Texas History Tour

Red

Pine Grove: Loblolly and Longleaf Pines: Texas' Most Famous Pines
Loblolly Pine (*Pinus taeda*)

- One of the most prominent forest trees in America, most abundant pine tree in Texas
- Most rapidly growing southern yellow pine. Can grow 3.5 feet in height and .5 feet in diameter each year.
- Most common timber tree planted in Texas. The wood, although weak and brittle, is commonly used for plywood, Kraft paper, newsprint, and rayon fiber
- Texas' famous "lost Pines" in Bastrop are well-known for their isolation from the pine forests of East Texas. They are 100 miles farther west than any others and represent the western edge of the distribution of this species. The Lost Pines are shorter and more drought tolerant than their Eastern relatives. Recent genetic research suggests that all extant East Texas loblolly pines descended from this isolated population.

Longleaf Pine (*Pinus palustris*)

- Not as abundant as other pines, but considered the largest and most important of the Southern yellow pines.
- It is one of our most stately and striking trees and its timber is the most valuable of all American pines. The wood is durable, heavy, hard, stiff, and very strong. It has been used in the construction of buildings and furniture. Unfortunately, it's popularity has led to its decline and while it once occupied 90 million acres, and now, only 12,000 acres of old growth forest remain.
- Longleaf pines are slow to start growing and have a "grass stage" that can last anywhere from 3-25 years. During this stage, only root growth is happening, and a mere tuft of needles is visible above ground, resembling evergreen grass. This stage is extremely fire resistant. Fires eliminate competition and fungal disease and are very beneficial for the trees. Longleaf pine forests are uniquely free of undergrowth and truly park-like. Once the roots are well-developed, the tree starts rapid growth of 3-6 feet per year.
- Interesting article: Photos Document the Last Remaining Old-Growth Pine Forests of the American South | Smithsonian (smithsonianmag.com)

Global Garden:

Welcome Fountain

Horsetail (*Equistem hyemale*) – this particular species is native to the old world, but other close species are native to Texas

- This plant is known as a living fossil. It's relatives date back to the Devonian period, more then 350 million years ago. For over 100 million years was much more diverse and dominated the understory of late Paleozoic forests. Some equisetids were large trees, reaching to 98 ft. tall. They are native to many parts of the Northern hemisphere, havngbeen present when the continents were joined.

- These forests hit their peak of diversity and abundance in the carboniferous period (350-290 MYA) during the carboniferous is when 75 % of the world's coal was formed, so horsetail relatives can be linked to a major source of modern energy.
- The most common use of horsetail in the history of our state was by both Native Americans and European settlers was as a cleaning and polishing agent (European settlers were familiar with the European species). Natives used them to polish pipes, bows, arrows, bones, tools, and fingernails.
- The plants polishing power comes from the large quantities of silica on the surface of the stems, which make it rough to the touch and a powerful scouring agent, superior to even sandpaper.

Sanctuary:

Sanctuary: Live Oak *(Quercus virginiana)*

- Live Oak wood is the heaviest of all oak wood and among the heaviest of all American wood. It is hard strong, heavy, and extremely dense. It resists decay, even when consistently exposed to wetting and drying.
- These qualities led to the wood being used extensively in wooden ships throughout the 18th century and during the last decade, massive amounts of live oak were used to construct the Navy's first frigates.
- Among these was the 44 gun *USS Constitution*, which earned the nickname *Old Ironside*, when British shots reportedly bounced off her sides in the historic victory over *HMS Guerriere* during the war of 1812.
- The Constitution is the oldest commissioned warship afloat in the world today
- Oak galls, a swelling produced by parasitic insects, mostly wasps, was used in oak gall ink. Most permanent record from the middle ages to the 20th century, were recorded with oak gall ink. Notable documents include Leonardo Davinci's notebooks, JS. Bach's manuscripts, and the US Constitution!
- Acorns were a food staple of indigenous people of Texas. They are rich in protein, fat, calcium, and other minerals. They could be boiled to remove tannins, then cooked and/or preserved in many different ways.
- Oaks are keystone species in every ecosystem they exist in. They provide food, shelter, nesting sites, and nesting material for countless animals. In recent years, entomologist and conservationist Doug Tallamy has shed light on the ecological importance of oaks, namely the amount of caterpillars that use them as a host plant. Collectively, oak trees support 897 caterpillar species, which are the main food source for terrestrial nesting birds.
- Live oaks are carry significant cultural and aesthetic value as a monarch of trees and a long-lived memorial. They can live hundreds of years and have seen many historical moments through time. Notable Texas Live Oaks are many, but some significant ones are:
    - The Freedom Tree – this live oak, located in Missouri City, TX is where enslaved workers on the Palmer Plantation learned of their freedom. The news of the emancipation of slaves reached Galveston, TX on June 19, 1865.
    - Treaty Oak – This famous live oak in Austin is reported to be where Stephen F. Austin signed the first boundary line agreement with native tribes
- The current state champion, largest live oak in Texas, is located in San Bernard National Wildlife Refuge in Brazoria County, and is 62 feet high, and 10 1/4 feet wide.

