



Center for Environmental Research at Hornsby Bend



MISSION

Urban Ecology and Sustainability

- Community
- Education
- Research

PARTNERS

- Austin Water Utility
- University of Texas
- Texas A&M University

RESEARCH AREAS

- Soil Ecology, Sewage Recycling and Reuse
- Hydrogeology of the Alluvial Aquifer
- Riparian Ecology and Restoration
- Avian Ecology



50 YEARS OF BIRDING



AUSTIN, TEXAS
Hornsby Bend
1959-2009

The Natural History of Austin: Biological Context and Urbanization

Kevin M. Anderson
Austin Water - Center for Environmental Research



Natural History

Understanding whole organisms in context

Ecological understanding shaped by cultural contexts

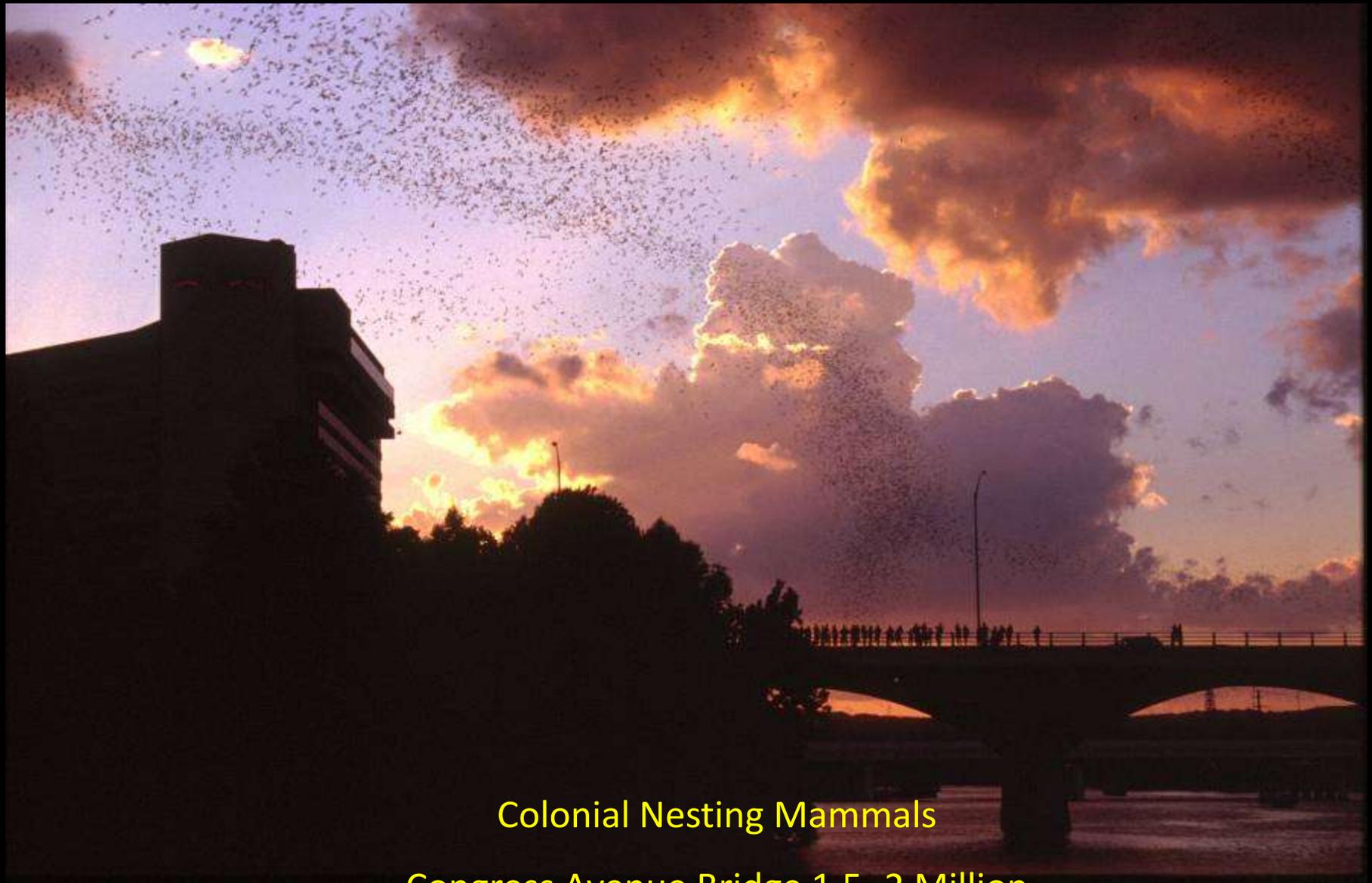
Cultural understanding shaped by ecological contexts



"The idea of nature contains, though often unnoticed, an extraordinary amount of human history."
Raymond Williams, "Ideas of Nature"

What is a City?





Colonial Nesting Mammals

Congress Avenue Bridge 1.5 -2 Million

Mexican Free-tailed Bats

Colonial Nesting Mammals



Black-Tailed Prairie Dog



© Jami White

Colonial Nesting Mammals

Invasive
Non-native
Species



Environmental Perception of Nature and the City

The Sacred and the Mundane

Wilderness and the City

Natural vs. Artificial

Pristine vs. Degraded

Native vs. Non-native

Invasive
Non-native
Species



Once a rock dove,
now the winged rat
of the city

Biodiversity?

John Graves - To have viewed it entire

“In recent decades it has become customary, and right I guess, and easy enough with hindsight, to damn the ancestral frame of mind that ravaged the world so fully and so soon.

What I myself seem to damn mainly though, is just not having seen it.

Without any virtuous hindsight I would likely have helped in the ravaging as did even most of those who loved it best.

But God! To have viewed it entire, the soul and guts of what we had and gone forever now...”

- From *Self Portrait, with Birds: Some Semi-Ornithological Recollections* (1991)



Live Oak-Juniper Forest



Blackland Prairie Grassland and Post Oak Savannah

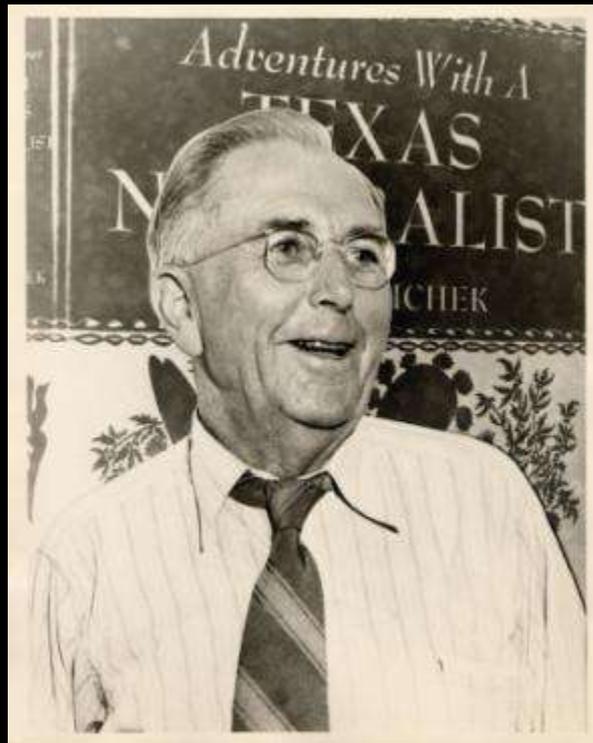
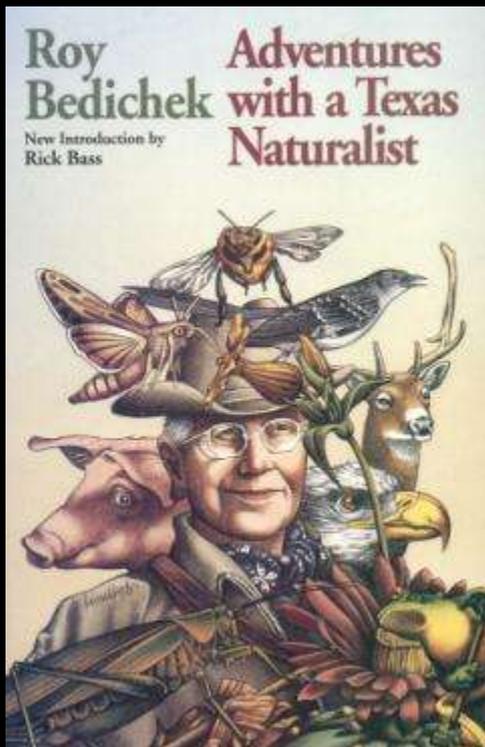


Roy Bedichek

Natural cliffs, especially those of limestone, have a disconcerting habit of sloughing off now and then, shedding a little; while a crumbly surface, such as is often found in limestone rock shelters, provides insecure footing for any kind of masonry.

Concrete, on the other hand, does not slough off or crumble but provides a smooth, stable, and adhesive base.

Adventures with a Texas Naturalist (1947)



