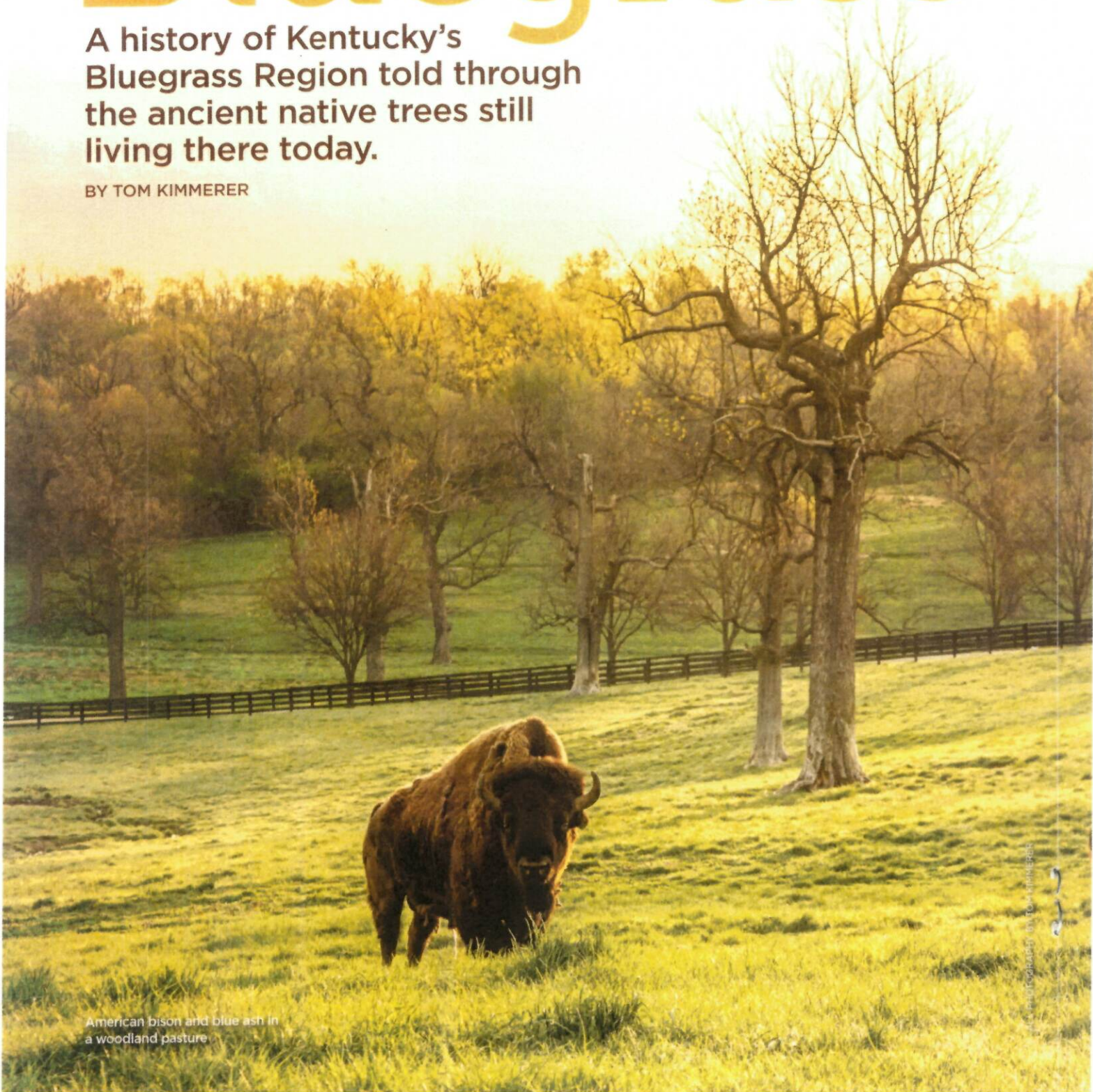


Venerable Trees of the Bluegrass

A history of Kentucky's
Bluegrass Region told through
the ancient native trees still
living there today.

