

Self-Guided Plant Kingdom Activities



FAIRCHILD
Discovery
PROGRAM

FAIRCHILD TROPICAL BOTANIC GARDEN

Welcome!

Dear Educator:

Welcome to Fairchild Tropical Botanic Garden! This experience will explore the Plant Kingdom through self-guided lessons. Before visiting Fairchild, please review this packet of materials with the understanding that teachers and chaperones will be responsible for leading activities with students.

This pre-visit packet includes:

- student worksheets
- a checklist of supplies to bring
- Discovery self-guided field-trip policies
- Directions

You will enter Fairchild through the Visitor Center – North entrance, directly next to Matheson Hammock Park.

Thank you for visiting Fairchild Tropical Botanic Garden. We hope that you and your students find the experience inspirational, educational and enjoyable.

Sincerely,

Laura Tellez
Discovery Program Coordinator
305-663-8076

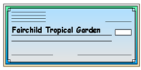
Fairchild Discovery Program

✓ Field Study Checklist ✓

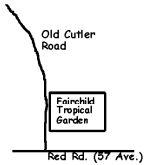
Remember to bring with you:



Lunches in coolers or boxes. This is an outdoor program and the lunches will not be air-conditioned! Please bring your own lunch. No refrigeration or vending facilities are available, so please plan accordingly.



Entrance fee



Directions to the Garden



Student Worksheets

Upon your arrival at Fairchild Tropical Botanic Garden:

- Identify teachers to Fairchild staff.
- Before entering the Visitor Center, total the number of students and adults.
- One teacher enters the Visitor Center.
- Have the entrance fee ready.
- Remove the lunches from the bus.
- Enjoy the day at Fairchild Tropical Botanic Garden!

Fairchild Discovery Program Self-guided Policies

All self-guided groups visiting Fairchild are required to follow these agreements during their visit:

- 1. Discovery Curriculum:** In preparation for your visit, please review the Discovery Plant Kingdom Activities, which includes a preview of the two-hour self-guided activity. Chaperones should be familiar with activity material, because they will lead the program with their group.
- 2. Arrival Time:** Please arrive at the main entrance of the North Entrance Visitor Center at your scheduled time. Only the group leader enters the Visitor Center to pay cashier and confirm attendance. The entire group will enter Fairchild together through the black metal gate at the front entrance.
- 3. Student number:** School groups are limited to 30 students with one chaperone for every 10 students.
- 4. Plant Kingdom Booklets:** Students should not write in any of the program booklets. A charge of \$25 a booklet will be assessed for booklets returned with writing or marking.
- 5. Lunch:** Eating in the Garden is limited to a few designated areas. School groups should bring their own lunches in coolers and or boxes. The Garden Cafe is not available for Self-Guided groups.
- 6. Attire:** This is an outdoor program! Wear comfortable walking shoes, hats and clothing that may become dirty. Bring sunscreen.
- 7. Chaperones:** An adult must remain with group at all times. One chaperone/adult/teacher is required for every 10 students.
- 8. Special Needs:** Please let us know in advance, if your class includes students with special needs. Tours will be modified to assist students as necessary.
- 9. Tram Tours:** Tram tours are not available to Discovery groups.
- 10. Garden Shop/Gallery/Conservatory:** Students are not permitted in the Visitor Center Garden Shop or Café.
- 11. Flora and Fauna:** Do not harm plants or feed wildlife. Please do not pull plant parts off plants.
- 12. Policies:** Please make sure that all chaperones and students understand these policies.

Driving Directions to the Garden



From the North:

US 1 (South Dixie Highway) south to LeJeune Road. Turn left (south) to the circle. Turn on to Old Cutler Road (follow sign, "Fairchild Tropical Garden," 2 miles). The Garden is on the left.

From the South:

US 1 (South Dixie Highway) north to SW 112th Street (Killian Drive). Turn right (east) to Red Road/ SW 57th Avenue. Turn right. Make left at next light (Old Cutler Road). The Garden is approximately 2 miles on the right.

*Any questions,
please call 305-672-651*

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Introduction

Welcome to the exciting world of Discovery!
These activities will help you and your students optimize the learning experience during your field study at Fairchild Tropical Botanic Garden. These multi-disciplinary activities in science, math, social studies, and language arts contain the components for students to successfully complete the program and understand the importance of science.