Biodiversity

Ecotone

Scrub Jays meet Blue Jays

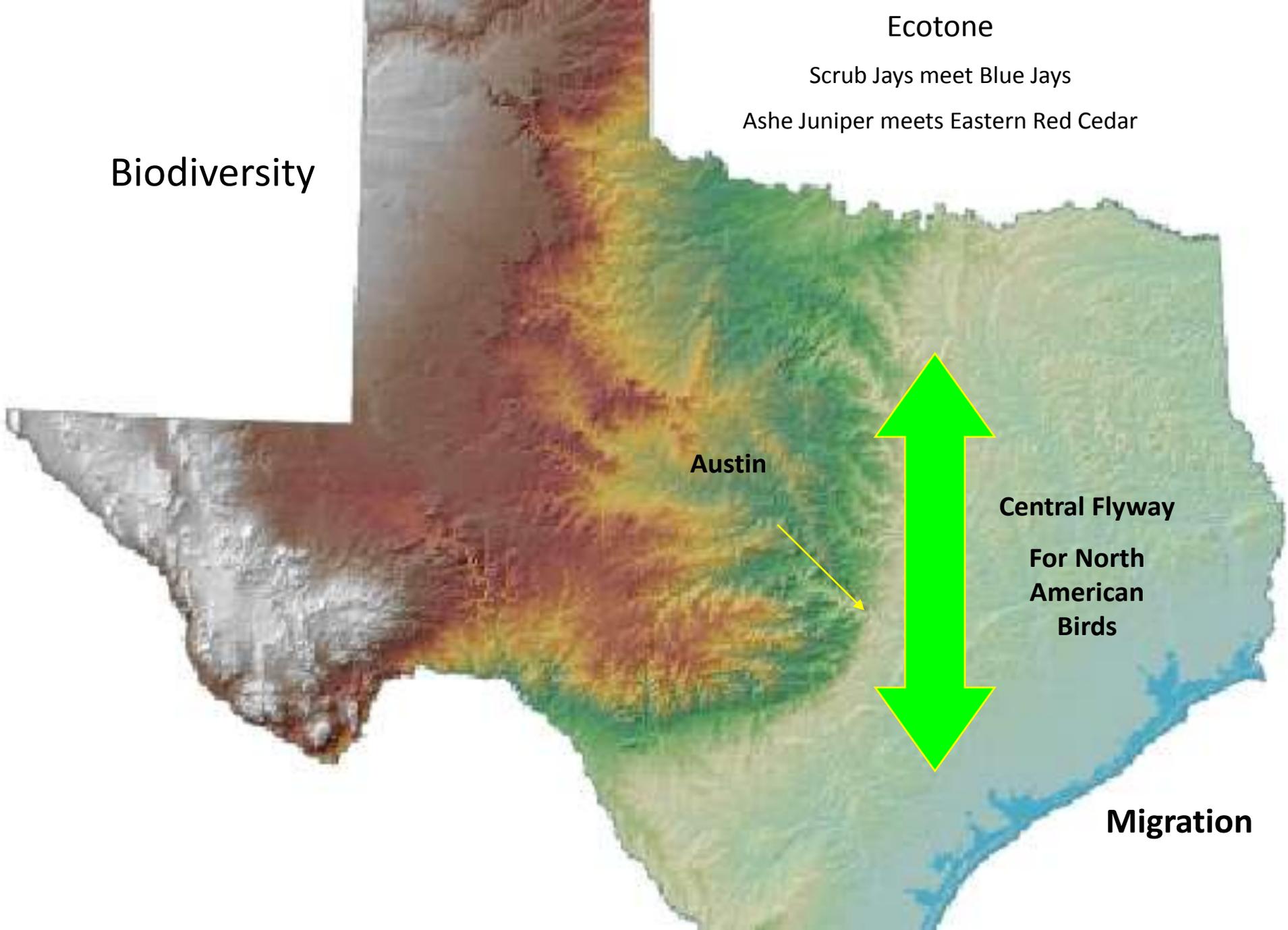
Ashe Juniper meets Eastern Red Cedar

Austin

Central Flyway

For North
American
Birds

Migration



Geological
Map
USGS Folio
1902

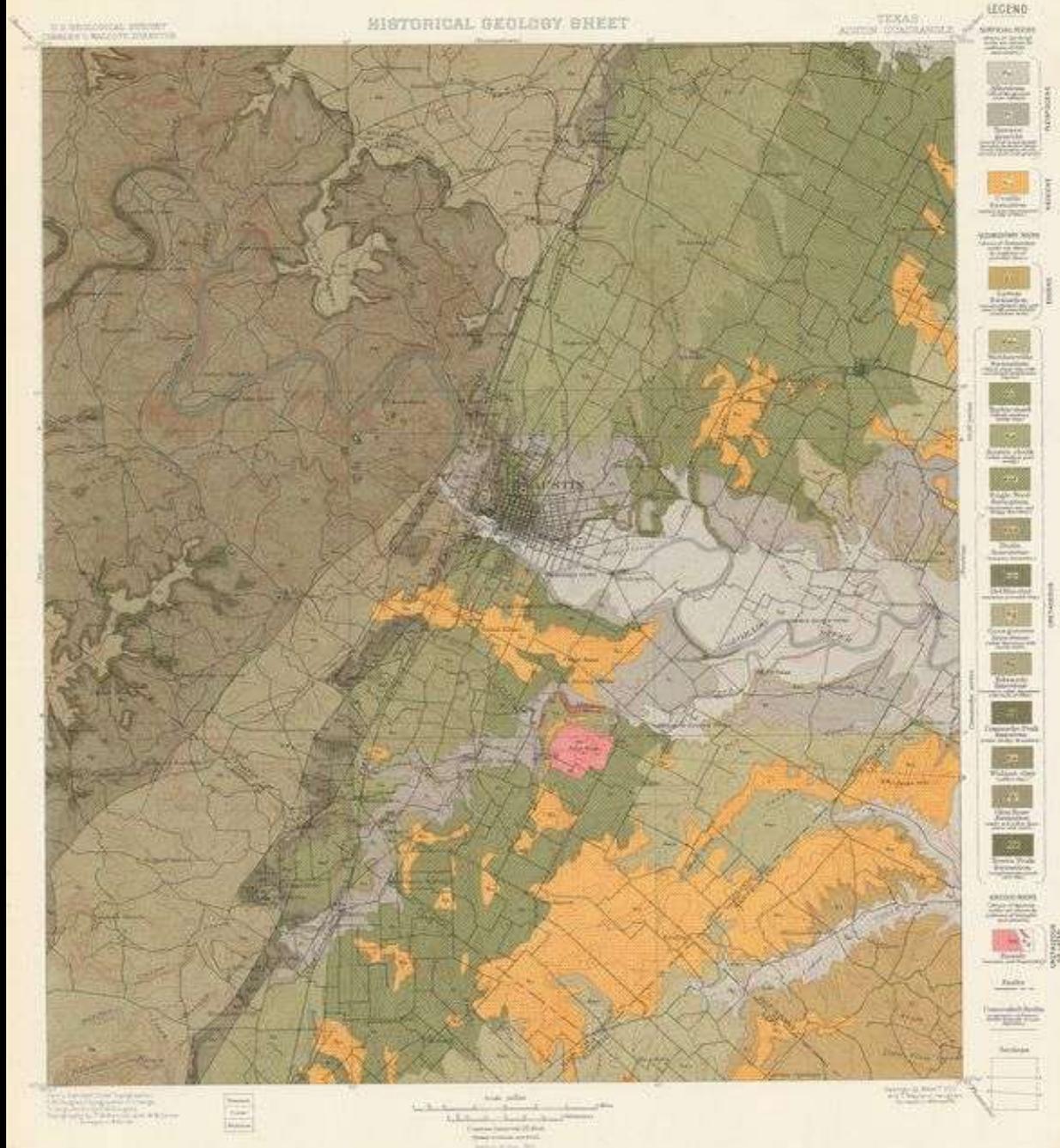


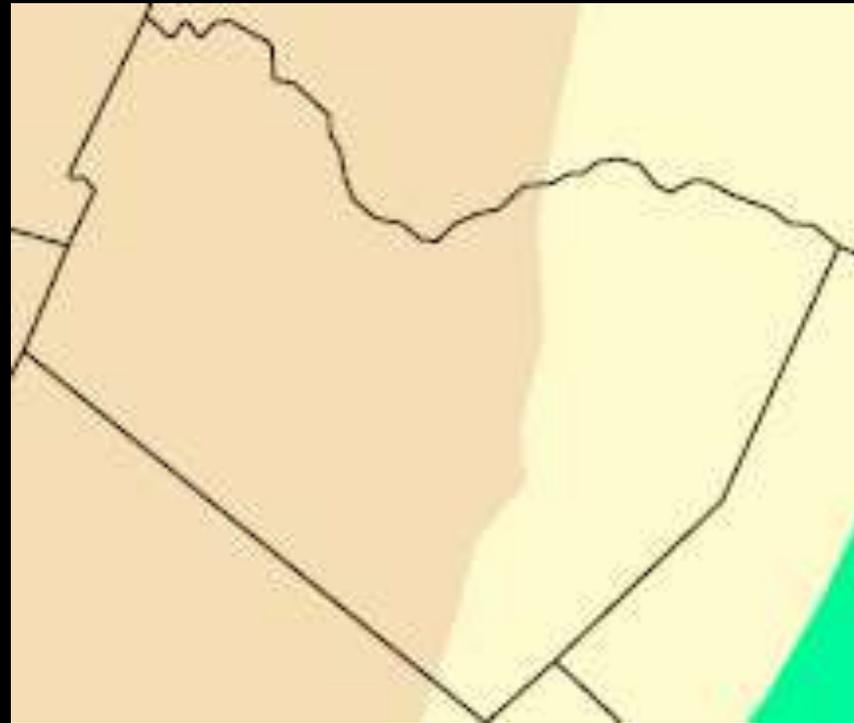
The Walter Geology Library

University of Texas Libraries | THE UNIVERSITY OF TEXAS AT AUSTIN

Guidebook to the Geology of Travis County

<http://www.lib.utexas.edu/geo/ggtc/toc.html>





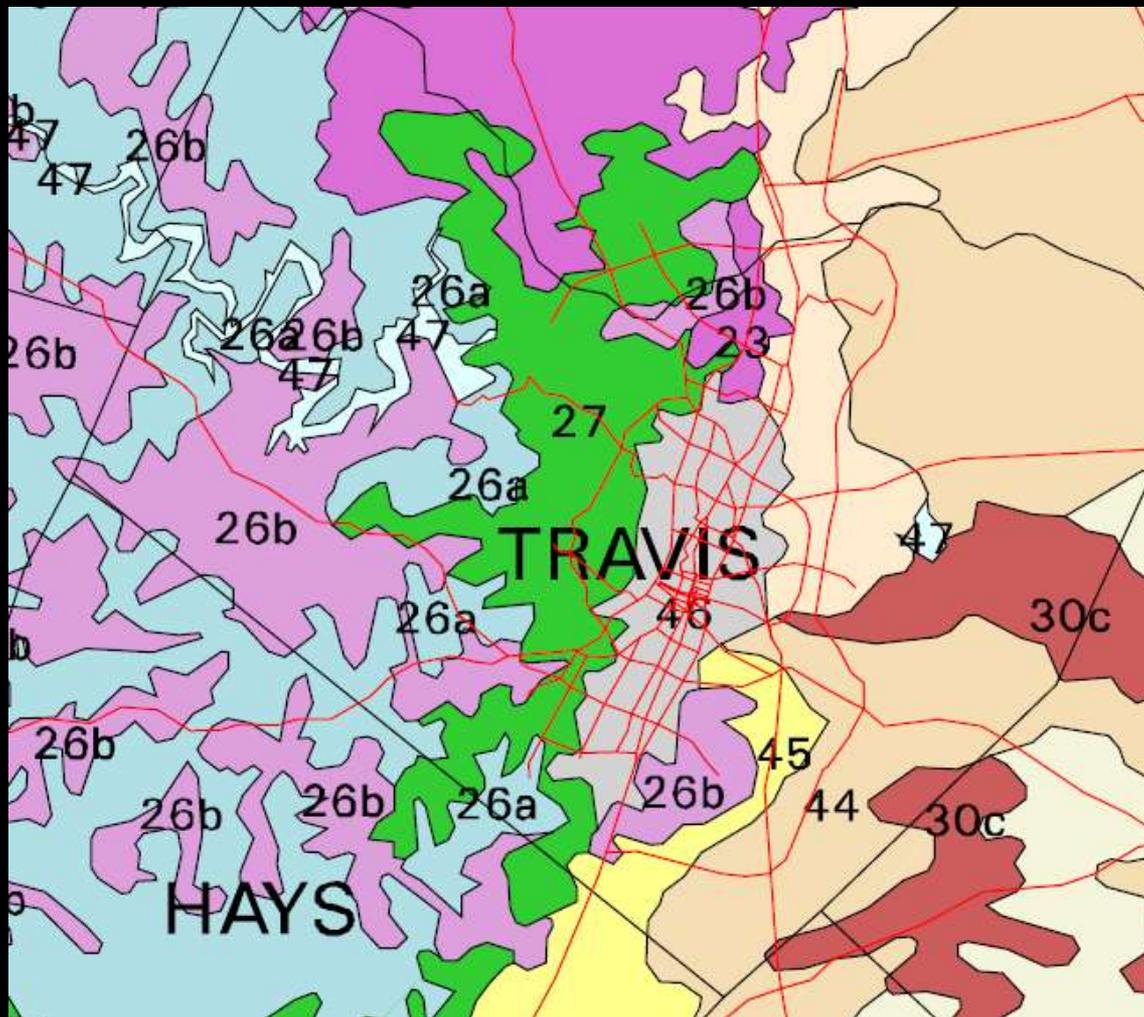
EDWARDS PLATEAU



OAK WOODS & PRAIRIES



BLACKLAND PRAIRIE



44	Crops
45	Other Native and/or Introduced Grasses
46	Urban
47	Lakes

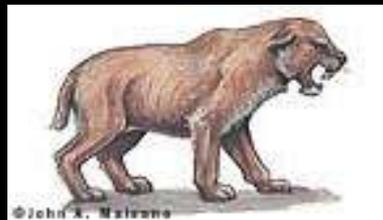
26a	Live Oak - Ashe Juniper Parks (<i>Quercus virginiana</i> - <i>Juniperus ashei</i>)
26b	Live Oak - Mesquite - Ashe Juniper Parks (<i>Quercus virginiana</i> - <i>Prosopis glandulosa</i> - <i>Juniperus ashei</i>)
30b	Post Oak Woods, Forest, and Grassland Mosaic
30c	Post Oak Woods/Forest

Which Natural History?



Arrival of humans in Texas – 15,000-10,000 years before the present...

Late Pleistocene Fossils (500,000-10,000 years before the present)