Botanists Alley:

Jimsonweed, Sacred thorn-apple (*Datura wrightii*)

- Drought-tolerant plant that can thrive in sun or part shade. With its striking white, trumpet-shaped flower, it is common as an ornamental. The white flowers open in the early evening and attract hawkmoths (also called hummingbird moths) as pollinators.
- It has a long storied history in Texas as a medicine and a poison.
- All parts of the plant are considered a toxin
- Recent investigations have identified images in ancient pictograms in the lower Pecos River area as *Datura* fruit
- Each native tribe's medicine men and shamans used the herb in its own way: to induce dreams, predict the future, acquire supernatural help and insight from guardian spirits, and more.
- It was used medicinally by native tribes and colonists. Indigenous people used the root as analgesic, to put patients under while broken limbs were set. Early Texas ranchers used it in a weak tea to treat asthma, and as a poultice to treat wounds, sores, and bruises on humans and pack animals.
- 19th century doctors used it to treat epilepsy (it is an anti-spasmotic), tetanus, palsy, rheumatism, and anything involving acute pain.
- In modern times, jimsonweed is considered a poison and is absent from ethnobotanical literature of indigenous groups that once inhabited Texas, suggesting that jimsonweed is too dangerous for practical application, and its sacred status may have discouraged discussion of the plant.

Purple coneflower (*Echinacea purpurea, Echinacea augustifolia*)

- One of our few native flowers that is as well known in gardening as in medicinal circles, it is so popular that the one place you are least likely to encounter it is in its native habitat. As one of the best recognized and most touted of herbal remedies, it has been extremely over-harvested.
- This was the most widely used medicinal plant of the Plains Indians, and has been employed for more ailments than any other plant
- Comanche people chewed the root for toothache, Kiowa and Cheyenne did the same for sore throats and coughs. Other tribes boiled the root into a tea for the same maladies. Other tribes swore it was an excellent remedy for snakebites and other stings and bites. Kiowa women would use the hard bristly flower disks as hair combs.
- Anglo healers did not take much notice of the plant until the second half of the 19th century, when a German lay physician, H.C.F Meyer, who formulated his own medication from it called Meyer's blood purifier. Through his work, it was determined by medicinal authorities of the time that echinacea was the new wonder drug. By the turn of the century, echinacea was the most popular of all medicinal plamts.
- Today, most supporters of medicinal remedies promote echinacea as a means to reduce severity of colds, flu, and fever. But, many still remember that it's uses run the gamet of applications for: infections and wounds, upper respiratory and urinary tract infections, strep throat, whooping cough, burns, herpes, skin ulcers, psoriasis, boils, eczema, arthritis, and toothaches!

Mediterranean: Eastern Red Cedar (*Juniperus virginiana* 'Taylor')

- Many early homes in the Texas Hill Country were built from eastern red cedar due to it's durability and lovely fragrance.
- Cedar wood contains a fragrant oil known as cedrol, which inhibit rot and repel insects, like termites and moths.
- Many Native Americans have used the smoke from various types of cedar for purification and cleansing. Many revered the Eastern red cedar as a "tree of life", using its aromatic oils in sweat lodges and for purification rituals.
- It is a pioneer species, meaning it is one of the first trees to recolonize disturbed sites, and it can spread aggressively. It is blamed for altering the prairie ecosystem in many parts of its range.
- Eastern Red Cedar is a species of Juniper and (*Juniperus)* and it is very similar in appearance to other juniper species in the state, like the ashe juniper. It is not a "true" cedar.
- All junipers produce cones that resemble berries and are called juniper berries. They are often aromatic and can be used as a spice.

