

A TAXONOMIC STUDY OF THE VASCULAR PLANTS  
INDIGENOUS TO, OR NATURALIZED IN,  
PONTOTOC COUNTY, OKLAHOMA

By

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## PREFACE

After making observations and periodic collections of the flora of Pontotoc County for several years, the author felt that a more intensive study should be made. He therefore chose to make the taxonomic study of the vascular plants indigenous to, or naturalized in the county, on which this dissertation is based. Collections were made during the years 1948 through 1952, but most collecting was done in 1951 and 1952.

Intensive collections were made at a number of stations that had distinctly different ecological conditions, so that as many different species as possible could be found. These areas were visited at intervals of about two weeks during the growing season. At the same time a constant search was being made for other sites of still different ecological conditions, so that new areas could be added.

Specimens were prepared and pressed in accordance with the standard methods employed by leading herbaria of the world. They were studied critically with the aid of various monographs and other similar treatments, when such were available, and were deposited in the herbarium of the Oklahoma Agricultural and Mechanical College. In addition to the collections made by the author, some are listed that were collected by others and are found in the Bebb Herbarium of the University of Oklahoma. The latter material was examined carefully and in some instances reidentified by the author before being listed. These are designated by citation of collector and collection number, followed by the symbol, "O. U."

In accordance with the latest revision of the International Rules

of Botanical Nomenclature,<sup>1</sup> the typical variety is designated by a repetition of the specific epithet without author citation, in instances where more than one variety of a species has been described. This is illustrated with the following example: Oenothera missouriensis Sims, var. missouriensis becomes the name of the typical variety, since other taxons differing from this, but considered of varietal rank, have been described, such as Oenothera missouriensis Sims, var. oklahomensis (Norton) Munz.

A critical study of these collections was carried on at the Oklahoma Agricultural and Mechanical College, where the library and herbarium were at the writer's disposal. For these privileges and many others, the author wishes to express his appreciation. Also, the very helpful suggestions made by his advisory committee during the preparation of this paper are greatly appreciated. He is especially grateful to Professor U. T. Waterfall, under whose supervision the study was made. His constant encouragement and helpful guidance were of invaluable assistance throughout the course of the investigations, as well as in the preparation of this paper.

The writer also wishes to express his appreciation and thanks to Dr. G. J. Goodman, Curator of the Bebb Herbarium of the University of Oklahoma, Norman, for the loan of collections from that herbarium.

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<sup>1</sup>H. W. Rickett. Some changes in international rules of botanical nomenclature made in Stockholm in 1950. Bull. Torr. Bot. Cl. 78: 5. 1951.

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## CHAPTER I

### PHYSICAL FEATURES

#### Location and Size<sup>1</sup>

Pontotoc County is in south-central Oklahoma. Its northern boundary is the South Canadian River. It extends from township one north to township six north, inclusive, and from range four east to range eight east inclusive. It is within the great physiographic province of Central United States, known as the Central Lowland, and in the section of Oklahoma which is often referred to as the "Cross Timbers."

The county contains seventeen whole townships and parts of six others. The total area is seven hundred seventeen square miles, with a total of four hundred fifty-eight thousand eight hundred eighty acres.

#### Topography<sup>2</sup>

Pontotoc County consists of rolling to gently rolling prairies, forested steep slopes, and some very rough, hilly terrain. An escarpment extends from the southeast corner of the county to a point near the southwest limits of the city of Ada. It consists of a strip of broken land, about 3 miles in width that divides the southeast portion into two distinct high plains. The higher plain, south of the escarpment and stretching across the entire southern portion of the county, has comparatively smooth relief. The stony hilltops and broad shallow valleys are covered by a rich soil of decomposed limestone and shale.

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<sup>1</sup>E. G. Fitzpatrick and A. W. Goke. Soil survey of Pontotoc County, Oklahoma. U. S. D. A. Bur. Plant Ind., Series 1936, No. 4, (Washington, D. C., 1941), Gov't. Printing Office.

<sup>2</sup>Ibid., 1-5.

This plain lies at an elevation of 1100 ft. to 1300 ft. above sea level, and is well drained by tributaries of the Blue River. It slopes gently to the southeast and contains dolomitic limestone on the eastern margin. Farther west it is underlain with sandstone.

The plain north of the escarpment, and extending across the entire northern portion of the county, is strongly rolling and in some sections is deeply cut. In general the valleys are deeper than those of the southern plain, and in many places angular slopes appear as a result of solid sandstone outcrops. This plain has an elevation of 800 ft. to 1100 ft. above sea level. The northern portion of this area is drained northward and eastward by tributaries of the South Canadian River. In the southeast portion of this plain, the drainage is eastward and southeastward into Muddy Boggy Creek and Clear Boggy Creek. Sandstone is dominant on this plain, but some shale, granitic conglomerate, limestone and old river deposits of sandy clay are also present.

#### Geology

The exposed strata of the county range in age from upper Cambrian to Recent.<sup>3</sup> In the northern part, Pennsylvanian Sandstone and Pennsylvanian Shale prevail, while a smaller area of the south contains outcroppings of Arbuckle Limestone of the Ordovician and Cambrian periods. Fringing the latter are smaller areas of Viola Limestone and Simpson Formation.<sup>4</sup>

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<sup>3</sup>R. A. Conkling. Geology of Pontotoc County, Oklahoma. Geol. Sur. Bull. No. 40-S, (Norman, Okla., 1927.)

<sup>4</sup>Geological map of Oklahoma. Compiled by Hugh D. Miser of the U. S. Geol. Sur. 1923 and 1924.



## CHAPTER II

### HISTORY

The area that is now Pontotoc County was a part of the Louisiana Purchase and was inhabited by Indians of the Washita tribe at the time it was acquired by the United States. This land was later ceded to the Chickasaw Nation in return for the land they held in Mississippi and Alabama. The Chickasaw Indians moved from their eastern holdings to this area during the period from 1835 to 1847. They settled first along the stream valleys, particularly along Muddy Boggy Creek and Blue River. They were agricultural people who cleared some of the land in this section and established a peaceful nation. They had a modern form of constitutional government and located their capital at Tishomingo, about thirty-five miles south of Ada.<sup>1</sup>

Pontotoc County was organized in 1907 from parts of the land formerly belonging to the Chickasaw and Choctaw Nations. It received its name from the original home of the Chickasaw Indians in Mississippi. The original interpretation of the word was "ponti" meaning cattail and "oktak" meaning prairie. Thus the name really means "cattails growing on the prairie."<sup>2</sup>

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<sup>1</sup>E. G. Fitzpatrick and A. W. Goke. Soil survey of Pontotoc County, Oklahoma. U. S. D. A., Bur. Plant Ind., Series 1936, No. 4, (Washington, D. C., 1941), Gov't. Printing Office.

<sup>2</sup>Ibid., 4.

One of the earliest plant collections from this area was made by C. S. Sheldon<sup>3</sup>, during the months of June, July, and August, 1891. This collection was made during a tour through this area under the auspices of the United States Department of Agriculture and the plants were stored in the United States National Herbarium, Washington, D. C. He listed a total of twenty-one species collected in the vicinity of Stonewall, Chickasaw Nation, in what is now Pontotoc County. These included five grasses, four composites and three legumes, with each of nine other families represented by only one species. He was assisted by L. H. Bailey, who verified identifications of the carices, and George Vasey, who determined the grasses.

During the years 1934 through 1941 Churchill W. Thomas, professor of botany at East Central Oklahoma State College, Ada, collected many plants from various sections of the county. He established the East Central Herbarium, in which these plants were placed and where some of them remain.

G. Thomas Robbins, who served as professor of botany at the same college during the years 1946 through 1948, continued collections of the county flora. Some of his duplicates were distributed among various herbaria, including the Bebb Herbarium of the University of Oklahoma and the Tracy Herbarium of the Texas Agricultural and Mechanical College, as well as the herbaria of the Southern Methodist University, the University of California, and the New York Botanical Garden. Among his collections were Phacelia hirsuta from Pontotoc County and P. strictiflora var., Robbinsii, named in his honor, and for which he collected the

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<sup>3</sup>J. M. Holzinger. List of plants collected by C. S. Sheldon and M. A. Carlton in the Indian Territory in 1891. Contr. U. S. Nat. Herb. 1(4): 188-201. (Washington, D. C., 1892), Gov't. Printing Office.

type specimen in adjoining Johnston County. These were examined and determinations were made by Dr. Lincoln Constance of the University of California.<sup>4</sup>

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<sup>4</sup>Lincoln Constance. A revision of *Phacelia*, subgenus *Cosmanthus* (Hydrophyllaceae). Contr. Gray Herb. 168: 20. (New York, N. Y., 1949), Publ. by Gray Herb.

## CHAPTER III

### CLIMATE<sup>1, 2</sup>

The climate of Pontotoc County is distinctly continental. High summer temperatures almost invariably occur with clear skies, and are attended by dry, or moderately dry, winds from south or southwest. Occasionally hot winds accompany the high temperatures and cause rapid evaporation of moisture. When these conditions persist for considerable periods, severe droughts often follow. Clear skies and dry atmosphere facilitate rapid radiation, therefore the summer nights are usually cool. In general the winters are comparatively mild and of short duration. Over a period of thirty years, the average temperature for January was 40.4 degrees Fahrenheit and that for July was 82.9 degrees Fahrenheit. In the same period there was a maximum of 116 degrees Fahrenheit and a minimum of -10 degrees Fahrenheit. During the years 1949, 1950, 1951, and 1952, the average temperatures for January and July departed only slightly from that of the longer period. In this four year period the maximum and minimum were 108 degrees Fahrenheit and 0 degrees Fahrenheit respectively.

Rains occur more often, and are more general, during the spring and early summer, while they are more local and uncertain for the remainder of the year. According to records kept in Ada for a period

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<sup>1</sup>U. S. D. A. Yearbook of Agriculture. Climate and man, (Washington, D. C., 1941), Gov't. Printing Office, 1067.

<sup>2</sup>U. S. Dept. of Commerce. Weather Bureau. Climatological data, Oklahoma, annual summary, 1949, V. 58, No. 13; 1950, V. 59, No. 13; 1951, V. 60, No. 13; 1952, V. 61, No. 13. (Washington, D. C.), Gov't. Printing Office.

of thirty-two years, the average total annual precipitation is 37.82 inches. The months April, May, and June have the highest averages with 3.81 in., 5.49 in., and 4.31 in. respectively. The months of January, February, and December show the lowest amount of precipitation with 2.19 in., 1.75 in., and 2.13 in. respectively. Snowfall produces a portion of this, but is so infrequent as to be of minor importance.

During the years 1949, 1950, 1951, and 1952, in which most collections were made for this research, considerable variation from the average precipitation occurred. In 1949 the total precipitation was 17.7% above average and in 1950 it was 24.5% above average. However, during the next two years in which the most intensive collecting was done, there was a very marked decrease in total precipitation. In 1951 the total precipitation measured only 27.92 in., which was 26.6% below the thirty-two year average. The year 1952 had a measurement of only 26.87 in., or 29.3% below the thirty-two year average.

The average date of the latest killing frost, as determined for a thirty year period is March 26, and the latest on record is April 25. The average date of the earliest killing frost is November 6, and the earliest on record is October 19. The average frost-free period is 226 days, which permits a comparatively long growing period for the vegetation.

