A FLORISTIC STUDY OF WASHINGTON COUNTY, OKLAHOMA

Charles B. McDonald

Department of Botany, North Carolina State University, Raleigh, North Carolina

Some 682 species of flowering plants were collected in Washington County, Oklahoma from 1971 to 1973. Two species, *Tradescantia bracteata* Small and *Wolffia papulifera* Thompson, are additions to the state flora.

Washington County is located in northeastern Oklahoma and has an area of 271,713 acres (109,958 hectares). Collections of the angiosperm flora were made during the fall of 1971 and the entire growing seasons of 1972 and 1973. Collecting trips were made throughout the county and as many different localities as possible were visited. In all, 1057 accessions were made and the identified specimens were deposited in the Oklahoma State University Herbarium. This note provides a brief summary of the flora, geomorphology, soils, climate, and plant communities of the county.

GEOMORPHOLOGY, SOILS, AND CLIMATE

The county is located principally within the Claremore Cuesta Plains geomorphic province. The Eastern Sandstone Cuesta Plains province extends into the western edge of the county at various points. These two provinces contain Pennsylvanian series sandstones and limestones that cap ridges between broad shale plains (3). The ridges have a steep face on the east and a gentle backslope with their height dependent on the thickness of the underlying shale formations. The county is drained by the Caney River, which flows generally south except for an eastward deflection in the central part of the county.

Soils are deep to moderately deep and nearly level to gently sloping. Five soil associations are described by Polone (5). Three of the associations, the Dennis-Okemah-Parsons, the Collinsville-Talihina-Bates, and the Summit-Sogn, cover 76% of the county and support upland prairies. The other two associations support woodlands. The Osage-Verdigris association covers 20% of the county and supports level bottomland woods while the Darnell-Stephenville association covers 4% of the county and supports upland woods.

The climate is continental with an average yearly rainfall of 90.28 cm (35.55 in). A normal growing season is 209 days with the average last spring freeze on April 2nd and the average first fall freeze on October 28th (6).

PLANT COMMUNITIES

According to Blair and Hubbell (2), Washington County lies in the Osage Savannah and Cherokee Prairie biotic districts. Each district is altered by local factors that produce distinctive plant communities. Three woodland and two grassland communities were recognized in this study but these fairly broad units could easily be subdivided.

Of the three woodland communities, the most distinctive is an upland woods that covers sandstone hills and escarpments at the western edge of the county. The most characteristic trees of this community are post oak (*Quercus stellata* Wang.), blackjack oak (*Q. marilandica* Muenchh.), chinquapin oak (*Q. muehlenbergii* Engelm.), and black hickory (*Carya texana* Buckl.). Prominent shrubs and herbs include coralberry (*Symphoricarpos orbiculatus* Moench.), greenbrier (*Smilax bona-nox* L.), various asters (*Aster* spp.) and goldenrods (*Solidago* spp.), big bluestem (*Andropogon gerardii* Vitman), little bluestem (*A. scoparius* Michx.), muhly (*Muhlenbergia* spp.), purple-top (*Tridens flavus* (L.) Hitchc.), and arrowfeather (*Aristida purpurascens* Poir.).

The other two woodland communities are produced in bottomlands. One is found in the Caney River flood plain and the other is found along the smaller streams of the county. Although they have many similarities in dominant vegetation, they can be separated by their different assortment of understory plants. The typical

dominant trees of these communities include box elder (*Acer negundo* L.), silver maple (*A. saccharinum* L.), burr oak (*Quercus macrocarpa* Michx.), shumard oak (*Q. shumardii* Buckl.), pecan (*Carya illinoensis* (Wang.) K. Koch), walnut (*Juglans nigra* L.), sycamore (*Platanus occidentalis* L.) and cottonwood (*Populus deltoides* Marsh.).

Two grassland communities cover a large portion of the county. They resemble the tall grass prairies that are found from northeastern Oklahoma to Illinois and Indiana (1). One community with big bluestem, little bluestem, switchgrass (*Panicum virgatum* L.), and Indiangrass (*Sorghastrum nutans* (L.) Nash) as its major components covers deep loam soils weathered from shale or limestone. However, many limestone areas have shallow soils where some tall grasses are replaced by little bluestem, side-oats grama (*Bouteloua curtipendula* (Michx.) Torr.), hairy grama (*B. hirsuta* Lag.), and buffalo grass (*Buchloe dactyloides* (Nutt.) Engelm.). These are the major components of the second grassland community. Both communities have numerous forbs that create striking aspect dominance with the changing seasons.

FLORISTIC SUMMARY

A total of 682 species in 372 genera and 101 families are known from the county with all but ten of these represented by the author's collections. Approximately 56% of the species are from nine families: Asteraceae, 100; Poaceae, 92; Fabaceae, 55; Cyperaceae, 36; Rosaceae, 21; Scrophulariaceae, 20; Apiaceae, 20; Euphorbiaceae, 18; and Lamiaceae, 18 (4).

Two species are believed to represent additions to the state flora. *Tradescantia bracteata* Small (Commelinaceae) was found in an open boggy area at Sec 7, R 13E, T 29 N, approximately 2.2 miles (3.54 kilometers) north and 1.2 miles (1.93 kilometers) west of Dewey. The site is near the Caney River and is inundated by major floods. *Wolffia papulifera* Thompson (Lemnaceae) was found in a pond at Sec 29, R 13E, T 29N. The pond was formed by excavation for railroad fill dirt and is about 800 meters long while only 15-20 meters wide.

ACKNOWLEDGMENTS

This paper is a summary of a master's thesis (4) completed at Oklahoma State University in 1974. The author gratefully acknowledges the guidance and assistance of Dr. R. J. Tyrl.

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