Confetti: Texas Redbud (*Cercis canadensis*)

- This iconic native tree is known for its bright pink, early spring blooms that cover the branches before the leaves arrive. Blooming early is an ecological strategy for the tree because it blooms before most other plants and has the undivided attention of early spring pollinators. It is pollinated by long-tongues bees like carpenter bees, bumble bees, and mason bees.
- The glossy, heart-shaped leaves are later eaten by several species of butterflies and moths, as well as being cut by leaf-cutter bees for nest provisioning.
- This tree is used for ornamental purposes, but has so many ecological benefits, making it a wonderful choice for the landscape.

Blue

Arid:

Sumac (*Rhus virens*)

- Sumac fruit is quite tart and was frequently enjoyed by Comanche children as a natural sour-tart candy. Coprolites (fossilized poop!) prove that sumac fruits were enjoyed by indigenous people for the last 2-3000 years!
- Sumac leave contain high levels of tanninsa, making them useful for tanning hides and leathers.
- Sumac leaves were added to tobacco smoking mixes for ceremonies
- Various Texan tribes such as the Comanche, Kiowa, and Kiowa-Apache used it in their smoking mixes.
- The fruits were excellent sources of dye. Cherokee people made a black dye from it, and it was also used to dye wool black. At the turn of the century, sumac was mostly used to dye cotton

Spineless Prickly Pear (*Opuntia cacanapa*)

- Prickly Pear is the official state plant of Texas, it was made so by the Texas Legislature in 1995
- Outsiders may wonder why, as the prickly pear cactus is associated with dry and barren places full of nasty thorns! But it is one of the most historically important plant in the state. Practically every part of the plant – it's stems, flowers, fruit, seeds, and even sap – have been used from prehistoric to contemporary times, by every culture from Native Americans and Spanish colonials, to Hispanic and Anglo Texians and cowboys.
- It is also an important food source for wildlife and livestock. One can argue that the prickly pear plant has been most responsible for keeping humans and other animals from starving to death during harsh times.
- The pads were a food staple for indigenous people in the Western portion of the state. After spines are removed, the pads are ready to b e eaten boiled, steamed, roasted or simply raw. They are rich in vitamin A and calcium. Their most enduring legacy is the Hispanic dish, nopales or nopalitios, where they are sliced boiled, and sauteed, then added to dishes.
- The pads were also used as a healing agent, and applied topically to wounds, sores, swellings, and insect bites, or stop bleeding.
- The mucilage, or gel inside the pad has had many uses as well. The Kiowa used it to varnish moccasins. It could also be used to clarify water by people along the entire Rio Grande. The gel from the pads forms a scum on the surface, which after about half an hour, sinks to the bottom, taking sediment with it, leaving water remarkable clear.
- Prickly pear flowers, which are a beautiful, yellow short-lived flower, are extremely important for native pollinators. They are edible.
- After pollination, flowers give way to bright red fruits, often called pears or tunas. The fruit is very sweet and can be up to 70-80% sugar, and before the European introduction of sugarcane and honeybees, the only sweets available to American Indians of the Southwest. They are also rich in vitamin C, calcium, and phosphorous.
- In the 16th century, when Cabeza de Vaca was living with the coastal Indians, he recounted that one of the major highlights was tuna season. Tribes would travel man y miles to thickets believed to be south of San Antonio, and gorge on tunas for months, eating practically nothing else!
- The spines were employed as arrow tips for small arrows to kill birds, tattoo needles, and for minor surgical procedures.
- The cochineal insect, a small white scale insect, that resembles patches of cottony fungus, have a whole history themselves! These tiny insects produce carminic acid for protection from predators. Which makes a brilliant red, safe and natural dye known as cochineal. This dye was used by the axtecs, whose bright red robes dazzled Spanish conquistadors, who began to import it back home to Europe. From 1520-1850, it was just behind gold and silver as the most valuable export. It was one of the surest and brightest of red coloring agents and gained renown in the robes of European royalty, the redcoats of the British, and jackets of the Canadian Mounties. Carminic acid is still used

today to color foods, soft drinks, and cosmetics, since so many synthetic dyes have been linked to cancer.