The prevailing wind direction in the county is southerly, although in December, January, and February northerly winds predominate. The average wind velocity is comparatively low.

The average annual number of clear days is 195, partly cloudy days 90, and cloudy days 80. Sunshine is abundant, averaging 66% of the total possible time.

## CHAPTER IV

### ECOLOGY

#### General Features

Pontotoc County lies within a wide belt extending across Oklahoma in a north-south direction, which is characterized by the presence of only a portion of the eastern hardwood forest and an increase in prairie vegetation. The transitional nature of this belt may be observed in the vegetation of the county, since the dominant vegetation of the eastern portion is oak-hickory forest and that of the western portion is sub-climax tall-grass prairie.

Approximately sixty percent of the total area has never been disturbed by cultivation. Of this area, almost one-half is composed of rough stony lands that are unsuited to the growth of cultivated crops.<sup>1</sup> A second large portion has productive soils, but has been utilized for pasture, now being occupied mostly by large ranches. A third non-cultivated area of much less extent is that of low flood plains, largely along the South Canadian River, where overflows often occur.

The portions of the county that have been disturbed by cultivation are widely scattered and are fairly well divided between those of high ridges or slopes, and those of flood plains. In either case they are mostly confined to the soils of sandstone and shale origin, since those of limestone areas are stony and rough.

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<sup>1</sup>E. G. Fitzpatrick and A. W. Goke. Soil survey of Pontotoc County, Oklahoma. U. S. D. A. Bur. Plant Ind., Series 1936, No. 4: 49, (Washington, D. C., 1941), Gov't. Printing Office.

### Rough Stony Lands

The rough stony lands are not restricted to a designated portion of the county, but are much more common in the eastern and northeastern sections. In this area there are many cliffs and steep slopes, between which often occur small spring-fed streams. The surface layer of soil is very shallow, sandy, or gravelly loam which is readily eroded when exposed. The most prominent association here is oak-hickory forest, with Quercus stellata, and Q. marilandica as the dominants.<sup>2</sup> Greater numbers of the latter grow as small scrubby trees on dry sandy exposed hillsides while the former make up an increasingly greater portion of the timber, where the habitat conditions are more favorable. Constantly associated with these, on the lower slopes, and along the ravines are Carya tomentosa, C. cordiformis, C. texana var. texana, Quercus Muhlenbergii, Q. Shumardii var. Schneckii, and Ulmus americana. Characteristic thickets of open areas are Rhus glabra var. glabra, with occasional, more local thickets of R. copallina var. latifolia and Symphoricarpos orbiculatus.

Prevernal species are not numerous in the oak-hickory forest, but usually include Antennaria plantaginifolia var. plantaginifolia and Galium Aparine on shaded slopes. In less sheltered situations of the hillsides, Nothoscordum bivalve, Physalis heterophylla var. heterophylla and Viola Kitaibeliana var. Rafinesquii are early flowering plants. In moist soils of the stream banks are such plants as Senecio obovatus var. rotundus, Erigeron philadelphicus var. philadelphicus and Viola missouriensis.

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<sup>2</sup>John E. Weaver and Frederick E. Clements. Plant Ecology. pp. 514-516, (New York and London, 1938). McGraw-Hill Book Company.

Some of the more common vernal species of the shaded slopes are Scutellaria parvula var. australis, Triodanis perfoliata, Achillea lanulosa, Erigeron tenuis and Oxalis violacea var. violacea. In less sheltered areas of the hillsides the most prominent vernal plants include Tephrosia virginiana, Oxalis stricta, Triodanis biflorus, Rhus glabra var. glabra, R. copallina var. latifolia, R. aromatica var. serotina, Erythronium albidum var. mesochorum, Desmanthus leptolobus and Daucus pusillus. On the lower slopes and stream margins, such plants as Sanicula canadensis, Geum canadense var. camporum, Lippia nodiflora, L. lanceolata var. recognita, Veronica peregrina var. xalapensis, Pyrrhopappus Geiseri and Cornus florida are commonly seen.

Prominent among the estival species of the high woodland hillsides are such low perennial herbs as Agrimonia pubescens, Acalypha virginica, A. gracilens var. monococca and Mollugo verticillata, as well as the low woody species, Ampelopsis arborea, Berchemia scandens and Ceanothus americanus. Common in the more open areas of this seasonal aspect are Sabatia angularis, S. campestris, Amsonia ciliata, Asclepias tuberosa, A. viridis, Phacelia hirsuta, Gilia rubra, Verbena simplex, V. canadensis, Crotalaria sagittalis var. sagittalis and Dalea purpurea. The areas of greater soil moisture are characterized in the openings, by the low herbaceous climbing vines, Clitoria mariana and Galactia volubilis var. mississippiensis, and in the scattered woods by the somewhat taller Strophostyles helvola var. helvola and Tephrosia virginiana var. virginiana. The estival vegetation that flourishes on the forest floor along the hillside ravines and brooks, consists of such species as Bidens bipinnata, Heliopsis helianthoides var. scabra, Tragia urticifolia, Parietaria pensylvanica and the climbing vines, Parthenocissus



quinquefolia, Vitis cinerea, V. Linsecumii var. glauca, V. vulpina, Cocculus carolinus and Menispermum canadense. Also very common in this habitat are Smilax Bona-nox, S. glauca var. leurophylla and S. tannoides, which may be climbers if their tendrils reach the larger plants, but often exist as dense low thickets.

Serotinal species of the woodland hilltops and slopes in the oak-hickory association include the grasses, Panicum lanuginosum var. fasciculatum, P. sphaerocarpon, P. oligosanthos var. oligosanthos, P. oligosanthos var. Helleri, P. oligosanthos var. Scribnerianum, and in the more xeric habitats, Eragrostis pilosa and Aristida adscensionis. Associated with these are the sedges Carex Muhlenbergii var. Muhlenbergii, C. retroflexa and C. Bicknellii. Other common herbaceous species are Erigeron tenuis, Eupatorium serotinum and Solidago ulmifolia. Some of these shade-tolerant, fall-blooming species may also be found in the open woods of the same sandy or gravelly hillsides. Other more prominent plants of this habitat are Aster exilis, Lespedeza stipulacea, L. Stuevei var. Stuevei, Vernonia Baldwini var. interior, Andropogon scoparius var. scoparius, A. ternarius var. ternarius, Bouteloua hirsuta var. hirsuta and Rubus trivialis var. trivialis. Along the margins of the rocky streams this seasonal aspect contains Elephantopus carolinianus, Helenium tenuifolium, Rumex crispus, R. altissimus, Polygonum pennsylvanicum var. laevigatum, Panicum anceps and Triodia flava.

Another large section of the rough stony lands occurs in an unbroken belt several miles in width which extends from a point near Ada to the southeast corner of the county. The northeast half of this belt is deeply cut by ravines which transverse this area, across which there is a drop of about two hundred to three hundred feet in a distance of two

to four miles. In general the vegetation is very similar to that of the previously described area of broken lands in the northeastern portion of the county.

The southwest half of the same belt is a high escarpment of limestones and shales with a very thin layer of surface soil, and in most places is so thickly covered with rocks as to support only scanty vegetation. The outcropping rocks are of Arbuckle Limestone. The few trees that grow here are only scrubby forms of Celtis laevigata, Viburnum rufidulum, Ulmus alata and Crataegus mollis var. mollis. Subclimax tall-grass prairie predominates in this region, and the dominants are Andropogon scoparius, Bouteloua hirsuta var. hirsuta and B. curtispindula, with many thickets of Rhus aromatica var. serotina showing prominence in some areas.

The common prevernal species of this habitat are Hedyotis minima, Viola Kitaibeliana var. Rafinesquii, Nothoscordum bivalve, Androstephium coeruleum, Astranthium integrifolium var. integrifolium, Chaetopappa asteroides, Draba reptans, D. brachycarpa, D. cuneifolia var. cuneifolia, Descurainia pinnata var. brachycarpa, Capsella bursa-pastoris and Carex blanda.

The more common vernal species are Dodecatheon Meadia var. Meadia, Oxalis stricta, O. violacea var. violacea, Sisyrinchium angustifolium, Yucca glauca var. glauca, Nemastylis geminiflora, Allium canadense var. mobile, A. Drummondii, Sonchus asper, Bifora americana, Baptisia leucophaea, Verbena bipinnatifida, Androsace occidentalis, and Carex austrina. Replacing some of these in the latter part of May are Sedum pulchellum and Valerianella amarella, which are often very abundant in large communities.

During the months of June, July, and August the true vernal species are replaced almost completely by the flowering of the following species of the estival aspect: Vicia hirsuta, Hedeoma Drummondii, Lomatium foeniculaceum, Heliotropium tenellum, Dalea purpureum, D. aurea, Triodanis leptocarpa, Hypericum sphaerocarpon, Opuntia humifusa, Centaurea americana, Cirsium altissimum and Thelesperma intermedium.

The serotinal aspect is likely to contain such grasses as Andropogon saccharoides, A. ternarius var. ternarius, Aristida oligantha and Eragrostis oxylepis var. oxylepis, along with the following dominants of this rough area: Andropogon scoparius var. scoparius, Bouteloua curtipendula and Bouteloua hirsuta var. hirsuta. Also this high rocky limestone plain often contains Solidago altissima, S. rigida, Aster ericoides and Cassia fasciculata.

#### Prairies

South and southwest of the escarpment which extends from near Ada to the southeast corner of the county, there is a high limestone prairie with many outcroppings. Only a very small portion of this prairie has ever been disturbed by cultivation of crops, due partially to its rocky nature and partially to its value as pasture land. The few exceptions are the farming areas sometimes found along Blue River, which has its headwaters in this area.

There are many smaller areas in the western part of the county, extending from the city of Roff northward and northwestward to a line extending from Ada northwestward to the boundary line, some four miles south of the South Canadian River. These prairies contain soils that are derived principally from sandstones, shales, and conglomerates. The vegetation is so similar to that of the limestone prairies of the

south as to permit their being described together.

Throughout these subclimax tall-grass prairies the *Andropogon-Bouteloua* faciation predominates, with *Andropogon scoparius*, *Bouteloua curtipendula* and *B. hirsuta* var. *hirsuta* as the dominants, and in the shallow valleys of deeper and richer soil there is often a good growth of *Andropogon Gerardi* var. *Gerardi*.

Very few prevernal species occur in this faciation, but in the areas intervening between the mats of sod *Draba reptans*, *D. cuneifolia*, *Viola Kitaibeliana* var. *Rafinesquii*, *Claytonia virginica* and *Anemone caroliniana* may blossom in February and March. These are followed in early April by *Corydalis micrantha* var. *micrantha*, *C. micrantha* var. *australis*, *Androsace occidentalis*, and *Allium Drummondii*. Near the rock outcrops where the soil layer is very thin *Arenaria stricta* var. *texana* and *Lesquerella ovalifolia* var. *alba* (the latter only in the limestone area) often grow abundantly.

