2011 Freedom's Frontier - An Introduction to the Flint Hills (selected by Nancy Landon Kassebaum)

Brian Obermeyer

Rex Buchanan

Emerald Grasses of Spring
Jim Richardson

AN INTRODUCTION TO THE FLINT HILLS AND THE TALLGRASS PRAIRIE

BRIAN OBERMEYER & REX BUCHANAN

Rex Buchanan and Brian Obermeyer's "An Introduction to the Flint Hills and the Tallgrass Prairie" is my favorite essay in the 2011 Field Journal. In the handful of places where I have lived during my lifetime, and the many places I have traveled to across the world, it is the tallgrass prairie that is most special to me. As a United States Senator, I tasked my staff to lead the effort to create the Tallgrass Prairie National Preserve to protect the 10,000-plus acres that we locals knew as the Z Bar Ranch. This effort was controversial at the time, but as I revisit the essay in the 2011 Field Journal, with an opening photograph by my friend Jim Richardson, the authors' concluding observation highlights the importance of protecting this national treasure: "…The Flint Hills are a remarkable place, one that has been millions of years in the making, and one that deserves our understanding and respect today." — Nancy Landon Kassebaum

It was Zebulon Montgomery Pike who first coined the name "Flint Hills" when exploring the region in 1806.

In his journal, on Sept. 12, he described the following while traversing what is now Chase County: "Commenced our march at seven o'clock. Passed very ruff flint hills. My feet blistered and very sore." He went on to say that from one view he could see buffalo, elk, deer, cabrie [pronghorn] and panthers.

Today one can still see many of the same unobstructed vistas that Zebulon Pike witnessed more than 200 years ago. The Flint Hills owe much of their persistence as a relatively unfragmented tallgrass prairie landscape to their ranching heritage, one that has perpetuated, in many cases, the natural disturbance regime of fire and grazing. Thin soils and local geology (in the form of limestone, chert and shale deposits) also meant that the region was better suited for ranching.

Some 285 million years ago, when the sediments that later formed these rocks were first deposited, Kansas looked much different. At that time much of the state was covered by a shallow sea. Eastern Kansas probably resembled the coast of Florida. (Geologists call these similar land formations "modern analogues" — or places you can go today that help us understand what things looked like in the past.) Kansas was also much closer to the equator than it is today. So these shallow, warm oceans teemed with life. Because these seas were shallow (likely less than a hundred feet deep) and the sea floor relatively flat, slight drops in sea level would expose broad areas as dry land, and slight increases in sea level meant that vast areas would be covered by water. For millennia, the seas in eastern Kansas came in and the seas went out. When someone says that Kansas was once covered by ocean, it would be more accurate to say that the state was covered by a series of oceans.

These seas left behind sediments that eventually became layers of limestone and shale. Limestone is the sterner, generally buff, brown or white rock that forms prominent benches in many pastures. Varieties of shale are generally darker-colored, gray or even red or green, and much softer. Visible along roadcuts in the area, shale is often grassed over in Flint Hills pastures, and is not as apparent as limestone.

Then there's the flint that gives the hills their name. Flint (also known as chert) is a dense, microcrystalline rock that is commonly found within some limestone layers. Because of its hardness, chert resists erosion. These rocks and the thin soils also deterred plowing in the Flint Hills — the primary reason they have remained as native grass. An Osage person once said that the white man will have a hard time putting that iron thing in the ground here. Chert also fractures with a characteristic sharp edge, which is why Native Americans used it to make tools and points, and why it can wreak havoc on car tires today.

Each of these rock layers has its own name, usually based on where it was first described. The thick, blocky Cottonwood limestone is named for Cottonwood Falls. Many of the rounded hills are capped

Winter
Hong Chun Zhang

by the Florence limestone, named for the small town in Marion County. The Fort Riley limestone forms a rimrock in pastures near Fort Riley.

Within these rocks are the remains of animals that populated those ancient seas, mostly invertebrates such as corals, clams, sponges, sea urchins. A wheat-grain-shaped protozoan called a fusulinid; a starfish relative called a crinoid; even the occasional trilobite. All provide clues about the ancient environment in which the sediments were laid down.

In the time since those sediments were deposited, parts of the Flint Hills were again inundated by oceans, but mostly the region has been exposed to erosion. While glaciers briefly (in geologic terms) covered the northern extension of the hills about 600,000 years ago, the hills south of the Kansas River were not glaciated. Thus, the valleys were not carved by glaciers but by water that cut down through the draws over time.

