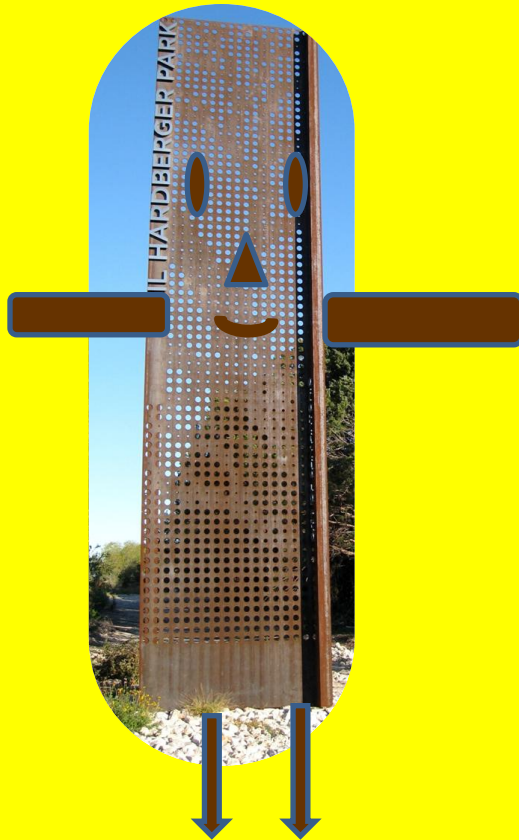


Hardy's Nature Guide

for Young Naturalists



I'm Hardy—
your Phil
Hardberger
Park guide to
adventure
and learning

Write Your Own Guide!



- Here's how it works:
- Read the page
- And add your own questions, observations and thoughts!

What Is Phil Hardberger Park All About?

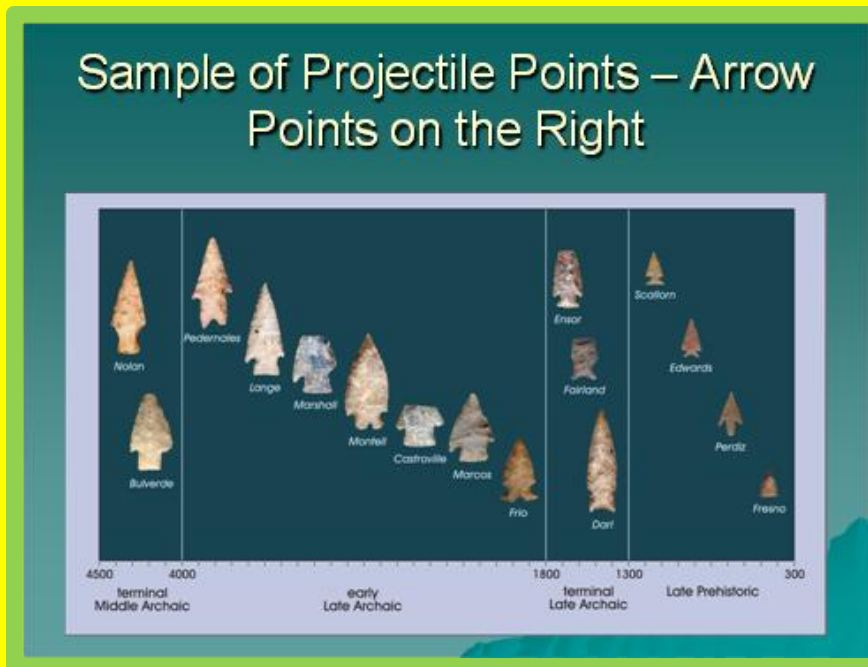
- The park is about creating wilderness in the city.
- The goal is to restore and renew the original landscape, provide recreation, and educate about our San Antonio natural area and history.

- Circle the pictures you would choose to show what the park is about–



Early Humans in San Antonio

- How might we learn about early people in this part of Texas



Dr. Steve Tomka, Director of the Archaeological Research Center at the University of Texas at San Antonio,

Early Humans in San Antonio

- What do we know about the early inhabitants of San Antonio?
- People lived here 12,000 years ago.
- Archeologists—scientists who study early people from the objects that remain in the land—have found dart and arrow points and bits of pottery.

