



School Programs Field Study

Environmental Tour: Overview 9th–12th grades

August 2018

Tour Topic: Vizcaya's Natural Environment

Tour Theme: How have Vizcaya's natural communities been adapted and preserved?

Thread A

Meet group in Piazza. In cooperation with LPF liaison, lead students through the entrance and then congregate students between the Ticket Booth and exit. Under no circumstances should students cross the white line into the driveway path.

Throughout the tour please seek shade in areas where you congregate and take water fountain breaks as needed. Water fountains are located in the Service Area, Oval Plaza and along the north sidewalk. In especially hot seasons, water breaks are more important than covering all of the tour content.

Introduction & Orientation

Piazza (5 minutes)

Note: This discussion should take place with the whole group, facilitated by one SPG or LPF.

Welcome to Vizcaya Museum and Gardens!

Logistics: Introduce self and co-facilitator. In your own words let the group know why you are pleased to be working with them, for example in the context of your interest for Vizcaya or the theme of the tour.

- Originally Vizcaya Museum and Gardens was a private home and belonged to one person, James Deering.
- Mr. Deering lived at Vizcaya during the winter seasons from 1916 through 1925, almost 100 years ago.
- Now the *estate*, which includes the house, property and all of the objects in the museum, belongs to Miami-Dade County for our community to visit and enjoy.
- James Deering chose this waterfront site to construct his winter home in the style of an old Italian *villa*, or country home.
- Though inspired by gardens found in old Italian villas, Vizcaya's formal gardens were also inspired by Miami's *subtropical* climate and include native plants and local materials.

*When visiting Vizcaya today how could you help us **preserve**, or take care of, the gardens?*

Facilitate discussion to address the following:

- Food and drinks (including gum) are not allowed in the gardens.
- Vizcaya is home to a lot of wildlife. For your safety and theirs, please do not approach or feed animals.
- Do not lean or climb on gates, railings or walls. Do not stand or sit on statues, fountains or railings.
- When walking through the gardens and grounds please remain on the stone, gravel or dirt pathways.
- Please do not move any plants or pick any flowers.

Note: While photography is allowed outside, our challenge will be to encourage students to wait until after the tour to take lots of photographs.

What expectations do you think the museum has for your behavior?

Facilitate discussion to address the following:

- Stay with your group.
- Listen to and respect others.
- All cell phones should be turned off and put in your pocket.

Vizcaya is a large estate:

- We are going to cover a lot of ground today, so it is important to stay together.
- Chaperones: thank you for coming to help today. We rely on you to stay with the group and to help keep the group together as we walk through the grounds. We also know that you will help students to focus on the tour as needed. Please make sure your phones are on turned off, on silent or vibrate. Please refrain from taking phone calls during the tour. We appreciate your support and cooperation today!

Transition

- As we explore, please be aware and cautious of the many steps and uneven terrain throughout the gardens and grounds.

Logistics: At this point ask the teacher or group leader to divide students into two equal groups.

Travel

- We will not stop in every area of the gardens on the tour today, but we will walk by many of them to give you a good introduction to Vizcaya.
- As we explore I encourage you to look all around to see the unique characteristics of the estate.

The Miami Rock Ridge

Entrance Cascades (5 minutes)

Key Point: What is the Miami Rock Ridge?

Logistics: Congregate students in the Piazza where they can look down towards the Main House.

- Take a moment to look at the area where we are standing. Look around, look down, look toward the house.

Logistics: Pause to give students a chance to look around.

We live in Miami, which is very flat. What's a little unusual about the area where we are standing?

Paraphrase and link responses. Point when possible.

Probe thinking by asking, What do you see that makes you say that? as appropriate.

Logistics: Distribute samples of limestone for students to touch as you speak.

- We are standing on the Miami Rock Ridge, part of the Atlantic Coastal Ridge that extends up into the state of Georgia. In Miami it is a ridge of higher ground that extends from North Miami Beach, south and west into Long Pine Key in the Everglades.
- The Ridge varies in elevation and we are standing at one of its higher points at 13 feet above sea level.
- The Miami Rock Ridge consists of oolitic limestone. It was formed about 100,000 years ago during the Great Ice Age when South Florida was under water.

Logistics: Move towards the exit swing gate, looking down into the north section of the waterway.

- By looking down into this channel, which used to be a waterway running from the north to the south of the house, we are able to see the depth of the rock.
- The rock that was quarried out of here was used in the construction of other areas of the house and gardens.

Transition

- As we walk down the hill, notice how oolitic limestone is used in the Entrance Cascades on each side of the walkway.
- Also take the opportunity to look into the wooded area alongside the path.

