



# Highland Lakes Steward

December 2013

Volume 4, Issue 12

**MISSION**

The Texas Master Naturalist program is a natural resource-based volunteer training and development program sponsored statewide by Texas A&M AgriLife Extension and the Texas Parks and Wildlife Department.

The mission of the program is to develop a corps of well-informed volunteers who provide education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities for the state of Texas

**OFFICERS**

**President**  
Linda O’Nan  
onan.linda@gmail.com  
(830) 822-1834

**Vice-President**  
Pat Campbell  
pat.campbell@dishmail.net  
(512) 715-0176

**Secretary**  
Barbara Booth  
boothbarbara@hotmail.com  
(512) 470-5534

**Treasurer**  
Phillip Mitchell  
phillipmitchell@gmail.com  
(830) 693-0184

## NO MORE ANGRY BIRDS

By Linda O’Nan

“3 Hours, 4 women, 2 windows....priceless.” That was one of the building challenges some of us unskilled laborers brought to the bird blind project currently under construction at Inks Lake State Park. Thanks to many talented hands and hours and hours of hard work, the project is looking great. Ed Myatt, our chief architect, engineer, and foreman, rallied the



troops each day for their assignments. At this point, the project is about 80% complete, lacking only a floor, doors and viewing glass. It is spectacular! Lots of fun work remains—a rock skirting around the bottom of the building, construction of a

water feature, handicap ramp, and of course, installing feeding stations, etc. Anticipated long term projects include native plant gardens, butterfly garden, walkways, and educational materials. So many thanks to our wonderfully skilled volunteers for many, many days of hard work - Jerry Stacy, George Brugnoli, Ed Lilley, David Payton, Ray Buchanan, Phillip Mitchell, Judy Parker (our working photographer), Bonnie Mikels, Vicki Myatt, Cathy Hill, Susan Morgan (Kim Soechting & Susan provided lunch for all one day), Paula D’Orsogna, John McClintock, Ray Zender, Billie Gunther and myself. David also bought lunch for all the workers one day, as well as liquid refreshment provided by George & Ed. Many of this group never missed a day, despite inclement weather and an injury or two! Great TEAMWORK y’all!

Our December Awards Banquet was fabulous. Thanks to our wonderful committee chairs, awesome Lyn Davis and Tom Ashcroft, who spent many hours planning this festive event (woo hoo--the ants were a big hit!) Many other hard-working volunteers helped decorate, set up the silent auc-

(Continued on page 2)

## INSIDE THIS ISSUE:

<b>No More Angry Birds</b>	<b>1</b>
Linda O'Nan	
<b>January Program</b>	<b>2</b>
Pat Campbell	
<b>Christmas Awards Banquet Photos</b>	<b>3</b>
Jerry Stone	
<b>Awards</b>	<b>4</b>
Jerry Stone	
<b>The Eagle Lady is Coming</b>	<b>7</b>
Sue Kersey	
<b>A Native Trout in Texas</b>	<b>8</b>
Becky Breazeale	
<b>Jimson Weed</b>	<b>9</b>
Jerry Stone	
<b>Towhee</b>	<b>10</b>
Joanne Fischer	
<b>Cottonwood Trees</b>	<b>12</b>
Phil Wyde	
<b>Gallery</b>	<b>17</b>
Jerry Stone, Sue Kersey, Mike Childers	

Please submit pictures, articles, reports, stories, announcements, etc. to

[chili865@gmail.com](mailto:chili865@gmail.com).

Photos should have captions and appropriate credits. The deadline for submissions to each month's newsletter is the 10th of the month and publication will be by the 15th.

### A NATURALIST'S 12 DAYS OF CHRISTMAS

On the 12<sup>th</sup> day of Christmas HLMN gave to me:  
 12 hummers hummin',  
 11 woodpeckers peckin',  
 10 sapsuckers suckin',  
 9 Painted ladies,  
 8 Praying mantis',

## JANUARY PROGRAM

by Pat Campbell

A big thank you to the Christmas party committee for a beautiful party. I, for one, had a great time.

