Registry News

From the Oklahoma Natural Areas Registry Program

Newly Registered Sites

Ancient Cross Timbers Found on Two New Natural Areas

One sunny day last winter, Diana Frost led me along the rocky wooded ridge, down into the valley, across the pond dam, and up the hill on the other side. We walked for a few hours, enjoying the relatively warm January day. On the way back to the truck, instead of returning on the trail, we scrambled up a dry drainage.

The spiral pattern in the bark indicates slow growth and possibly a long life.

And that's when I spotted it, or actually them. Diana described my reaction later: "I wasn't sure what she was looking at, but I could tell she was excited. So, I knew it must be something interesting." What I was looking at was the bark of the post oaks growing up through the stony soil. What made it exciting was the spiral pattern of the bark, twisting up the trunk — like a candy cane. This twisting oak bark often is a sign of slow growth, indicting that the tree may be old, really old — such as 200 years old — or to be dramatic, *ancient*.

Not many ancient trees are left in Oklahoma. In the 1880s, sawmills were established in the forests of the eastern mountains. The sturdy and gnarly trees of the cross timbers were not considered commercially viable, but were used locally by settlers for fuel and building materials. The cross timbers is a transitional woodland, between the grasslands and the eastern deciduous forest. [See Forests of Cast Iron on page 4 more information about the cross timbers ecoregion.] Trees on the open flats were first to fall to the ax and saw. As the cutting of trees in the cross timbers pushed back to steeper ridges and rockier hillsides, more trees were left uncut. On these less accessible locations we now find the remnants of the ancient cross timbers forest.

Diana, who now lives in Norman, contacted the Registry Program a little while after she and her siblings and cousin inherited from their parents 120 acres of woodland near Sand Springs in western Tulsa County. She was concerned about potential drilling on the property and wanted to learn more about protecting the land. She hadn't been there in years, but remembered it as a special place – a natural childhood playground – where she and her family spent weekends picnicking, fishing, and exploring. Diana grew up in Tulsa and her parents bought the property in the 1950s to "have a bit of land."

→continued on page 2

Oklahoma Natural Areas Registry

Winter 2011-2012

About Us: The Natural Areas Registry was formed by the Oklahoma Legislature in 1984 to identify areas with unique natural features and to encourage their voluntary protection by Oklahoma's citizens.

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Newly Registered Sites

→continued from page 1

Around the same time, another landowner, Larry Andrews, picked up a Registry Program brochure while visiting a preserve owned by The Nature Conservancy. "I think my land could qualify for this," he mused after reading the pamphlet. His 162 acres in northwest Pawnee County near the Arkansas River is covered with tallgrass prairie on the upland, cross timbers on the ridges, and bottomland forest on the floodplain. His great uncle purchased the original property back in the 1920s, and Larry has been tramping around these woods and fields ever since he could remember.

Larry inherited the property nearly 20 years ago and has been plugging away at the slow process of restoring the natural habitats. Working with the USDA's Natural Resources Conservation Service, Larry has been able to implement several restoration projects on his land. The NRCS has provided both technical and financial assistance to fight invasive plants, hold prescribed burns, plant trees in the bottomland, and remove eastern red cedar from the upland. As a retired Red Rock firefighter, Larry is especially qualified to plan and execute a prescribed burn. But you don't need a background in fire fighting to plan and carry out a prescribed fire. You can learn more through the Oklahoma Prescribed Fire Council, discussed on page 3.

Larry Andrews and daughter Jamie pose with their Registry plaque in front of one of the ancient chinquapin oaks on their Pawnee County property.

Diana Frost marvels at one of the gnarly post oak trees on her family's property in western Tulsa County.

Both Larry and Diana's trees have the potential for being *ancient*, but we need to do a little more investigating. So, how do you determine a tree's age? Well, you don't get a copy of its birth certificate, nor do you look at its teeth. You have probably seen tree rings on a cut log or tree stump. In general, each ring represents one year of growth. The rings are visible because the plant cells that form the wood are different sizes. The early spring growth is lighter in color because the cells are larger. The cells grown in late summer are smaller and the ring made up of those cells is darker. As you might guess, rings are most visible in trees growing in areas with distinct seasons that cause cell growth to follow a consistent pattern – hot, dry means small cell growth; warm, moist equals big cell growth. (However, just to warn you, there are trees in North America that are tricky and are known to have "false rings," but these oaks are pretty faithful ring growers.)

We can observe tree rings in a tree's cross section, but Larry and Diana wouldn't take kindly to us cutting down their oldest-looking trees just to find out how old they are! Fortunately, there is a more conservative technique to counting tree rings – coring. Using an increment borer, a tool with a long, hollow drill bit, we can extract a sample from the trunk. The sample is a long cylinder of wood representing a horizontal cross section of the trunk.

