

HISTORICAL ECOLOGY OF THE TEXAS HILL COUNTRY

Historical Perspectives of
Vegetation Communities:

~1700-1900

Project History

- Work in progress
- Started in early 1990s
- Questioning popular assumptions, such as...
 - The Hill Country was originally dominated by grasslands that have been invaded by woodlands due to overgrazing/over-browsing and fire suppression
 - Native Americans burned on a regular basis
 - Ashe juniper is not native, invasive, etc.

1865 ▶

AREA INDIANS ANNUALLY
BURNED THE "DIVIDE"
GRASSLANDS TO PROVIDE
FRESH GRAZE FOR BUFFALO
AND ANTELOPE.



Putting the Brakes on Cedar

When Frederick Law Olmstead crossed the Colorado River in 1857, he described the Hill Country of Central Texas as "vast region, on which the live-oaks stand alone or in picturesque groups near and far upon the green sward, which rolls in long waves..." The first settlers found the landscape covered with little timber other than ancient cypress trees and some scattered, sturdy oaks growing upon a carpet of lush grasses and herbs.

But present-day patterns of vegetation in the Texas Hill Country shifted from rolling hills clothed in tall grasses. One of the most striking differences in the landscape is the large area that now is covered in dense cedar brakes—extensive stands of tall shrubs and trees dominated by ashe juniper, commonly known as cedar. This brush species has expanded from the ravines and canyons to which it was restricted in the past. Cedar now colonizes and persists in what were formerly pastures dotted with live oak and hackberry.

Ranchers are aware of the devastation that is gradually taking over the Hill Country. Many are apprehensive, knowing that cedar lowers the quality of pastures for deer and livestock. These animals use cedar for food only under the most severe conditions, preferring to browse on oaks and other hardwood species that cedar can shade out as it takes over. Although hand-chopping and chaining with bulldozers are used to control its spread, high labor costs make those methods too expensive for complete control. Meanwhile, the spread of cedar continues.

Three questions commonly asked

by ranchers have never been measured every year since their establishment. Some are located on badly overgrazed round-up pastures, which were removed in 1950. They were established in a time when cedar brakes had not been there for more than 60 years. Information on the effect of cedar on livestock production and how it has changed over the years has been scarce. One remarkable finding is that the



Example of Using Historic Accounts to Justify Management Practices

"...present-day patterns of vegetation in the Texas Hill Country have shifted from rolling hills clothed with tall grasses. One of the most striking differences in the landscape is the large area that now is covered with dense cedar brakes—extensive stands of tall shrubs and trees dominated by Ashe juniper, commonly known as cedar."

Claims based on historic accounts, cite Frederick Law Olmstead (1857).

Need to look at the validity of these claims and management goals for endangered species.



Project Outline

- Primary eye-witness accounts (>20)
 - Missionaries, prospectors, settlers, scientists, reporters
 - Frame of reference/context for accounts:
 - Major ecological regions
 - Major historic events
 - <1700
 - 1700-1800
 - 1800-1850
 - 1850-1900
- Other sources (historic maps, photos, buildings, original land grants/field survey notes, rare/endangered species habitat, land use histories)

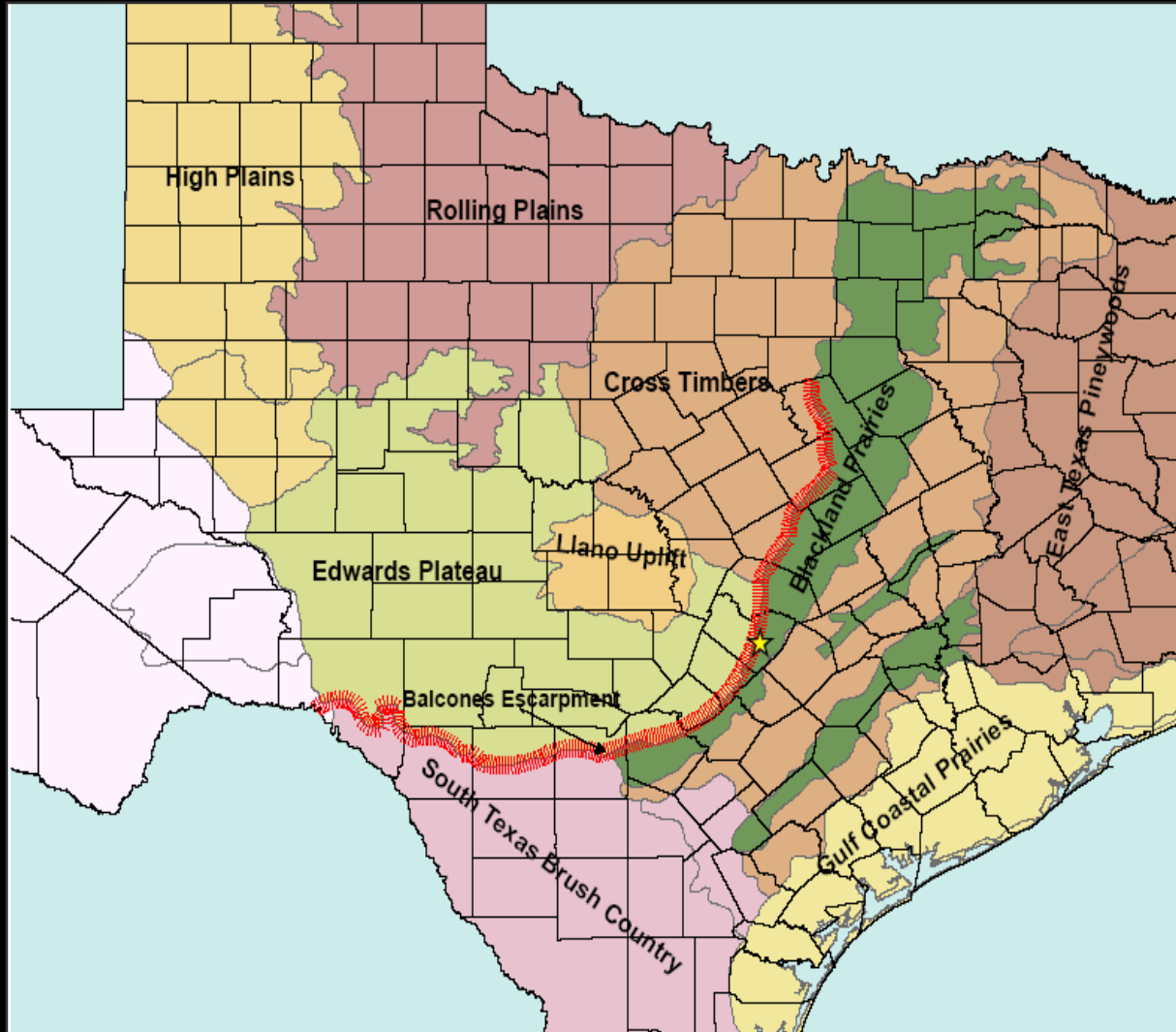
Prehistoric Records



Sketch (unknown artist) of Friesenhahn Cave from the Bulletin of the Texas Memorial Museum, 1961

Spatial Context for Historic Accounts

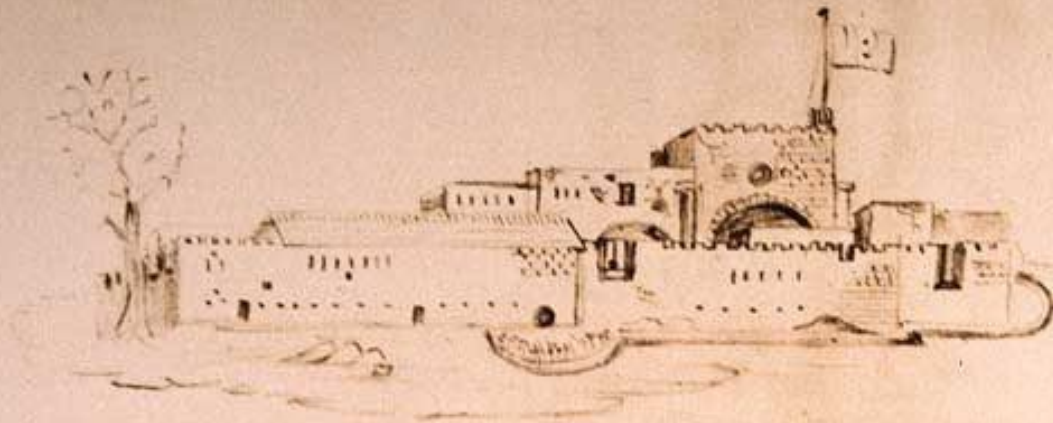
Major Ecological Regions



Major Historic Events: 1700-1800

>1700 Comanches move south into Texas, displacing other tribes

1716-1789 Spain establishes networks of Catholic missions and presidios, including the Alamo in 1718

