



**NATIONAL
CONSERVATION
LANDS**

Eastern States

Jupiter Inlet Lighthouse

Outstanding Natural Area

Hands on the Land
Lesson Plan

Plants of the ONA

4th Grade

Bureau of Land Management
Jupiter Inlet Lighthouse Outstanding Natural Area
600 State Road 707, Jupiter, FL 33469
561-295-5953
www.BLM.gov/jupiterONA

Lesson Plan

Course: Grade 4

Course Number: Science

Lesson Plan Date: October 2016

Lesson Title: Identifying plants and their uses on the ONA

Time: 1-hour class and 2-hours field visit

Instructor Preparation:

This lesson has correlations with the following book:

Oyer, Harvey E. III. The Adventures of Charlie Pierce: The American Jungle. Oakland Park FL. Middle River Press. 2010.

Discuss the historical use of various plant by the early 1900 settlers in South Florida.

Prepare students with vocabulary and plant ID PowerPoint and ONA rules.

Make necessary copies of data sheets and preview lesson activities.

Site Prep and Equipment:

a. Pre-registration is required for all field trips please check the Lighthouse and ONA websites at:

<http://www.jupiterlighthouse.org/plan/school-field-trips/>
www.BLM.gov/jupiterONA

b. Clipboards, pencils, ID pamphlets and binoculars are available on site.

c. Activity Overview:

Using reference materials, students will make and record observations of plants of the ONA. Students will determine if the plant is native or exotic and list both historical and current uses of those plants.

Main Objective:

Using the plant identification data sheet, students will observe and identify plants, describe the main characteristics of those plants and indicate both their historical and current uses. Students will also indicate if the plant is a native or exotic plant.

Est. Time	Visuals and Notes	Content
20 min.	<p>Oyer, Harvey E. III. <u>The Adventures of Charlie Pierce: The American Jungle</u>. Oakland Park FL. Middle River Press. 2010.</p> <p>Introduction: (pre-trip)</p> <p>See attached Vocabulary list sheet.</p>	<p>It is highly recommended that student read <u>The Adventures of Charlie Pierce: The American Jungle</u> prior to this lesson.</p> <p>Have students define the following vocabulary:</p> <p>Bromeliad: any of the chiefly tropical American usually epiphytic plants comprising the pineapple family and including Spanish moss.</p> <p>Epiphyte: An epiphyte is a plant that grows harmlessly upon another plant (such as a tree) and derives its moisture and nutrients from the air, rain, and sometimes from debris accumulating around it. (example: Orchids)</p> <p>Exotic species: species that has been introduced or is non-native.</p> <p>Native species: species that live in the geographical locations where they originated.</p> <p>Non-Renewable resource: a resource that cannot be replaced as fast as it is being used; a finite resource.</p> <p>Renewable resource: a resource that can be replaced or replaces itself as it is used up. (example: food crops)</p> <p>Sustainable: wise use and replacement of natural resources so as not to run out of that resource in the future.</p>

<p>20 Min.</p>	<p>Hook 1: Refer to the ONA Plant ID PowerPoint</p>	<p>Show the ONA Plant ID PowerPoint.</p> <p>Discuss the following: Difference between native and exotic plants. Possible uses for various plants Currently used substitutes for those plant uses What early settlers do to make uses sustainable</p>
<p>10 Min.</p>	<p>Hook 2: See attached Data Sheet</p>	<p>Review data sheet with students so they know what is expected of them on the field visit.</p>