Our January meeting is going to be on January 8, at 12:30 pm. at the Marble Falls Methodist Church. Please note, we are not meeting on the first Wednesday, as that is a holiday. Our speaker that day will be Charlie Neuenschwander. His talk will be on Basic Disaster Preparedness. He comes with 20 years experience in the Secret Service as well as 20 years in commercial security. We seem to be having our share of disasters these days, so this should be of major interest to all of us. Lunch plans will be announced at a later date.

Please note the meetings have been moved to 12:30 pm, not 1:00. Don't be late!

Merry Christmas and Happy New Year!!

---

*No More Angry Birds* (Continued from page 1)

tion, and clean up afterwards. The auction was a huge success by the way. Thanks to the generous donors for such great items that contributed to so much bidding interest. I congratulate all our chapter volunteers for such a successful year!

The year is almost over for my term as chapter president. I have so enjoyed getting to know a lot of you better and look forward to working with you on many new and old projects next year. What better way to spend your free time enjoying the outdoors, sharing your time and talents with young people, and know you can make a difference somehow. We need your continuing support to keep the HLMN mission alive and well. Our work is not over, so plan on a big year with all your naturalist friends!

Have a wonderful holiday—sing along with the carol below to get in the spirit, and of course,

**see you soon. Can't wait.** Hugs, Linda

7 au naturel "ists"swimming,  
 6 wood ducks a'layin';  
 5 Golden Dragonfly Wings...  
 4 calling old coots,  
 3 Bewick's wrens,  
 2 Mourning doves,  
 & the last chain-sawed Chinaberry.

# 2014 CHRISTMAS AWARDS BANQUET

Photos by Jerry Stone/Sue Kersey/Mike Childers



Many Thanks to  
Linda O’Nan  
President 2013



## Texas Master Naturalist Highland Lakes Chapter



**George Brugnoli & Pat Campbell**  
250 Hours

**Linda O'Nan**  
1000 Hours

## Highland Lakes Master Naturalists



## 2013 Certification Pin

Pictured from left to right: Marilyn Lageman, MJ Hansen, Kay Zagst, Billie Gunther, Lori Greco, Karyn Parker, Melanie Huff, Lee Kinard, Janis Kolby, Judy Parker, Fred Zagst, Harris Greenwood, Sheryl Smith Rodgers, Margy Butler, Joy Ellen Collins, Connie Barron, Ralph Herter, Melissa Duckworth, Susan Downey, Ray Buchanan, Nancy Ellison, Dennis Ellison, and Minnie Eaton

**TEXAS MASTER NATURALIST  
HIGHLAND LAKES CHAPTER**



**Wade Hibler swearing in the 2014 officers**

President: Pat Campbell  
Vice-President: Cris Faught  
Treasurer: Blair Feller

**Stewardship**

An ethic that embodies cooperative planning and management of environmental resources with organizations, communities and others to actively engage in the prevention of loss of habitat and facilitate its recovery in the interest of long-term sustainability