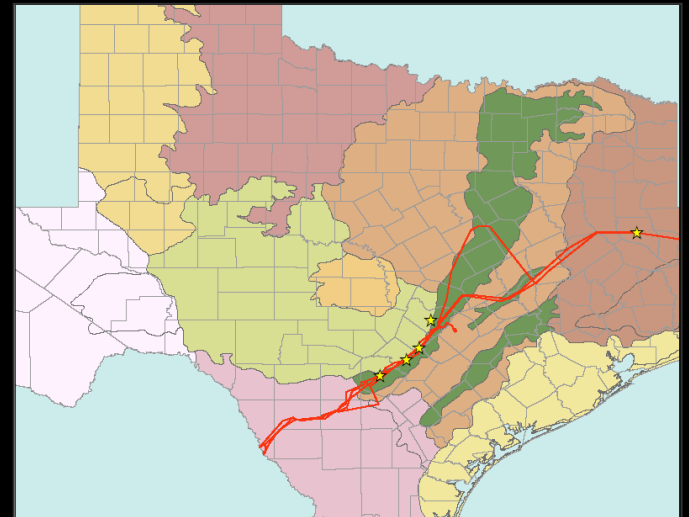


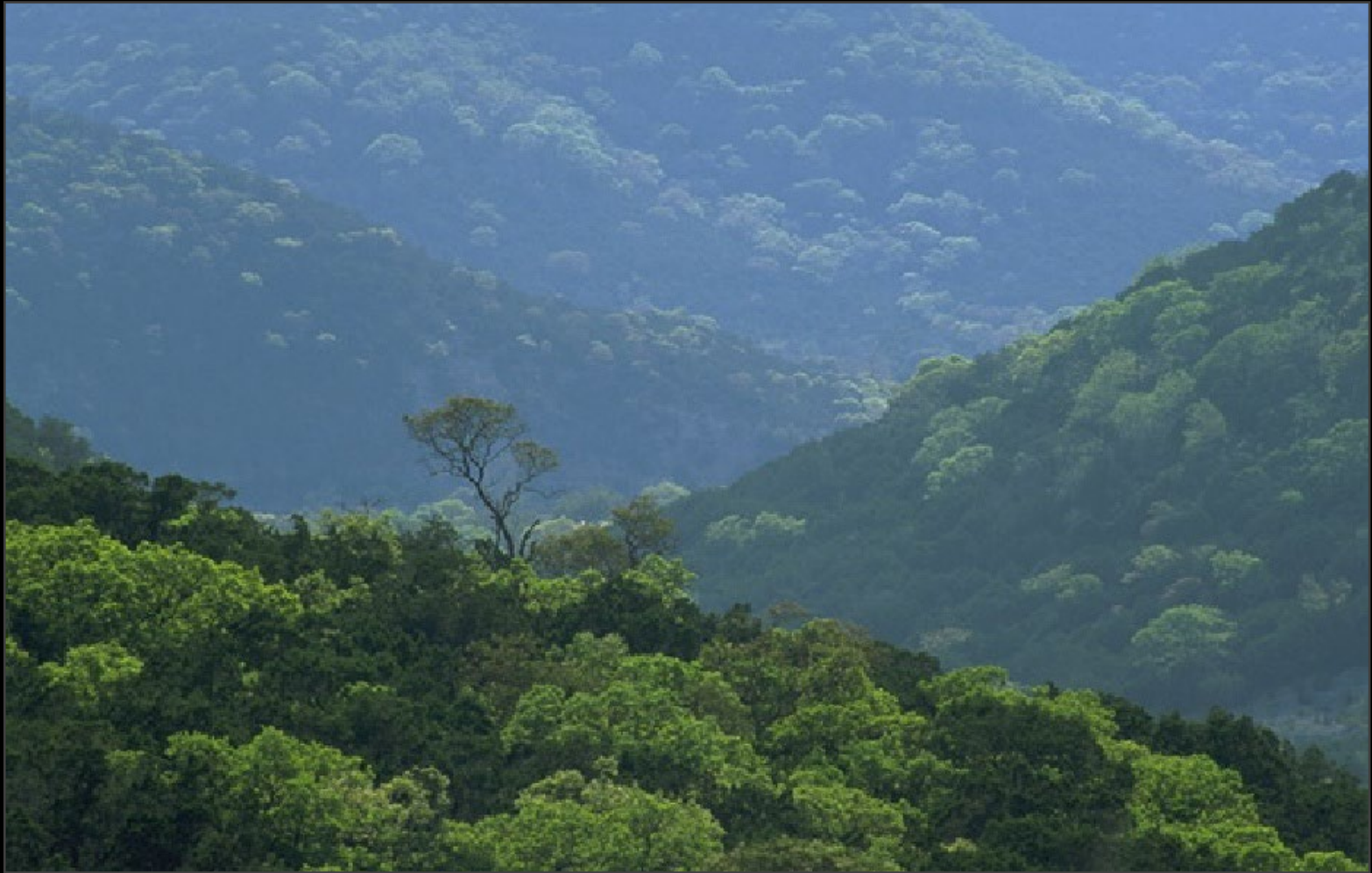
Vista del fuerte de San Antonio de Valero comunemente llamado del Alamo tomada desde la azotea de la casa de Barrinendi en la ciudad de Bexar por Sr. D. Juan Sanchez Alacada



“...we...travelled upstream with a desire to ford [the Guadalupe River] or reach its source. We travelled about three leagues of very rugged land owing to the heavy woods and many rocks; and at the end of the three leagues two soldiers left for upstream to reconnoiter the land. They said that it could not be traveled because it is more wooded and contains more rocks....The woods consist of oaks and junipers....”

--Fray Francisco Céliz, 1719





“Travel in this country was dangerous, for it borders on the Lomeria Grande inhabited by the warlike Apaches.” -- Father J.A. Pena, 1722

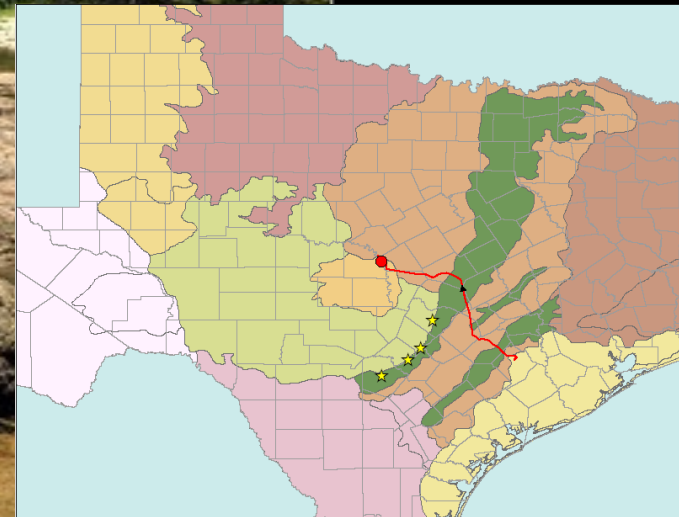


“...going past the Balcones [Escarpment], we arrived at the river they call Alarcón [Guadalupe River]. *This [travel] was an effort because of the many hills and rocks, the many arroyos formed by the hills, and some thickets that contain valuable cedar and oak timbers.*” -- Bernardo de Miranda, 1756