Next Generation Sunshine State Standards

SC.3.L.15.2, SC.4.N.1.6, SC.5.L.14.2 SC.6.L.15.1, SC.912.L.14.53, SC.912.L.15.6, SS.912.G.1.3,
LA.3.1.6.1, LA.4.1.6.1, LA.5.1.6.1, LA.6.1.6.1, LA.910.1.6.1, LA.910.5.1.1, LA.910.5.2.1,
LA.910.5.2.3

Mission and History of Fairchild

FAIRCHILD HISTORY

Fairchild Tropical Botanic Garden is one of the world's preeminent botanic gardens, with significant collections of palms, cycads, flowering trees, tropical fruits, vines, aroids and endangered species. The 83-acre garden was founded in 1936 by Colonel Robert Montgomery and was named after Dr. David Fairchild - the nation's foremost economic botanist and plant explorer. Dr. Fairchild and Marjorie Stoneman Douglas played an important role in creating a picturesque botanical garden to showcase an outstanding collection of palms and cycads.

Today Fairchild Tropical Botanic Garden is internationally renowned for its tropical plant collections, horticultural displays, scientific research and educational programs, and is accredited by the American Association of Museums. Over 20,000 accessioned plants are showcased in the Garden's landscape while the Fairchild Herbarium contains over 160,000 dried, pressed plant specimens.

Scientists and graduate students from around the world utilize the plant collections in taxonomic, floristic, horticultural and conservation studies. The living collection is also the basis of educational programs for students in kindergarten through PH.D. graduate studies. Fairchild is a leading source of environmental, horticultural and botanical education in South Florida, with more than 250 adult education courses offered annually, and over 70,000 K-12 students served.

Fairchild Tropical Botanic Garden has over 214,00 visitors annually from 50 states and over 100 countries, and a membership of 36,000 in 17,000 households. The Garden is known for hosting community events and programs, including Ramble - A Garden Festival, International Mango Festival, Orchid Festival, Holiday Music and Moonlight Musicale concerts.

MISSION STATEMENT

The mission of Fairchild Tropical Botanic Garden is to save tropical plant diversity by exploring, explaining and conserving the world of tropical plants; fundamental to this task is inspiring a greater knowledge and love for plants and gardening so that all can enjoy the beauty and bounty of the tropical world.

Plant Kingdom Worksheets

Use these worksheets to write the answer to the questions asked in the PLANT KINGDOM booklet.

Angiosperms **A1-A5**, Gymnosperms **B6**, Ferns **C7**, Mosses **D7**, Plant Adaptations **E8**

A1) Dicot Flowers

- Draw the flower and label all the parts.

Scientific plant name _____

A2) Dicot Stems

- The bark texture and color of *Eucalyptus deglupta* is _____
_____.
- The bark texture and color of *Eugenia confusa* is _____
_____.
- The bark texture and color of *Myrcianthes fragrans* is _____
_____.

A3) Dicot Fruit

#

- Circle the parts of the tree where the fruits and flowers come from:

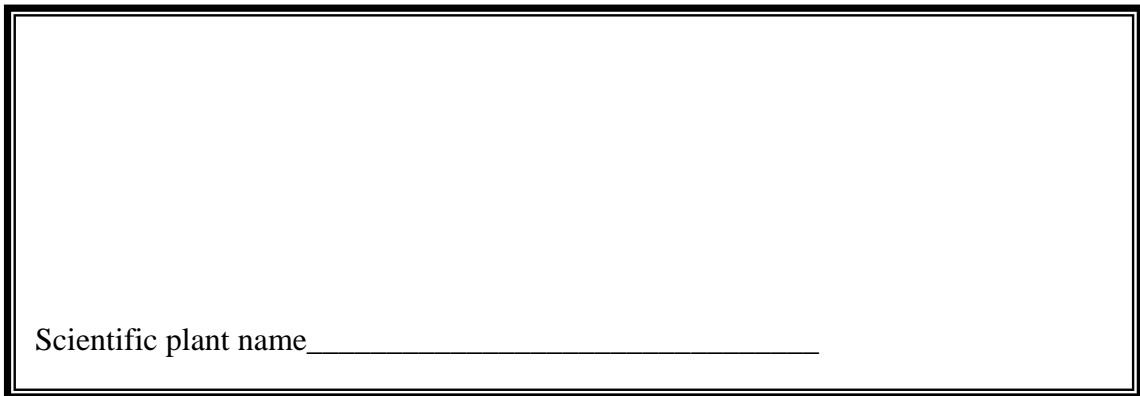
Leaves

Stems

Roots

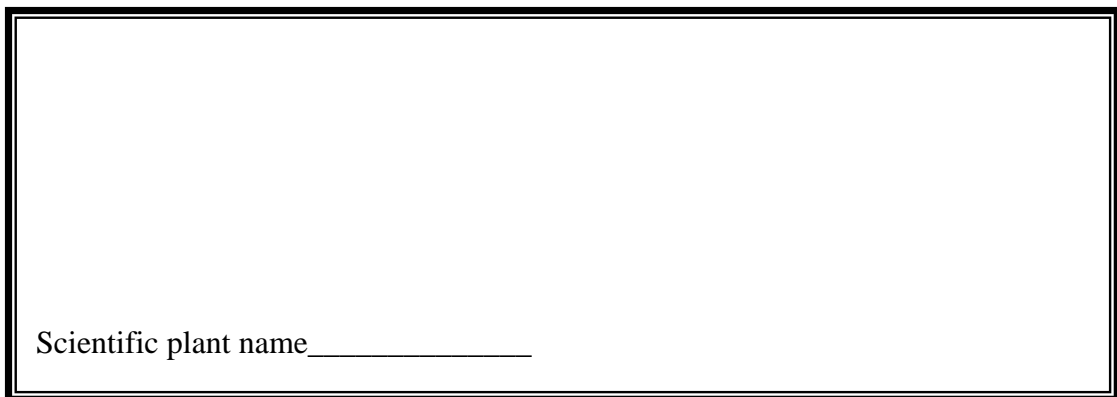
A4) Dicot Leaves

- The leaves of *Guaiacum sanctum* are compound – meaning they are divided into many leaflets.
- Draw a *Guaiacum sanctum* leaf.



Scientific plant name _____

- Draw a simple leaf. What is the scientific name of the plant your leaf comes from?



Scientific plant name _____

A5) Monocot Flowers and Leaves

- How many petals are on the Purple Heart flowers_____?
- Draw the leaves of the four species.

Plant_____	Plant_____	Plant_____	Plant_____
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- Draw the venation (vein pattern) of these four species in the box below.

- How are the leaves of the four species alike?

B6) Gymnosperms

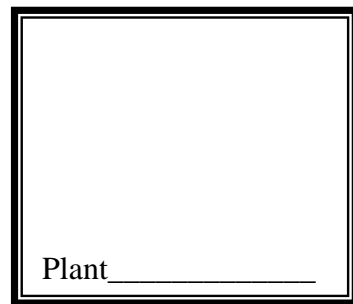
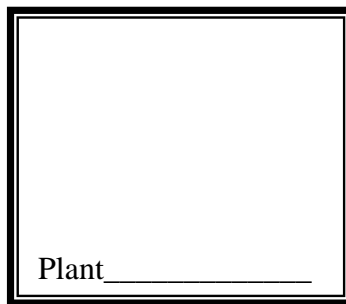
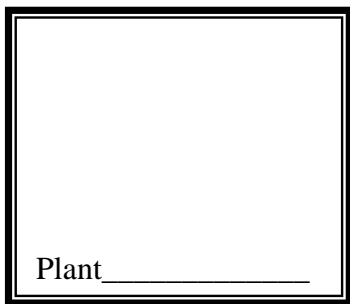
- Do you think that cycads are more closely related to pine trees or palm trees? Why?

C7) Ferns

- Write the scientific and common names of three ferns.

- _____
- _____
- _____

- Draw the spore arrangement for each of the ferns you found.



D7) Mosses

- List two characteristics of mosses.

- _____
- _____

What do you wonder?

E8) Any living thing can lead us to ask questions, and questions are the basis of scientific investigation.

Now that you have seen some of the different ways plants can modify their structure, spend the next ten minutes asking yourself questions about plant adaptations.

You can see flowers and leaves of many colors on [_____ plant name],
What do you wonder about plants with different colors?

Roots are “normally” underground, but you can see aerial roots on [_____ plant name],
What do you wonder about plants with aerial roots?

You can see hairs and spines on different of plants, for example, [_____ plant name],
What do you wonder about hairs or spines?



Challenge Activity



There are many different types of leaves in the garden. Find one example you like and draw a picture in the space provided.

Describe as many characteristics as possible: leaf venation (parallel or netted), leaf shape (simple, compound), leaf arrangement (opposite, alternate, whorled), leaf color, leaf texture, etc. Use your vocabulary sheet if you need help.

Why are all leaves different?



