

Zilker Botanical Garden Self- Guided Tour

The purpose of this document is to provide information for Austin area schoolteachers as they tour Zilker Botanical Garden.

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Marion Alsup
Tommy Clayton
Don Freeman
Jo Kautz

Bette J. Millis
Irene Shlapak
Tommye Zetner

Enjoy the gardens.

Dr. Carol McKenzie
Vice President, Education
Austin Area Garden Council
Zilker Botanical Garden

Rules of the Rose (and all other things in Zilker Botanical Garden)



Welcome to **Zilker Botanical Garden**. We are glad that you are here. You have joined over 390,000 visitors of all ages who have enjoyed the gardens in the past year. We ask that you

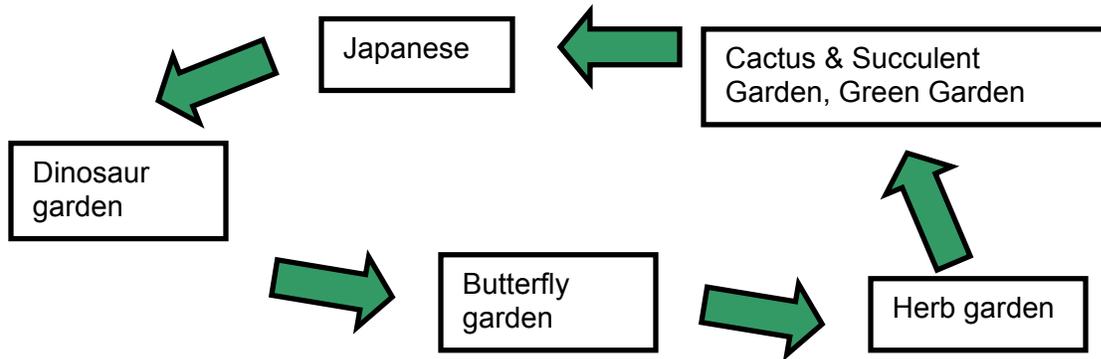
- 1. Stay with your group.**
- 2. Stay on the trail. Don't go into the flowerbeds or the walls that surround them.**
- 3. Don't pick flowers or pick up things including sticks, rocks, animals or insects.**
- 4. Enjoy the gardens and learn new things about plants and nature.**

After you leave you will be the expert of the gardens so you will need to remember these rules. We will be exploring 5 distinct gardens:

- The oriental and rose garden

- The dinosaur garden
- The butterfly garden
- The herb garden
- The cactus garden and the green garden

You may start at any of these places first, but will need to go in the following order:



Isamu Taniguchi Japanese Garden

[Start at the lantern]

Focus Questions

Who has pushed a wheelbarrow before?

Who has pushed a wheelbarrow full of rocks before?

Who has pushed a wheelbarrow full of rocks up a hill before?



This garden was made by a Japanese man who was older than your grandparents and not much taller than some of you! But he was very strong after a lifetime of farming.

Information

Can you figure out his name? Mr. Taniguchi (ton e guch ee)

Mr. Taniguchi **built this garden as a gift to the City of Austin** in 1969 when he was seventy years old. It took him 18 months with the help of only one part-time assistant to transform 3 acres of woodlands into the peaceful garden you see today. In this garden you will see many Japanese lanterns, just as you would see in gardens in Japan. When Japanese enter a garden, they have an attitude of reverence, to find peace.

DISCUSSION:

At the first pond, the story goes that it is in the shape of some letters. Can you see the letters?

Frequently in Japan, ponds are built in the shape of letters or ideograms. This first series of ponds was built to spell out “Austin”, reflecting the fact that these gardens were constructed as a gift to the city. The A is very easy to see.

A Bridge to Walk Over the Moon is next- Can you guess why it is called this?

When there is a full moon, it is reflected in the water and as you walk over the bridge, you see the moon below you. The idea is that as you gaze at the reflection of the moon on the water’s surface, ultimate universal beauty will be revealed to you.

[Cross the bridge and proceed to the tea house. Younger kids (K-2nd) should go to the right & up the stairs, older kids are usually ok to go to the left and up the spiral stairs by the waterfall. There are no handrails here.]

Japanese Tea House - was also built by Mr. Taniguchi.

The symbols (or Kanji) on the side are words written in Japanese. It says TEN-WA-JIN – translated – **Heaven, Harmony and Man**

What do you think the three words mean? Why are they important to people?