The vernal aspect consists of numerous species, many of which continue to blossom well into the summer. Plants of xeric habitats, as *Hymenoxys linearifolia*, *Arenaria patula*, *Neobessya missouriensis* and *Marshallia caespitosa*, commonly form societies among rocks and on gravelly mounds. Habitats of a slightly less xeric nature support such species as *Plantago Purshii* var. *Purshii*, *P. rhodosperma*, *Thelesperma intermedium* and *Scutellaria parvula* var. *australis*. Plants characteristic of eroding banks along ravines, or other disclimax spots, are *Lomatium foeniculaceum*, *Solanum carolinense*, *Oenothera missouriensis* var. *missouriensis* and *Tribulus terrestris*. Those most common in moderately moist prairies are *Linaria canadensis*, *Oxalis stricta*, *Penstemon Cobaea*, *P. oklahomensis*, *Collinsia violacea*, *Castilleja*

indivisa, Daucus pusillus, Allium canadense var. mobile, Coreopsis grandiflora var. grandiflora, Echinacea angustifolia, Gaillardia pulchella, Cacalia plantaginea, Erigeron annuus and Baptisia leucophaea.

The estival species of the tall-grass prairie are for the most part deeply rooted, reaching moisture of the subsoil. These plants, indicative of dry gravelly soils, are Palafoxia callosa var. callosa, Aplopappus ciliatus, Chrysopsis pilosa, Opuntia humifusa and Hymenopappus scabiosaeus. In the slightly less xeric regions are Dalea purpureum, D. multiflora, D. candida, Baptisia australis var. minor, Yucca glauca var. glauca, Oenothera serrulata, Polytaenia Nuttallii, Asclepias viridis, A. capricornu var. capricornu and Linum Lewisii var. pratense. Low meadows of moist rich soil contain such summer flowering plants as Amorpha canescens var. canescens, A. fruticosa var. angustifolia, Astragalus canadensis, Melilotus officinalis, Psoralea tenuiflora, Euphorbia dentata, E. marginata, E. corollata var. corollata, Callirhoe involucrata var. involucrata, C. alcaeoides, Physalis pumila, Salvia azurea var. grandiflora, Monarda citriodora, Plantago virginica var. virginica and Rudbeckia amplexicaulis.

The serotinal aspect of the drier prairies consists primarily of Aster ericoides, A. praealtus, Mentzelia oligosperma, Eryngium Leavenworthii, Solidago altissima, S. nemoralis var. decemflora and S. rigida, while the plants most common in the moist low meadows are Carex Frankii, Cyperus ovularis var. ovularis, Tovara virginiana var. virginiana, Liatris aspera var. intermedia, Liatris squarrosa var. glabra, Helianthus hirsutus var. hirsutus, H. mollis, Heterotheca latifolia, and Vernonia Baldwini var. interior.

## Nonarable Flood Plains

The principal climax of the low flood plains vegetation is the *Quercus-Ulmus* faciation, with *Quercus Muhlenbergii*, *Q. Shumardii* var. *Schneckii* and *Ulmus americana* as the dominants. There are places in which two or more of these are replaced, at least partially, by *Quercus macrocarpa*, *Juglans nigra*, *Carya illinoensis* or *Populus deltoides*, as dominants. In addition to these, there is likely to be a good growth of *Salix nigra* and *Cephalanthus occidentalis* along the stream margins, where the water table is shallow. Limited to two streams, Sheep Creek and Byrds Mill Creek, in the southern part of the county, *Alnus maritima* grows in local communities along the gravelly low banks of the streams.

The seasonal aspect on the forest floor of the flood plains is limited to a few shade-tolerant species. Among the prevernal species are *Viola missouriensis*, *V. triloba* var. *dilatata*, *Polygonatum canaliculatum*, and in the southern portion, *Podophyllum peltatum*, which appears in definite local communities.

Among the vernal species are most of the above mentioned prevernals, and in addition, such later flowering plants as *Parietaria pensylvanica*, *Arisaema Dracontium*, *Valerinella radiata*, *Fragaria virginiana* var. *virginiana*, *Geum canadense* var. *canadense*, *Desmodium Dillenii*, *Cicuta maculata*, *Sanicula canadensis* var. *canadensis*, *S. gregaria* and *Senecio obovatus* var. *rotundus*.

The estival aspect includes *Phryma leptostachya* var. *leptostachya*, *Physalis heterophylla* var. *heterophylla*, *Urtica chamvdyroides*, *Mentha spicata*, *Taenidia integerrima*, *Zizia aurea*, *Commelina erecta* var. *erecta*, *Desmodium glutinosum*, *Silene stellata* var. *scabrella* and *Salvia lyrata*. Many of the low or climbing vines are in flower or fruit during this

season. Some of these are Cocculus carolinus, Menispermum canadense, Smilax Bona-nox, Vitis cinerea and Parthenocissus quinquefolia. Also the semiparasitic Phoradendron flavescens, growing rather abundantly on the branches of Ulmus americana and Ulmus rubra, and occasionally on some of the other trees, flowers at this time.

The most prominent serotinal plants of the low flood plain forest floor, are Elephantopus carolinianus, Eupatorium coelestinum, Bidens bipinnata, Aster sagittifolius, Lobelia cardinalis and Agrimonia pubescens. Occasionally species that are usually found on open slopes, such as Aster exilis, Solidago ulmifolia, Xanthium italicum and Eupatorium serotinum, are also found in these low shaded areas.

#### Disclimaxes of Abandoned Fields

Approximately forty percent of the county is composed of soils that have been disturbed by cultivation of crops. However, at present, it is estimated that only one-half of this area remains in cultivation, thus leaving a good portion of the county acreage as abandoned fields. Many of these fields are in early stages of succession. Most small flood plains were abandoned as areas for field crops, due to repeated overflows, or because the tracts were so small that farming was unprofitable. Many fields were abandoned on high plains and slopes because of extreme erosion, and as a result of recent tendencies toward stock farming in the county.

#### Flood Plains

The field crops that are cultivated on the flood plains must compete constantly with many weedy species. Some of the most common of these are Sorghum halepense, Setaria geniculata, Parietaria pensylvanica,

Acalypha virginica, Euphorbia dentata, E. maculata, Physalis pendula, Helianthus mollis var. mollis, H. annuus, Rudbeckia amplexicaulis, R. bicolor, Ratibida columnifera and Xanthium pensylvanicum. These plants, therefore, represent the major part of the initial disclimax succession after these fields are abandoned.

The prevernal aspect often includes Descurainia pinnata var. brachycarpa, Capsella bursa-pastoris, Chaerophyllum procumbens, Lemium amplexicaule, Galium Aparine, Erigeron philadelphicus and Senecio obovatus var. rotundus. Where succession has progressed far enough, some woody species such as Cephalanthus occidentalis, in very moist places, and Smilax Bona-nox in sandy loam, have replaced some of the above herbaceous species.

Common among the vernal plants, of very sandy soils are Cnidocolus texanus, Physalis longifolia and P. pendula, while in sandy loam are such plants as Phytolacca americana, Melilotus officinalis, Vicia minutiflora, Oenothera laciniata var. laciniata, Torilis japonica, Echinacea atrorubens var. atrorubens and ratibida columnifera.

Some of the more common estival species of the sandy soils are Sorghum halepense, Paspalum distichum, Echinochloa pungens var. pungens, Elymus canadensis, Setaria glauca var. glauca, S. geniculata, Carex Frankii, Cyperus uniflorus, Diodia teres, Juncus biflorus, Physalis longifolia, P. pendula, Solanum americanum, Centaurea americana, Rudbeckia bicolor, and in the rich moist clay loam Juncus Dudleyi, J. Torreyi, Parietaria pensylvanica, Polygonum hydropiperoides var. hydropiperoides, P. pensylvanicum var. laevigatum, Physalis heterophylla var. heterophylla, Ruellia strepens, Helianthus annuus, Lactuca canadensis var. canadensis and Rudbeckia amplexicaulis. Occasional



plants of such species as Helianthus mollis var. mollis and Xanthium pensylvanicum flower at this time but most of these flower and develop fruit through the autumn.

Some of the more common serotinal plants of the low sandy abandoned fields are Sorghastrum nutans, Echinochloa pungens var. pungens, Andropogon virginicus var. virginicus, Euphorbia dentata, E. maculata, Ludwigia hirtella, Eustoma Russelliana, Aster ericoides, A. exilis, Gaillardia fastigata and Heterotheca latifolia. Those growing in rich clay loam often include Conyza canadensis var. canadensis and Eupatorium serotinum, with Cocculus carolinus occasionally twining about these.

#### High Plains and Slopes

Among the abandoned field disclimaxes of high plains and slopes are those of sandy soil, restricted mostly to the northwestern portion, and those of rocky or gravelly soil found largely in the eastern and northeastern portions. The dry exposed areas contain the grasses, Andropogon saccharoides, A. ternarius var. ternarius, Aristida oligantha, Agrostis hyemalis, Cenchrus longispinus, Digitaria sanguinalis var. sanguinalis, and Eleusine indica. Some rushes that are often associated with these are Juncus interior and J. Dudleyi. Old fields with a little more soil moisture usually contain Bromus japonicus var. japonicus, Elymus virginicus var. virginicus, Eragrostis oxylepis var. oxylepis, Panicum dichotomiflorum, Setaria geniculata, Setaria glauca var. glauca and Triodia flava.

The prevernal aspect of these abandoned fields includes a few small species such as Stellaria media var. media, Capsella bursa-pastoris, Descurainia pinnata var. brachycarpa, Draba reptans var. reptans, Lepidium virginicum, Lesquerella gracilis var. repanda and Oxalis stricta.

Prominent in the vernal flora are Plantago aristata, where the soil is badly eroded, and Rosa foliolosa on the rocky or gravelly slopes. Commonly growing in dry sandy habitats are Rumex hastatalus, Cycloloma atriplicifolium, Medicago hispida, Evolvulus nuttallianus, Solanum carolinense, S. rostratum and Helianthus petiolaris. Regions of more moisture, such as depressions along terraces, may contain Psoralea tenuiflora and Erigeron strigosus var. strigosus.

The dry exposed slopes nearly always contain a good distribution of Cassia fasciculata during the summer months. This species is often accompanied in sandy areas by Froelichia floridana var. campestris, Oenothera rhombipetala, Cnidioscolus texanus, Euphorbia dictyosperma and Gaillardia lanceolata. If erosion has progressed to the extent of removing all of the original surface soil, Aristida oligantha and A. purpurea may constitute the total estival aspect.

Most of the serotinal species found in abandoned fields are the grasses, Andropogon saccharoides, A. ternarius var. ternarius, Aristida oligantha, Agrostis hyemalis, Cenchrus longispinus, Digitaria sanguinalis var. sanguinalis, and Eleusine indica. Associated with these are Eriogonum annuum, E. longifolium, Lespedeza stipulacea, Aplopappus ciliatus, Solidago ulmifolia, and S. mollis var. mollis.

#### Hydrophytic Zones

There are in Pontotoc County many farm ponds, most of which occupy less than one acre. Also Lake Wintersmith, one mile southeast of Ada, along with the South Canadian River, Blue River and many smaller streams contain several aquatic and semiaquatic plant species.

Because of the continuous habitat differences in and around ponds and lakes, the structure of the vegetation can be clearly seen in

zonation. Free-floating or partially submerged algae usually occupy an area near the center of ponds and lakes. These are followed by such flowering plants as Nelumbo lutea, Potamogeton nodosus, Najas guadalupensis and Justicia americana var. subcoriacea, which grow at various depths, rooted in the muddy or sandy bottom. They may form dense masses of vegetation in older ponds. The two latter species are entirely submerged, while the others have floating leaves and aerial flowers.

