Explorers by nature.

Place-based environmental education: Creating a professional learning community

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BRIT CARES: About Water

Community of
Applied
Research in
Education for
Sustainability

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Agenda

Monday – Introduction

- Hydrology, wetlands, riparian zones, and engineered vs. natural waterways
- Water supply: past, present & future

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Agenda

Tuesday – Fort Worth Nature Center

- Exploring water features in a natural environment
- “Reading the land”

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Tuesday – Fort Worth Nature Center

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Wednesday – Trinity River

- Urban landscape/hardscape systems
- Trinity River Vision Authority

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Wednesday – Trinity River

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Thursday – School Campuses

- Landscape/hardscape
- Water retention and filtration

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Friday – Reflection & Planning

- Hope for the future: sustainable agriculture
- Preparation & presentation of grant proposals

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Learning Outcomes

Participants will:

- Experience a professional development that is place-based and project-based
- Understand the past, present and future state of water in North Texas
- Understand the plant/water/food connection
- Recognize wetlands and places that should/could be wetlands
- Create meaningful TEKS aligned projects and/or lessons on water
- Gain understanding of hydrology, riparian areas and local water supply

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Place-Based Education

"The ultimate test of [our] conscience may be [our] willingness to sacrifice something today for future generations whose words of thanks will not be heard"

Gaylord Nelson

Former governor of Wisconsin

Co-founder of Earth Day

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Place-Based Education

- Teachers were from Fort Worth, TX area
- We used PBE to orient the teachers to Fort Worth with the hope that they could use a version of it with their students
- The original settlement that became Fort Worth was founded on the banks of the Trinity River

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Trinity River

There are actually 4 forks of the Trinity River… not 3

- West
- Clear
- Elm
- East

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The Trinity River

An early settler said this about the area that would become Fort Worth in 1854

“...by far the richest and most beautiful district of country I have ever seen, in Texas or elsewhere, is that watered by the Trinity and its tributaries”

J. Pope, 1854

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You are here…

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Why is North Texas Like This?

What determines the types of plants that will grow in a particular area?

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Why is North Texas Like This?

What determines the types of plants that will grow in a particular area?

- Geology/Soil
- Rainfall
- Temperature
- Amount of Sunlight
- Latitude (relates to temp & sunlight)

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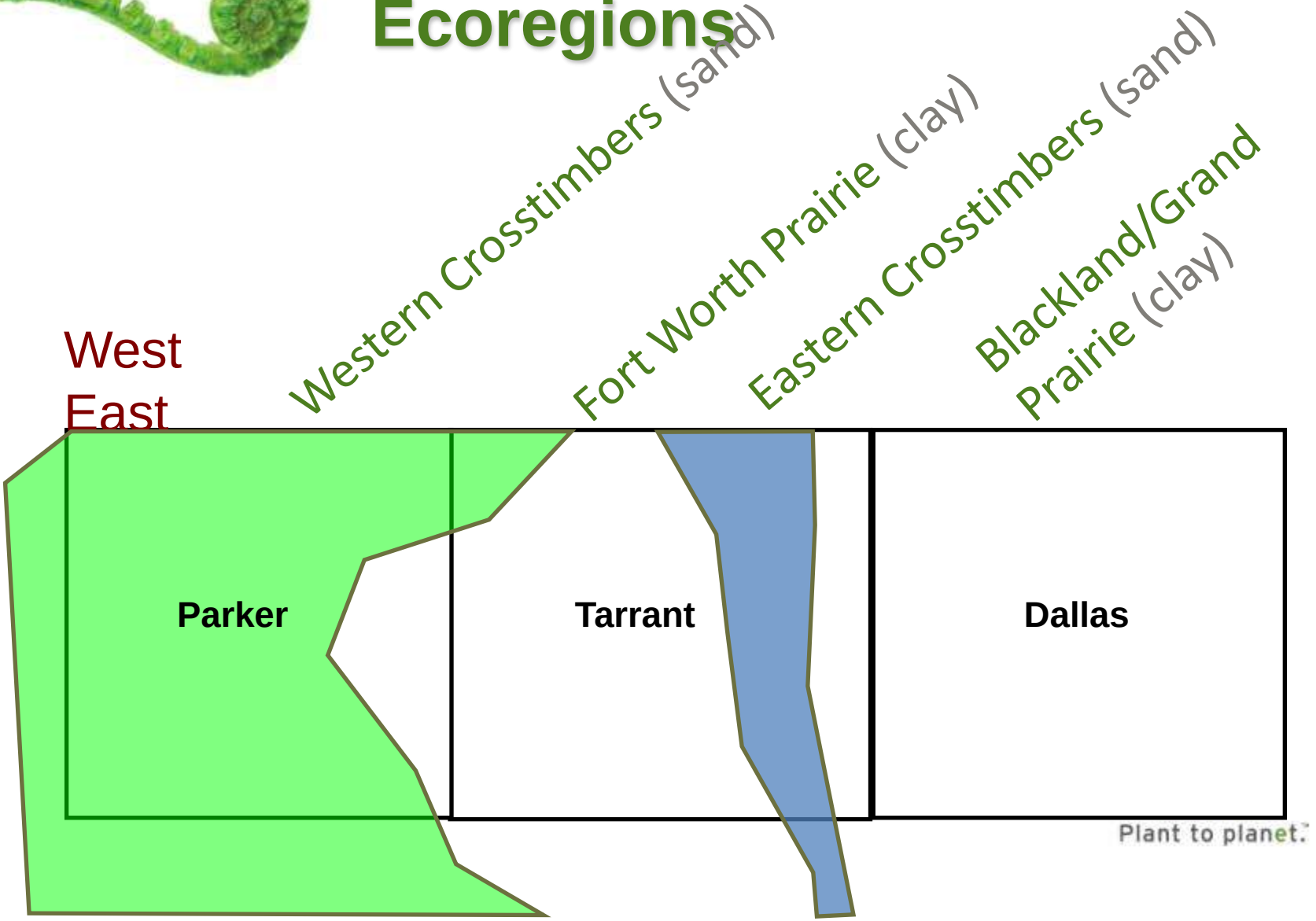
Ecoregions