Homotherium serum
Scimitar-toothed Cat



Geochelone sp.
Giant Tortoise



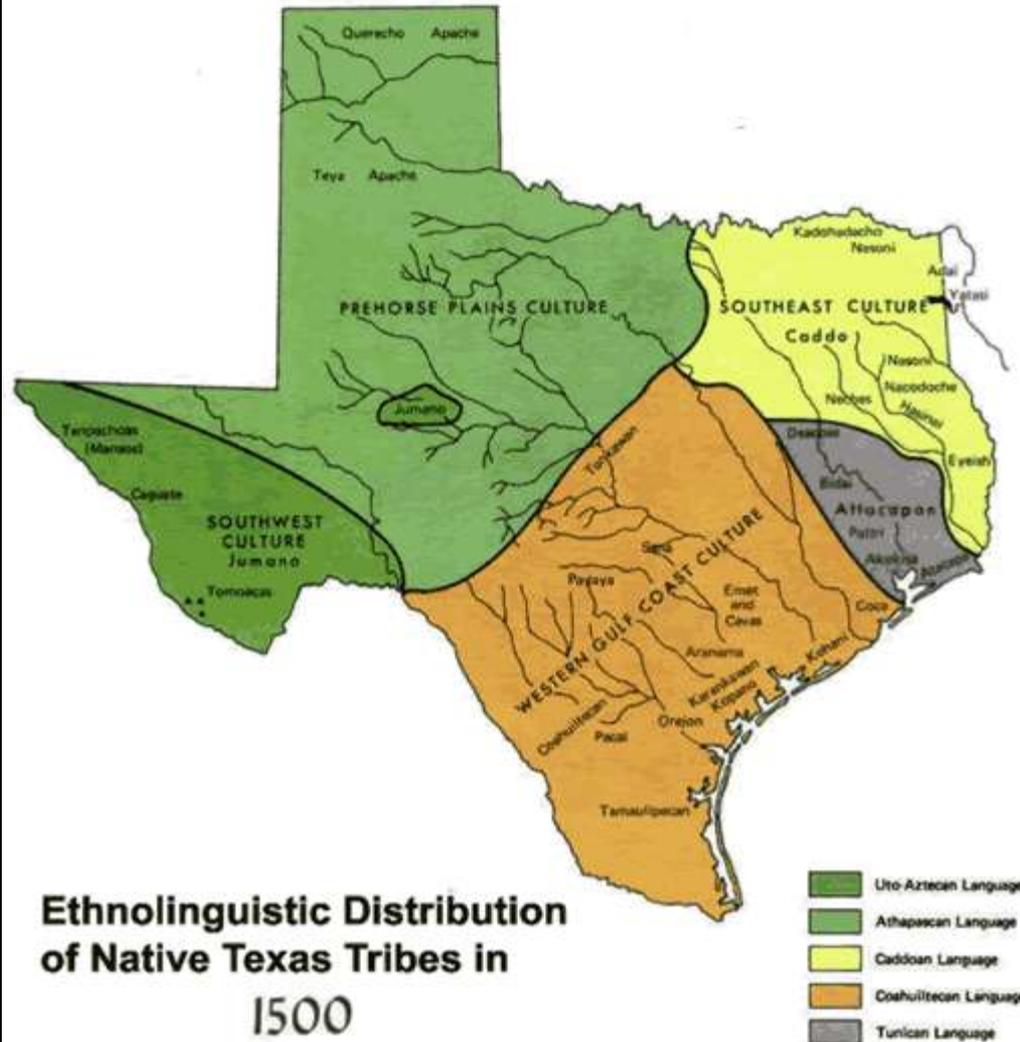
Mammut americanum
American Mastodon



Mammuthus sp.
301 Congress
Mammoth

Humanized Landscape – Buttermilk Creek Complex 15,000 years old



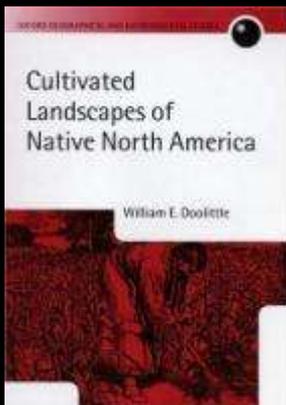
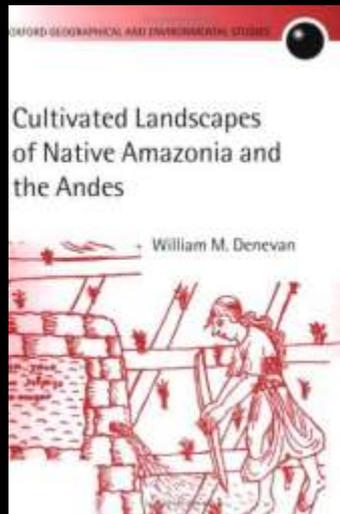
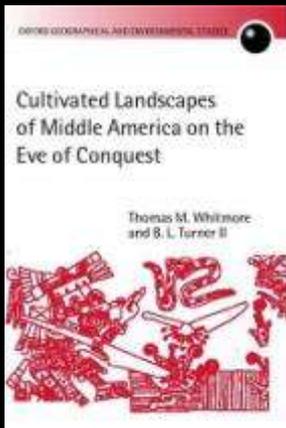


Ethnolinguistic Distribution of Native Texas Tribes in 1500

Source: Lydia L. M. Skewes, *An Ethnohistorical Survey of Texas Indians*,
Texas Historical Survey Committee, Office of the State Archeologist,
Report No. 22, Austin, 1972.

Cultivated Landscapes of the Americas

The Myth of Pristine Nature



The Pristine Myth: The Landscape of the Americas in 1492

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Abstract. The myth persists that in 1492 the Americas were a sparsely populated wilderness, "a world of barely perceptible human disturbance." There is substantial evidence, however, that the Native American landscape of the early sixteenth century was a humanized landscape almost everywhere. Populations were large. Forest composition had been modified, grasslands had been created, wildlife disrupted, and erosion was severe in places. Earthworks, roads, fields, and settlements were ubiquitous. With Indian depopulation in the wake of Old World disease, the environment recovered in many areas. A good argument can be made that the human presence was less visible in 1750 than it was in 1492.

Key Words: Pristine myth, 1492, Columbus, Native American settlement and demography, prehistoric New World, vegetation change, earthworks.

"This is the fairest prairie . . ."

Engelke: A Tale of Acadia (Largellow, 1847).

WHAT was the New World like at the time of Columbus—"Geography as it was," in the words of Carl Sauer (1971, xi). The Admiral himself spoke of a "Terrestrial Paradise," beautiful and green and fertile, teeming with birds, with naked people living there whom he called "Indians." But was the landscape encountered in the sixteenth century primarily pristine, virgin, a wilderness, nearly empty of people, or was it a humanized landscape, with the imprint of native Americans being dramatic and persistent? The former still seems to be the more common view, but the latter may be more accurate.

The pristine view is to a large extent an invention of nineteenth-century romanticist and

primitivist writers such as W.H. Hudson, Cooper, Thoreau, Longfellow, and Parkman, and painters such as Catlin and Church.¹ The wilderness image has since become part of the American heritage, associated "with a heroic pioneer past in need of preservation" (Pyne 1982, 17; also see Bowden 1992, 22). The pristine view was restated clearly in 1950 by John Bakeless in his book *The Eyes of Discovery*:

There were not really very many of these redskins . . . the land seemed empty to invaders who came from settled Europe . . . that ancient, primeval, undisturbed wilderness . . . the streams simply baked with fish . . . so much game . . . that one hunter counted a thousand animals near a single oak tree . . . the virgin wilderness of Kentucky . . . the fabled glory of primitive America (11, 201, 223, 314, 407).

But then he mentions that Indian "prairie fires . . . cause the often-mentioned oak openings . . . Great fields of corn spread in all directions . . . the Barrens . . . without forest," and that "Early Ohio settlers found that they could drive about through the forests with sleds and horses" (31, 304, 306, 314). A contradiction!

In the ensuing forty years, scholarship has shown that Indian populations in the Americas were substantial, that the forests had indeed been altered, that landscape change was commonplace. This message, however, seems not to have reached the public through texts, essays, or talks by both academics and popularizers who have a responsibility to know better.²

Kirkpatrick Sale in 1990, in his widely reported *Conquest of Paradise*, maintains that it was the Europeans who transformed nature, following a pattern set by Columbus. Although Sale's book has some merit and he is aware of large Indian numbers and their impacts, he nonetheless champions the widely-held dichotomy of the benign Indian landscape and

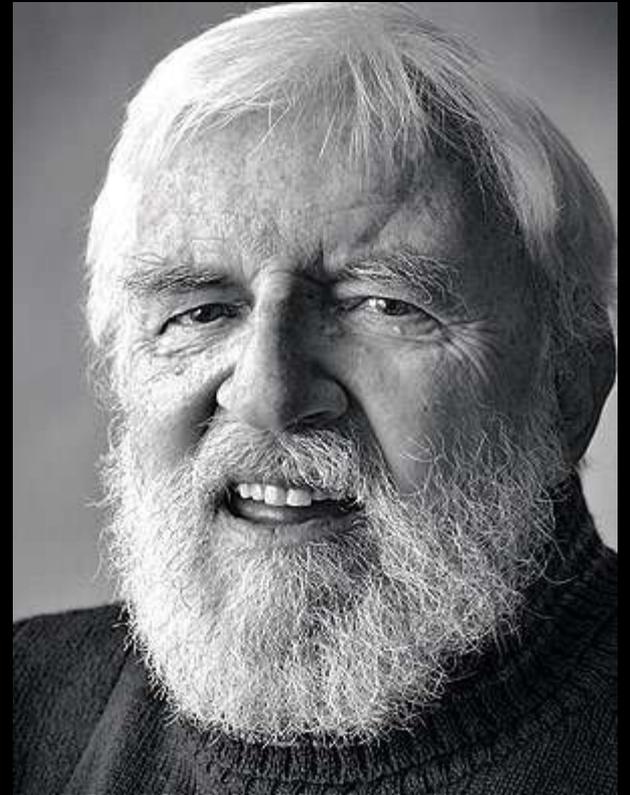
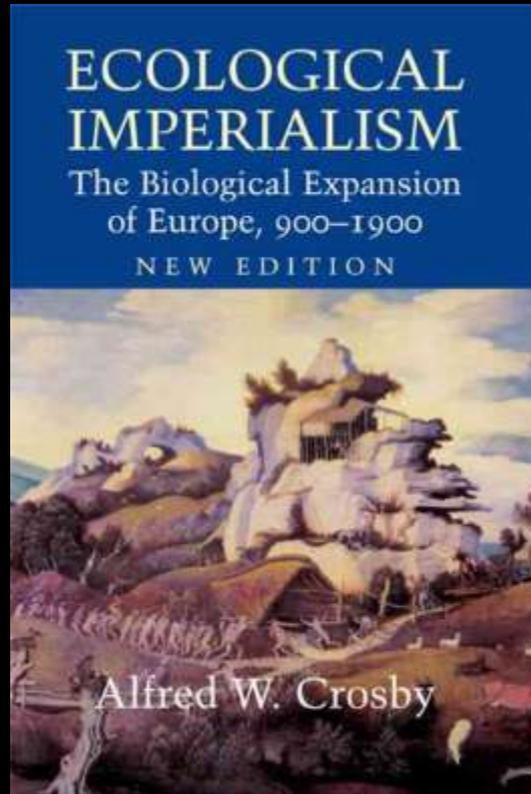
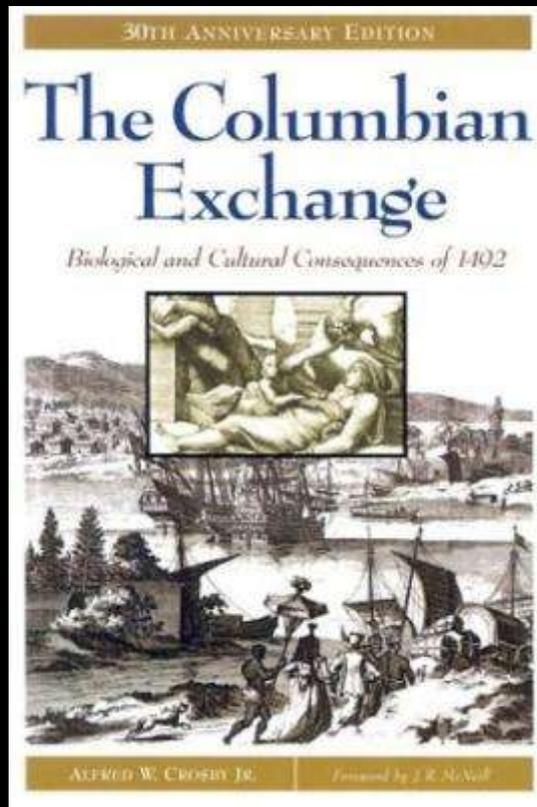


Native Americans – Fire and Other Ecological Impacts



The Columbian Exchange and Ecological Imperialism





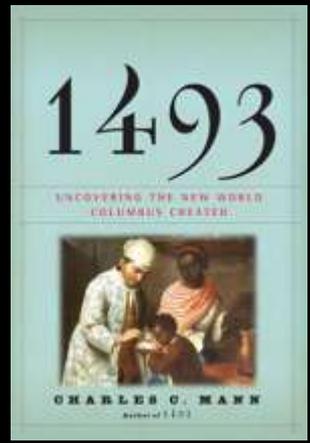
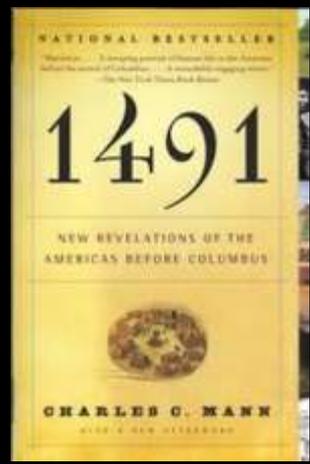


Columbian Exchange
1492-1650

- Fruits and vegetables
- Beans, nuts, and grains
- Flowers
- Other plant products
- Animals
- Insects
- Diseases

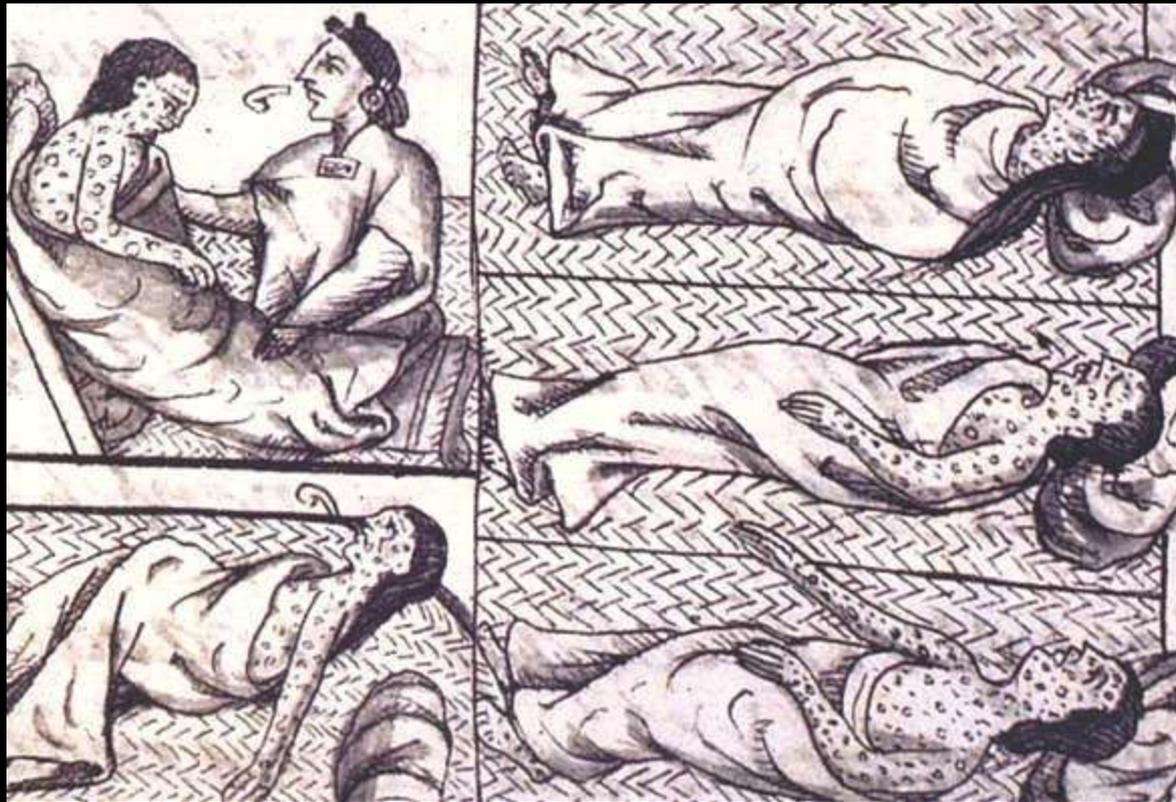
Colors show hemisphere of origin.

