIU).

Sporobolus ozarkensis Fern.: COLES (EIU, SIU).

Toxicodendron toxicarium (Salisb.) Gillis: POPE (SIUM).

Valerianella chenopodifolia (Pursh) DC.: IROQUOIS (ISM).

Literature Cited

MOHLENBROCK, R. H. & D. M. LADD. 1978. Distribution of Illinois Vascular Plants. Southern Illinois University Press, Carbondale. 282 pp.

_____ & _____. 1983. New distribution data for Illinois vascular plants. Erigenia 3:2-21.

S. I. GARDENING:

HERB GARDENER'S NOTEBOOK

Robert H. Mohlenbrock[1]

Herb gardens have been popular for several centuries as sources of pleasure and usefulness. The plants which are grown in the herb garden are usually aromatic and frequently impart a distinctive flavor. As a result, herbs have found their way into cooking and into the preparation of scented baskets and potpourri.

There are several general comments that should be made regarding the harvesting and use of herbs:

1. The leaves of herbs are best gathered just before the plants begin to flower.

2. The leaves of herbs should be gathered in the morning before the sun has become hot but after the dew has evaporated.

3. Leaves of perennial herbs should not be collected after early September.

4. Immediately after harvesting the leaves, wash them gently with cool water. Dry the leaves with soft paper towels, being careful not to bruise them.

5. Lay small leaves out to dry on window screens that have been covered by cheesecloth, but do not let them dry in the sun.

6. You may gather bunches of stems and leaves together and hang them upside-down in a warm place until dry.

7. After drying, strip the leaves from the stems. Do not let the dried plants hang excessively since the aromatic oils will leach out.

---

[1]Robert H. Mohlenbrock is Professor of Botany at Southern Illinois University, Carbondale.

8. Dried leaves may be stored whole or crumpled in air tight glass containers.

9. Most herbs can be cut back by about 2/3 their height two or three times during the growing season.

A brief discussion of herbs which can be grown successfully in southern Illinois follows:

Sweet Basil

Tender annual.
Clovelike spicy tang.
Leaves and stems are used fresh or dried.
Useful in flavoring soups, chowders, stews, spaghetti. Particularly excellent in tomato dishes. Good in seafoods and poultry and with beef, veal, lamb, pork. Also used in eggplant dishes, fruit compotes, seafood salads, salad dressings, egg dishes, herb butter, and herb vinegar.
One-half teaspoon dried is equivalent to one tablespoon fresh.
Start seeds indoors in warm place or outdoors well after the last frost. Thin plants to ten inches apart. For basil in winter, sow seeds indoors in a pot in August and keep plants in good light.
There are several variations of basil in the herb garden. Each has similar porperties to the sweet basil. Other kinds are:
Dark Opal Basil. Plant has attractive deep purple leaves and stems.
Holy Basil. Plant is sacred in the Hindu religion.
Lettuce-leaved Basil. Prettier leaves than sweet basil.
Small Basil. Form of basil with smaller leaves.
Cinnamon Basil. Interesting form with slight cinnamon flavor.

Chives

Hardy perennial.
Can be used fresh or frozen.
Mild onion flavor.
Leaves and flowers make an excellent garnish for many dishes.
Used to flavor vegetables and meat casseroles, seafood, peas, beans, potatoes, succotash, eggplant, and squash.
A delight in green salads, seafood salads, soups, and with cottage cheese.
Goes well in omelets and on baked potatoes with sour cream. Used in herb butter.

Potted chives usually may be purchased. Transplant into full sun in garden soil. Chives grow slowly from seeds. Leave clusters of young plants together. Clumps should be spaced about twelve inches apart.
A somewhat stronger onion flavor is derived from Garlic Chives.

Lovage

Hardy perennial.
Strong celery flavor.
Fresh or dried leaves can be used.
Good in vegetable dishes, meat salads, and salad dressings.
Used to flavor meat or fish sauces, broths, soups, stews, and casseroles. Excellent for stuffing poultry and other meat. May be used minced on roasts, steaks, and chops. An ingredient of herb butter. Stems can be candied for cake and cookie decorations.
One-fourth teaspoon dried is equal to one teaspoon fresh.
Sow seeds outdoors in early autumn or obtain small living plants. Plant in deep loamy soil. Keep cool and damp. Plant may get to be six feet tall.

Parsley

Hardy perennial.
Leaves and stems can be used fresh, dried, or frozen.
Chopped leaves and sprigs used as garnishes; excellent with meats, seafood, cheese, egg dishes, and as stuffings for poultry, fish, and meat. Good in seafood salads and salad dressings. Used in parsley lemon butter.
One teaspoon dried is equivalent to one tablespoon fresh.
Grows readily from seeds if planted in warm soil. Young plant can usually be purchased. Grow in full sun or partial shade in good garden soil with a little lime.

Sage

Hardy perennial.
Leaves may be used fresh or dried.
Good for flavoring meat and fish, stews, sauces, stuffings, chowders, soups, and bouillion. Excellent with pork sausage, roast pork, pork chops, roast beef, veal, lamb, poultry, and seafood.
May be used with beans, tomatoes, eggplant, squash, and cheese dishes. May be made into sage tea.