Major Historic Events: 1800-1850

- 1810-1821 Mexican War for Independence
- 1835-1836 Texas Revolution
First documented permanent European settlement in Austin
The new Texas government begins issuing land grants to immigrants
- 1837 Village of Waterloo (present-day Austin) is founded
William Barton settles at Barton Springs
- 1839 Mirabeau Lamar, second president of the Republic of Texas, relocates the capitol from Houston to Austin. Lamar launches an “exterminating war” of “total extinction” against Texas Indian tribes.
- 1845 Texas is incorporated into the United States

“...as far as the eye could reach was one extended plain covered with verdure and beautiful flowers, and over it were riding numerous Indians driving cavyards of horses. *On the left hand of the valley rose a mountain to the height of five hundred feet covered with tall cedar trees.* Never in my life have I seen so beautiful a landscape...On our right ran the clear waters of our own dear Colorado, before us lay the beautiful valley, and *on our left towered the high mountain of rock, covered with trees forever green and beautiful.*” --W.B. Dewees, 1830



Field survey notes and "witness trees" for land grant near Barton Springs, 1838

Survey for Wm Barton one Salto of land situated on the west side of the Colorado river on Big Spring creek being the quantity of land to which is entitled by virtue of a certificate No 194 Issued by the Board of Land Commissioners for the colony of Austin beginning at an elm at the mouth of a creek thence 4000 ft 00 in thence 4500 ft 00 in to a stake from which is a hackberry bearing 4500 ft 00 in one 4000 ft 00 in thence 3000 ft 00 in to a stake from which is a cedar bearing 4000 ft 00 in one 324 ft 00 in thence 3000 ft 00 in to a stake from which is a cedar bearing 4000 ft 00 in one 3000 ft 00 in the other 4000 ft 00 in thence 4000 ft 00 in where it intersects another line a spanish oak from which is a live oak bearing 4000 ft 00 in one 4000 ft 00 in thence 4000 ft 00 in with said cedars line 0000 ft to the corner on spring creek thence 4000 ft 00 in to the beginning containing 10000 acres of arable land Variation 11° East

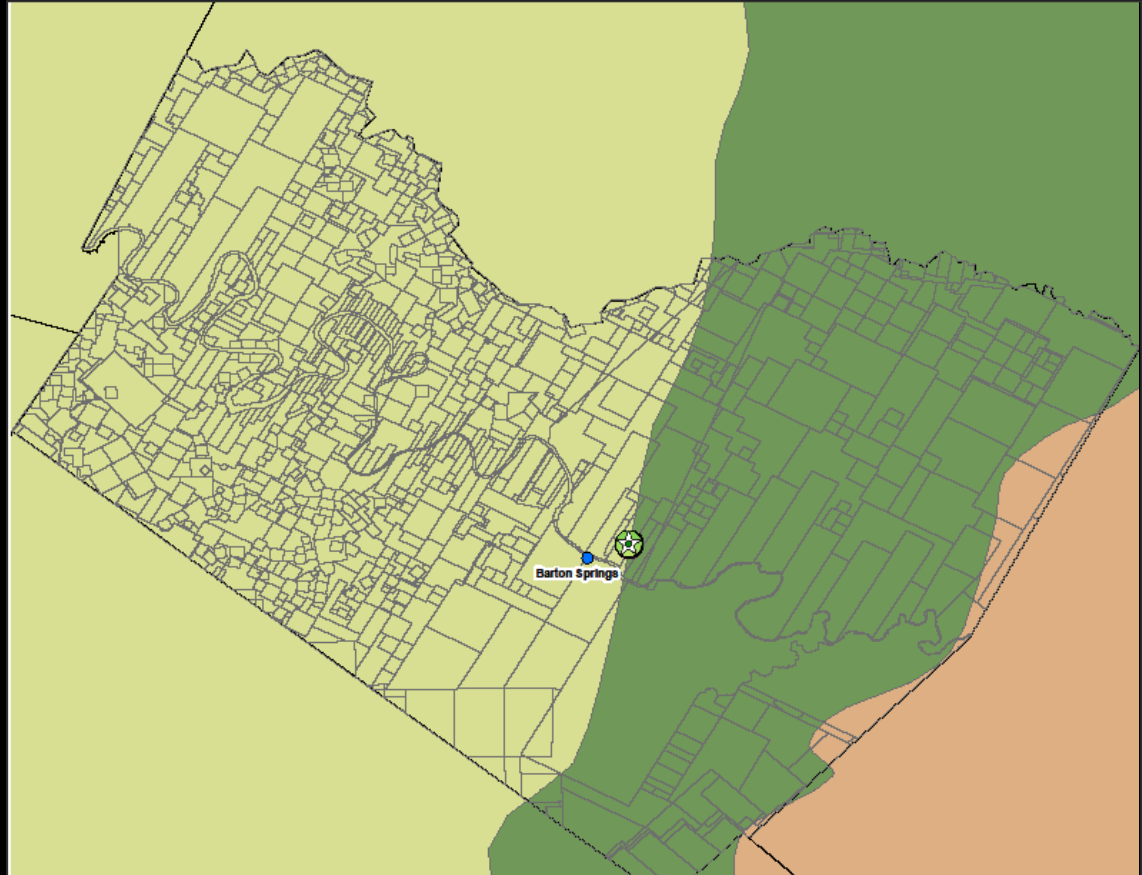
Geo Drayton }
 Geo Green }
 Big Springs March 10th 1838

Wm Haskaman }
 Geo C C

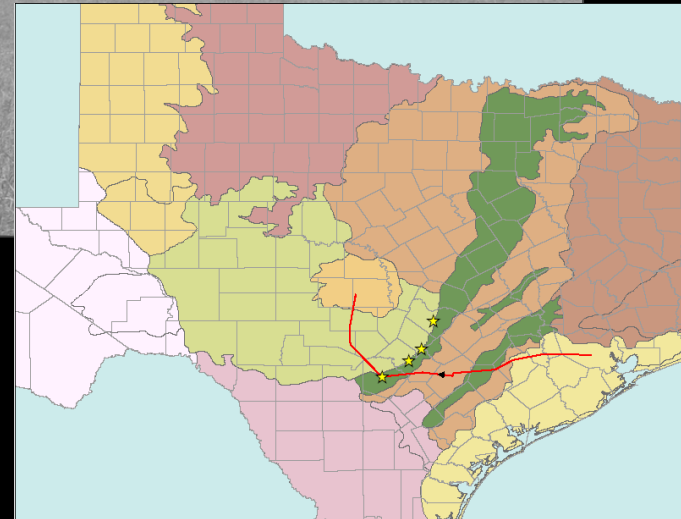
I do solemnly swear the foregoing survey was made since the opening of the new office in conformity to law
 Geo Haskaman
 April 6th 1838

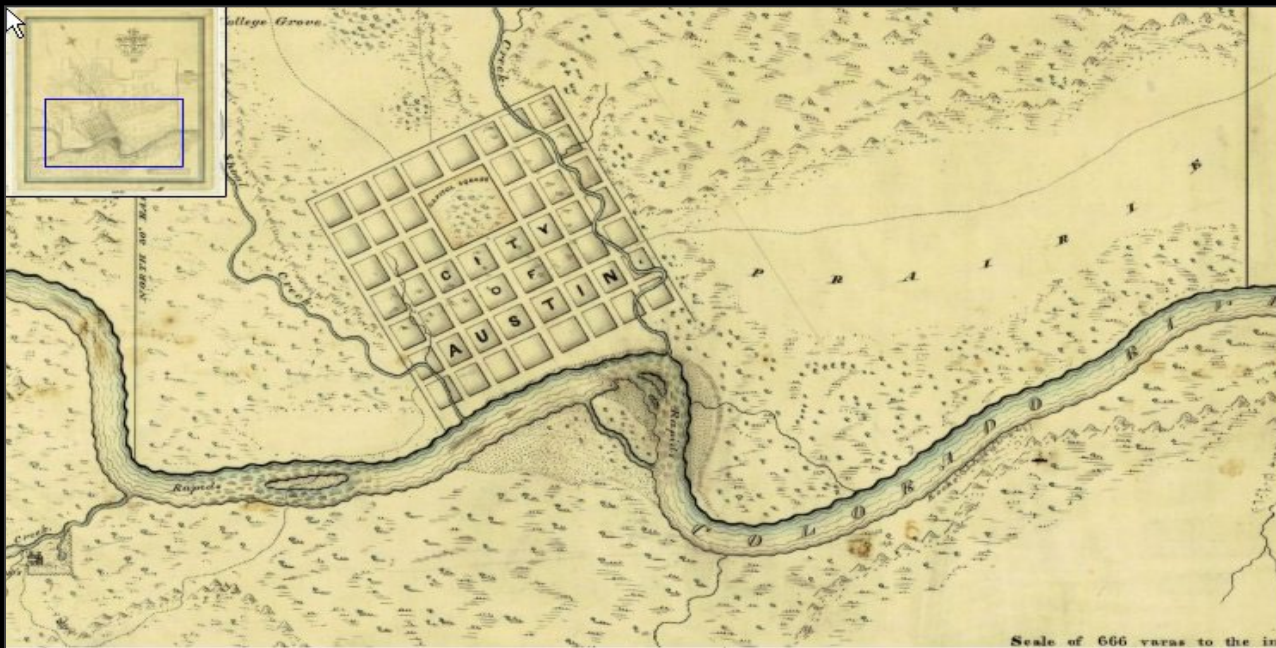
I certify that Allan Haskaman being sworn can depose me and in my office and acknowledge this foregoing under oath this 6 April 1838
 Geo C C

