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A PRELIMINARY SURVEY OF THE VASCULAR PLANTS OF POTTAWATOMIE COUNTY, OKLAHOMA*

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As so few detailed floristic studies have been made for any limited region of Oklahoma (2, 6, 7 and 9), it was thought that an intensive study of some localized area would be of value. Pottawatomie county, which represents a rather typical sample of the more xerophytic phase of the oak-hickory woodland characteristic of the greater part of eastern Oklahoma, was chosen, and collections were made there at regular periods throughout the year 1932.

Probably the first botanical exploration in Pottawatomie county, was that of Dr. Edwin James, the botanist for Major Stephen H. Long's party during his expedition to the Rocky Mountains in 1820, who collected 1,500 species on the entire expedition (4 and 11). In 1853 a government surveying party under Captain A. W. Whipple, exploring a route for a railroad from the Mississippi River to the Pacific Ocean along the thirty-fifth parallel, crossed the state from Fort Smith to the Antelope Hills along the Canadian River. Dr. J. M. Bigelow, the botanist on this expe-

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dition, collected 125 species in Oklahoma (12 and 13). In both cases it is unlikely that many specimens came from Pottawatomie county.

The first floristic studies strictly limited to Pottawatomie county were those done by the priests at Sacred Heart Mission and at St. Gregory's College. Unfortunately no collections or manuscripts of their studies have survived. More recent collections from the flora in the Shawnee region have been made by students of Oklahoma Baptist University as a foundation for an university herbarium.

In 1930 Ben Osborn of the Oklahoma Agricultural and Mechanical College made a careful survey and prepared a list of about 150 species of the Shawnee region (8).

Pottawatomie county lies just east of the center of the state. It has an area of about 820 square miles. It lies near the boundary between the Sandstone Hills region (Pennsylvanian) and the Redbeds Plains (Permian) on the west. The rocks are probably all of Pennsylvanian origin. Those in the west part of the county are red, while those in the east are gray. The rocks consist almost entirely of shale with some sandstone. The topography is fairly rough, though the relief is much less than in the counties to the east. (See 10).

North Fork of the Canadian crosses the northern part of the county, Little River and the Salt Creek the central part, and the Canadian River forms the southern boundary. The rainfall is moderate, averaging about 35 inches per year. The soils are principally sandstone and clay with richer soils in the river valleys. The river valleys are as a rule, quite fertile; the prairie regions are moderately so; while the hill regions are now good for very little. At one time much upland woodland was cleared and cultivated; but because of the coarse character of the soil, the heavy rains of spring and fall, and the fact that terracing was not practiced then, the land very rapidly became so badly eroded that it was soon abandoned. Many of these fields now lie idle or are used only for pasture. The creek valleys of this particular region were once quite fertile, but they too have suffered, in this case by the deposition of subsoil from the eroding hillsides.

The county as a whole presents an appearance of low undulating wooded hills with wide fertile river valleys. There is very little prairie land except north of the North Fork of the Canadian River. The hilly land, which makes up the greater part of the county, is dominated by *Quercus marilandica* (Black Jack Oak) and *Quercus stellata* (Post Oak). *Carya buckleyi* probably var. *arkansana* (Arkansas Hickory) is somewhat less common. *Symphoricarpos orbiculatus* (Coral-berry) and *Diospyros virginiana* (persimmon) are abundant in cleared upland pasture land.

Along the river and creek beds the trees most commonly found are *Populus deltoides* (Cottonwood), *Salix* spp, (Willow), *Ulumus* spp (Elm), *Cercis canadensis* (Red-bud) and *Fraxinus* sp. (Ash). Others are *Carya illinoensis* (Pecan), *Juglans nigra* (Black Walnut) and *Celtis* spp. (Hackberry). *Aesculus glabra* var, *arguta* (Western Buckeye) is common in the southwestern corner of the county, while *Cornus florida* (Flowering Dogwood) is peculiar to the southeastern corner of the county. Both species are fairly abundant.

The dominant species of the prairie regions seems to have been *Andropogon furcatus* (Big Blue-stem). It is practically exterminated. The prairies, like the river bottoms, are being sucessfully cultivated at present.

Due to heavy erosion, overgrazing and the burning-over of much of the land every spring, the county is constantly tending to become more xerophytic. The results may be seen in the fact that the undergrowth of

many upland woodlands consists mainly of lichens, xerophytic mosses and prickly-pear.

A total of 372 species representing seventy-six families and thirty-four orders of vascular plants are listed. (See (1) for the tabulation of species.) It includes five species representing three families and two orders of Pteridophyta; one species of Gymnospermae; fifty-three species of Monoscotyledonae, distributed in seven families of five orders; and 313 species of Dicotyledoneae, representing sixty-five families and twenty-six orders. (With the exception of a few species in the Osborne (8) collection which were not collected by the author, the specimens are deposited in the Herbarium of the Botany Department of the University of Oklahoma.)

Cornus florida L. was found to reach its western limit in Oklahoma, in this county.

The three families best represented are the Compositae with sixty-three species, the Leguminosae with thirty-seven species, and the Gramineae with twenty-four species.

New species* for the state found in this county are *Cyperus torreyi* Britton, *Pyrus arbutifolia* L., and *Rosa carolina* L. Species not listed by Jeffs and Little in their check list of the vascular plants of Oklahoma are *Andropogon saccharoides* var. *laguroides* (DC) Hack., *Carex tetanica* Schk., *Robinia hispida* L., *Rubus flagellaris* Willd., and *Rubus ostryifolius* Rybd.

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*Identifications of these species were checked by Dr. J. M. Greenman, Curator of the Missouri Botanical Garden.