One-fourth teaspoon dried is equal to one teaspoon fresh.
Plant seeds in spring and thin seedlings to about fourteen inches. Soil should be light and sandy. Sage prefers full sun. Add a little bone meal to soil one a month.

Thyme

Hardy perennial.
Leaves and stems can be used fresh of dried.
Used for fish and shellfish, seafood salads, chowders, and soups. Good for stuffing poultry. Excellent with beef, veal, pork roasts, pork chops, and steaks. Particularly good with carrots, beans, peas, potatoes, squash, and in vegetable salads. May be used on cottage cheese and in egg dishes. Can be made into thyme tea and into herb butter.
One-fourth teaspoon dried is equal to one teaspoon fresh.
Plant seeds in spring in good garden soil and thin seedlings to twelve inches apart. Grow in full sun and add a little lime.
English Thyme is a similar, excellent plant in the herb garden.
Lemon Thyme has a distinctive lemony aroma and flavor.

Salad Burnet

Hardy perennial.
Has flavor of cucumber.
Use only fresh leaves as a garnish for all salads, fresh tomatoes, cold asparagus. Flavors soups, particularly mushroom, chicken, and asparagus. Excellent ingredient in mayonnaise and herb vinegar. Can be mixed with cream cheese and also used as a garnish for iced drinks.
Plant seeds in garden soil in spring in full sun. Thin seedlings to ten inches.

Oregano

Hardy perennial, but should be mulched during winter in southern Illinois.
Sweet but pungent flavor.
Harvest leaves just as flower buds begin to open, but be sure to leave several inches of stem and several of the lower leaves.
Used in pizzas and in salads, hamburger, meatloaf, steaks, chops, and roasts.
Plant seeds in sandy garden soil in full sun well after last frost.

Summer Savory

Annual.
Spicy flavor.
Clip leaves and stems in June and July and dry or freeze.
Excellent with vegetables, particularly string beans, and with pork, stews, and chowders.
Sow seeds directly in garden in late spring. Thin seedlings to five inches apart. Soil should have good drainage and be in full sun.

Winter Savory

Hardy perennial.
Spicy taste; stronger than summer savory.
Cut tips of branchlets before the plant flowers. May be dried or frozen.
Unexcelled with pork and sausages.
Plant seeds in full sun after last frost. Winter savory is easy to grow indoors all winter.

NOTICE TO FUTURE CONTRIBUTORS:

There is a constant need for manuscripts pertaining to Illinois native plants, natural areas, horticulture, etc. of both technical and general interest. Guidelines for manuscripts submitted may be found on the inside back cover of this issue. Please note that these guidelines are revised and replace all previous guidelines. Feature articles may be of any number of topics: from floristics studies (of areas in Illinois or the states contiguous to Illinois) to articles on ferns, prairies, biographies on plant collectors, fall coloration, swamps, orchids, trees, edible plants, etc. If you have an idea for a potential article but would like to have it approved prior to completion, please feel free to discuss it with the Editor (see inside back cover for address).

(PANICUM from page 52)

Panicum joori is a species of low woodlands. In addition to its Illinois locations, this species ranges from Virginia to Arkansas, south to southeastern Texas and Florida. There are also collections from Mexico.

Illinois specimens of *Panicum joori* were found in shady floodplain woods along the Cache River and in low, swampy woods in the LaRue-Pine Hills Ecological Area of the Shawnee National Forest.

These floodplain and bottomland forests are dominated by hardwoods, including swamp red maple (*Acer rubrum* var. *drummondii* H. & A.), Shumard oak (*Quercus shumardii* Buckl.), basket oak (*Quercus michauxii* Nutt.), kingnut hickory (*Carya laciniosa* (Michx.) Loud.), and shagbark hickory (*Carya ovata* (Mill.) K. Koch). Understory includes spicebush (*Lindera benzoin* (L.) Blume) and swamp holly (*Ilex decidua* Walt.). Herbaceous plants growing with *Panicum joori* were sea oats (*Chasmanthium latifolium* (Michx.) Yates), marsh agrostis (*Agrostis alba* L. var. *palustris* (Huds.) Pers.), and bedstraw (*Galium triflorum* Michx.).

Apparently *Panicum joori* is not common in southern Illinois but grows in small clumps scattered in moist woodlands. This grass grows in similar situations along the Atlantic Coast and in the Gulf states. The Illinois collections represent a considerable extension of the known range up the Mississippi Embayment.

Literature Cited

CHASE, A. 1951. Hitchcock's Manual of the Grasses of the United States. Second edition revised. United States Department of Agriculture Miscellaneous Publication 200. 1051 pp.

FERNALD, M. L. 1950. Gray's Manual of Botany. Eighth edition. New York: The American Book Company. 1632 pp.

GLEASON, H.A. 1952. The New Britton and Brown Illustrated Flora of the Northeastern United States and Adjacent Canada. Volume I. New York: The New York Botanical Garden.

HITCHCOCK, A.S. & A. CHASE. 1910. The North American species of *Panicum*. Contributions from the U. S. National Herbarium 15:1-396.