Photo Announcements assembled  
by Jerry Stone

By Sue Kersey

## “EAGLE LADY” IS COMING TO THE INKS DAM NATIONAL FISH HATCHERY

**December 28<sup>th</sup> at 10am-Free program**

**Inks Dam National Fish Hatchery,**

**345 Clay Young Road just off Park Road 4 West**



Photo by Sue Kersey

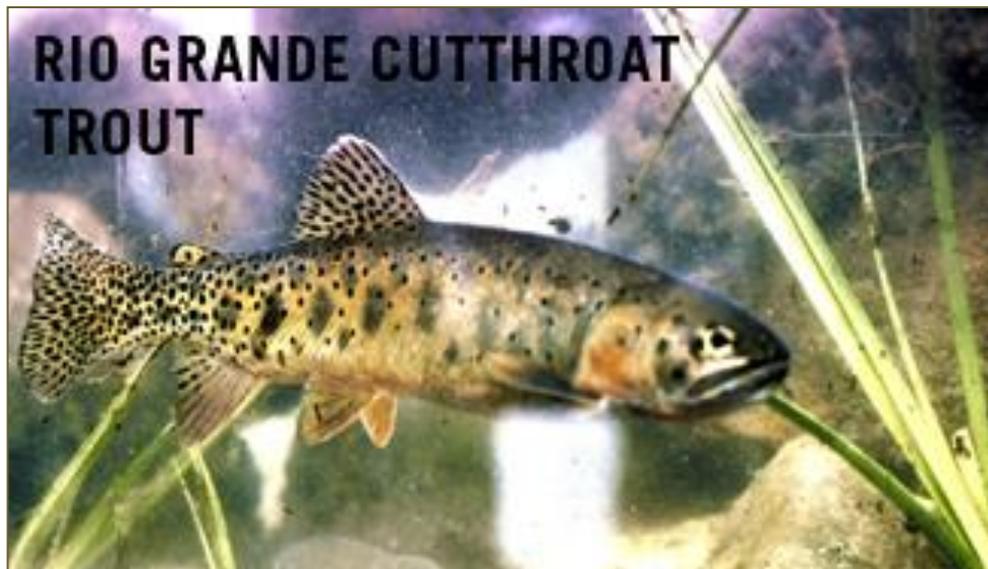
The Friends of the Inks Dam National Fish Hatchery are excited to be able to offer a free program for the general public to see up close and personal the amazing birds of prey that travel with Doris Mager. The program will showcase the birds, the value and characteristics of raptors and what it takes to be a wildlife rehabilitator. Traveling with her will be ET the 31 year old Great Horned Owl, Tex a small screech owl and EV Yaah an American kestrel. All of these birds in the programs are non-releasable due to injuries that prohibit their return to the wild or they have been imprinted on humans.

For over 40 years Doris Mager has been a tireless advocate for the conservation and preservation of American Raptors (birds of prey). She has rehabilitated over 80 Bald Eagles and other raptors. Mager was a member of Florida Audubon Society before she founded Save Our American Raptors (S.O.A. R.), a non-profit organization, with the focus on educating children and adults about the fate of America's beautiful birds of prey.

For information about this program or how to join the Friends of Inks Dam National Fish Hatchery please contact Phil Wyde at [prwyde@gmail.com](mailto:prwyde@gmail.com) or 325-388-8692

## A NATIVE TROUT IN TEXAS

By Becky Breazeale



Source: U. S. Fish and Wildlife Service

Texas may have had and could possibly once again have a population of native trout. There is strong evidence that the Rio Grande Cutthroat Trout inhabited the streams of the Guadalupe Mountains and were indigenous to that area. Texas Parks and Wildlife is partnering with Guadalupe River Trout Unlimited and New Mexico State to research the restoration of the Rio Grande Cutthroat Trout to the area.

Rio Grande Cutthroat Trout live in cool mountain streams and require low summer temperatures and clean gravel for spawning. They have an orange colored area below their jaw and big black spots (some up to one inch in diameter) along their body. In small streams, adults grow to about 10 inches and in rivers 14 to 15 inches. Historically, they have been found in streams off the Canadian, Pecos, and Rio Grande Rivers in Colorado and New Mexico.

In McKittrick Creek, a wild population of Rainbow Trout flourishes today. It is believed that the non native fish were stocked and out-competed the native cutthroats. A unique environment has been created for these Rainbow Trout in the Guadalupe Mountains. The eight mile section of the creek that holds the fish is near Guadalupe Peak which is 8,751 feet above sea level and is very remote. Bigtooth maple trees provide shade for the creek in the summer, keeping the water temperatures cool. Also, fishing is prohibited in Guadalupe National Park.

The Rio Grande Cutthroat Restoration Project offers an opportunity to bring back the native, almost endangered species. The team of researchers will examine the existing fish, insects, crustaceans, mollusks, arachnids, and other small animals that live in and around the creek. They will also monitor water quality, stream flows, and water and air temperatures. It is exciting to think that if the studies show that the creek will support the Cutthroat Trout, Texas will once again have a population of native trout.