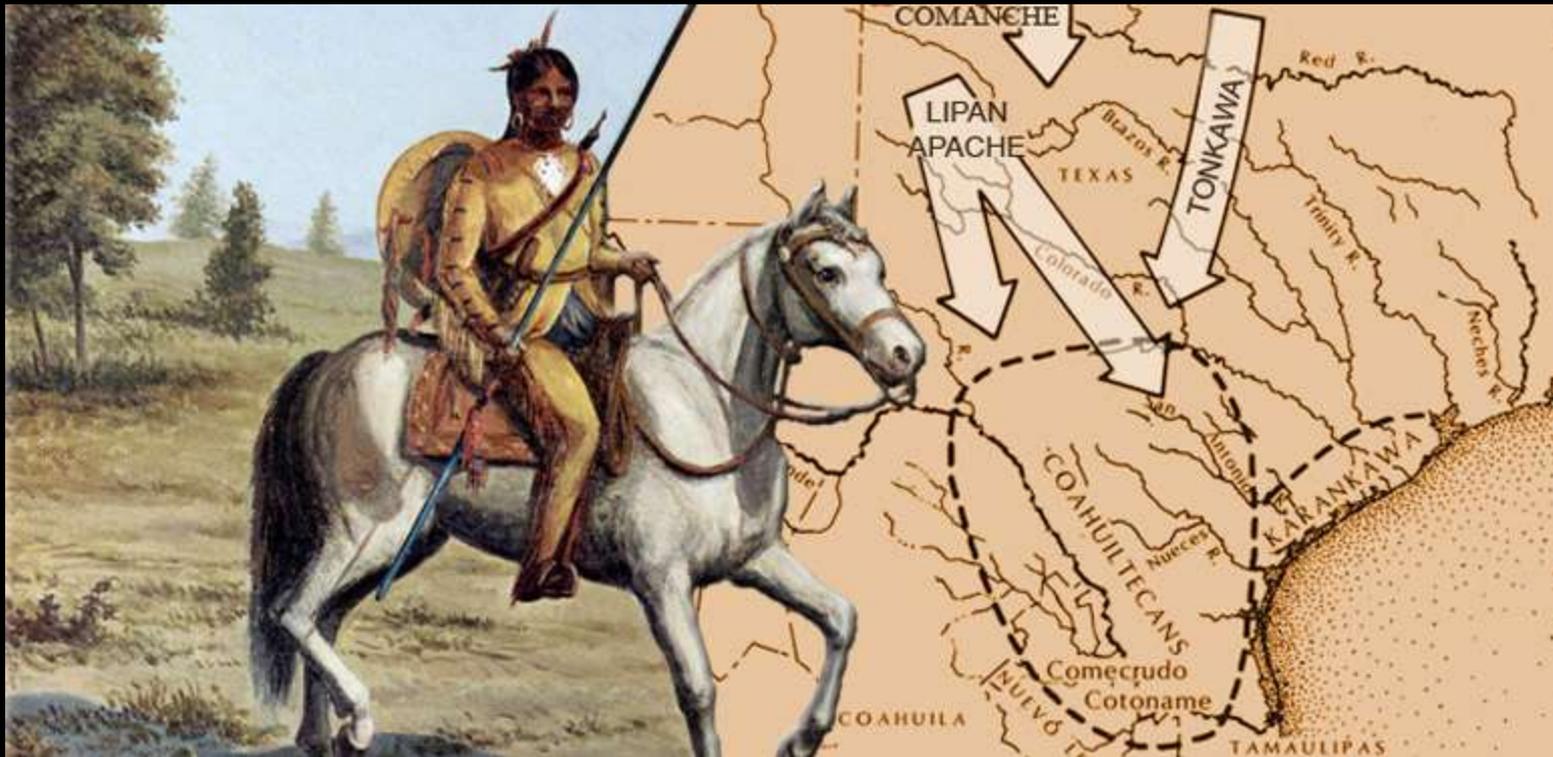
B Before Columbus established lasting European contact with the Americas, only Native Americans raised corn. Today corn is grown throughout the world. Name three foods that are not originally from the Americas.



The Columbian Exchange and Ecological Imperialism

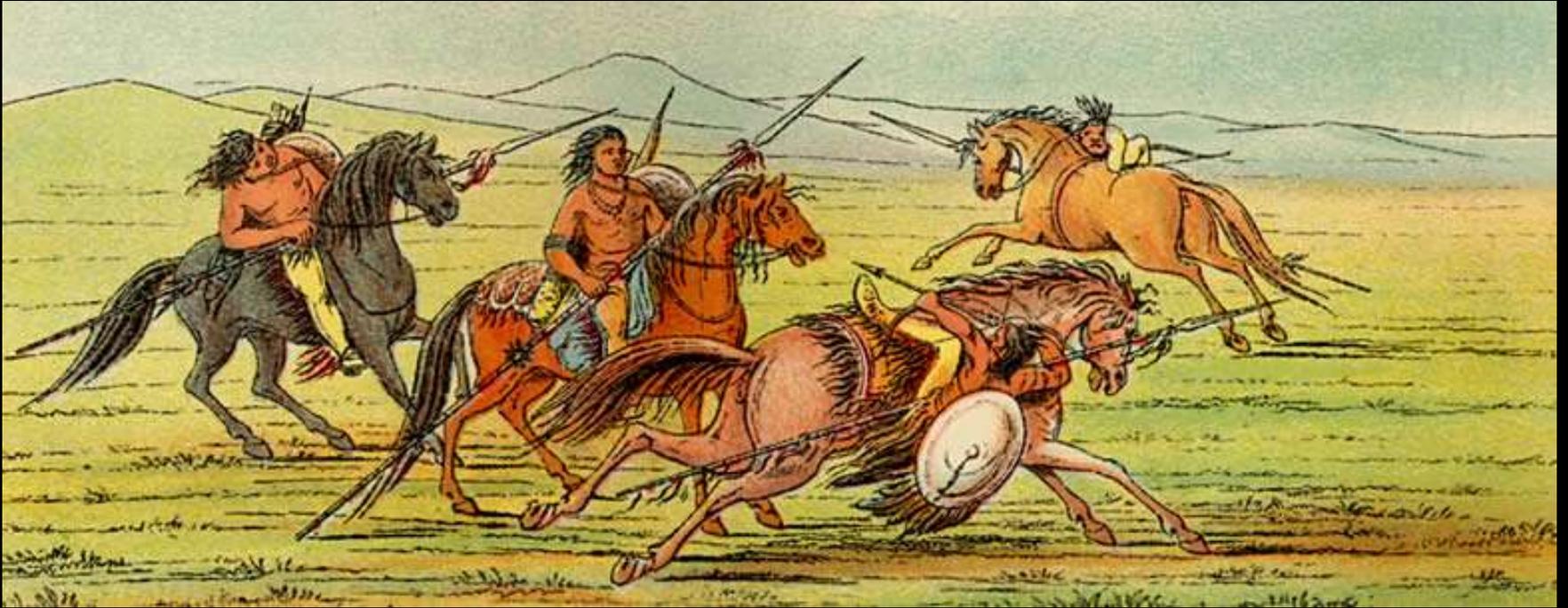
Disease and Depopulation





1600s Dislocation

Horses and Cattle



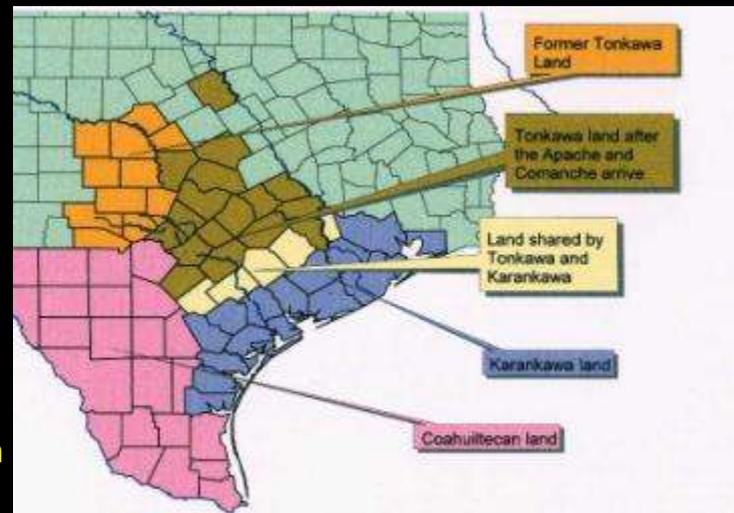
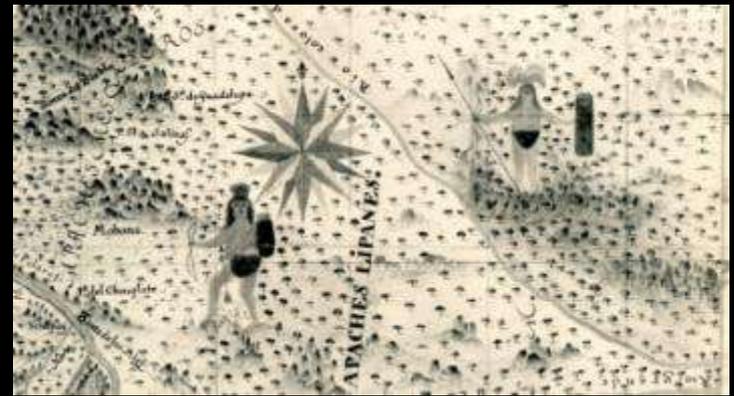
Tonkawa, Lipan, and Comanche

The Tonkawa occupied the region of central Texas since the 14th century as well. Like the Comanche, they were very mobile and hunted buffalo, deer, and smaller game.

The Lipan, or Lipan-Apache, who arrived in the 14th century, were among the more important subgroups of Apaches in Texas. They ranged the furthest eastward and had the most contact with the early Texas settlements.



Lipan Apache brave wearing breastplate. Watercolor by Frederick Richard Petri, circa 1850s. The artist lived in the area of Fredericksburg, Texas, and was on peaceful terms with many of the native peoples.



The Tonkawa and their neighbors

Johnson, chief of Tonkawa scouts under Ranald Mackenzie in north Texas. The skills of the Tonkawa scouts were greatly valued by the Army.

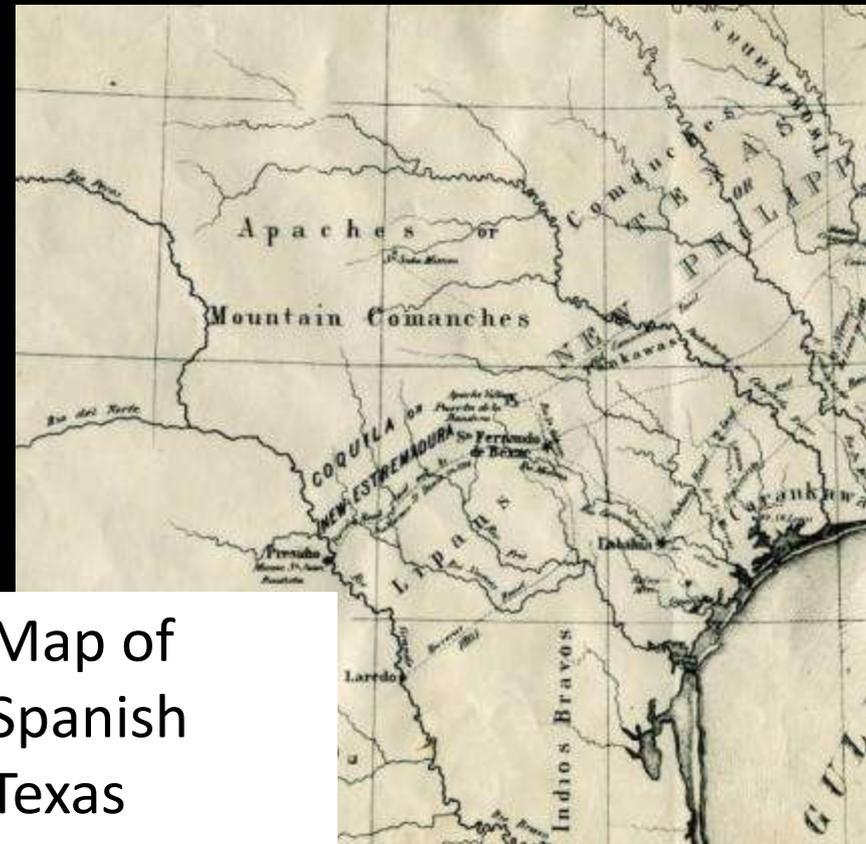
Comanches

The well known Comanche tribes were relative latecomers to Texas in the early 17th century, after migrating from the north and northwest.