VOSS, E. G. 1966. Nomenclatural notes on monocots. Rhodora 68: 435-463.

SUPER SITES FOR SPRING WILDFLOWERS

As the spring season approaches, wildflower lovers begin to fill with excitement at the thought of spring beauties, trilliums, violets, and many other lovelies breaking their winter dormancy. We are fortunate to have several superior areas in southern Illinois for spring wildflowers, and some of them are listed below. Each of them has carpets of dutchman's-breeches, wild larkspurs, wild geraniums, buttercups, spring beauties, trilliums, trout lilies, bloodroots, phloxes, and many others. The blossoming of spring wildflowers usually begins in early March and continues until the summer flowers begin to bloom in June.

Piney Creek Ravine. Randolph County. Rich streambank woods flanked by sandstone cliffs. Best area to see the rare Harvey's buttercup in late April and early May.

Fountain Bluff. Jackson County. Rich woods on west side of bluff. Superior show of celandine poppy and large white trillium. Excellent area for sessile trillium, which blooms in late March.

Little Grand Canyon. Jackson County. Scenic gorge. Extremely rich flora. Rare buttercup-leaved phacelia blooms in April.

Lake Murphysboro State Park. Jackson County. Rich ravine west of spillway. Unusual amount of putty-root orchid (May). Shay's yellow trillium is also here (April).

Pomona Natural Bridge. Jackson County. Small ravine with good diversity of wildflowers.

Giant City State Park. Jackson and Union counties. Fern Rocks Nature Preserve is densely carpeted with spring wildflowers. Blue-eyed Mary is abundant in late April. French's shooting star, which was first found here, still blooms in late April and early May. Outstanding display of the rare synandra mint (early May).

Trail of Tears State Forest. Union County. Many wildflowers, with an abundance of squirrel corn.

LaRue-Pine Hills. Union County. Rich bottomland woods. Extraordinary display of bluebells and Miami mist in April and early

May. Cherty slopes beneath the shortleaf pines have bird's-foot violets in April and pink azaleas in mid-May.

Hogg Bluff. Johnson County. Woods adjacent to bluff rich with goldenseal.

Ferne Clyffe State Park. Johnson County. Box canyon features the lovely bishop's-cap in late April.

Devil's Kitchen Lake. Williamson County. Ravine near spillway has a great variety of wildflowers.

Belle Smith Springs. Pope County. Broad canyon with wide array of species.

Lusk Creek Canyon. Pope County. Canyon near horseshoe bend contains numerous wild orchids and a large colony of louseworts (May).

Jackson Hollow. Pope County. Deep canyon with numerous sandstone overhangs. Several colonies of hepatica bloom in late March and early April.

Hayes Creek Canyon. Pope County. Rich sandstone canyon with diversity of wildflowers.

Pounds Hollow. Gallatin County. Sensational canyon near Ox-lot Cave. Good diversity of spring wildflowers.

The following chart gives approximate mileage from selected southern Illinois towns to the super sites for spring wildflowers listed in this article:

	Belleville	Cairo	Carbondale	Chester	DuQuoin	Harrisburg	Marion	Metropolis	Mt. Vernon
Piney Creek Ravine	49	94	34	19	38	74	50	98	88
Fountain Bluff	75	62	20	29	33	60	36	84	74
Little Grand Canyon	84	81	14	49	27	54	30	78	68
Lake Murphysboro	74	71	11	28	24	51	27	75	65
Pomona Natural Bridge	88	60	18	42	31	58	34	63	72
Giant City State Park	95	56	11	49	31	51	27	60	65
Trail of Tears	99	49	29	53	42	69	45	52	83
Larue-Pine Hills	92	63	37	46	50	77	53	65	91
Hogg Bluff	130	44	46	84	66	30	30	31	69
Ferne Cliff State Park	112	55	28	66	48	39	15	33	71
Devil's Kitchen Lake	93	69	9	47	29	37	13	42	80
Belle Smith Springs	132	60	48	86	68	29	31	42	80
Lusk Creek Canyon	142	70	58	96	78	26	41	31	69
Jackson Hollow	128	56	44	82	64	33	27	38	76
Hayes Creek Canyon	136	64	52	90	72	25	35	29	67
Pounds Hollow	145	89	61	99	81	20	44	49	68

Fig. 1. Mileage to super wildflower sites from selected southern Illinois cities.

In Our Next Issue

The next issue of Erigenia will include articles on wildflower photography, the flora of the Fountain Bluff area of southern Illinois, part 2 of "Nomenclatural Equivalencies in the Illinois Flora", regular departments such as:"Illinois Natural Areas", Endangered and Threatened Plants of Illinois", "Book Reviews", plus other interesting articles.

BOOK REVIEW

Wildlife of the Prairies and Plains. Keith E. Evans and George E. Probasco. 1977. USDA For. Serv. Gen. Tech. Rep. NC-29, 18p. (Available from the U.S. Government Printing Office, Washington, D.C.)