Travel

- Walk down to the Forecourt and gather in the southwestern area of the Forecourt looking back up into the rockland hammock.

Rockland Hammock (Native Forest)

Forecourt (5 minutes)

Key Point: What is a Rockland Hammock?

Logistics: Reminder, seek shady spot.

- The oolitic limestone that we just looked at is extremely porous (meaning the rainwater drains away very quickly), and low in nutrients.
- Being low in water and nutrients makes the Miami Rock Ridge a difficult environment for plants to thrive.
- However, there are two natural communities that historically thrived along the ridge. We are fortunate to have a fine example of one here at Vizcaya. Look into this area.

Logistics: Point to the rockland hammock.

How would you describe this area?

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

- This ecosystem is a rockland hammock or native forest.
- It thrives along the ridge because there is no danger of flooding up here.
- The trees are nearly all evergreen or ***semi-deciduous***, which creates a dense canopy all year round.
- Although rockland hammocks used to be found in many places along the Miami Rock Ridge only about 2% remain.
- Contrary to popular practice, Mr. Deering left the majority of the rockland hammock at Vizcaya intact, clearing away only what was needed for access.

What might have been some of the advantages of preserving this ecosystem one hundred years ago?

What are the advantages now?

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

Transition

- We are now going to visit an area much closer to sea level, between the ridge and the bay.

Travel

- Walk to the formal gardens via the south gate of the Forecourt, through the Service Area. Point out the limestone on the South Terrace steps and seat students on the steps

by the Frog Fountain.

Adapting a Tidal Swamp

South Terrace (3 minutes)

Key Point: What were the challenges to the creation the Formal Gardens?

Logistics: Reminder, seek shady spot.

How does this area compare to the rockland hammock?

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

- Mr. Deering chose this area to establish his formal gardens.
- His landscape architect, Diego Suarez, was Colombian but trained in the formal gardens of Northern Italy.
- The formal elements seen here, water features, statues and walkways are typical of many European formal gardens, but the area was originally a tidal swamp.

Thinking about the words “tidal swamp,” and thinking about Miami’s climate, what are some of the challenges that Diego Suarez might have encountered when creating these gardens?

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

If responses are not forthcoming ask students to think about **climatic factors** such as **drainage, heat, light, wind** and **salt** in both the water and the air.

- In choosing what to plant here at Vizcaya, Diego Suarez had to be careful to select plants that were well suited to the sub-tropical environment. This is an ongoing challenge for our horticultural department, the people in charge of the gardens now that Vizcaya is a museum.

What do we mean when we say “native to South Florida?”

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

- Though inspired by gardens found in old Italian villas, Vizcaya’s formal gardens were also inspired by Miami’s **subtropical** climate and include native plants and local materials such as oolitic limestone.

Transition

- As we walk down to the Center Island notice the carefully trimmed hedges or parterres.

Travel

- Walk down the right hand side of the Center Island, stopping to look at the parterres en route. Seat students on the low wall at the entrance to the Center Island.

Naming Conventions for Plants

Center Island (10 minutes)

Key Point: Why are Latin names important?

Logistics: Reminder, seek shady spot.

- Currently the parterres are planted with wax jasmine: *jasminum simplicifolium*, which is not native to Florida and requires a lot of trimming and water.
- Our Chief Horticulturalist plans to replace these wax jasmines with a plant that is native to South Florida, dwarf yaupon holly: *ilex vomitoria*. This plant requires much less maintenance and water.
- Notice how I used both the common and the Latin names when telling you about these plants.
- Let's take a look at a letter from 1915 from a landscape architect who was involved in supplying plants for the gardens.



Logistics: Distribute the letter, giving students a minute to read it.

What do we learn about the tree's foliage?

What is the Latin name of the tree this landscape architect is suggesting?

- The copy of this letter is another example of what Vizcaya preserves and is part of the museum's archive materials. An archive preserves and collects public records or historical documents. Vizcaya's archive includes many letters that provide us with information about decisions that informed the design and construction of Vizcaya.
- Now turn the page over to look at the U.S. Department of Agriculture description of this plant.

Using this information, why do you think it is important for plants to have Latin names as well as common names?

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

- Common names for plant often differ from country-to-country and even region-to-region. Having one consistent Latin name means that people living in different countries and speaking different languages have a shared system to refer to plants.
- Latin names can refer to the person who discovered them, to their appearance, their place of origin or other qualities.
- These trees providing the shade along the Center Island are live oaks, *Quercus Virginiana*, named for the state of Virginia which is probably where these trees were

first identified.

