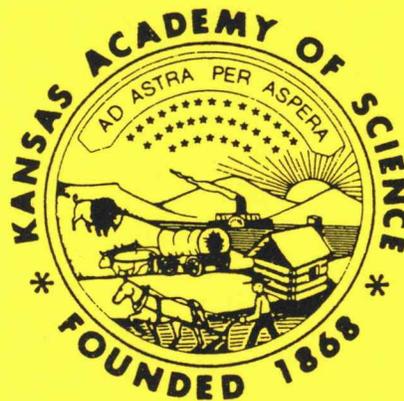


KANSAS ACADEMY OF SCIENCE

15th ANNUAL FALL FIELD TRIP

Chautauqua Hills Natural History

Chautauqua County, Kansas



21st September 2002

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**Kansas Academy of Science
Multidisciplinary Guidebook 15**

**Chautauqua Hills Natural History
Chautauqua County, Kansas**

**Fall Field Trip in
Chautauqua County, Kansas**

**Stan Roth
Kansas Biological Survey**

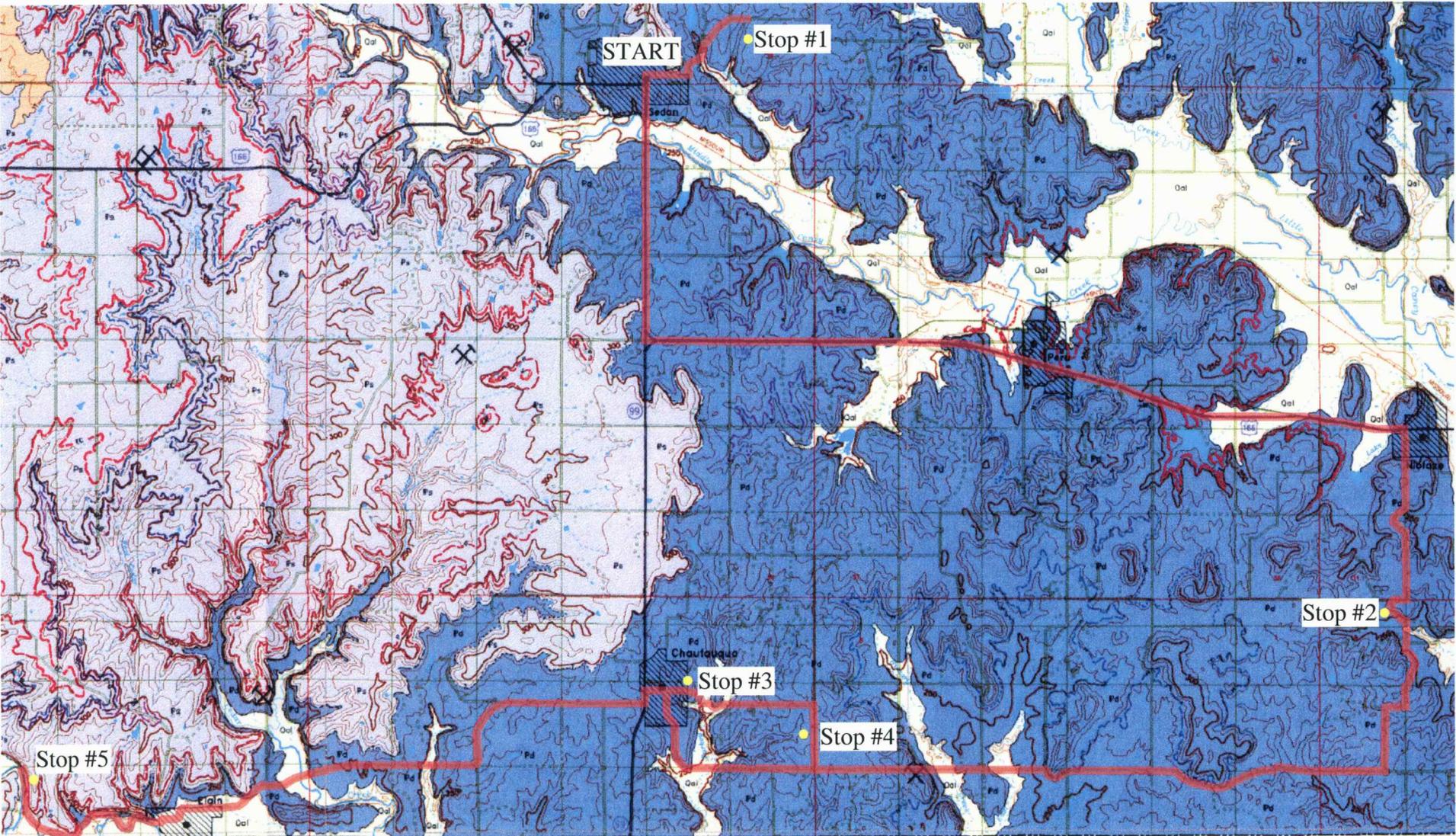
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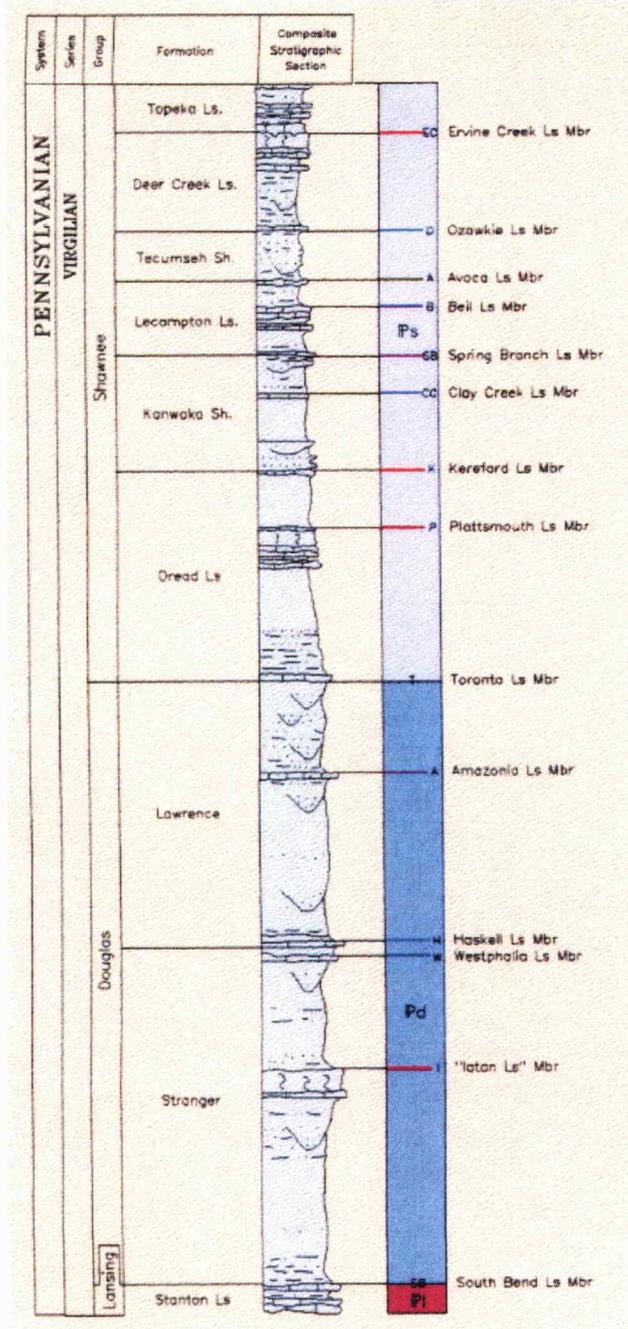
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Kansas Academy of Science Field Trip Route Map



Kansas Academy of Science Geologic Column



Field Trip Itinerary

Stop 1. Resurrection Term: 1 ½ miles northeast of Sedan.

South of the county road is a broad oak wooded ravine with sandstone outcrops along the east and west edge. Most precipitous are the outcroppings and side canyons along the east slope. Open rocky glades exist on the ridge tops. About 150 yards south of the road is one such ravine which harbors the only known colony of Resurrection Fern (*Pleopeltia polypodioides*) in Kansas. In several areas huge boulders have slumped away from the hillside. Excellent habitats abound for mesic species.

Stop 2. Poison Oak: 2 miles south of Niotaze.

A trashy ravine runs to the east. Openings in the south-facing brushy woodland harbor specimens of Poison Oak (*Rhus pubescens*). This site and roadsides immediately south represent the only known population of Poison Oak in Kansas.

Stop 3. Chautauqua city park. Lunch break.

Stop 4. Royal Fern: 1 mile east and ¾ mile south of Chautauqua.

A series of shallow sandstone ravines with natural springs, pools and small streams lies in this oak-hickory woodland east of Turkey Creek. The stream valleys are for the most part broad and sandy with a heavy covering of herbaceous vegetation. The only known plants of Southern Lady Fern (*Athyrium filix-femina*) in Kansas are here along with the largest population of Royal Fern (*Osmunda regalis*) in the state.

Stop 5. Robbers Cave: 2 miles northwest of Elgin.

This very small cave is typical of several sites in the area that are cracks, rock shelters or erosional features of both the sandstone and limestone outcrops. This cave is also known as Elgin Cave, Eagle Cave or Eagle Camp Cave. The site was known when the now abandoned railroad ran along the Caney River here. Today the cave serves as an occasional nesting site for the turkey vulture. Turkey vultures roost in the trees outside.

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"A BRIEF REVIEW OF THE ECOLOGY OF THE CHAUTAUQUA HILLS"

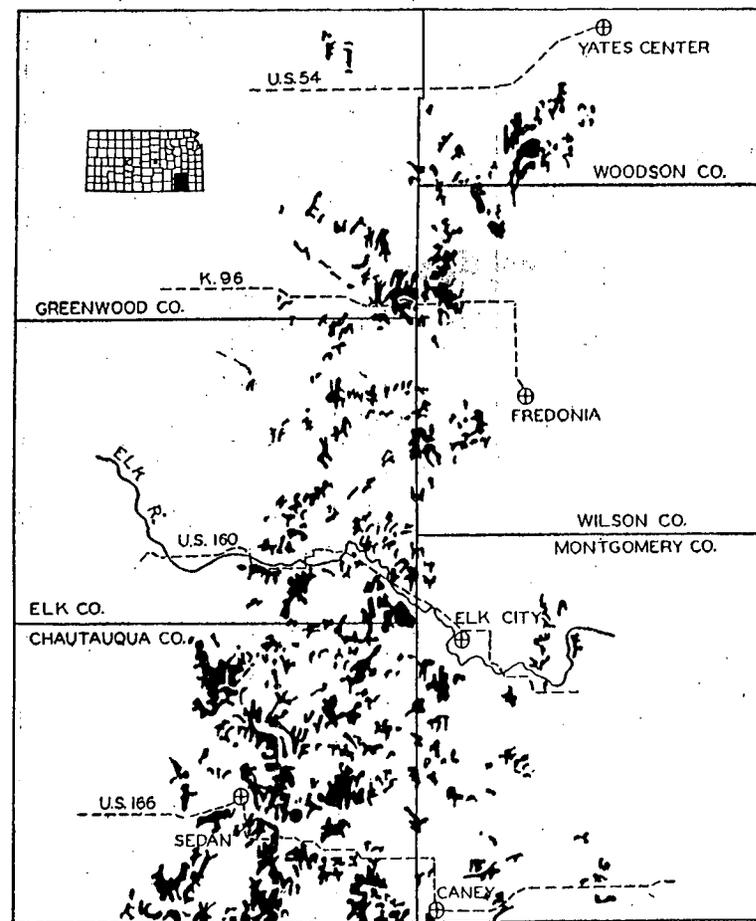
[Excerpt from: Lathrop, E.W., 1958, The flora and ecology of the Chautauqua Hills in Kansas: The University of Kansas Science Bulletin, v. 39, no. 4, 209 p.]

INTRODUCTION

The name Chautauqua Hills was first applied by Adams (1899) to that area lying within a triangular belt approximately ten miles wide extending from Yates Center in Woodson County, Kansas, southward to the State line in Montgomery and Chautauqua counties (Maps 1 and 2). Schoewe (1949) describes the area as follows. "The Chautauqua Hills are developed chiefly in the thick sandstone of the Douglas group which farther to the north are replaced by shales and which there, because of their position between the limestones, produce escarpments." As a result of erosion, the surface of the sandstone belt has been dissected into a series of low hills which are intersected by deep gullies which have been cut by many small streams. The Verdigris, Fall, and Elk rivers cross the area (Map 2) in low narrow valleys. In many places the rivers and valleys are bordered by bluffs which show sandstone outcrops (Plate 17).

This area is described by McGregor (1955) as being distinguished primarily by sandy soil and sandstone capped hills whose tops and upper slopes are forested. (Plates 1 and 2) with *Quercus stellata*, *Q. marilandica*, *Q. velutina*, and *Q. prinoides* (Table 1) with *Q. muehlenbergia*, *Q. macrocarpa*, *Carya cordiformis*, *C. ovata*, *Ulmus americana*, *U. rubra*, and *Celtis occidentalis* becoming admixed with

MAP 1

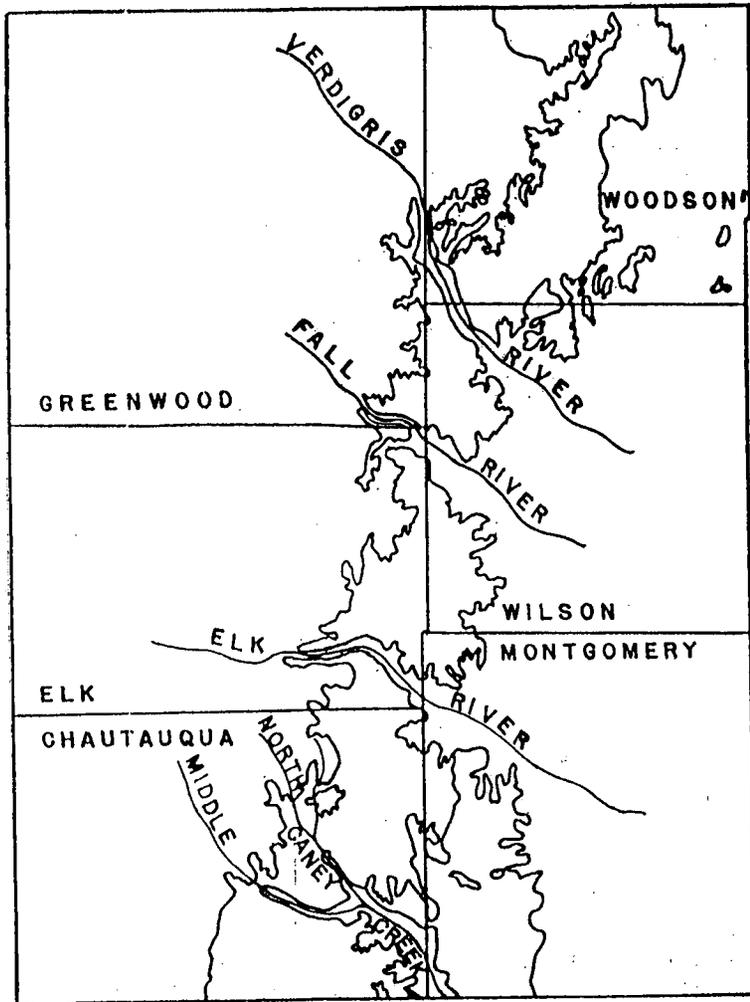


MAP 1. The Chautauqua Hills area showing location of upland woods and major cities and highways. Copied from Hale (1950) as taken from aerial photographs, 1954 (U. S. D. A. Commodity Stabilization Service, Index Maps, scale 1:20,000).

the above on the lower slopes and along the streams (Tables 2, 3, and 5).

Yates Center is the chief town at the north border of the Chautauqua Hills area, Toronto, Fall River, Elk River, Sedan, and Elgin mark its west border whereas Tyro, Elk City, New Albany, and Coyville define its east border.

MAP 2



MAP 2. Tracing from the Geologic Map of Kansas, Moore and Landes (1937), showing the area of Douglas sandstone and major stream courses of the Chautauqua Hills.

The Chautauqua Hills area is a physiographic province in Kansas. Actually it is the northern limits of the Texan Biotic Province and is bounded on the east and west by physiographic provinces, the Osage Plains and Flint Hills respectively, and on the north by the Illinoian Biotic Province. From the east there is an influx from the Carolinian and on the west from the Kansan Biotic Provinces. Thus the area is unique in that it is a unit with three boundaries which form transitions.

