

Mesas to Marshes

A Look at the Unexpectedly Diverse Ecoregions of Oklahoma

By Blayr Gourley and Cynthia N. Park

“Native America—Native Rangelands” is the theme for the Society for Range Management 66th annual meeting. There could not be a more appropriate state to host the upcoming event than Oklahoma, true native America. Mile for mile, Oklahoma offers the nation’s most diverse terrain, containing over 10 ecoregions due to its diversity in soil, topography, and climate. The various terrains span from the foothills of the Rocky Mountains to hardwood forests, cypress swamps to shortgrass prairie, oak savannas to pine-covered mountains. Much of what one can see in present Oklahoma is as it was before settlement by pioneers; a time when bison roamed across the state and the Native Americans followed. In fact, management techniques, such as prescribed fire, are used to replicate Native American influence. Many of these ecosystems have evolved with anthropogenic use of fire, and the suppression of fire in these habitats can significantly alter native flora and fauna.

Oklahoma supports an extraordinary gradient of vegetation from west to east. The panhandle sits at the foothills of the Rocky Mountains, elevating it higher than the rest of the state and purging it of almost all rain. In contrast, the lush forests of the southeastern edge receive almost three times the amount of precipitation at a tenth of the elevation. The wildlife and scenery are constantly transforming as one moves across the state. The geographic and climatic diversity that Oklahoma encompasses leave residents and visitors alike with never-ending amazement.

The High Plains of the panhandle offer the highest elevation and the least rainfall. Although a large portion of this area has been cropped due to its notably flat landscape, one can still observe the understated allure of the shortgrass prairie. Plains full of native grama and buffalo grasses are home to wildlife species such as the American pronghorn antelope and the scaled quail. These semiarid grasslands are the only areas in Oklahoma where one will find such characteristic species of the west. Also occupying the same area is the Southwestern Tablelands ecoregion. The elevated tablelands are home to the highest point in the state, Black Mesa. Visitors flock to this area throughout the year for breath-taking stargazing events, excellent bird watching, and ancient dino-

saur quarries. This is one of the few grasslands that has escaped cultivation and still remains largely undeveloped owing to the lava-formed mesas that scatter the land. Those seeking to escape the congestion of civilization can find solitude on top of one of the many buttes isolated in the prairie. Overlooking the stark beauty of the grama, mesquite, and buffalo grass sweeping across the land or observing the shinnery oak hugging the bends of the Canadian River, one can genuinely feel that they are the first to discover this land.

Traveling slightly more east, the Central Great Plains dominates most of the western half of the state from north to south. Depending on the unpredictable amount of rainfall it receives, this prairie vegetation can fluctuate from a mixed grass ecosystem to tallgrasses such as big bluestem, switchgrass, Indiangrass, and little bluestem with low trees and shrubs scattered about the landscape. The highly productive land of the Central Great Plains has mostly been lost to cultivation. The settlers that came to this area saw the tremendous potential, and the rumors about the fruitful unclaimed land spread like wildfire. The Central Great Plains provides the quintessential image of Oklahoma—a rolling sea of grass sprinkled with milkweeds of orange and violet, meadowlarks perched on top of a mature bluestem stalk, and bison placidly roaming across the prairie under the deep blue sky.

The Central Great Plains runs into a natural boundary line dividing the central and western grasslands with the mountains of forests and other various prairies tucked inside the eastern half of the state. This distinct boundary line is known as the Cross Timbers, a transitional ecoregion that has a mixture of open prairie, dense forest, and everything in between. Washington Irving was one of the first to describe this region, stating that was like “struggling through forests of cast iron,” referring to the dense stands of blackjack and post oak. Because this region also evolved with fire, areas that receive the natural disturbance form open savannas in which native game species (such as white-tailed deer and turkey) thrive, prospering from the cover of the forest and the lush understory. The Cross Timbers have stayed intact because of the incredibly rocky soils that define this region. It is now primarily used as grazing land, but has been an area of major oil extraction for over 80 years.

