

Native Texas Park Scavenger Hunt—Fall

TEACHER GUIDE

Blackland Prairie used to dominate the Dallas region, but by the mid 1920's almost 80% of it was lost to farming. The building of cities reduced the amount of remaining prairie. Today only 1% of original Blackland Prairie remains in the state of Texas. After World War II, housing was developed here, and this site was almost entirely paved.

The Bush Center's grounds are designed to give visitors an opportunity to experience the native Texas landscape once predominant in the area. This 15-acre park is a unique feature among presidential libraries and reflects President and Mrs. Bush's love of the native Texas landscape and their belief that the Center should contribute to the everyday life of nearby communities. Your appreciation of the native Texas landscape begins here!

Laura Bush is also the founder of the organization *Texan by Nature* where all Texans, from home gardeners, to land owners, to CEOs, come together to practice conservation – in big ways and small – to ensure Texas' natural heritage and economic vitality endure for generations to come, as our relationship with the outdoors is an integral part of what makes us Texan. Their "Monarch Wrangler" program is particularly appropriate for schools' and students' participation. Visit <http://texanbynature.org/programs/monarch-wrangler/> to learn more about how your class can participate both in school and at home.

Objective: This landscape contributes to the Presidential Center's ambitious sustainability objectives by increasing biodiversity, restoring native habitat, reducing the need for irrigation, and employing an organic maintenance program. The children's scavenger hunt touches upon each of these. TEKS standards are also addressed.

Introduction: Lead in by telling students they are about to go on a hike. Include hike length (total hike should take 30 minutes on site) and general hiking rules and expectations (stay on gravel or grass trails, no running ahead, do not pick or take anything with you, etc.). Photos are allowed. Students are encouraged to try to identify their personal photos by using online or published resources at school or at home. **WARNING: Be on the watch for FIRE ANT mounds**—they love our prairie, too!

Procedure: Have the students work in small groups, each with a chaperone. Nature is a new adventure for most children who have grown up in an urban environment; for them to get the most out of this hike they'll need your guidance. For groups we recommend one adult for every 5-10 children. Provide each student with the scavenger hunt handout and each chaperone with this guide.

Method: Students can each take an item and read aloud the description, while the chaperone guides them toward its location. This guide will help the adult orient the students toward the items. A map is included with dots pointing out a path. The map is numbered to correspond with each hunt item. Items were chosen to give students the experience of an historically native blackland prairie, the latest environmental techniques in sustainability and rainwater run-off management, and a close-up look at the plants and animals that make up the prairie eco-system. Once an item is located, the chaperones should ask the provided "Let's talk about it" conversation starters that will connect the students' experience at the Native Texas Park to their daily lives.

NOTE: The park is a dynamic environment. Everything on the scavenger hunt list may not be found in one visit. Encourage the students to revisit the park with their parents to show what they've learned and maybe check off a few more items. We're open year-round from sunrise to sunset and admission is always free! We offer both Spring and Fall versions of the scavenger hunt.



Stop #1: Look in the fields near the bike rack for an example of this grass. If you can't recognize side oats grama, just point out one of the other grasses as an example of grass. (Walk left past the rear of the building on the stone path...)

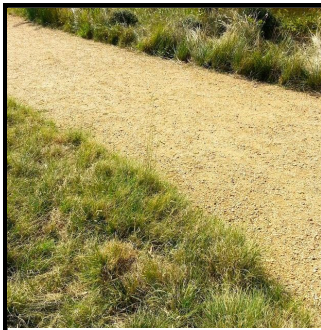
1. Side Oats Grama—Texas even has a state grass and this is what it looks like! See how the seeds hang off the **SIDE** of the stalk? Grasses were very important to both the Native Americans and European settlers because they provided grazing food for bison and cattle. Both animals were a main source of food, clothing and even shelter to people who lived on the prairie.

TEKS Social Studies: §113.15 (b)(2)(A). History (Early Texans way of life)—Grasses were food for Native American's bison and settler's cattle.

Let's talk about it:

Why do you think the settlers chose to raise cattle rather than bison? Can you find another type of grass?

Guidance: They were easier to domesticate and keep near the homestead. Bison roamed far and wide.



#2: Talk about the path you're on. (Then, take a right off the stone path toward the lawn, then a sharp right. Continue on that path then take the grassy path to the SEEP ...)

2. Crushed Stone Pathways— As you walk down the gravel path toward the Great Lawn, you will see that the paths in the park are crushed stone or grass rather than concrete.

TEKS Science: §112.15 (b)(8)(B).Earth and space (Water Cycle)— Crushed granite is a permeable surface, which allows water to seep back into the underground water table.

NOTE: Near Stop #3 is the limestone SEEP and one of many BIOSWALES in the park—both big components of our hydrology system. You may want to point it out to your students—more info is at the bottom of page 4 of this guide.

Let's talk about it:

Why do you think this is? (Hint: Rain has something to do with it!)