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Ecoregions

- Western Crosstimbers
- Fort Worth Prairie
- Eastern Crosstimbers
- Blackland/Grand Prairie

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Western Crosstimbers

- Red Sandy loam soil
- Post Oaks
- Blackjack Oaks
- Woodland, not forest

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Historic Accounts

When approached from the west, the Western Crosstimbers were described as:

"something much resembling an irregular cloud is dimly seen. This is a skirt of woodland…called the Cross Timbers"

Col. Stiff, 1840

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Historic Accounts

“The growth of timber is principally small gnarled, post oaks and black jacks, and in many places the traveler will find an almost impenetrable undergrowth of briers and other thorny bushes.”

Kendall, 1841

Who would have purchased lumber like this?
Would it be good for building purposes?

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Timber

- Native Post and Blackjack oaks are highly gnarled and useless as timber
- Due to this, the Crosstimbers is one of the least disturbed ecoregions with more “Old Growth” trees than in other parts of the Eastern U.S.
- 200-300 year old oaks
- 500 year old Eastern Redcedars

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Historic Accounts

“I have found it (Western Crosstimbers) characterized by the same peculiarities; the trees, consisting principally of post-oak and blackjack, standing at such intervals that wagons can with out difficulty pass between them in any direction. The soil is thin, sandy, and poorly watered.”

Marcy, 1866

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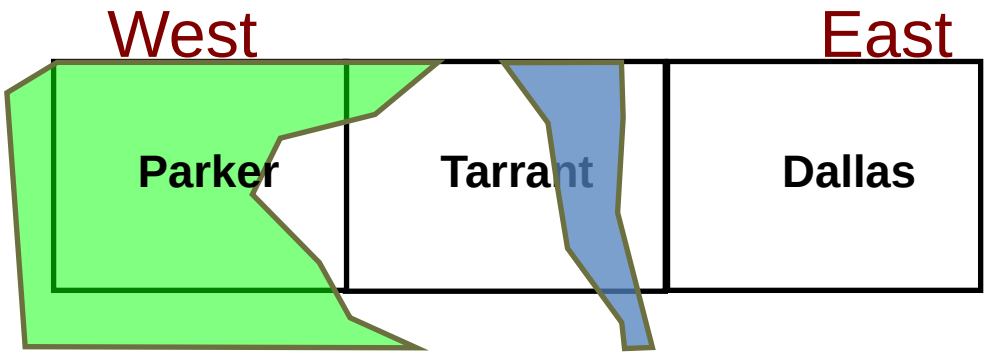
Historic Accounts

“Below, stretching as far as the eye could reach, lay the apparently interminable forest of the Cross Timbers, like a barrier, on passing which we were to be shut out from civilization, its joys and cares, for many, many weeks.”