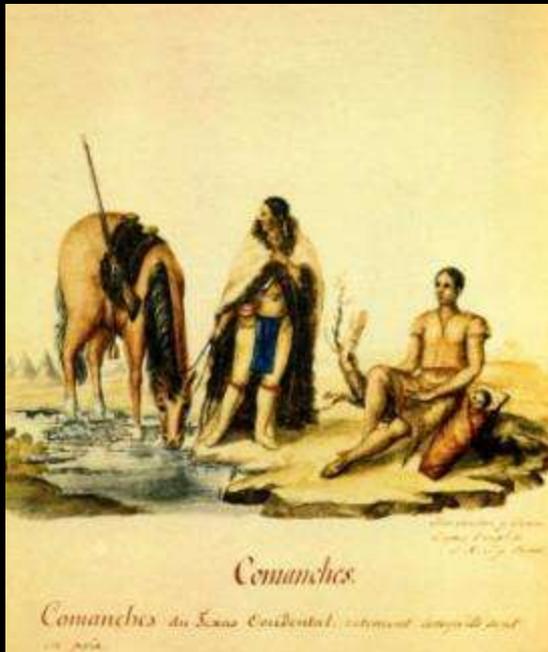
Their mobility and horsemanship seemed to amplify their numbers in the eyes of the early Anglo settlers.

By the 1670s, the Apache were pushing south off the Southern Plains due to Comanche intrusion into their former homeland.

This pattern—interlopers moving into territory occupied by others—can be seen time and again in the history of the native peoples of Texas after contact.



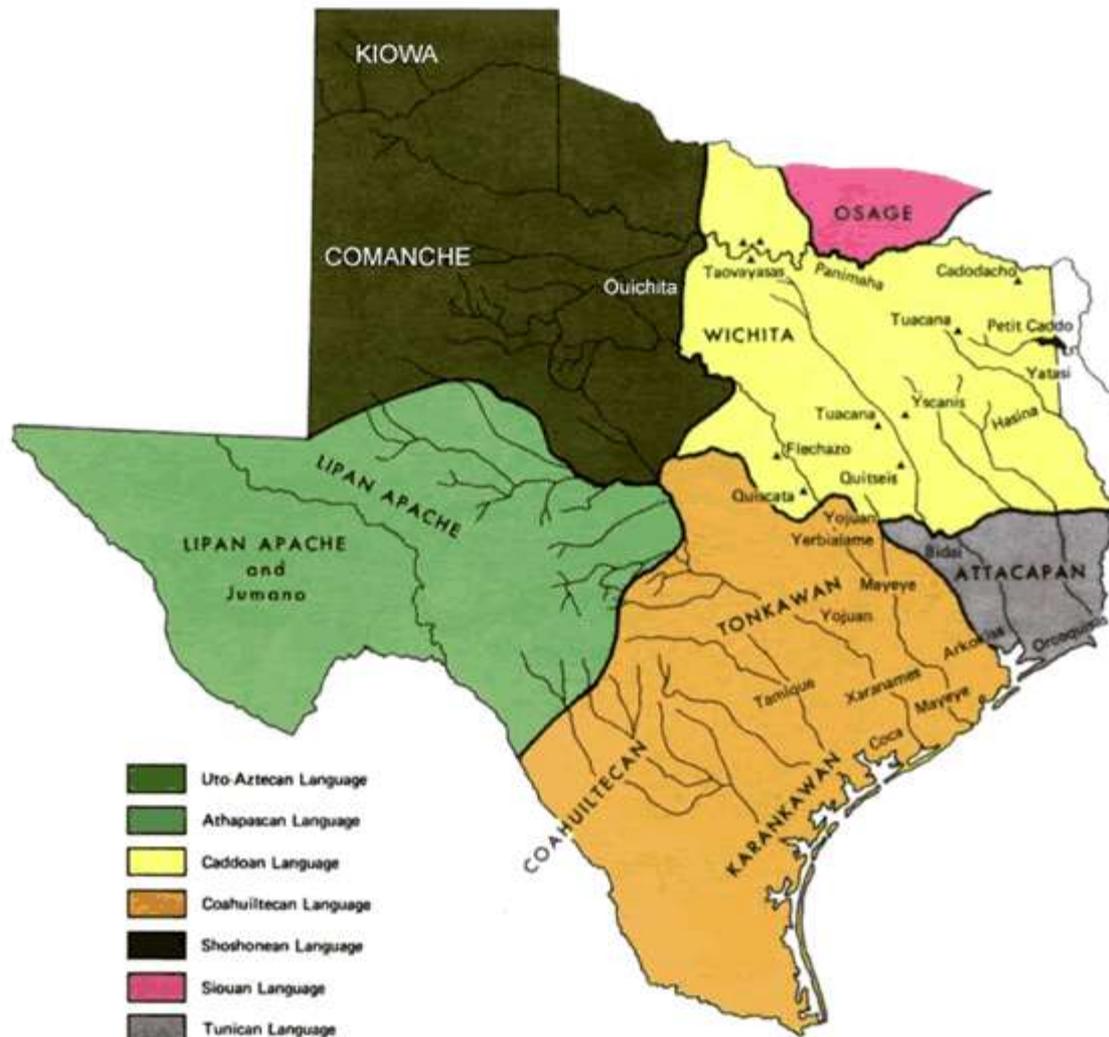
Map of Spanish Texas
With Native Tribes



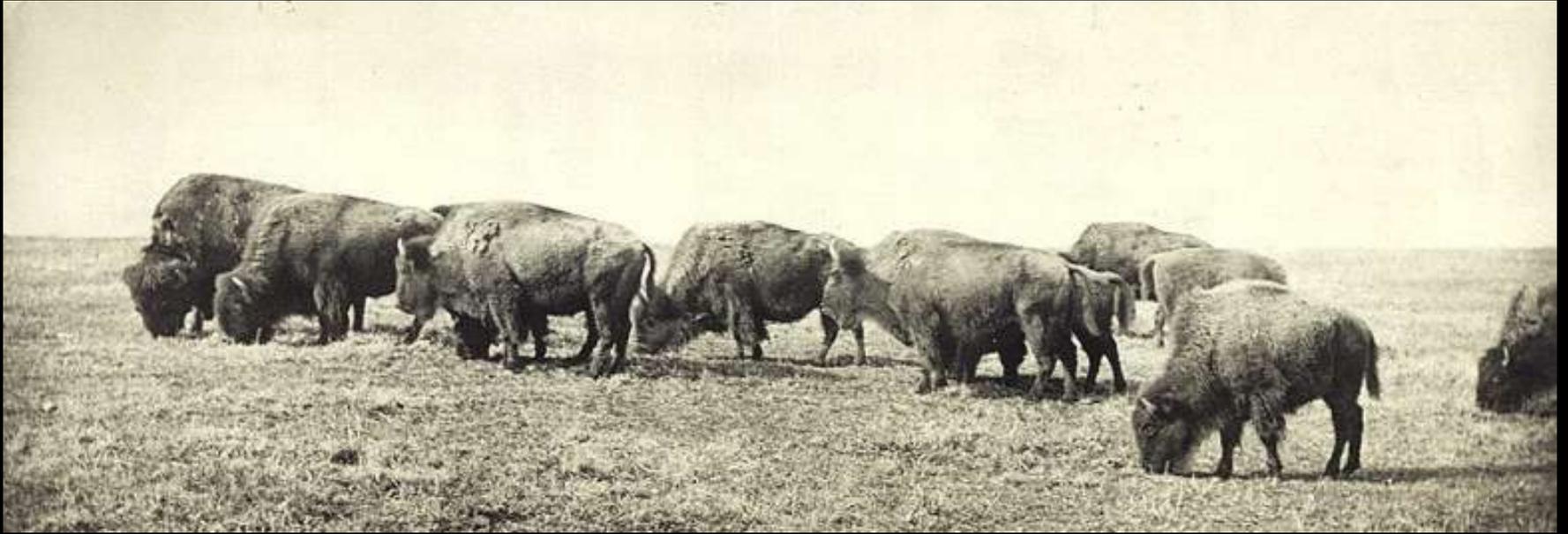
A Comanche family in Texas, as drawn during the Berlandier expedition, 1828. Note the buffalo robe worn by the man.



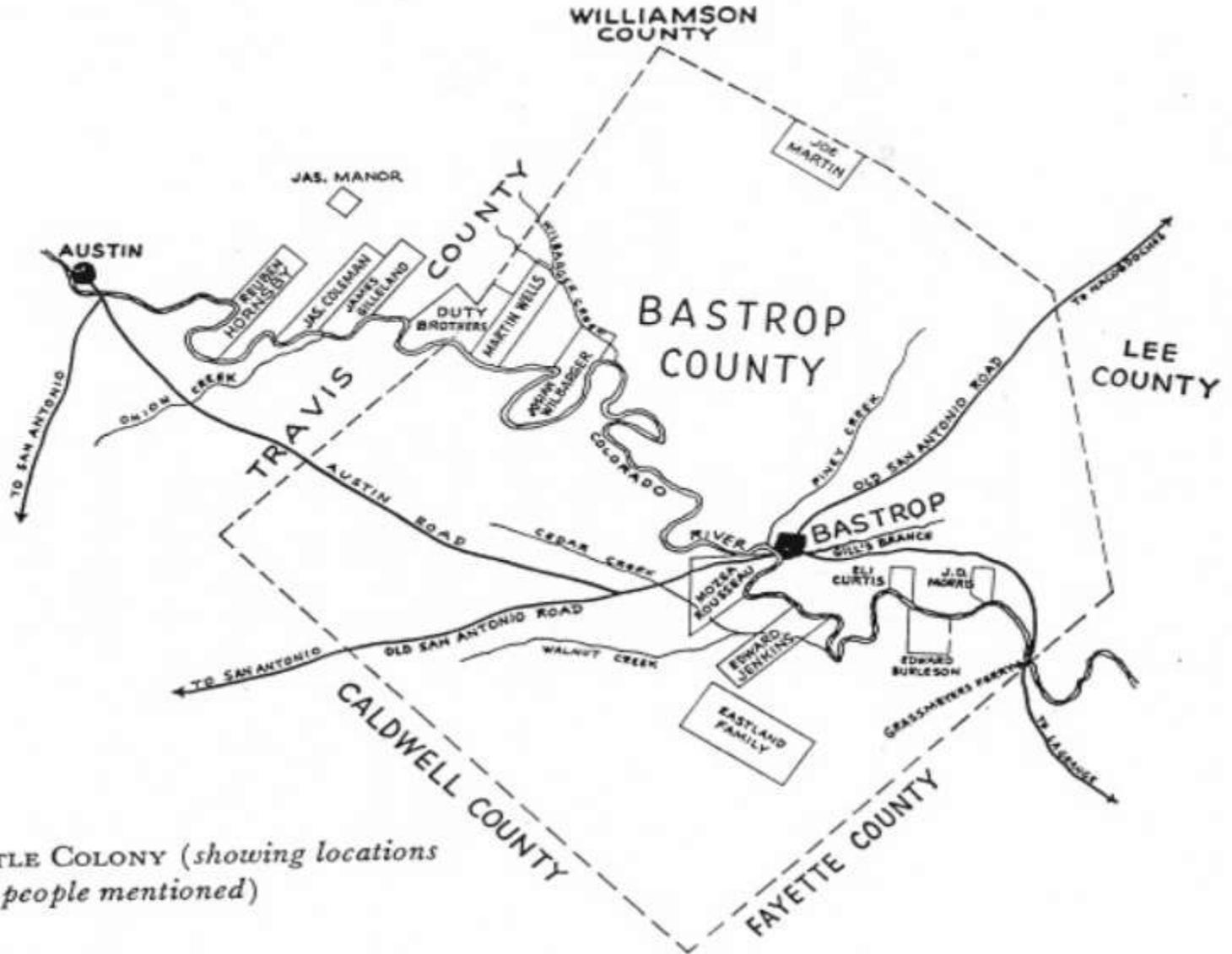
Ethnolinguistic Distribution of Indians in Texas in 1776



