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THE DOCENT NEWS



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Colorful Berries

- Van Vives

I have had two inquiries about the red to red/purple berries evident on the walking trail. With most plants in their tan and gray fall colors, the berries present a very colorful contrast. There are two plants that produce such berries.

American Beautyberry, *Callicarpa Americana*, is a member of the Vervain family. It is also known as French Mulberry, Sourbush, Bunchberry, Foxberry, Turkey Berry, and Spanish Mulberry. The leaves are opposite, elliptic on long, arching stems. When the leaves are bruised they give off a woody, pungent odor. The fruit grow in clusters at the leaf nodes and are rose-pink or violet or



American Beautyberry

red-purple. The fruit are eaten by many animals and bird species, but only when other food is scarce.

Buckbrush, *Symphoricarpos Orbiculatus*, is a member of the Honeysuckle family. It is also known as Cloralberry, Indian Current, and Buckbush. The leaves are opposite and oval on stems of gray-brown bark that is often shredding. The fruit form clusters at leaf nodes and have a small protuberance at the end of each berry. Native Americans used all parts of the plant to make eyewashes, and teas to reduce fevers and menstrual problems. Animals and birds eat the berries when other fruit is scarce.



Buckbrush



Cross Timbers

Andrew Donovan-Shead

Cross Timbers is an enigmatic designation for a distinctive regional ecology that has been recognized for thousands of years by the people living in and around them. Strange, then, that what was once a significant landmark is now so ho-hum as to go almost unnoticed, especially by Oklahomans. Native Americans once described the Cross Timbers as a great forest, which is probably how the Spanish explorers came to refer to it as *Monte Grande*.

An 1880s geologist, Robert T. Hill, noted a direct correlation between the Cross Timbers and the underlying strata of sandstones alternating with clays. This geology, supporting woodland vegetation, extends from Waco, Texas, in the south, north across eastern Oklahoma into the southeast corner of Kansas; crossed by all major rivers, the Brazos, Red River, and Washita, the Canadians, Cimarron, and Arkansas. Into this sandstone matrix the roots of the trees
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penetrate further, cracking the sandstone to allow water to percolate and collect in quantity within rocky reservoirs. The picture below shows an oak tree felled by tornado that has yanked blocks of sandstone from the ground. Apparently, major regional aquifers lie below the Cross Timbers, most of which are being pumped down faster than they are replenished.



Felled tree with blocks of sandstone

As we are learning, many things are interrelated and cross scientific disciplines. To better understand our environment, interdisciplinary work is important among geology, soils, flora, fauna, etcetera. In this endeavor to understand, teamwork is important to build common databases in standard format that are readily accessible to all researchers.

Hill was a geologist, yet he recognized that soils influence growth of vegetation. He noted the difference in fertility between the upper Cross Timbers in the west and lower Cross Timbers in the east, an observation that was

later confirmed by scientists working in the newer discipline of ecology.

Cross Timbers consist of post oak (*Quercus Stellata*) and blackjack oak (*Quercus Marilandica*), in the main, with hickory (*Hicoria Buckleyi*), elm (*Ulmus Alata*), hackberry (*Celtis*), Osage Orange (*Maclura Pomifera*), and Sumac (*Rhus Glabra*) when conditions favor.

Post oak has smooth leaves with rounded lobes; it is a member of the white oak family, producing sweet acorns that mature in six months. Post oak trees have gnarled branches that grow almost at right angles to the trunk, star-like instead of uplifted. Leaves are dark green on top, hairy gray or brownish underneath. Twigs are greyish. Bark is brown gray broken by long shallow cracks that divide into rectangular blocks. Acorns of the post oak are a valuable source of food to wild game such as prairie chickens, quail, wild turkey, bluejays, woodpeckers, racoons, squirrels, and deer who also eat the twigs and leaves of young trees. These trees can live to a great age as Dr. David Stahle discovered in his study of growth rings during which he found one post oak near Keystone Lake that he estimates is nearly four hundred years old.