Savannah: Honey Mesquite (*Neltuma glandulosa)*

- Mesquite trees are found all over our state, but is more common in the arid central and western territories. It is and has always been an important source of food, wood, and fuel in its native range.
- The wood, which is very hard and beautiful, making it desirable for furniture, and when burned, it imparts a pleasant smoky flavor.
- Mesquite pods were once hugely important as a source of food, they were the single most important food source for Native Americans in the desert Southwest. Its 3 most important qualities being its nutritional content, its reliability, and ability to be stored.
- The pods are roughly 15-35% sugar, and rich in calcium, iron, and other minerals. They contain 7-10% soluble fiber and 39% protein, almost twice what is found in commercial legumes like peas.
- It reliably flowers and produces fruit each year, even during drought, which may cause it to produce more fruit than usual. Making surviving harsh times attainable for indigenous people
- Traditional people of the Southwest chewed the green, unripe pods like a sweet candy, and unripe pods could also be made into a nutritious syrup, which is supposed to be great on pancakes, or a simple jelly
- Mesquite meal, was made from the mesocarp, or substance within the pods and between the seeds. The pods would be dried, roasted, and pounded, and then the seeds and hard husks removed. The meal could be used right away or dried into a cake or bread-like substance that could be kept indefinitely without spoiling.
- The mesquite meal would also be mixed with water to make a beverage called atole. It could be fermented into a beer-like drink as well.
- Mesquite bark contains an amber-colored gum that could be used a glue or a black stain for hair dye, face paint, or pottery glaze. The gum soaked in water was used to make a drink that would help with diarrhea, sore throat, stomach flu, or food poisoning.
- The pods are also food for deer, javalina, feral hogs, coyotes, jackrabbits, skunks, turkeys, dove, and quail and make excellent feed for cattle, hogs, horses, and mules.
- In the southwest, mesquite flowers are a major source of nectar for desert dwelling pollinators, and it is the principal source of nectar for honeybees, making a delicate, mild-flavored honey.
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Sabal Palm (*Sabal mexicana)*

- One of the most widespread and common palm trees found in Mexico and was once abundant in Texas, inhabiting thick bottomland forests along many Texas rivers dozens of miles from the gulf coast. While these palms have been planted ornamentally throughout Texas, agricultural clearing has destroyed much of the natural population aside from the Sabal Palm Audubon Center and Sanctuary near Brownsville, and scattered populations near Vanderbilt, TX and in the San Bernard National Wildlife Refuge in Brazoria County.
- The Sabal palm has valuable wood that lasts indefinitely and was used to construct rural houses in it's native range.

- The leaves were used for thatching for roofs and are currently used to manufacture chair seats, hats, handbags, and briefcases.
- The fruits are edible and are said to taste similar to a date, which also comes from a palm. The date palm, an old world species, are located right across from the sabal palms, in the savannah.

Sweetgum (*Liquidambar styraciflua*)

- Once a very Popular ornamental tree because of its striking fall foliage displaying beautiful red, purple, yellow, and orange leaves. But, it has become undesirable in some places because of its sometimes difficult to deal with fruits
- It is known for its hard, spiky fruits which you will never forget stepping on with bare feet!
- The name "sweetgum" comes from the resin that exudes from the bark when it is injured. Historically it was used medicinally, to treat diarrhea and as a salve for wounds, and to make chewing gum!
- The resin was used to add a distinctive balsamic flavoring to the first pipe of tobacco Aztec Emperor Moctezuma shared with Conquistador Hernando Cortez.

Upland Forest:

Cedar elm (*Ulmus crassifolia*)

- the "cedar" refers not to any trait of the tree itself, but to the junipers it likes to hang around with. And even those junipers are not really cedars.
- This tough and adaptable shade tree is the most wide-spread native elm in Texas. While it prefers the limestone "cedar breaks", it does well in heavy clay, compacted soils, and tolerates alkaline or salty soils.
- It is an upright or vase-shaped tree, excellent for casting shade from summer heat, yet deciduous so that it drops its golden yellow fall leaves to let in warming winter sun.
- Cedar elm wood is extremely strong and has exceptional shock resistance. It's often sold mixed with other elm hardwoods as "rock elm". It is used in a variety of manufacture, from caskets and furniture to fence posts and bee frames. It's fine grain bends well, so is used to make curved containers, boxes, crates, barrels and baskets.
- Several bird species thrive on the elm seeds, including the wild turkey and plain chachalaca; squirrels eat the buds and seeds.