The succeeding zone is characterized by the tall plants Scirpus validus var. creber and Typha latifolia which are rooted in the muddy shallow margins. Associated with these in some ponds is Lemna minor, which is a free-floating species but is usually restricted to the margins because of surface waves. Also, in at least two of the larger ponds of the eastern part of the county, Sagittaria falcata is a part of this marginal zone.

The land margin surrounding ponds usually contains a zone including several sedges, rushes, and grasses intermixed with a few species of forbs. Some of these plants are Carex Frankii, C. Meadii, C. vulpinoidea var. vulpinoidea, Cyperus acuminatus, C. esculentus var. esculentus, C. setigerus, Juncus diffusissimus, Tripsacum dactyloides, Paspalum distichum, P. floridanum, Phalaris caroliniana, Cicuta maculata and Polygonum lapathifolium var. lapathifolium.

The succeeding zone is marked by a good growth of woody plants. Among these are Cephalanthus occidentalis, Salix nigra, Cornus florida, C. Drummondii and Populus deltoides.

The final zone is characterized by the climax or subclimax association of the area, therefore is usually oak-hickory or tall-grass prairie, depending on the locality.

The small spring-fed streams of the hills and slopes often contain partly submerged Nasturtium officinale var. officinale and have small communities of Equisetum hyemale var. affine, E. hyemale var. intermedium and Woodsia obtusa growing along the rocky margins or steep banks. Otherwise the vegetation of these habitats was described along with the oak-hickory association, of which they are a part.

Along the sandy bed of the South Canadian River may be found certain species that are for the most part late flowering annuals. Some of these are Echinochloa pungens var. pungens, Eragrostis pectinacea, Leptochloa filiformis, Panicum capillare var. capillare, Acnida tamariscina, Conobea multifida, Eclipta alba, Ammania coccinea, Fimbristylis Vahlia, Fuirena simplex, Cyperus erythrorhizos and Eleocharis compressa var. compressa. In addition to these annuals there often are early seedling communities of Salix nigra and Populus deltoides which are almost completely destroyed by spring floods when water spreads over these beds of sand. Another small tree, Tamarix gallica, predominates on some of the beds of sand that are inundated less often. This species has been fairly successful in gaining a foothold over many acres of the bottom along the river.

## CHAPTER V

### RELATIONSHIPS OF THE FLORA

Since Pontotoc County is located in the transition area between the tall grass prairie and the oak-hickory forest, floras of both are well represented. With the aid of recent manuals, groupings were made, showing the geographic relationships of this flora. They are more or less arbitrary and separate consideration is given to each taxon of specific rank. The groups consist of plants having the following distributional patterns: (1) wide range throughout most of North America, as shown by their being found in several manuals covering different parts of North America; (2) wide range across Southern United States; (3) wide range in Eastern North America; (4) wide range in Western North America; (5) wide range in the interior of the United States (especially prairie states); (6) ranging throughout Southeastern United States; (7) ranging throughout Northeastern United States; (8) ranging throughout Southwestern United States; (9) limited mostly to Missouri, Kansas, Oklahoma and Texas.

Species of Pontotoc County that are of wide range throughout most of North America number 115, representing approximately 16.5% of the total flora. These include many cosmopolitan species, such as Stellaria media var. media and Geranium carolinianum var. carolinianum. Others that are slightly more limited in range, as Juncus interior, occurring from Michigan to Washington and South to Texas, are included in this group.

There are only 24 species, or 3.5% of the total, that are considered

of wide range throughout only the southern states. Typical representatives of this group are Andropogon saccharoides, which occurs from Alabama to Mexico and north to Missouri and Southern California, and Sibara virginica which extends from Florida and Mexico to Eastern Virginia and Southern California.

Approximately 255, or 36.5% of the plants of the county, are included in the general range of Eastern North America. In this group are most of the forest trees, such as Quercus Muhlenbergii, which occurs from Northern Florida to Eastern Texas and north to Vermont and Eastern Nebraska, along with many woodland species, as Sanicula canadensis var. canadensis, which occurs from Florida to Texas and north to New Hampshire, Ohio and Missouri. Also many prairie species are found in this group. A typical example of such plants is Bouteloua curtipendula, which ranges from Connecticut to Ontario, west to Montana and south to Georgia, Texas, and Mexico.

The western range, as considered in this grouping, includes the entire area from the Great Plains westward to the Pacific Ocean. Only 13 species, or 1.9% of the total flora, are of this range. Typical of these are Gaura parviflora var. parviflora, which occurs from Texas to Illinois and west to Washington, and Ambrosia psilostachya var. psilostachya, which extends from Illinois to Saskatchewan and south to Texas, Mexico and California.

Species that are more or less limited to the prairie states of the interior number 112, or approximately 16% of the total flora. Typical of these are the species Vernonia Baldwini var. interior, occurring from Illinois to Minnesota and Nebraska, south to Arkansas and Texas, and Androsace occidentalis, with a more extensive range from Ontario to

British Columbia, and south to Arkansas, Texas, New Mexico and Arizona. It is not intended that this group include all prairie species, since many such species are included in other more extensive ranges.

Species that extend throughout the southeastern portion of the United States number 102, or 14.5% of the total. This area extends from Florida to Texas and north to Southern New England and west to Missouri and Kansas, although several species are included in this group, that do not extend so far northward. Typical of this group are Viburnum rufidulum and Diospyros virginiana var. virginiana, which extends only as far north as Missouri and Tennessee.

Only 8 species, or 1.1% of the total flora of the county is considered of northeastern relationships. These consist of such species as Cornelina communis var. ludens which was naturalized in New Jersey and Pennsylvania to Virginia and Kentucky, becoming only partially established in Pontotoc County, and Carex annectens var. xanthocarpa, indigenous from Maine to southwestern Quebec and south to Virginia and Oklahoma.

Species of the southwestern group number 24, or 3.5% of the total flora. These typically range from Texas to Kansas and west to Mexico and Arizona. Representative species of this group are Solanum elaeagnifolium, Centaurea americana and Hymenoxys linearifolia.

A more limited range considered is one including all or portions of Missouri, Kansas, Oklahoma and Texas, with now and then an extension into Colorado, Arkansas or Louisiana. There are approximately 45 species, or 6.5% of the county flora that are thus restricted in range. Typical of these are the following: Oenothera missouriensis var. missouriensis, O. missouriensis var. oklahomensis, Baptisia australis var. minor,

Cyperus setigerus, Tradescantia Tharpii, Eriogonum longifolium, Rhyn-  
chosia latifolia, Eryngium Leavenworthii, Limnoscium pinnatum,  
Physalis pendula, Collinsia violacea, Valerianella stenocarpa var.  
parviflora, Chrysopsis pilosa, Erigeron tenuis, Marshallia caespitosa  
and Palafoxia callosa var. callosa.



CHAPTER VI

LIST OF THE SPECIES, VARIETIES AND FORMS

PTERIDOPHYTA

Equisetaceae

Equisetum hyemale L., var. affine (Engelm.) A. A. Eat.

Equisetum hyemale L., var. intermedium A. A. Eat.

Ophioglossaceae

Botrychium virginianum (L.) Sw., var. virginianum

Ophioglossum Engelmanni Prantl (G. T. Robbins 3014; O. U.)

Polypodiaceae

Adiantum Capillus-Veneris L.

Asplenium platyneuron (L.) Oakes

Cystopteris fragilis (L.) Bernh., var. simulans (Weatherby) McGregor

Pellaea atropurpurea (L.) Link, var. atropurpurea

Polypodium polypodioides (L.) Watt, var. Michauxianum Weatherby

Woodsia obtusa (Spreng.) Torr.

SPERMATOPHYTA

Gymnospermae

Pinaceae

Juniperus virginiana L., var. virginiana

Angiospermae

Monocotyledoneae

## Typhaceae

Typha domingensis Pers.Typha latifolia L.

## Zosteraceae

Potamogeton diversifolius Raf.Potamogeton nodosus Poir.

## Najadaceae

Najas guadalupensis (Spreng.) Magnus

## Alismaceae

Sagittaria falcata Pursh

## Gramineae

Aegilops cylindrica Host., var. cylindricaAgropyron Smithii Rydb., var. SmithiiAgrostis hyemalis (Walt.) BSP.Alopecurus carolinianus Walt.Andropogon Gerardii Vitmin, var. GerardiiAndropogon saccharoides Sw.Andropogon scoparius Michx., var. scopariusAndropogon ternarius Michx., var. ternariusAndropogon virginicus L., var. virginicusAndropogon virginicus L. var. abbreviatus (Hack.) Fern. & Griseb.Aristida adscensionis L.Aristida oligantha Michx.Aristida purpurascens Poir.Aristida purpurea Nutt.

- Bouteloua curtipendula (Michx.) Torr.
- Bouteloua hirsuta Lag., var. hirsuta
- Bouteloua hirsuta Lag., var. pectinata (Feath.) Cory
- Bromus catharticus Vahl.
- Bromus japonicus Thunb., var. japonicus
- Bromus japonicus Thunb., var. porrectus Hack.
- Bromus pratensis Ehrh.
- Bromus secalinus L.
- Bromus tectorum L.
- Buchloe dactyloides (Nutt.) Engelm.
- Cenchrus longispinus (Hack.) Fern.
- Cenchrus pauciflorus Benth.
- Chloris verticillata Nutt.
- Cynodon dactylon (L.) Pers.
- Digitaria Ischaemum (Schreb.) Muhl., var. Ischaemum
- Digitaria sanguinalis (L.) Scop., var. sanguinalis
- Echinochloa pungens (Poir.) Rydb., var. pungens
- Echinochloa pungens (Poir.) Rydb., var. Wiegandii Fassett
- Eleusine indica (L.) Gaertn.
- Elymus canadensis L.
- Elymus canadensis L., forma glaucifolius (Muhl.) Fern.
- Elymus virginicus L., var. virginicus
- Elymus virginicus L., var. virginicus, forma hirsutiglumis (Scribn.) Fern.
- Elymus virginicus L., var. glabrifolius (Vasey) Bush, forma australis  
(Scribn. & Ball) Fern.
- Eragrostis capillaris (L.) Nees
- Eragrostis intermedia Hitchc.

- Eragrostis megastachya (Koel.) Link
- Eragrostis oxylepis (Torr.) Torr., var. oxylepis
- Eragrostis pectinacea (Michx.) Scribn.
- Eragrostis pilosa (L.) Beauv.
- Eragrostis poaeoides Beauv. ex Roem. & Schult.
- Eragrostis spectabilis (Pursh) Steud., var. sparsihirsuta Farw.
- Eragrostis trichodes (Nutt.) Nash, var. trichodes
- Glyceria striata (Lam.) Hitchc., var. striata
- Hordeum pusillum Nutt.
- Koeleria cristata (L.) Pers.
- Leersia virginica Willd., var. virginica
- Leptochloa filiformis (Lam.) Beauv.
- Limodea arkansana (Nutt.) L. H. Dewey, var. arkansana
- Lolium multiflorum Lam.
- Melica nitens Nutt.
- Muhlenbergia capillaris (Lam.) Trin. (G. T. Robbins 2263; O. U.)
- Panicum anceps Michx., var. anceps
- Panicum capillare L., var. capillare
- Panicum capillare L., var. occidentale Rydb.
- Panicum dichotomiflorum Michx., var. dichotomiflorum
- Panicum lanuginosum Ell., var. fasciculatum (Torr.) Fern.
- Panicum lanuginosum Ell., var. Lindheimeri (Nash) Fern.
- Panicum malacophyllum Nash (G. T. Robbins 2279; O. U.)
- Panicum obtusum HBK. (G. T. Robbins 3097; O. U.)
- Panicum oligosanthos Schultes, var. oligosanthos
- Panicum oligosanthos Schultes, var. Helleri (Nash) Fern.
- Panicum oligosanthos Schultes, var. Scribnerianum (Nash) Fern.