At first glance you may wonder why a review of a booklet on wildlife. Opening the cover of this publication would quickly answer this question since it begins with an excellent summary of prairie under the heading "The Resource". Here, the authors discuss the various types of prairie and grassland in North America followed by comments on terrain, soil, and climate, and a discussion on the vegetation.

The authors then present interesting discussions on the wildlife of the prairie. Topics include: waterfowl, upland game birds, nongame birds, bison, pronghorn antelope, elk, deer, bighorn sheep, small game, prairie dogs, mammalian predators, fish, amphibians, and reptiles. For each, past and present ranges are presented.

Management of the prairie-grassland habitat is discussed, followed by a useful and quite extensive "Literature Cited".

- Mark W. Mohlenbrock

ILLINOIS NATURAL AREAS:

HOGG BLUFF

Jerry L. Hinkley[1]

There are conflicting stories among the local residents as to how the locality of Hogg Bluff got its name. One version is that early farmers included some of the area's shelter bluffs in their hog pens. Another story told by an area "old timer" includes the first version along with the fact that an early resident of the area had the family name of Hogg. Whichever way the name is spelled it remains that this area is certainly worthy of consideration as a botanical preserve because it is remote, relatively undisturbed, and contains a great variety of habitats and microhabitats. All these facts might lead one to believe that Hogg Bluff has the potential for great botanical diversity as well.

Hogg Bluff is located in the Creal Springs Quadrangle, T. 12S, R. 4E in the NW¼ of the SW¼ of Section 3. One way to get to Hogg Bluff is to drive to the junction of U.S. 45 and Tunnel Hill Road, turning southeast on the blacktop road. This very scenic drive of about five miles leads across a series of hills; past a cemetery and Gilead Church to a gravel road leading to the left (northeast). This narrow, gravel road crosses a bridge over the East Branch of Cedar Creek. After parking just north of the bridge, we can walk along the horse trail which leads eastward into the woods. Within a short distance, we can turn northward and follow an old railroad grade for about one-half mile. Here we encounter our first surprise about Hogg Bluff.

On the west side of the railroad grade is a swamp. The water level of this body of water is partially controlled by the fill material used to build the railroad bed and has also been controlled at least in

---

[1]Division of Biological and Health Sciences, College of Lake County, Grayslake, Illinois 60030

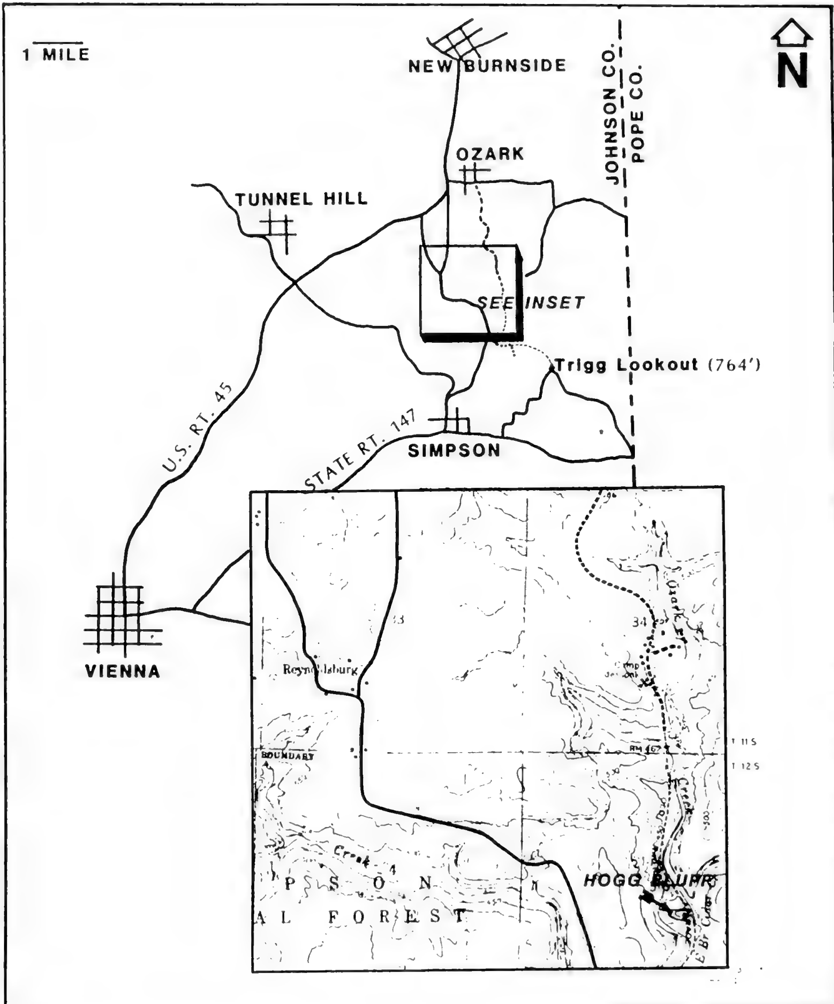


Figure 1. Map of Hogg Bluff and vicinity.