At the far south end of this ecoregion the very small area of the East Central Texas Plains perches on the border of Texas and Oklahoma. Also known as the “Claypan Area,” this very small ecoregion now consists of irregular plains, but historically encompassed a post oak savannah as well.

Going east of the Cross Timbers, one can find a hidden treasure of rare, unfragmented tallgrass prairie in the Flint Hills. Like many highly productive grasslands, much of the tallgrass prairie has been lost to cultivation. The characteristic limestone and shale rolling hills, narrow steep valleys, and rocky soils are the very things that saved this area from being tilled. Located in northcentral to northeastern parts of Oklahoma and into Kansas, it is one of the most charismatic ecoregions. One can visit areas such as The Nature Conservancy’s famous Tallgrass Prairie Preserve to see unique wildlife such as the greater prairie-chicken and bison while hiking through native grasses that grow head-high. This area is largely undeveloped and its human influence mainly consists of large cattle ranches. Because this region is almost impossible to cultivate, beef cattle provide the major land use in this area. Many Oklahomans use traditional ranch practices to create a way of life that is sustainable for themselves and the land that they depend on.

The Central Irregular Plains is another distinct ecoregion that has a mix of land-use types based on the mosaic grassland/forest vegetation that it encompasses. With the eastern side of the state receiving approximately three times more precipitation than the west, more woody vegetation proliferates here. The Central Irregular Plains are located on the northeastern and eastcentral portion of the Oklahoma, and show the beginnings of the deciduous forests that dominate the eastern edge.

The Ozark Highlands showcase highly dissected plateaus of limestone that intersect into the extensive hills of oak and hickory. The dissolution of rock by water has created numerous caves that are nestled deep in the dark, cool forests. These caves house numerous threatened bat and other karst species and are vigorously protected from destruction and disease.

Just south of the Ozark Highlands, in east-central Oklahoma, lie the Boston Mountains. These mountains are blanketed with stately pine forests that grow on the folded and faulted linear ridges. The sandstone and shale plateaus display powerful cliffs that expose the ancient strata. Such irregular topography hosts diverse and beautiful vegetation. A patchwork of red oak, white oak, and hickory are evident, but the shortleaf pine and eastern redcedar lining the lowlands might take many by surprise. This region is sparsely populated, allowing adventurers to escape into the hillsides.

The Arkansas Valley separates the Boston Mountains to the north and the Ouachita Mountains to the south with stunning forested valleys, ridges, oak savannahs, and tallgrass prairie. A natural association of habitats makes this ecoregion one of the most diverse in the entire state. As one continues south of this dividing line into the geographic province of the Ouachita Mountains, the topography and geology of the land become increasingly complex.

The Ouachita Mountains consist of a myriad of geological material from the Cambrian Period to the Mississippian Period. Over time these mountains have developed sharp east-west ridges that have formed thorough erosion of compressed sedimentary rock formations. The mountains are covered with towering loblolly and shortleaf pines, which provide ideal habitat for fascinating species such as black bear. The captivating mountains of woodlands, coupled with the fresh, clear streams make the Ouachitas seem as if they were pulled out of the Appalachians and placed in Oklahoma.

Finally, the South Central Plains is tucked away in the south east corner, receiving the highest temperatures and the most precipitation. Terraces and floodplains of the Red River make this region significantly different than the Ouachita Mountains to the north. In upland areas, post oak-blackjack oak forests give way to the oak-hickory-pine forests in the east. In the bottomlands, floodplains, and terraces, southern floodplain forests and wetlands make an appearance. The sloughs that are present in the far south east corner are home to amazing species such as the American alligator.

Oklahoma has much more to offer than the characteristic rolling plains that have defined it for many years. The state is fortunate enough to sit in the middle of a hot spot for biodiversity, and encompasses ecoregions that range from mesas to mountains. The visitors to this year’s Society for Range Management 66th annual meeting will be astonished when they realize how much this one of a kind state has to offer. After all, there is a reason Oklahoma has been named native America.

References

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