Panicum scoparium Lam.

Panicum sphaerocarpon Ell., var. sphaerocarpon

Panicum virgatum L., var. virgatum

Paspalum bifidum (Bertol.) Nash, var. bifidum (U. T. Waterfall 5684;  
O. U.)

Paspalum ciliatifolium Michx., var. Muhlenbergii (Nash) Fern.

Paspalum dilatatum Poir. (G. T. Robbins 2680; O. U.)

Paspalum distichum L.

Paspalum floridanum Michx., var. floridanum

Paspalum pubiflorum Rupr., var. glabrum Vasey

Phalaris caroliniana Walt.

Poa bulbosa L.

Setaria geniculata (Lam.) Beauv.

Setaria glauca (L.) Beauv., var. glauca

Setaria viridis (L.) Beauv., var. viridis

Sorghastrum nutans (L.) Nash

Sorghum halepense (L.) Pers.

Sphenopholis obtusata (Michx.) Scribn., var. obtusata

Sphenopholis obtusata (Michx.) Scribn., var. lobata (Trin.) Scribn.

Sporobolus canovirens Nash (M. Hopkins & Van Valkenburgh 5555; O. U.)

Sporobolus cryptandrus (Torr.) Gray, var. cryptandrus

Stipa leucotricha Trin.

Triodia flava (L.) Hitchc.

*Tridens* Triodia pilosa (Buckl.) Merr.

Tripsacum dactyloides L.

Uniola latifolia Michx.

Vulpia octoflora (Walt.) Rydb.

## Cyperaceae

Bulbostylis capillaris (L.) C. B. Clark, var. crebra Fern.

Carex annectens Bickn., var. xanthocarpa (Bickn.) Wieg.

Carex austrina (Small) Mack.

Carex Bicknellii Britton

Carex blanda Dewey

Carex Frankii Kunth

Carex granularis Muhl.

Carex Meadii Dewey

Carex Muhlenbergii Schkuhr., var. Muhlenbergii

Carex Muhlenbergii Schkuhr., var. enervis Boott

Carex oligocarpa Schkuhr.

Carex physorhyncha Liebm.

Carex retroflexa Muhl.

Carex texensis (Torr.) Bailey (G. T. Robbins 2951; O. U.)

Carex vulpinoidea Michx., var. vulpinoidea

Cyperus acuminatus Torr. & Hook.

Cyperus erythrorhizos Muhl.

Cyperus esculentus L., var. esculentus

Cyperus filiculmis Vahl., var. filiculmis

Cyperus odoratus L.

Cyperus ovularis (Michx.) Torr., var. ovularis

Cyperus ovularis (Michx.) Torr., var. sphaericus Chapm.

Cyperus setigerus Torr. & Hook.

Cyperus strigosus L., var. strigosus

Cyperus uniflorus Torr. & Hook.

Cyperus virens Michx.

Eleocharis macrostachya Britt.

Eleocharis montevidensis Kunth

Fimbristylis interior Britton

Fimbristylis Vahlia (Lam.) Link

Firena simplex Vahl

Rhynchospora capitellata (Michx.) Vahl. (W. T. Penfound P-343a; O. U.)

Scirpus lineatus Michx.

Scirpus validus Vahl, var. creber Fern.

#### Araceae

Arisaema Dracontium (L.) Schott.

#### Lemnaceae

Lemna minor L.

#### Commelinaceae

Commelina communis L., var. ludens (Miquel) Clarke (G. T. Robbins 2611;  
O. U.)

Commelina erecta L., var. erecta

Commelina erecta L., var. angustifolia (Michx.) Fern., forma crispa  
(Woot.) Fern.

Tradescantia ohiensis Raf.

Tradescantia Tharpia Anders. & Woodson

#### Juncaceae

Juncus acuminatus Michx.

Juncus biflorus Ell.

Juncus brachycarpus Engelm.

Juncus brachyphyllus Wiegand

Juncus diffusissimus Buckl.

Juncus Dudleyi Wiegand

Juncus interior Wiegand

Juncus nodatus Coville, var. rubustus (Engelm.) Coville

Juncus Torreyi Coville

Juncus validus Coville

#### Liliaceae

Allium canadense L., var. canadense

Allium canadense L., var. mobile (Regel) Ownbey

Allium Drummondii Regel

Androstaphium coeruleum (Scheele) Greene

Camassia scilloides (Raf.) Cory

Erythronium albidum Nutt., var. mesochoreum (Knerr) Rickett

Nothoscordum bivalve (L.) Britton

Polygonatum canaliculatum (Muhl.) Pursh

Smilax Bona-nox L., var. Bona-nox

Smilax glauca Walt., var. glauca

Smilax glauca Walt., var. leurophylla Blake

Smilax rotundifolia L.

Smilax tannoides L., var. hispida (Muhl.) Fern.

Yucca glauca Nutt., var. glauca

#### Amaryllidaceae

Agave lata Shinnars (G. T. Robbins 3094; O. U.)

Hypoxis hirsuta (L.) Coville

#### Iridaceae

Nemastylis geminiflora Nutt.



Sisyrinchium angustifolium Mill.

Sisyrinchium campestre Bickn.

Orchidaceae

Corallorhiza Wisteriana Conrad

Epipactis gigantea Dougl.

Spiranthes gracilis (Bigel.) Beck (G. T. Robbins 2268; O. U.)

Dicotyledoneae

Salicaceae

Populus alba L.

Populus deltoides Marsh.

Salix nigra Marsh.

Juglandaceae

Carya cordiformis (Wang.) K. Koch

Carya illinoensis (Wang.) K. Koch

Carya texana Buckl., var. texana

Carya tomentosa (Poir.) Nutt.

Juglans nigra L.

Betulaceae

Alnus maritima (Marsh.) Muhl.

Fagaceae

Quercus falcata Michx., var. falcata

Quercus falcata Michx., var. triloba (Michx.) Nutt.

Quercus macrocarpa Michx.

Quercus marilandica Muench.

Quercus Muhlenbergii Engelm.

Quercus palustris Muench.

Quercus prinoides Willd.

Quercus rubra L., var. rubra

Quercus Shumardii Buckl., var. Schneckii (Britton) Sarg.

Quercus stellata Wang., var. stellata

Quercus velutina Lam., var. velutina

Quercus velutina Lam., var. velutina, forma macrophylla (Dippel) Trel.

#### Ulmaceae

Celtis laevigata Willd., var. laevigata

Ulmus alata Michx.

Ulmus americana L.

Ulmus rubra Muhl.

#### Moraceae

Broussonetia papyrifera (L.) Vent.

Maclura pomifera (Raf.) Schneider

Morus rubra L.

#### Urticaceae

Parietaria pensylvanica Muhl.

Pilea pumila (L.) Gray, var. Deamii (Lunell) Fern. (G. F. Robbins 3189;

O. J.

Urtica chamaedryoides Pursh

#### Loranthaceae

Phoradendron flavescens (Pursh) Nutt.

## Polygonaceae

- Eriogonum annuum Nutt.  
Eriogonum longifolium Nutt.  
Polygonum Convolvulus L., var. Convolvulus  
Polygonum cristatum Engelm. & Gray  
Polygonum Hydropiper L.  
Polygonum hydropiperoides Michx., var. hydropiperoides  
Polygonum hydropiperoides Michx., var. Bushmanum Stanford  
Polygonum lapathifolium L., var. lapathifolium  
Polygonum orientale L.  
Polygonum pennsylvanicum L., var. laevigatum Fern.  
Polygonum Persicaria L., var. Persicaria  
Polygonum prolificum (Small) Robinson  
Polygonum punctatum, var. parviflorum Fassett  
Rumex altissimus Wood  
Rumex crispus L.  
Rumex hastatulus Baldw.  
Rumex verticillatus L.  
Tovara virginiana (L.) Raf., var. virginiana

## Chenopodiaceae

- Chenopodium album L. (G. T. Robbins 3205; O. U.)  
Chenopodium carinatum R. Br.  
Chenopodium pallescens Standl.  
Chenopodium pratericola Rydb., var. pratericola  
Cycloloma atriplicifolium (Spreng.) Coult.

## Amaranthaceae

- Acnida tamariscina (Nutt.) Wood

Amaranthus graecizans L. (U. T. Waterfall 8390; O. U.)

Amaranthus spinosus L.

Froelichia floridana (Nutt.) Moq. var. campestris (Small) Fern.

Iresene rhizomota Standl. (G. T. Robbins 2761; O. U.)

#### Nyctaginaceae

Mirabilis albida (Walt.) Heimerl, var. lata Shimmers

Mirabilis linearis (Pursh) Heimerl

Mirabilis nyctaginea (Michx.) MacM.

#### Phytolaccaceae

Phytolacca americana L.

#### Aizoaceae

Mollugo verticillata L.

#### Portulacaceae

Claytonia virginica L.

Portulaca mundula I. M. Jtn. (U. T. Waterfall 8391; O. U.)

#### Caryophyllaceae

Arenaria patula Michx., forma media Steyerl.

Arenaria patula Michx., forma Pitcheri (Nutt.) Steyerl.

Arenaria stricta Michx., var. texana Robinson

Cerastium brachypodium (Engelm.) Robinson

Cerastium viscosum L.

Silene antirrhina L. (G. T. Robbins 2946; O. U.)

Silene stellata (L.) Ait. f., var. scabrella (Niewl.) Palm. & Steyerl.

Stellaria media (L.) Cyrill, var. media

Stellaria Nuttallii T. & G.

## Illecebraceae

Paronychia virginica Spreng., var. scoparia (Small) Cory

## Nymphaeaceae

Nelumbo lutea (Willd., Pers.

## Ranunculaceae

Anemone caroliniana Walt.

Anemone caroliniana Walt., forma violacea Clute

Anemone decapetala Ard.

Clematis Pitcheri T. & G.

Delphinium Ajacis L.

Delphinium tricornis Michx.

Delphinium virescens Nutt., var. virescens

Ranunculus fascicularis Muhl., var. apricus (Greene) Fern.

## Menispermaceae

Cocculus carolinus (L.) DC.

Menispermum canadense L.

## Berberidaceae

Podophyllum peltatum L.

## Papaveraceae

Argemone intermedia Sweet

## Fumariaceae

Corydalis crystallina Engelm.

Corydalis micrantha (Engelm.) Gray, var. micrantha

Corydalis micrantha (Engelm.) Gray, ssp. australis (Chapm.) Ownbey

## Capparidaceae

Polanisia trachysperma T. & G.

## Cruciferae

Arabis canadensis L. (G. T. Robbins 3004; O. U.)

Brassica juncea (L.) Coss.

Brassica Kaber (DC.) Wheeler, var. pinnatifida (Stokes) Wheeler

Camelina microcarpa Andrz.