Blackjack oak exhibits leaves with three distinct lobes that are rough to the touch, with
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pointed bristles at the end of each lobe; acorns mature in two years attached to cups lined with wooly hairs. Blackjack acorns have a bitter tannic taste, which can be ameliorated by soaking in several changes of water .

Oaks form about 75 percent of the tree species and 90 percent of the forest canopy. Oaks along with other nut bearing trees in the Cross Timbers are an abundant source of food for squirrels and hogs. Understory of the Cross Timbers can become thick with shrubs, vines, and branches that is suitable for and gives security to a wide variety of wildlife.

Cross Timbers woodland is intermixed with prairie, a mix that waxes and wanes over time as environmental conditions change. It is this change that Drs. Palmer and Arévalo have under investigation at the TGP. Dynamic interaction between Cross Timbers and prairie is usually slow. After catastrophic damage, the dynamics will move more rapidly as will happen now after passage of the tornado this year across the southwest section of the Preserve. This is why Palmer and Arévalo's research is important; most change is expected to occur within the next three years. A conservative estimate of Cross Timbers coverage stands at 11,206,000 acres now. Pre-settlement coverage is Estimated at a little more than 19 million acres.

During the last hundred years or so there has been much speculation on many things in addition to soils and bedrock that might explain why there is forest in one place and prairie in another when both places share similar climate and terrain. Post tornado research into change will contribute an answer, in part, to this speculation. Another field of research that promises more accurate modeling of the discontinuous behaviour of biological systems is offered by *Dynamic Equations on Time Scales* by Martin Bohner and Allan Peterson, otherwise known as *Time Scale Calculus*. We don't have the space to go into this here, but if you are interested then you can find a short, readable article in a library copy of the July 19, 2003 edition of *New Scientist*, issue #2404, page 28, *Taming Nature's Numbers* by Vanessa Spedding.

Cross Timbers is an odd, somewhat controversial, name. The woodland runs north to south crossing all the major rivers and streams running from west to east. Cross Timbers impeded westward expansion by European settlers. Travelers west had to cross the timber. Timbers were a cross travelers had to bear, a place in which it was possible to get crossed-up and lose one's bearings. Post oak limbs grow at right angles to the trunk and are called cross oaks. You choose. Because origin of the name is obscure it is a source of

argument in which partisans can become very cross. Cross Timbers is an English nomenclature that usurped the original Spanish *Monte Grande*, which is also a source of confusion in that *Monte* can mean either mountain or forest. At one time the Cross Timbers was a significant landmark that appeared on many early maps of the area. It is better known in Texas where many have adopted the term Cross Timbers to identify their communities and businesses, especially in Fort Worth where there are regulations to prevent destruction of woodland.

Value of the Cross Timbers is recognized now for large semi-forested housing lots, in promoting environmental diversity, for wildlife animal sustenance, water conservation, and for aesthetic recreational purposes. Cross Timbers is in constant change between deforestation and reforestation. Reforestation occurs where grazing is limited, fire suppressed, and farming in decline. Deforestation occurs in areas of urban development; particularly as post oak is considered ugly, leading to its replacement by exotic trees, for which we pay a price with our allergies. Most exotic trees planted are now mature, male trees that are more visually appealing; unfortunately, they release vast amounts of pollen into the air at different times of the year.

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Landscapes and the vegetation growing thereon change in response to variable conditions. Nothing in nature is a permanent fixture. Human activity is the most powerful influence on the environment. We are endowed with abilities to create and to destroy; of the two, destruction is easiest; creation the most difficult. Perhaps our role should be guided by the physician's code to "Do no harm". As individuals our sojourn on Earth is fleeting, what lives longest is our culture. A good middle course would be to cultivate a culture of caretaking and good husbandry of our natural resources; a sustainable balance between the needs of human society and those of other species. Ultimately, we depend on a healthy environment for our survival. On the other hand, Earth can do without us. If, by some freak accident, humanity was completely removed from the planet, the biosphere would adjust to a new equilibrium where life would continue without us and none would mourn our passing.