I certify that these corners of the above tract are found in the same place and the same way as according to law given under my hand this 6 April 1838
 Wm Haskaman



“Immediately before us appeared as an extensive lawn with a beautiful green sward, slightly tinged with the various flowers which decked its surface. Not a shrub or bush obstructed the monotony except the towering Live Oak.... *Further to the west appeared the skirting timber thickening the further it receded and rising gradually so that mile after mile of the dark boding forest rose to our view so that ones imagination or view would be extending to the intricacies of the forest in search for the curling smoke of the wigwam.*” -- W.J. Benedict, 1839





“The river bank is bluff, from whence a level prairie affording excellent ground for building lots, extends back about two-thirds of a mile, where it rises into *hills, most of them covered with timber....*” —Judge E. Waller, 1839

“[Austin] is about two miles distant from and in full view of *the Mountains... covered with Live Oak and Dwarf Cedar to their summits.*”

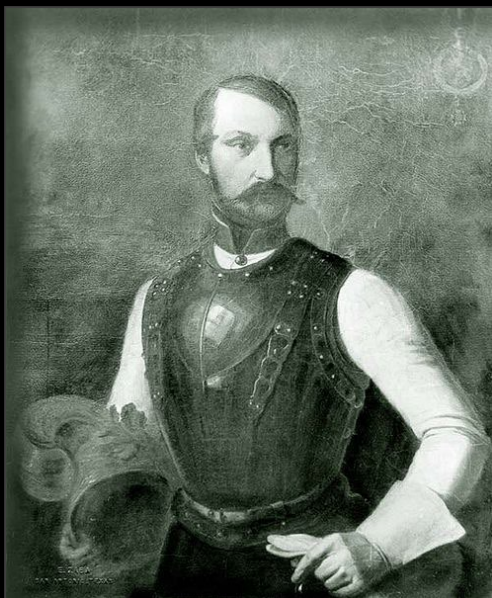
—A.C. Horton, I.W. Burton, W. Menefee, I. Campbell, L.P. Cooke, 1839

Austin is situated...about three miles from the Colorado mountains and on a beautiful rich prairie....*The Colorado mountains...are covered with Scrubby Live Oak, Cedar, and cliffs of rock, which present a delightful appearance.*”

— Surveyor Sandusky, 1839

“On the left bank of Comal Creek there is well forested bottom land which extends to the cedar, oak, and elm covered cliffs which here already have considerable height. Beyond this there is a high ridge with summits here and there similar to our Black Forest.”

“From its confluence with the Comal Creek I, with four companions, attempted to reach the head spring. However, having covered only five miles after hours of chopping through underbrush and heavy forest, we had to return without success.”



“...I ascended the ridge on horseback, forcing a path through the heavy cedar thickets and using the outcropping ledges as steps. The view from the high ridge, behind which there is a plateau several miles wide, is enchanting. I rode three or four miles into this tableland without coming to its end.”

-- Prince Carl of Solms-Braunfels, 1845



“The cedars start blooming in mid-January....In the case of the mountain cedars the branches begin quite low and the [trees] are scarcely 1½’ in diameter and 40’ high.”

“...[Geranium] grows in the hills, you see, on the plateau, which is here [New Braunfels] 200’ high, full of ravines that are densely covered with cedars and underbrush, and to which one has few ways of access along the slopes.”

-- F. Lindheimer, 1846

(near area where Lindheimer collected Bracted Twistflower)

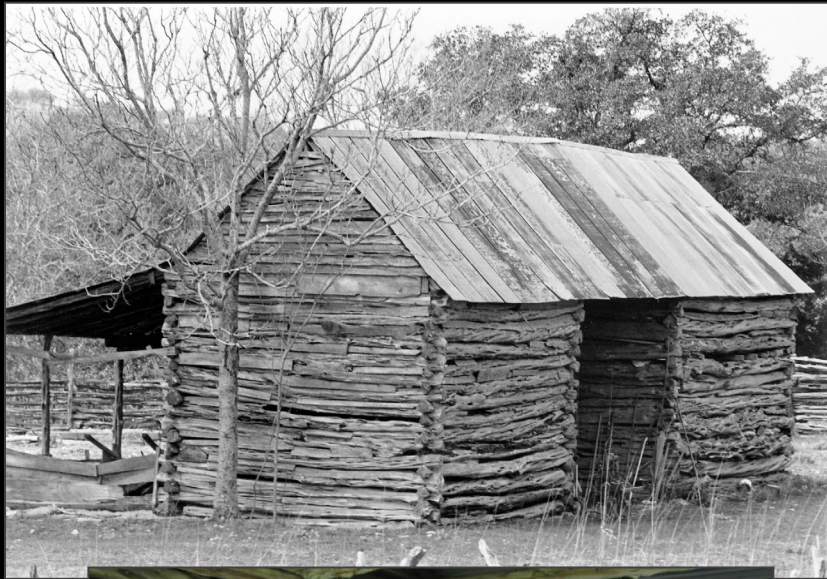


“The cedars here are not the stunted shrub-like plants found in the Northern States of the Union, but are stately trees with straight trunks, seldom more than twenty to twenty-five feet in height and one and one-half feet thick. They have a uniformly spreading crown....”

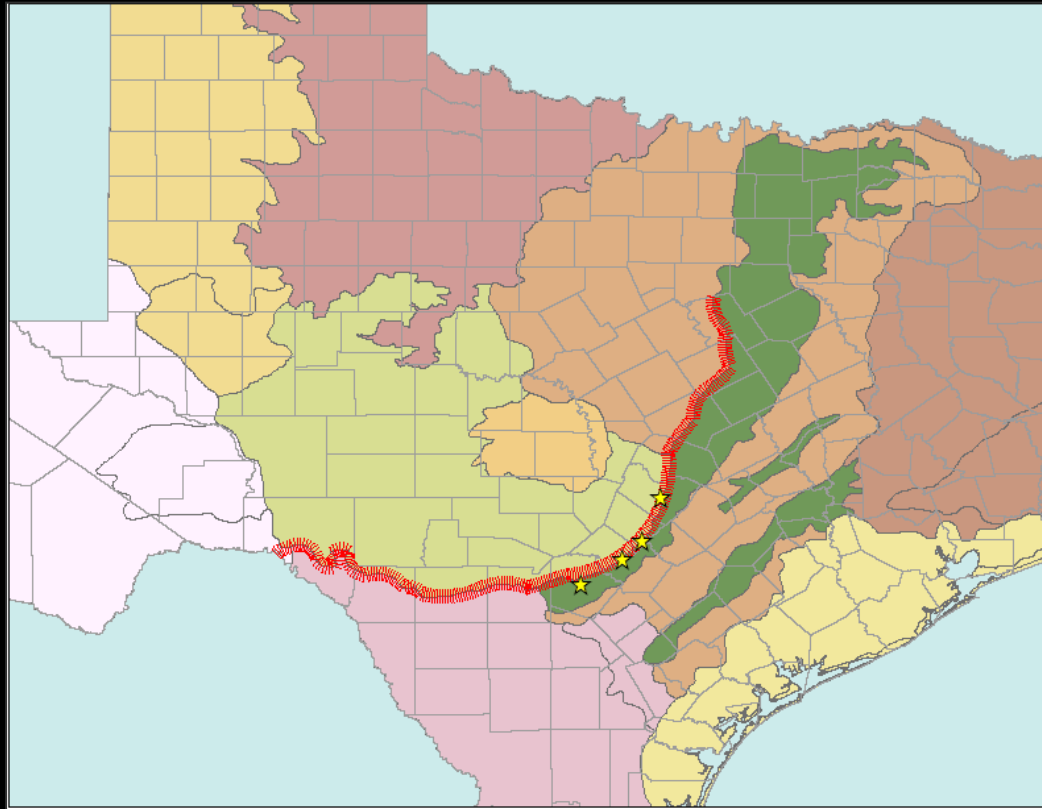
– F. Roemer, 1849

Champion Ashe juniper tree
New Braunfels
41 feet, 3.7 feet diameter





“This cedar forest is a treasure to the colonists of New Braunfels, since the wood was preferred above all others on account of its durability when used in building houses and fences.” – F. Roemer, 1849