Guidance: Rainwater will soak into the ground rather than become run-off on a concrete path.



Stop #3: This nest is in a tree between the SEEP and the path—about eye-level. (Continue down the path, toward the wooden bridge.)

3. Habitat - A special place where plants or animals can live. For animals, a habitat must provide places for food, shelter, and water. This park provides a habitat for birds, insects and small mammals . Can you find other types of shelters on your walk? Keep an eye out for any!

TEKS Science: §112.15 (b)(10)(B). Organisms and environments (Inherited Traits) — Making nests and burrows is an inherited behavior. Each bird is born knowing how to make a nest. Different species of birds make different nests. This nest consists of dead twigs shaped into an open cup lined with grasses, leaves and trash. The male builds the twig foundation and the female makes the lining.

Let's talk about it:

What animal lives in the shelter pictured? Can you point out some food or water sources for it in the park?

Guidance: This is a Northern Mockingbird nest. They may get water from the bioswales, forebay, or wet prairie. They eat insects in the summer and fruit in fall and winter.



Stop #4: As you're heading toward the bridge you may see some grasshoppers in the plants on the hill. (Cross the bridge and follow the grassy path to the top of the ridge.)

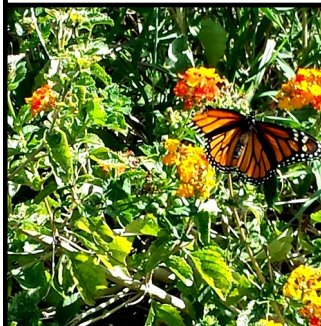
4. Grasshoppers—Producers need sunlight, water, and carbon dioxide to make their own food. Consumers are dependent on other organisms for food. Our plants are producers and grasshoppers and other plant-eating insects you see in the park are the consumers.

TEKS Science: §112.15 (b)(9)(A).Organisms and the environment (Producers, consumers, and decomposers)— The grasshopper is a consumer because it must eat plants for food.

Let's talk about it:

Do you know what a food chain is? If we start one with plants, then grasshoppers ...what would be next in the food chain in this park?

Guidance: Birds will feed on the grasshoppers.



Stop #5: At the top of the ridge, turn left. On your right you'll see lantana and possibly some monarchs. (Continue east on the grassy path.)

5. Monarch Butterfly—The state butterfly of Texas! The monarch female will only lay eggs on milkweed plants. For this reason, Milkweed is called a host plant. Nectar plants (like this Texas Lantana and Tall Goldenrod, elsewhere in the park) provide food for the monarch during its fall migration. We have both host plants and nectar plants in this park. Many other butterflies visit the park, too.

TEKS Science: §112.15 (b)(10)(A).Organisms and the environment (Life cycles)— First butterflies are eggs, then caterpillars, then chrysalis, then butterflies.

Let's talk about it:

Can you see any butterflies today? What is one thing you can do at home to promote a butterfly habitat?

Guidance: Planting nectar flowers like lantana, goldenrod and mistflower attracts butterflies; planting host plants like milkweed or parsley encourage egg-laying.



Stop #6: Right before the grassy path meets the stone path is a big Turk's Cap plant - on the left. (After viewing it, turn left on the stone path toward the bridge...)

6. Turkscap—These flowers have adapted to attract pollinators. When a hummingbird sips nectar from inside the flower, its head picks up pollen, too. Then, as the bird moves from flower to flower tasting more nectar, the pollen rubs off on the pistil of a new plant, thus fertilizing it, resulting in the production of the fruit. In Fall, you may spot a hummer!

TEKS Science: §112.15 (b)(10)(A).Organisms and environment (Adaptations)— Red plants have adapted to the fact that hummingbirds prefer red.

Let's talk about it:

Do you know what else attracts hummingbirds to the beautiful Turks Cap flower?

Guidance: Hummingbirds are attracted to the color red.



Stop #7: Stop in the center of the wood bridge and notice the wet prairie with the cistern beneath. (Turn around and look on the other side of the bridge...)

7. Wet Prairie—Water from all over the property eventually ends up here, where it slowly infiltrates into our cistern (an underground storage tank that can hold 250,000 gallons of water). We reuse 90% of our stormwater run-off. The grasses and sedges here adapt to both saturated and extremely dry conditions. When it has water below, the wet prairie will be green. If dry, it will be brown. Wet prairie plants include Little Bluestem, Bushy Bluestem, and Inland Sea Oats.

TEKS Science: §112.15 (b)(7)(A).Earth and space (Properties of soil) — Different plants live in dry and wet soils. Plants that live in wetter soils have adaptations so their roots don't drown or rot.

Let's talk about it:

Where do you think the rainwater run-off would go if we didn't have a wet prairie and cistern to keep it on our grounds?

Guidance: The water would run through the city storm-water drains and away to other parts of the city where it may cause erosion and flooding.



Stop #8: You'll see several tall Maximilian Sunflower plants. They may be dried or flowering. (Turn around and walk down the stone path toward the building...)