Parker, 1854

Texas Parks and Wildlife

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What was here… in 1923?

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Trinity Perspectives II

Near Hulen Street

Near La Grave Field

Streams and Valleys, Inc.

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The Flood of 1949

Corner of 7th and University

11” of rain caused the Clear fork of the Trinity River to breach the levees and flood much of the area around 7th street in west Fort Worth

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The Flood of 1949

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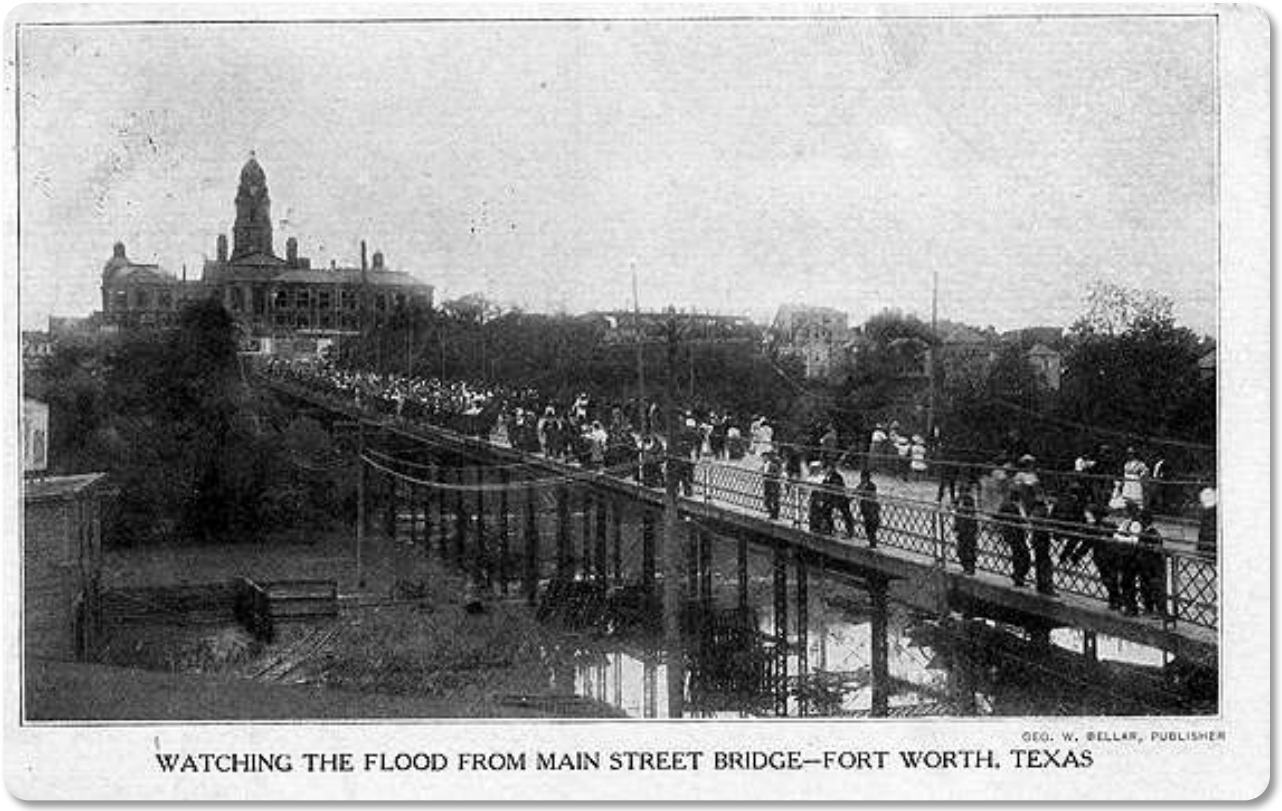
Not the first time… 1908



WATCHING THE FLOOD FROM MAIN STREET BRIDGE—FORT WORTH, TEXAS

1908 and 1933 saw major floods as well. … a reminder that flooding is a *natural occurrence* in any healthy river system