In the context of the garden, these words are meant to convey message that man exists in harmony with nature. Mr. Taniguchi was greatly concerned about the ravages of war. Read the closing words from the plaque; (you may want to only read the last sentence if your group is young)

“As an Oriental, I have come through the turmoil of the problems in the United States during the last half of the century, Twenty-five years have passed since World War II and yet we see the harsh realities such as the injuries caused by radio-activity which cannot be erased. Is not now the time that all mankind should in retrospect of our past, be reborn from the beastly nature – that yoke, which has been our burden for several million years since the beginning of mankind in prehistory? Is not now the time when man may evolve from the beast-nature toward the realm of true humanity?”

“It is my wish that you have pleasant communion with the spirit of the garden.”

Aside – Mr. Taniguchi was confined in an internment camp in California during World War II.

Question:

There are plants around here that were used to build the tea house. Can you find it?

Bamboo is down the hill. **What do you know about bamboo?**

- A grass – look at the leaves to see that it is just like your grass at home only larger
- Food for panda bears
- Used for food (bamboo shoots)
- Used to build structures
- Used for fences

Our next pond is full of fish. **They are NOT GOLDFISH – they are called koi. Koi are special to the Japanese** and are taken care of and live very long lives. You may also see our Blotched Water Snake - these are friendly snakes & cannot harm humans in any way. They just eat frogs and small rodents and are NOT poisonous.

Who wants a fried fish dinner? You can't have one with these fish, even if this pond were open to fishing, the koi aren't edible. They have too many bones and don't taste good, yet they have been cultivated in Japan for 600 years. **Any ideas why?** (They add beauty to the garden.)

Can anyone see the boat, gangplank, sail, anchor & chain in this pond?

What plant in this pond would you use to make paper? (Papyrus, used by the Egyptians 3000 years ago to make paper.)

Congress Avenue Foot Bridge

This bridge was used in Austin from 1870-1905. At that time roads were muddy and sidewalks were wooden planks. The footbridge was used to cross drainage ditches from sidewalk to sidewalk.

Questions

How would it be to try to walk the muddy streets of Austin?

What could people do to avoid walking in the mud? (walk on sidewalks, walk on bridge, ride horses)

Bickler Cupola (a structure that is built on a roof)

This cupola has originally on top of Bickler School, one of the public schools in Austin, located at East Avenue (now I-35) and 11th Street. It was built in 1894 – over 100 years ago. When the school was torn down, the cupola was donated to the City of Austin.

[Let's walk down to the rose garden.]

MABEL DAVIS ROSE GARDEN

Question:

What do you know about roses?

- Vitamin C is often made from rose hips (the part left on the plant after a rose is done blooming).
- William Shakespeare referred to roses more than 50 times throughout his writings.
- Archaeologists recently discovered the fossilized remains of wild roses over 40 million years old.
- Other members of the rose family include peach, apple, pear, almond, apricot, cherry, nectarine, plum, blackberry, raspberry and strawberry.
- The largest rose bush in the USA is a Lady Banksia in Tombstone, Arizona. It covers over 8,000 square feet and requires 68 posts and thousands of feet of iron pipe to support it.
- The rose is the state flower of Georgia, Iowa, North Dakota and New York, as well as the national flower of the USA.

This is the one area of the garden where you may get off the trail, but please stay out of the beds and off the stone walls. This is the time to stop and smell the roses - some have a nice fragrance, some don't smell at all. Find the one that smells the best and let's meet at the arbor in 5 minutes.

[Stop at arbor.]

[Go to Hartman Prehistoric Garden down the hill.]

Hartman Prehistoric Garden



[Meet under the memorial arch on the edge of the rose garden.]

You can view this garden from the Memorial Arch in the Rose Garden. One young visitor named **this arch the Time Machine**, a place to travel back in time 97 million years! The entrance to the garden is to your right down the hill.

REMINDER- Please remember to stay on the trail! You don't want to damage the plants by walking on them.

Focus Question:

Why would someone want to build a garden around dinosaur tracks?

Rocks:

Near the entrance, a very large shiny black rock is **basalt**. It is the oldest rock here. It is an **igneous** rock, formed from molten lava at the bottom of the ocean. The white veins are quartz, caused by heat and pressure. It was found in a quarry near San Antonio.

You'll also see limestone with calcite crystals, and another limestone rock that shows water erosion.

There is a large collection of petrified wood. How do you think wood, something organic became a rock, or inorganic?