- Draw a picture of some of the things that archeologists might find indicating the presence of early people:

The Voelcker Farm

- How was the land of Phil Hardberger Park used in the past?



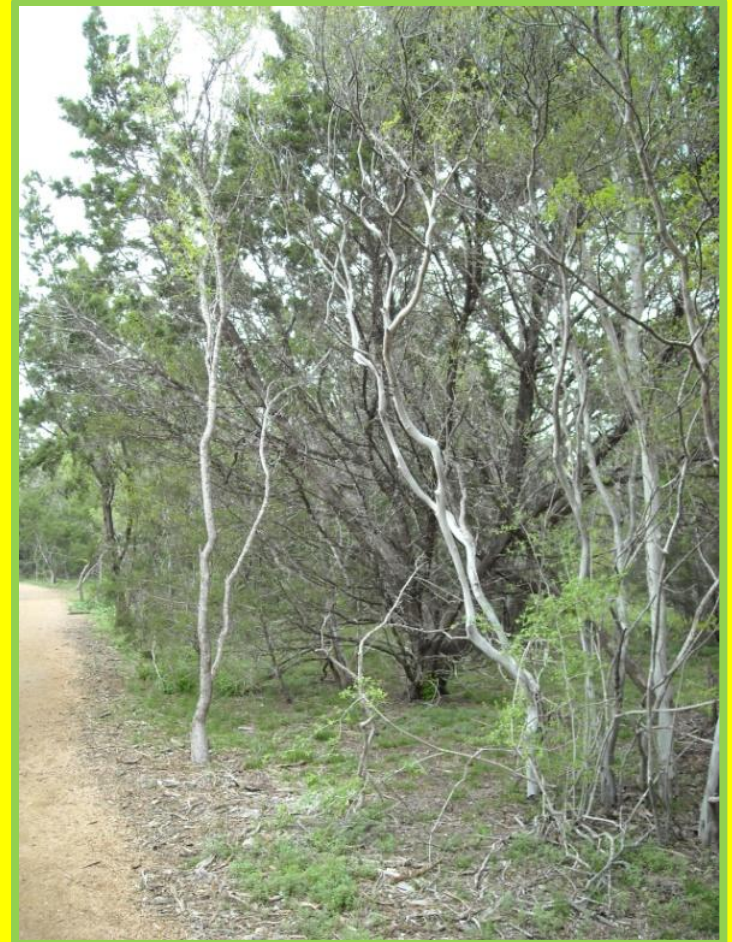
- Rendering courtesy of Phil Hardberger Park Master Plan as reproduced in
- <http://blog.mysanantonio.com/jeffcoyle/2011/03/volunteers-to-restore-historic-dairy-barn-at-phil-hardberger-park/>

The Voelcker Farm

- How was the land used before it was a park?
 - Minnie and Max Voelcker lived on the land of Phil Hardberger Park. They had a dairy farm.
 - When large dairies were formed, they sold their milk to the large dairies.
 - When there were too many dairy farms, they sold their cows and ran cattle and sold hunting leases.
- What do you think it was like to live on a farm 100 years ago?

Ashe Juniper

- People sometimes call the Ashe Juniper “cedar”.
- What do you know about “cedar” trees?



Ashe Juniper

- There are lots of Ashe Juniper trees in the park.
- In the past, fire kept the Ashe Juniper trees in balance. In recent times, man controlled fire and Ashe Juniper had an advantage over shorter shrubs, trees, grass and plants.
- The tree takes the first quarter inch of rain that falls.
- Litter from its leaves repels water so water runs off. The litter also covers other young plants.
- Its pollen causes allergies.
- The Golden-Cheeked Warbler makes its nest from strips of the bark of old Ashe Juniper.
- The Ashe Juniper litter helps with soil creation.