Looking south toward the Courthouse on the Main Street bridge

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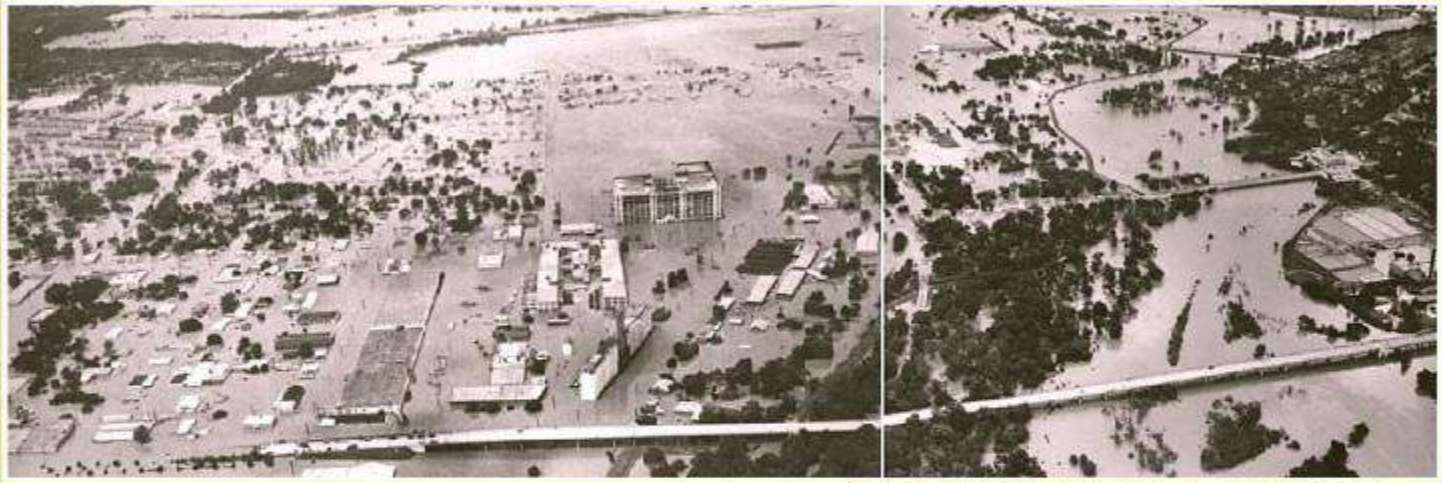
Angry Waters…

http://youtu.be/eu2qKnKRRbs

Fort Worth ...the way we were.

Trinity flood of May 17, 1949 covered most of near west side



From the Jack White Collection of Historic Fort Worth Photos, University of Texas at Arlington

Between 6 p.m. May 16 and 3 a.m. May 17, 11 inches of torrential rain fell on the watershed of the Clear Fork of the Trinity River west of Fort Worth. Fort Worth residents found when they awoke on May 17 that the levee system had been breached and much of the town was under water. Ten lives were lost and more than a million dollars damage was done in Fort Worth. In the panorama above assembled from two National Weather Service photos, the Lancaster bridge is seen at bottom. At far right, the Holly Water Treatment Plant fortunately survived with a higher levee, so the city water supply was not interrupted. At top center and left, the huge Montgomery Ward store on West Seventh was inundated with water so deep that it reached the second floor. The 1949 flood was undoubtedly the greatest flood in Fort Worth history, surpassing the floods of 1908 and 1922. The flood resulted in the construction of Lake Benbrook and a channelization program of the river by the Corps of Engineers.

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We will conquer Nature!

Levees were created and trees removed to speed water downstream

The “Water District” joined with the U.S. Army Corp of Engineers to create a levee system to prevent future flooding

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Can you imagine it?

What has changed?

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Fire Suppression

- Denser forested areas than before
- Allowed Eastern Redcedar to become more widespread and fill in gaps
- Created nearly impenetrable thickets