Figure 2. View of the swamp from the railroad embankment. Hogg Bluff is across the swamp.

the recent past, by beaver activity. This swamp harbored an active beaver lodge as recently as 1978. As of this writing, all evidence of the lodge has vanished. There has been much bark stripping from larger trees and the felling of smaller trees. Many pieces from these smaller trees, which are complete with typical beaver gnaw markings,form small dams which block the flow of water across the embankment toward Ozark Creek and the East Branch of Cedar Creek. These little dams complete the water level control mechanism of the swamp.

The botanical nomenclature used here follows Mohlenbrock (1975). The dominant tree species in the swamp is sycamore (Platanus occidentalis). These trees are tall, spindly, and do not exhibit well developed crowns. The canopy is sparcely leaved, allowing much sunlight to reach the surface of the swamp. Under the sycamores and among the rotting stumps and water logged trunks of

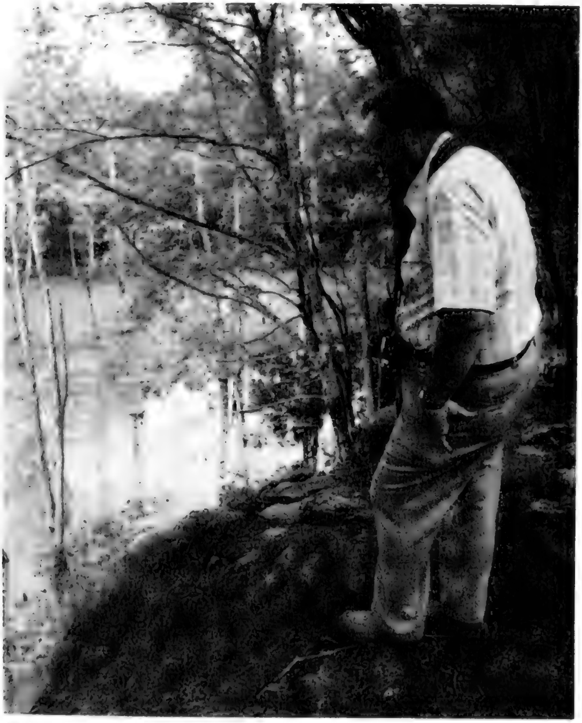


Figure 3. Dr. Robert H. Mohlenbrock stands at the edge of a thirty foot, north-facing cliff while observing the swamp below.

fallen trees, we can observe the yellow pond lily (Nuphar advena) surrounded by floating islets of duck-weeds (Lemna spp., and Spirodela polyrhiza) and watermeal (Wolffia columbiana).

Along the margin of the swamp and on saturated hummocks, we find swamp dock (Rumex verticillatus), common arrowleaf (Sagittaria latifolia), and the eye-catching cardinal flower (Lobelia cardinalis). A good indicator of the botanical potential of this area is the presence of swamp buttercup (Ranunculus flabellaris) with its morphologically distinct above- and below-water leaves. By now, we can determine that the swamp surrounds a central bluff except at the point where the railroad embankment accomplishes a tangential attachment to the bluff's east face. The only real access to the bluff top is at this point of attachment where we are confronted with a steep but short climb.

Once on top, we find ourselves in a thin soiled drier habitat atop the sandstone bedrock. As we might expect the trees here are smaller than those found below in the low woodlands. Here on the blufftop, we find white oak (Quercus alba), black oak (Q. velutina), and blackjack oak (Q. marilandica) interspersed with hickories (Carya glabra and C. cordiformis). Shrubs and shrub-sized trees found here include farkleberry (Vaccinium arboreum), low bush blueberry (V. vacillans), winged elm (Ulmus alata), the lovely spring flowering dogwood (Cornus florida) and shadbush (Amelanchier arborea).

In the relatively sparse herb layer of the bluff top, we can locate two mint family representatives, skullcap (Scutellaria ovata) and wild bergamont mint (Monarda fistulosa). As the soil thins out near the edge of the bluff, pussy-toes (Antennaria plantaginifolia) are seen mixed within and growing out of a carpet of mosses and lichens. It is a fascinating walk around the perimeter of this blufftop, for now we can look down from the cliffs of twenty to thirty feet to the swamp below and the vegetation of the narrow talus slope between the cliffs and the swamp. Even though Hogg Bluff has only about one acre on top, even the casual observer can note distinctly different vegetational areas owing to different thicknesses in soil. As we return to the access point, we notice partridge berry (Mitchella repens) along the north edge and spilling over onto some narrow ledges below.

As we make the traverse from upland to lowland woods, we can notice that Virginia creeper (Parthenocissus quinquefolia) and poison ivy (Toxicodendron radicans) make the trip with us. Some of the robust specimens of poison ivy found here in the lowland woods assume the posture of shrubs, while the vines attain diameters of well over three inches.

Returning to the railroad embankment, we can skirt the swamp and enter the lowland woods. This tract of woodlands is bordered by the swamp on the lower side and on the upper circumference by a fascinating series of cliffs and shelter bluffs. Let us take a closer look at the low woods vegetation.

