



EXPLANATION OF VEGETATION TYPES*

GRASSLANDS

1 Shortgrass High Plains has its greatest extent in the Panhandle and far northwestern Oklahoma. In some areas, much of the shortgrass prairie has been converted to wheat and milk production, but large areas of native vegetation persist on shallow soil underlain by sandstone or caliche. Blue grama and buffalograss are the predominant species in the shortgrass prairie. Other common species include plains blackfoot, plains zinnia, ring muhly grass, and dropseed, tansy aster, vine mesquite grass, and yellow spine prairie thistle.

2 Mixedgrass Eroded Plains occupies much of western Oklahoma, and much of it has been converted to wheat or cotton production. The best examples of mixedgrass eroded plains can be found on shallow soils overlying red sandstone and shale or granite in the Wichita Mountains. Predominant species include dropseeds, little bluestem, and sideoats grama. Common grasses include hairy grama and Indiangrass. Associated species include biscuitroot, crowpoison, Engelmann's daisy, hedgehog cactus, old plainsman, prairie clover, skunkbrush, spider milkweed, plains pricklypear, and threadleaf daisy.

3 Tallgrass Prairie has declined in acreage, but large expanses still occur in Osage and adjacent counties. Smaller remnants occur throughout eastern Oklahoma as native haymeadows. It intergrades with oak-hickory forests in eastern Oklahoma and mixedgrass eroded plains to the west. Forest and woodland vegetation readily replace tallgrass prairie following land abandonment and fire suppression. Predominant grasses are little bluestem, big bluestem, Indiangrass, and switchgrass. Associated species include lead plant, Indian plantain, prairie clover, heath aster, small panic grass, pallid coneflower, ashy sunflower, and Missouri goldenrod.

WOODLANDS

4 Piñon Pine-Juniper Mesa is found in the northwestern corner of the Panhandle. Vegetation and plant species in this region are typical of the Rocky Mountain front range in Colorado and New Mexico. Although oneseed juniper and piñon pine are predominant, oneseed juniper often occurs without piñon pine. Common grass species include buffalograss, grammas (blue, black, hairy, and sideoats), and silver bluestem. Associated woody plants include cholla, Gambel oak, mesquite, mountain mahogany, skunkbrush, and soapweed. A stand of ponderosa pine also occurs in this region.

5 Sandsage Grasslands is common on deep sand deposits and dunes in western Oklahoma. Sandsage is a low-growing shrub with narrow, gray-green leaves, which is often cleared to increase the productivity of pasture grasses for cattle grazing. Predominant grasses include sand reed, little bluestem, sand bluestem, and sand dropseed. Mapleleaf grape, netleaf hackberry, sand plum, silky prairie clover, skunkbrush, soapweed, and spectacle clover are also common. Most species occurring in sandsage grasslands also can be found in stabilized dunes and shinnery-oak grasslands. These three vegetation types so thoroughly intergrade that they are indistinguishable in parts of western Oklahoma.

6 Stabilized Dunes occurs along the north sides of major rivers in western Oklahoma. Excellent examples can be found at Little Sahara State Park in Woods County and at Beaver State Park in Beaver County. Vegetation cover ranges from sparse to dense cover of shrubs. In some cases, vegetation is absent.

7 Mesquite Grasslands is most prevalent in western Oklahoma and extends east along the Red River into Jefferson County. Mesquite was first documented in Oklahoma in 1853, and its abundance has steadily increased over time. Note that Duck and Fletcher (1943) did not map mesquite grasslands in northwestern Oklahoma, where it is now common on gypsum. Mesquite is readily transportable in digestive systems of cattle, and isolated populations are present in northeastern Oklahoma as a result. Predominant grasses include bromes, little bluestem, sideoats grama, and silver bluestem. Common species include broomweed, green antelopehorn milkweed, plains pricklypear, waxyleaf thistle, and western ragweed.

8 Shinnery Oak Grasslands is restricted to western Oklahoma. Shinnery is typically a small, shrubby tree, ranging in height from a few inches to several feet. Larger trees are hybrids with post oaks. Shinnery reproduces by sprouts from a dense network of underground roots; most shinnery stems and biomass are below ground. As a result, dense mottes are formed that can cover several acres.

FORESTS

9 Post Oak-Blackjack Forest is known locally as the Cross Timbers, and presents a mosaic of forest, woodland, and grassland vegetation. The most important trees in this vegetation type are post oak and blackjack oak. Blackhaw, black oak, black hickory, buckbrush, gum bumelia, Mexican plum, redbud, roughleaf dogwood, and smooth and winged sumac are common woody plants. Common plants include beebalm, big bluestem, hairy sunflower, Indiangrass, little bluestem, poverty grass, pussytoes, trailing lespedeza, and purpletop.

10 Oak-Hickory Forest occurs primarily in the Ouachita Mountains and Ozark Plateau. Common oak species include black, blackjack, post, northern red, southern red, and white. Shagbark, black, pignut, mockernut, and bitternut are common hickories. Associated trees and shrubs include flowering dogwood, highbush and lowbush blueberries, hophorn beam, redbud, serviceberry, and sugar maple. There is a profusion of flowering herbaceous plants in the oak-hickory forest, most notably spring ephemerals, of which Dutchman's breeches, Solomon's seal, troutlilies, Virginia waterleaf, wake robin, and wild ginger are but a few.

11 Oak-Pine Forest is limited to the Ouachita Mountains and Ozark Plateau. The presence of shortleaf pine distinguishes oak-pine forest from oak-hickory forest. Otherwise, associated species are similar to those of the oak-hickory forest. Shortleaf pine forests vary from closed canopy, pine-mixed oak stands to open canopy woodlands of predominantly shortleaf pine. The degree of canopy closure is controlled by fire.

12 Loblolly Pine Forest is restricted to the Coastal Plain physiographic province of McCurtain County. Common associated trees include black gum, black willow, red maple, river birch, and water oak. These forests were heavily logged in the 1800s, and undisturbed native remnants probably no longer exist. However, loblolly pine is planted extensively in southeastern Oklahoma for timber production.

13 Cypress Bottoms is limited to the Little River drainage in McCurtain County, where it occurs in sloughs and backswamps. In addition to bald cypress, American snowbell, buttonbush, hazel alder, water elm, water hickory, and overcup and water oaks are common woody plants. Wetland plants, both rooted and floating, include duckweeds, spongeweed, pennywort, water crowfoot, and pondweed.

14 Bottomland Forest extends from eastern to western Oklahoma along major rivers as mapped by Duck and Fletcher (1943). As a result, there is tremendous variation in the species present. Throughout much of the bottomland forest, hackberry, red elm, sugarberry, and green ash are common. In eastern Oklahoma, common bottomland trees include black gum, boxelder, red maple, river birch, silver maple, and sycamore. In the southeast, sweetgums and water and willow oaks are common. In western Oklahoma, there are fewer tree species, but bur oak, eastern cottonwood, pecan, Shumard oak, soapberry, and sandbar and black willows are common. In the Panhandle, eastern cottonwood is the predominant tree with peachleaf willow in the understory.

* Modified from Duck and Fletcher's (1943) original map, A Game Type Map of Oklahoma. Detailed descriptions were published in a separate report by the same authors (Duck and Fletcher, 1945?).

VEGETATION OF OKLAHOMA
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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. Some plants, such as buffalo currant, therefore, bloom a week earlier in Love County than in Grant County.

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.

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 on 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.

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