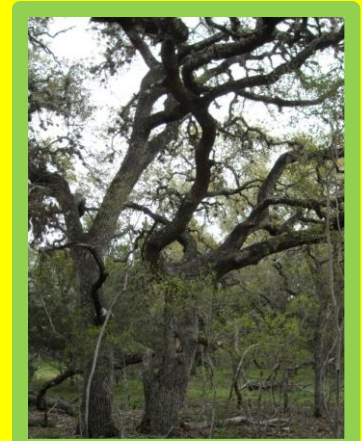
- Do you think the Ashe Juniper is good or bad? Why?

Ashe Juniper Live Oak Ecosystem

- What conditions favor the Ashe Juniper–Live Oak ecosystem?



Ashe Juniper



Live Oak

Ashe Juniper Live Oak Ecosystem

- Phil Hardberger Park was once a savanna grassland with few scattered trees, mainly Live Oak and some Ashe Juniper.
 - Live Oaks like to grow in shallow limestone soil on hills and steep areas or cliffs.
 - Ashe Juniper prefers to grow on slopes and in canyon lands.
 - The savanna and Live Oaks were sustained by natural fire to reduce woody undergrowth, and by roaming native animals. After European settlement, fire was controlled, and fenced herds were able to strip native grasses to the ground.
 - Live Oak savanna became Live Oak/Ashe Juniper woodlands with lots of Texas Persimmon and Whitebrush.
- Look at the two trees—what are some of the differences you see?

Savanna Restoration

- What is the purpose of savanna restoration projects?



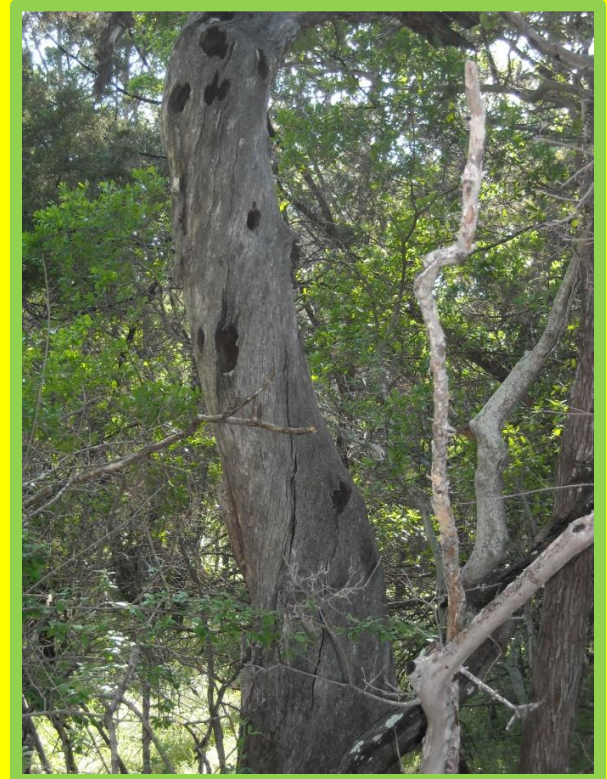
Savanna Restoration

- Phil Hardberger Park used to be savanna.
- Savanna is grassland with just a few scattered trees.
- Fire kept too many trees from growing, so grass, small plants, shrubs and small trees could grow. Bison ate the grass and moved on.
- In the last century, people controlled fire and the young woody trees grew and blocked the sun and rain. Fenced cattle ate the grass to the roots.
- The land became a woodland with Ashe Juniper, Texas Persimmon and Live Oak trees.
- The park is cutting down some of the trees, and planting grass and wildflowers so the savanna can return.

- Draw a picture of what a savanna looks like:

Snags

- What functions do snags serve?