Tracks:

Dinosaur tracks were discovered in this area in 1992, along with the fossilized bones of an ancient turtle. The tracks had been recently uncovered in order to build the Butterfly Trail there. The decision was made to build the Butterfly Trail in another location. The tracks began deteriorating rapidly because they are in soft limestone, **so casts were made from the tracks, the tracks were covered up to preserve them, and reproductions of the original tracks have been made along the path.**

Dinosaur:

The statue is of **Ornithomimus** (Greek for bird mimic), the dinosaur that made the tracks. Because he **had no teeth**, scientists believe that he had a diet of plants, insects and small animals.

Do you know the name of an animal that lives only on plants? (herbivore)

Scientists also think that he may have had feathers and traveled in flocks. He ate plants like the **marsilea, ferns, ginko, magnolia** and **cycads** in this garden. Fossils of plants like these have been found which demonstrate that they were on the earth at the same time as the dinosaurs.

History:

Ninety seven million years ago, during the Cretaceous Period of time, this area was near the Sea of Tethys. Our ornithomimus friend made its tracks in the mud flats along the shore.

If you go up to the shaded bench overlooking this garden, you'll find some great fossils in the wall. The large spiral formation is ammonite, an animal 200-300 million years old. Be sure to look for small sea animals in one of the other rocks in this wall.

On both sides of the waterfall, you'll see the Balcones Fault. Don't worry, it's not an active fault!

Focus Questions:

Do you see any differences between ornithomimus and the velociraptors in Jurassic Park? (Hint: no teeth) How would that affect his diet?

What do the tracks resemble?

Butterfly Garden

[You can find the butterfly trail from the west end of the Prehistoric Garden or from the trail to the left of the bathrooms in the west end of the parking lot.]



Focus Question:

- Why do we like butterflies?**
- What do butterflies mean to you?**
- Why would someone build a butterfly garden?**

Information

A grant from Texas Botanical Garden Society board member Ruth Puett started the construction on the butterfly trail and garden in **1989-90**. The butterfly trail was inspired by and named for **Doug Blachly**, a life member of the Garden Council. The trail was funded by a donation from Curtis and Patricia Meadows.

What might be a threat to baby butterflies?	birds, insects, animals might eat them
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What do butterflies eat?

Butterflies eat the nectar from many of the flowering plants found in the garden. They get water from the round flat fountain located in the garden. There are several hanging feeders that contain **fermenting* bananas**, which is a favorite food source of Red Admiral, Question Mark and Hackberry butterflies.

What does fermenting mean?	rotting
What could you put out in your yard to attract butterflies?	rotten fruit some plants

Let's see what kind of plants we would need to get butterflies.

The garden has been planted with local plants and flowers that attract many different types of butterflies. There are butterfly species that live in this area as well as migrating varieties. If you look closely, you may see caterpillars on some of the plants. Butterflies only lay their eggs on

certain plants that provide food for the caterpillars after they have hatched. Different butterflies require different plants. See pictures on last page.

Eastern Black Swallowtail	Dill, fennel and parsley
Monarch	Milkweed
Queen	Milkweed
Gulf Fritillary	Passionflower
Pipevine Swallowtail	Pipevine

Q & A

What does migrating mean?	Travel to another place for part of the year. Butterflies go from northern US to Mexico in the winter so that they don't get too cold.
How do butterflies taste?	With their feet. This is how they know which plant to lay their eggs on.
What do butterflies eat?	See above.

[Walk to the blacksmith shop.]

Blacksmith Shop

Focus Question

One hundred years ago, where did you take your car for gas? (There were no gas stations, your had a horse that went to the blacksmith shop for shoes.)

Information

The Blacksmith Shop displays equipment needed to make and shape metal implements **hand-forged*** by pioneer blacksmiths. Coal was used to heat the forge and a **bellows*** to fan the fire red hot so metal could be heated to a softened state and be worked on the anvil.

Hand-forged	using hammer and fire, a person shaped metal by hand
bellows	A large accordion shaped device that blows air onto the fire. (Why does the fire need air?)

Blacksmiths made shoes for horses and parts for the wagons that were pulled by the horses. Horses and wagons were the only transportation the pioneers had since there were no cars and trucks like we use today.

Q&A

Why were blacksmiths important?	Fixed wagons, shod horses,
Who does a similar job to a blacksmith now?	Car repair, gas station

[Go to the Esperanza School house.]

Esperanza School House

Focus question

Why was the school named Esperanza? (It means hope; the pioneers felt that education was a best hope for a good life.)