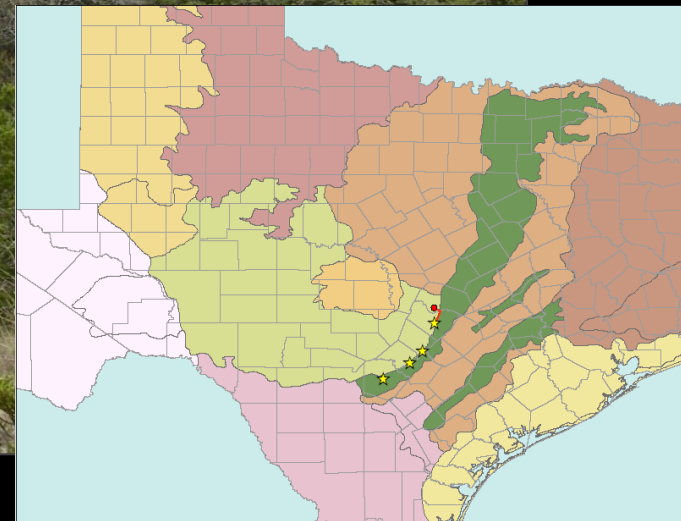
“The road [between New Braunfels and San Antonio] led us over an open, undulating prairie of great fertility. *A cedar-covered slope, similar to that at New Braunfels, was at our right for the first ten miles, which farther on flattened out into a low lying chain of hills.*” – F. Roemer, 1849

“*The hills which extend all the way from Austin to New Braunfels, are covered with heavy timber.*” – V. Bracht, 1849

Major Historic Events: 1850-1900

- | | | | |
|-----------|---|-------|--|
| 1854 | Two Indian reservations established in West-Central Texas. | 1883 | UT Austin opens |
| 1859 | Indians on the Texas reservations moved to reservations in Oklahoma | 1888 | Completion of Texas State Capitol |
| 1861-1865 | Civil War | 1889 | Survey reports 25 buffalo remaining in the Texas panhandle |
| 1868 | First patent granted for barbed wire | 1893 | Completion of first Colorado River dam |
| 1871 | First train arrives in Austin | 1894 | Oil discovered in Texas |
| 1872 | Yellowstone established as first national park | 1900 | Last records of passenger pigeons in Texas. U.S. wild buffalo population drops to fewer than 40 animals. |
| 1875 | Last free band of Comanches surrenders and moves to Fort Sill Reservation in Oklahoma | >1900 | Continued expansion of livestock industries on the Edwards Plateau |
| 1878 | Huston-Tillotson opens | | |

“We rode [from Austin] to the Brushy Creek, 20 miles [near Cedar Park], and encamped for the night. Our road was for about 14 miles of the way over a rich rolling prairie and for about *six miles through a heavy cedar brake*. Cedar is the main reliance for rail timber in this section, the live oak being too gnarled for such purposes.”
-- A. S. Johnston, 1855





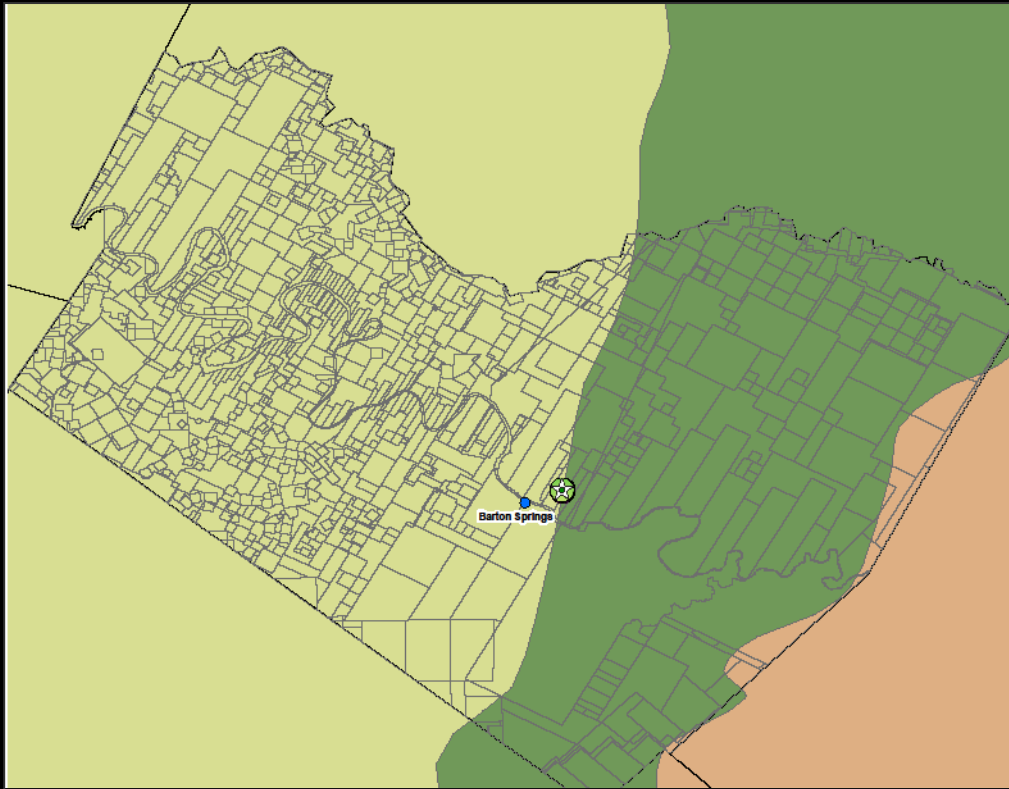
“I have visited Austin for the first time...The surrounding country is quite beautiful...*dark, steep, cedar-covered mountains rise about five miles north of the city.*” -- V. Bracht, 1849

“*The country on [Barton] creek presents an extensive range of cedar hills and is much broken.*” – J. De Cordova, 1858



“Beyond [San Marcos] our road approached closely the hill-range, which is made up of spurs coming down from mountains North. They are well wooded with cedar and live-oak.”