In addition to Schoewe (1949) and McGregor (1955) one other publication, Hale (1955), includes mention of the characteristic trees of the Chautauqua Hills as being *Quercus marilandica*, *Q. stellata*, and *Q. velutina*. Miller (1932), Caldwell (1937), other early survey records, and a few historical accounts include mention of the trees of this area. A few publications, Gates (1940), Cockrum (1952), and Fearing (1952) have included discussions and maps which involve the vegetation of this area to some degree. Other publications have been produced which give lists of species found in the various counties of the Chautauqua Hills area. Some of these are Gates (1940), Stevens and Dill (1940), Horr and McGregor (1949, 1951), McGregor (1950, 1956), Humfeld (1951), McGregor and Horr (1949, 1950, 1953, 1955), McGregor and Volle (1950), Yokoyama and McGregor (1951), McGregor and Hartman (1956), McGregor and Lathrop (1957), and Lathrop (1957). Previous to the present study, extensive field work had been done in the area by Dr. Ronald L. McGregor of the Department of Botany, University of Kansas. As a result, many plant specimens are on file at the University of Kansas Herbarium which supplemented the writer's collections. Dr. W. H. Horr and Mr. B. L. Wagenknecht have also collected numerous specimens from this area.

Up to this time, no one has made a study of the vascular flora of the Chautauqua Hills area of Kansas. Since it is in a region of transition of other vegetation areas, it was felt that a floristic and ecological study of the Chautauqua Hills would be a worthwhile addition to the knowledge of Kansas plants.

CLIMATE

Annual temperatures (° F.) for the Chautauqua Hills computed from records covering the years 1898-1942.

Mean maximum	Normal	Mean minimum
68.6	58.4	46.7

Annual precipitation (inches) for the Chautauqua Hills computed from records covering the years 1898-1942.

Maximum, yr. 1915	Normal	Minimum, yr. 1936
52.68	37.70	29.52

Average dates of the killing frost and the average growing season for the Chautauqua Hills based on all available records through 1945.

Average date of the first killing frost in fall—October 23.

Average date of the last killing frost in spring—April 14.

Average length of the growing season—192 days.

ORIGINAL VEGETATION

A knowledge of the vegetation of the Chautauqua Hills before the time of settlement between the years 1870 and 1880 must be gained largely from surveyors' notes and writings of early residents of the area. These written records include mention of native plants from time to time. However, such mention was usually casual, and the exact species frequently could not be determined. Supplemental information was derived from oral statements of long time residents of the area concerning the early vegetation and from data of tree ring counts. The latter information was obtained by removing small cores of wood from 83 upland trees in the area by means of an increment borer. From these cores it was possible to estimate the approximate age of the tree by counting the annual growth rings. The counts indicate that many upland trees now

growing in the area were already there in the early and middle eighteen hundreds before the area was settled by the white man. Six *Quercus stellata*, ranging in diameter from 12 to 20 inches, dated from the year 1852 to as far back as 1769. One *Q. marilandica*, 17.6 inches in diameter dated back to 1851. For 11 trees, 5 *Q. stellata*, 5 *Q. marilandica*, and 1 *Q. velutina*, ranging in diameter from 10 to 19 inches; growth rings showed that they began their growth during the 1870's.

Additional evidence that the Chautauqua Hills were wooded before and at the time of settlement is to be found in the original surveyors' notes of the area. These records are on file at the State Auditor's Office in the State House and at the Kansas State Historical Society, Topeka, Kansas. These notes, taken in the field during the surveys of township and section lines between the years 1856 and 1877, include mention of the kinds, and in some cases, the diameter of trees on or near the lines. A general description of the land in the area of the surveys was sometimes recorded by the surveyors.

Frequent mention is made, in these notes, of blackjack oak (*Quercus marilandica*), post oak (*Q. stellata*), and to a lesser extent, black oak (*Q. velutina*) as occurring in the uplands of the Chautauqua Hills. The diameters listed for these species were, on an average, slightly larger than for the same species today, being from 6 to 20 inches. However, several diameters of from 24 to 30 inches were recorded for the above species, indicating that at least some of the trees, growing at the time of settlement, were of even older age than those of the present.

Descriptions of the area of the Chautauqua Hills while it was still in undisturbed condition, were included in these Public Land Survey notes. The surveyors described the vegetation and physiography with respect to specific landmarks that can be easily located at the present time. Their descriptions of the areas surveyed are quoted below, in part.

(The present site of Yates Center, Wodson County, 1856.) "Timber black jack open woods, land graveley prairie. Land south part of black jack ridge, third rate — north part level first rate timber of black jack, post oak, hickory (*Carya*), and black walnut (*Juglans nigra*)."

(Two miles west of Yates Center, 1856.) "Land very broken with large sandstone on surface. Timber oak (*Quercus*), hickory, black walnut, black jack, and bur oak (*Quercus macrocarpa*), un-

dergrowth the same." (Chautauqua Hills area between Verdigris and Fall rivers, 1866.) "On either side of the two to three mile wide valley of the river (Verdigris) are broken ridges, the outcrops of rock being chiefly sandstone. Bluff soil poor, valley of Verdigris and smaller valleys have a rich alluvial soil covered with a fine vegetable mold. There is a belt of superior timber along the river and the hills are in several places covered with a young growth of post and black oak . . . Timber is abundant in the valleys and in many places is found in considerable quantities upon the bluffs . . . Almost entire surface is rolling and broken . . . with sandstone outcrops . . . The naturally rich, well timbered, and beautiful valleys of Indian Creek and Fall River . . . timber along Fall River composed of red elm (*Ulmus rubra*), white elm (*U. americana*), bur oak, hackberry (*Celtis*), oak, black walnut, sycamore (*Platanus occidentalis*), soft maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), mulberry (*Morus*), coffee bean (*Gymnocladus dioica*), and buckeye (*Aesculus*). Undergrowth the same plus willow (*Salix*) and paw paw (*Asimina triloba*) . . . Along the bluffs and on the ridges there are large bodies of inferior scrub oak (*Quercus stellata* and *Q. marilandica*) . . . elsewhere a broken prairie except along the Verdigris and Fall Rivers."

In the year 1857 a surveying party, led by Col. Joseph E. Johnston, surveyed the southern boundary of the Kansas Territory. The party crossed the Chautauqua Hills along the southern line of present Chautauqua and Montgomery counties. Descriptions of the area, taken from the private journal of Col. Johnston and recorded by Miller (1932), are quoted below, in part.

(Approaching the Chautauqua Hills area from the east.) "The line today ran parallel to Russell Creek . . . the country gently undulating and soil rich black loam, limestone showing itself occasionally. Woodlands two or three miles to the southeast on the crest of a ridge beyond the creek." (On the divide between 12 Mile Creek and an affluent of the Verdigris.) ". . . the latter runs to the southwest in a broad and beautiful valley, the western side of which is abrupt, wood scattered through it." (Northeast part of present Coffeyville, Montgomery County.) "An Osage village of 27 huts, a half mile west of the ford (of the Verdigris River), the inhabitants buffalo hunting. . . . Two miles to the south is Nickeokaka (Onion Creek), well wooded. . . . Went to the crest of the ridge this side of the Little Verdigris (North

Caney Creek; Map 2) from which . . . the country appeared to be much more broken and wooded than the east side of the Verdigris . . . in 5 miles reached the Little Verdigris . . . moved on to a little south of west to avoid rugged hills. . . . The country, especially to the north, very broken. A good deal of oak in the heights . . . passed over a rugged ridge covered with post oak." (Approximately 2 miles west of Hewins, Chautauqua County.) "Our last camp (near Elgin, Chautauqua County) was just with timbered country. The march today was in prairie. The dividing ridge opposite is a plateau (Flint Hills) about 300 feet above this valley; the sides very abrupt and rocky. Limestone near the summit."

Similar notes were taken by Hugh Campbell, astronomer on the same survey. His descriptions of the area are recorded by Caldwell (1937) and are quoted below, in part. (Approximately 3 miles southeast of the present Coffeyville, Montgomery County.) "After crossing Pumpkin Creek we found ourselves ascending beautiful heights or uplands covered with the most luxuriant grass and other vegetation, particularly flowers of various colors . . . As the ascent continues, little specks of timber can be seen in all directions . . . on some of these (small streams) I found great numbers of wild rose bushes." (Along the march westward.) "The country over which we pursued our course presented a different aspect to that hitherto traversed. Ridges, mounds, and small elevated tablelands, covered with a luxuriant growth of vegetation, intersected with lines of timber marking the courses of gullies or small streams, now occupies the view. The country as far as the eye can see has the same broken and irregular appearance . . . Encamped on a small stream, the banks of which are well wooded with sycamore, cottonwood, and hackberry." (At Horse Head Creek.) ". . . well timbered on the west bank with oak, cottonwood, sycamore, walnut and cherry (*Prunus*.) The country on this day's march is still more abrupt and broken . . . passed over many ridges very rocky and covered with dense growth of black jack." (At present Caney City, Montgomery County.) "Passed through a large grove of post oak."

(Slightly west of Elgin, Chautauqua County.) ". . . the grass here, as well as on the neighboring highlands is excellent. The principal productions are as follows: Vis. Timber in immediate vicinity of river consists of oak sycamore, and walnut . . . Fish: Cat, trout or bass, buffalo and garr. Game: Deer, antelope, and turkeys are very numerous."

Public Land Surveys were not carried out in the southern part of the Chautauqua Hills until approximately 14 years after the northern half was surveyed. Descriptions of the area in survey notes of 1871 are quoted below, in part.

(Approximately 6 miles northeast of Sedan, Chautauqua County.) "Timber along stream (Middle Caney Creek) of elm, sycamore, walnut, ash (*Fraxinus*), and hackberry. Undergrowth of vines . . . Water (of the stream) clear and pure . . . Timber on upland post oak."

(The vicinity of present Elk Falls, Elk county.) "Creek bottoms . . . are well watered by many fine springs from the bluffs. Clear Creek, Wild Cat Creek, and Elk River are well timbered . . . ash, walnut, oak, hackberry, and sycamore. There are also several groves of upland timber consisting of black jack and post oak. . . ."

(General description of the land eight miles north of Sedan, Chautauqua County.) ". . . mostly high broken prairie covered with sandstone . . . eastern portion covered with black jack and post oak." (T30S, R12E, east central part of Elk County.) "Center of township is rough, rolling, and broken by ravines . . . the hills covered with a scrubby timber known as post oak and blackjack . . . Prairie covered with sandstone."

(T33S, R14E, west central part of Montgomery County.) "Land mostly second rate . . . except in the eastern and western portion of the township where there are high mounds rising from the rolling prairie, composed of sandstone. Timber on mounds post oak and black jack. Along streams elm, sycamore, and cottonwood."

The notes of the early surveyors for this area seemed to be consistent in mentioning timber for both uplands and bottomland. Upon examination of the notes, however, there are indications that the upland timber was not as dense as it is today. In listing trees which were marked at section and township corners, their distance from the corner is given and often their space relationship to other trees. Frequently these distances were relatively far and many times mention is made that no other trees were near or available to mark.

The uplands were not one continuous woods. The notes include mention of considerable upland hilly prairie over sandstone which was not wooded, just as it is today. Also the relatively large diame-

ters given for many of the upland trees indicate that they would have likely been well spaced.

Statements from Lockhart (1927), concerning the history of Elk Falls, Elk county, include, "The first settlers arrived over two trails, one from Independence country following the river (Elk) valley, which was covered with bluestem grass higher than the back of an ox. . . . Historical incidents and facts recollected by some of the older residents of the vicinity: Mr. Wert Wicker remembers when places, now covered with a dense growth of timber, could have been mowed, and some, at that time, (1877-79) actually were hay fields; Mr. George Bennett remembers when the bluestem grass was dense everywhere on the prairie and no country roads were marked, and few fields were broken."

General descriptions of the counties in the area of this study written by Andreas (1883) are quoted below, in part.

(Woodson County.) "The county is largely upland . . . Along the streams are belts of timber . . . averaging a half mile in width. In these belts are found oak, elm, hickory, black walnut, hackberry, sycamore, and cottonwood. (Greenwood County.) "It is . . . 5 percent of forest and 95 percent of prairie." (Elk County.) "The surface of the county is chiefly high, broken prairie, particularly back from streams, and in the western part the prairies are of increased elevation, rising into what are known as the Flint Ridges (Flint Hills). The uplands . . . although rocky and light of soil, produce abundant grasses . . . being supplied with abundance of clear running water." (Wilson County.) "Along the streams are timber belts . . . embracing oak, hickory, walnut, hackberry, elm, soft maple, pecan (*Carya illinoensis*), sycamore, ash, cherry, basswood (*Tilia*), and some cedar (*Juniperus virginiana*)." (Chautauqua County.) "The county is covered with a rich growth of wild grasses . . . and an abundant growth of timber . . . in some places it covers the hills and draws . . . the timber . . . upon the bluff lands is made up of a species of oak vulgarly known as 'black jack.'" (Montgomery County.) "Timber, as in most parts of the state, is scarce, being confined to the belts along the water courses . . . occasional groves are found upon the uplands, but the timber is limited, and of inferior quality."

Early township maps of the area often showed the extent of forests. These maps were made up solely on the basis of data

written in the early surveyors' notes previously mentioned. These maps show that most of the uplands in the Chautauqua Hills, which are wooded at present, were covered by forests, to a slightly less extent, at the time of the surveys (1856 and 1871).

Further information concerning the distribution and spread of the forests is afforded by interviews with elderly residents who have lived in the Chautauqua Hills for all or most of their lives. Their recollections of the extent of timber on the uplands is as follows: C. C. Cox of Elk City, Montgomery County, stated that the scrub oak has increased a lot as far back as he can remember (to the 1890's). What used to be just a few blackjack near his farm is now a forest of the same. He recalled a prairie area that is now a scrub oak woods. He said that some hills were bare when he was young, but that there were scattered trees on most of the hills of the area; Art Oliver of Elk City can recall trees being on the hills and prairie hills as far back as 1897. He said that the oaks scattered into the prairie before hedge rows were planted and that they have spread down over the hills. He said that there is more post oak and blackjack now than 60 years ago, but that there has always been some on these hills. Mr. Oliver said that his father once pointed out a hill to him and stated that when the mature trees there were cut down, the forest that came afterwards was more dense; William Row of Toronto, Woodson county, remembered his father telling him that there was scattered post oak on the hills at the time of settlement. Mr. Row said that there has been an increase of the post and blackjack oak in the area in the last 65 years; Joe Dexter of Longton, Elk county, said that the woods on the hills of the area looked about as they do now as far back as he could remember; Frank Burtenshaw of Elk City, Montgomery county, stated that the scrub oak on the hills covers more area now than it did 50 to 60 years ago and that the trees have spread from the hilltops onto the slopes and into ravines. He stated that the mature trees had been cut in the past and that the growth that replaced it was thicker; Johnny Wilson of Havana, Montgomery county, said that the trees have increased on the hills and have spread. He remembered areas which used to be maintained as hay fields that are now forested. He stated that mowing and burning of hay fields and open woods kept down saplings of scrub oak and that the latter grew up as dense timber after mowing and burning ceased, allowing the young growth to continue year after year.

Following a study of the list of native trees of the Chautauqua

Hills as compiled from historical records, one is impressed by the fact that it corresponds with the common trees of the present woodlands of the area. It is significant that there is frequent mention of trees on the uplands of the area under consideration because Kansas has usually been thought of as being barren of trees except along water courses and valleys.

A statement by Fitch and McGregor (1956), concerning a woodland study in northeastern Kansas, applies equally well to this area. "The belief that this and similar areas in northeastern Kansas were virtually treeless at the time of occupation by white settlers is shown to be wholly unfounded by the information obtained from growth rings." For the Chautauqua Hills area, information from survey notes and other historical accounts can be added to the latter evidence.

PRESENT VEGETATION

With the disturbance by the plow, ax, and grazing, the changes in the vegetation of the Chautauqua Hills since settlement has been considerable. These changes have been not so much changes in composition as in extent of area covered. Evidence indicates that there is more forest and much less prairie now than before settlement. It is probable that regular burning of prairies kept back the spread of scrub oak as did mowing and burning in prairie woodlands by the settlers. Much of the upland timber was cut down 60 to 70 years ago by the early settlers for fuel and lumber. Since that time the trees have reproduced from seed, and much second growth has developed from the stumps and suckers from roots. Since fire has been under control, trees have advanced down slopes and into prairie uplands as far as the environment permitted.

Most of the lowland and some of the upland prairie was plowed for cultivation. Much of the latter area is in use now for grazing and native hay but is by no means in an undisturbed condition. Yates Center, in Woodson county, is considered the prairie hay capital of the world. Of the 2,678,440 acres in the Chautauqua Hills area, 188,511 acres were in native hay in 1936 and 107,370 acres in 1952.

Disturbance has allowed for invasion of plants into fields and overgrazed pastures. Besides invasion of weeds into these places, some trees have become established also.

There is great diversity of plant groupings in the Chautauqua Hills ranging from marsh to flood plain woods, prairie, and rocky

wooded gullies. The following habitats are typical and representative of the plant communities in the Chautauqua Hills area.