Large numbers of herbivores such as bison had significant impacts

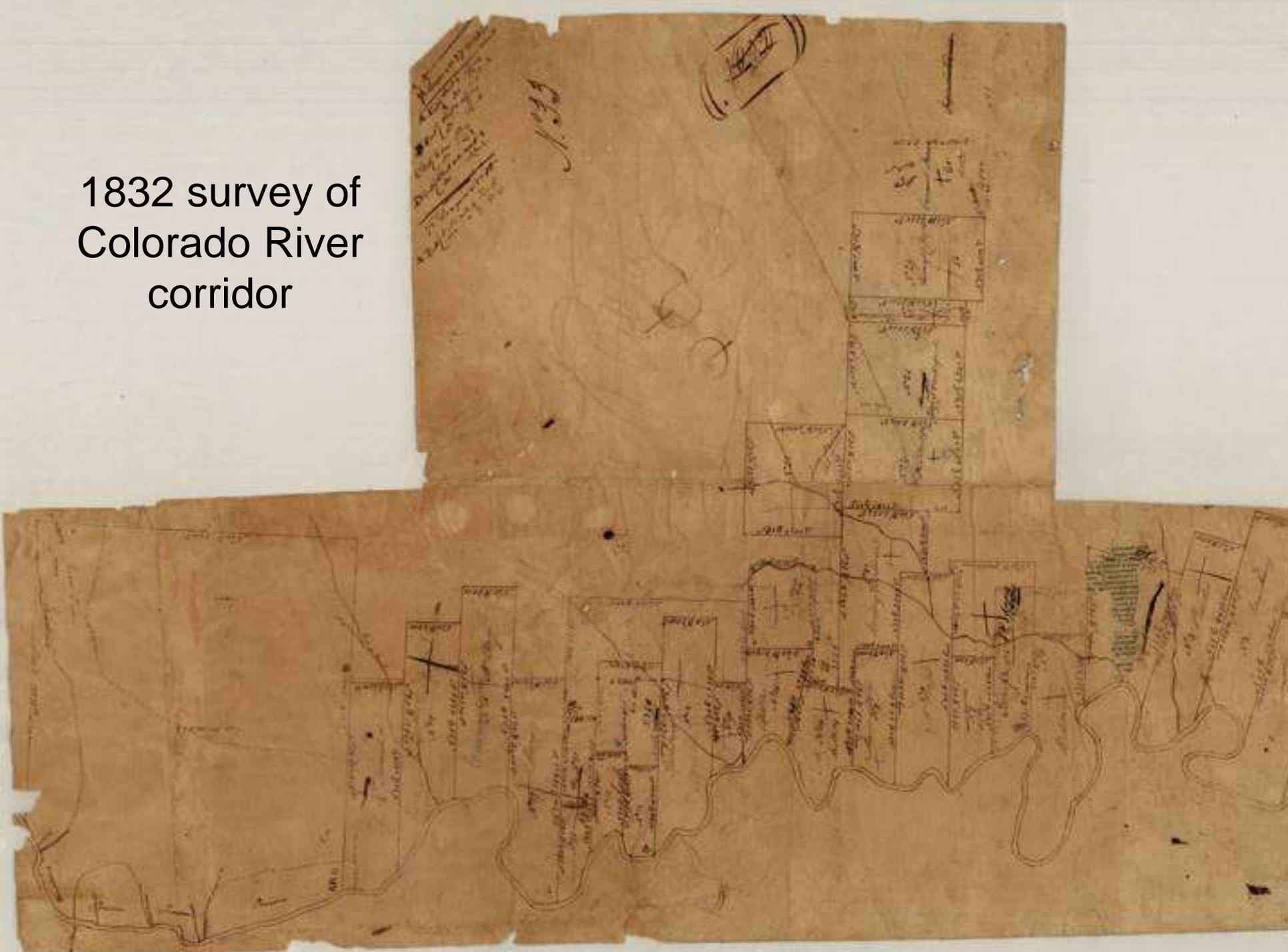


Non-native Invasive Species - Settlement begins 1820's along The Colorado River corridor



Austin's Little Colony (showing locations of homes of people mentioned)

1832 survey of
Colorado River
corridor

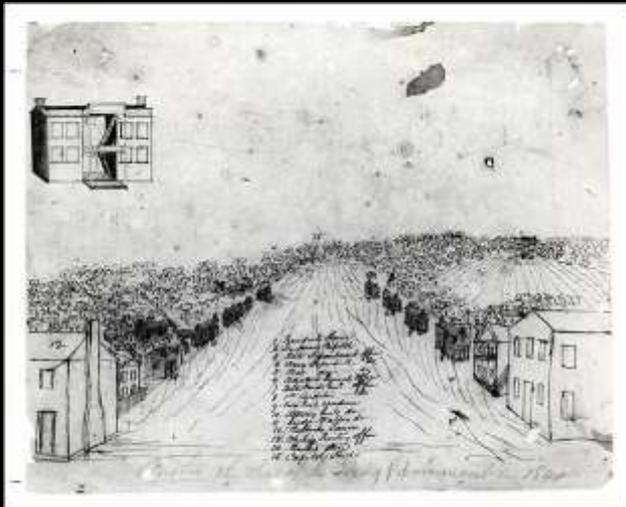


Waterloo and Montopolis

In 1835, Jacob Harrell and his family set up a camp near the present site of the Congress Avenue bridge.

In 1837, after Texas had declared its independence from Mexico, William Barton moved from his property in Bastrop County to a new home on the Colorado River near the springs. Meanwhile, other families joined the Harrell's at their camp and named their settlement Waterloo.

In 1839, Jessie Tannehill and a few investors laid out plans for a town they christened Montopolis near a river crossing west of Hornsby's.



3402 Montopolis Bridge, Colorado River, south of Austin

Austin 1839

The city was established by the three-year-old Republic of Texas in 1839 to serve as its permanent capital, and named in honor of the founder of Anglo-American Texas, Stephen F. Austin.

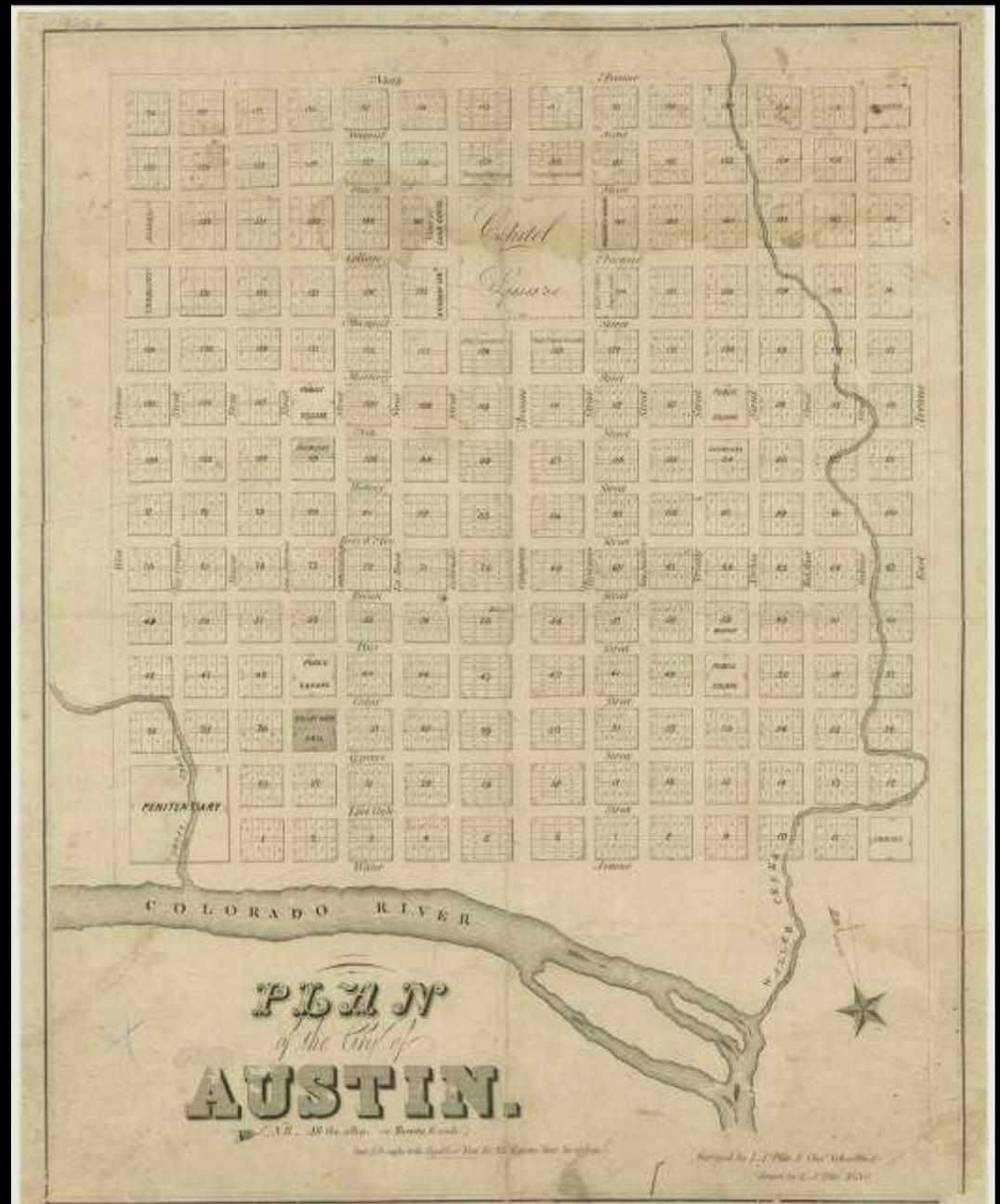
A site-selection commission appointed by the Texas Congress in January 1839 chose a site on the western frontier, after viewing it at the instruction of President Mirabeau B. Lamar, a proponent of westward expansion who had visited the sparsely settled area in 1838.

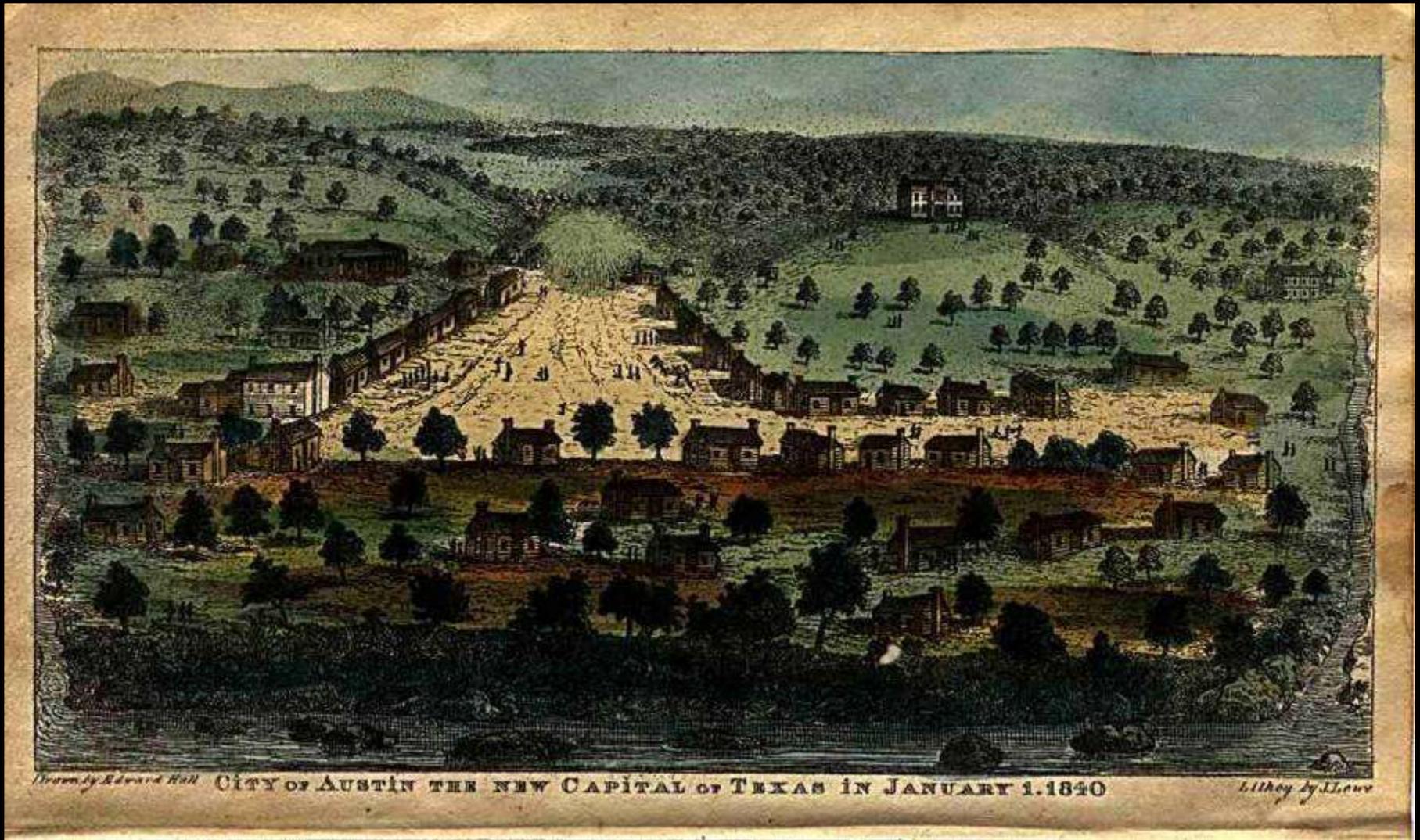
The commission purchased 7,735 acres along the Colorado River comprising the hamlet of Waterloo and adjacent lands.