Cross Timbers have long been recognized as vital to the support of large populations of smaller mammals and birds, a support attributed to the mix of forest and grassland. Within the last fifty years, characteristics of the Cross Timbers has changed with increased human habitation, and

management techniques promoted by government agricultural agencies, agricultural extension services, and conservation organizations. This coupled with new range management practices enlightened by scientific research is helping to protect and nurture the Cross Timbers environment.

This article is the outcome of another brief exchange I had with Dr Michael Palmer, during which he recommended that I read Richard Francaviglia's book [The Cast Iron Forest: A Natural and Cultural History of the North American Cross Timbers](#). Most of the information for this article I gleaned from reading Francaviglia's book. I got a cheap used copy through Amazon.com.



Visitation Summary - George Meyers

1008 sign-in visitors came during October, an increase of 46.5% from October 2002. Visitation is still down 15% for the year-to-date compared to 2002. There were 267 visitors from 34 other states, up 37% from last October, with Kansas (44), Texas (35), California (26), Florida (16), and Colorado and Missouri (10 each) heading the list. 23 visitors came from 10 other countries, down 34% from last October, with Germany (5), Australia and New Zealand (4 each),

England, Czech Republic and Ireland (2 each), and Mexico, Ecuador and Malawi finishing the list with 1 each. Malawi was a new addition to the list of foreign countries. Four came from Guam. 714 Oklahomans visited the preserve this month, a higher percentage than usual.

Saturdays and Sundays had more visitors, as 41% of the month's visitors came on those days. Visitation was relatively equal Monday through Friday. 67% of the visitors came between 11:30 a.m. and 3:30 p.m. with an additional 24% from 9:30 to 11:30 a.m. 96% of the foreign visitors were first timers, along with 72% of other state visitors and 56% of Oklahomans. Overall, 61% of visitors were first timers.

Comments reveal that people enjoyed the prairie and the gift shop. They include: "A wonderful experience", "Gorgeous day, lovely scenery", "We had to come out to see this first hand - Awesome", "Office closed 10 minutes early", "Great volunteers, great work", "Great memories", "Remarkable", "Thanks for scripting bison near road", "One great preserve", "Would have been nice if someone was here" (1:00 on a Thursday), "Vision of a lost time", "Great - We saw it on the map", "Grasseeeee". Beautiful and Great tied at 28 each.



Sumac or Shumac? -Van Vives

As far as the pronunciation is concerned, both pronunciations are acceptable in most dictionaries. We are all familiar with the beautiful crimson foliage of the fall sumac and its decorative seed heads, but I think we greatly underestimate its worldwide presence and importance. There are over 100 varieties of sumac worldwide. Uses of the plant include lemon substitute, tea, herb, spices, tanning, medicinal uses, landscaping, Vitamin C source, dye, wine, and food for many animal species.

A short while ago I took a group of people belonging to an association of Fulbright Scholars on the walking trail. Among them was a young German woman who asked me if we harvest the sumac seed heads. I said no and asked her why she asked. She said that in Germany and other parts of Europe it is harvested. They use it for a lemon substitute and for making tea.

Dr. Michael Palmer of OSU has identified three species of sumac at the TGP. They are Fragrant Sumac, *Rhus Aromatica*, Winged Sumac, *Rhus Copallinum*, and Smooth Sumac, *Rhus Glabra*. It is interesting that they are members of the Cashew family.

We are used to seeing sumac bushes from about one foot to

six feet high. There are some varieties, such as the Staghorn Sumac that can grow to 20 to 40 feet tall. This variety grows mostly in the northeast.



Fragrant Sumac



Winged Sumac



Smooth Sumac

Fragrant Sumac is also known as *stinking bush* due to the pungent smell released from crushed leaves. Its fruit is not the first choice of many kinds of wildlife, but it is used when other food is scarce. This sumac occurs naturally in limestone hills and can tolerate dry seasons. The leaves are alternate and have three leaflets each.