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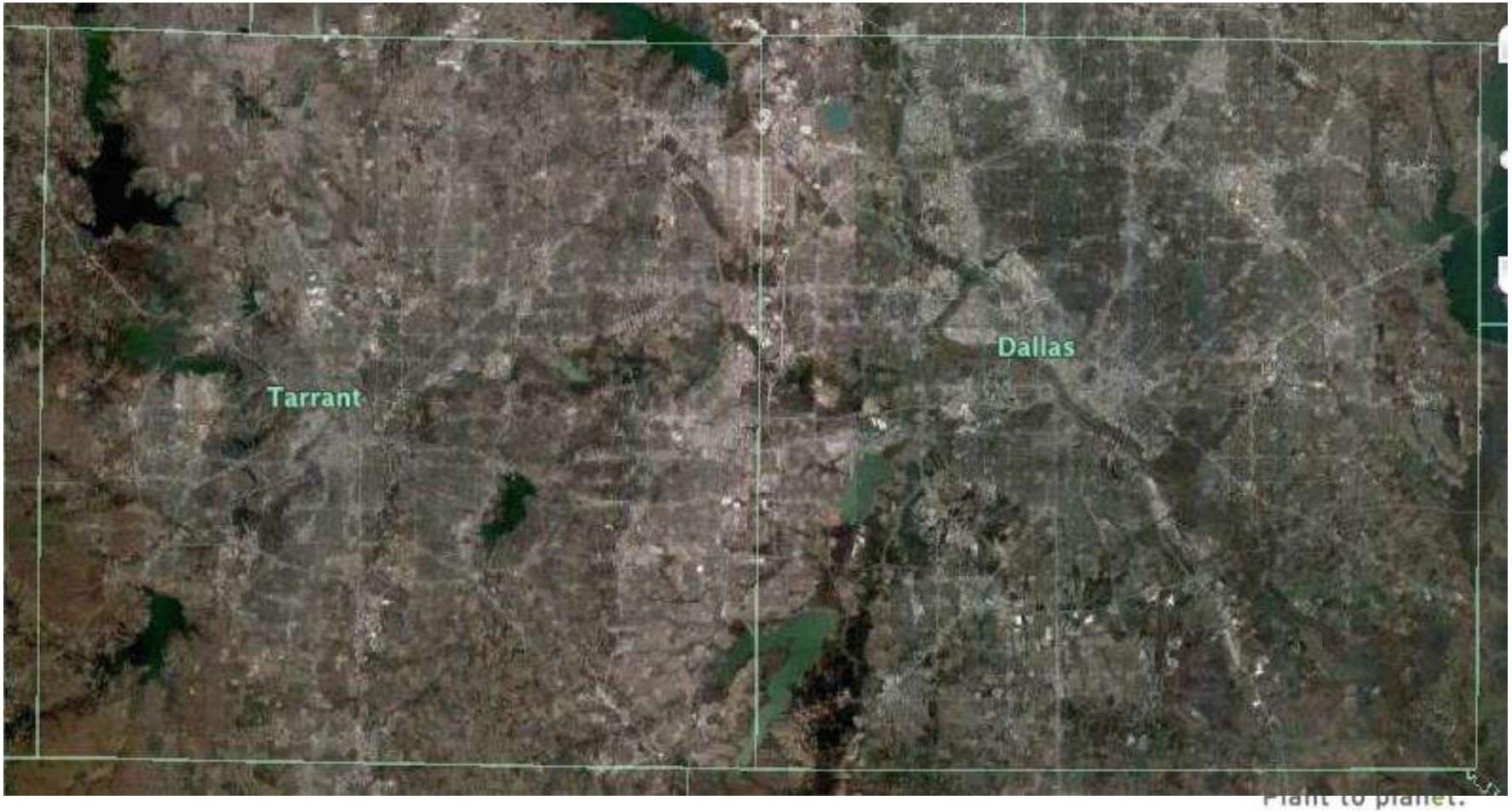
Population explosion!