BY TOM KIMMERER



American bison and blue ash in
a woodland pasture

THE INGLESIDE OAK STANDS A FEW FEET AWAY FROM HARRODSBURG ROAD,

a mile from the center of Lexington in the heart of Kentucky's Bluegrass Region. The ancient bur oak has been here for at least 300 years, perhaps as long as 500. Thousands of cars whoosh by every day, but few people notice the tree.

The tree is not alone. The Bluegrass is home to thousands of trees that were here long before Europeans arrived in the region. I believe that there are more ancient, pre-European settlement trees in the Bluegrass than in any other settled region of North America. Bur, chinkapin and Shumard oaks, blue ash and kingnut (also called shellbark hickory) are all long-lived trees that have been here for hundreds of years. While the Bluegrass is home to many other trees, especially black walnut, hackberry, black locust and Kentucky coffeetree, none of them are as long-lived as our venerable, ancient trees.



WOODLAND PASTURES

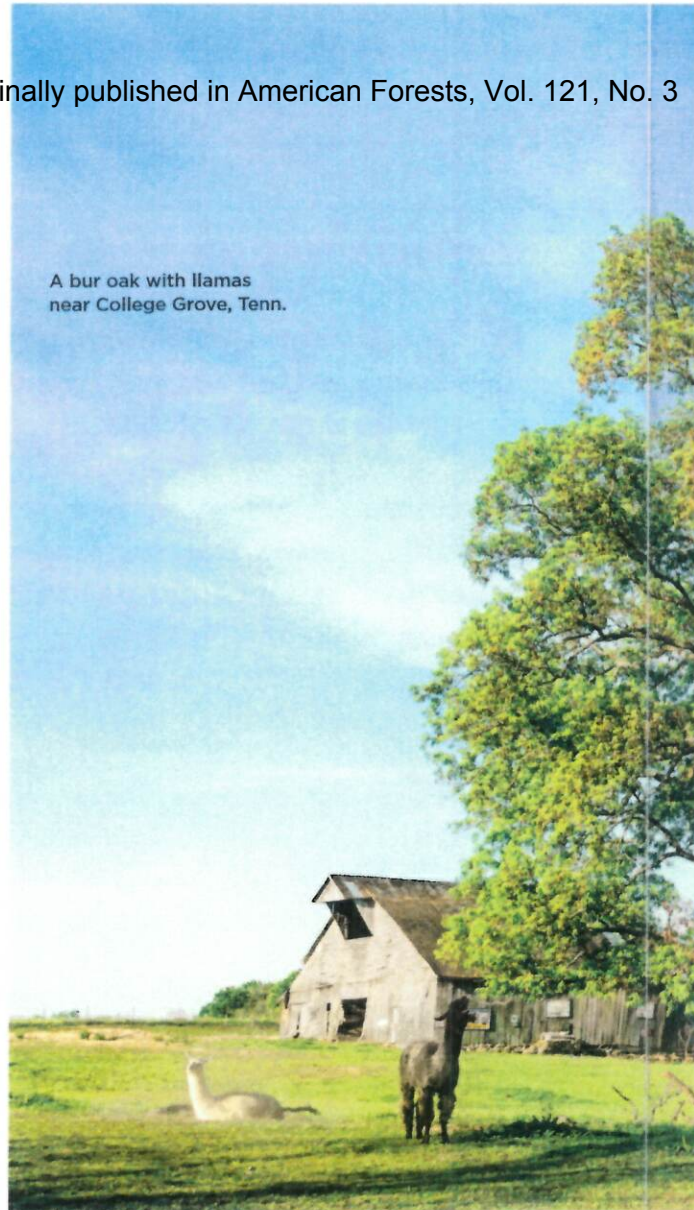
The Ingleside Oak is not a forest tree and never was. Instead it is part of a woodland pasture, a group of open-grown trees shading grass and livestock. For over 100 years, Ingleside Manor was a thriving farm on the edge of downtown Lexington, raising cattle, sheep and horses in the shade of ancient trees. Eventually, development swallowed the farm, leaving behind the Ingleside Oak and a few other ancient trees.