In contrast to the trees of the swamp, the sycamores in the low woods show a growth form which exhibits trunks three to four feet in diameter. The dense canopies of these specimens cast the forest floor into complete shadow. There are other large trees in this lowland woods which complete the dense canopy layer. Here we also find beech trees (Fagus grandifolia), bitternut hickory, red oak, and white oak. These last three species are also observed on the drier uplands. Found only in the lowland woods in this locality are tulip tree (Liriodendron tulipifera), sour gum (Nyssa sylvatica) and excitingly, the cucumber magnolia (Magnolia acuminata). If a plant like the cucumber magnolia is present, which is at the very edge of its geographic distribution, then perhaps we can hope to find other unusual and uncommon plants. As we continue through the lowland woods, we encounter dense stands of shrubs and young trees. This denseness is probably the result of secondary growth due to past beaver activity. Some of the largest sycamore trees have been girdled by ambitious beavers but these trees were never felled by the animal activity. The subsequent opening of the canopy has allowed for the rapid development of young sugar maples (Acer saccharum) and hackberry (Celtis occidentalis). Other shrub layer species found both within these thickets and under dense canopies include paw paw (Asimina triloba), spicebush (Lindera benzoin), and bladder-nut (Staphylea trifolia).

Turning our attention to the herbaceous plants, we can enjoy this luxuriant layer both in terms of the number of showy species and in the uncommon ones. As we scout about the slope between the swamp and the cliffs, we can observe many fern species including marginal fern (Dryopteris marginalis), lady fern (Athyrium filix-femina), and rattlesnake fern (Botrychium virginianum). In an area of large sandstone boulders

Figure 4. Same cliff as in Figure 2 seen from the talus slope below.

beneath a north-facing cliff, we can inspect a large colony of gray polypody fern (Polypodium polypodioides). Violets (Viola sororia and V. papilionacea), bloodroot (Sanguinaria canadensis), and the large flowered bellwort (Uvularia grandiflora) beacon us to continue our search. Pink valerian (Valeriana pauciflora) catches our attention as it blooms just down slope from a large colony of mayapple (Podophyllum peltatum). Just beyond the next boulder, Indian pipe (Monotropa uniflora) comes into view followed by a colony of wild ginger (Asarum reflexum). Here we also find the remains

Figure 5. Marc Evans examines a large colony of golden seal (Hydrastis canadensis).

of a putty-root orchid (Aplectrum hyemale). Just a few feet away, we see the spectacular showy orchid (Orchis spectabilis). Botanists' hearts beat a good deal faster with these finds for now we are realizing the promise of the cucumber magnolia. Nearby are large colonies of golden seal (Hydrastis canadensis). These colonies are the largest of this species that this writer has ever seen. One of the colonies is roughly oval, and is approximately thirty by forty feet. In this same locality are some small but no less exciting colonies of genseng (Panax quinquefolia).

Our botanical excursion would not be complete without climbing up the talus slopes between the perimeter shelter bluffs to find additional plants which are not found on the swamp encircled Hogg Bluff. These would include the false aloe (*Agave virginica*) and the eastern prickly pear cactus (*Opuntia rafinesquii*). In some of the most inhospitable appearing exposures we can notice that the slender lip fern (Cheilanthes lanosa) is growing out of soil collected in some cracks in the rocks.

Returning to the cooler shelter bluffs below, it appears that the openings under the overhangs are partially hidden with wild hydrangea (*Hydrangea arborescens*). Here we also find alumroot (*Heuchera parviflora*) and goosefoot (*Chenopodium standleyanum*) in the sand under the overhang. These plants are surrounded by depressions which look like cleat marks from football shoes. These depressions are actually constructed by and are the home of the voracious ant lion.

Before leaving Hogg Bluff and its surroundings, I urge you to do something very unbotanical. Sit on a rock in any one of the several shelter bluffs and gaze out over this quiet, unspoiled place. Relish the fact that areas of botanical diversity like this one still exist. Realize that you are sitting on a spot where a Native American sat long before North America was "discovered". What that Native American saw is probably not much different than what you see.

Enjoy Hogg Bluff!

Reference

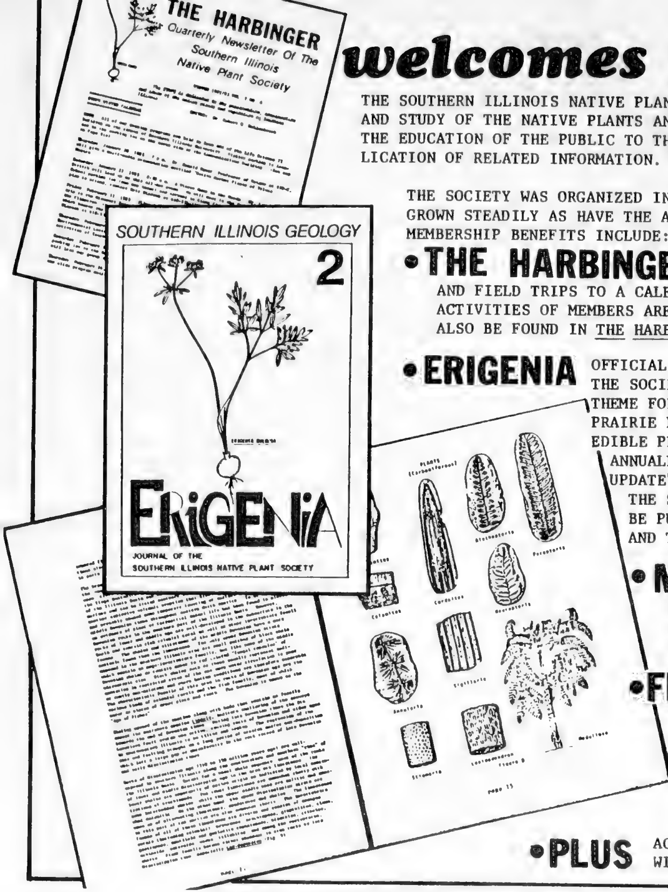
Mohlenbrock, Robert H. 1975. Guide to the Vascular Flora of Illinois. Southern Illinois University Press. Carbondale.

