



## San Antonio Botanical Garden Exploring the Texas Native Trail

Your mission, should you choose to accept it, is to explore the Texas Native Trail, which showcases three of the ecosystems from around our great state! Be sure to pick up a map at the front desk in the Carriage House. As you “walk across Texas,” you’ll visit the Hill Country, East Texas Pineywoods, and South Texas Brushlands. Each ecosystem has characteristic plants and animals, soil, topography, geology, and rainfall patterns. On the trail, you’ll learn how plants have adapted to the conditions found in their ecosystems and by the end of your visit, you’ll be able to tell just by looking at a plant where it might grow. Good luck exploring!

### From the Texas Native Trail Pavilion, head left down the path to the Texas Hill Country.

Millions of years ago this area was covered by a shallow sea. The rolling hills of limestone are made up of the fossil shells of marine organisms. Today the limestone is covered with a thin layer of soil and is home to many wildflowers, prairie grasses, oaks, and junipers.

1. Look for one of the Hill Country’s characteristic plants, **Agarita**, along the right side of the path going down the hill. The berries of this plant are a favorite food for small mammals and songbirds. Agarita also makes great cover for them. Why? Sketch a leaf below. Native American Herbal Lore: the Chiricahua and Mescalero Apache also ate the berries\* and the roots were used to make a yellow dye.

\*Never eat plants in the wild that you are not 100% sure of—and remember, no picking in the Garden! Remember, you can go to the grocery store. Let’s leave the wild food for the wildlife!

2. On your left before the next bend, you can find the easily recognizable **Twist-leaf yucca**. It is an endemic plant, only growing on the Edwards Plateau in Texas. In late spring, it will send up a flower stalk with beautiful white bell-shaped flowers that are pollinated by the yucca moth. How do you think they can find it at night?



The female collect balls of pollen three times the size of her head, tucks them under her “chin” and finds a new bloom. First, she checks it to make sure that no other female has visited it yet. Then she will lay her eggs within the ovary and fertilize the flower with the pollen she has collected. In exchange, the yucca plant provides her young with room and board (the fruit and some seeds to eat). This is a good example of **mutualism**, where organisms provide each other with a benefit.



3. Water in the Hill Country is held in underground layers of limestone called **aquifers**. Head to your right to visit an example of a seep. This area receives an average of 30 inches of rain per year. The rain soaks into the ground until it reaches an impermeable layer of rock and then flows along it, sometimes emerging on the surface as a seep or spring. Springs help support a variety of plant and wildlife. List two plants growing nearby or animals visiting the Seep. How can you help protect our water resources and the wildlife that depend upon them?

4. Just past the Seep, you'll find **Mountain cedar** (Ashe juniper) growing. Its berries are a popular food source for wildlife and its bark is used by the rare golden-cheeked warbler to build its nest. So why is it such an unpopular plant?

5. Stop and explore the **Schumacher House**. Just like wildlife, people depend on the natural world for everything we need to survive. Pioneer families depended much more on their local environments than we do today. Many of the things we use everyday come from far away. What were some of the native materials that were used to build this home? What do you think each of the rooms were used for?



## East Texas Pineywoods



The Pineywoods in East Texas are the southwest edge of the pine-hardwood forest that extends over the southeastern U.S. The Pineywoods are a critically **endangered ecosystem**, with less than 2% remaining. Most of the plants native to East Texas prefer an acid, sandy soil and moist, humid conditions. Six thousand cubic yards of sandy clay were brought in to help create these conditions.

1. Gently rub the leaves of the **spicebush** on your left just before the bench. How do they smell to you? Pioneers often made tea from the leaves and twigs of this plant. Another animal thinks it's just great, too! Spicebush is a host plant for the beautiful spicebush butterfly. Look under the leaves to see if you can find any eggs or caterpillars. Be careful not to disturb any that you may find.

2. **Bald cypress** trees are characteristic of the swampy lowlands found in East Texas. Look for their unusual roots sticking up out of the water. What are they called? How are they an adaptation to help this plant survive in its habitat? Also, notice how the trunk of the tree flares out at the bottom. This is called buttressing. How might this be an adaptation?