The Ingleside Oak is much older than the farm. Long before the settlement of Lexington or the founding of the United States, the trees were here. The farmers who established Ingleside Manor simply moved into a habitat that was already present. When the Ingleside Oak was younger, it shaded a buffalo trace, a path used by vast herds of bison to commute from grazing lands to water. Today, the buffalo trace is a busy road used by people commuting to work.

The first European explorers of the Bluegrass found extensive woodland pastures of open-grown trees shading grasses and giant cane, covering many square miles, mixed with denser forests and stands of pure cane along the creeks. This astonishing landscape was unlike anything the explorers, accustomed to slow travel through dense forests, had ever seen. News of this fine land well suited to farming quickly brought settlers.

In 1779, a party of travelers arrived after a long journey from the east. I like to think that they came up the buffalo trace and passed the Ingleside Oak, but whatever route they took, they set up camp on a spring-fed stream called Town Branch. About a mile

The Ingleside Oak



A bur oak with llamas
near College Grove, Tenn.

north of the Ingleside Oak, a young Virginian named Josiah Collins felled a huge bur oak. Collins and his companions built a small blockhouse from the oak, and then a group of small cabins from oak, ash and walnut. This was the beginning of Lexington.

The new town grew quickly as farmers settled in with their cattle and sheep. They were able to graze livestock without the immense labor of clearing forests. Some of the trees were felled for buildings, but many were left to shade the pastures. The giant cane and native grasses were quickly grazed down and replaced by non-native grasses. Ironically, the most important grass brought by farmers is now known as Kentucky Bluegrass, although it was originally from Europe or Asia.

What explains the presence of woodland pastures of open-grown trees, grass and cane? This landscape exists in only two places in North America, the Bluegrass of Kentucky and the Nashville Basin of Tennessee. E. Lucy Braun, the renowned forest ecologist, called this "the most anomalous vegetation in North America."



Woodland pastures do exist elsewhere in the world, in England, Russia and especially in Romania, where they have been maintained by traditional livestock agriculture. Thanks to the work of scientists, such as Oliver Rackham, Frans Vera and Tibor Hartel, we know a lot about the history of European woodland pastures. The most important thing we know about them is that they were originally created and maintained by vast herds of grazing mammals, including wisent (European bison), aurochs (ancestral cattle) and horses. Early farmers took advantage of this habitat, driving off or domesticating the native mammals and raising livestock and crops.

This appears to be what happened in the Bluegrass. Although we think of American bison as western animals, there were herds numbering in the thousands in the Bluegrass, grazing on the rich grass and cane, and wandering along the buffalo traces in search of water. The intermittent grazing of bison, feeding intensely in one area and then leaving for long periods, allowed the

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woodland pasture habitat to flourish, just as it did in Europe thousands of years earlier.

Drought has always played a role in the Bluegrass. Although our soils are rich and thick, they lie atop deep Ordovician limestone with fractures, caves and sinkholes. Our rainfall is abundant but percolates quickly through the limestone. Most of our creeks dry up soon after a rain. A prolonged period of drought from around the year 600 to 1100, known from tree rings, may have brought bison to the region from the more drought-stricken west and established the first woodland pastures. A series of droughts in the 18th century just before Europeans arrived coincides with the age of many of our ancient trees. One of the characteristics of our



Woodland pasture on a horse farm, Fayette County, KY

The biggest threat to the future of woodland pastures is that the trees are unable to reproduce.

trees is that they are deeply rooted into the fractured limestone, with access to water that is not available to other plants. The woodland pastures of the Bluegrass were created and maintained by drought and bison, not by humans.