Upland woods: These forests exist in continuous to scattered stands (Map 1) on sandstone of the Douglas group (Map 2) throughout the Chautauqua Hills. The forests are characteristically located over low rolling uplands (Plates 1, 3, and 5; Fig. 2) and cap prairie hilltops in numerous places (Plate 2). However, the aspect of the upland woods changes from place to place. Where these woods border gullies, ravines, and flood plains, the slopes are usually wooded their entire extent (Plates 4 and 5). In prairie areas the upland woods are generally restricted to the upper slopes and high places (Plates 1 and 2). In such areas, *Quercus stellata* and *Q. marilandica* among others (Tables 1 and 4), grow on rough, rocky land where run in water is received from sandstone surfaces and where snow lodges during the winter. These trees are located well above the water table and must withstand varying periods of drought. Seedlings do not become established on lower prairie slopes because the grasses are better equipped to obtain the available moisture.

To understand better the composition of the upland woods, the trees in 16 representative areas throughout the Chautauqua Hills were sampled by 45 strip transects. With these, the species and diameter of the first 100 trees occurring in a strip two meters wide were recorded. The data of transects which were taken in areas showing a similar aspect were tabulated and the percentages of the trees by size class were worked out (Tables 1-5).

The distribution of other *Quercus stellata*—*Q. marilandica* type woodlands are included in the writings of several workers. The oak-hickory forest region, as recognized by Braun (1950) extends from Canada to Texas as the westernmost part of the Eastern Deciduous Forest. A *Q. stellata*—*Q. marilandica* type woods, among others, is listed as occurring in the Piedmont (oak-hickory region of North Carolina) by Bourdeau (1954). His statements are quoted below, in part.

"The post oak—black jack oak forest (or the Piedmont) is called preclimax or subclimax by Oosting (1942). From a polyclimax point of view . . . it would be a physiographic or edaphic climax . . . Whatever the terminology used, post oak—black jack oak forests are restricted, in the North Carolina Piedmont, to dry south facing bluffs, thin rocky soils, strongly eroded soils, or to

the Iredell, Orange, and other closely related soil series . . . Trees in these sites are slow growing, rarely exceeding 30 feet in height . . . the stands are poorly stocked and do not form a closed canopy."

Braun (1950) lists similar communities of *Quercus stellata*—*Q. marilandica*, which exist throughout the Oak-Hickory Forest region, as follows: (1) in the Flatwoods Belt of Alabama and Mississippi, a flat area of heavy soils, water logged during rainy periods, dry and hard at other times; (2) on the poorest soils in the uplands of the Coast Plain west of the Mississippi River; (3) on drier ridges with sandy slopes and on steep more or less southerly slopes of the Ozark Plateau, the Boston Mountains, and the Ouachita Mountains; (4) on the open xeric plateau of the western border of the Ozarks; (5) on extensive areas of the old Kansas drift (Mississippi Valley); (6) on the Illinoian drift area (Prairie Peninsula section). The *Quercus stellata*—*Q. marilandica* communities are also represented in the Oak-Chestnut, the Western Mesophytic, and the Mixed Mesophytic forest regions.

In discussing the Oak-Hickory Association, Oosting (1956) stated that throughout the association, various combinations of oak and hickory may occur as preclimax. His illustration was the *Quercus stellata*—*Q. marilandica* which occurs widely on poor sites and dry exposures in the association. In Texas and Oklahoma the above species occur in open, savannalike stands, known as Cross Timbers (Dyksterhuis) 1948, which mark the transition to grassland in that area.

Rice and Penfound (1956) list *Quercus stellata* and *Q. marilandica* as dominants in the deciduous forest frontier in Oklahoma extending in a strip about 140 miles wide east of U. S. 81 and extending from Kansas to Texas.

The upland woods of the Chautauqua Hills extend through Oklahoma and on south to the Cross Timbers in Texas.

Several communities of *Quercus stellata*—*Q. marilandica* also occur as isolated stands on low sandstone capped hills in outlying areas of the Chautauqua Hills and in limited areas of the extreme southeastern corner of Cherokee County, Kansas. Fitch and McGregor (1956) reported a few small groves on slopes of a woodland area in Douglas County, Kansas. McGregor (1948) listed *Quercus marilandica* as being dominant in some strictly sandy soils of hillsides in the latter county.

In the understory of the upland woods (Plate 3; Fig. 2), shrubs such as *Symphoricarpos orbiculatus*, *Rhus copallina*, *R. glabra*, *Rubus allegheniensis*, *R. flagellaris*, and *R. occidentalis* grow beneath the trees and along margins of the woods. Numerous other characteristic species are found and can be listed as spring, summer, and fall aspects. Species in the spring aspect are usually evident because of their coloration. Several species of the woodlands come out early in the spring, have a short growth and die down. Characteristic of such are *Hedyotis minima*, *Androsace occidentalis*, *Claytonia virginica*, *Viola pedata*, *V. papilionacea*, *Draba reptans*, *D. brachycarpa*, and *Sibara virginica*. Some of the other common species of the spring aspect in upland woods are *Erythronium mesochoreum*, *Chaetopappa asteroides*, *Viola kitaibeliana* var. *rafinesquii*, *Erysimum repandum*, *Corydalis crystallina*, *Arenaria patula*, *Geranium carolinianum*, *Antennaria fallax*, *Nothoscordium bivalve*, *Galium aparine*, *Hypoxis hirsuta*, and *Fragaria virginiana*.

Species of sedges which are common at this time are *Carex blanda*, *C. pennsylvanica*, *C. bicknellii*, *Eleocharis obtusa*, and *E. engelmanni*. Some of the rushes, which appear shortly after the sedges, are *Juncus torreyi*, *J. marginatus* var. *setosa*, and *J. interior*.

For a period of a few weeks after the peak of the spring aspect is past, few new species appear, after this the summer aspect becomes evident. It is not as colorful as the spring aspect, but many species are conspicuous for their relative large size. Characteristic of the latter are *Tephrosia virginica*, *Amorpha canescens*, *A. fruticosa*, *Desmodium illinoense*, *D. sessilifolium*, *D. glutinosum*, *Cassia fasciculata*, *Lespedeza virginica*, *Apocynum cannabinum*, *Hieracium gronovii*, *Liatris squarrosa*, *Aster patens*, *A. ericoides*, *Chrysoopsis pilosa*, and *Solidago ulmifolia*.

Other less conspicuous species making up the understory of the summer are *Plantago virginica*, *P. purshii*, *P. aristata*, *Polytaenia nuttallii*, *Talinum parviflorum*, *Polygala incarnata*, *P. sanguinea*, *Lechea tenuifolia*, *Cyperus filiculmis*, *C. ovularis*, and *Parietaria floridana*. Some of the more common grasses of the summer aspect are *Boutelous hirsuta*, *Muhlenbergia racemosa*, *M. brachyphylla*, *Paspalum ciliatifolium*, and *Festuca ovina*.

In the fall the understory of the upland woods is made up of numerous species of grasses as well as several colorful flowering species. A few of the grasses are *Andropogon scoparius*, *Sporobolus asper*, *Aristida dichotoma*, *A. purpurascens*, *Muhlenbergia*

capillaris, *Panicum agrostoides*, *P. spaerocarpon*, *Leersia oryzoides*, and *Agrostis hiemalis*. Other species of plants characteristic of the fall aspect are *Liatris scariosa*, *Desmodium marilandicum*, *Spiranthes cernua*, *Acalypha gracilens*, *Solidago missouriensis* var. *glaberrima*, *Conyza canadensis*, and *Oxalis europaea*.

Prairie: The prairie which once covered much of the Chautauqua Hills is now confined to a few hay fields, considerable pasture, and to a few relics along railroad right of ways, and roadsides (Plates 1, 6, and 20: Fig. 2).

SUMMARY

The Chautauqua Hills area is a physiographic province in Kansas. It lies between the Osage Plains on the east and the Flint Hills on the west. It is bordered on the north by the Illinoian Biotic Province. The Kansas State line in Chautauqua and Montgomery counties marks its southern boundary. This region is the northern limits of the Texan Biotic Province. The area is characterized by low rolling hills capped with sandstone and covered on the tops and upper slopes with a growth of *Quercus stellata* and *Q. marilandica*, along with *Q. velutina* and *Q. prinoides* which form an oak savanna. The soil is typically light and sandy and the oaks are relicts from a former moist phase of the climatic cycle that have been able to maintain themselves against the competition of the grasses by virtue of the favorable amount of water available in the sandy soil. Trees common in flood plains become admixed with the above on slopes and in gullies and ravines. Evi-

dence from early survey notes and tree ring counts establishes proof that the Chautauqua Hills were wooded before the time of settlement. The upland forests, however, were not as extensive or as dense as they are at present.

Prolonged protection from fire permitted the encroachment of upland trees into the surrounding prairie areas as far as the environment allowed. There is less prairie now than before settlement due to much of it being plowed for cultivation by the settlers. Many prairie areas which remain have had their original species replaced by less desirable grasses and by various weedy forbs. The tree species in the flood plains and uplands at the present time are essentially the same as before settlement. The rest of the present flora, however, is much different than that present before man brought his disturbing influence to the region.

This study was undertaken with the view in mind to present an account of the flora and ecology of the Chautauqua Hills of Kansas, along with a description of the area before settlement. Species percentage composition for the characteristic plants of the woodland and prairie is included along with an annotated list of 1,030 taxa of vascular plants for the area.

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**KANU Collections Information Management System
Plants of Chautauqua County, Kansas, USA**

Based on specimens deposited at the R.L. McGregor Herbarium (KANU), University of Kansas, Lawrence KS.

Summary statistics: 755 species in total [ferns and fern allies = 25; gymnosperms = 1; monocots = 187; dicots = 542]; * = non-native species (109/754); ** = Kansas noxious weed (1/754); † = state rare species (one of fewer than 20 populations of species known to occur state; 68/754); ‡ = federally protected species (0/754).

PTERIDOPHYTES

Scientific name	Family	Common name	Scientific name	Family	Common name
<i>Asplenium platyneuron</i>	Aspleniaceae	ebony spleenwort	<i>Carex brevior</i>	Cyperaceae	short-beak sedge
† <i>Asplenium resiliens</i>	Aspleniaceae	black-stem spleenwort	‡ <i>Carex conjuncta</i>	Cyperaceae	soft fox sedge
<i>Asplenium rhizophyllum</i>	Aspleniaceae	walking fern	<i>Carex frankii</i>	Cyperaceae	Frank's sedge
† <i>Asplenium trichomanes</i> subsp. <i>trichomanes</i>	Aspleniaceae	maiden-hair spleenwort	<i>Carex grisea</i>	Cyperaceae	narrow-leaf sedge
† <i>Athyrium filix-femina</i> var. <i>asplenioides</i>	Dryopteridaceae	southern lady fern	<i>Carex leavenworthii</i>	Cyperaceae	Leavenworth's sedge
<i>Cystopteris protrusa</i>	Dryopteridaceae	southern bladder fern	<i>Carex meadii</i>	Cyperaceae	Mead's sedge
<i>Cystopteris tennesseensis</i>	Dryopteridaceae	Tennessee bladder fern	<i>Carex microdonta</i>	Cyperaceae	little-tooth sedge
<i>Dryopteris marginalis</i>	Dryopteridaceae	marginal wood fern	‡ <i>Carex missouriensis</i>	Cyperaceae	Missouri sedge
<i>Onoclea sensibilis</i>	Dryopteridaceae	sensitive fern	<i>Carex umbellata</i>	Cyperaceae	low sedge
† <i>Polystichum acrostichoides</i>	Dryopteridaceae	Christmas fern	<i>Carex vulpinoidea</i>	Cyperaceae	fox sedge
<i>Woodsia obtusa</i> subsp. <i>obtusa</i>	Dryopteridaceae	blunt-lobed cliff fern	<i>Cyperus acuminatus</i>	Cyperaceae	tape-leaf flat-sedge
<i>Woodsia obtusa</i> subsp. <i>occidentalis</i>	Dryopteridaceae	blunt-lobed cliff fern	<i>Cyperus echinatus</i>	Cyperaceae	globe flat-sedge
<i>Equisetum xferissii</i>	Equisetaceae	intermediate scouring-rush	<i>Cyperus esculentus</i>	Cyperaceae	yellow nut-sedge
† <i>Isoetes butleri</i>	Isoetaceae	Butler's quillwort	<i>Cyperus lupulinus</i> subsp. <i>lupulinus</i>	Cyperaceae	slender-stem flat-sedge
<i>Botrychium virginianum</i>	Ophioglossaceae	rattlesnake fern	<i>Cyperus odoratus</i>	Cyperaceae	slender flat-sedge
<i>Ophioglossum engelmannii</i>	Ophioglossaceae	limestone adder's-tongue	‡ <i>Cyperus pseudovegetus</i>	Cyperaceae	marsh flat-sedge
† <i>Osmunda regalis</i> var. <i>spectabilis</i>	Osmundaceae	royal fern	<i>Cyperus setigerus</i>	Cyperaceae	bristle flat-sedge
† <i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	Polypodiaceae	resurrection fern	<i>Cyperus strigosus</i>	Cyperaceae	false nut-sedge
<i>Argyrochosma dealbata</i>	Pteridaceae	false cloak fern	‡ <i>Eleocharis coloradoensis</i>	Cyperaceae	Colorado spike-rush
<i>Cheilanthes feei</i>	Pteridaceae	slender lip fern	<i>Eleocharis compressa</i> var. <i>acutisquamata</i>	Cyperaceae	flat-stem spike-rush
† <i>Cheilanthes lanosa</i>	Pteridaceae	hairy lip fern	<i>Eleocharis obtusa</i>	Cyperaceae	blunt spike-rush
<i>Pellaea atropurpurea</i>	Pteridaceae	purple-stem cliffbrake	‡ <i>Eleocharis verrucosa</i>	Cyperaceae	slender spike-rush
<i>Pellaea glabella</i> subsp. <i>glabella</i>	Pteridaceae	smooth cliffbrake	‡ <i>Eleocharis wolfii</i>	Cyperaceae	Wolf's spike-rush
<i>Selaginella rupestris</i>	Selaginellaceae	rock spike-moss	‡ <i>Fimbristylis annua</i>	Cyperaceae	annual fimbry
<i>Thelypteris palustris</i> var. <i>pubescens</i>	Thelypteridaceae	marsh fern	<i>Fimbristylis puberula</i> var. <i>puberula</i>	Cyperaceae	hairy fimbry
			‡ <i>Isolepis carinata</i>	Cyperaceae	keeled annual-bulrush
			<i>Schoenoplectus tabernaemontani</i>	Cyperaceae	soft-stem twine-bulrush
			<i>Scirpus pallidus</i>	Cyperaceae	pale bulrush
			<i>Scirpus pendulus</i>	Cyperaceae	drooping bulrush
			‡ <i>Scleria pauciflora</i> var. <i>pauciflora</i>	Cyperaceae	few-flower nut-rush
			<i>Scleria triglomerata</i>	Cyperaceae	whip nut-rush
			<i>Nemastylis geminiflora</i>	Iridaceae	two-flower celestial-lily
			<i>Sisyrinchium campestre</i>	Iridaceae	prairie blue-eyed-grass
			<i>Juncus diffusissimus</i>	Juncaceae	slim-pod rush
			<i>Juncus dudleyi</i>	Juncaceae	Dudley's rush
			<i>Juncus marginatus</i>	Juncaceae	grass-leaf rush
			<i>Juncus nodatus</i>	Juncaceae	stout rush
			<i>Juncus torreyi</i>	Juncaceae	Torrey's rush
			<i>Luzula bulbosa</i>	Juncaceae	southern wood-rush
† <i>Carex arkansana</i>	Cyperaceae	Arkansas sedge	<i>Lemna perpusilla</i>	Lemnaceae	minute duckweed
<i>Carex austrina</i>	Cyperaceae	southern sedge	<i>Allium canadense</i> var. <i>canadense</i>	Liliaceae	Canadian onion
<i>Carex blanda</i>	Cyperaceae	woodland sedge	<i>Allium canadense</i> var. <i>lavendulare</i>	Liliaceae	Canadian onion