Out of the 7,735 acres they chose a 640-acre site fronting on the Colorado River and nestled between Waller Creek on the east and Shoal Creek on the west.

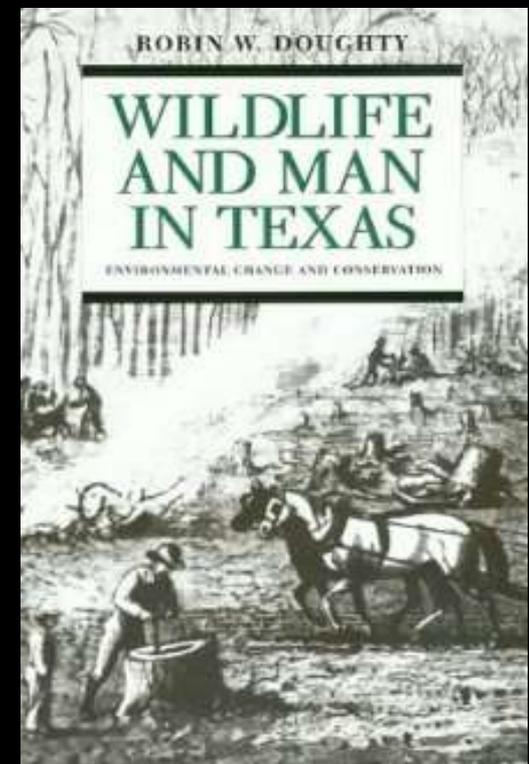
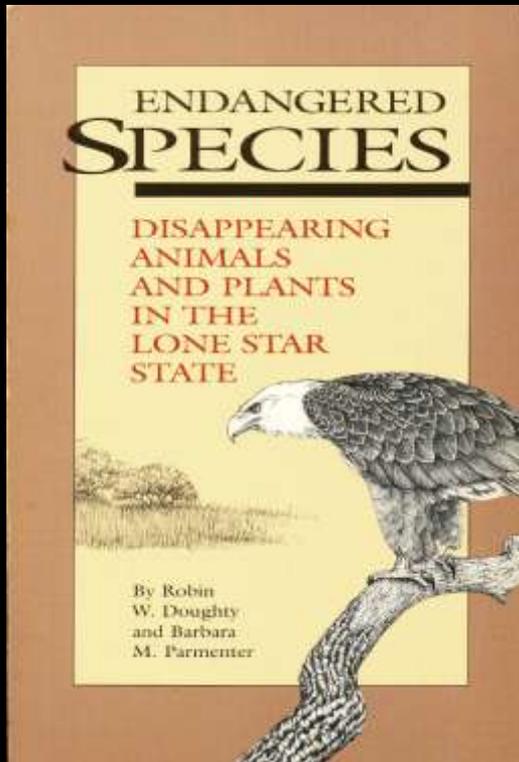
By 1840 Austin had 856 inhabitants, including 145 slaves as well as diplomatic representatives from France, England, and the United States.





From wilderness to garden – the “Mediterranean middle ground” of Texas – parkland
Robin Doughty, At Home In Texas: Early Views of the Land

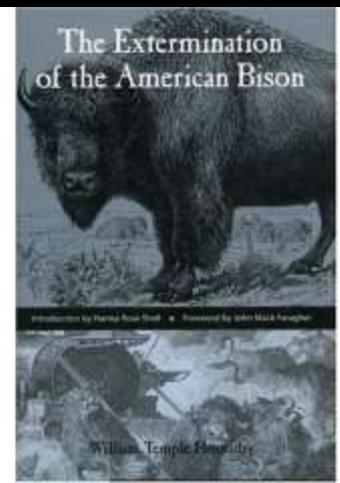
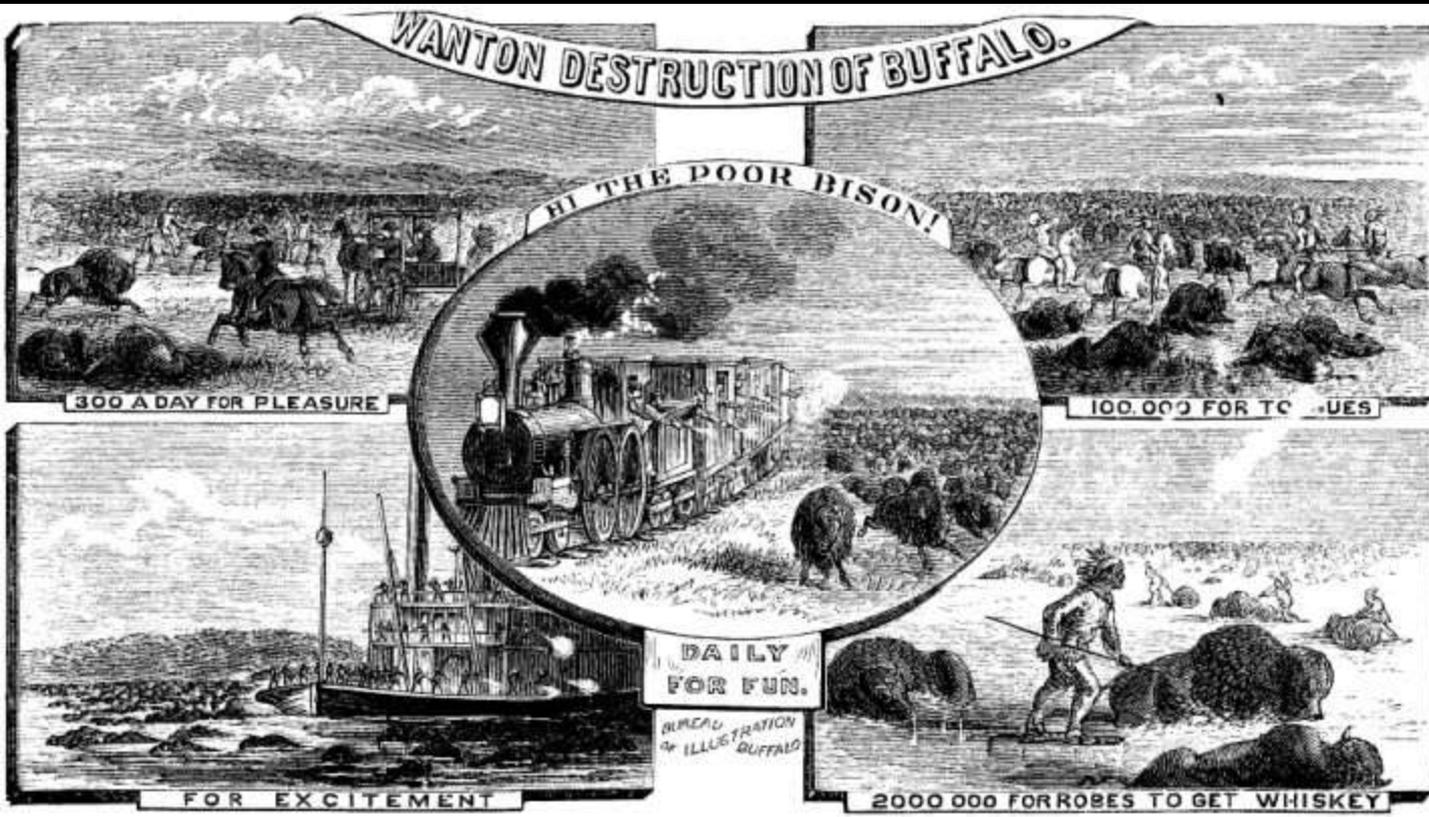
The Myth of Superabundance



Bison and Cattle

In 1889, William Temple Hornady, the Superintendent of the National Zoological Park in Washington, DC, wrote a detailed report about the disappearance of the bison, a.k.a. American buffalo, from the North American continent. At the time of Hornady's writing, there were less than 200 bison living in the wild.

It is generally agreed that, ninety years prior to Hornady's writing, more than 60 million bison roamed the plains and prairies of the American West. Most of the bison -- millions upon millions upon millions -- were destroyed between the 1830s and the 1870s.



Market Hunting/Trapping

Robin Doughty Wildlife and Man in Texas

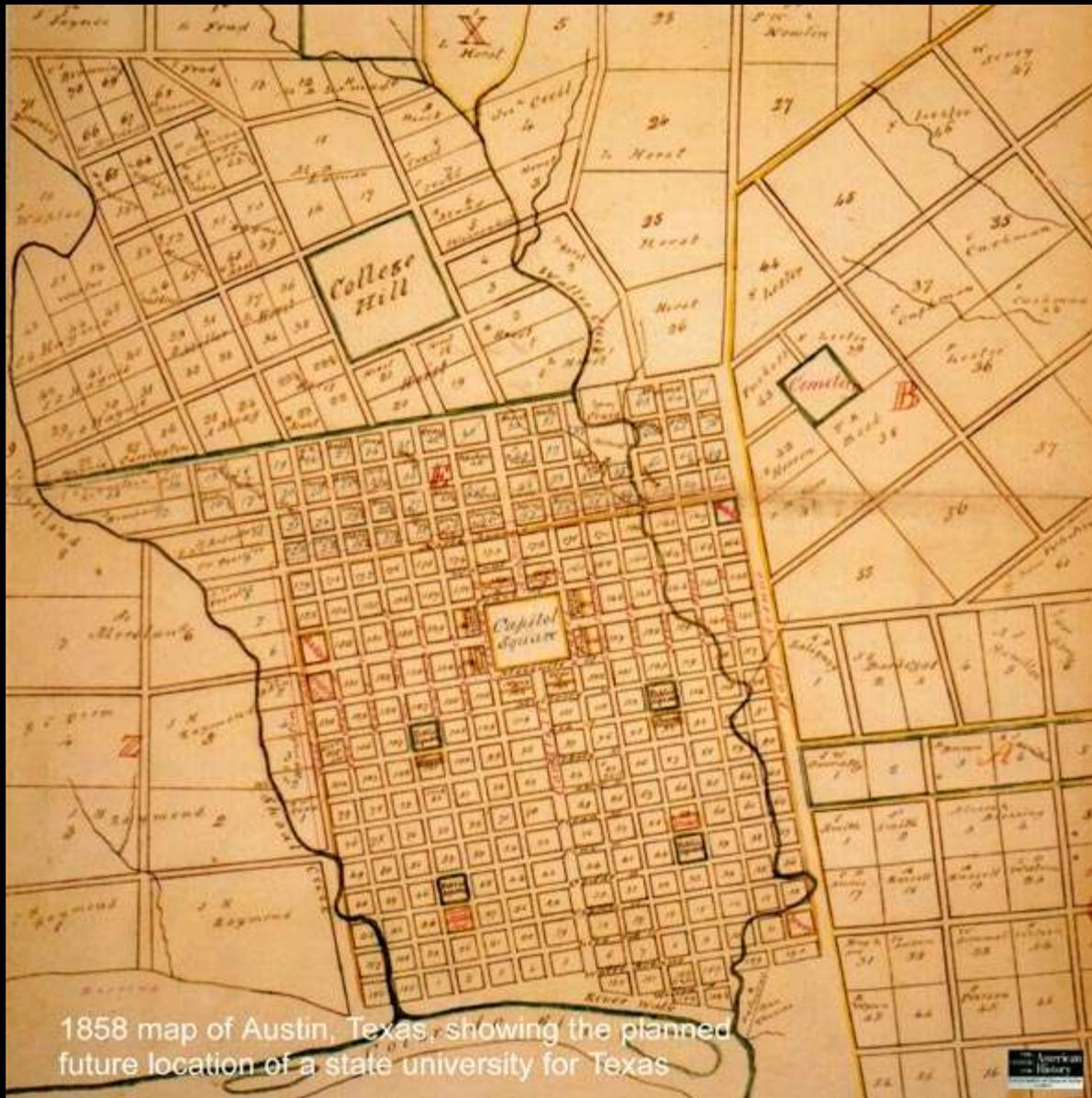
In the 1870s “passenger pigeons appeared around Austin several times, when they did, restaurant owners put them on the menu. A large flight of birds passing over the city toward the Hill Country took place in the fall of 1878.”

“String after string of many thousands of birds passed over; many lit on the tall trees along Barton Creek just above its mouth and in the trees along the south side of the [Colorado] river just above the creek, literally loading down the limbs”

Simmons, *Birds of the Austin Region* 1925.

September 1, 1914, Martha, the last Passenger Pigeon dies at the Cincinnati Zoo.