These natural woodland pastures are not savannas, which form a transition from forest to prairie and are maintained by fire. We do not find fire scars on old trees or logs. Indians hunted seasonally in the Bluegrass but did not live there permanently. It may not have been possible for Indians to establish settled villages in the presence of vast herds of bison. Early European settlers tell of thousands of bison flattening gardens, stockades and cabins. It took rifles and horses to eliminate the threat from bison.

The Nashville Basin has a similar history of limestone, drought and bison and is the only other place in North America where woodland pastures were common, though they are now mostly gone. The Nashville Basin has a different land-use history from the Bluegrass, with few large horse farms and more intensive farming. Today, there are many individual, large trees remaining as testament to what were once extensive woodland pastures.

Soon after the settlement of the Bluegrass, wealthy farmers came from the east to establish today's horse farms. They built English-style manor houses, locating them in the middle of the instant landscaping provided by our open-grown trees. Farming consisted merely of surrounding the existing woodland pastures with plank fencing and replacing the native grasses and cane with more familiar forage crops.

Today, there are thousands of trees in the Bluegrass that were standing before Josiah Collins cut that first bur oak. Many of these trees are still shading pastures that form Horse Country, the emerald ring of farms around Lexington that is the heart of the world's Thoroughbred industry. The magnificent farms of stately houses, plank fences, horses and cattle, and rich pasture would look barren and forlorn without the huge old trees.

It is likely that the farms of Horse Country today look more like they did prior to European settlement than any other landscape in North America. Replace the bison with horses and cattle, add plank fences and elegant barns, and you convert an ancient habitat into modern farms.

LOSING GROUND

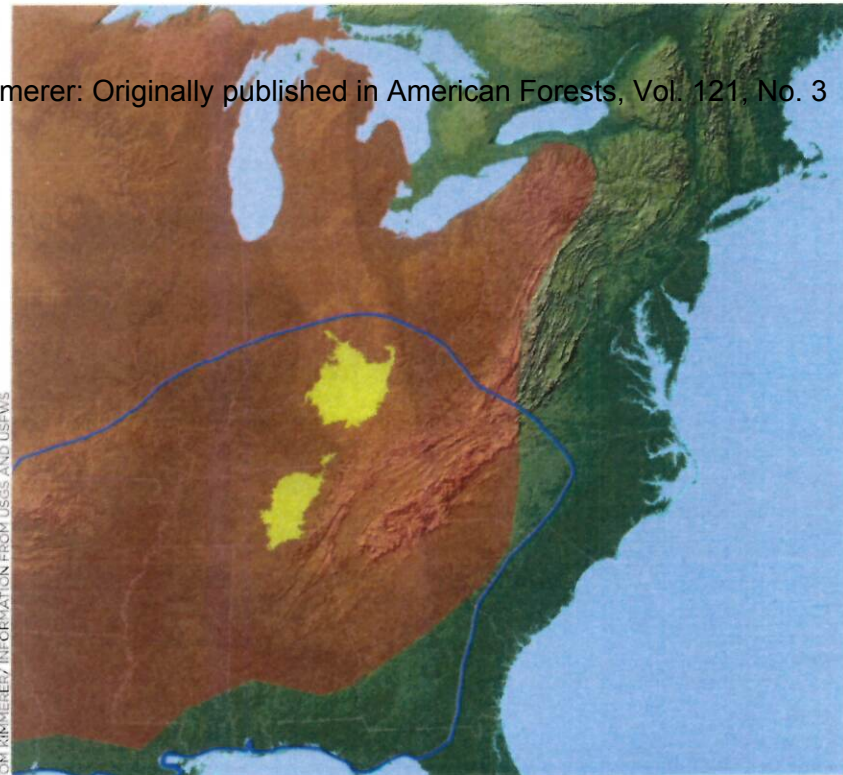
Unfortunately, today, the trees and woodland pastures are disappearing. The rapid growth of Lexington and surrounding towns has consumed many of the horse farms. In Fayette County, about

90 percent of the bur oaks have vanished in only 60 years, mostly due to development.