Wax Myrtle (*Morella cerifera*)

- A wispy, 6-12 ft., multi-trunked, evergreen shrub, southern bayberry or wax myrtle can reach 20 ft. in height. The light olive-green foliage has a spicy fragrance. Pale blue fruits occur on female plants in the winter. Handsome gray bark is almost white on some plants.
- This popular evergreen ornamental is used for screens, hedges, landscaping, wetland gardens, habitat restoration, and as a source of honey. Essentially a shrub, it serves as an excellent screen plant, with both standard and dwarf varieties available. Because there are separate male and female plants, if you want berries you must have male plants close enough to the berry-producing female plants for pollination to occur.
- The leaves are aromatic, with an appealing, spicy fragrance when crushed, which repels mosquitoes
- Colonists separated the fruits' waxy covering in boiling water to make fragrant-burning candles, known as Bayberry Candles, a custom still followed in some countries.

- The berries have high nutrient content and are an important food source for migrating birds in the fall

Green

Culinary Garden:

Pecan (*Carya illinoinensis*)

- The Pecan is the official state tree of Texas! It has played a major role in the history of our state from prehistoric times through present day!
- The pecan tree is the largest species of the genus hickory, in the walnut family. It is native to south-central North America and typically found along rivers, streams and fertile bottomlands.
- The delicious pecan is rich in fats, protein, and minerals. During pre-Columbian times, fats were far scarcer, and pecans provided a critical and reliable source of protein in fat, so much so that they influenced the migration patterns of indigenous people. Cabeza De Vaca in 1530, described pilgrimages of Texas Indian tribes who would travel more than 100 miles to harvest pecans and subsist on them for 2 months.
- It is the only commercially grown nut in Texas, native to 152 counties and grown commercially in some thirty additional counties. Texas is usually the second largest producer of pecans, with average annual yields around 60 million pounds

Mexican Plum (*Prunus Mexicana*)

- This tree is known for clusters of fragrant white blooms that cover the branches in early spring, similar to the redbud tree
- Just as the name implies, Mexican plum has an edible plum that ripens in late summer that is dark-purple red in color. Birds and other small animals enjoy the small fruit, so plum-pickers should be ready to quickly pick the ripened fruit in late summer. Plums can be eaten straight from the tree or used to make jams and jellies.
- 270 species of butterflies and moths use these trees and their relatives like black cherry, as a host plant, giving them high ecological significance.

Corkscrew Willow *(Salix scarcuzam* 'Scarlet Curls')

- While considered a weed by many, willow trees in the genus *Salix* have many uses throughout history
- It is wonderful in erosion control. It easily establishes along waterways. It's interlacing, far-reaching roots form mats that buffer riverbanks from the scouring actin of fast moving water. Willow roots function as well, if not better than any other man-made method.

- Willow is probably most well-known for its medicinal uses. The bark, roots, and leaves have been used around the world as an analgesic and for relief of fever.

Texas Persimmon (*Diospyros texana*)

- The most noteworthy thing about the Texas persimmon is its fruit, which has been called "the sweetest natural Texas fruit on the range".
- The fruit is small, about 1 inch in diameter, black in color, and tastes like a sweet prune, has fed men and animals for millenia. The seeds and fruit were the third most abundant food found in an ancient cooking pit dating back to approximately 7000BC
- The fruit has been and is still made into jellies, jams, puddings, pies, quick breads, and even wines.
- Many native animals depend on the fruits during the fall, including deer, coyote, gray fox, red fox, ringtail, raccoon, javelina, turkey, and other birds.
- The wood, known as Texas Ebony, is strong, black in color, hard, even grained, and takes a high polish. It has been used for tool handles, engraving blocks, furniture, pen holders, picture frames, and even fiddle keys.

Sotol (*Dasylirion wheeleri*)

- In it's range, sotol was more responsible for food and material culture than any other plant.
- All Trans-Pecos ranchers know that in times of need, feed for their cattle can be found in the heart of the plant, by chopping off the leaves and cutting it open.
- Sotol heart was a food staple of many tribes of the region. While they could be eaten raw, the best method was for them to be roasted slowly in a pit. These sotol pits could contain hundreds of hearts and be 5 feet deep by 10 feet or more in diameter. The hearts could be pounded into a paste and sundried, then mixed with nuts and fruits, or ground into a flour, rehydrated, and baked into ash cakes in the winter as needed.
- The leaves were one source of fibers for Natives. They were used in such articles as sandals, mats, baskets, and many varieties of twisted cordage
- In a land of few or no trees, sotol's 15 foot flower stalk was used for a variety of needs such as basket frames, spear shafts, fireboards, fire tongs, knife handles, and digging sticks.
- Historical, mainly Apache uses, include teepee poles, cradleboards, headdresses, and one-string fiddles.