### Resources:

McCorcle, Mick, Rio Grande Cutthroat Restoration Project Moves Forward: McKittrick Creek Field Study Scheduled This Fall Now Underway, Guadalupe River Trout Unlimited Newsletter, October, 2013.

[www.biologicaldiversity.org](http://www.biologicaldiversity.org)

[http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd\\_br\\_t3200\\_0166.pdf](http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_br_t3200_0166.pdf)

## JIMSON WEED

By Jerry Stone

These photos were taken 10/18/2013 of a Sacred thorn-apple, or a Jimsonweed, Thorn apple, Datura, Angel Trumpet, Sacred datura, western Jimson weed, Indian whiskey, Indian apple, Nightshade, Pricklybur, Toloacche, Moon lily or Moon-flower. These are all common names for plants with scientific names of *Datura wrightii* or *Datura innoxia*. It is difficult to distinguish between *D. wrightii* and *D. innoxia* as they are very similar in appearance and the variation within the species is large. Some literature indicated that *D. innoxia* has a purple tint at the outer fringe of the white flower and can commonly have more than five teeth at the flower edge. As these flowers clearly do not have a purple fringe and only have five teeth at the flower's edge, I am declaring them to be *Datura wrightii*. The species name of this plant is for Charles Wright, 1811 – 1885, world-wide collector but mainly in Texas (1837 – 1852).

We have lived in the same house in Horseshoe Bay for 16 years. They recently completed a rework of the main roads in our area. The rework consisted of grinding up the existing road base, adding curbs, base leveling and compaction, adding ribbon curbs and a topping with an asphalt compound. This resulted in regrading the drainage and road edge. The roads were completed in our immediate area at the end of June. The

first several feet on ei-

ther side of the road were stripped bare of foliage.

For 16 years I have not seen any *Datura wrightii* along those roads. One of the first plants to sprout were these datura. I did a little research and found that it is not uncommon for the datura seeds to lay dormant for several years waiting on conditions to be right. They like disturbed soil and little competition. So we have enjoyed the large trumpet like flowers this fall. Unfortunately I am not sure with their late start that they had time to complete seed development prior to the freezes. I have also attached a couple photos showing the seed pods, obviously taken after the first hard freeze.

You should note that all the *Datura* plants contain dangerous levels of poison and may be fatal if ingested by humans and livestock. *Datura wrightii* is sacred to some native Americans and has been used in ceremonies and rites of passage. *Datura wrightii* has also been used to induce hallucination for recreational purposes. Ingestion of plant material can induce auditory and visual hallucinations with the active compounds being concentrated in the seedpods and roots; concentrations vary widely between samples, and onset is slow. This makes dosage estimation difficult and adds further risk to the potentially lethal side effects. So enjoy the flowers, but avoid the trip.



## TOWHEES

by Joanne Fischer

There are six species of Towhees in the United States – Abert's, California, Green-tailed, Canyon, Eastern and Spotted. The last four are all possible to spot in Texas. The Green-tailed Towhee can be found in the western and southern part of the state in winter, the Eastern and Spotted are common winter residents of the Hill Country and the Canyon Towhee can be spotted year round with the Hill Country being the very eastern edge of its range.

Towhees are in the family Emberizidae (which is Sparrows and their allies) and all are of the genus *Pipilo*. Towhees are considered a kind of



large sparrow (they are about the same size as a cardinal). They have somewhat chunky bodies and long rounded tails and all have conical bills which combine sturdiness for cracking seeds and dexterity for grasping insects. Their diets consist primarily of insects in the summer and seeds in the winter.

The Towhee species have undergone numerous mergings and separations over the years. The Canyon and California Towhees were considered a single species named the Brown Towhee until 1989 when they became two separate species. And the Eastern and Spotted Towhees were at first considered two species



(the Red-eyed and the Spotted), then they were combined into one species, called the Rufous-sided Tow-

*(Continued on page 11)*

*(Continued from page 10)*

hee, and then in 1995 they were again split and this time called the Eastern Towhee (eastern territory range) and the Spotted Towhee (western territory range). In addition to the confusion caused by mergings and separations of the species, the Spotted and Eastern Towhees have overlapping ranges and as a result, they sometimes interbreed and create hybrids!