8. Maximilian Sunflower— This yellow range plant is eaten by many livestock. In the fall, it produces a heavy crop of seeds, making it a valuable plant for wildlife, too. It was named for the naturalist Prince Maximilian of Germany, who led an expedition into the American West in the 1830's.

TEKS Science: §112.15 (b)(10)(A).Organisms and the environment (Life cycles)— The purpose of flowers is to produce seeds. Seeds can be dispersed by wind, by water, by animals eating them, and by sticking to animal's fur. This plant grows from 3-8 feet tall.

Let's talk about it:

What park wildlife do you think would enjoy sunflower seeds as a food source?

Guidance: Mainly birds, but mice and other rodents will also eat the sunflower seeds.



Stop #9: Pause here and discuss the purpose of the Forebay in the hydrology system at the park. (Continue on the path to the amphitheater area...)

9. Forebay—Via underground pipes, stormwater from the service area to the east of the building, and the building itself, flows into the forebay. The limestone rocks slow the water down in order to prevent erosion and the sediment and litter carried with it settles out here before the water is released into the bioswales and on to the wet prairie and cistern.

TEKS Science: §112.15 (b)(1)(B).Scientific investigation and reasoning (Conservation)— We have one forebay in the park. It's another component of our hydrology system.

Let's talk about it:

Do you notice any litter or oily residue in the forebay? Where do you think that comes from?

Guidance: The service/work areas can get dirty with litter and chemicals. Rainwater picks it all up and brings it to the forebay for filtering, then it is cleaned as needed.



Stop #10: There are a few trees in a grove. Look for the pecan tree. Point out its leaves, nuts and bark. (Have the students sit down in the amphitheater...)

10. Pecan Tree— There are several trees near the amphitheater. One is the state tree of Texas, the pecan tree. Both Native Americans and Settlers used the pecan nut to supplement their diet, they used the leaves and bark for medicinal purposes, and the wood for implement handles and as for fuel to burn.

TEKS Social Studies: §113.15 (b)(2)(A). History (Early Texans way of life)—Native Americans and settlers enjoyed this native plant source of protein.

Let's talk about it:

What is your favorite food made with pecans?

Guidance: Suggest and help the kids share the many ways they enjoy the nut of our native Pecan tree.

You can find the pecan tree in the fall by looking for nuts on the ground or in the tree.



11. Bonus Stop: Take a break here while students examine the limestone. (Your hunt ends here. Make your way back to the museum.)

11. BONUS STOP! Amphitheater — The stone used in the park is called "Leuders Limestone" and comes from Abilene, Texas. 65 million years ago Texas was under water. This limestone was formed by the layering of shells of small fossilized snails, shellfish, and coral over millions of years. The architect said this was the most beautiful limestone he's ever seen.

TEKS Science: §112.15 (b)(7)(B).Earth and space (Weathering and Erosion)— This stone is now at the surface of the land, it will eventually wear away by weathering(wear due to mechanical or wind forces) and erosion (wear due to water).

NOTE: You may want to stop at the wall near the bicycle racks on the way out. The fossils there may be easier to find.

Let's talk about it:

Take a close look at the limestone in the amphitheater. What color is it? How would you describe its texture? Can you spot any fossils?

Guidance: Encourage the students to go and explore the properties of the stone .

Did you love your experience at the Native Texas Park? We encourage you to write a "Thank-you" letter to President and Mrs. Bush about your experience. Please send all correspondence to:

President and Mrs. Bush
P.O. Box 259000
Dallas, TX 75225-9000

OTHER SITES YOU WILL SEE IN THE PARK :

As you walk throughout the park you'll see other components of our hydrology system that the students may ask about: (1) The limestone **SEEP** (near stop #3) serves as a barrier (wall) that keeps storm water from the lawns and parking lot from rushing into the swale below. Instead, the water slowly trickles out joints in the wall for days after a rain. The seep's micro climate supports shade and moisture-loving plants such as Maidenhair Fern, Wood Fern, Spider Lily, and Spicebush (2) **BIOSWALES** are above ground channels where rainwater from the landscape and parking makes it way to our storage cistern. Boulders slow down the flow of water as it heads toward the cistern and wet prairie. Wherever you see what looks like a dry creek with lots of boulders—it's most likely a bioswale—you can see them from any of the bridges. The best time to appreciate the rainwater management (hydrology) system here is after a rain.

OTHER TEKS APPLICABLE TO YOUR PARK VISIT TODAY:

Physical Education: §116.6 (b)(3)(F). Students take advantage of an opportunity for physical activity out in the community. English Language Art and Reading: §110.15 (b)(18)(B). Students will translate their experience to the form of a Thank-you note.

******* SPECIAL NOTICE *******

Please have the students check their shoes for gravel or debris before entering the museum.

Your consideration is appreciated!



FALL SCAVENGER HUNT MAP

STOP - at each number

READ - the clue

FIND - the object or something similar

DO - the "Lets talk about it" activity