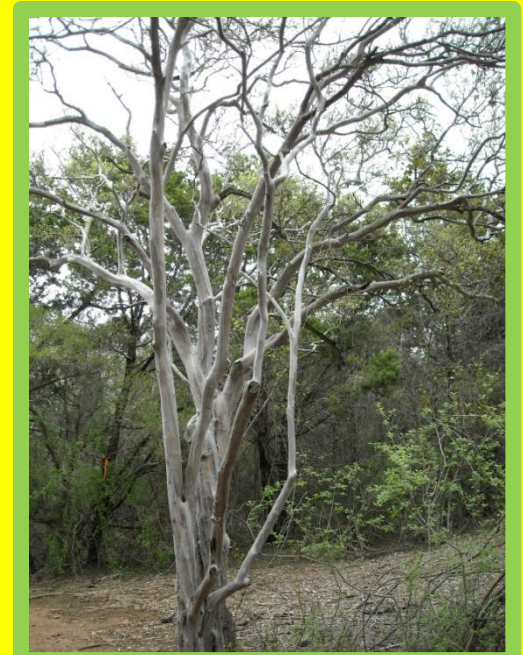


Snags

- Do you wonder why the park service lets dead trees remain in the park?
 - Standing dead trees are “snags” and they are important to a healthy forest.
 - Bird, reptiles and mammals make their homes in the holes of the dead trees.
 - Woodpeckers come first and then other birds like the Carolina Chickadee use the holes the woodpeckers make. The Texas Spiny Lizard can live in a snag.
 - And when the trees fall, insects and fungi live on the dead trees and eventually the trees turn into rich soil.
- What are some of the good things snags do to help the life of the forest?

Texas Persimmon

- What are some of the uses of the Texas Persimmon?



Texas Persimmon

- The Texas Persimmon is easy to spot with its smooth gray bark and small oval leathery green leaves.
- It has many uses. Wildlife eat the fruit. The fruit makes delicious jelly. The wood is used to make piano keys and tool handles. You can make a dye from the fruit.

- Draw a picture of one use of the Texas Persimmon:

Kidneywood

- What insect depends on the Kidneywood tree?



Kidneywood

- Kidneywood is one of the understory trees that grow under the big trees in the park.
 - Others are the Gum Bumelia, Blue Condalia, Wafer Ash and Elbowbush and Eve's Necklace.
 - Kidneywood is important for the Dogface Butterfly. Birds and butterflies love its sweet smelling blossoms.
 - The inside of the wood can be used to make an orange dye.
 - Healthy forests need three levels—
"canopy" trees which are tall,
"understory " trees and other plants which are middle sized and flowers and grasses and other ground level plants.
- Names tell you about plants.
 - Why do you think Kidneywood, Elbowbush, Eve's Necklace, Gum Bumelia, and Wafer Ash or Hoptree, have those names?

Wildlife of the Park

- Which animals live in which places in the park?

- Ringtail (Bassaricus) from USDA FS



Wildlife of the Park

- The park has different ecosystems. An ecosystem is a set of relationships among the species, and habitats where they live, of an area.
 - The east part of the park is on Salado Creek—a “riparian” area. Riparian refers to the plants that grow along rivers or creeks. Dark black Rock Squirrels like the vegetation, or plants, in a riparian area. Coyotes and raccoons use the creek as a highway for travel.
 - Some animals are nocturnal like the ringtail, a relative of the raccoon. Nocturnal animals are active at night, when the darkness provides cover.
- What do you think are some of the advantages of being nocturnal?

Birds of the Park

What are some good places to look for birds?



Roadrunner

- Photos courtesy of Lora Render



Golden-crowned Kinglet



Sage Thrasher



Field Sparrow

Birds of the Park

- In the sky—that's where you may see Turkey Vultures, Black Vultures and Northern Caracaras.
- There are over 100 species of birds that have been seen in Phil Hardberger Park.
- In the trees you may see Northern Cardinals, Black-crested Titmice, Bewick's Wrens and Golden-fronted Woodpeckers.
- And on the ground—Roadrunners!
- Migrating birds such as the Cedar Waxwings can be spotted as they travel through.
- Draw a picture of one of the birds in the park:

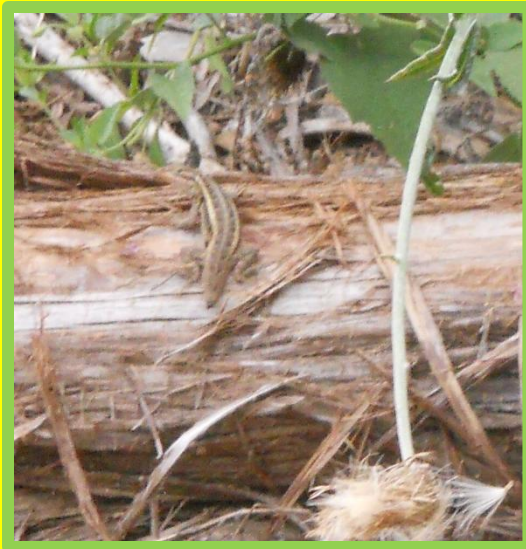


- Photo courtesy of Barbara Schmidt

Reptiles of the Park

- How does camouflage help reptiles?

Rosebelly Lizard



Reptiles of the Park

- Reptiles are land animals with a backbone and scales covering their bodies. There are four kinds of reptiles in Texas, and three—snakes, lizards and turtles—live in the park.
- Reptiles are cold-blooded. They depend on the outside temperature to control their temperature. That is why you see them move in and out of the sun.
- Different reptiles like different habitats—rocky, moist, ground, trees.
- The Rosebelly Lizard is one of the most common reptiles seen in the park.

- **Draw a picture of one of the habitats of reptiles:**

Wildflowers of the Park

- Why are wildflowers important?



Horsemint



Greenthread



Prairie Verbena



Bladderpod



Gaillardia



2 Leaved Senna

Wildflowers of the Park

- Wildflowers do many things to help the ecosystem.
- They anchor soil and keep water from running off.
- They provide food, cover and nesting material for butterflies and other insects, birds and other species.
- Some wildflowers, such as Horsemint, Lindheimer's Senna and Larkspur, can be used like medicine.
- Some wildflowers provide beautiful dyes.
- And wildflowers make us happy with their beauty!

- **Draw a picture of a wildflower:**

Exotic Invasive Plants

- What conditions allow exotic invasive plants to take over the ecosystem?



KR Bluestem



Giant Mustard

Exotic Invasive Plants

- Exotic plants are not native to Texas.
- Exotic invasive plants are able to do better than native plants. They takeover. They make it hard for native plants, which are necessary for the survival of native species of wildlife, birds, reptiles, amphibians and insects, to survive.
- Since the plants are not native, they do not have native wildlife to keep them in check.
- Many of these plants have been bred to withstand extremes of weather and insects and so they can compete more favorably.
- Exotic invasives include: nandina, chinaberry, ligustrum, Chinese tallow tree and lantana.

- Why are exotic invasive plants a problem?

Prickly Pear

- What is a tuna?



Prickly Pear

- Prickly Pear are Opuntia. They have flat pads or platycades. You can fry the young pads and eat them! The pads have two kinds of spines—hard fixed spines and small hair-like spines called glochids. The small spines come off and stick to whatever touched them.
 - The fruit of the cactus is called a tuna. Tuna is a Spanish word for fruit of a plant. You can make jelly from them.
 - The white on the cactus pad is cochineal—a red dye is made from it.
- Draw a picture of one use of the prickly pear?

Tasajillo

- Tasajillo is also called the Christmas Cactus—why do you think people use that name?



Tasajillo

- Tasajillo is known by many names, most frequently Pencil Cactus. It is a thin cactus with beautiful red fruit and yellow flowers.
 - It is the nesting site for Cactus Wrens.
 - Its fruits are eaten by many animals.
- Why do you think it's called Pencil Cactus.

Yucca Moth

- How are the yucca moth and yucca related?



Yucca Moth

- The yucca moth and the yucca are an example of “obligate mutualism”. Obligate mutualism means that they need each other.
- The moth needs the yucca flower to lay and feed eggs. The yucca needs the moth to bring pollen from one flower to another.
- They help each other!

- Draw a diagram of how the yucca moth and yucca work together:

Butterflies and Bugs

Why do you think we see so many butterflies in the park?