Towhees are primarily ground foraging birds and therefore they have strong legs and feet. Towhees have a characteristic two-footed foraging hop. They scratch with both feet together and move forward in short hops, kicking leaves in all directions while uncovering tasty morsels of food. In fact, bird watchers often know a towhee is present by the sound of rustling leaves in the underbrush before spotting the bird itself.

Besides being ground foragers, Towhees are ground-dwelling birds as well and have quite secretive natures. They spend most of their time in brush, thickets, overgrown fields and along forest edges where there is plenty of leaf cover for foraging and protection. They typically build their nests either on the ground with the nest cup sunk up to the rim in fallen leaves or close to the ground in grape, honeysuckle or greenbrier tangles.

An unfortunate fact regarding Towhees is that they are common victims of the parasitic Brown-headed Cowbird (the Eastern Towhee in particular). Towhees, unlike some other birds, show no ability to recognize or remove the imposter's eggs. Female cowbirds typically take out a towhee egg when laying their own, making the swap harder for the Towhee to discern.

The most common Towhee wintering in the Hill

Country is the Spotted Towhee. Male Spotted Towhees have jet-black upper parts and throat and their black wings and back have bright white spots. The flanks are warm rufous and the belly is white. Females have the same pattern but are warm brown where males are black. In flight, white corners are visible on the black tail.

The Eastern Towhee may also be seen in the Hill Country in winter. Eastern Towhee males are a striking sooty black above and on the throat, with warm rufous sides and white on the belly (basically just lacking the spots seen on the Spotted Towhee). Females have the same pattern, but again, the females are rich brown where the males are black.

The Canyon Towhee has the same body shape and size as the Eastern and Spotted Towhees but completely different coloring. Some consider the Canyon Towhee to be a very plain brown bird and many do confuse it with a sparrow. However to aid in identification, Canyon Towhees have warm rusty undertail coverts, a buffy throat, a hint of a reddish crown coloring and some display a distinct dark breast spot.

If you are fortunate to travel to the west or south and see a Green-tailed Towhee, you will discover that it is aptly named, having wings and a tail that are a deep olive green which set off a gray chest, white throat, and rufous crown.

A final bit of information about Towhees. The name "Towhee" was given to this genus of birds in 1731 by the naturalist and bird artist Mark Catesby who felt it was the sound he heard when the Towhee sang. Unfortunately I just can't get "towhee" out of the odd song of any of the towhees I've encountered.

## COTTONWOOD TREES (*POPULUS DELTOIDES*)

by Phil Wyde



Figure 1. Cottonwood in full fall plumage.



Figure 2. Closeup of cottonwood leaves



Figure 3. Illustrations of cottonwood leaf, catkins and buds

I decided to review cottonwood trees this month because over the years I have seen some magnificent specimens of this tree and really did not know much about them. I am going to write this review using the bulleted format that I used