Native Americans used all parts of the Fragrant Sumac medicinally. The fruit is high in Vitamin A. They used it also to make a lemonade-like beverage, and used the branches for weaving baskets.

Winged Sumac leaves are opposite and have 11 to 23 smooth-edged, narrow leaflets. Use of the plant includes tanning and dyeing leather. Native Americans cured the leaves as tobacco. They also used a tea made from the bark to stimulate milk flow in nursing mothers.

Smooth Sumac leaves are alternate and have 11 to 33 leaflets each. Each leaflet has small *teeth* on the outer edges. An herbal reference describes the effects of sumac as follows.

- ★ Brings a gentle strength and stamina to the system.
- ★ Assists in maintaining connection with the heart during difficult phases and transitions in recovery.

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★ Good for those who feel that they have somehow missed life or have been passed by.



Staghorn Sumac

The Staghorn Sumac gets its name from the tiny hairs covering its branches and resemble the hair on a deer's antlers. The red fruit are also covered with red hairs and are rich in malic acid and tannin.

When making tea from Sumac fruit, the fruit should be gathered soon after turning red. Extract the juice in cold water overnight. Hot water will extract too much tannin and will be bitter.

Growing up, I was always warned about *poison sumac*. The poison variety produces white seed heads and thrives in wet, swampy areas. I grew up in southern Louisiana, so the warnings were valid.



Science in Action Andrew Donovan-Shead

In May this year I helped Hunter Anderson to collect data for his experiment, as you may recall reading in the June issue of *The Docent News*. Hunter tells me that he has finished his field work for the season.

Everything is going as planned. He will resume soil and light sample collection again in March 2004 and exactly repeat everything he did this year at the same times next year.

The purpose of this replication is to correct for differences in soil at each site that exist in native tallgrass prairie landscapes. For example, at each site there will be differences in the depth of soil overlaying the bedrock, in organic carbon content, in texture of the soil, etcetera; all these differences have an effect on the mineralizable pool of organic nitrogen.

The response variable used in the final statistical analysis will be the percentage change in mineralizable nitrogen from year one to year two. These two sets of measurements have the effect of canceling the nuisance variations caused by the differences at each site, enabling expression of treatment induced variation caused by the random fire and grazing regime.

So, the data Hunter collected this year is only half the story and more or less meaningless until he can collect and compare a new set of data next year.



Gift Shop Sales Summary

\$ 3,719.68	October 2002
\$ 6,477.62	October 2003
\$49,131.64	Year-to-date 2002
\$42,290.03	Year-to-date 2003
< \$6,841.61 >	Year-to-date decrease in sales



Dennis Bires stands beside one of the trees planted by the Docents at the headquarters building on November 15th.



TNC Oklahoma Chapter Preserve Updates

Nickel Preserve

- Chris Wilson

The fall seed harvest was a good one this year. Volunteers collected wildflower seed on three different days. Staff picked a bumper crop of pine cones and used a tumbler to shake out the seed. The pine seed will be germinated at Greenleaf Nursery and a few thousand seedlings will be available for planting in the spring. Staff collected hundreds of acorns from post oak, white oak, and blackjack oak. Pine seedlings and oak acorns will be planted in restoration areas to re-create a pine-oak savanna. Native grass and wildflower seed will be sown on a 15-acre unit in early winter.

A kiosk and trailhead signs are now in place near the preserve headquarters. The signs will provide information and directions for visitors to make it possible to use the trails anytime seven days a week. Self-guided trail brochures are in production. Additional signage is being designed for placement along the county road through the preserve.

Statewide stewardship staff completed a 260-acre burn north of the headquarters building in late October. The

burn encompasses the area around the Savanna Trail, and it should stimulate an abundance of wildflowers next spring and summer. The approach of deer season has brought on the usual need for fencing and posting. Staff have completed a half mile of fence along an adjoining tract to the south where ATVs have repeatedly trespassed on to the preserve.