Though their geology may sound simple, the Flint Hills hold surprises. Water accumulates within the cracks, fissures and pore space of the limestone, then shows up at the surface in the form of numerous springs and seeps. Some of the state's largest and purest springs, like Diamond Spring (Morris County), Rock Spring (Dickinson County) and Crystal Spring (Marion County) are in the Flint Hills.

Over time, water has worn away underground channels in the limestone, and some of those channels are big enough to qualify as caves, several going thousands of feet back into the Flint Hills countryside. And in places like Pillsbury Crossing east of Manhattan, limestone ledges create impressive waterfalls.

The connection between the hills and water doesn't end there. Because so much of the Flint Hills remains in native grass, and because many of the streams here have gravel bottoms, the streams typically run clear, more like mountain streams than most silt-laden drainages in Kansas. As a result, the area holds many of the central plains' most pristine waters, supporting a rich variety of native fishes and a diverse assemblage of freshwater mussels.

The Flint Hills are special because they represent the last functional landscape expression of tallgrass prairie, the most altered major habitat type in North America in terms of acres lost. Tallgrass prairie once stretched across approximately 170 million acres, but today less than four percent of the original tallgrass prairie remains. The Flint Hills encompass the single largest tallgrass prairie landscape remaining in North America, with more tallgrass prairie remaining here than in all the other prairie states combined.

Autumn
Hong Chun Zhang

Approximately 90 native grass species are found in the Flint Hills, with big bluestem, little bluestem, Indian grass, switchgrass, eastern gama and sideoats grama being some of the more dominant species. But the Flint Hills are much more than grass. Over 500 native broadleaf prairie plant species (herbaceous forbs) have been documented in the Flint Hills. This rich floristic diversity is important for maintaining the ecological health of the prairie's natural communities. The region is especially important for grassland nesting birds, such as greater prairie-chicken, eastern meadowlark and upland sandpiper. The Flint Hills also serve as a staging area for numerous raptors, and comprise North America's only north-south tallgrass prairie corridor used extensively by migrant birds.

Climate, grazing and fire were the primary ecological processes that shaped the tallgrass prairie ecosystem. Weather patterns influenced the growth of vegetation, which in turn affected the availability of fuels for burning and forage for grazing. Historic herbivores, such as bison and elk, preferentially grazed in recently burned patches of prairie, which in turn helped maintain the vegetation mosaic. American Indians also influenced these patterns and played a large role in shaping the historic landscape prior to Euro-American settlement.

The Flint Hills have recently received much deserved recognition as a national treasure. For example, The Nature Conservancy ranks the Flint Hills landscape as a priority conservation action site, the Kansas Natural Heritage Inventory rates the Flint Hills as the state's number one landscape conservation priority, and the World Wildlife Fund recognizes the landscape as "one of only six grasslands in the contiguous U.S. that is globally outstanding for biological distinctiveness." Most recently, the U.S. Fish & Wildlife Service (USFWS) announced the establishment of the Flint Hills Legacy Conservation Area, which authorizes the USFWS to purchase conservation easements in the Flint Hills.

All these organizations acknowledge what Kansans have known for years: The Flint Hills are a remarkable place, one that has been millions of years in the making, and one that deserves our understanding and respect today.

Rex Buchanan is the Director Emeritus of the Kansas Geological Survey, based at the University of Kansas. He is a native of central Kansas, with degrees from Kansas Wesleyan University and the University of Wisconsin-Madison. He co-authored three books published by the University Press of Kansas, most recently "Petroglyphs of the Kansas Smoky Hills."

Brian Obermeyer is a fifth-generation Kansan from the western flank of the Flint Hills. He has been with The Nature Conservancy for the past 24 years and currently oversees grassland conservation across the Great Plains. He and his wife Gwen live on a small ranch in Chase County.

The Honorable Nancy Landon Kassebaum served as United States Senator from Kansas from 1978 to 1997. She was the first woman elected to a full term in the U.S. Senate who was not preceded by her husband in Congress. In 1994, Kassebaum was the first female chair of the Senate Labor Committee. In 1996, after announcing her retirement, Kassebaum married former U.S. Senator Howard H. Baker, Jr. The couple lived in Tokyo, Japan, from 2001 to 2005 when Baker served as U.S. Ambassador to Japan. In January 2025, Senator Kassebaum received the prestigious Presidential Citizens Medal.