For our slow-growing hardwoods, we cannot easily distinguish the narrow tree rings on the core without a little preparation of the wood. The cores are fragile and may break along any

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Newly Registered Sites

→continued from page 2

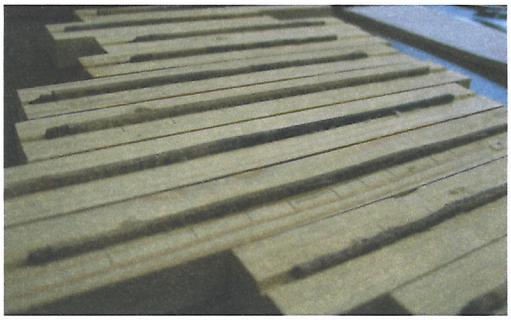
Using a specialized hand drill, Elise takes a sample of tree trunk so that the age of the tree can be determined.

of the rings. For transportation back to the lab, cores are safely stored using the sophisticated scientific materials of kitchen plastic wrap and zippy freezer bags. In the lab, the plastic wrap is removed to allow the cores to dry. Once dry, the cores are glued to wooden mounts for stability. The cores are sanded smooth after the glue is dry. The whole process can take a week or two before you can begin to count the rings. Growth is so minute in some of the cores that magnification is required to see the individual rings. Using these techniques, we set out to investigate Larry's and Diana's cross timbers.

The bluffs along the Arkansas River on Larry's property are a prime location for remnant ancient cross timbers. The rock outcroppings would have made timber harvest difficult, but it also made any ecological study of the area challenging! Nonetheless, Larry and I enthusiastically cored 12 trees on the steep slope and rocky ridge. We sampled a variety of trees – black jack oak, post oak, and chinquapin oak. The oldest of the 12 trees turned out to be a large-diameter chinquapin oak that is 212 years old.

After our January visit to her property, Diana and I made plans to find out the age of a few of her trees. We needed to plan a visit when the leaves were out so that I could be sure of the tree species and to better study the composition of the whole forest in this area. We chose five of the twisty bark trees to core. Coring into these hardwoods with a hand-powered drill was challenging, and blisters formed on our hands before we finished. A quick look at the core in the woods was inconclusive, but I had high hopes because with my naked eye I couldn't recognize any rings – were they too small to see? Well a week later, settling down to count the rings, Elise Clopton, summer 2011 research assistant, exclaimed after just a couple minutes at the microscope. The first tree core she counted was over 200 years old! In fact, all five trees we sampled were over 200 years old, with the oldest being at least 320 years old. Needless to say, Diana was thrilled when we told her the news.

Diana, Larry, and their families are excited to discover that their land harbors patches of ancient cross timbers forest. The trees in their woodlands have experienced more than 200 years of history. With the landowners' dedication to land conservation, we expect that the trees and woodlands that they inhabit will be around for future generations to explore and enjoy. ■



Cores of wood are dried, mounted, and prepared so that the tree rings can be examined.

Taking Action: Oklahoma Prescribed Fire Council

Have you wanted to try prescribed burning to help manage your property? Maybe you want to control woody plants in your grassland or reduce the potential for a catastrophic fire on your property. A controlled burn may be a good management solution for you. The Oklahoma Prescribed Fire Council was established to promote, encourage, and help private, rural landowners throughout the state to use fire as a practicable tool.

The council works on four fronts: educating the public about the benefits of fire to the natural environment; developing training on the proper use of prescribed fire; acting as a legislative advocate for prescribed fire; and facilitate fundraising for prescribed burn activities and trainings.

For more information on the Oklahoma Prescribed Fire Council and how they may be able to help you, go to the link on our website: www.oknaturalheritage.ou.edu/registry_about.htm

Focus on Oklahoma's Natural Diversity:
Forests of Cast Iron - The Cross Timbers

"I shall not easily forget the mortal toil, and the vexations of flesh and spirit that we underwent occasionally, in our wanderings through the cross timber. It was like struggling through forests of cast iron."

A Tour on the Prairies by Washington Irving, published 1835.

Washington Irving did not give the most favorable account of the cross timbers, but he was truthful, nonetheless.

The trees of the cross timbers are not the tall stately trees of our eastern forests, not the shrubby scrub of the western grasslands, but the cross timber trees fall in-between – taller than a person, gnarlier than a pine, less showy than a maple in autumn. The cross timber trees have a character all their own. As described above, the cross timbers can be a dense forest of thick undergrowth and stout, low branches. Or it can be a more typical savanna with widely spaced trees and grassy expanses.