Vocabulary

Adaptation – changes in a species that help it survive in its natural environment

Arboretum – a place where trees, shrubs, and herbaceous plants are cultivated for scientific, educational, and aesthetic purposes

Anther – a sac-like structure at the apex of the stamen where the pollen is formed

Aerial roots – roots that are formed on above ground on the stem

Alternate leaves – a leaf arrangement where the leaves are arranged on alternate sides of a stem; having one leaf or bud at a node

Aromatic oils – compounds produced by plants, often as a defense against herbivores

Bud – an undeveloped flower

Carpel – the female reproductive organ composed of the style, stigma, ovules, and ovary

Classification – the ordering and ranking of plant species according to their characteristics

Compound leaf – a leaf blade divided into leaflets (a single part of a compound leaf)

Conservation – protection of natural resources from waste, loss, or harm

Costapalmate – the petiole of the leaf extends into the leaf blade

Cotyledon – (seed leaves) the first leaves to emerge from the seed

Epiphyte – a plant that lives on the surface of another plant, for example on the trunk or branches. Epiphytes do not usually harm their host.

Family – a group of related organisms with similar characteristics

Filament – the stalk of the stamen that holds the anther

Indigenous – plants or animals growing or living naturally in a particular region or environment

Inflorescence – the flowering part of a plant, a flower cluster

Leaf veins – the vascular bundles (xylem and phloem) found in a leaf

Monocotyledon – one of the two groups of angiosperms; plant embryos in this group have only a single cotyledon, or seed leaf.

Nectar – a sweet, sticky liquid that attracts insects or other animals needed for pollination

New World Plants – plants native to North America or South America

Node – a joint in the stem of a plant, especially those joints where leaves or buds begin to grow

Old World Plants – plants native to Europe, Asia, and Africa

Opposite leaves – a leaf arrangement where the leaves are arranged on either side of a stem; having two leaves at a node

Vocabulary

Ovary – where the ovules are produced; the plant structure where the seeds develop

Palmate leaves – leaves have leaflets coming out from a central point

Petals – usually delicate and often brightly colored structures that surround a plant's reproductive organs; usually help to attract pollinators

Petiole – the slender stalk attaching a leaf to a stem

Pinnate leaves – leaves have leaflets along a central stalk, giving them a feathery appearance

Rhizome – a horizontal plant stem that grows underground

Sepals – small leaf-like structures that surround and protect developing flower buds

Simple leaf – a leaf with one undivided blade or a lobed leaf that is not divided to the midrib

Stamen – the male reproductive organ of a flower; where the pollen is produced

Stigma – the flower structure where the pollen is deposited; often it is sticky

Stomata – small pores on the surface of the leaves that allow air to enter and exit the leaves

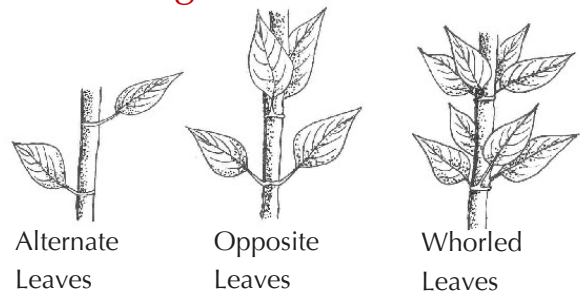
Style – an elongated tube that the pollen moves through to reach the ovary

Vascular tissue – plant tissue composed of cells that are responsible for transporting water, sugar, and minerals around the plant

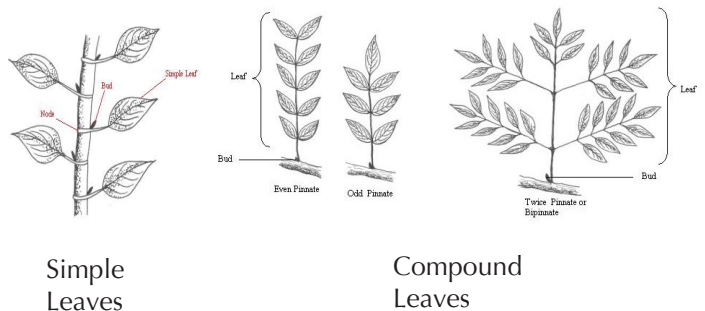
Venation – the vein arrangement of the leaf

Whorled leaves – a leaf arrangement where the leaves are arranged in a circle around the stem; having three or more leaves at a node

Leaf arrangements



Leaf types



Palm leaves