“Behind us were the continuous wooded heights, with a thick screen of cedars; before us, very beautiful prairies....” –F.L. Olmstead, 1857



“Wild lands [in Travis County] may be purchased at very low rates. The cost of improvements is a serious item; but when a cedar fence is once put round a plantation it will need but little repair for many years. *With vast prairies, we have also cedar lands at intervals seldom exceeding five miles, and these can be purchased at a small price. The planter finds a cedar lot of indispensable value, from the abundant material for improvements with which it furnishes him.*” -- J. De Cordova, 1858

Our fences are chiefly made of cedar-rails, from the cedar-brake above Austin.
- S.J. Wood, 1861



For Sale: “500 acres of land [in Travis County] out of the headright quarter of a league of WILKINSON SPARKS, situated on the river Colorado, opposite the city of Austin, and *including a fine cedar brake.*”

-- J. De Cordova, 1858

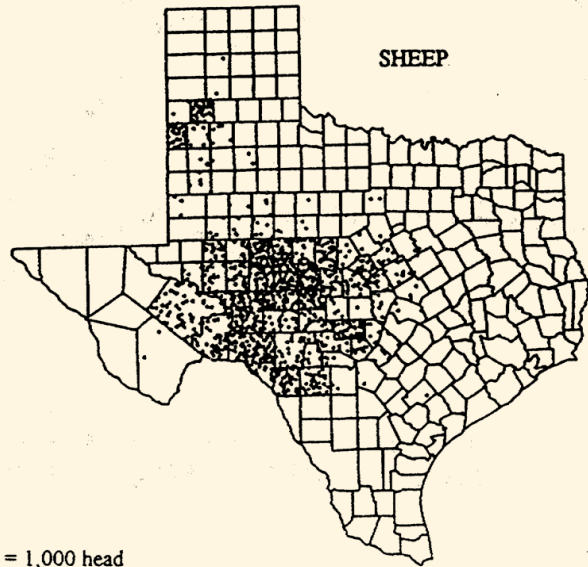
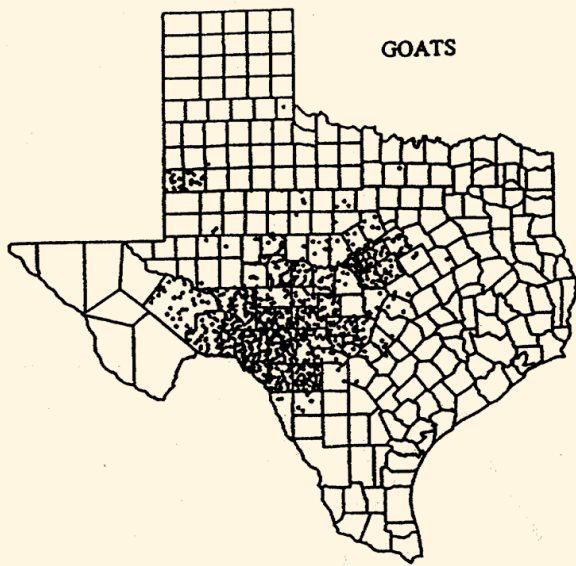




“...the mountains...are covered with cedar, and send clear crystal waters gushing from them....” –J. de Cordova, 1858



“I am getting a little afraid the sheep will take the mountains in four or five years more.... Sheep is mighty hard on the range. You can tell a sheep range before you get in two or three miles of the house, for they keep the grass eaten off plum in the ground....” – E. Burrowes, 1860



1 dot = 1,000 head

“About one fourth of [Travis] county is mountainous or hilly, the land rather poor and rocky, but well watered, and *some of it covered with cedar and others kinds of timber*. It is well adapted to the raising of horses, cattle, sheep, and goats. The balance of the county is gently rolling prairie or level prairie and river-bottom....” -- Wood, S.J. 1861



Distribution of sheep and goats in Texas
(Texas Crop and Livestock Reporting Service 1994)



“The cedar tie business has contributed largely to the growth and prosperity of the ‘Hill City’ in the last two years, more especially the last twelve months. A gentleman connected with the Central Railroad says that two hundred thousand cedar ties have been shipped from this city during the last two years, and when it is remembered that these ties bring from sixty to ninety cents each, the reader will readily comprehend the vastness of the revenue from this source....”

—Austin Daily Democratic Statesman, September 10, 1874



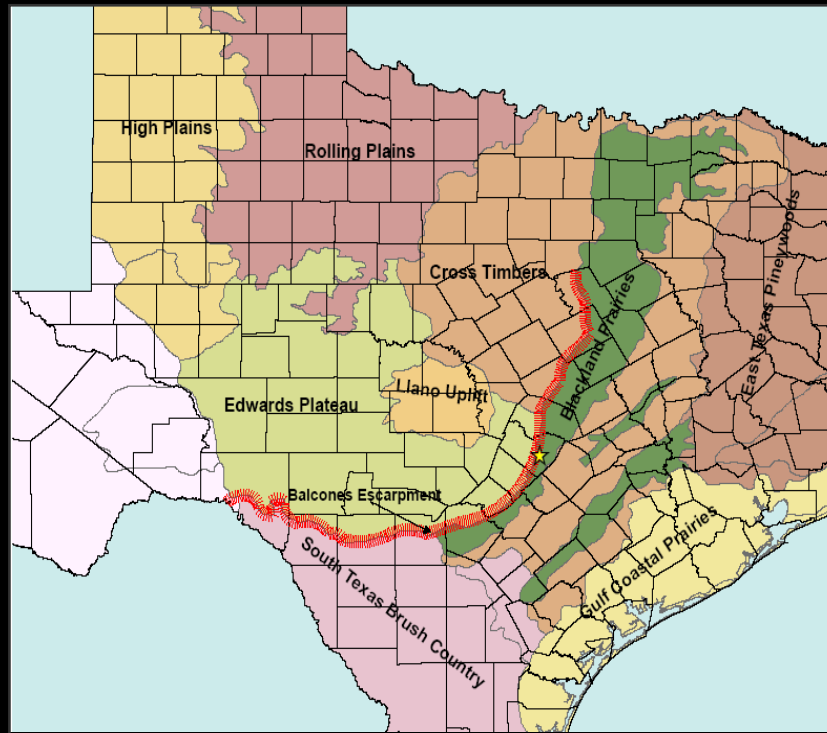
[Golden-cheeked Warblers] are nowhere abundant, and only to be met with in the thickest cedar brakes, and as these are fast being cut and burnt out, the bird will no doubt become still more rare.” – H.P. Attwater, 1892



“From the more open and level lower country [the Balcones scarp line] appears as a *sharp line of timber-covered hills*, and these are universally called ‘mountains’ by the people of the region.” –R. Hill and T. Vaughan, 1898



“The writer knows of no region in which any species of cedar is so uniformly abundant and dominant as is the mountain cedar in the limestone country of Texas. ... [Mountain cedar] is the most valuable tree of the semiarid hill country of Texas.” –W. Bray, 1904



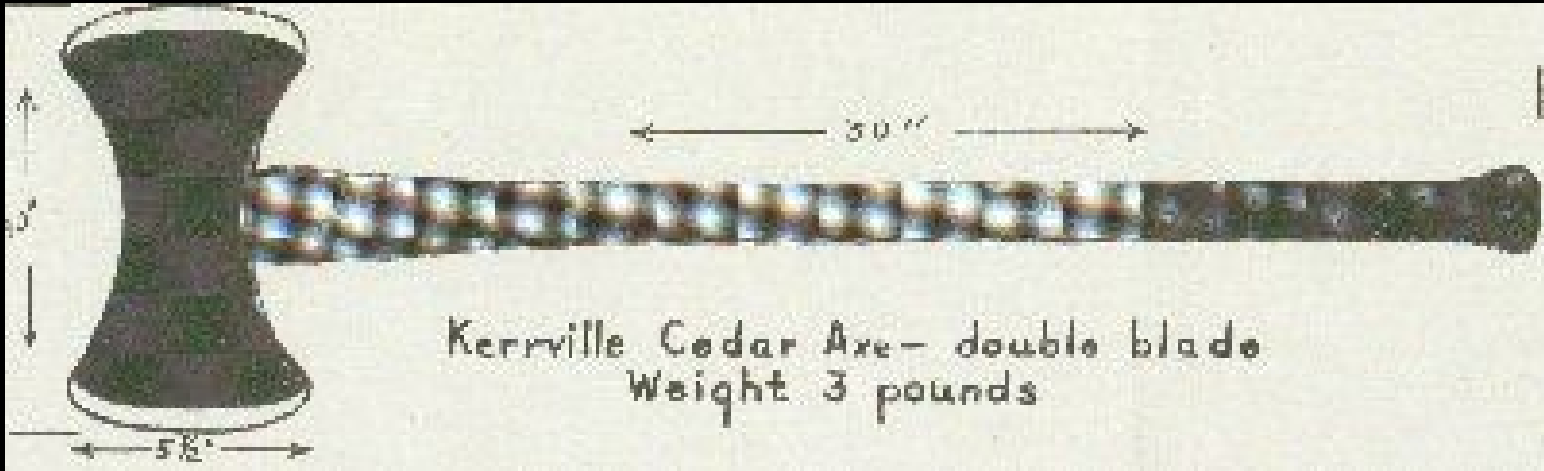
“...in general, the Edwards Plateau is a timbered region only in the deeply eroded portions, becoming prairie on the level uplands, and finally passing into the great grass plains which stretch northward into Canada. One must however, distinguish many degrees of forestation, according to the relative amount of moisture. Through a gradual dwarfing and thinning out the timber passes from the big, heavy growth of the watered canyons to the stunted though continuous forest of the hills and bluffs and the scant tree growth of the loose, stony slopes in the eastern part of the area, until at the west there remains only scattered chaparral, and finally the unique vegetation of the Sotol Country, in which the sotol, cactus, yucca, and agave reign supreme.” –W. Bray, 1904

“Cedar Chopper” Culture



“With the exception of cedar, the hill timber finds a market chiefly as fuel, of which enormous quantities are consumed....Cedar likewise is extensively consumed as fuel and in charcoal burning; but its great value lies in its yield of railway ties, poles, posts, sills, and innumerable other articles which utilize its great durability.”