Scientific name	Family	Common name	Scientific name	Family	Common name
* <i>Allium vineale</i>	Liliaceae	field garlic	<i>Dichanthelium scoparium</i>	Poaceae	velvet dichanthelium
* <i>Asparagus officinalis</i>	Liliaceae	garden asparagus	<i>Dichanthelium sphaerocarpon</i> var. <i>sphaerocarpon</i>	Poaceae	round-seed dichanthelium
‡ <i>Camassia angusta</i>	Liliaceae	greater camas	<i>Digitaria cognata</i> subsp. <i>cognata</i>	Poaceae	fall witch grass
<i>Camassia scilloides</i>	Liliaceae	Atlantic camas	* <i>Digitaria ischaemum</i>	Poaceae	smooth crab grass
<i>Erythronium albidum</i>	Liliaceae	white fawn-lily	* <i>Digitaria sanguinalis</i>	Poaceae	hairy crab grass
<i>Erythronium mesochoreum</i>	Liliaceae	prairie fawn-lily	* <i>Echinochloa crusgalli</i>	Poaceae	common barnyard grass
* <i>Hemerocallis fulva</i>	Liliaceae	orange day-lily	<i>Echinochloa muricata</i> var. <i>muricata</i>	Poaceae	rough barnyard grass
<i>Hypoxis hirsuta</i>	Liliaceae	hairy yellow star-lily	<i>Echinochloa muricata</i> var. <i>microstachya</i>	Poaceae	rough barnyard grass
<i>Nothoscordum bivalve</i>	Liliaceae	yellow false-garlic	* <i>Eleusine indica</i>	Poaceae	Indian goose grass
<i>Polygonatum biflorum</i>	Liliaceae	small Solomon's seal	<i>Elymus canadensis</i> var. <i>canadensis</i>	Poaceae	Canadian wild-rye
‡ <i>Zephyranthes chlorosolen</i>	Liliaceae	evening-star zephyr-lily	<i>Elymus glabriflorus</i> var. <i>australis</i>	Poaceae	southeastern wild-rye
<i>Zigadenus nuttallii</i>	Liliaceae	Nuttall's death-camas	<i>Elymus virginicus</i> var. <i>intermedius</i>	Poaceae	Virginia wild-rye
<i>Corallorhiza wisteriana</i>	Orchidaceae	Wister's coralroot	<i>Elymus virginicus</i> var. <i>jejunus</i>	Poaceae	Virginia wild-rye
<i>Spiranthes cernua</i>	Orchidaceae	nodding ladies'-tresses	<i>Elymus virginicus</i> var. <i>virginicus</i>	Poaceae	Virginia wild-rye
<i>Spiranthes lacera</i> var. <i>gracilis</i>	Orchidaceae	southern slender ladies'-tresses	‡ <i>Eragrostis capillaris</i>	Poaceae	lace grass
<i>Spiranthes tuberosa</i>	Orchidaceae	little ladies'-tresses	* <i>Eragrostis cilianensis</i>	Poaceae	stink grass
<i>Spiranthes vernalis</i>	Orchidaceae	spring ladies'-tresses	<i>Eragrostis hypnoides</i>	Poaceae	teal love grass
* <i>Aegilops cylindrica</i>	Poaceae	jointed goat grass	‡ <i>Eragrostis intermedia</i>	Poaceae	plains love grass
<i>Agrostis eliottiana</i>	Poaceae	Elliott's bent grass	<i>Eragrostis pectinacea</i> var. <i>pectinacea</i>	Poaceae	Carolina love grass
<i>Agrostis hyemalis</i>	Poaceae	winter bent grass	<i>Eragrostis secundiflora</i> subsp. <i>oxylepis</i>	Poaceae	red love grass
<i>Andropogon gerardii</i>	Poaceae	big bluestem	<i>Eragrostis spectabilis</i>	Poaceae	purple love grass
<i>Andropogon ternarius</i>	Poaceae	split-beard bluestem	<i>Eriochloa contracta</i>	Poaceae	prairie cup grass
<i>Andropogon virginicus</i> var. <i>virginicus</i>	Poaceae	broom-sedge bluestem	<i>Festuca subverticillata</i>	Poaceae	nodding fescue
<i>Aristida dichotoma</i> var. <i>curtissii</i>	Poaceae	church-mouse threeawn	<i>Glyceria striata</i>	Poaceae	fowl manna grass
‡ <i>Aristida dichotoma</i> var. <i>dichotoma</i>	Poaceae	church-mouse threeawn	‡ <i>Gymnopogon ambiguus</i>	Poaceae	bearded skeleton grass
<i>Aristida oligantha</i>	Poaceae	old-field threeawn	<i>Hordeum jubatum</i>	Poaceae	fox-tail barley
<i>Aristida purpurascens</i> var. <i>purpurascens</i>	Poaceae	arrow-feather threeawn	<i>Hordeum pusillum</i>	Poaceae	little barley
* <i>Bothriochloa bladhii</i>	Poaceae	Caucasian bluestem	<i>Koeleria macrantha</i>	Poaceae	prairie June grass
<i>Bothriochloa laguroides</i> subsp. <i>torreyana</i>	Poaceae	silver bluestem	<i>Leersia oryzoides</i> var. <i>oryzoides</i>	Poaceae	rice cut grass
<i>Bouteloua curtipendula</i> var. <i>curtipendula</i>	Poaceae	side-oats grama	<i>Leersia virginica</i>	Poaceae	white grass
<i>Bouteloua hirsuta</i> var. <i>hirsuta</i>	Poaceae	hairy grama	<i>Leptochloa panicea</i> subsp. <i>mucronata</i>	Poaceae	red sprangletop
* <i>Bromus commutatus</i>	Poaceae	hairy brome	* <i>Lolium arundinaceum</i>	Poaceae	tall rye grass
* <i>Bromus inermis</i>	Poaceae	smooth brome	<i>Muhlenbergia bushii</i>	Poaceae	Bush's muhly
* <i>Bromus japonicus</i>	Poaceae	Japanese brome	‡ <i>Muhlenbergia capillaris</i>	Poaceae	hairy muhly
<i>Bromus pubescens</i>	Poaceae	Canadian brome	<i>Muhlenbergia frondosa</i>	Poaceae	wire-stem muhly
* <i>Bromus secalinus</i>	Poaceae	rye brome	<i>Muhlenbergia schreberi</i>	Poaceae	nimblewill
* <i>Bromus tectorum</i>	Poaceae	downy brome	<i>Muhlenbergia sobolifera</i>	Poaceae	rock muhly
<i>Buchloë dactyloides</i>	Poaceae	buffalo grass	<i>Panicum anceps</i>	Poaceae	beaked panicum
<i>Cenchrus longispinus</i>	Poaceae	field sandbur	<i>Panicum capillare</i> var. <i>brevifolium</i>	Poaceae	common witch grass
<i>Chasmanthium latifolium</i>	Poaceae	broad-leaf wood-oat	<i>Panicum capillare</i> var. <i>capillare</i>	Poaceae	common witch grass
<i>Chloris verticillata</i>	Poaceae	whorled windmill grass	<i>Panicum dichotomiflorum</i> var. <i>dichotomiflorum</i>	Poaceae	fall panicum
<i>Cinna arundinacea</i>	Poaceae	eastern wood-reed	<i>Panicum philadelphicum</i>	Poaceae	Philadelphia witch grass
* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Poaceae	common bermuda grass	<i>Panicum rigidulum</i>	Poaceae	red-top witch grass
* <i>Dactylis glomerata</i>	Poaceae	common orchard grass	<i>Panicum virgatum</i> var. <i>virgatum</i>	Poaceae	switch grass
‡ <i>Danthonia spicata</i>	Poaceae	poverty oat grass	<i>Paspalum floridanum</i> var. <i>floridanum</i>	Poaceae	Florida paspalum
<i>Dichanthelium acuminatum</i> var. <i>acuminatum</i>	Poaceae	pointed dichanthelium	<i>Paspalum floridanum</i> var. <i>glabratum</i>	Poaceae	Florida paspalum
<i>Dichanthelium acuminatum</i> var. <i>implicatum</i>	Poaceae	pointed dichanthelium	<i>Paspalum pubiflorum</i> var. <i>glabrum</i>	Poaceae	hairy-seed paspalum
<i>Dichanthelium clandestinum</i>	Poaceae	deer-tongue dichanthelium	<i>Paspalum repens</i>	Poaceae	water paspalum
<i>Dichanthelium linearifolium</i>	Poaceae	slim-leaf dichanthelium	<i>Paspalum setaceum</i> var. <i>stramineum</i>	Poaceae	thin paspalum

Scientific name	Family	Common name	Scientific name	Family	Common name
* <i>Phleum pratense</i> subsp. <i>pratense</i>	Poaceae	common timothy	<i>Iresine rhizomatosa</i>	Amaranthaceae	root-stock bloodleaf
* <i>Poa annua</i>	Poaceae	annual blue grass	<i>Rhus aromatica</i> var. <i>serotina</i>	Anacardiaceae	fragrant sumac
<i>Poa chapmaniana</i>	Poaceae	Chapman's blue grass	<i>Rhus copallina</i>	Anacardiaceae	dwarf sumac
* <i>Poa pratensis</i>	Poaceae	Kentucky blue grass	<i>Rhus glabra</i>	Anacardiaceae	smooth sumac
<i>Poa sylvestris</i>	Poaceae	woodland blue grass	‡ <i>Toxicodendron pubescens</i>	Anacardiaceae	eastern poison-oak
<i>Schedonnardus paniculatus</i>	Poaceae	tumble grass	<i>Toxicodendron radicans</i> subsp. <i>negundo</i>	Anacardiaceae	poison-ivy
<i>Schizachyrium scoparium</i> subsp. <i>scoparium</i>	Poaceae	little bluestem	<i>Asimina triloba</i>	Annonaceae	common pawpaw
* <i>Sclerochloa dura</i>	Poaceae	hard grass	‡ <i>Ammoselinum butleri</i>	Apiaceae	Butler's sand-parsley
* <i>Setaria faberi</i>	Poaceae	Chinese bristle grass	<i>Ammoselinum popei</i>	Apiaceae	plains sand-parsley
<i>Setaria parviflora</i>	Poaceae	knot-root bristle grass	<i>Chaerophyllum procumbens</i> var. <i>procumbens</i>	Apiaceae	spreading chervil
* <i>Setaria pumila</i>	Poaceae	yellow bristle grass	<i>Chaerophyllum tainturieri</i> var. <i>tainturieri</i>	Apiaceae	southern chervil
* <i>Setaria viridis</i> var. <i>viridis</i>	Poaceae	green bristle grass	<i>Cicuta maculata</i> var. <i>maculata</i>	Apiaceae	spotted water-hemlock
<i>Sorghastrum nutans</i>	Poaceae	yellow Indian grass	* <i>Conium maculatum</i>	Apiaceae	poison-hemlock
* <i>Sorghum halepense</i>	Poaceae	Johnson grass	<i>Cryptotaenia canadensis</i>	Apiaceae	honestwort
<i>Spartina pectinata</i>	Poaceae	prairie cord grass	‡ <i>Daucus pusillus</i>	Apiaceae	southwestern carrot
<i>Sphenopholis obtusata</i> var. <i>obtusata</i>	Poaceae	prairie wedgescale	‡ <i>Eryngia bulbosa</i>	Apiaceae	harbinger-of-spring
<i>Sporobolus clandestinus</i>	Poaceae	southeastern dropseed	<i>Eryngium leavenworthii</i>	Apiaceae	Leavenworth's eryngo
<i>Sporobolus compositus</i> var. <i>compositus</i>	Poaceae	rough dropseed	<i>Eryngium yuccifolium</i> var. <i>yuccifolium</i>	Apiaceae	button snake-root eryngo
<i>Sporobolus compositus</i> var. <i>drummondii</i>	Poaceae	meadow dropseed	<i>Lomatium foeniculaceum</i> var. <i>daucifolium</i>	Apiaceae	fennel-leaf desert-parsley
‡ <i>Sporobolus compositus</i> var. <i>macer</i>	Poaceae	Mississippi dropseed	<i>Polytaenia nuttallii</i>	Apiaceae	Nuttall's prairie-parsley
<i>Sporobolus cryptandrus</i>	Poaceae	sand dropseed	<i>Sanicula canadensis</i> var. <i>canadensis</i>	Apiaceae	Canadian sanicle
<i>Sporobolus neglectus</i>	Poaceae	puff-sheath dropseed	<i>Sanicula odorata</i>	Apiaceae	fragrant sanicle
<i>Sporobolus ozarkanus</i>	Poaceae	Ozark dropseed	‡ <i>Spermolepis divaricata</i>	Apiaceae	forked scaleseed
<i>Sporobolus pyramidatus</i>	Poaceae	whorled dropseed	‡ <i>Spermolepis echinata</i>	Apiaceae	bristly scaleseed
<i>Tridens flavus</i> var. <i>flavus</i>	Poaceae	purpletop	<i>Spermolepis inermis</i>	Apiaceae	spreading scaleseed
‡ <i>Tridens muticus</i> var. <i>elongatus</i>	Poaceae	slim tridens	* <i>Torilis arvensis</i>	Apiaceae	field hedge-parsley
<i>Tridens strictus</i>	Poaceae	long-spike tridens	<i>Zizia aurea</i>	Apiaceae	common golden-alexanders
<i>Triplasis purpurea</i> var. <i>purpurea</i>	Poaceae	purple sand grass	<i>Apocynum cannabinum</i>	Apocynaceae	hemp dogbane
<i>Tripsacum dactyloides</i> var. <i>dactyloides</i>	Poaceae	eastern gamma grass	‡ <i>Ilex decidua</i>	Aquifoliaceae	deciduous holly
<i>Vulpia octoflora</i> var. <i>octoflora</i>	Poaceae	six-weeks annual-fescue	<i>Asclepias incarnata</i> subsp. <i>incarnata</i>	Asclepiadaceae	swamp milkweed
<i>Potamogeton diversifolius</i>	Potamogetonaceae	water-thread pondweed	<i>Asclepias stenophylla</i>	Asclepiadaceae	narrow-leaf milkweed
<i>Potamogeton foliosus</i> subsp. <i>foliosus</i>	Potamogetonaceae	leafy pondweed	<i>Asclepias sullivantii</i>	Asclepiadaceae	smooth milkweed
<i>Potamogeton nodosus</i>	Potamogetonaceae	long-leaf pondweed	<i>Asclepias syriaca</i>	Asclepiadaceae	common milkweed
<i>Potamogeton pusillus</i> subsp. <i>pusillus</i>	Potamogetonaceae	baby pondweed	<i>Asclepias tuberosa</i> subsp. <i>interior</i>	Asclepiadaceae	butterfly milkweed
<i>Smilax hispida</i>	Smilacaceae	bristly greenbrier	<i>Asclepias verticillata</i>	Asclepiadaceae	whorled milkweed
<i>Typha angustifolia</i>	Typhaceae	narrow-leaf cat-tail	<i>Asclepias viridiflora</i>	Asclepiadaceae	green milkweed
<i>Typha latifolia</i>	Typhaceae	broad-leaf cat-tail	<i>Asclepias viridis</i>	Asclepiadaceae	spider milkweed
ANGIOSPERMS: DICOTS			<i>Achillea millefolium</i> subsp. <i>lanulosa</i>	Asteraceae	western yarrow
<i>Dicliptera brachiata</i>	Acanthaceae	wild mudwort	<i>Ageratina altissima</i>	Asteraceae	tall snakeroot
<i>Justicia americana</i>	Acanthaceae	American water-willow	<i>Ambrosia artemisiifolia</i>	Asteraceae	common ragweed
<i>Ruellia humilis</i>	Acanthaceae	fringe-leaf ruellia	<i>Ambrosia bidentata</i>	Asteraceae	southern ragweed
<i>Ruellia strepens</i>	Acanthaceae	limestone ruellia	<i>Ambrosia psilostachya</i>	Asteraceae	western ragweed
<i>Acer negundo</i> var. <i>violacea</i>	Aceraceae	boxelder	<i>Ambrosia trifida</i>	Asteraceae	giant ragweed
<i>Acer saccharinum</i>	Aceraceae	silver maple	<i>Amphiachyris dracunculoides</i>	Asteraceae	common broomweed
* <i>Amaranthus hybridus</i> subsp. <i>hybridus</i>	Amaranthaceae	slender pigweed	<i>Antennaria neglecta</i>	Asteraceae	field pussy's-toes
* <i>Amaranthus retroflexus</i>	Amaranthaceae	rough pigweed	<i>Antennaria parlinii</i> subsp. <i>fallax</i>	Asteraceae	plantain-leaf pussy's-toes
* <i>Amaranthus spinosus</i>	Amaranthaceae	spiny pigweed	* <i>Arctium minus</i>	Asteraceae	common burdock
<i>Amaranthus tuberculatus</i>	Amaranthaceae	tall water-hemp	<i>Arnoglossum plantagineum</i>	Asteraceae	tuberous Indian-plantain
<i>Froelichia gracilis</i>	Amaranthaceae	slender snake-cotton	<i>Artemisia ludoviciana</i> subsp. <i>mexicana</i>	Asteraceae	Louisiana sagewort