Checkered Skipper



Sleepy Orange



Checkered white



tiger Swallowtail



Red Admiral

Butterflies and Bugs

- The savanna and wildflowers attract lots of butterflies. What similarities and differences can you see in how they look?
- One of the insects of the park is the dung beetle. Dung is animal droppings. These beetles roll dung into balls and roll the balls away. How do you think dung beetles help us?

Grasses

- Most people think all grass is the same—but each kind of grass is different!



Texas wintergrass



Bushy Bluestem



Australian Bluestem



Little Barley



Perennial Ryegrass



Eastern Gamagrass

Grasses

- The Savanna Restoration has many grasses. You can see both native and exotic invasive grasses in the park. Some of the native grasses are Texas wintergrass, Cupgrass, Eastern gamagrass, Perennial ryegrass and Texas grama. You will also see invasive King Ranch bluestem, Australian bluestem and Bermuda grass.
- Look at the grasses—what are some of the differences you see?

Your Phil Hardberger Park!

- Phil Hardberger Park is called a “learning landscape” and “urban wild”.

- What do those words tell you about the park?

Key Words

- **Do you know the meaning of these words? Find them in the dictionary!**
- Ecosystem
- Biodiversity
- Savanna
- Snag
- Ecotone
- Obligate mutualism
- Archeology
- Chert
- Canopy tree
- Understory tree
- Riparian
- Habitat
- Nocturnal

Key Words Defined

- Ecosystem--the complex set of relationships among the resources, habitats, and residents of an area.
- Savanna—a grassland with occasional groupings of trees so that the tree canopy, or cover, does not close.
- Snag—a dead standing tree.
- Ecotone—the meeting of two or more ecoregions.
- Obligate mutualism—two species that depend upon each other to survive.
- Archeology—the study of past human life and activity based on objects from those times.
- Canopy tree—a large tree the leaves and branches of which cover the ground when seen from above.
- Understory tree—a small tree that grows under a larger tree.
- Riparian—the plants that are found by rivers and creeks.
- Habitat—the natural place for a living thing to survive.
- Nocturnal—active at night.

Some Scientific Names

- Ashe Juniper—*Juniperus ashei*
- Live Oak—*Quercus virginiana*
- Texas Persimmon—*Diospyros texana*
- Kidneywood—*Eysenhardtia texana*
- Twist-leaf Yucca—*Yucca rupicola*
- Prickly Pear—*Opuntia engelmannii* var. *lindheimeri*
- Tasajillo—*Cylindropuntia leptocaulis*
- Yucca Moth—*Prodoxidae*
- Gaillardia—*Gaillardia pulchella*
- Prairie Verbena—*Glandularia bipinnatifida*
- Northern Cardinal—*Cardinalis cardinalis*
- Golden-cheeked Warbler—*Setophaga chrysoparia*
- Ringtail—*Bassariscus astutus*
- Rock Squirrel—*Otospermophilus variegatus*
- Rosebelly Lizard—*Sceloporus variabilis marmoratus*
- Texas Rat Snake—*Elaphe obsoleta lindheimerii*
- Tiger Swallowtail—*Papilio glaucus*
- Little Barley—*Hordeum pusillum*

Useful Websites

- <http://www.flyingwild.org/>
- <http://www.gaultschool.org/Home.aspx>
- <http://www.wildflower.org/plants/>
- <http://www.texasbeyondhistory.net/>
- <http://www.edwardsaquifer.net/>
- <http://sfr.psu.edu/youth/sftrc/lesson-plans/forestry/k-5>
- <http://www.projectwild.org/growingupwild.htm>
- <http://www.thebutterflysite.com/texas-butterflies.shtml>
- <http://www.discoverlife.org/mp/20q?guide=Caterpillars>
- <http://www.sanaturalareas.org/butterflyid1.htm>
- <http://www.npot.org/>
- <http://essmextension.tamu.edu/plants/>
- <http://www.austinreptileservice.net/lizards.html>
- <http://birdingbyyear.com/>

- http://www.saws.org/education/h2o_university/index.cfm

Acknowledgements

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