In 2006, the Inner Bluegrass was placed on the World Monument's Fund Watch List of Endangered Sites. Strict land-use rules, focusing future development inside the existing urban area of Lexington, is slowing development. Many farm owners, working with county governments and nonprofit organizations, like the Bluegrass Conservancy, are permanently protecting their farms with conservation easements. While these measures may protect the farms, they will not protect the woodland pastures. Many of the trees are declining, as natural aging is accelerated by soil compaction from heavy farm equipment and constant livestock grazing. Lightning strikes, though rarely fatal, take their toll as well.

The biggest threat to the future of woodland pastures is that the trees are unable to reproduce. Constant grazing and mowing leaves little room for natural reproduction. It is rare to find any natural regeneration of our ancient trees. As the trees decline and die, they are being replaced by short-lived ornamental trees planted by humans, most of them not native to the region. Trees that normally live for hundreds of years are being replaced by trees that will live a few decades at most.

Natural regeneration of our ancient trees is possible if we create processes that mimic the in-



TOM KIMMERER/ INFORMATION FROM USGS AND USFWS

termittent grazing of the bison. In Griffith Woods, a wildlife management area in Harrison County, a huge kingnut is surrounded by her progeny, ranging from tiny seedlings to tall saplings. At the Julian Farm, a nature preserve in Frankfort, young oaks, blue ash and kingnuts are scattered throughout the woodland pasture. At the Huskisson Farm, on the edge of the Kentucky River in Woodford County, blue ash seedlings are thriving. These three locations share a common history: they were intensely grazed, and then livestock were removed for a long period of time. However, if grazing is not reintroduced, the trees will quickly be swallowed by forests and will give way to more shade-tolerant trees. As the European experience has shown, it is not possible to maintain woodland pasture for long periods without a grazing mammal.

Location of the Bluegrass and Nashville Basin (yellow), the approximate original range of American bison (red), and the approximate original range of giant cane (blue)