Scientific name	Family	Common name	Scientific name	Family	Common name
<i>Aster drummondii</i> subsp. <i>drummondii</i>	Asteraceae	Drummond's aster	<i>Helianthus mollis</i>	Asteraceae	ashy sunflower
<i>Aster ericoides</i> var. <i>ericoides</i>	Asteraceae	heath aster	<i>Helianthus pauciflorus</i> var. <i>pauciflorus</i>	Asteraceae	stiff sunflower
<i>Aster lanceolatus</i> var. <i>lanceolatus</i>	Asteraceae	lance-leaf aster	<i>Helianthus salicifolius</i>	Asteraceae	willow-leaf sunflower
<i>Aster oblongifolius</i>	Asteraceae	aromatic aster	<i>Helianthus tuberosus</i>	Asteraceae	Jerusalem-artichoke sunflower
<i>Aster oolentangiensis</i> var. <i>oolentangiensis</i>	Asteraceae	azure aster	<i>Heliopsis helianthoides</i> subsp. <i>scabra</i>	Asteraceae	sunflower heliopsis
<i>Aster patens</i> var. <i>patens</i>	Asteraceae	sky-drop aster	‡ <i>Hieracium gronovii</i>	Asteraceae	Gronovius' hawkweed
<i>Aster patens</i> var. <i>patentissimus</i>	Asteraceae	sky-drop aster	<i>Hymenopappus scabiosaeus</i> var. <i>corymbosus</i>	Asteraceae	flat-top woolly-white
<i>Aster pilosus</i> var. <i>pilosus</i>	Asteraceae	hairy aster	<i>Iva annua</i> var. <i>annua</i>	Asteraceae	annual sumpweed
<i>Aster praealtus</i> var. <i>praealtus</i>	Asteraceae	willow-leaf aster	<i>Krigia cespitosa</i>	Asteraceae	weedy dwarf-dandelion
<i>Astranthium integrifolium</i> subsp. <i>ciliatum</i>	Asteraceae	whole-leaf western-daisy	‡ <i>Krigia occidentalis</i>	Asteraceae	western dwarf-dandelion
<i>Bidens aristosa</i> var. <i>retrorsus</i>	Asteraceae	coreopsis beggar-ticks	<i>Lactuca canadensis</i>	Asteraceae	Canadian lettuce
<i>Bidens bipinnatus</i>	Asteraceae	Spanish needles	<i>Lactuca floridana</i>	Asteraceae	Florida lettuce
<i>Bidens frondosus</i>	Asteraceae	devil's beggar-ticks	<i>Lactuca ludoviciana</i>	Asteraceae	western lettuce
<i>Boltonia asteroides</i> var. <i>latisquama</i>	Asteraceae	white boltonia	* <i>Lactuca saligna</i>	Asteraceae	willow-leaf lettuce
<i>Boltonia asteroides</i> var. <i>recognita</i>	Asteraceae	white boltonia	* <i>Lactuca serriola</i>	Asteraceae	prickly lettuce
<i>Bradburia pilosa</i>	Asteraceae	hairy bradburia	* <i>Leucanthemum vulgare</i>	Asteraceae	common ox-eye daisy
<i>Brickellia eupatorioides</i> var. <i>corymbulosa</i>	Asteraceae	eastern brickellbush	<i>Liatris aspera</i>	Asteraceae	button gayfeather
* <i>Centaurea cyanus</i>	Asteraceae	bachelor's-button	<i>Liatris mucronata</i>	Asteraceae	eastern dotted gayfeather
‡ <i>Chaetopappa asteroides</i> var. <i>asteroides</i>	Asteraceae	common least daisy	<i>Liatris pycnostachya</i>	Asteraceae	thick-spike gayfeather
<i>Cirsium altissimum</i>	Asteraceae	tall thistle	<i>Liatris squarrosa</i> var. <i>hirsuta</i>	Asteraceae	plains gayfeather
<i>Cirsium undulatum</i> var. <i>undulatum</i>	Asteraceae	wavy-leaf thistle	<i>Packera obovata</i>	Asteraceae	round-leaf ragwort
* <i>Cirsium vulgare</i>	Asteraceae	bull thistle	<i>Packera plattensis</i>	Asteraceae	prairie ragwort
‡ <i>Conoclidium coelestinum</i>	Asteraceae	heavenly mistflower	<i>Parthenium integrifolium</i> var. <i>hispidum</i>	Asteraceae	whole-leaf feverfew
<i>Conyza canadensis</i>	Asteraceae	tall horseweed	<i>Pluchea odorata</i> var. <i>odorata</i>	Asteraceae	purple marsh-fleabane
‡ <i>Conyza ramosissima</i>	Asteraceae	spreading horseweed	<i>Prenanthes aspera</i>	Asteraceae	rough rattlesnake-root
‡ <i>Coreopsis grandiflora</i> var. <i>grandiflora</i>	Asteraceae	big-flower coreopsis	<i>Prionopsis ciliata</i>	Asteraceae	wax-goldenweed
‡ <i>Coreopsis lanceolata</i>	Asteraceae	lance-leaf coreopsis	<i>Pseudognaphalium obtusifolium</i>	Asteraceae	fragrant false-cudweed
<i>Coreopsis palmata</i>	Asteraceae	finger coreopsis	<i>Pyrrhopappus carolinianus</i>	Asteraceae	Carolina false-dandelion
<i>Coreopsis tinctoria</i> var. <i>tinctoria</i>	Asteraceae	plains coreopsis	<i>Pyrrhopappus grandiflorus</i>	Asteraceae	tuberous false-dandelion
<i>Dracopis amplexicaulis</i>	Asteraceae	clasping-coneflower	<i>Ratibida columnifera</i>	Asteraceae	upright prairie-coneflower
<i>Echinacea pallida</i>	Asteraceae	pale purple-coneflower	<i>Rudbeckia hirta</i> var. <i>pulcherrima</i>	Asteraceae	black-eyed-Susan
<i>Eclipta prostrata</i>	Asteraceae	yerba de tajo	<i>Silphium laciniatum</i>	Asteraceae	compassplant
‡ <i>Elephantopus carolinianus</i>	Asteraceae	Carolina elephant's-foot	<i>Solidago canadensis</i> var. <i>scabra</i>	Asteraceae	Canadian goldenrod
<i>Erechtites hieraciifolia</i> var. <i>hieraciifolia</i>	Asteraceae	American burnweed	<i>Solidago gigantea</i>	Asteraceae	late goldenrod
<i>Erigeron annuus</i>	Asteraceae	annual fleabane	<i>Solidago missouriensis</i>	Asteraceae	Missouri goldenrod
<i>Erigeron philadelphicus</i> var. <i>philadelphicus</i>	Asteraceae	Philadelphia fleabane	<i>Solidago nemoralis</i> subsp. <i>decemiflora</i>	Asteraceae	gray goldenrod
<i>Erigeron strigosus</i> var. <i>strigosus</i>	Asteraceae	daisy fleabane	<i>Solidago petiolaris</i> var. <i>angusta</i>	Asteraceae	downy goldenrod
<i>Eupatorium altissimum</i>	Asteraceae	tall joe-pye-weed	<i>Solidago rigida</i> subsp. <i>humilis</i>	Asteraceae	stiff goldenrod
<i>Eupatorium perfoliatum</i>	Asteraceae	clasping-leaf joe-pye-weed	<i>Solidago rigida</i> subsp. <i>rigida</i>	Asteraceae	stiff goldenrod
<i>Eupatorium serotinum</i>	Asteraceae	fall joe-pye-weed	<i>Solidago speciosa</i> var. <i>rigiduscula</i>	Asteraceae	showy-wand goldenrod
<i>Euthamia gymnospermoides</i>	Asteraceae	sticky euthamia	<i>Solidago ulmifolia</i> var. <i>microphylla</i>	Asteraceae	elm-leaf goldenrod
<i>Gamochaeta purpurea</i>	Asteraceae	purple everlasting	<i>Solidago ulmifolia</i> var. <i>ulmifolia</i>	Asteraceae	elm-leaf goldenrod
<i>Grindelia lanceolata</i> var. <i>lanceolata</i>	Asteraceae	spiny-tooth gumweed	* <i>Sonchus asper</i>	Asteraceae	prickly sow-thistle
<i>Helenium amarum</i> var. <i>amarum</i>	Asteraceae	bitter sneezeweed	* <i>Taraxacum laevigatum</i>	Asteraceae	red-seed dandelion
<i>Helenium autumnale</i>	Asteraceae	common sneezeweed	* <i>Taraxacum officinale</i>	Asteraceae	common dandelion
<i>Helianthus annuus</i>	Asteraceae	common sunflower	* <i>Tragopogon dubius</i>	Asteraceae	western salsify
<i>Helianthus grosseserratus</i>	Asteraceae	saw-tooth sunflower	<i>Verbesina alternifolia</i>	Asteraceae	wing-stem crownbeard
<i>Helianthus hirsutus</i>	Asteraceae	hairy sunflower	<i>Verbesina virginica</i>	Asteraceae	white crownbeard
<i>Helianthus maximiliani</i>	Asteraceae	Maximilian's sunflower	<i>Vernonia arkansana</i>	Asteraceae	Arkansas ironweed

Scientific name	Family	Common name	Scientific name	Family	Common name
<i>Vernonia baldwinii</i> subsp. <i>baldwinii</i>	Asteraceae	western ironweed	<i>Minuartia patula</i> var. <i>patula</i>	Caryophyllaceae	spreading sandwort
<i>Vernonia baldwinii</i> subsp. <i>interior</i>	Asteraceae	western ironweed	<i>Paronychia fastigiata</i> var. <i>fastigiata</i>	Caryophyllaceae	forked nailwort
<i>Xanthium strumarium</i> var. <i>canadense</i>	Asteraceae	common cocklebur	‡ <i>Sagina decumbens</i> subsp. <i>decumbens</i>	Caryophyllaceae	trailing pearlwort
<i>Podophyllum peltatum</i>	Berberidaceae	common May-apple	* <i>Saponaria officinalis</i>	Caryophyllaceae	bouncingbet
‡ <i>Betula nigra</i>	Betulaceae	river birch	<i>Silene antirrhina</i>	Caryophyllaceae	sleep catchfly
* <i>Campsis radicans</i>	Bignoniaceae	common trumpet-creeper	<i>Silene stellata</i>	Caryophyllaceae	starry catchfly
* <i>Catalpa speciosa</i>	Bignoniaceae	northern catalpa	* <i>Stellaria media</i>	Caryophyllaceae	common chickweed
<i>Heliotropium tenellum</i>	Boraginaceae	pasture heliotrope	* <i>Stellaria pallida</i>	Caryophyllaceae	pale chickweed
* <i>Lithospermum arvense</i>	Boraginaceae	corn gromwell	<i>Celastrus scandens</i>	Celastraceae	American bittersweet
<i>Lithospermum incisum</i>	Boraginaceae	plains gromwell	* <i>Chenopodium ambrosioides</i> var. <i>ambrosioides</i>	Chenopodiaceae	worm-seed goosefat
<i>Myosotis verna</i>	Boraginaceae	spring forget-me-not	<i>Chenopodium missouriense</i>	Chenopodiaceae	Missouri goosefoot
<i>Onosmodium bejariense</i> var. <i>occidentale</i>	Boraginaceae	western marbledseed	<i>Chenopodium standleyanum</i>	Chenopodiaceae	Standley's goosefoot
<i>Arabis canadensis</i>	Brassicaceae	Canadian rockcress	* <i>Kochia scoparia</i>	Chenopodiaceae	broom kochia
* <i>Barbarea vulgaris</i>	Brassicaceae	bitter wintercress	‡ <i>Lechea mucronata</i>	Cistaceae	hairy pinweed
* <i>Brassica rapa</i> subsp. <i>rapa</i>	Brassicaceae	field mustard	<i>Lechea tenuifolia</i>	Cistaceae	narrow-leaf pinweed
* <i>Camelina microcarpa</i>	Brassicaceae	little-pod false-flax	<i>Hypericum drummondii</i>	Clusiaceae	nits-and-lice
* <i>Camelina rumelina</i>	Brassicaceae	white-flower false-flax	<i>Hypericum hypericoides</i> subsp. <i>muticaule</i>	Clusiaceae	St. Andrew's-cross
* <i>Capsella bursa-pastoris</i>	Brassicaceae	common shepherd's-purse	<i>Hypericum mutilum</i> subsp. <i>mutilum</i>	Clusiaceae	slender St. John's-wort
<i>Cardamine parviflora</i> var. <i>arenicola</i>	Brassicaceae	small-flower bittercress	* <i>Hypericum perforatum</i>	Clusiaceae	common St. John's-wort
<i>Descurainia pinnata</i> subsp. <i>brachycarpa</i>	Brassicaceae	pinnate tansy-mustard	<i>Hypericum punctatum</i>	Clusiaceae	spotted St. John's-wort
<i>Draba brachycarpa</i>	Brassicaceae	short-pod draba	<i>Hypericum sphaerocarpum</i>	Clusiaceae	round-fruit St. John's-wort
<i>Draba cuneifolia</i> var. <i>cuneifolia</i>	Brassicaceae	wedge-leaf draba	<i>Calystegia sepium</i> var. <i>angulata</i>	Convolvulaceae	common hedge-bindweed
* <i>Erysimum repandum</i>	Brassicaceae	bushy wallflower	* <i>Convolvulus arvensis</i>	Convolvulaceae	field bindweed
<i>Lepidium densiflorum</i> var. <i>densiflorum</i>	Brassicaceae	prairie pepper-grass	<i>Evolvulus nuttallianus</i>	Convolvulaceae	Nuttall's evolvulus
<i>Lepidium virginicum</i> var. <i>virginicum</i>	Brassicaceae	Virginia pepper-grass	<i>Ipomoea lacunosa</i>	Convolvulaceae	white morning-glory
* <i>Microthlaspi perfoliatum</i>	Brassicaceae	perfoliate-pennycress	<i>Ipomoea pandurata</i>	Convolvulaceae	big-root morning-glory
<i>Rorippa sinuata</i>	Brassicaceae	spreading yellowcress	<i>Cornus amomum</i> subsp. <i>obliqua</i>	Cornaceae	pale dogwood
‡ <i>Selenia aurea</i>	Brassicaceae	golden senenia	<i>Cornus drummondii</i>	Cornaceae	rough-leaf dogwood
<i>Sibara virginica</i>	Brassicaceae	Virginia rockcress	<i>Penthorum sedoides</i>	Crassulaceae	ditch-stonecrop
* <i>Thlaspi arvense</i>	Brassicaceae	field pennycress	‡ <i>Sedum nuttallianum</i>	Crassulaceae	Nuttall's stoncrop
<i>Opuntia macrorhiza</i> var. <i>macrorhiza</i>	Cactaceae	big-root pricklypear	<i>Echinocystis lobata</i>	Cucurbitaceae	wild mock-cucumber
<i>Callitriche heterophylla</i> var. <i>heterophylla</i>	Callitricheaceae	large water-starwort	<i>Sicyos angulatus</i>	Cucurbitaceae	wall bur-cucumber
<i>Campanula americana</i>	Campanulaceae	American bellflower	<i>Diospyros virginiana</i>	Ebenaceae	common persimmon
<i>Lobelia appendiculata</i> var. <i>appendiculata</i>	Campanulaceae	ear-flower lobelia	<i>Acalypha monococca</i>	Euphorbiaceae	slender copperleaf
<i>Lobelia cardinalis</i>	Campanulaceae	cardinal-flower	<i>Acalypha ostryifolia</i>	Euphorbiaceae	rough-pod copperleaf
<i>Triodanis leptocarpa</i>	Campanulaceae	slender-fruit Venus'-looking-glass	<i>Acalypha rhomboidea</i>	Euphorbiaceae	rhombic copperleaf
<i>Triodanis perfoliata</i>	Campanulaceae	clasping-leaf Venus'-looking-glass	<i>Acalypha virginica</i>	Euphorbiaceae	Virginia copperleaf
* <i>Cannabis sativa</i>	Cannabaceae	hemp	<i>Chamaesyce maculata</i>	Euphorbiaceae	spotted mat-spurge
<i>Humulus lupulus</i> var. <i>pubescens</i>	Cannabaceae	common hop	<i>Chamaesyce missurica</i>	Euphorbiaceae	Missouri mat-spurge
<i>Polanisia dodecandra</i> subsp. <i>trachysperma</i>	Capparaceae	rough-seed clammyweed	<i>Chamaesyce nutans</i>	Euphorbiaceae	eyebane
‡ <i>Lonicera flava</i>	Caprifoliaceae	yellow honeysuckle	<i>Chamaesyce prostrata</i>	Euphorbiaceae	prostrate mat-spurge
* <i>Lonicera japonica</i>	Caprifoliaceae	Japanese honeysuckle	<i>Chamaesyce serpens</i>	Euphorbiaceae	round-leaf mat-spurge
<i>Sambucus canadensis</i>	Caprifoliaceae	American honeysuckle	<i>Chamaesyce stictospora</i>	Euphorbiaceae	slim-seed mat-spurge
<i>Symphoricarpos orbiculatus</i>	Caprifoliaceae	buckbrush	<i>Croton capitatus</i> var. <i>capitatus</i>	Euphorbiaceae	woolly croton
<i>Viburnum rufidulum</i>	Caprifoliaceae	rusty black-haw viburnum	<i>Croton glandulosus</i> var. <i>septentrionalis</i>	Euphorbiaceae	tropic croton
* <i>Arenaria serpyllifolia</i> subsp. <i>serpyllifolia</i>	Caryophyllaceae	thyme-leaf sandwort	<i>Croton monanthogynus</i>	Euphorbiaceae	one-seed croton
<i>Cerastium brachypodium</i>	Caryophyllaceae	short-stalk mouse's-ear-chickweed	‡ <i>Croton willdenowii</i>	Euphorbiaceae	Willdenow's croton
* <i>Cerastium glomeratum</i>	Caryophyllaceae	sticky mouse's-ear-chickweed	<i>Euphorbia corollata</i>	Euphorbiaceae	flowering spurge
* <i>Holosteum umbellatum</i> subsp. <i>umbellatum</i>	Caryophyllaceae	jagged-chickweed	<i>Euphorbia cyathophora</i>	Euphorbiaceae	painted spurge