Capsella bursa-pastoris (L.) Medic., var. bursa-pastoris

Cardamine parviflora L., var. arenicola (Britt.) O. E. Schultz. (Van Valkenburgh 10a; O. U.)

Descurainia pinnata (Walt.) Britt., var. brachycarpa (Richards.) Fern.

Draba brachycarpa Nutt.

Draba cuneifolia Nutt., var. cuneifolia

Draba reptans (Lam.) Fern., var. reptans

Erysimum asperum DC., var. asperum

Erysimum repandum L.

Lepidium densiflorum Schrad.

Lepidium virginicum L., var. virginicum

Lesquerella gracilis (Hook.) Wats., var. repanda (Nutt.) Payson

Lesquerella ovalifolia Rydb., var. alba Goodman

Nasturtium officinale R. Br., var. officinale

Rorippa islandica (Oeder ex Muir) Borbas, var. Fernaldiana Butt. & Abbe

Rorippa sessiliflora (Nutt.) Hitchc.

Sibara virginica (L.) Rollins

Thlaspi arvense L.

## Crassulaceae

Sedum pulchellum Michx.

## Saxifragaceae

Penthorum sedoides L. (G. T. Robbins 2300; O. U.)

## Platanaceae

Platanus occidentalis L.

## Rosaceae

Agrimonia pubescens Wallr.

Crataegus crus-galli L., var. crus-galli

Crataegus mollis (T. & G.) Scheele, var. mollis

Crataegus viridis L., var. lutensis (Sarg.) Palmer

Fragaria virginiana Duchesne, var. virginiana

Geum canadense Jacq. var. camporum (Rydb.) Fern. & Weath.

Potentilla simplex Michx., var. simplex (G. J. Goodman 5467; O. U.)

Prunus americana Marsh., var. lanata Sudw.

Prunus angustifolia Marsh., var. angustifolia

Prunus gracilis Engelm. & Gray

Prunus mexicana Wats.

Prunus serotina Ehrh.

Rosa carolina L., var. carolina, forma glandulosa (Crepin) Fern.

Rosa foliolosa Nutt.

Rosa setigera Michx., var. tomentosa T. & G.

Rubus trivialis Michx., var. trivialis

Sanguisorba annua Nutt.

## Leguminosae

Acacia angustissima (Mill.) Kuntze, var. hirta (Nutt.) Robinson

Amorpha canescens Pursh, var. canescens

Amorpha fruticosa L., var. angustifolia Pursh

Apios americana Medic., var. americana (G. T. Robbins 3108; O. U.)  
Astragalus canadensis L., var. canadensis  
Astragalus caryocarpus Ker.  
Astragalus nuttallianus DC., var. nuttallianus  
Baptisia australis (L.) R. Br., var. minor (Lehm.) Fern.  
Baptisia leucantha T. & G.  
Baptisia leucophaea Nutt., var. leucophaea  
Baptisia sphaerocarpa Nutt.  
Cassia fasciculata Michx., var. fasciculata  
Cercis canadensis L., var. canadensis  
Cercis canadensis L., var. canadensis, forma glabrifolia Fern.  
Clitoria mariana L.  
Crotalaria sagittalis L., var. sagittalis  
Dalea aurea Nutt.  
Dalea candida Willd.  
Dalea multiflora (Nutt.) Shimmers  
Dalea purpurea Vent.  
Desmanthus illinoensis (Michx.) MacM.  
Desmanthus leptolobus T. & G.  
Desmodium canescens (L.) DC.  
Desmodium ciliare (Muhl.) DC., var. ciliare  
Desmodium Dillenii Darl.  
Desmodium glutinosum (Muhl. ex Willd.) Wood  
Desmodium sessilifolium (Torr.) T. & G.  
Galactia volubilis (L.) Britt., var. mississippiensis Vail  
Gleditsia triacanthos L.  
Glottidium vesicarium (Jacq.) Harper



Indigofera leptosepala Nutt.  
Krameria secundiflora DC.  
Lathyrus pusillus Ell.  
Lespedeza repens (L.) Bart.  
Lespedeza stipulacea Maxim.  
Lespedeza Stuevei Nutt., var. Stuevei  
Lespedeza virginica (L.) Britt.  
Lotus americanus (Nutt.) Bisch.  
Medicago hispida Gaertn.  
Medicago lupulina L., var. lupulina  
Medicago minima L., var. minima  
Medicago sativa L.  
Melilotus alba Desv.  
Melilotus officinalis (L.) Lam.  
Neptunia lutea (Leavenw.) Benth., var. lutea  
Oxytropis Lambertii Pursh  
Psoralea esculenta Pursh  
Psoralea tenuiflora Pursh  
Rhynchosia latifolia L.  
Robinia Pseudo-Acacia L.  
Schrankia Nuttallii (DC.) Standl.  
Sophora affinis T. & G.  
Strophostyles helvola (L.) Ell., var. helvola  
Stylosanthes biflora (L.) BSP., var. hispidissima (Michx.) Pollard & Ball  
(G. T. Robbins 2518; O. U.)  
Tephrosia virginiana (L.) Pers., var. virginiana  
Trifolium repens L.

Vicia dasycarpa Ten.

Vicia hirsuta (L.) S. F. Gray

Vicia minutiflora Dietr.

Vicia villosa Roth.

Linaceae

Linum Lewisii Pursh., var. pratense Norton

Linum medium (Planch.) Britton, var. texanum (Planch.) Fern.

Linum rigidum Pursh, var. Berlandieri (Hook.) T. & G. (G. J. Goodman  
5447; O. U.)

Oxalidaceae

Oxalis corniculata L., var. Langloisii (Small) Wieg.

Oxalis stricta L.

Oxalis violacea L., var. violacea

Geraniaceae

Geranium carolinianum L., var. carolinianum

Zygophyllaceae

Kallstroemia intermedia Rydb.

Tribulus terrestris L.

Euphorbiaceae

Acalypha gracilens Gray, var. monococca Engelm.

Acalypha ostryaefolia Riddell

Acalypha virginica L.

Cnidoscolus texanus (Muell. Arg.) Small

Croton capitatus Michx.

Croton glandulosus L., var. septentrionalis Muell. Arg.

Croton monanthogynus Michx.

Euphorbia bicolor Engelm. & Gray

Euphorbia corollata L., var. corollata

Euphorbia dentata Michx.

Euphorbia dentata Michx., forma cuphosperma (Engelm.) Fern.

Euphorbia dictyosperma Fisch & Mey.

Euphorbia heterophylla L.

Euphorbia hexagona Nutt.

Euphorbia maculata L.

Euphorbia marginata Pursh

Euphorbia missurica Raf., var. missurica

Euphorbia serpens HBK.

Euphorbia supina Raf.

Phyllanthus polygonoides Nutt. (G. T. Robbins 2285; O. U.)

Tragia urticifolia Michx.

#### Anacardiaceae

Rhus aromatica Ait., var. serotina (Greene) Rehder.

Rhus copallina L., var. latifolia Engler

Rhus glabra L., var. glabra

Rhus radicans L., var. radicans

#### Celastraceae

Celastrus scandens L. (U. T. Waterfall 7978; O. U.)

Euonymus atropurpureus Jacq.

#### Aceraceae

Acer Negundo L., var. texanum Pax

## Hippocastanaceae

Aesculus glabra Willd., var. Sargentii Rehd.

## Sapindaceae

Sapindus Drummondii H. & A.

## Rhamnaceae

Berchemia scandens (Hill) K. Koch

Ceanothus americanus L., var. Pitcheri T. & G.

Ceanothus ovatus Desf., var. pubescens (S. Wats.) Soper

Rhamnus caroliniana Walt., var. mollis Fern.

## Vitaceae

Ampelopsis arborea (L.) Koehne

Ampelopsis cordata Michx.

Parthenocissus quinquefolia (L.) Planch

Vitis cinerea Engelm.

Vitis Linsecumii Buckl., var. glauca Munson

Vitis vulpina L.

## Malvaceae

Abutilon Theophrasti Medic.

Callirhoe alcaeoides (Michx.) Gray

Callirhoe digitata Nutt., var. stipulata Waterfall

Callirhoe involucrata (Nutt. ex. Torr.) Gray, var. involucrata

Sida procumbens Sw. (U. T. Waterfall 8387; O. U.)

Sida spinosa L.

## Guttiferae

Ascyrum Hypericoides L., var. multicaule (Michx.) Fern. (G. T. Robbins

2303; O. U.)

Hypericum punctatum Lam., var. pseudomaculatum (Bush) Fern.

Hypericum sphaerocarpon Michx.

Tamaricaceae

Tamarix gallica L.

Cistaceae

Lechea tenuifolia Michx., var. occidentalis Hodg.

Lechea villosa Ell., var. villosa

Violaceae

Viola Kitaibeliana Roem. & Schultz, var. Rafinesquii (Greene) Fern.

Viola missouriensis Greene

Viola pedatifida G. Don

Viola sagittata Ait. (G. T. Robbins 2334; O. U.)

Viola tricolor L.

Viola triloba Schwein., var. dilatata (Ell.) Brainerd

Passifloraceae

Passiflora lutea L., var. glabriflora Fern. (G. T. Robbins 3099; O. U.)

Loasaceae

Mentzelia oligosperma Nutt.

Cactaceae

Echinocereus Reichenbachii (Tersch.) Haage

Neobessya missouriensis (Sweet) Br. & Rose

Opuntia humifusa Raf.

Lythraceae

Ammannia coccinea Rothb.

Cuphea petiolata (L.) Koehne (G. T. Robbins 2790; O. U.)

Lythrum lanceolatum Ell.

Rotala ramosior (L.) Koehne, var. interior Fern. & Griseb.

Onagraceae

Gaura biennis L., var. Pitcheri Pickering ex T. & G.

Gaura filiformis Small (M. Hopkins 5556; O. U.)

Gaura parviflora Dougl., var. parviflora

Gaura parviflora Dougl., var. parviflora, forma glabra Munz

Gaura suffulta Engelm., var. suffulta

Jussiaea repens L., var. glabrescens Ktze.

Ludwigia alternifolia L., var. alternifolia

Ludwigia hirtella Raf.

Oenothera laciniata Hill, var. laciniata

Oenothera linifolia Nutt.

Oenothera missouriensis Sims, var. missouriensis

Oenothera missouriensis Sims, var. oklahomensis (Norton) Munz

Oenothera rhombipetala Nutt.

Oenothera serrulata Nutt.

Oenothera speciosa Nutt.

Oenothera triloba Nutt.

Stenosiphon linifolius (Nutt.) Britton

Umbelliferae

Anethum graveolens L.

Bifora americana (DC.) Wats.

Chaerophyllum procumbens (L.) Crantz

Chaerophyllum Tainturieri Hook., var. Tainturieri

Chaerophyllum texanum C. & R.

Cicuta maculata L.

Cryptotaenia canadensis (L.) DC.

Daucus pusillus Michx.

Eryngium Leavenworthii T. & G.

Eryngium yuccifolium Michx., var. synchaetum Gray ex Coult. & Rose

Limnoscium pinnatum (DC.) Math. and Const.

Lomatium foeniculaceum (Nutt.) Coult. & Rose

Polytaenia Nuttalli DC., var. Nuttallii

Ptilimium Nuttallii (DC.) Britton

Sanicula canadensis L., var. canadensis

Sanicula gregaria Bicknell

Spermolepis divaricata (Walt.) Britton

Spermolepis echinata (Nutt.) Heller

Spermolepis inermis (Nutt.) Math. & Const.