Transition

- Let's move to the top of the Garden Mound to see some larger trees.

Travel

- Walk to the top of the Garden Mound.

Native Plants

Garden Mound (5 minutes)

Key Point: What is an epiphyte?

What happened to the light and temperature as we came to the top of the Garden Mound?

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

- During Vizcaya's construction, these live oaks were transplanted from other estates that were being built here in Miami. They were probably 50 years old when they were transplanted, which makes them around 150 years old now.
- The plants growing throughout these oak trees are a type of bromeliad, *Tillandsia utriculata*. This particular plant is endangered, meaning its prospects of survival are in jeopardy.
- The plants hanging from the tree limbs are *Tillandsia usneoides*. You might be familiar with its common name, Spanish Moss.

Looking at the location of these bromeliads, in what ways might their growing habits differ from most other plants?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

If responses are not forthcoming ask students to think about whether or not they seem to have **roots**, and where **nutrients** and **water** come from.

- Bromeliads, along with cacti, orchids, ferns and mosses are part of a group of plants known as *epiphytes* or air plants and derive their moisture and nutrients from the air.
- They are perfectly suited to Miami's sub-tropical climate with its high humidity. Many of the plants here at Vizcaya are epiphytes.

Transition

- These oak trees were not the only ones transplanted from other places in Miami.

Travel

- Move group to sit at the top of the stairs leading down to the Fountain Garden.

The Ficus Move

Stairs to the Fountain Garden (5 Minutes)

Key Point: How did Vizcaya preserve a tree as development took place in Miami?



Logistics: Distribute photograph of the ficus move, giving students a minute to look at it.

What's going here?

What do you see that makes you say that?

What more can we find?

Facilitate these questions as a brief VTS discussion.

- Turn the handout over and let's take a look at an article from the Miami Herald written at the same time this photo was taken.

Logistics: Give students a minute to read the article. Alternatively, ask one student to read it out loud.

So, according to the article, what were some of the reasons for transplanting this tree?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

- These primary source documents are additional examples of how Vizcaya researches its past. By exploring the photograph and article together we approach the past as an historian would, constructing meaning from a variety of resources and tracking how a situation evolves or changes over time – in this case Miami's landscape.

Logistics: collect the image/article.

Transition

- Let's take a look at a Strangler Fig tree.

Travel

- Walk down the east steps of the Garden Mound and congregate by the large strangler fig between the Fountain Garden and the Maze Garden.

Strangler Fig (2 minutes)

- This is not the tree from the photograph, but it is the same kind.
- This fig tree is native to South Florida and is known as a strangler fig because of its habit of climbing up other trees, eventually killing them.
- These prop roots stabilize the tree, protecting them against the strong winds that mark the summer season in South Florida.
- Because of their sturdiness, the Seminole Indians used them as route markers, identifying them by their unique root formations.

Transition

- We will see a different kind of fig tree growing in the Maze Garden.

Travel

- Move students to the Maze Garden and congregate students at the back of the maze by the bench.

The Importance of Mangroves

Maze Garden (10 minutes)

Key Point: Why are Mangroves so important?

- The Maze Garden was originally designed with different plants and was much taller than it is now.
- Unfortunately after a bad storm, the area became flooded with saltwater from the bay, directly behind those trees.

What might have happened to the original plants under those circumstances?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

- The original plants were **glycophytes**, which means they needed fresh water and could not survive being submerged in salt water. They were replaced with these plants, which are salt tolerant, or **halophytes**.
- In this way, Vizcaya is able to preserve the Maze Garden while adapting it to the local environment.

Are any of you familiar with the kind of trees we see here?

How did you recognize them?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

- Vizcaya is home to a strong and healthy mangrove shore, containing red, black and white mangroves.
- Mangroves are of critical importance here in South Florida and in many other parts of the world.

Thinking about where they grow, along the shoreline, why might Mangroves be good trees to have around?

Is a mangrove tree a glycophyte or a halophyte?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

If responses are not forthcoming ask students to think about how they might **protect** the **shoreline** and **sea life**.

- Mangroves are fundamental in protecting the shoreline from erosion caused by high winds and storms.
- By preserving this mangrove shore when he built the estate, Mr. Deering played an important part in protecting Vizcaya from some very serious hurricanes over the last one hundred years.
- Mangrove forests also absorb carbon at 4-5 times the rate of other forests.
- Because mangroves are such an important part of the natural environment, cutting mangroves is a federal offense.