The tough, slow-growing trees of the cross timbers vary across the ecoregion, but typical dominant species are post oak (*Quercus stellata*), blackjack oak (*Q. marilandica*), chinquapin oak (*Q. muehlenbergii*), hackberry (*Celtis occidentalis*), and pecan (*Carya illinoinensis*). The canopy (top of the tallest trees) is not high and can be quite a bit shorter when the woodland is on a dry ridge-top where the wind shears the tree limbs. The trees found in the shade of the tall canopy can be redbud (*Cercis canadensis*), persimmon (*Diospyros virginiana*), sumac (*Rhus* spp.), and eastern red cedar (*Juniperus virginiana*).

As a transitional woodland, the forested areas are interspersed with pockets of prairie. Four tall grasses reign in these patches: big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), Indian grass (*Sorghastrum nutans*), and switch grass (*Panicum virgatum*). On drier sites, the smaller grass species of hairy grama (*Bouteloua hirsuta*) and buffalo grass (*B. dactyloides*) also can be found. Showy prairie flowers also are an important element of the habitat: purple coneflower (*Echinacea purpurea*), foxglove penstemon (*Penstemon digitalis*), wild bee balm (*Monarda* spp.), and wild indigo (*Baptisia australis*).

Larry Andrews

The cross timbers ecoregion of Oklahoma can be visualized as a belt that stretches from Osage County to the Lake Texoma with a wide buckle in the center of the state. ■

Larry Andrews

You can explore the cross timbers ecoregion at many public areas, including several Oklahoma State Parks, such as:

- Lake Thunderbird State Park
- Keystone State Park
- Osage Hills State Parks

Larry Andrews

Our Aim: Oklahoma Natural Areas Registry encourages citizen-based conservation of Oklahoma's natural diversity through a voluntary land-preservation program that promotes awareness of rare species, natural communities, and important geologic features.

A Note from Summer Registry Research Assistant, Elise Clopton

Despite the intense heat, we had a great time exploring the ancient cross timber sites this summer. In addition to taking core samples from selected trees, we conducted surveys on Karen and Larry's properties (see page one for article). Analysis of our data on the tree species present, tree sizes, and the spatial distribution of those trees will help us to better describe these ancient sites.

The high temperatures were also of concern during the Registry's fifth season monitoring the breeding sites of the Interior Least Tern along the Canadian River. Low water levels left nests vulnerable to increased vehicular traffic along the river; we devastatedly discovered several eggs and chicks destroyed in the tracks of ATVs and trucks. However, we suspect that at least 10 juveniles survived the challenges of the summer in order to join the adult birds on their flight to their wintering grounds.

For the Registry Program, Elise conducted original research, assisted with site visits, and helped with outreach activities.

Inside the comfort of our air-conditioned office, we were able to follow up on some of the tallgrass prairie work Melissa Hinten wrote about in the winter 2010-2011 edition of Registry News. Melissa mapped tallgrass prairie the fragments that remain in Northeastern Oklahoma. Aside from the Tallgrass Prairie Preserve in Osage County, most prairie patches are small and held in private ownership. We used her map to identify and contact private landowners with tallgrass remnants on their property.

Attempting to get a sense of the future for Oklahoma's tallgrass prairie, we interviewed several landowners from Rogers County. We were interested in their use of the land and their opinions regarding land conservation, both natural and agricultural land. Many people indicated that the preservation of these tallgrass prairie remnants is of great importance to them. They were especially interested in conservation if they or their family had held the property for decades. Many landowners were concerned about the decisions future generations might make regarding the prairie and agricultural land. Yet, only a few landowners felt comfortable with the idea of permanent, legal land protections. Luckily, these are not the only means of protecting habitats. An increasing number of organizations are establishing systems to help working ranchers maintain native grasslands and profitable operations simultaneously. We feel it is important to include working landscapes in the overall preservation of Oklahoma's grasslands.

Elise, a native to Oklahoma City, currently is finishing her master's degree in environmental studies at the College of Charleston, S.C. Her work with the Registry Program, insprired Elise to focus on voluntary land conservation.

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The Illinois River: *A Visual Record*

A conservation photography book that captures the beauty of an Oklahoma river.

Kim Baker

A collaboration of Oklahoma photographers and authors, including Priscilla Crawford, *Registry Representative*, uses art and stories to empower environmental conservation. The contributors aim to inspire citizens to make better-informed decisions about this precious natural resource.

The book focuses on the natural benefits derived from the Illinois River and its ecosystems that support biological diversity, while providing rich context for the region's rich cultural heritage.

The Illinois River: A Visual Record is a relevant piece of literature that will help the river today, and it will be a lasting record of the Illinois River for the future.

To learn more and to order a copy, follow the links on our website: **www.oknaturalheritage.ou.edu/registry_about.htm**