<p>10 Min.</p>	<p>Pre-trip: See attached ONA Rules and Guidelines</p>	<p>Review the ONA rules and guidelines with students.</p> <ol style="list-style-type: none"> 1. <u>Do not collect anything.</u> Collection of any item, living or non-living is not allowed without special permit from the site manager. 2. <u>No digging.</u> This site is a historical site with cultural significance, it is protected by law. 3. <u>Stay on the concrete trail and boardwalk.</u> Endangered and sensitive plants are on the site. 4. <u>No pets are allowed</u> in the natural area. 5. <u>No swimming.</u> Wading may be permitted for specific field study activities. 6. <u>Closed-toe shoes are required</u> for all activities on site. 7. <u>Be familiar with the local plants and animals</u> both terrestrial and marine. There are poison plants and may be venomous animals on the ONA site. 8. <u>Be respectful of both other visitors and the environment while visiting the natural area.</u> 10. <u>Emergency – follow group protocol. Report all injuries, issues or concerns to the site manager.</u>
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<p>2 Hours</p>	<p>On site Plant ID and Uses Lesson Plan</p>	<p>Our Main objectives are:</p> <ol style="list-style-type: none">1. Describe ways in which early Florida settlers used the natural resources in both renewable and non-renewable ways. (SC.4.E.6.3)2. Identify impacts on the environment by people, plants and animals. (SC.4.L.17.4)3. Identify plants and animals by direct observation. (SC.4.N.1.6) <p>Plants: Identification and Uses (Lesson relates to sustainable use of renewable resources) Using the plant identification data sheet, students will observe and identify plants, describe the main characteristics of those plants and indicate both their historical and current uses. Students will also indicate if the plant is a native or exotic plant.</p> <p>Directions:</p> <ol style="list-style-type: none">1. Pair students for collaboration and materials management.2. Provide each pair of students with a clipboard, plant data sheet and plant identification booklets.3. As students are lead through the site and using the plant data sheet along with the plant identification booklets, students are to fill in the plant data sheet indicating the main characteristics of the plant, what they think the plant's historical and current uses may be and if that plant is a native or exotic plant.4. If the plant is not observed, students can still complete the data sheet using the identification booklets and their prior knowledge.5. After the allotted time (30-45 minutes) collect the materials and discuss the various plants and their uses comparing and contrasting the historical and current uses in relation to renewable uses and sustainability.
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<p>20+ Min.</p>	<p>Follow-up</p>	<p>Review the following:</p> <ol style="list-style-type: none"> 1. Review vocabulary 2. Discuss why native plants are better than exotic plants in the environment. 3. Review which plants and animals were important to the early settlers. 4. Explain what has been done since the early 1900's to help make the use our natural resources sustainable. 5. Discuss the benefits of native species compared to exotic species. 6. Follow-up with students to have them survey their yards or school to see if there are more native plants or exotic plants.
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Following attachments:

Vocabulary List

Teacher information and resource web sites

Plant ID data sheet

Plant ID data sheet answers

Field trip follow-up questions

ONA rules and Guidelines

How to be a Great Chaperone

4th Grade plant ID and use VOCABULARY:

Bromeliad:

Epiphyte:

Exotic species:

Native species:

Non-Renewable resource:

Renewable resource:

Sustainable:

Teacher information and resource web site links:

Recommended reading prior to site visit:

Oyer, Harvey E. III. The Adventures of Charlie Pierce: The American Jungle. Oakland Park FL. Middle River Press. 2010.

During site visit:

Weather observations may be estimated, or gathered from equipment on site (if available) or taken from a local report. It is important that students record the unit of measurement and indicate if the recorded data is estimated or taken from a source. Bird observations may be affected by weather conditions and time of year. All species except the Anhinga have been documented on site.

Actively Chaperone and assist students with observations and recording.

Post-Visit Classroom Activities:

- Review vocabulary
- Review which plants were important to the early settlers and why.
- Explain what has been done since the early 1900's to help make the use our natural resources sustainable.
- Discuss the benefits of native species compared to exotic species.

Resource web site links:

The following websites are provided for teacher use and information and should be used as reference only.