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<i>Euphorbia davidii</i>	Euphorbiaceae	western toothed spurge	<i>Stylosanthes biflora</i>	Fabaceae	two-flower pencil-flower
<i>Euphorbia marginata</i>	Euphorbiaceae	snow-on-the-mountain	<i>Tephrosia virginiana</i>	Fabaceae	Virginia hoary-pea
<i>Euphorbia spathulata</i>	Euphorbiaceae	warty spurge	* <i>Trifolium campestre</i>	Fabaceae	low hop clover
<i>Tragia betonicifolia</i>	Euphorbiaceae	betony noseburn	* <i>Trifolium hybridum</i>	Fabaceae	alsike clover
<i>Acacia angustissima</i> var. <i>hirta</i>	Fabaceae	prairie acacia	* <i>Trifolium pratense</i>	Fabaceae	red clover
<i>Amorpha canescens</i>	Fabaceae	leadplant	* <i>Trifolium repens</i>	Fabaceae	white clover
<i>Amorpha fruticosa</i>	Fabaceae	bush wild-indigo	<i>Vicia ludoviciana</i> subsp. <i>leavenworthii</i>	Fabaceae	Louisiana vetch
<i>Apios americana</i>	Fabaceae	American potato-bean	* <i>Vicia villosa</i> subsp. <i>villosa</i>	Fabaceae	hairy vetch
<i>Astragalus crassicaerpus</i> var. <i>crassicaerpus</i>	Fabaceae	ground-plum milk-vetch	<i>Quercus macrocarpa</i>	Fagaceae	bur oak
<i>Baptisia alba</i> var. <i>macrophylla</i>	Fabaceae	white wild-indigo	<i>Quercus marilandica</i>	Fagaceae	black-jack oak
<i>Baptisia australis</i> var. <i>minor</i>	Fabaceae	blue wild-indigo	<i>Quercus muehlenbergii</i>	Fagaceae	chinquapin oak
<i>Baptisia bracteata</i> var. <i>leucophaea</i>	Fabaceae	plains wild-indigo	<i>Quercus palustris</i>	Fagaceae	pin oak
<i>Cercis canadensis</i> var. <i>canadensis</i>	Fabaceae	eastern redbud	<i>Quercus prinoides</i>	Fagaceae	dwarf chinquapin oak
<i>Chamaecrista fasciculata</i>	Fabaceae	showy partridgepea	<i>Quercus rubra</i>	Fagaceae	northern red oak
<i>Chamaecrista nictitans</i> var. <i>nictitans</i>	Fabaceae	sensitive partridgepea	<i>Quercus shumardii</i>	Fagaceae	Shumard's oak
<i>Dalea candida</i> var. <i>candida</i>	Fabaceae	white prairie-clover	<i>Quercus stellata</i>	Fagaceae	post oak
<i>Dalea multiflora</i>	Fabaceae	round-head prairie-clover	<i>Quercus velutina</i>	Fagaceae	black oak
<i>Dalea purpurea</i> var. <i>purpurea</i>	Fabaceae	purple prairie-clover	<i>Corydalis crystallina</i>	Fumariaceae	mealy fumewort
<i>Desmanthus illinoensis</i>	Fabaceae	Illinois bundle-flower	<i>Corydalis micrantha</i> subsp. <i>australis</i>	Fumariaceae	slender fumewort
<i>Desmanthus leptolobus</i>	Fabaceae	slender-lobe bundle-flower	<i>Sabatia campestris</i>	Gentianaceae	prairie rose-gentian
<i>Desmodium canescens</i>	Fabaceae	hoary tick-clover	* <i>Erodium cicutarium</i>	Geraniaceae	California filaree
‡ <i>Desmodium ciliare</i>	Fabaceae	little-leaf tick-clover	* <i>Geranium pusillum</i>	Geraniaceae	small crane's-bill
<i>Desmodium cuspidatum</i>	Fabaceae	long-leaf tick-clover	<i>Ribes missouriense</i>	Grossulariaceae	Missouri gooseberry
<i>Desmodium glutinosum</i>	Fabaceae	large-flower tick-clover	<i>Ribes odoratum</i>	Grossulariaceae	buffalo currant
<i>Desmodium paniculatum</i>	Fabaceae	panicked tick-clover	<i>Aesculus glabra</i> var. <i>arguta</i>	Hippocastanaceae	western Ohio buckeye
<i>Desmodium perplexum</i>	Fabaceae	Dillen's tick-clover	<i>Ellisia nyctelea</i>	Hydrophyllaceae	water-pod
<i>Desmodium sessilifolium</i>	Fabaceae	sessile-leaf tick-clover	‡ <i>Phacelia hirsuta</i>	Hydrophyllaceae	hairy scorpion-weed
‡ <i>Galactia volubilis</i>	Fabaceae	shapely milkpea	<i>Carya cordiformis</i>	Juglandaceae	bitter-nut hickory
<i>Gleditsia triacanthos</i>	Fabaceae	common honey-locust	<i>Carya illinoensis</i>	Juglandaceae	pecan
<i>Gymnocladus dioica</i>	Fabaceae	Kentucky coffeetree	‡ <i>Carya lacinosia</i>	Juglandaceae	king-nut hickory
* <i>Kummerowia stipulacea</i>	Fabaceae	Korean low bush-clover	‡ <i>Carya tomentosa</i>	Juglandaceae	mocker-nut hickory
* <i>Kummerowia striata</i>	Fabaceae	Japanese low bush-clover	<i>Juglans nigra</i>	Juglandaceae	black walnut
* <i>Lathyrus latifolius</i>	Fabaceae	perennial peavine	<i>Hedeoma hispida</i>	Lamiaceae	rough false-penny-royal
<i>Lespedeza capitata</i>	Fabaceae	round-head bush-clover	* <i>Lamium amplexicaule</i> var. <i>amplexicaule</i>	Lamiaceae	hen-bit dead-nettle
** <i>Lespedeza cuneata</i>	Fabaceae	sericea bush-clover	* <i>Lamium purpureum</i> var. <i>purpureum</i>	Lamiaceae	purple dead-nettle
‡ <i>Lespedeza procumbens</i>	Fabaceae	trailing bush-clover	<i>Lycopus virginicus</i>	Lamiaceae	Virginia water-horehound
<i>Lespedeza stuevei</i>	Fabaceae	tall bush-clover	* <i>Marrubium vulgare</i>	Lamiaceae	common horehound
<i>Lespedeza violacea</i>	Fabaceae	violet bush-clover	<i>Monarda citriodora</i> var. <i>citriodora</i>	Lamiaceae	lemon bee-balm
<i>Lespedeza virginica</i>	Fabaceae	slender bush-clover	<i>Monarda fistulosa</i> var. <i>fistulosa</i>	Lamiaceae	wild bergamot bee-balm
* <i>Medicago lupulina</i>	Fabaceae	black medic	* <i>Nepeta cataria</i>	Lamiaceae	common catnip
* <i>Medicago minima</i>	Fabaceae	little medic	<i>Physostegia angustifolia</i>	Lamiaceae	narrow-leaf lion's-heart
* <i>Medicago sativa</i> subsp. <i>sativa</i>	Fabaceae	alfalfa	* <i>Prunella vulgaris</i>	Lamiaceae	common selfheal
* <i>Melilotus albus</i>	Fabaceae	white sweet-clover	<i>Pycnanthemum tenuifolium</i>	Lamiaceae	narrow-leaf mountain-mint
* <i>Melilotus officinalis</i>	Fabaceae	yellow sweet-clover	<i>Salvia azurea</i>	Lamiaceae	blue sage
<i>Mimosa quadrivalvis</i> var. <i>nuttallii</i>	Fabaceae	cat-claw mimosa	<i>Salvia reflexa</i>	Lamiaceae	lance-leaf sage
<i>Psoraleidium tenuiflorum</i>	Fabaceae	narrow-leaf scurf-pea	<i>Scutellaria lateriflora</i> var. <i>lateriflora</i>	Lamiaceae	side-flower skullcap
<i>Senna marilandica</i>	Fabaceae	Maryland senna	<i>Scutellaria parvula</i> var. <i>australis</i>	Lamiaceae	southern small skullcap
<i>Strophostyles helvolus</i>	Fabaceae	trailing wildbean	<i>Stachys tenuifolia</i>	Lamiaceae	slender-leaf hedge-nettle
<i>Strophostyles leiosperma</i>	Fabaceae	slick-seed wildbean	<i>Teucrium canadense</i> var. <i>canadense</i>	Lamiaceae	American germander

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<i>Trichostema brachiatum</i>	Lamiaceae	flux-weed bluecurls	<i>Plantago patagonica</i> var. <i>patagonica</i>	Plantaginaceae	woolly plantain
<i>Linum sulcatum</i> var. <i>sulcatum</i>	Linaceae	grooved flax	<i>Plantago pusilla</i>	Plantaginaceae	tiny plantain
<i>Mentzelia oligosperma</i>	Loasaceae	stick-leaf	<i>Plantago rugelii</i>	Plantaginaceae	Rugel's plantain
<i>Ammannia coccinea</i>	Lythraceae	purple toothcup	<i>Plantago virginica</i>	Plantaginaceae	pale-seed plantain
<i>Ammannia robusta</i>	Lythraceae	stout toothcup	<i>Platanus occidentalis</i>	Platanaceae	common sycamore
<i>Lythrum alatum</i> var. <i>alatum</i>	Lythraceae	winged loosestrife	<i>Phlox divaricata</i>	Polemoniaceae	blue phlox
<i>Lythrum californicum</i>	Lythraceae	California loosestrife	‡ <i>Phlox oklahomensis</i>	Polemoniaceae	Oklahoma phlox
<i>Rotala ramosior</i>	Lythraceae	branched lesser-toothcup	<i>Phlox pilosa</i> subsp. <i>pilosa</i>	Polemoniaceae	prairie phlox
* <i>Abutilon theophrasti</i>	Malvaceae	common velvetleaf	<i>Polygala incarnata</i>	Polygalaceae	slender milkwort
<i>Callirhoë alcaeoides</i>	Malvaceae	pale poppy-mallow	<i>Polygala sanguinea</i>	Polygalaceae	blood milkwort
<i>Hibiscus laevis</i>	Malvaceae	halberd-leaf rose-mallow	<i>Polygonum amphibium</i> var. <i>emersum</i>	Polygonaceae	swamp smartweed
‡ <i>Hibiscus moscheutos</i> subsp. <i>lasiocarpos</i>	Malvaceae	woolly rose-mallow	* <i>Polygonum arenastrum</i>	Polygonaceae	sand knotweed
* <i>Hibiscus trionum</i>	Malvaceae	flower-of-an-hour	<i>Polygonum bicornes</i>	Polygonaceae	pink smartweed
* <i>Malva pusilla</i>	Malvaceae	running mallow	* <i>Polygonum convolvulus</i>	Polygonaceae	dull-seed cornbind
<i>Malvastrum hispidum</i>	Malvaceae	rough false-mallow	<i>Polygonum hydropiperoides</i>	Polygonaceae	mild water-pepper smartweed
* <i>Sida spinosa</i>	Malvaceae	prickly sida	<i>Polygonum lapathifolium</i>	Polygonaceae	pale smartweed
<i>Cocculus carolinus</i>	Menispermaceae	Carolina snailseed	<i>Polygonum pensylvanicum</i>	Polygonaceae	Pennsylvania smartweed
<i>Menispermum canadense</i>	Menispermaceae	Canadian moonseed	* <i>Polygonum persicaria</i>	Polygonaceae	lady's-thumb smartweed
* <i>Mollugo verticillata</i>	Molluginaceae	green carpetweed	<i>Polygonum punctatum</i>	Polygonaceae	dotted smartweed
* <i>Maclura pomifera</i>	Moraceae	Osage-orange	<i>Polygonum ramosissimum</i> var. <i>ramosissimum</i>	Polygonaceae	bushy knotweed
* <i>Morus alba</i>	Moraceae	white mulberry	<i>Polygonum scandens</i>	Polygonaceae	hedge cornbind
<i>Morus rubra</i>	Moraceae	red mulberry	<i>Polygonum tenue</i>	Polygonaceae	pleat-leaf knotweed
<i>Mirabilis albida</i>	Nyctaginaceae	white four-o'clock	<i>Polygonum virginianum</i>	Polygonaceae	jumpseed
<i>Mirabilis nyctaginea</i>	Nyctaginaceae	wild four-o'clock	* <i>Rumex acetosella</i>	Polygonaceae	sheep sorrel
<i>Nymphaea odorata</i> subsp. <i>odorata</i>	Nymphaeaceae	white water-lily	<i>Rumex altissimus</i>	Polygonaceae	pale dock
<i>Fraxinus americana</i>	Oleaceae	white ash	* <i>Rumex crispus</i>	Polygonaceae	curly dock
<i>Fraxinus pennsylvanica</i>	Oleaceae	green ash	<i>Rumex hastatulus</i>	Polygonaceae	heart-wing sorrel
‡ <i>Fraxinus quadrangulata</i>	Oleaceae	blue ash	<i>Claytonia virginica</i>	Portulacaceae	Virginia springbeauty
<i>Calylophus serrulatus</i>	Onagraceae	plains yellow evening-primrose	<i>Portulaca pilosa</i>	Portulacaceae	hairy purslane
<i>Gaura longiflora</i>	Onagraceae	large-flower butterfly-weed	<i>Talinum calycinum</i>	Portulacaceae	rock-pink fameflower
<i>Gaura parviflora</i>	Onagraceae	velvet butterfly-weed	<i>Talinum parviflorum</i>	Portulacaceae	prairie fameflower
<i>Ludwigia alternifolia</i>	Onagraceae	bushy seedbox	<i>Anagallis minima</i>	Primulaceae	little pimpernel
<i>Ludwigia palustris</i> var. <i>palustris</i>	Onagraceae	marsh seedbox	<i>Dodecatheon meadia</i> subsp. <i>meadia</i>	Primulaceae	prairie shootingstar
<i>Ludwigia peploides</i> subsp. <i>glabrescens</i>	Onagraceae	floating seedbox	<i>Samolus parviflorus</i>	Primulaceae	small water-pimpernel
<i>Oenothera laciniata</i>	Onagraceae	cut-leaf evening-primrose	<i>Anemone caroliniana</i>	Ranunculaceae	Carolina anemone
<i>Oenothera latifolia</i>	Onagraceae	pale evening-primrose	<i>Aquilegia canadensis</i>	Ranunculaceae	American columbine
<i>Oenothera macrocarpa</i> subsp. <i>macrocarpa</i>	Onagraceae	Missouri evening-primrose	* <i>Consolida ajacis</i>	Ranunculaceae	rocket larkspur
<i>Oenothera speciosa</i>	Onagraceae	showy white evening-primrose	<i>Delphinium carolinianum</i> subsp. <i>virescens</i>	Ranunculaceae	Carolina larkspur
<i>Oenothera triloba</i>	Onagraceae	stemless evening-primrose	<i>Delphinium tricorne</i>	Ranunculaceae	dwarf larkspur
<i>Oenothera villosa</i> subsp. <i>villosa</i>	Onagraceae	hairy evening-primrose	<i>Myosurus minimus</i>	Ranunculaceae	tiny mousetail
<i>Stenosiphon linifolius</i>	Onagraceae	stenosiphon	<i>Ranunculus abortivus</i>	Ranunculaceae	early wood buttercup
<i>Oxalis dillenii</i> subsp. <i>dillenii</i>	Oxalidaceae	gray-green wood-sorrel	<i>Ranunculus fascicularis</i>	Ranunculaceae	early buttercup
<i>Oxalis stricta</i>	Oxalidaceae	yellow wood-sorrel	<i>Ceanothus americanus</i>	Rhamnaceae	American ceanothus
<i>Oxalis violacea</i>	Oxalidaceae	violet wood-sorrel	<i>Ceanothus herbaceus</i>	Rhamnaceae	inland ceanothus
* <i>Papaver rhoeas</i>	Papaveraceae	field poppy	<i>Agrimonia parviflora</i>	Rosaceae	small-flower agrimony
<i>Phytolacca americana</i> var. <i>americana</i>	Phytolaccaceae	American pokeweed	<i>Agrimonia pubescens</i>	Rosaceae	downy agrimony
<i>Plantago aristata</i>	Plantaginaceae	bottle-brush plantain	<i>Amelanchier arborea</i> var. <i>arborea</i>	Rosaceae	downy service-berry
‡ <i>Plantago elongata</i> subsp. <i>elongata</i>	Plantaginaceae	slender plantain	<i>Fragaria virginiana</i> subsp. <i>virginiana</i>	Rosaceae	woodland strawberry
* <i>Plantago lanceolata</i>	Plantaginaceae	English plantain	<i>Geum canadense</i>	Rosaceae	white avens