Pontotoc Ridge Preserve

- Jim Erwin

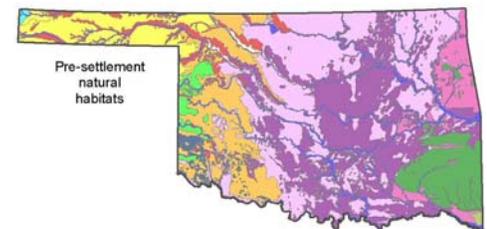
At Pontotoc we had a good turnout for our new ADA trail dedication. Although it rained all day, people still seemed to have a good time. We will be starting our red cedar control in the next couple weeks, which means lots of chainsaw work. We will also be cutting cedars at Boehler Seeps Preserve. Anyone wanting to help can call me at (580) 777-2224. And don't be bashful!

At Cucumber Creek the leaves are turning color and looking beautiful. I recommend that anybody who hasn't been down the Talimena Drive this time of year do so. You can find lots of information on the Ouachita Mountains and

their history at the many vistas along the way. Or, make a stop at the Kerr Arboretum. You might even see a Black Bear and can catch a hot cup of coffee at the Queen Wilimena lodge or a fine dinner at a reasonable price. It's just a few miles across the Arkansas state line. They also have gifts and walking trails. They have a petting zoo where they have rehabilitated several animals such as Mountain Lions, Black Bears, alligators, deer, many hawks, snakes, and lots of other animals; however, I'm not sure of the dates it is open.



Western Oklahoma Oklahoma: Then and Now

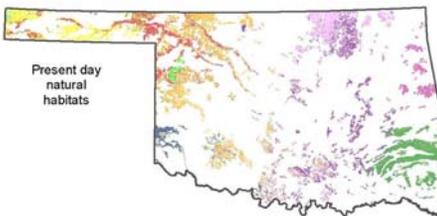


The state's first explorers and settlers encountered a vast and varied landscape, one of forested mountains, grassland plains, rolling hills, and pristine rivers. Glimpses of our natural past can be found in the journals of early pioneers and trailblazers, who wrote of the plants and

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 wildlife they encountered in the wilderness region that is now Oklahoma.

Among these explorers was the famous author Washington Irving, who described his first impression of the Great Plains of central Oklahoma as follows: *"After a toilsome march...we emerged upon a grand prairie. Here one of the characteristic scenes of the Far West broke upon us. An immense extent of grassy, undulating, or, as it is termed, rolling country, with here and there a clump of trees, dimly seen in the distance like a ship at sea; the landscape deriving sublimity from its vastness and simplicity."*



Pinyon - Juniper Mesa	Tallgrass Prairie
Shortgrass Prairie	Post Oak - Blackjack Oak Forest
Sand Sage Grassland	Oak - Pine Forest
Shinnery Oak Grassland	Oak - Hickory Forest
Mesquite Grassland	Cypress Forest
Mixedgrass Prairie	Loblolly Pine Forest
Stabilized Dunes	Bottomland (Flood Plain)

Though much of Oklahoma's natural habitat has been developed in the past century, some areas remain much as they were during Irving's time. The Flint Hills, Arbuckle Plains, Cookson Hills, and Ouachita Mountains are a few of the intact areas that The Nature Conservancy is working to protect.



Tallgrass Prairie Preserve

The annual Round-up was just completed and details will be published in the next issue of *The Docent News*. Meanwhile, enjoy these photos from the 2003 Round up!



Cowboys hard at work



Bison leaving squeeze shoot



Round up 2003

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Ozarks Ecoregion

Overview

The Oklahoma Chapter has a history of conservation work in the Ozarks dating back to the late 1980s. Conservation staff has worked extensively with the U.S. Fish and Wildlife Service (USFWS) and the Tulsa Regional Oklahoma Grotto (TROG) to protect caves through land acquisition and gate installation. Several tracts acquired by the Conservancy were subsequently transferred to USFWS to become part of the Ozark Plateau National Wildlife Refuge. In addition, the chapter retains 3 preserves that protect cave systems.