Bureau of Land Management (ONA) - www.BLM.gov/jupiterONA

Jupiter Lighthouse - <http://www.jupiterlighthouse.org/>

Florida Wildlife - <http://myfwc.com/wildlifehabitats/>

Conservation of Florida Wildlife - <http://myfwc.com/conservation/>

Florida listed species:

<https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=FL&status=listed>

Native Trees - <http://edis.ifas.ufl.edu/eh157>

Bromeliads - <http://edis.ifas.ufl.edu/pdffiles/UW/UW20500.pdf>

Pineapple - <http://edis.ifas.ufl.edu/fp039>

Spanish Moss -

http://solutionsforyourlife.ufl.edu/hot_topics/environment/spanish_moss.shtml

Figure 1 Identifying Plants Data Sheet

IDENTIFYING PLANTS		NAME:				
PLANT NAME	Plant Observed		DESCRIPTION (Main characteristics)	HISTORICAL USES	CURRENT USES	Native or
	YES	NO				
BANYAN/Ficus (many species)						
CABBAGE PALM (Sable Palm)						
COCONUT PALM						
COCO-PLUM						
GUMBO LIMBO						
MANGROVE (three species)						
OAK TREE (several species)						
PERIWINKLE						
PINEAPPLE						
PRICKLY - PEAR CACTUS						
SAND PINE						
SEA GRAPE						
SPANISH MOSS						
STRANGLER FIG						

Figure 2 Identifying Plants Data sheet Answers

IDENTIFYING PLANTS		ANSWERS				
PLANT NAME	Plant Observed		DESCRIPTION (characteristics)	HISTORICAL USES	CURRENT USES	Native or Exotic?
	YES	NO				
BANYAN/Ficus (many species)	x		Wide spreading base, aerial dropping roots. Can be very large tree.	Shelter/hiding.	Shade.	Many species, most are exotic.
CABBAGE PALM (Sable Palm)	x		Single grey trunk tree. May have "boots" (old leaf stalks) on trunk. Wide fronds.	Food source (heart of palm), roofing material.	Landscaping. Some use heart of palm for food (kills tree).	Native
COCONUT PALM	x		Single grey trunk, no boots, trunk often curved. Fronds long and narrow. May have coconuts at base of fronds.	Non-native, food and water source (coconuts).	Landscaping, food source.	Exotic
COCO-PLUM	x		Bright green shrub with round shiny leaves. Usually trimmed to shape.	Food source for humans and animals.	Landscape. Some still use fruit.	Native
GUMBO LIMBO	x		Heavy reddish trunk with flaky bark. Often odd shapes trunk/branches. May have small reddish nuts.	Shade.	Native tree used for shade & ascetics.	Native
MANGROVE (three species)	x		Grown along the water's edge. Red mangroves have reaching prop roots.	Hiding, shelter for humans and animals.	Shoreline protection. All species are protected.	Native
OAK TREE (three species)	x		Small to large tree. Thick trunk, grey rough bark. Dark green small leathery leaves. May have acorns.	Lumber, Firewood, Shelter, food source for humans and animals.	Shade, ascetics.	Native
PERIWINKLE	not much on site		Small flower with white or pinkish/purple flower. Usually grows in sandy disturbed soil.	None, maybe landscaping.	Some species used in medical drug production.	Exotic
PINEAPPLE	x		Bromeliad. Low growing single stalk with long (12-18 inch) narrow spiny green leaves.	Food source, income.	Food source, income.	Exotic bromeliad
PRICKLY - PEAR CACTUS	on north site		Cactus. Thick oval shaped green leaves with long sharp spines. May have red fruit.	Food source for humans and animals.	None. Some still use for food source.	Native
SAND PINE	on north site		Dark brown trunk, usually small to medium sized. Short (2-3 inch) dark green needles.	Some lumber and fire wood.	None. Mostly on protected natural areas.	Native
SEA GRAPE	x		Large (6-8 inches) round leathery leaves. Shrub or tree. May have clusters of grape-like fruit.	Shelter, food source for Humans and animals.	Landscaping shore protection.	Native
SPANISH MOSS	not much on site		Bromeliad (pineapple family). Grows hanging from other trees and shrubs. Greenish/grey color.	Bedding, seat cushions.	Ornamental uses. Birds use for nests.	Native bromeliad
STRANGLER FIG (<i>Ficus aurea</i>)	x		Can begin as an epiphyte or free standing. Often grows on cabbage palm trees "strangling" them.	Humans-none. Food source for birds.	Humans-none. Food source for birds.	Native

Field Trip Follow-up Questions:

- 1. Identify several renewable and non-renewable resources you observed on your field trip or that you know early settlers used.**
- 2. Describe ways that early settlers in Florida used natural resources in a sustainable way.**
- 3. Explain the difference between native and exotic species.**
- 4. Compare and contrast native and exotic plants.**
- 5. Create a list the natural resources used by the early Florida settlers that are still used by current residents.**

ONA Rules and Guidelines:

The Natural Area is Federal property and is regulated by Federal, State and local laws. Complete and detailed regulations regarding the Jupiter Inlet Lighthouse Outstanding Natural Area (ONA) are available in the *Jupiter Inlet Outstanding Lighthouse Natural Area Comprehensive Management Plan and Environmental Assessment* (pages 137-149) available at the following website:

www.BLM.gov/jupiterONA

General Rules and Guideline Requirements:

1. All groups or individuals **MUST** contact the site manager (Peter DeWitt, Site Manager Jupiter Inlet Lighthouse ONA, Bureau of Land Management, 600 State Road 707, Unit B Jupiter, FL 33469. Phone: (601) 331-7407) **prior to starting** any field study or research activities on the site to obtain special permits for field work.
2. Do not collect anything. Collection of any item, living or non-living is **not allowed without special permit from the site manager.**
3. No digging. This site is a historical site with cultural significance, it is protected by law.
4. Stay on the concrete trail and boardwalk. Endangered and sensitive plants are on the site.
5. No pets are allowed in the natural area.
6. No swimming. Wading may be permitted for specific field study activities.
7. Closed-toe shoes are required for all activities on site.
8. Be familiar with the local plants and animals both terrestrial and marine. There are poison plants and may be venomous animals on the ONA site.

Helpful websites:

Marine organisms: http://www.floridahealth.gov/diseases-and-conditions/food-and-waterborne-disease/_documents/stings.pdf

Plants: <http://www.edis.ifas.ufl.edu/pdffiles/EP/EP22000.pdf>

Snakes: http://ufwildlife.ifas.ufl.edu/venomous_snake_identification.shtml

Insects: <http://edis.ifas.ufl.edu/ig099>

9. Be respectful of both other visitors and the environment while visiting the natural area.
10. Park only in designated areas.
11. Emergency – follow group protocol or call 911. Report all injuries, issues or concerns to the site manager.

How to be a Great Chaperone

You don't need special knowledge to be a chaperone—just common sense and a willingness to jump in and get involved. Here are a few tips to help make your trip a good one:

What will I be doing as a chaperone?

You will supervise a small group of students, help them learn, assist the ranger when called upon, and make sure the students behave appropriately.

What will my role be during the program?

Throughout the visit, your job will be to monitor the behavior of the students, provide for their safety, and facilitate the learning process while insuring a fun visit for the students. You may be asked to work with specific students and help guide them through program activities. You may want to ask the teacher for information about the program, including background information and vocabulary words, to familiarize yourself with the topic. The more you can interact with the students, the better their experience will be.

What do I need to tell the students about touching things?

Encourage students to touch gently when instructed to do so. When touching marine animals, wet your hands in seawater first. Most marine animals have a coating of slime to protect them. Touching them with a dry hand can damage their slime layer and harm their delicate surfaces.

- Do not pick up or remove the animals.
- Follow the guidance of the education staff.

How can I help students get the most out of their visit?

- Be sure you understand the plan for the day, as instructed by the student's teacher.
- Ask the teacher for any material that will help you lead the students.
- Ask the teacher whether the students have specific projects to work on, and how you can help them during the visit.
- Interact and have fun with the students.
- Ask questions of each student in your group. There will always be a few who have all the answers.
- Encourage the shy or quiet students to share ideas, too.

What else do I need to know?

- Please leave small children at home if possible. They distract you from your duties as a chaperone.
- Avoid visiting with other adults at the expense of your chaperone duties. Remember that your primary job is to chaperone the students, not to visit with other parents.
- Students must stay with you, their chaperone, always. Their behavior is your responsibility.
- Be sure you know when and where to meet the rest of your group during and at the end of the visit.