1858 map of Austin, Texas, showing the planned future location of a state university for Texas

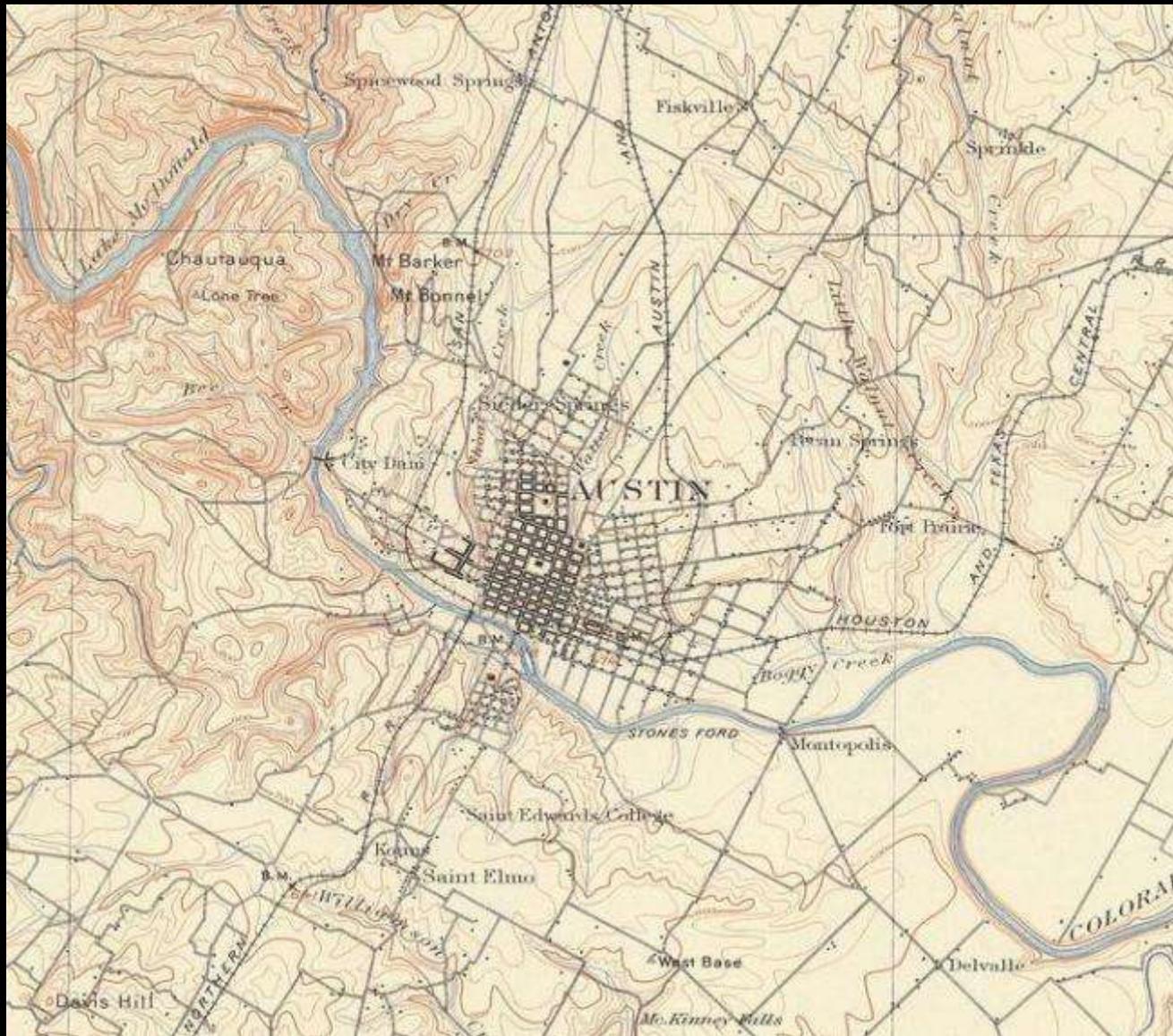
1890



PARTIAL VIEW OF
AUSTIN, TEXAS.
This view illustrates the beautiful city of Austin, the Capital of the State, Texas, showing the numerous streets, parks, and public buildings, and the surrounding hills and woods. The City is surrounded by a beautiful view of the surrounding country, and the view is taken from the top of the hill, looking down on the city.

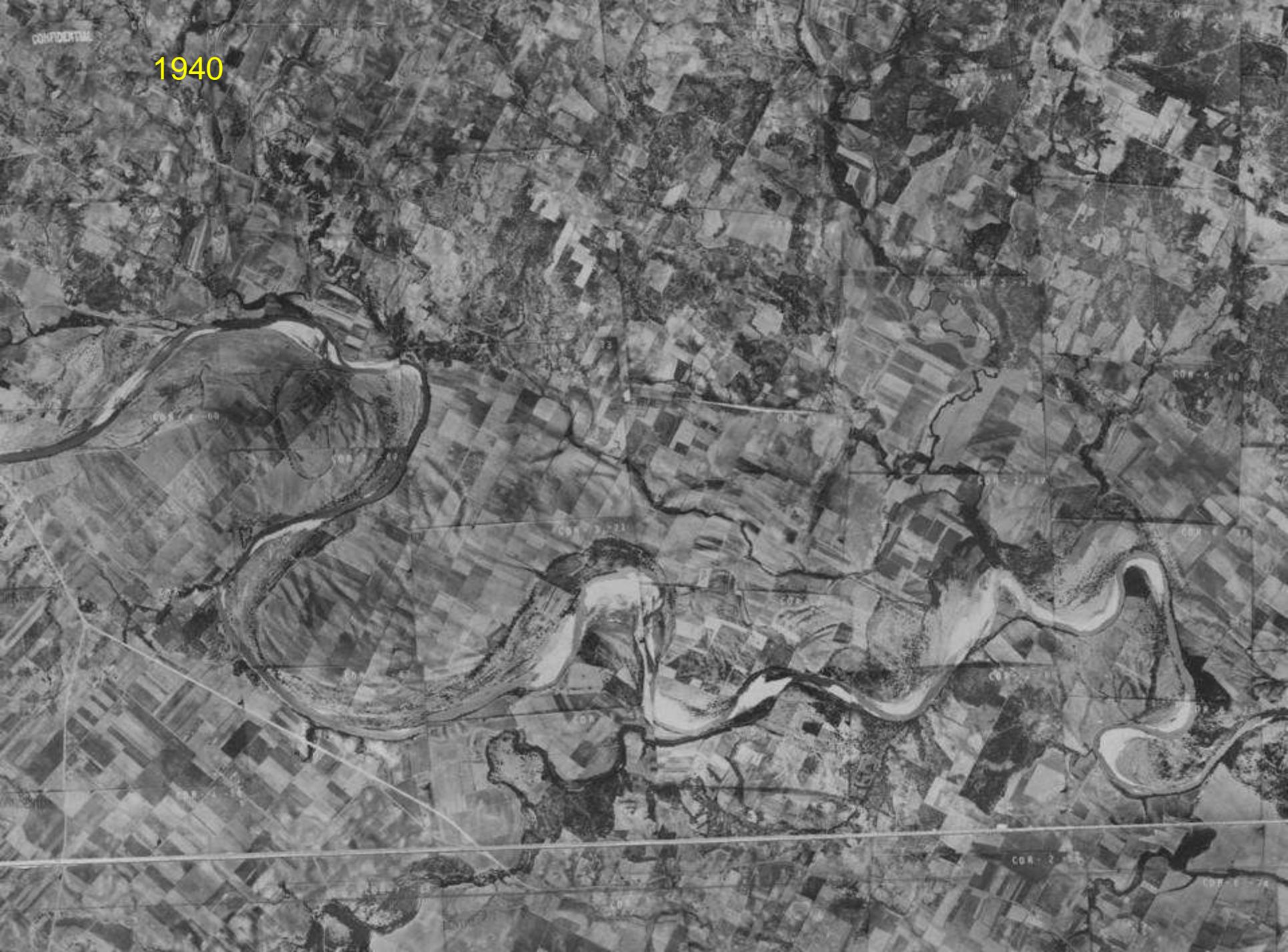


UT campus as seen from the Capitol, ca. 1894



CONFIDENTIAL

1940





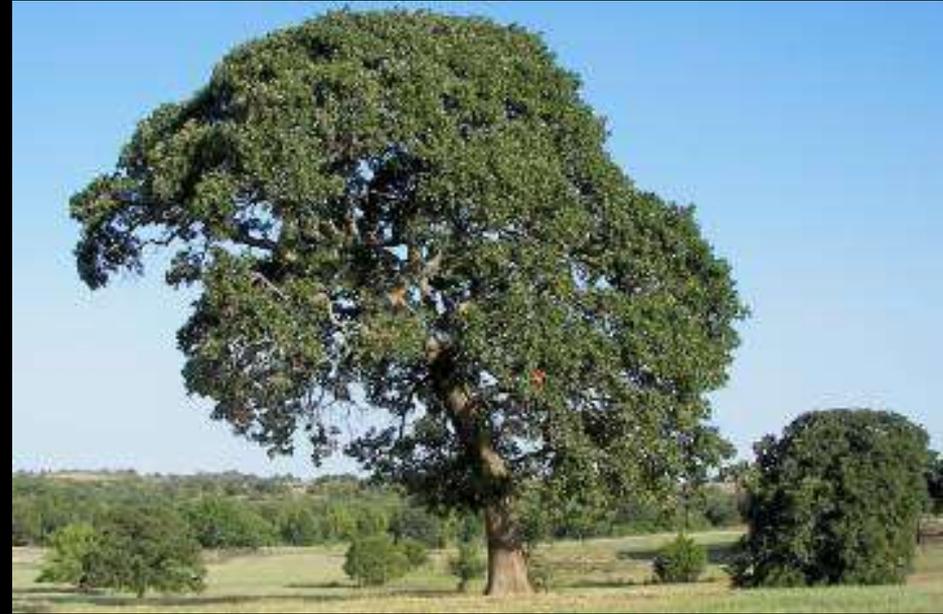




Live Oak-Juniper Forest



Blackland Prairie Grassland and Post Oak Savannah

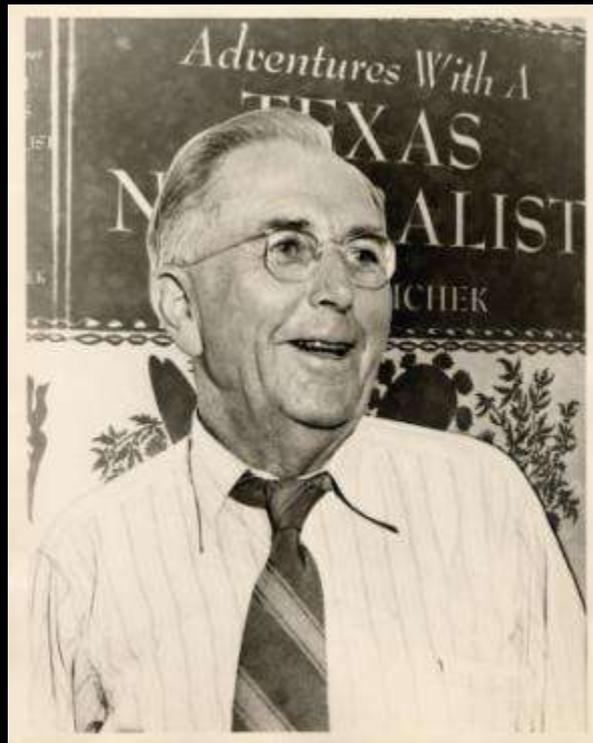
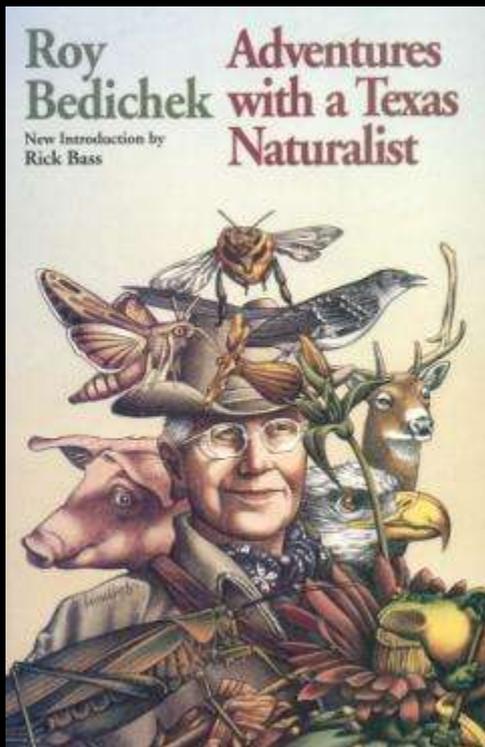


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The Sacred and the Mundane

Wilderness and the City

Natural vs. Artificial

Pristine vs. Degraded

Native vs. Non-native



Natural History

Understanding whole organisms in context

Ecological understanding shaped by cultural contexts

Cultural understanding shaped by ecological contexts



"The idea of nature contains, though often unnoticed, an extraordinary amount of human history."
Raymond Williams, "Ideas of Nature"

Applause



Questions?