Twin Cave

Twin Cave lies beneath the Lakemont Shores subdivision, a large but minimally developed residential/vacation home development near Grand Lake. The Conservancy has acquired numerous lots totaling approximately 30 acres overlying the cave. A cave stream flows through the cave. The cave harbors a maternity colony for the federally endangered gray bat (*Myotis grisescens*) numbering more than 20,000 individuals. The cave stream is inhabited by Ozark cavefish (*Amblyopsis rosae*) and blind cave crayfish (*Cambarus subterraneus*), both G1 species.

Eucha Preserve

Eucha Preserve is a 151-acre tract in the Spavinaw Creek

drainage basin. The preserve protects Long Cave and McGee Cave, both of which harbor more Ozark cavefish than any other site in Oklahoma. The blind cave crayfish also occurs in good numbers. Water quality is extremely high, and expansive habitat bodes well for the long-term viability of these populations.

Charley Owl Preserve

This 90-acre tract lies within the Ozark Plateau National Wildlife Refuge. The TNC preserve protects at least one cave opening to the extensive cave system protected by the Refuge. The cave underlying the tract protects a significant gray bat maternity colony. This is part of the larger cave system that also harbors a large maternity colony of Ozark big-eared bat (*Plecotus townsendii ingens*). The US Fish and Wildlife Service manages the area through a management agreement with the Conservancy.

Nickel Preserve

The J.T. Nickel Family Nature & Wildlife Preserve was created through an unprecedented conservation partnership between The Nature Conservancy and a private landowner that wished to ensure the lasting protection of this pristine woodland landscape. The Nickels committed to donate the 14,000-acre property to the Conservancy over a period of years. The Conservancy

initiated management at the site in November 2000.

The Nickel Preserve has been identified as a key conservation area in the protection of biological diversity in the Ozarks Ecoregion. The preserve harbors numerous species and plant communities identified as conservation targets in the Conservancy's ecoregional plan for the Ozarks. Primary conservation targets include oak-pine forest, pine-oak woodland and savanna, riparian forest, stream aquatic system, and cave ecosystem. The long-term maintenance of an ecologically functional landscape will be enhanced by the size and integrity of this largely intact area.

Primary threats to the site's conservation targets include residential development, conversion for cattle, fire exclusion, and invasive species. These threats will be addressed through legal protection of critical tracts, plant community restoration, fire management, and invasive species control. Measures of success are being developed to evaluate the success of strategies at abating threats and enhancing biodiversity health.

The Nature Conservancy will manage the Nickel Preserve as a core conservation area to support native forest, woodland, and savanna

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(Continued from page 9) communities. More than 1,200 acres of the flats and valleys converted to non-native pasture will be restored to native plant communities in an ambitious woodland and savanna restoration effort. As fire is returned to its historical role in this Ozark system, a diverse landscape mosaic is expected to emerge, with an even greater diversity and abundance of wildlife species.

A new 2,200 sq. ft. Headquarters Building was completed in early 2003 near the east entrance to the preserve. This log-cabin style facility houses staff offices, restrooms and a spacious area for meetings, receptions, and visitors. Two trails have been established at the headquarters. An informational kiosk, trailhead signs & markers, and road signage will inform and educate visitors to the Nickel Preserve.



Cucumber Tree Update

Both Sally Jo Bible, donor of the Cucumber Creek Preserve, and Jim Erwin, Preserve Director, have confirmed the existence of Cucumber Trees at Cucumber Creek Preserve! Jim tells us that they are very hard to get to, being about one half mile past ATV access along the creek bed. No we know! Thanks, Sally Jo and Jim, for providing us with this information.



Dec 2003 Docent Schedule

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
	Pat Jaynes		Duane Price			
<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
	Maureen Forsythe Steve Forsythe		Don Baird Larry Myers	Deana Brewster Dennis Brewster		Don Bruner TG
<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>
	Loretta Vives Van Vives		Marilyn Keefer			John Fisher TG
<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>
					June Endres	Scott Morgan Van Vives TG
<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>			