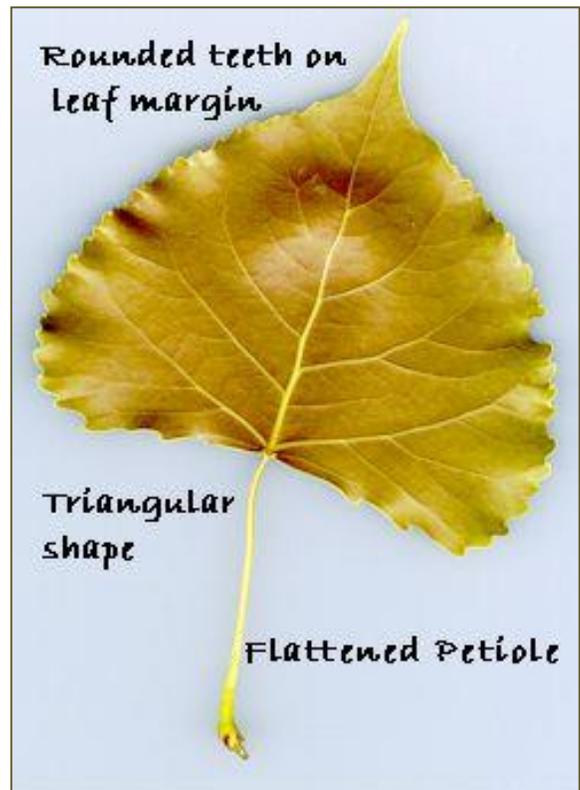


Figure 4. A cottonwood leaf showing some key characteristics

last month. I have no idea if you favored that presentation over formal writing, but since I did not receive any feedback, I will just go ahead and use it.

There are cottonwood species native to North America, Europe and western Asia (ref. 1).

- The three species that are common to North America are the Eastern cottonwood (found throughout the Eastern U.S. including Texas), the black cottonwood (found in the Western U.S.) and the Fremont cottonwood that primarily grows in California (ref. 3). There are also allusions to the so called “Plains cottonwood.” However, there is debate whether this is a separate species or only a variation of the Eastern cottonwood (ref. 4). Using the predominant view, the Latin name of the plains cottonwood is *Populus deltoides* var. *occidentalis*. This variant is predominant in the central part of the United States from Texas to Manitoba, Canada. This review will concentrate primarily on the Eastern and Central cottonwoods, *Populus deltoides* and *Populus deltoides* var. *occidentalis*.
- Interestingly, cottonwoods are one of North America’s largest hardwood trees, but have rather soft wood (ref. 2). So Master Naturalists, how can this be? To add to the mystery, balsa trees are in the same tree family, are hardwood trees and they have even softer wood. Again, how can a tree be a hardwood and have soft wood? If you can make it to the end of this article, you will find the answer just before the list of references. Alternatively you can skip reading further and ask Blair Feller.
- Western cottonwood trees are similar to the Eastern cottonwood, but have slightly different serration of their leaves, and minor differences in their flower and seed pod structures. They are generally larger than their Eastern cousins (ref. 3).
- The leaves of cottonwood trees are alternate and triangular; they are also coarsely toothed and curved and the leafstalks (petioles) are flattened (see Figs. 2 and 4). The second portion of the Latin name of cottonwood trees (*Populus deltoides*) refers to the triangular—shaped leaves of these trees.
- The bark of young trees is yellowish green or greenish-tan and smooth. As the bark matures it becomes ash-gray and develops long, deep, interconnecting furrows with broadly round ridges (ref. 4 and 5).
- Of course we all know why cottonwood trees have the word cotton in their common name. But just in case you don’t, it comes from the fact that their seeds are borne on “cottony” structures that allow them to be blown long distances in the air before settling to ground (much like daffodil seeds). (They are also known as water poplars or poplar trees.) Cottonwood trees can be either male or female (ref. 10). Only the female tree produces the fluffy white seeds. The seeds are produced in early spring and if you have ever lived near a cottonwood producing seeds, the air can be full of these floating parcels of DNA.
- The seeds of cottonwood trees are very small (1mm wide by 4 mm long; ref. 10). What is remarkable about this fact is that successful germination of one of these seeds can lead to the growth of one of the largest trees in North America, up to 100 ft. tall, a trunk in excess of 5 ft. in diameter and a branch spread of over 100 feet across; ref. 10). (It is in fact the largest native tree between the Appalachian and Rocky Mountains (ref. 12).
- The flowers on both the male and female trees are called catkins (see middle illustration in Fig. 3).