Our Contributors

MR. JERRY L. HINCKLEY is the Division Assistant for the Division of Biological and Health Sciences at the College of Lake County where for the past fourteen years he has taught Botany, Microbiology and Field biology. He received his B.S. and M.A. degrees from Southern Illinois University, Carbondale, in Botany and Plant Taxonomy.

DR. ROBERT H. MOHLENBROCK is Professor of Botany at Southern Illinois University-Carbondale, where he has been teaching for the past 28 years since receiving his Ph.D. from Washington University in St. Louis. He has been active in the flora of Illinois since his junior year in high school when he rediscovered the West Point stand of shortleaf pine and the Olive Branch grove of yellow-wood trees.

MR. LAWRENCE STRITCH is a native of upstate New York. He received his bachelor's degree from Illinois Benedictine College and master's from Southern Illinois University-Carbondale. Lawrence is in the final stages of completing his Ph.D. at SIU-C on a revision of the genus Wisteria (Leguminosae).



welcomes your membership

THE SOUTHERN ILLINOIS NATIVE PLANT SOCIETY IS DEDICATED TO THE PRESERVATION, CONSERVATION, AND STUDY OF THE NATIVE PLANTS AND VEGETATION OF SOUTHERN ILLINOIS. IT IS ALSO PLEDGED TO THE EDUCATION OF THE PUBLIC TO THE VALUE OF THE NATIVE FLORA AND ITS HABITAT, AND THE PUBLICATION OF RELATED INFORMATION.

THE SOCIETY WAS ORGANIZED IN FEBRUARY 1982. SINCE ITS INCEPTION, THE MEMBERSHIP HAS GROWN STEADILY AS HAVE THE ACTIVITIES AND BENEFITS AVAILABLE TO THE MEMBERS. MEMBERSHIP BENEFITS INCLUDE:

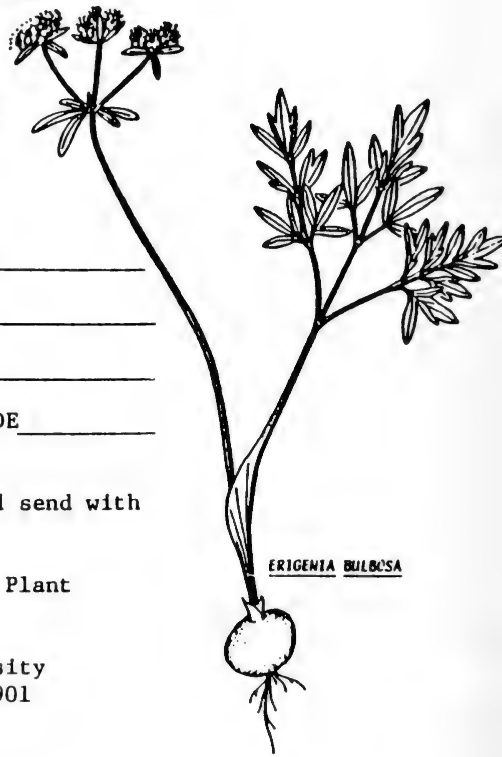
- **THE HARBINGER** NEWSLETTER OF THE SOCIETY, IS PUBLISHED QUARTERLY AND INCLUDES SUCH ITEMS AS HIGHLIGHTS OF MEETING PROGRAMS AND FIELD TRIPS TO A CALENDAR OF UPCOMING ACTIVITIES. OTHER SOCIETY NEWS AND ACTIVITIES OF MEMBERS ARE COVERED AND SPECIAL ARTICLES ON S.I. NATIVE PLANTS MAY ALSO BE FOUND IN THE HARBINGER.
- **ERIGENIA** OFFICIAL JOURNAL OF THE SOCIETY, IS PUBLISHED OCCASIONALLY BY THE SOCIETY (1 TO 4 ISSUES/YEAR). ARTICLES FOLLOW A PARTICULAR THEME FOR EACH ISSUE, INCLUDING: PLANT COLLECTING, S.I. GEOLOGY, PRAIRIE PLANTS OF S.I., S.I. NATURAL AREAS, WILDFLOWER GARDENING, EDIBLE PLANTS OF S.I., AND ORCHIDS OF S.I. IN ADDITION, PUBLISHED ANNUALLY AMONG THE ISSUES OF ERIGENIA IS THE "ILLINOIS FLORA UPDATE" WHICH LISTS ALL NEW STATE AND COUNTY FLORA RECORDS FOR THE STATE OF ILLINOIS. SPECIAL ISSUES OF ERIGENIA WILL ALSO BE PUBLISHED FOR FLORISTIC AND RELATED STUDIES OF ILLINOIS AND THE SURROUNDING STATES.
- **MEETINGS** THE SOCIETY HOLDS MONTHLY MEETINGS WITH PROGRAMS ON THE CAMPUS OF SOUTHERN ILL. UNIVERSITY. PROGRAMS INCLUDE PREVIEWS OF UPCOMING FIELD TRIPS, SLIDE PRESENTATIONS ON PLANTS FROM S.I. AND AROUND THE WORLD, AND RELATED TOPICS. ALL ARE WELCOME TO ATTEND.
- **FIELD TRIPS** THE SOCIETY OFFERS FIELD TRIPS EACH MONTH TO NATURAL AREAS ALL OVER S.I. ANYONE WHO ENJOYS PLANTS, ANIMALS, AND BEAUTIFUL SCENERY IS WELCOME.
- **DISCOUNTS** THE SOCIETY OFFERS ITS MEMBERS DISCOUNTS ON MANY OF THE BOOKS AVAILABLE THROUGH ITS BOOK LIST.
- **PLUS** ACCESS TO THE SOCIETY'S RARE PLANT HERBARIUM, LIBRARY, AND WILDFLOWER GARDEN.