Information

The **Esperanza School House** was built in 1866 in the Spicewood Springs area and was in use until about 1873. Dr. and Mrs. F. E. Ingersol saved the building in 1962. With the support of the Parks and Recreation Department and local civic groups, it was moved to its present site and restored.

What is inside the schoolhouse that you use today in your school?	books, desks
What is in the schoolhouse that is different?	
Do you have other things at school that are not in the Esperanza schoolhouse?	computers, bathrooms, telephones

Inside the schoolhouse you can see books, desks and benches used by students in the 1800's.

Q&A

Why are schools important?

How do you know that schools are important to pioneers?

[Go to the Swedish Pioneer Cabin.]

Swedish Pioneer Cabin

Focus Question

If you came to Texas 100 years ago, where would you live?

Information

S. M. Swenson, the first Swedish settler to come to Texas in 1838, built the Swedish Pioneer Cabin about 1840 in Govalle. The **cabin was first moved log by log** to Round Rock's Nelson Park by Louis Palm where it was reassembled. In 1965 the cabin was moved to its present location by the Texas Swedish Pioneers Association, which also collected the **authentic pioneer furnishings** on view inside the structure. The cabin is considered among the **best-preserved log cabins in the U.S.**

Q & A

How do you think pioneers used plants 100 years ago?

Herb Garden



[Start at herb garden.]

Focus Question

Does anyone know what an herb is?

Information

Herbs are various plants that are used for medicine and for cooking. They are used by every culture on earth from the earliest times.

“FOLKLORE”...Each culture has its own myths (stories) about the herbs it uses.

Dill	In the Middle Ages dill was burned to chase a thunderstorm away
Rosemary	Students in ancient Greece wore garlands of rosemary around their necks, or braided rosemary in the hair to improve their memory during exams
Thyme	Ancient Romans would bathe in water scented with thyme before going into battle.

You can touch the herbs lightly – like you pat a kitten- to figure out their smell.

Can you find an herb that reminds you of

Spaghetti sauce?	Oregano, Thyme
Lemon?	Lemon Balm, Lemon Grass
Gum?	Spearmint
Root Beer soft drink?	Hoja Santa
Pine?	Rosemary

I wonder if you can figure out what herbs are used for? Any ideas?

Cooking	Marjoram, Parsley, Bay Leaves, Rosemary, Thyme
Medicine	Aspirin from willow bark, Echniacea (Purple Cone Flower), Silymarin from Milk Thistle
Flavoring	Dill for pickles; Pepper for foods, Mints for foods, teas, medicines, etc.
Garden Plant	Mexican Oregano, Sage, Basil & hundreds more...
Decorations	Dried Bay, Sage, Lavender, Garlic, Rue, Dill, Rose
Tea	Lemon Grass, Blackberry, Cloves, Cinnamon, Rose Hips, Anise Seed, etc.
Attract butterflies	Fennel, Parsley, Lavender, Dill, Pineapple Sage, Thyme, etc.

Q & A

Why do we need herbs?

If you were an herb, which one would you like to be?

Green Garden, Cactus & Succulent Garden



Cactus & Succulent Garden

Focus Question

What is different about this garden from what you think of as plants?
Not leafy, has succulents

Information

A cacti is a type of succulent.

Cacti and succulents are grouped together because of their ability **to store water and survive drought**, but they are very different types of plants.

Cactus (plural is cacti)

- Cacti are **indigenous**¹ to the Western Hemisphere and are found all the way from Alaska to Chile.
- Many plants have spines or thorns, but the cactus family is the only one that has **areoles**². In most cacti, **photosynthesis**³ occurs in the stem. Members of the Cactus and Succulent Society built this garden.

¹ Indigenous	Native to an area; grown naturally
² Areoles	A cushion like structure that grows spines, hairs, branches, leaves and flowers.
³ Photosynthesis	A process where plants make food using chlorophyll.

Q & A

What plant parts do spines look like to you?

Spines are considered to be modified leaves.

Why do you think people would want to grow cacti in their own garden?

Easy to take care of
Minimal maintenance
Pretty flowers

Succulents

Does anyone know what the term succulent means?

It means luscious or juicy – Let's see if we can find out why plants have this name.

- Succulents come from up to thirty plant families and are native to many parts of the world.
- These plants **store water** in their leaves and stems.
- The Hen and Chickens plant is a native of the Swiss and Italian Alps.
- **Aloe** family comes from South Africa. Most of you will recognize Aloe Vera, which has been used to treat burns and promote healing for thousands of years.
- **Agave** has been called the **needle and thread plant**. Some people call it the Century Plant because it takes so long to bloom - but only 20 years or so, not really a century!