Why might absorbing carbon at a higher rate be a useful quality?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

- Mangroves roots also act as a safe harbor for juvenile fish to grow safely. Since fishing is such an important part of the local economy we can see that mangroves are not only important environmentally, but also economically.

Transition

- Let's move to an area where we can take a closer look at the bay itself.

Travel

- Walk along the east sidewalk through the Secret Garden to the lower East Terrace and seat students on the step looking over the Barge.

Biscayne Bay

East Terrace (5 minutes)

Key Point: Why is the preservation of Biscayne Bay so important?

Logistics: Reminder, seek shady spot. Distribute mini-scopes for students to explore the Bay.

We are looking out over Biscayne Bay towards Key Biscayne. How might the view have changed over the last one hundred years?

Mr. Deering was a keen fisherman and would often take fishing trips in the bay. As Miami has developed over time so has Biscayne Bay. What might be some of the uses of Biscayne Bay nowadays?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

If responses are not forthcoming ask students to think about **leisure activities, research,** and **maritime transport.**

- Biscayne Bay is about 35 miles long and is a state aquatic preserve. This means it is protected in such a way to ensure that it will always be a home for breeding birds, fisheries, sea grass beds and mangrove forests. The central portion is Biscayne National Park and it is North America's only underwater National Park.
- Biscayne Bay supports a wide range of leisure activities such as the ones we have just mentioned.
- It is also important for the fishing and shipping industry, contributing to more than 10% of Miami Dade's economy.
- Many of the species living in Biscayne Bay are endangered including corals, turtles, manatees, and a wide variety of birds.

What might be some of the threats facing these species?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

If responses are not forthcoming ask students to think about factors such as **pollution, habitat destruction,** and **sea temperature rise.**

Transition

- N/a

Travel

- N/a

Wrap up (3 minutes)

- The Barge is actually a breakwater playfully designed as a boat. Like the mangrove shore, it has protected the East Terrace and Main House through decades of storms.
- Though inspired by gardens found in old Italian villas, Vizcaya's formal gardens were also inspired by and part of Miami's *subtropical* climate.
- Mr. Deering chose to build Vizcaya very close to the water of Biscayne Bay. Vizcaya has weathered several major storms and hurricanes in the last century, but like the rest of the world, the estate will be facing some of the issues associated with climate change in the near future.

What might some of those issues be?

How might they affect a historic house and estate like Vizcaya in particular?

Probe thinking by asking, What do you see that makes you say that? as appropriate. Paraphrase and link responses. Point when possible.

Logistics: Allow students to explore and observe the 3D prints of the mermaids.

- **These 3D** prints we see here are copies of a sculpture on the Barge (point when possible). We have used scanning and 3D printing technology to reproduce some parts of Vizcaya that are suffering deterioration. This print (smooth) is what the sculpture looked like originally. This other print is what it looks like now.

What *do you think has caused the deterioration of the sculpture?*

Probe thinking by asking, What do you see that makes you say that?, as appropriate. Paraphrase and link responses. Point when possible.

Logistics: Collect the 3D prints and mini-scopes and store them back in their plastic box.

What happened to Vizcaya after Mr. Deering died in 1925?

- James Deering lived in/at Vizcaya during winter seasons from 1916 until his death in 1925. He died on board a ship returning from France to the United States.
- The estate was passed on to Mr. Deering's nieces who owned Vizcaya until the early 1950s when they sold and donated the land, buildings and collection to Miami-Dade County and other organizations.
- Vizcaya Museum and Gardens has been open as a museum since 1953.
- Vizcaya has been designated a National Historic Landmark because the property is an outstanding example of design and construction, and it played an important role in the history of Miami.

Transition

- Thank the group in your own words, remind them or allude to how they will spend the rest of their visit (Main House tour and/or picnic lunch).

Travel

- Help direct the group leader to their next area (school group picnic area, Main House, restroom, or bus) as needed.
- Entry to the Main House through the East Loggia doors is an option.