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<i>Geum vernum</i>	Rosaceae	heart-leaf avens	* <i>Veronica arvensis</i>	Scrophulariaceae	corn speedwell
<i>Potentilla arguta</i> var. <i>arguta</i>	Rosaceae	tall cinquefoil	<i>Veronica peregrina</i> subsp. <i>peregrina</i>	Scrophulariaceae	purslane speedwell
<i>Potentilla simplex</i>	Rosaceae	old-field cinquefoil	* <i>Veronica polita</i>	Scrophulariaceae	wayside speedwell
<i>Prunus americana</i>	Rosaceae	American plum	* <i>Datura stramonium</i>	Solanaceae	jimsonweed
<i>Prunus angustifolia</i>	Rosaceae	Chickasaw plum	<i>Physalis angulata</i> var. <i>pendula</i>	Solanaceae	cut-leaf ground-cherry
<i>Prunus mexicana</i>	Rosaceae	big-tree plum	<i>Physalis longifolia</i> var. <i>longifolia</i>	Solanaceae	long-leaf ground-cherry
<i>Prunus munsoniana</i>	Rosaceae	wild goose plum	<i>Physalis longifolia</i> var. <i>subglabrata</i>	Solanaceae	long-leaf ground-cherry
<i>Prunus rivularis</i> var. <i>rivalis</i>	Rosaceae	creek plum	‡ <i>Physalis pubescens</i> var. <i>integrifolia</i>	Solanaceae	downy ground-cherry
<i>Prunus serotina</i> var. <i>serotina</i>	Rosaceae	black cherry	<i>Physalis pumila</i>	Solanaceae	prairie ground-cherry
* <i>Rosa multiflora</i>	Rosaceae	multiflora rose	<i>Solanum carolinense</i>	Solanaceae	Carolina horse-nettle
‡ <i>Rubus argutus</i>	Rosaceae	serrate-leaf highbush blackberry	<i>Solanum elaeagnifolium</i>	Solanaceae	silver-leaf nightshade
<i>Rubus flagellaris</i>	Rosaceae	American dewberry	<i>Solanum ptychanthum</i>	Solanaceae	black nightshade
‡ <i>Rubus hancinianus</i>	Rosaceae	Hancin's dewberry	<i>Solanum rostratum</i>	Solanaceae	buffalo-bur nightshade
‡ <i>Rubus roribaccus</i>	Rosaceae	Lucretia dewberry	* <i>Solanum sarrachoides</i>	Solanaceae	sticky nightshade
<i>Cephalanthus occidentalis</i>	Rubiaceae	common buttonbush	<i>Staphylea trifolia</i>	Staphyleaceae	American bladdernut
<i>Diodia teres</i> var. <i>teres</i>	Rubiaceae	rough buttonweed	<i>Celtis laevigata</i>	Ulmaceae	sugar hackberry
<i>Galium aparine</i>	Rubiaceae	catch-weed bedstraw	<i>Celtis occidentalis</i>	Ulmaceae	common hackberry
<i>Galium circaezans</i>	Rubiaceae	forest bedstraw	<i>Celtis tenuifolia</i>	Ulmaceae	dwarf hackberry
<i>Galium pilosum</i>	Rubiaceae	hairy bedstraw	<i>Ulmus americana</i>	Ulmaceae	American elm
<i>Galium virgatum</i>	Rubiaceae	southwestern bedstraw	* <i>Ulmus pumila</i>	Ulmaceae	Siberian elm
<i>Houstonia pusilla</i>	Rubiaceae	small bluet	<i>Ulmus rubra</i>	Ulmaceae	slippery elm
<i>Stenaria nigricans</i> var. <i>nigricans</i>	Rubiaceae	narrow-leaf bluet	<i>Boehmeria cylindrica</i>	Urticaceae	small-spike false-nettle
<i>Zanthoxylum americanum</i>	Rutaceae	common prickly-ash	<i>Laportea canadensis</i>	Urticaceae	Canadian wood-nettle
<i>Populus deltoides</i> subsp. <i>monilifera</i>	Salicaceae	plains cottonwood	<i>Parietaria pensylvanica</i>	Urticaceae	Pennsylvania pellitory
<i>Salix caroliniana</i>	Salicaceae	Carolina willow	<i>Pilea pumila</i>	Urticaceae	dwarf clearweed
<i>Salix humilis</i> var. <i>humilis</i>	Salicaceae	prairie willow	<i>Urtica dioica</i> subsp. <i>gracilis</i>	Urticaceae	American stinging nettle
<i>Salix nigra</i>	Salicaceae	black willow	<i>Valerianella radiata</i>	Valerianaceae	limestone cornsalad
<i>Sapindus saponaria</i> var. <i>drummondii</i>	Sapindaceae	southern soapberry	<i>Glandularia canadensis</i>	Verbenaceae	rose vervain
<i>Sideroxylon lanuginosum</i> subsp. <i>oblongifolium</i>	Sapotaceae	woolly jungle-plum	<i>Phyla lanceolata</i>	Verbenaceae	northern fogfruit
‡ <i>Saxifraga texana</i>	Saxifragaceae	Texas saxifrage	<i>Verbena bracteata</i>	Verbenaceae	prostrate vervain
<i>Agalinis aspera</i>	Scrophulariaceae	rough agalinis	<i>Verbena hastata</i>	Verbenaceae	blue vervain
‡ <i>Agalinis heterophylla</i>	Scrophulariaceae	stiff purple agalinis	<i>Verbena simplex</i>	Verbenaceae	narrow-leaf vervain
<i>Buchnera americana</i>	Scrophulariaceae	American bluehearts	<i>Verbena stricta</i>	Verbenaceae	hoary vervain
‡ <i>Castilleja purpurea</i> var. <i>purpurea</i>	Scrophulariaceae	purple paintbrush	<i>Verbena urticifolia</i>	Verbenaceae	nettle-leaf vervain
<i>Collinsia violacea</i>	Scrophulariaceae	violet blue-eyed-Mary	<i>Viola bicolor</i>	Violaceae	Johnny-jump-up
<i>Leucospora multifida</i>	Scrophulariaceae	paleseed	<i>Viola pedata</i>	Violaceae	bird-foot violet
* <i>Linaria vulgaris</i>	Scrophulariaceae	butter-and-eggs	<i>Viola sororia</i> var. <i>sororia</i>	Violaceae	dowy blue violet
<i>Lindernia dubia</i> var. <i>dubia</i>	Scrophulariaceae	false-pimpernel	‡ <i>Phoradendron leucarpum</i>	Viscaceae	American mistletoe
<i>Mimulus alatus</i>	Scrophulariaceae	sharp-wing monkey-flower	<i>Ampelopsis cordata</i>	Vitaceae	heart-leaf raccoon-grape
<i>Nuttallanthus texanus</i>	Scrophulariaceae	Texas toad-flax	<i>Cissus incisa</i>	Vitaceae	ivy treebind
<i>Pedicularis canadensis</i> subsp. <i>canadensis</i>	Scrophulariaceae	Canadina lousewort	<i>Parthenocissus quinquefolia</i> var. <i>quinquefolia</i>	Vitaceae	Virginia creeper
<i>Penstemon cobaea</i> var. <i>cobaea</i>	Scrophulariaceae	cobaea beardtongue	<i>Vitis cinerea</i> var. <i>cinerea</i>	Vitaceae	gray-bark grape
<i>Penstemon tubaeformis</i>	Scrophulariaceae	tube beardtongue	<i>Vitis riparia</i>	Vitaceae	riverbank grape
* <i>Verbascum blattaria</i>	Scrophulariaceae	moth mullein	<i>Vitis vulpina</i>	Vitaceae	winter grape
* <i>Verbascum thapsus</i>	Scrophulariaceae	flannel mullein	<i>Tribulus terrestris</i>	Zygophyllaceae	spreading puncturevine

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*Rhus pubescens**toxicodendron* L.

POISON OAK

(R. quercifolia (Michx.) Steud.; *Toxicodendron quercifolium* Greene)

Perennial shrub, reproducing from seeds and spreading by subterranean stolons (Fig. 127); *Stems* slender, erect, woody for 0.5-6 dm., simple or with a few erect branches, not climbing, nor with aerial roots; *Leaves* 3-parted, on long erect velvety petioles, mostly near the top of the stem and often appearing falsely whorled; *Leaflets* elliptic, rhombic or obovate, hairy above, velvety beneath or eventually glabrous above, obtuse or rounded above, with 3-7 deep teeth or variously lobed, suggesting oak leaves,

or unlobed (*forma elobata* Fern.), wedge-shaped to rounded at the base; *Fruit* (drupe) greenish to buff, about 5 mm. in diameter, pubescent or glabrous (*forma leiocarpa* Fern.). Flowering May-June; fruiting August-November, sometimes all winter.

Dry barrens, sandy wastes, pinewoods, and sandy woods. Native. Throughout the southeastern area of the United States from New Jersey to Florida, west to Missouri, eastern Oklahoma, and Texas.

Rhus diversiloba Torr. & Gray

WESTERN POISON OAK

Perennial woody shrub or vine; *Stems* forming an upright shrub (common form), with many small woody stems rising from the ground, or attached to upright objects for support, becoming a vine, up to 8-10 m. high; *Leaves* 3-parted, very irregular as to lobing, especially the two lateral ones, the margins either even or lobed, the surface of the leaves usually glossy and uneven, thus appearing thick and leathery; *Flowers* in clusters on slender stems diverging from the axis of the leaf,

greenish-white, about 2-3 mm. in diameter; *Drupe*s spherical or somewhat flattened, greenish or creamy-white, with a smooth glossy surface, striped into segments, the fruits remaining on the plants fall and winter. Fruiting mid-October.

Roadsides, cultivated fields, and abandoned land. Native. Western half of Washington and Oregon; north to British Columbia; south through most of California to Baja California, Mexico.

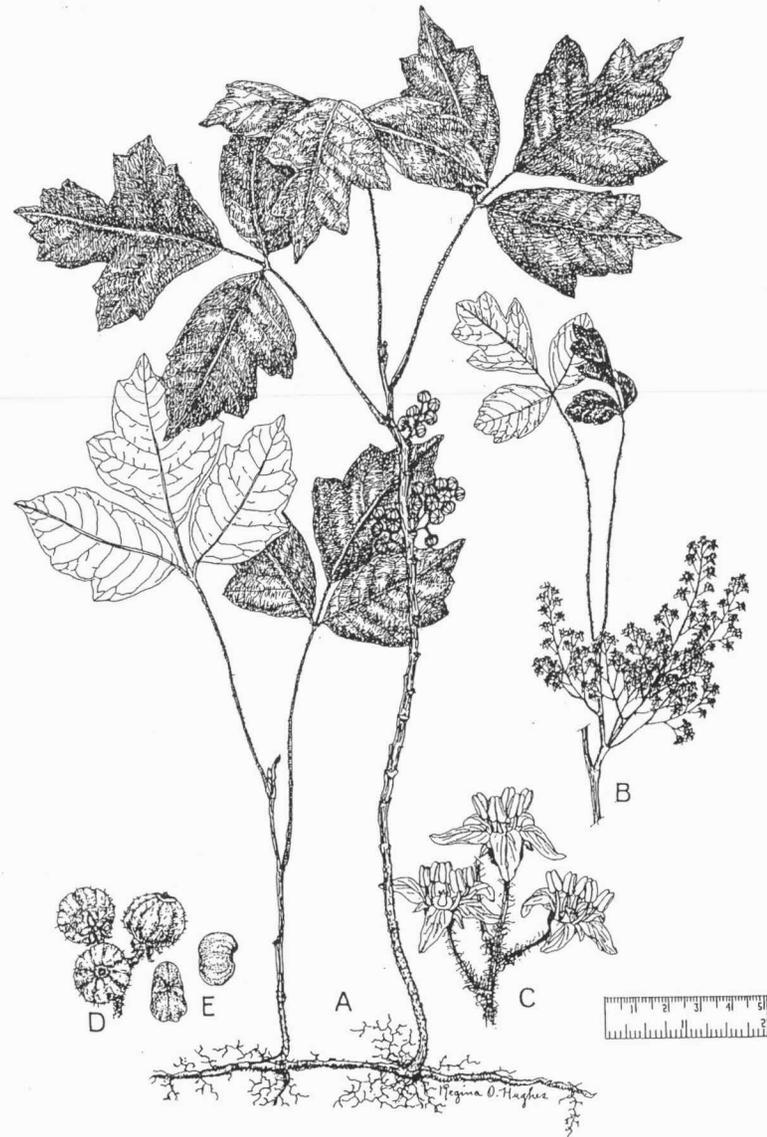
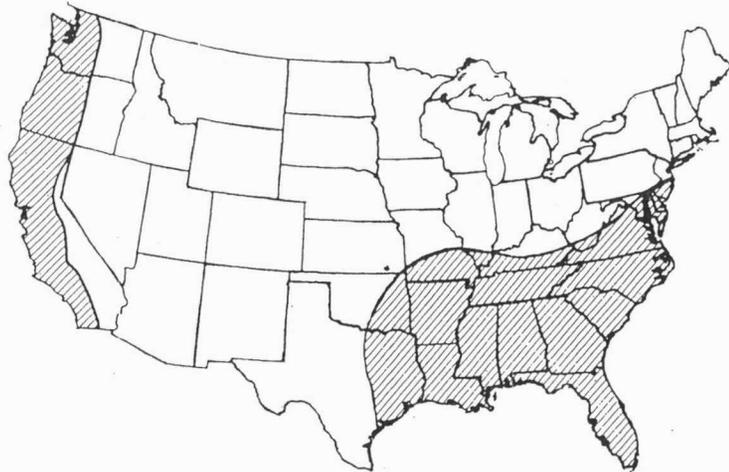


FIGURE 127.—*Rhus toxicodendron* L. Poison oak. A, Habit— $\times 0.5$; B, inflorescence— $\times 0.5$; C, flowers— $\times 5$; D, drupes— $\times 2$; E, stones— $\times 2$.



Distribution of *Rhus toxicodendron* L. (Eastern United States) and *Rhus diversiloba* Torr. & Gray (Western United States)

Rhus radicans L.

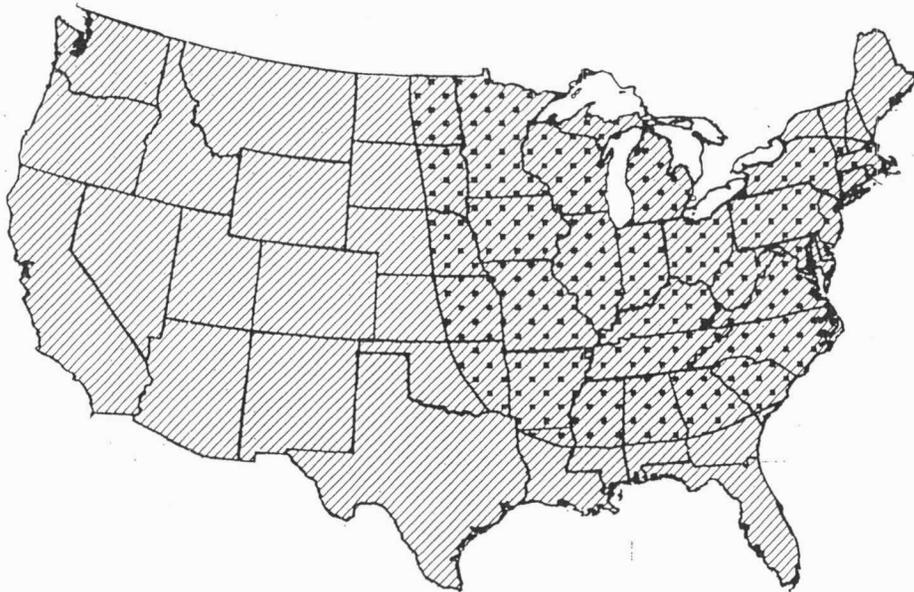
(*Toxicodendron radicans* (L.) Kuntze)

Perennial woody shrub or vine, reproducing by seeds and by creeping rootstocks from the basal stem nodes, sometimes running horizontally underground for several meters, sending up leafy shoots from their nodes (Fig. 126); Stems erect and shrubby or a vine climbing high into trees, on fences, the stem supported by aerial roots along the stem; Leaves alternate, quite variable in outline and in marginal cutting, ovate or elliptic, acute or tapering to a point, rounded to wedge-shaped at the base, entire to irregularly serrate or wavy, glabrous or thinly pubescent, compound with 3 large shiny leaflets, each 5–10 cm. long, pointed at the tip, the terminal leaflet longer petioled than the lateral leaflets; Panicles up to 1 dm. long, axillary and di-

vergent; Flowers small, yellowish-green, 5-petaled; Drupes small, 5–6 mm. in diameter, grayish-white, nearly globose, hard, usually glabrous, with a grayish striped, 1-seeded stone about 3–4 mm. in diameter. June–July.