- **Ocotillo** is a tall plant that grows in the desert. They bloom scarlet and orange flowers. Many people consider them in their gardens.

Aloe	Break the leaves and the juice is used as medicine for burns; this is an old world (not western hemisphere) wood lily; There is an aloe that was used to preserve mummies in Egypt.
Agave	Spines can be used as needles and the fibre as thread; Agave is also used for soap and for rope. this is a new world wood lily; 10% of medical cortisone is Agave

Why do you think that this group is called succulent?

How are succulents and cacti alike?

- Fleshy leaves
- Both store water in its stem
- Mostly are desert plants

Different?

Cactus is a family of plants that originated in the Western Hemisphere.

Succulents are found all over the world. They store water in their stems, leaves or roots. Many species of plants, including almost all members of the cactus family, are considered to be succulents.

DISCUSSION:

What do we know about cactus? Can you eat it? Would a deer or antelope want to eat it? Did the desert plants that didn't develop thorns live long enough to make seeds? This concept is known as natural selection, where a plant is adapted to its environment.

Is it a good idea to play basketball next to a Century Plant? Why not?

GREEN GARDEN

Focus question

This garden is called the **green garden**. **Who thinks they know why it was named that?**

Yes, it is green but so are some of the other plants. This is called green garden because it uses native plants that grow well in the Austin area with minimum of maintenance. They are **indigenous** to Austin.

Information:

The Green Garden **was opened in 2001 as a demonstration garden to show the principles of green gardening and water conservation:** good design, soil improvement, use of mulch, limited lawn area, native and low water-use plants, efficient irrigation and low maintenance.

One can tell from this garden that a water conserving landscape doesn't have to be limited to rocks and cacti.

DISCUSSION:

What do you think Austin yards will look like when you are adults?

Will there be enough water for everybody to water his or her big lawns twice a week?

You can learn here how to have a beautiful yard that doesn't require very much water!

TREE IDENTIFICATION:

From this spot, you can see three different kinds of trees and identify them by their bark.

Tree	Bark	Other info
Native Persimmon	smooth gray bark	It produces a small black fruit; birds love it and humans can eat it, but don't eat too many or you'll get diarrhea!
Mountain Laurel	dark, rough bark	Looks beautiful year round, with fragrant purple blooms in the spring, followed by bean pods containing red seeds. Some of you might be familiar with these seeds, but don't collect them; they're very poisonous!
Cedar, also known as Juniper	Red-brown peeling bark.	The red pollen of the male juniper is the cause of cedar fever that some of you might suffer from in the winter. The female trees produce a blue berry, which is much loved by migrating birds, especially cedar waxwings. Humans use these juniper berries to flavor food such as gin and three-bean salad.

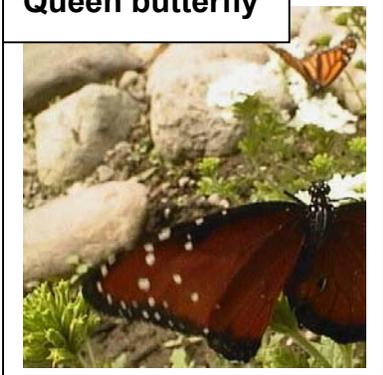
Questions:

Why do you think bark is different?

If you were a bird, could you find a use for red cedar bark? (Some birds use it to build their nests).

PEACE AVIARY used to hold ring-necked doves, but the doves have been freed and the cage is currently being used for decoration.

Queen butterfly

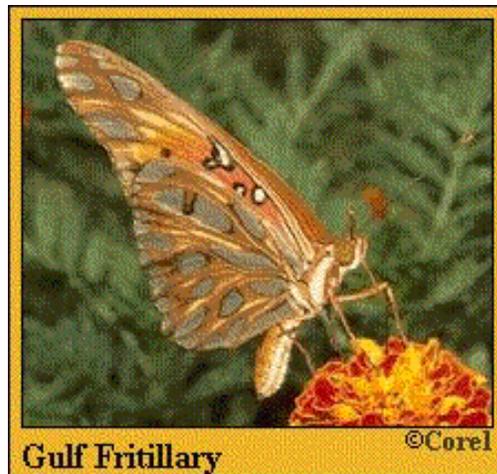


Monarch butterfly



Eastern Black Swallowtail

Butterflies that you may see in Zilker Botanical Gardens



Gulf Fritillary

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