- I find it interesting that cottonwood species are members of the tree family, *Salicaceae*, or willow family, since they do not look at all like willow trees. Regardless, they are close relatives of both willows and the quaking aspen (*Populus tremuloides*) that is iconic in both the Rockies and New England. Given this close relationship it is not surprising that both willows and cottonwoods can often be found growing together along lakes, streams, rivers and alluvial flood plains (ref. 4).
- The two greatest threats to cottonwood trees are fire and prolonged drought (ref. 4). They are very vulnerable to the former as even light burning will kill seedlings and saplings, while hotter fires can disrupt the bark on older trees making them vulnerable to decay.
- Cottonwood trees are generally not long-lived, with their average age span being only between 30 to 60 years (ref. 12).
- Although not long-lived, cottonwood trees are very fast growing and as indicated above can grow very large (e.g., 80 to >100 feet tall with equivalent branch spreads).
- Because of their rapid growth cottonwood trees can be utilized as a windbreak. However, this use is limited since they are so relatively short-lived; (ref. 4).
- If you want to read a romanticized version of the relationship of cottonwood trees to Texas and the Alamo go to reference 6. I would present a portion of story here, but as is true of so much Texas history and lore, it is hard to tell what is fact and what if fiction.
- Are cottonwood trees worth much (ref 8 and 12)? Compared to the wood of oak, elm and maple trees, one would think not. Its wood is soft, light and not very strong. Moreover, wood from cottonwood trees do not provide many BTUs of energy when used for firewood. In addition, cottonwoods are rather uncontrollable and often sprout when and where they aren't wanted. Moreover, they often form impenetrable tree stands. As if that is not enough, they are also well known for breaking apart during storm events -- and maybe even more common, for having their billowy seeds clog water intake structures and screens – and air conditioning units.
- Yet, in the words of Jim Bottorff (ref. 8), Forest Stewardship Wildlife Biologist, retired from the Washington Department of Natural Resources, “As exasperating as cottonwood trees can be to some forestland owners, they are an invaluable wildlife habitat resource throughout their range. Where they can be protected –do it! And if they don't occur within suitable habitat on your property, they are easily planted. In fact they are one of the easiest species to propagate, and one of the fastest to deliver results.”
- What prompted this testimonial are the following facts (taken from ref 8):
  - Young cottonwood twigs, bark, cambium and leaves are a major food source for many browsing and gnawing animals.
  - The many insects that feed on, or live in cottonwood trees (including butterflies and caterpillars), provide food for the predatory birds and mammals.
  - Beavers use cottonwood for food, for making dams and for building their lodges.
  - Cottonwood trees often provide nest platforms and hunting perches for a variety of predatory birds including eagles and osprey.
  - In drier environments, cottonwoods often

provide the only large tree for long distances. In these environments, turkeys often choose these trees for night roosts, a very important factor for the success of these birds.

- Because of the tendency of branches of older cottonwood trees to break off, and/or develop decay issues, cottonwood trees often develop holes that make valuable habitat for cavity-dependent birds and mammals.
- Although the wood of the cottonwood trees is relatively soft and light and so is not very desirable for building great structures, it was once used as a source of wood for construction of canoes, barns and houses by pioneers and American Indians. But now it is much more commonly used to make pulp, interior parts of furniture (drawers, backs and partitions), pallets, shipping crates, plywood, matches, boxes and other things where an inexpensive but strong enough wood is suitable (ref. 4, 9, 11 and 12). Cottonwood is also good for making wood shavings for stuffing and packing (ref. 12).
- The tree must have some value and esteem as the Eastern cottonwood is the state tree of Kansas, Wyoming and Nebraska (ref. 10 and 12).
- As pointed out by Matt Turner in his book, *Remarkable Plants of Texas* (ref. 12), one of the best attributes of the cottonwood tree is its sheer beauty and stature.”
- To the pioneers crossing the Great Plains where there were very few trees and where the region was frequently seen as a very foreign and hostile environment (ref. 10), cottonwoods were almost certainly held in high regard since seeing one offered the possibility of wood and shade and of finding water.
- In those days the tree’s bark was used as forage for horses, as well as a bitter medicinal tea to relieve pain, fever and inflammation (ref. 11 and 12). This is not far-fetched as bark from willow trees has been utilized similarly. Because of its softness, the bark and wood of cottonwood trees are still utilized today by some artists to make carvings (ref. 11 and 12).
- Several of the characteristic traits of cottonwood trees appeared to have helped cottonwoods to grow on the Great Plains where most tree species did not grow. For example, to survive in that environment trees had to survive prairie fires. Cottonwoods appear to have done this by their penchant for growing on the edges of rivers and streams and by developing a very thick, corky bark upon maturity (ref. 11).
- As for their preference for growing along streams and rivers, it is likely that this occurs not only because of the trees partiality for sandy and moist soils, but also because many of their seeds land on the surface of water where they eventually end up along the waterline on sandbars, islands and river banks. If there is not much fluctuation in the water level and the seeds are not washed away, they can germinate and establish a tree (or trees; ref. 11). This speculation is not far-fetched as one apparently can often walk along a sandbar and see a row of newly sprouted cottonwoods at the former waterline (ref. 11). Another factor is that cottonwood trees require up to 50 gallons of water/day and even though they often have extensive roots, these roots are relatively shallow (ref. 12). Thus, it really does need to be near water and can quickly get into