Rocky fields, pastures, thickets, woods, and waste places, often climbing trees, fences, and dwellings; a ubiquitous weed. All parts of the plant contain a poisonous principle that may cause blistering of the skin. A variable species as to habit in growth, leaflet shape, rooting habit, pubescence of the leaves, petioles, and fruit, giving reason for several named varieties and forms. Native. Throughout the United States; north into southern Canada from Quebec to British Columbia; south into Mexico; West Indies.

POISON IVY

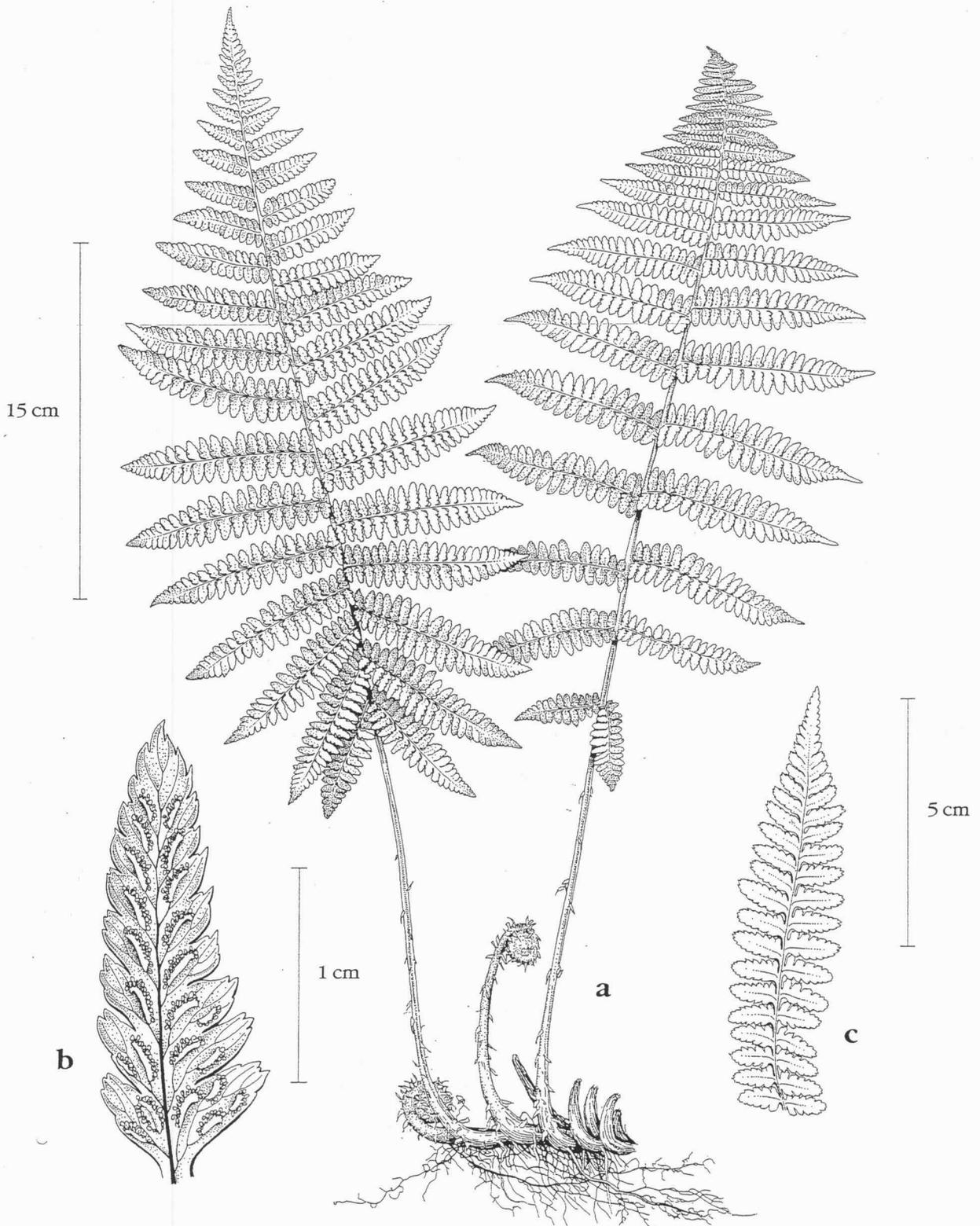


Distribution of *Rhus radicans* L.



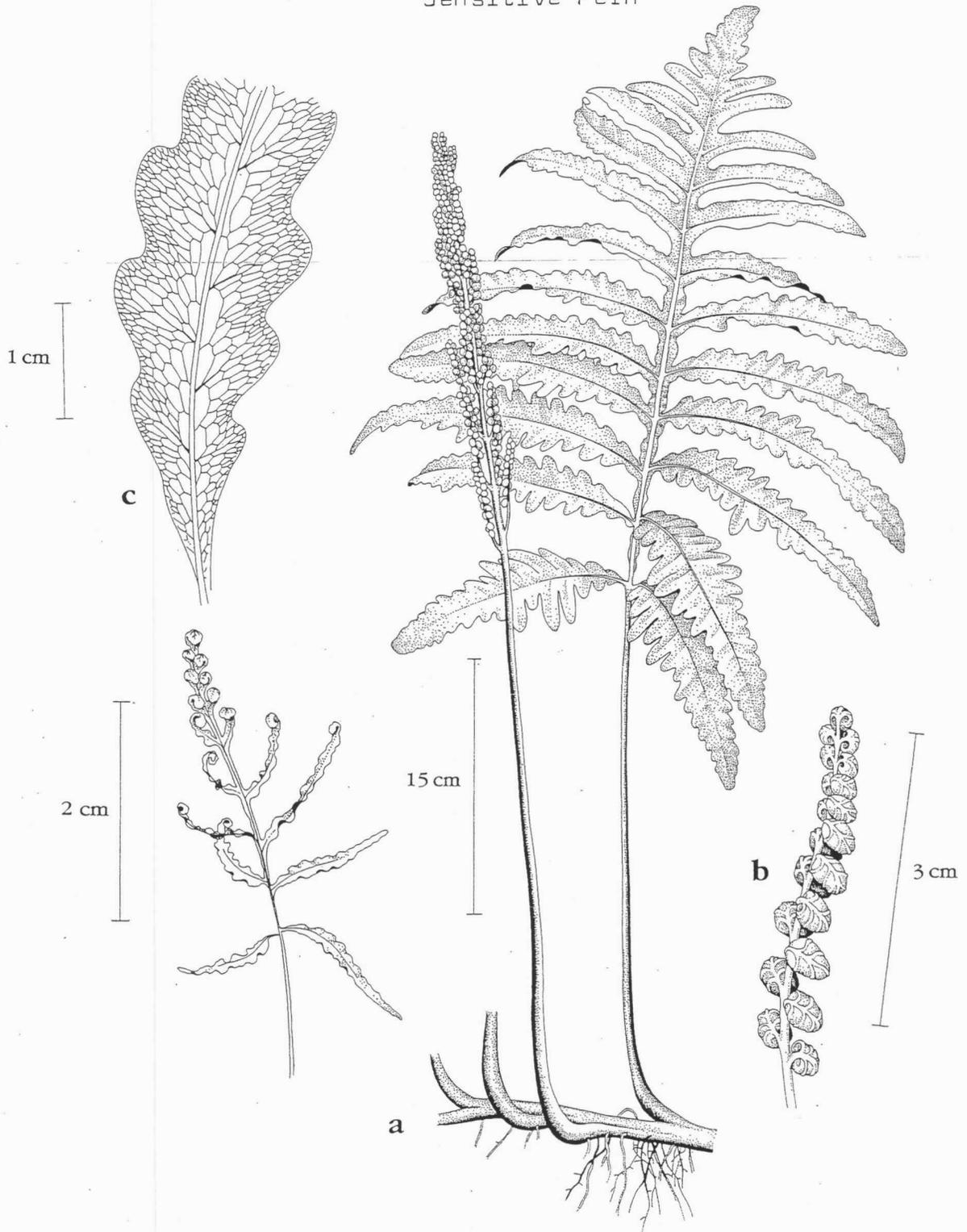
FIGURE 126.—*Rhus radicans* L. Poison ivy. A, Habit— $\times 0.5$; B, flower panicle— $\times 0.5$; C, flowers— $\times 4$; D, drupe— $\times 2.5$; E, stones— $\times 2.5$; F, aerial roots— $\times 2.5$

Southern Lady Fern



Athyrium filix-femina subsp. *asplenioides*
 a. Habit; b. Lower surface of sporiferous pinna; c. Pinna.

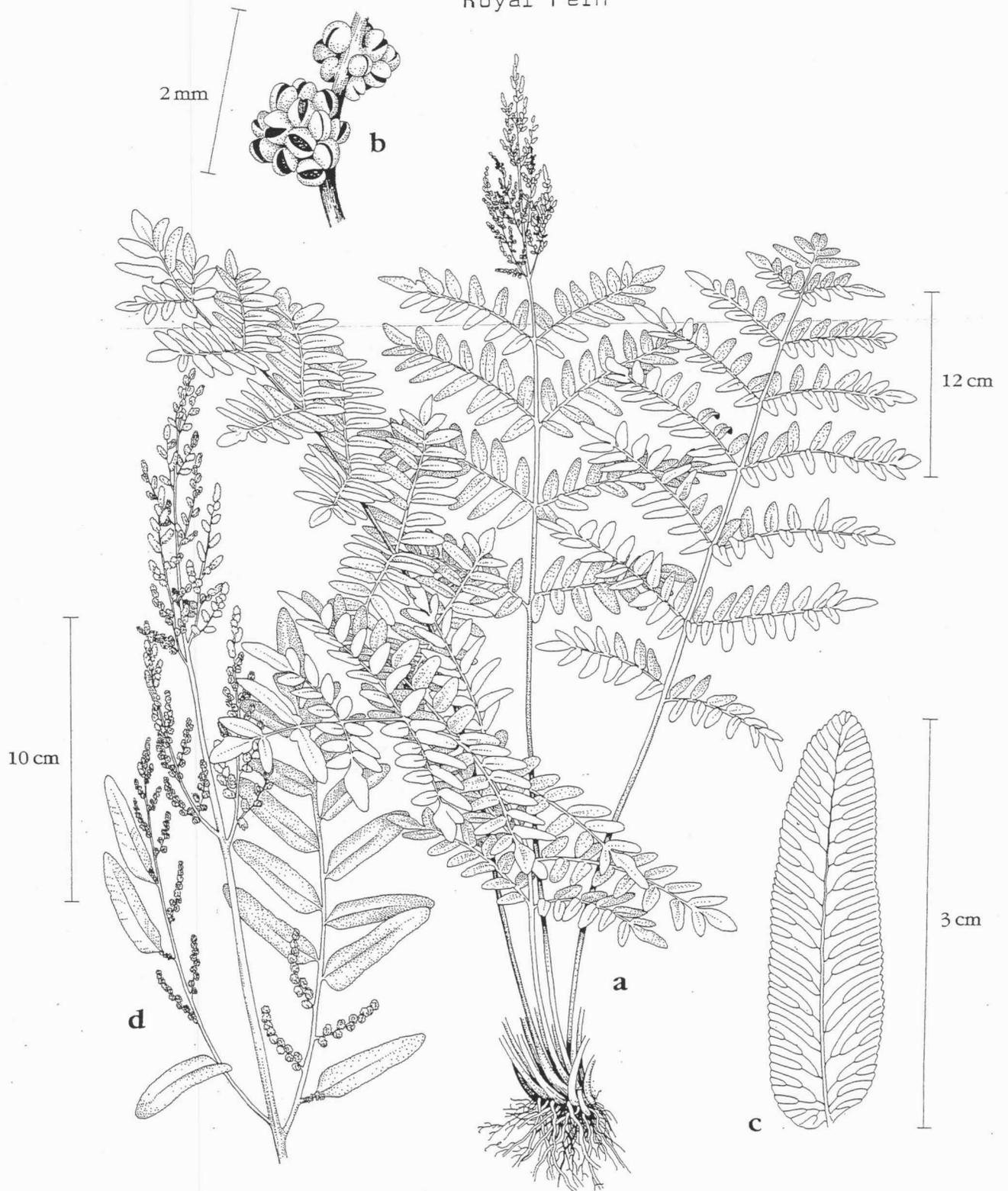
Sensitive Fern



Onoclea sensibilis

a. Habit; b. Fertile pinnules; c. Portion of sterile pinna.

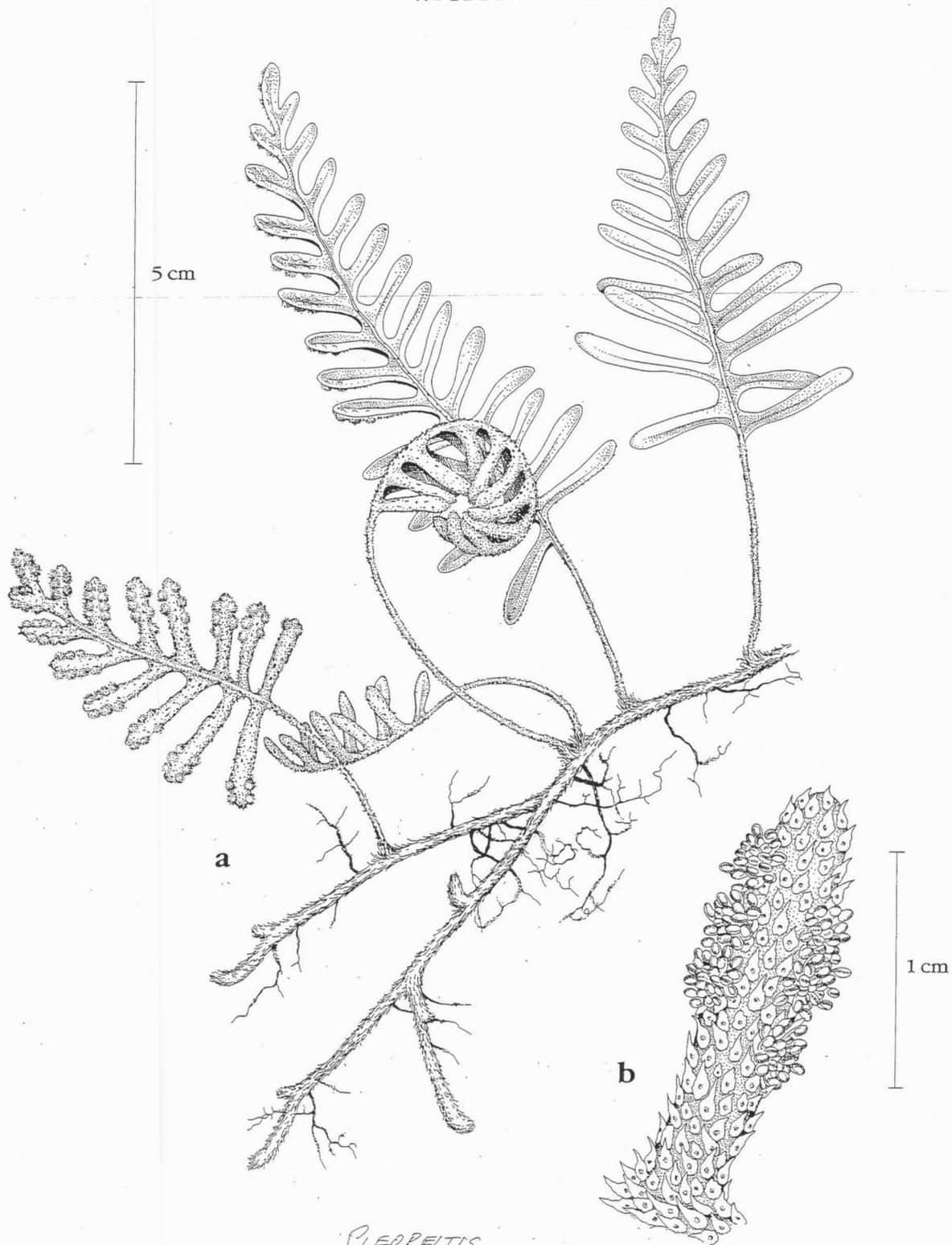
Royal Fern



Osmunda regalis var. *spectabilis*

a. Habit; b. Sporangia; c. Pinnule; d. *f. anomala*, portion of frond.

Resurrection Fern



PLEOPELTIS
Polypodium polypodioides var. *michauxianum*
a. Habit; b. Lower surface of frond lobe with sori.