—W. Bray, 1904



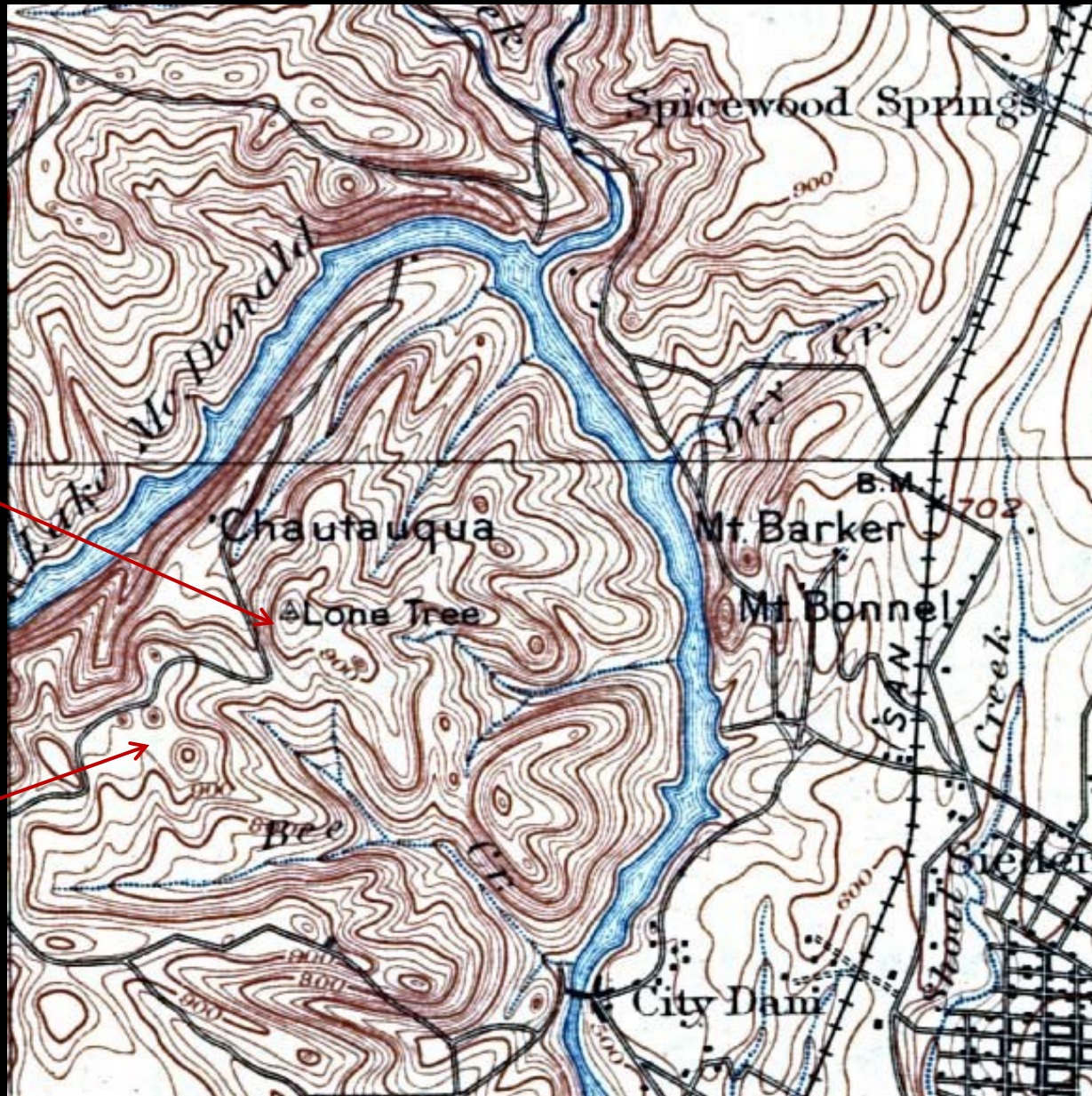
“The cedar eradication program was greatly accelerated as a result of the invention of a new type of axe [‘Kerrville Cedar Axe’] especially suited for cutting cedar trees and cedar brush. The cedar axe is a product of the Hill Country in Texas, where armies of cedar choppers have been swinging away for over thirty years. It was invented partly by accident and partly because of a real need for a better tool to do the job.” –G. Hollon, 1946

“All over the Hill Country cedar smoulders on the horizon. The wild, deep-green graceful trees are being cleared and burned so grass will grow for stock to eat.”

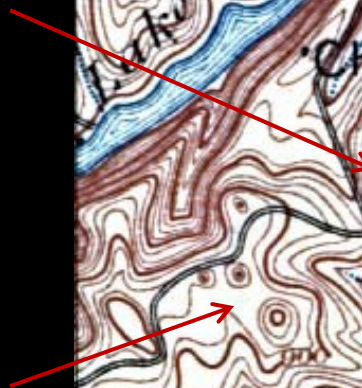
– W. Bode, 1859

“A deplorable loss of cedar has taken place from brake fires. For half a century these have periodically occurred; areas which have not been burned over are the exception. Every old settler can tell of big fires which burned for days. In July, 1901, a very disastrous fire occurred near Marble Falls, in which about 600 acres of valuable cedar were destroyed” -- W. Bray, 1904