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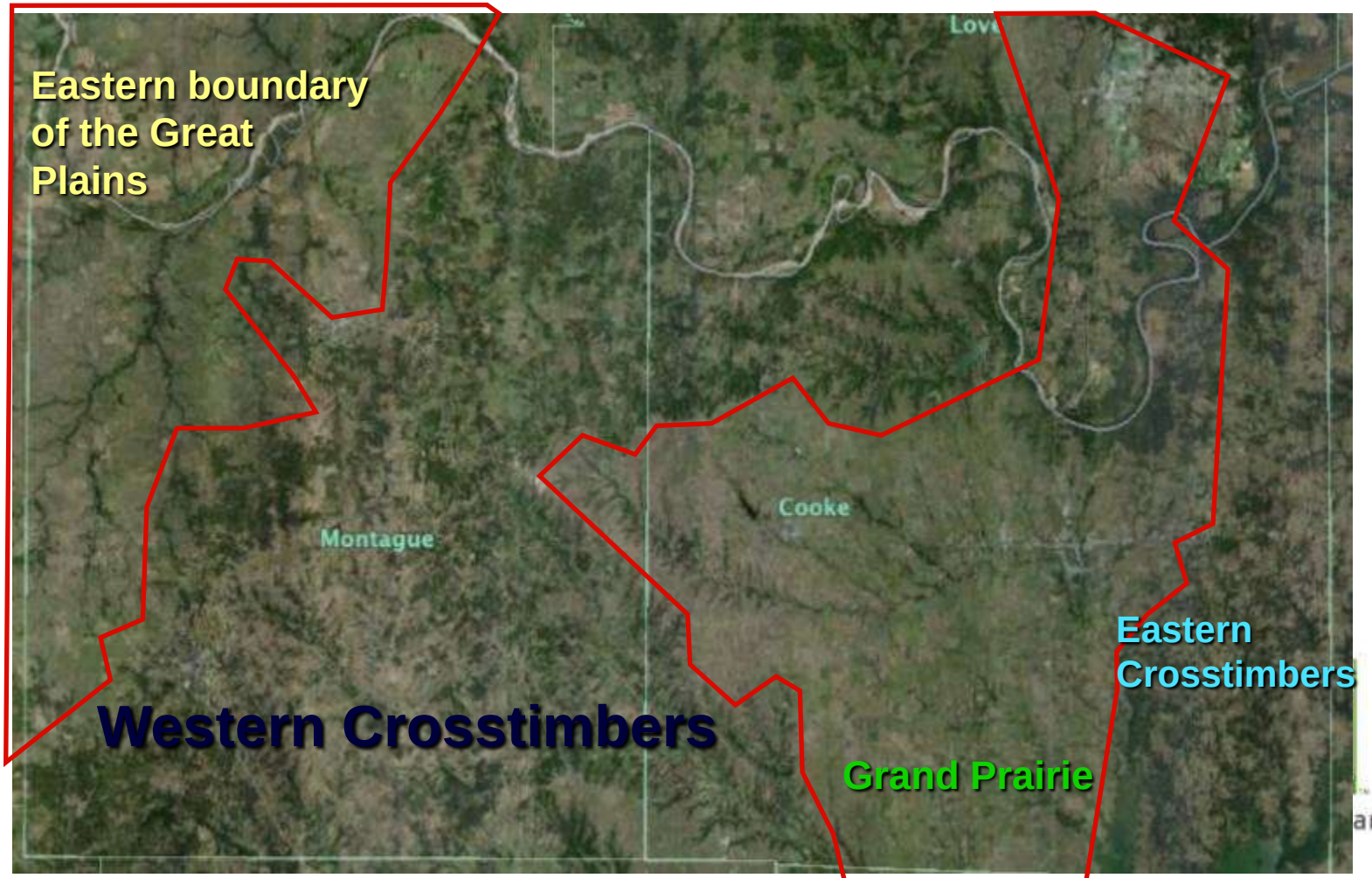
Better to the North...



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Can we re-create it?

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Can we re-create it?

Should we?

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Take a few minutes...

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Who Polluted the Trinity?

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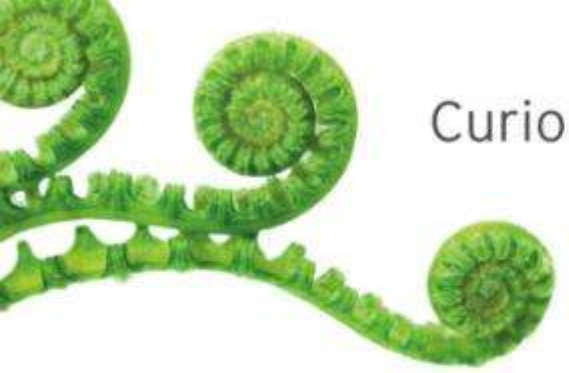

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How well do you know the area in which you live and teach?

- Form groups
- Brainstorm how you could use PBE effectively at your institution
- What resources would you need?
- Where would you find these resources?

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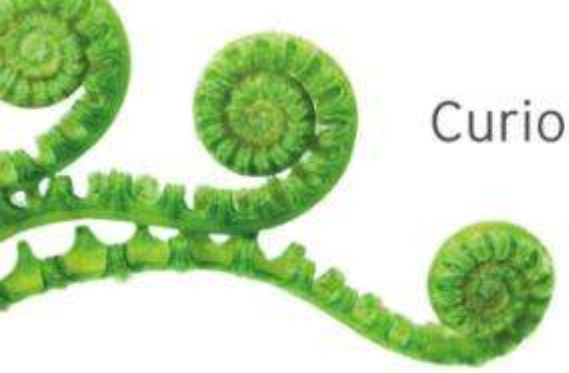

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How well do you know the area in which you live and teach?

- What regions/areas are represented here?
- Did anyone use a different aspect of their local area besides water?
  - Plants
  - Animals
  - Landforms/Geology
  - What else might work?

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Share your results

- Describe your ideas to implement some of these ideas into your local curricula
- Share ideas for resources

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Contact Us

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