MEMBERSHIP APPLICATION

All memberships run for the calendar year (January thru December). Dues received after November 1 of a given year are put toward the following year unless otherwise specified.

MEMBERSHIP CATEGORIES

STUDENT $5
REGULAR $10
SUPPORTING $20
PATRON $25



Dr./Mr./Mrs./Ms./Miss
NAME____________________________

ADDRESS_________________________

CITY____________________________

STATE____________ZIP CODE__________

Clip this application and send with check to:

Southern Illinois Native Plant Society
Department of Botany
Southern Illinois University
Carbondale, Illinois 62901

Make checks payable to S.I.N.P.S.

GUIDELINES FOR MANUSCRIPTS SUBMITTED TO ERIGENIA FOR PUBLICATION (REVISED 1985)

Manuscripts pertaining to the native flora of Illinois, natural areas, gardening with native plants and related topics are accepted for publication. The author shall be required to cover publication costs, if financially able, by remittin- $5.00 per page of manuscript (including illustration and map pages). Manuscripts should be typed single-spaced with 1 3/4 inch top and bottom margins and 1½ inch side margins. Title pages should have 2 1/4 inch top margins. Paragraphs should be double-spaced. Paragraphs are not to be indented. Pages are to be numbered, but in pencil only. Tables and figures should be numbered consecutively and an indication should be made as to where the author would like them placed. Either "Literature Cited" or "References" may be used. Use of the Harvard style for citing literature is recommended. If at all possible, please use an IBM Selectric typewriter and indicate which element was used as the editor can correct the copy much easier this way. Illustrations and maps are printed up to a maximum size of 5-by-7 inches. Four-by-five inch glossy black and white photos are also accepted. Cost of each photo to author is $7.50. The original manuscript and one copy must be included. Title and author's name should be typed on the first page of the manuscript in a manner found in ERIGENIA 2 or more recent issue. A one paragraph biobraphical sketch of the author must also accompany manuscripts submitted. Manuscripts are not returned to the author. If other materials such as photos or illustrations are requested to be returned, a self-addressed stamped envelope is required and should accompany the manuscript.

Five free reprints of articles submitted are provided to the author. Additional reprints may be ordered by the author at a charge (write to the editor for details and prices). ADDITIONAL REPRINTS MAY BE ORDERED ONLY AT THE TIME THE MANUSCRIPT IS SUBMITTED.

Each manuscript received by the editor will be sent out for review to one (or more) of the members of the editorial review board. Authors will be notified of any revisions judged necessary and will, if necessary, have the manuscripts returned for revision. The editorial staff reserves the right to reject any manuscript which does not comply to the above guidelines.

Contributors are also needed to submit book reviews to be published in the journal. Please inform the editor of the title wished to be reviewed prior to submitting it. Guidelines are the same as above except no biographical sketch is needed and the review should not exceed one page in length.

As a special service, floristic studies and related topics of areas in Illinois and the states which border Illinois will be acceped for publication. Guidelines are as those for above manuscripts except that plant lists are to be typed in double columns with ½ inch margins around the page. (Plant lists shall be printed in a slightly reduced form.)

Copy ready manuscripts and/or questions concerning publication should be sent to:

Mark W. Mohlenbrock
Editor - ERIGENIA
Department of Botany and Microbiology
Arizona State University
Tempe, Arizona 85287

SOUTHERN ILLINOIS NATIVE PLANT SOCIETY
DEPARTMENT OF BOTANY
SOUTHERN ILLINOIS UNIVERSITY
CARBONDALE, ILLINOIS 62901