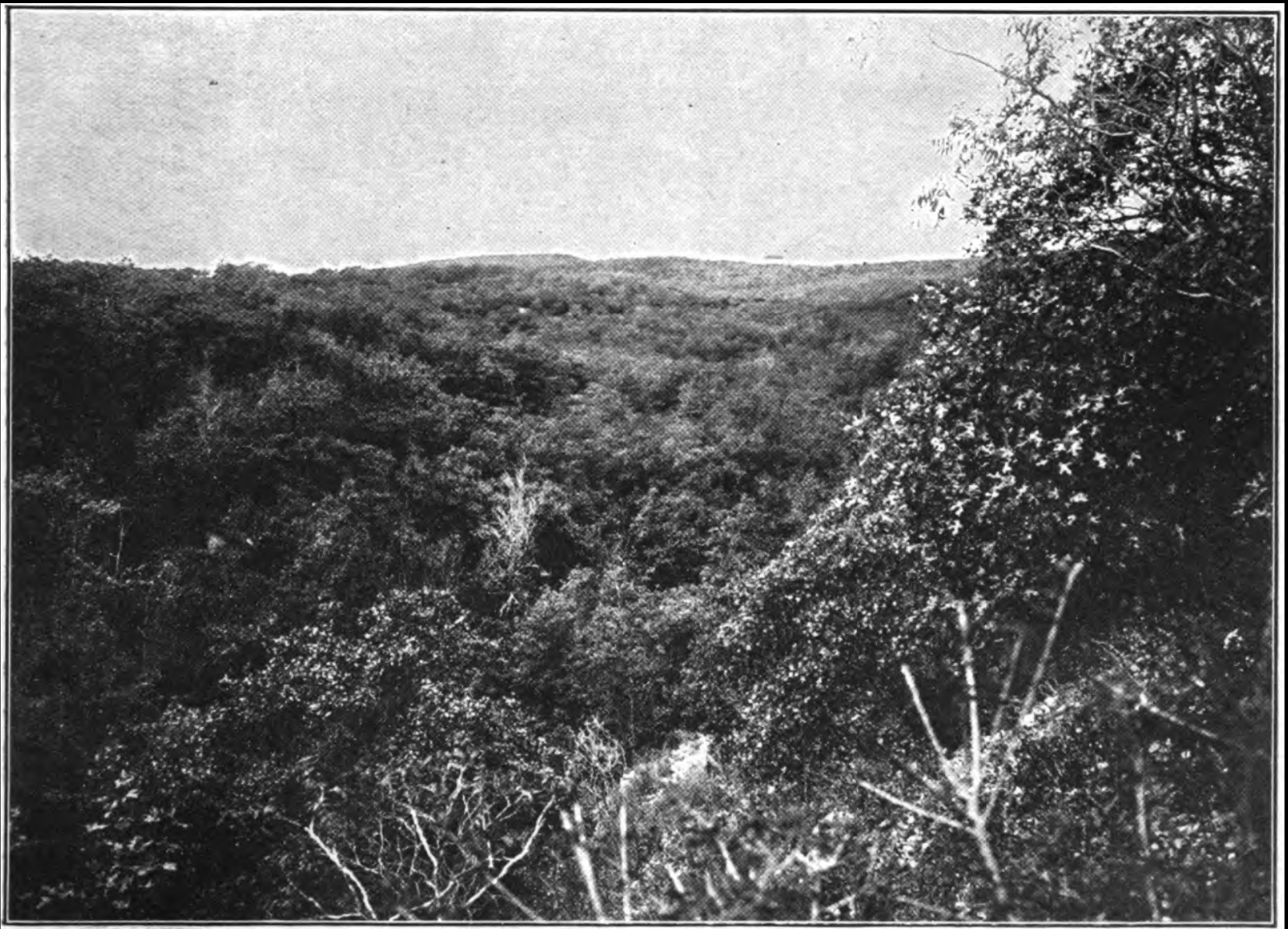
Lone
Tree Hill



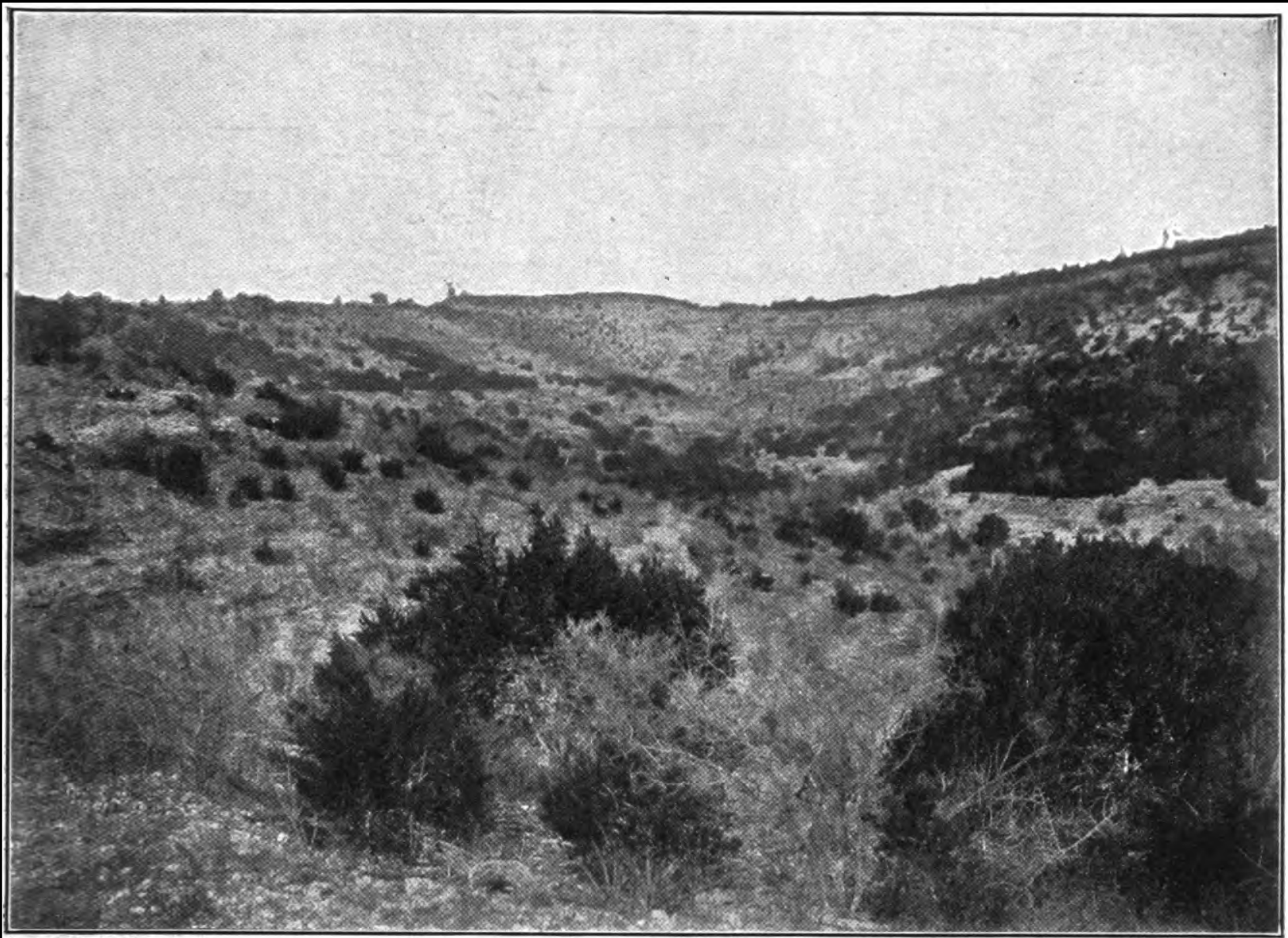
Wild Basin



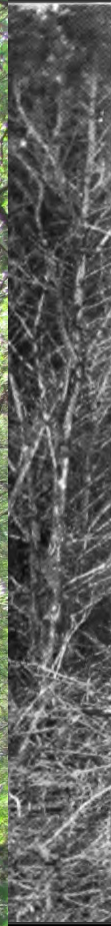
Topo map,
Westbank
Peninsula,
circa 1895



“North Gorge’ from Lone Tree Hill” -- William Bray 1904



“South Gorge’ at its head under Lone Tree Hill, near Austin” -- William Bray 1904



“Near Austin cedar
being cut a second
from which the timber
yield of fuel timber.
twenty-five years’ growth
in this, and no clear

75] are now
t on Dry Creek,
it, with a large
brake after
or post timber



“About the time of World War I the need for more land for farming and ranching became acute, so much so that the farmers and ranchers began a systematic eradication of the cedar. During the next twenty years in Texas alone more than a million acres of brush land was cleared of cedar and thus became more valuable for farming and ranching purposes. In 1937 this pasture improvement project was included as a ranch conservation practice in the AAA [Agricultural Administration Act] program. Since that time almost 3,400,000 acres of cedar trees and brush in Texas have been cleared....It is estimated that the AAA has paid out approximately \$4,000,000 for the carrying out of this practice during the program years 1937 through 1944.” –G. Hollon, 1946



INSPECTION—A stack of fine cedar posts, eight feet long, is inspected by C. R. Morrison, operator, on the left, and John A. Oliver, buyer from Temple, on the right. Standing halfway up

the stack is Morrison's son, Herbert, and Lupe Martinez, one of the skilled cedar cutters in the county, is in the center. —(Carrier Photo.)

LOWLY CEDAR TREE PROVIDES LIVING FOR MANY



“We have loaded trucks going to Louisiana, Mississippi, Arkansas, Oklahoma, New Mexico, Colorado, Arizona and even up in Nebraska. Not only do we sell these truckers posts, but also blocking, used mainly under houses, but sometimes used for posts....Posts are graded according to straight or crooked.”

-- Austin American Statesman, March 24, 1950





Any
Questions?

William Willard Ashe
(1872-1932)

1892-1905 – Forester, North Carolina Geological Survey

1905–1932 – U.S. Forest Service

1918-1924 - Secretary of the National Forest Reservation Commission