Taenidia integerrima (L.) Drude

Torilis japonicus (Houtt.) DC.

Zizia aurea (L.) Koch

#### Cornaceae

Cornus Drummondii C. A. Meyer

Cornus florida L.

#### Ericaceae

Vaccinium arboreum Marsh., var. arboreum

#### Primulaceae

Androsace occidentalis Pursh

Dodecatheon Meadia L., var. Meadia, forma sedens Fassett

Samolus parviflorus Raf.

Sapotaceae

Bumelia lanuginosa (Michx.) Pers., var. oblongifolia (Nutt.) Clark

Ebenaceae

Diospyros virginiana L., var. virginiana

Oleaceae

Forestiera pubescens Nutt., var. pubescens (Aven & Ruth Nelson & G. J. Goodman 5491; O. U.)

Fraxinus americana L., var. americana

Loganiaceae

Polypremum procumbens L.

Gentianaceae

Gentaurium Beyrichii (T. & G.) Robinson

Eustoma Russelianum (Hook.) Griseb.

Sabatia angularis (L.) Pursh

Sabatia angularis (L.) Pursh, forma albiflora (Raf.) House

Sabatia campestris Nutt.

Apocynaceae

Ansonia ciliata Walt., var. texana (Gray) Coulter

Apocynum cannabinum L., var. cannabinum

Asclepiadaceae

Ampelamus albidus (Nutt.) Britt.

Asclepias capricornu Woodson, var. capricornu

Asclepias stenophylla Gray (U. T. Waterfall 7983; O. U.)



Asclepias tuberosa L.

Asclepias tuberosa L., forma lutea Clute

Asclepias variegata L.

Asclepias verticillata L.

Asclepias viridiflora Raf., var. viridiflora

Asclepias viridis Walt.

Matelea biflora (Raf.) Woodson

Matelea decipiens (Alexander) Woodson (G. T. Robbins 3010; O. U.)

#### Convolvulaceae

Convolvulus sepium L., var. sepium

Cuscuta campestris Yuncker

Cuscuta cuspidata Engelm.

Cuscuta glabrior (Engelm.) Yuncker, var. pubescens (Engelm.) Yuncker

Cuscuta Gronovii Willd., var. Gronovii

Cuscuta indecora Choisy

Evolvulus Nuttallianus Schultze

Ipomoea pandurata (L.) G. F. W. Mey.

Ipomoea purpurea (L.) Roth. (G. T. Robbins 2750b; O. U.)

#### Polemoniaceae

Gilia rubra (L.) Heller

Phlox pilosa L., var. pilosa

#### Hydrophyllaceae

Ellisia Nyctelea L.

Phacelia hirsuta Nutt.

#### Boraginaceae

Heliotropium tenellum (Nutt.) Torr.

Lithospermum arvense L.

Lithospermum carolinense (Walt.) MacMill.

Lithospermum incisum Lehm.

Myosotis macrosperma Engelm.

Myosotis verna Nutt.

Onosmodium occidentale Mackenzie (G. T. Robbins 2802; O. U.)

#### Verbenaceae

Lippia lanceolata Michx., var. recognita Fern. & Grise.

Lippia nodiflora (L.) Michx.

Verbena bipinnatifida Nutt.

Verbena bracteata Lag. & Rodr.

Verbena canadensis (L.) Britton

Verbena Halei Small (G. T. Robbins 2486; O. U.)

Verbena simplex Lehm.

Verbena stricta Vent.

Verbena urticifolia L., var. urticifolia

#### Labiatae

Glechoma hederacea L., var. micrantha Moricand

Hedeoma Drummondii Benth.

Hedeoma hispida Pursh

Lamium amplexicaule L.

Marrubium vulgare L.

Mentha spicata L.

Monarda citriodora Cerv. ex Lagasca

Monarda fistulosa L., var. mollis (L.) Benth.

Monarda punctata L., var. villicaulis Pennell

Monarda virgata Raf.

Prunella caroliniana Mill.

Pycnanthemum albescens T. & G. (G. T. Robbins 2254; O. U.)

Pycnanthemum tenuifolium Schrad.

Pycnanthemum virginianum (L.) Durand & Jackson

Salvia azurea Lam., var. grandiflora Benth.

Salvia lyrata L.

Salvia reflexa Hornem.

Satureja arkansana (Nutt.) Briq.

Scutellaria Drummondii Benth. (G. T. Robbins 2472; O. U.)

Scutellaria parvula Michx., var. australis Fassett

Teucrium canadense L., var. virginicum (L.) Eaton

#### Solanaceae

Datura Meteloides DC.

Datura Stramonium L.

Physalis heterophylla Nees, var. heterophylla

Physalis longifolia Nutt.

Physalis pendula Rydb.

Physalis pumila Nutt.

Solanum americanum Mill.

Solanum carolinense L.

Solanum elaeagnifolium Cav.

Solanum rostratum Dunal

#### Scrophulariaceae

Castilleja coccinea (L.) Spreng.

Castilleja indivisa Engelm.

Collinsia violacea Nutt.

Conoclea multifida (Michx.) Benth.

Gerardia heterophylla Nutt. (G. T. Robbins 2711; O. U.)

Linaria canadensis (L.) Dumont, var. texana (Scheele) Pennell

Penstemon Cobaea Nutt., var. Cobaea

Penstemon oklahomensis Pennell

Verbascum Thapsus L.

Veronica arvensis L.

Veronica peregrina L., var. xalapensis (HBK.) St. John & Warren

#### Bignoniaceae

Campsis radicans (L.) Seem.

Catalpa speciosa Warder

#### Acanthaceae

Dicliptera brachiata (Pursh) Spreng. (G. T. Robbins 2758; O. U.)

Justicia americana (L.) Vahl., var. subcoriacea Fern.

Ruellia humilis Nutt., var. expansa Fern. (G. T. Robbins 2583; O. U.)

Ruellia humilis Nutt., var. longiflora (Gray) Fern.

Ruellia strepens L.

#### Phrymaceae

Phryma leptostachya L., var. leptostachya

#### Plantaginaceae

Plantago aristata Michx.

Plantago lanceolata L.

Plantago Purshii R. & S., var. Purshii

Plantago rhodosperma Dene.

Plantago Rugelii Dcne.

Plantago virginica L., var. virginica

Rubiaceae

Cephalanthus occidentalis L., var. occidentalis

Diodia teres Walt., var. setifera Fern. & Griseb.

Galium Aparine L.

Galium circaezens Michx., var. hypomalacum Fern.

Galium pilosum Ait., var. pilosum

Galium pilosum Ait., var. puncticulosum (Michx.) T. & G.

Galium virgatum Nutt.

Hedyotis minima (Beck) T. & G.

Hedyotis nigricans (Lam.) Fosberg

Caprifoliaceae

Sambucus canadensis L., var. canadensis

Sambucus canadensis L., var. submollis Rehd.

Symphoricarpos orbiculatus Moench

Triosteum angustifolium L., var. angustifolium (G. T. Robbins 3248; O. U.)

Viburnum rufidulum Raf.

Valerianaceae

Valerianella amarella (Lindl.) Krok

Valerianella radiata (L.) Duf., var. radiata

Valerianella stenocarpa (Engelm.) Krok, var. parviflora Dyal

Campanulaceae

Lobelia appendiculata DC.

Lobelia cardinalis L.

Lobelia siphilitica L., var. siphilitica

Triodanis biflora (R. & P.) Greene

Triodanis leptocarpa (Nutt.) Nieuwl.

Triodanis perfoliata (L.) Nieuwl.

Compositae

Achillea lanulosa Nutt.

Actinomeris alternifolia (L.) DC. (G. T. Robbins 2746; O. U.)

Ambrosia artemisiifolia L., var. elator (L.) Descourtils

Ambrosia psilostachya DC., var. psilostachya

Ambrosia trifida L., var. texana Scheele

Antennaria plataginifolia (L.) Richards, var. plataginifolia

Aphanostephus skirrobasis (DC.) Trel.

Aplopappus ciliatus (Nutt.) DC.

Arctium minus (Hill) Bernh.

Artemisia annua L. (G. T. Robbins 2759; O. U.)

Artemisia ludoviciana Nutt., var. mexicana (Willd.) Fern. (G. T. Robbins  
2801; O. U.)

Aster ericoides L.

Aster exilis Ell.

Aster praealtus Poir.

Aster sagittifolius Wedemeyer, var. Drummondii (Lindl.) Shinnars

Astranthium integrifolium (Michx.) Nutt., var. integrifolium

Bidens bipinnata L.

Bidens frondosa L. (G. T. Robbins 2755; O. U.)

Cacalia plantaginea (Raf.) Shinnars

Centaurea americana Nutt.

Chaetopappa asteroides DC.

Chrysopsis pilosa Nutt.

Cirsium altissimum (L.) Spreng.

Cirsium undulatum (Nutt.) Spreng., var. undulatum

Conyza canadensis (L.) Cronq., var. canadensis

Conyza canadensis (L.) Cronq., var. glabrata (Gray) Cronq.

Coreopsis grandiflora Hogg., var. grandiflora

Coreopsis grandiflora Hogg., var. Harveyana (Gray) Sherff

Cosmos sulphureus Cav.

Croptilon divaricatum (Nutt.) Raf., var. divaricatum

Echinacea angustifolia DC.

Echinacea atrorubens Nutt., var. atrorubens

Echinacea pallida Nutt.

Eclipta alba (L.) Hassk.

Elephantopus carolinianus Raeuschel

Engelmannia pinnatifida T. & G.

Erigeron annuus (L.) Pers.

Erigeron philadelphicus L., var. philadelphicus

Erigeron strigosus Muhl. ex Willd., var. strigosus

Erigeron strigosus, var. Beyrichii (Fisch. & Mey.) Gray

Erigeron strigosus, var. septentrionalis (Fern. & Weig.) Fern.

Erigeron tenuis T. & G.

Eupatorium altissimum L.

Eupatorium coelestinum L.

Eupatorium rugosum Houtt., var. rugosum (G. T. Robbins 2748; O. U.)

Eupatorium serotinum Michx.

Evax multicaulis DC., var. multicaulis

Evax prolifera Nutt. ex DC.

- Gaillardia fastigata Greene
- Gaillardia lanceolata Michx.
- Gaillardia pulchella Foug.
- Gnaphalium obtusifolium L., var. obtusifolium
- Gnaphalium purpureum L.
- Helenium tenuifolium Nutt.
- Helianthus annuus L.
- Helianthus hirsutus Raf., var. hirsutus
- Helianthus Maximiliani Schrad. (M. Hopkins & Van Valkenburgh 5557; O. U.)
- Helianthus mollis Lam., var. mollis
- Helianthus petiolaris Nutt.
- Heliopsis helianthoides (L.) Sweet, var. scabra (Dunal) Fern.
- Heterotheca latifolia Buckl.
- Hymenopappus scabiosaeus L'Her.
- Hymenoxys linearifolia Hook.
- Iva ciliata Willd. (G. T. Robbins 2743; O. U.)
- Krigia Dandelion (L.) Nutt.
- Krigia occidentalis Nutt.
- Lactuca canadensis L. var. canadensis
- Lactuca canadensis L., var. canadensis, forma angustata Wieg.
- Liatris aspera Michx., var. intermedia (Lundell) Gaiser
- Liatris mucronata DC., var. mucronata
- Liatris squarrosa (L.) Michx., var. glabrata (Rydb.) Gaiser
- Lindheimeria texana Gray & Engelm.
- Marshallia caespitosa Nutt.
- Matricaria matricarioides (Less.) Porter
- Palafoxia callosa (Nutt.) T. & G., var. callosa



Parthenium hysterophorus L.