trouble during prolonged droughts.

- Another interesting fact about cottonwood trees is that they are very easy to grow. Small saplings with only a few bare roots attached can be transplanted and they will grow. Indeed, fence posts made from cottonwood can sprout and take root when placed in moist soil (ref. 12).
- I alluded to the abundance of seeds produced by cottonwood trees in the spring. Indeed, a single large cottonwood may release as many as 48 MILLION seeds (ref. 12).

The answer to the question raised at the beginning of this article, “How can a hardwood tree have relatively soft wood?” It turns out that the primary trait that differentiates hardwood and softwood trees has nothing to do with the hardness of the wood, but with how the tree reproduces. Hardwood trees are angiosperms, i.e., they are plants that reproduce with covered seeds (some examples being an apple, an acorn and the seeds of most non-conifer [pine] trees). In contrast, softwoods are gymnosperms whose seeds fall to the ground as is [naked], e.g., pine tree seeds which grow in hard cones but whose seeds are dispersed uncovered; (ref. 3).

## References

1. [www.Ask.com/images](http://www.Ask.com/images)
2. [http://forestry.about.com/cs/treeid/a/the\\_cottonwood.htm](http://forestry.about.com/cs/treeid/a/the_cottonwood.htm)
3. <http://science.howstuffworks.com/life/genetic/question598.htm>
4. <http://www3.northern.edu/natsource/TREESA1/Easter1.htm>
5. [https://www.natlarb.com/html/plains\\_cottonwood.html](https://www.natlarb.com/html/plains_cottonwood.html)
6. [https://www.natlarb.com/html/plains\\_cottonwood.html](https://www.natlarb.com/html/plains_cottonwood.html)
7. <http://www.tpwmagazine.com/archive/2006/mar/legend/>
8. <http://foreststewardshipnotes.wordpress.com/2012/11/26/what-good-is-a-cottonwood-tree/>
9. [http://en.wikipedia.org/wiki/Populus\\_sect.\\_Aigeiros](http://en.wikipedia.org/wiki/Populus_sect._Aigeiros)
10. <http://www.gpnc.org/cottonwood.htm>
11. <http://www2.arborday.org/programs/nationalTree/cottonwood.cfm>
12. Turner, M.W. 2009. Cottonwood *Populus deltoides* in Remarkable Plants of Texas, pp. 59-63, The University of Texas Press, Austin, TX.

# GALLERY

By Jerry Stone



Frostweed photos taken 12/7/2013 in HSB



Fall color & Bridge taken in Horseshoe Bay 11/21/2013



Sleepy Orange butterfly taken 11/21/2013



Acorn from pin oak taken 11/9/2013

# GALLERY



Clockwise: Osprey, Great Blue Heron, Northern Cardinal and Sharp-shinned hawk. by Sue Kersey



Palo Duro Canyon State Park 7/27/2013

by Mike Childers