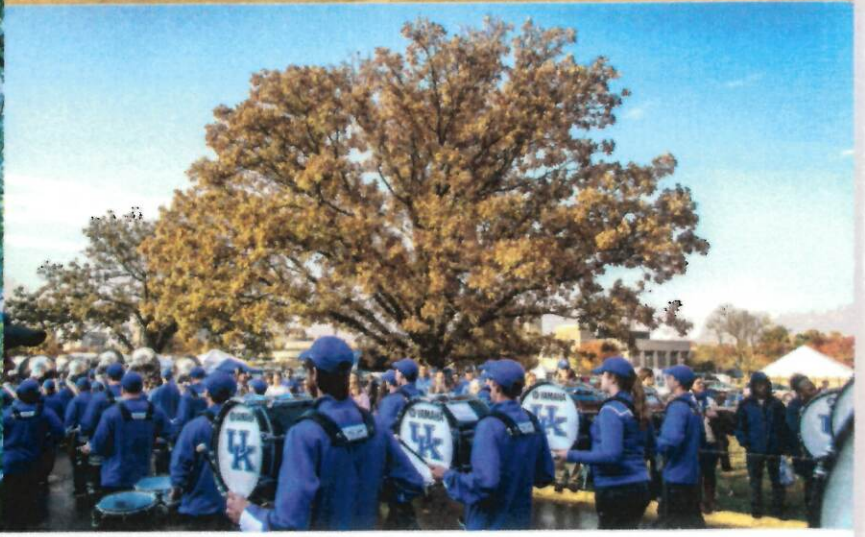
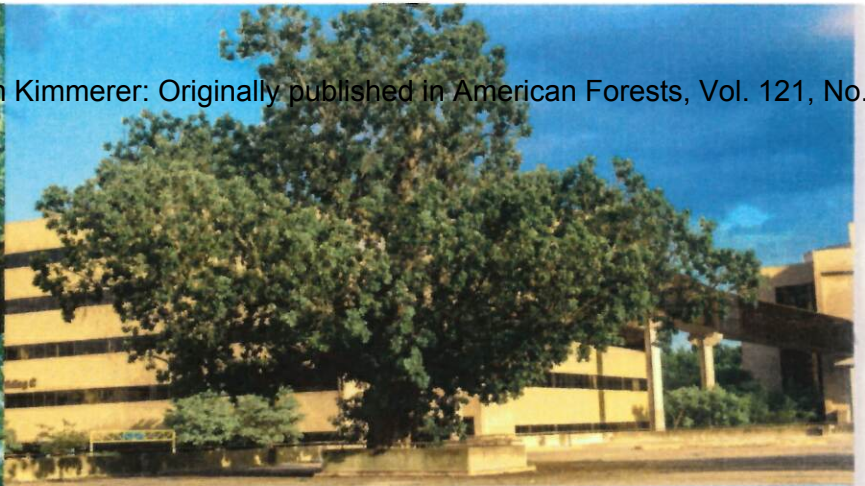
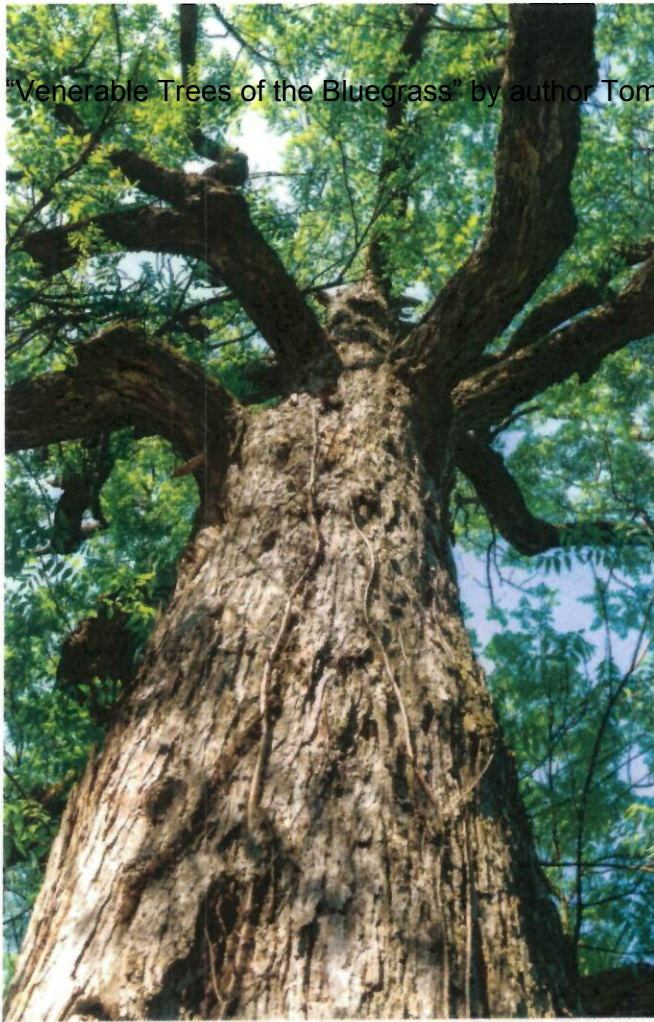
The farms of Horse Country are too valuable for the production of horses and cattle to allow the setting aside of large tracts of land. The use of tree pens, small enclosures of ¼ to 2 acres, within a grazed pasture could allow natural regeneration or at least provide space for planting native trees. Although many horse farms use tree pens today, they are almost always planted with non-native ornamentals that will not survive long.

URBAN TREES

As the Ingleside Oak shows us, development of housing and commercial property may have eliminated the woodland pastures, but not all the individual trees. Throughout the cities and towns of the Bluegrass and Nashville Basin are many huge old trees. They can be found in parking lots, suburban yards, parks and industrial areas.



