The best reference for the study of Oklahoma vegetation is A Game Type Map of Oklahoma (Duck and Fletcher, 1943) published by the State of Oklahoma Game and Fish Commission (now the Oklahoma Department of Wildlife Conservation). Duck and Fletcher and a team of researchers used aerial photography, soils maps, and extensive field surveys to map the distribution of major vegetation types. Their map is considered a potential vegetation map; it shows the distribution of vegetation in the absence of human intervention. The map is still widely used to study Oklahoma vegetation, ecology, and geography and is a testament to their thorough and conscientious work.

Duck and Fletcher’s map clearly reveals the influence of climate, particularly the precipitation gradient, on the distribution of vegetation in Oklahoma. As rainfall decreases from 55 inches in the southeast to 13 inches in the northwest, forests give way to grasslands. However, the boundary between grassland and forest vegetation is dynamic; prolonged droughts can change the boundary between the two vegetation types. Length of growing season is another climatic variable that affects cultivated crops and natural vegetation. Counties in the Red River valley have a longer growing season than those along the Kansas border.

Distribution of vegetation is also influenced by such disturbances as fire and grazing by large animals. In the absence of fire, grasslands are often replaced by forests and shrublands. Woodlands, which are characterized by scattered trees that are not in direct contact with one another, transform into closed-canopy forests in the absence of fire. Eastern red cedar is one species that is very sensitive to fire and has proliferated in the absence of fire.

The vegetation types mapped by Duck and Fletcher (1943) can be segregated into three categories: grasslands, woodlands, and forests. Grasslands are areas where various grass species predominate in the landscape. Trees and shrubs may be present at particular sites, but they are not abundant and often are restricted to bottomlands or other favorable habitats. Woodlands are areas where trees and shrubs are more abundant, but their crowns are not in contact with one another. Because of the open nature of woodlands, grass species predominate in the understory. Forests are areas where trees predominate and their crowns interlock, resulting in significant shade that favors the growth of shrubs and herbaceous species adapted to such conditions.

**Vegetation of Oklahoma**

Bruce W. Hoagland, Oklahoma Biological Survey

*VEGETATION OF OKLAHOMA*

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**EXPLANATION OF VEGETATION TYPES**

**GRASSLANDS**

**Meadowgrass Eroded Plains**

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Geology and soils also play integral roles in determining the distribution of vegetation. For example, sugar maple trees can be found in the deeply eroded Permian sandstone canyons of Canadian and Caddo Counties, about 150 miles west of the Ozark Plateau and Ouachita Mountains where they are common. Limestone produces soils with high clay content that tend to be somewhat alkaline. Black dalea, Engelmann's pricklypear, shortlobe oak, and Ashe juniper are species that occur in regions where limestone and dolomite predominate, such as the Arbuckle Mountains and Slick Hills.

Gypsum deposits in western Oklahoma support salt-tolerant plants, such as redberry juniper, gypsum phacelia, and woolly paperflower.