3. Follow the path to the right and look for the **Palmetto palms** past the bridge. Notice their large leaves. What do you think Native Americans or settlers might have used them for?
4. Take a moment to look for the **layers of the forest**. The canopy is made up of the tallest trees, covering the forest like a...canopy. In some forests, the different trees in the canopy fit together like a puzzle. In a mature forest, they might not let much sunlight come through to the other layers. Under the tallest canopy trees is the understory with smaller trees. Sometimes these are just young canopy trees, but other times they are species that don't like to have as much light. Birds often nest in this layer (why might that be?). The next layer is the shrub layer, giving good cover to small animals. Then you might find the herb layer, made up of perennial plants. Finally, there is the forest floor, where all the leaves, sticks, and everything else falls. Notice the layer of leaves carpeting the forest floor. How might these benefit the plants and animals of the forest? Write down the name of a plant from each layer:



**Canopy:**

**Understory:**

**Shrub layer:**

**Herb layer:**

**Find something cool on the forest floor. What is it?**

5. Look for the longleaf and loblolly pines near the log cabin. Compare the size of your hand to the longleaf pine needle. How many of your hands does it take to reach the full length of the leaf? These leaves can grow up to 18 inches long and were used by Native Americans to weave baskets. Longleaf pines grows well when low-intensity fires burn through their stands, returning nutrients to the soil and keeping out other woody species. The Garden does not burn our Pineywoods and so you can see how over the years, through a process called **succession**, many other plants have grown up and filled in the forest.

## **South Texas Brushland**

The South Texas plains are characterized by dryland trees and shrubs such as mesquite, huisache, and cenizo that have adapted to 20-30 inches of rain per year. As you explore this area, compare these low-growing plants to the tall trees and shrubs of East Texas. What other differences can you see?

1. As you enter South Texas, look for the **big lechuguilla** plants growing on the right-hand side, along the wall. Its dark green leaves with a light green stripe were pounded with stones and cleaned to remove the fibers, which could then be used to make rope. The sharp tips of the leaves were made into needles. Many of the plants in South Texas are spiny or have thorns. What are they trying to protect? (Hint: what would they lose if an animal took a bite out of them?)

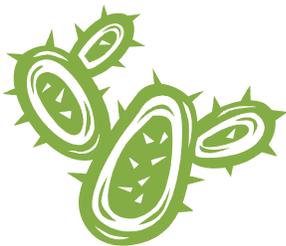
2. Stay to the left and find the beautiful **Guajillo** on your right. How do its leaves compare to those of the palmetto from the Pineywoods? Plants lose water through tiny holes (stomata) in their leaves. Plants that grow in areas with little rain often adapt by having few or no stomata. How would having small leaves be an adaptation to a dry climate?

3. Just opposite the guajillo, you'll find a **Grey sotol**. Look around at the color of the leaves on the plants around you. How is it different from in East Texas? You might notice that many of the plants here are a grayish-green. That's because many of these plants have tiny hairs or wax covering them to help prevent water loss. If you are very careful, you can gently rub off some of the wax on the sotol...and look, it's a darker green! Please don't rub it all off, though.

4. Continue on the path until you reach the **Spanish dagger** (it's leaning down to the ground). Look at the shape of its leaves. What would happen if it was raining? How is that an adaptation to help capture water in a dry climate?

5. Just before the Bird Watch, look for a small tree with green bark called **Palo verde**. In an extreme drought, it will drop its small leaves (through which it loses water). How is having green bark an adaptation to dry conditions? (Hint: think about what a plant is doing when it is green and what part of the tree is usually green.)

6. Circle around and follow the path that heads back to the Adobe House (don't go down the maintenance path). Can you find the century plant, cholla, and prickly pear cactus? What is this fun cactus named after? These three plants show off another water-saving adaptation called **succulence**. They store water inside their thick leaves (the century plant) and stems (the cholla and cactus). Did you know that the pads of the cactus are actually succulent stems? Their spines are modified leaves.



Quiz time! If you see a plant with large green leaves, what predication can you make about the ecosystem in which it grows?

If you see a plant with tiny, hairy, gray-green leaves, where might it live?

**Congratulations on completing your mission!** Thank you for visiting the Garden!