Lightning scar and top loss in an old blue ash



Clockwise from left: Blue ash tree; The St. Joe's Oak; Old bur oak on the University of Kentucky campus

While many of these trees in the Bluegrass are badly neglected, others are carefully tended and prized. Ball Homes, a housing developer, has preserved a magnificent bur oak as the icon of a new housing development. At St. Joseph Hospital, a parking structure was built around a large bur oak. A large housing and retail development is home to dozens of the largest trees in the region, including all the original woodland pasture species. I call this area the Hamburg Giant Grove because of the impressive size of the trees. Many of these trees are in detention basins where flood control precludes further development.

There are hidden treasures throughout Lexington, Nashville and many smaller towns in the region waiting to be found. For a long time, I thought that the Ingleside Oak was the lone survivor of the original woodland pasture, but there are about a dozen other ancient trees in back yards and empty lots in the neighborhood that are the original companions of the Ingleside Oak. Finding a single old tree can set off a hunt that reveals many more.

However, the population of these ancient urban trees is declining. Although some of the decline is simply due to old age, modern lawn care is probably accelerating the process. Heavy mowing equipment compacts the soil and wounds stems and roots. Use of lawn chemicals, including fertil-

izer and herbicide, is likely to be a major cause of decline. One commercial property with an intact woodland pasture was carefully maintained for decades with minimal lawn care. When a new owner created a high-maintenance lawn of dark green grass with no weeds, the old trees began to decline and many are now dead.

It should be possible, through careful planning and planting, to replace our native trees as they age. These trees require large spaces and are not suitable street trees. There are many large landscapes, from college and industrial campuses to schoolyards and church grounds, which provide ample room to establish groups of native trees. The challenge, both for urban and farm landscapes, is to find adequate, locally-sourced planting stock.

Bur oak from local seed sources is available from some nurseries. Shumard oak is widely available, but the Texas Shumard oaks common in the nursery trade are very different in their growth pattern and drought tolerance from the Bluegrass and Nashville Basin Shumard oaks. Further analysis may show that these are actually separate species or subspecies. It is very hard to find chinkapin oak, kingnut or blue ash in nurseries. Central Kentucky is in the middle of the emerald ash borer outbreak, and many green and white ash trees are dying. Blue ash so far seems to be unaffected.

The establishment of local nurseries using locally-collected seeds could provide adequate planting stock. Reforest the Bluegrass, one of the largest volunteer planting programs in the country, is restoring some of the woodland pasture species along the edges of riparian areas with seedlings produced by the Kentucky Division of Forestry. In most of our urban areas and farms, though, our ancient native trees are being replaced with short-lived ornamental ones.

A FORMIDABLE FUTURE

We cannot discuss the future of very long-lived trees without addressing the challenge of climate change. The next hundred years, a fraction of the lifetime of our trees, will see dramatic changes in climate. Regional models show that we should expect longer growing seasons, milder winters, increased rainfall intensity but also more frequent drought. We are already seeing changes in the length of the frost-free season and perhaps increased rainfall intensity. Whether our native trees will be able to tolerate these changes is not yet known, but they are likely to have an advantage over most ornamental species. The greatest climate threat to trees is drought. Few ornamental trees are drought tolerant, but the deep rooting and tremendous drought tolerance of our native trees may allow them to tolerate climate change better than some other species.

I have spent more than 30 years getting to know our woodland pastures and ancient trees and have intensively studied them for the last few years. It is surprising to me how few people, even those born and raised here, are aware of the incredible number of ancient trees that we live among and of the historical importance of our woodland pastures.

The Ingleside Oak and the other ancient trees of the Bluegrass and Nashville Basin are slowly

Few ornamental trees are drought tolerant, but the deep rooting and tremendous drought tolerance of our native trees may allow them to tolerate climate change better than some other species.



Old bur oak in a woodland pasture

disappearing. Without our efforts to maintain the existing trees and to plant and tend replacement trees, this unique landscape will vanish. The only way that we can ensure a future for the woodland pastures of our farms and the ancient trees of our cities is to be sure that people know about, value and venerate our native trees. 🌱

This article is based on *Venerable Trees: History, Biology and Conservation in the Bluegrass* by Tom Kimmerer, 2015, University Press of Kentucky.

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