Pyrrhopappus carolinianus (Walt.) DC.

Pyrrhopappus Geiseri Shimmers

Pyrrhopappus scaposus DC.

Ratibida columnifera (Nutt.) W. & S.

Rudbeckia amplexicaulis Vahl

Rudbeckia bicolor Nutt. sensu Fern.

Rudbeckia serotina Nutt., var. sericea (T. V. Moore) Fern. & Schub.

(Smith & Randel 6; O. U.)

Senecio imparipinnatus Klatt.

Senecio obovatus Muhl., var. rotundus Britt.

Senecio plattensis Nutt.

Serinia oppositifolia (Raf.) Kuntze

Silphium asperrimum Hook.

Silphium Gatesii Mohr.

Silphium laciniatum Torr., var. Robinsonii Perry

Solidago altissima L.

Solidago mollis Bartl.

Solidago nemoralis Ait., var. nemoralis

Solidago nemoralis Ait., var. decemflora (DC.) Fern.

Solidago rigida L.

Solidago speciosa Nutt., var. angustata T. & G.

Solidago ulmifolia Muhl.

Sonchus asper (L.) Hill

Taraxacum erythrospermum Andrz.

Taraxacum officinale Wiggers, var. officinale

Thelesperma intermedium Rydb.

Verbesina encelioides (Cav.) B. & H., var. encelioides

Verbesina helianthoides Michx.

Vernonia Baldwini Torr., var. Baldwini

Vernonia Baldwini Torr., var. interior (Small) Schub.

Xanthium italicum Mor.

Xanthium pennsylvanicum Wallr. .

Xanthocephalum dracunculoides (DC.) Shimmers

## CHAPTER VII

## TABULAR VIEW OF THE FAMILIES

Families	Genera	Species	Varieties, Forms
Equisetaceae	1	1	2
Ophioglossaceae	2	2	1
Polypodiaceae	6	6	3
Pinaceae	1	1	1
Typhaceae	1	2	
Zosteraceae	1	2	
Najadaceae	1	1	
Alismaceae	1	1	
Gramineae	40	82	47
Cyperaceae	8	31	11
Araceae	1	1	
Lemnaceae	1	1	
Commelinaceae	2	4	4
Juncaceae	1	10	1
Liliaceae	8	12	8
Amaryllidaceae	2	2	
Iridaceae	2	3	
Orchidaceae	3	3	
Salicaceae	2	3	
Juglandaceae	2	5	1
Betulaceae	1	1	
Fagaceae	1	10	8

Ulmaceae	2	4	1
Moraceae	3	3	
Urticaceae	3	3	1
Loranthaceae	1	1	
Polygonaceae	4	17	8
Chenopodiaceae	2	5	1
Amaranthaceae	4	5	1
Nyctaginaceae	1	3	1
Phytolaccaceae	1	1	
Aizoaceae	1	1	
Portulacaceae	2	2	
Caryophyllaceae	4	8	5
Illecebraceae	1	1	1
Nymphaeaceae	1	1	
Ranunculaceae	4	7	3
Menispermaceae	2	2	
Berberidaceae	1	1	
Papaveraceae	1	1	
Fumariaceae	1	2	2
Capparidaceae	1	1	
Cruciferae	14	21	12
Crassulaceae	1	1	
Saxifragaceae	1	1	
Platanaceae	1	1	
Rosaceae	9	17	12
Leguminosae	34	59	22
Linaceae	1	3	3
Oxalidaceae	1	3	2

Geraniaceae	1	1	1
Zygophyllaceae	2	2	
Euphorbiaceae	6	20	5
Anacardiaceae	1	4	4
Celastraceae	2	2	
Aceraceae	1	1	1
Hippocastanaceae	1	1	1
Sapindaceae	1	1	
Rhamnaceae	3	4	3
Vitaceae	3	6	1
Malvaceae	3	6	2
Guttiferae	2	3	2
Tamaricaceae	1	1	
Cistaceae	1	2	2
Violaceae	1	6	2
Passifloraceae	1	1	1
Loasaceae	1	1	
Cactaceae	3	3	
Lythraceae	4	4	1
Onagraceae	5	15	9
Umbelliferae	16	22	4
Cornaceae	1	2	
Ericaceae	1	1	1
Primulaceae	3	3	2
Sapotaceae	1	1	1
Ebenaceae	1	1	1
Oleaceae	2	2	2
Loganiaceae	1	1	

Gentianaceae	3	4	1
Apocynaceae	2	2	2
Asclepiadaceae	3	10	3
Convolvulaceae	4	9	3
Polemoniaceae	2	2	1
Hydrophyllaceae	2	2	
Boraginaceae	4	7	
Verbenaceae	2	9	2
Labiatae	12	21	6
Solanaceae	3	10	1
Scrophulariaceae	8	11	3
Bignoniaceae	2	2	
Acanthaceae	3	4	3
Phrymaceae	1	1	1
Plantaginaceae	1	6	2
Rubiaceae	4	8	5
Caprifoliaceae	4	4	3
Valerianaceae	1	3	2
Campanulaceae	2	6	1
Compositae	58	101	40

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TOTALS:

<u>FAMILIES</u>	<u>GENERA</u>	<u>SPECIES</u>	<u>VARIETIES, FORMS</u>
98	380	698	287

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## CHAPTER VIII

### SUMMARY

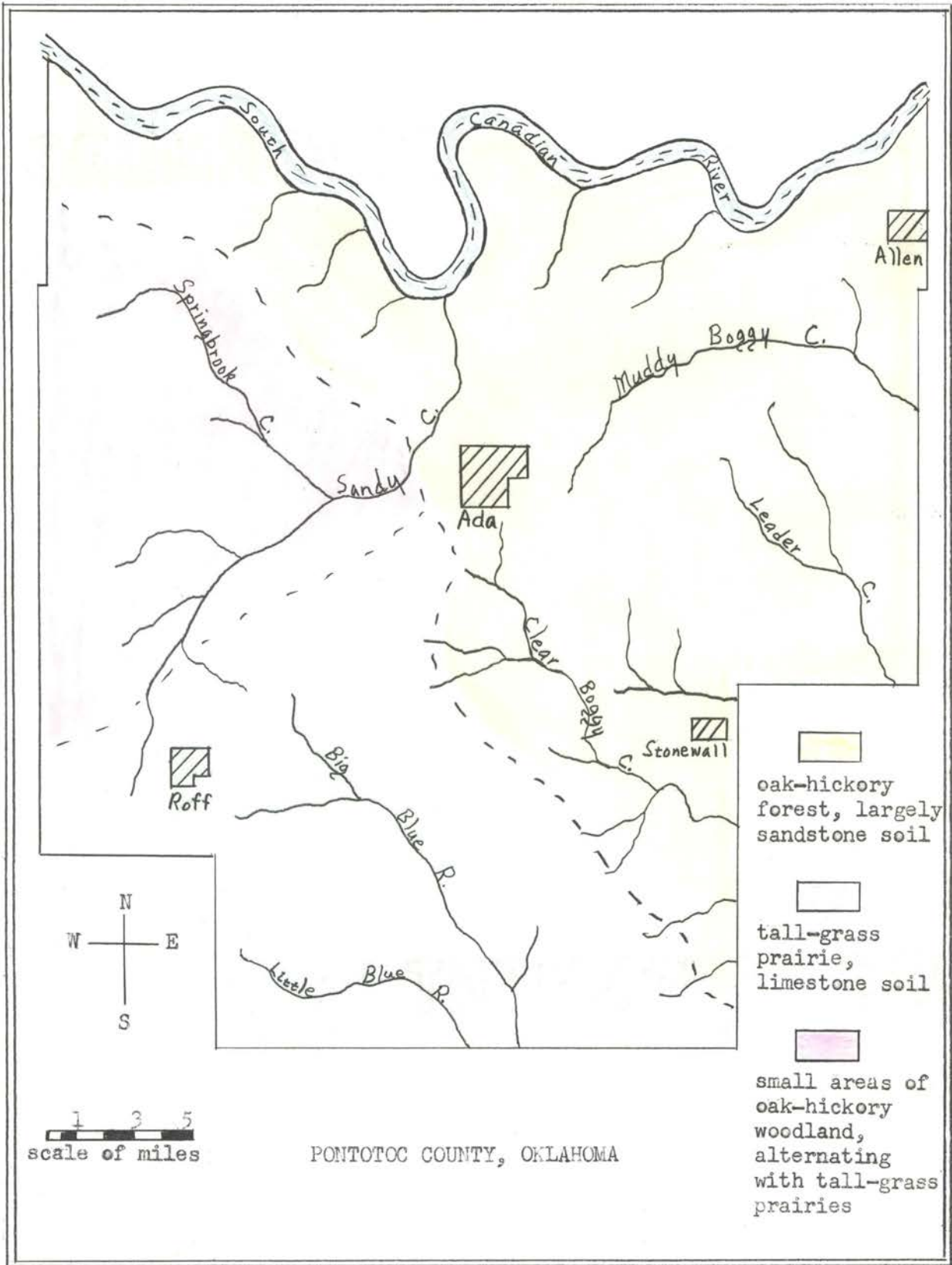
The problem of studying the flora of Pontotoc County, Oklahoma was chosen so that the author might become more familiar with a large number of plants and with critical taxonomic work. During the course of the investigations, which were carried on from 1948 through 1952, collections were made throughout the county by employing a combination of intensive and extensive collecting methods.

Specimens were prepared and pressed in accordance with standard methods of leading herbaria. They were studied critically with the aid of various monographs and other similar treatments, when such were available, and were deposited in the herbarium of the Oklahoma Agricultural and Mechanical College. In addition to the collections made by the author, some are listed that were collected by others, and are found in the Bebb Herbarium of the University of Oklahoma. The latter material was examined carefully and in some instances reidentified by the author before being listed. In the course of this study 135 taxonomic treatments were utilized, of which 123 were monographs or other critical taxonomic studies. These were published in 30 different North American botanical journals and in *Das Pflanzenreich*, a German publication. Of the former, 29 were from *Rhodora*, 15 from *Field and Laboratory*, 15 from *Annals of the Missouri Botanical Garden* and 12 from *North American Flora*. Also used were 8 manuals, 3 unpublished theses and 1 unpublished manuscript.

A total of 98 families represented by 380 genera, 698 species and 287 varieties, subspecies and forms, native to, or naturalized in

Pontotoc County, was accounted for in this study. The largest families, with numbers of species in each, were: Compositae 101, Gramineae 82, Leguminosae 59, Cyperaceae 31, Umbelliferae 22, Labiatae 21, Cruciferae 21 and Euphorbiaceae 20. These eight families contain 51% of the total flora of the county.





PONTOTOC COUNTY, OKLAHOMA

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THESIS TITLE: A TAXONOMIC STUDY OF THE VASCULAR PLANTS  
INDIGENOUS TO, OR NATURALIZED IN,  
PONTOTOC COUNTY, OKLAHOMA

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