Tour Threads

Thread A

1. Piazza: *Introduction & Orientation*
 - a. 5 minutes (occurs with whole group, led by one person)
2. Entrance Cascades: *The Miami Rock Ridge*
 - a. 5 minutes
3. Forecourt: *Rockland Hammock (Native Forest)*
 - a. 5 minutes
4. South Terrace: *Adapting a Tidal Swamp*
 - a. 3 minutes
5. Center Island: *Naming Conventions for Plants*
 - a. 10 minutes
6. Garden Mound: *Native Plants*
 - a. 5 minutes
7. Stairs to the Fountain Garden: *The Ficus Move*
 - a. 5 Minutes
8. Maze Garden: *The Importance of Mangroves*
 - a. 10 minutes
9. East Terrace: *Biscayne Bay*
 - a. 5 minutes
 - b. Conclusion: 3 minutes

Thread B

1. Piazza: *Introduction & Orientation*
 - a. 5 minutes (occurs with whole group, led by one person)
2. Forecourt (between the Entrance Cascades): *The Miami Rock Ridge*
 - a. 5 minutes
3. Forecourt (southwest corner): *Rockland Hammock (Native Forest)*
 - a. 5 minutes
4. East Terrace: *Biscayne Bay*
 - a. 5 minutes
5. South Terrace: *Adapting a Tidal Swamp*
 - a. 3 minutes
6. Center Island: *Naming Conventions for Plants*
 - a. 10 minutes
7. Garden Mound: *Native Plants*
 - a. 5 minutes
8. Stairs to the Fountain Garden: *The Ficus Move*
 - a. 5 Minutes
9. Maze Garden: *The Importance of Mangroves*
 - a. 10 minutes
10. Maze Garden: *Conclusion*
 - a. 3 minutes

Tour Vocabulary

When using a tour vocabulary word, ensure the audience understands the word. Ask the audience if anyone knows what it means. Facilitate the discussion to conclude with an accurate definition, and if helpful, examples. If no one knows the definition of the word, share the definition using a developmentally appropriate description. Preferred definitions are included here for reference.

Adapt: to modify for new use.

Archive: a place in which public records or historical documents are preserved; a collection of information.

Epiphyte: air plants that derive their moisture and nutrients from the air.

Estate: all of someone's property including land, buildings, and material objects.

Erosion: to destroy slowly over time; to wear away from water or wind.

Glycophyte: any plant that requires fresh water to live.

Halophyte: any plant that can live from fresh or saltwater; a saltwater tolerant plant.

Landscape Architect: a person who develops land for human use and enjoyment through effective placement of structures, vehicular and pedestrian ways, and plantings.

Parterre: low, trimmed ornamental shrubs planted in patterns.

Preserve: to prolong the existence of cultural objects and property by preventing physical damage and deterioration.

Primary Source: contemporary accounts of an event, written by someone who experienced or witnessed the event in question. These original documents (i.e., they are not about another document or account) are often diaries, letters, memoirs, journals, speeches, manuscripts, interviews and other such unpublished works.

Semi-deciduous: a plant that sheds leaves seasonally or at a certain stage of development in the life cycle for a short period of time.

Subtropical: a region that borders a tropical zone.

Villa: a country estate.

The Ficus Move

Double-sided resource.

Delivery of Ficus tree via Barge, ca. 1916, Vizcaya Museum and Gardens Archives (ca05064a)



Article, Miami Herald, ca. 8/6/1916

SUCCESS WITH MOVING TREES

Those Taken to the Deering Es-
tate Are All in a Thrifty
Condition

Every tree moved from Miami to the James Deering estate in the southern part of the city is now alive and in a thrifty condition, according to reports emanating from there yesterday. The big wild fig tree taken from the McAllister lot at the intersection of the boulevard and Twelfth street some months ago now has sprouts on it twelve to eighteen inches long, and those transferred from the lot where the Urmey hotel is being erected are likewise in a healthy and growing condition.

Tour Development Background

This tour is designed to focus on concepts related to Vizcaya's outdoor environments, horticulture, and environmental education context for 9th–12th grade students.

The theme and objectives of this tour were developed based on:

- Age appropriate objects and areas at Vizcaya;
- Logistically accessible objects and areas at Vizcaya;
- Research in aesthetic development;
- Significant elements and concepts related to Vizcaya's natural environments, landscape architecture, and historical context; and
- Local mandates to infuse literacy objectives into all lessons, including art.

The lesson plan is available on Vizcaya's website:

<http://www.vizcaya.org/visit-classroom-tour-resources.asp>

A pre-visit lesson, designed for teachers to present and facilitate via PowerPoint in their classrooms is also available on Vizcaya's website:

<http://www.vizcaya.org/visit-classroom-tour-resources.asp>

The goals of the pre-visit lesson are to:

- Orient students to the location and site plan of Vizcaya Museum and Gardens;
- Provide introduction to the history of Vizcaya (What is Vizcaya?); and
- Provide an introduction to James Deering (Who is James Deering?).

The pre-visit lesson includes an optional activity in which students visit Vizcaya's website, view a specific historical photograph and answer a written prompt.

Teachers may choose to design and lead their own post-visit lessons based on the media, styles or periods represented in the tour.