

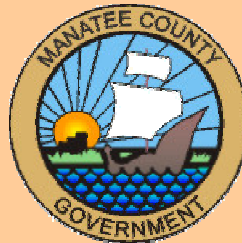


Manatee County
Board of County Commissioners
Natural Resources Department

"INVADERS!"

Traveling Trunk

Grades 6-8



Program made possible by



Florida Exotic
Pest Plant Council

*Traveling Trunk & Teacher's Guide created by
Melissa Cain Nell with assistance from Department
Interns Suwanna Blakey and Renee Price.*



Spot the Plant Cards

Student Handout



Examine the "Spot the Plant" cards carefully and complete the questions below:

Match the plant card photo to the plant common name (choose a name from the list and write it in the blank):

- | | | |
|-----------|--------------|---------------------------|
| 1. _____ | Balsam Apple | Brazilian Pepper |
| 2. _____ | _____ | Balsam Apple |
| 3. _____ | _____ | Australian Pine |
| 4. _____ | _____ | Snakeplant |
| 5. _____ | _____ | Carrotwood |
| 6. _____ | _____ | Creeping Wedelia |
| 7. _____ | _____ | Caesar Weed |
| 8. _____ | _____ | Air Potato |
| 9. _____ | _____ | Rosary Pea |
| 10. _____ | _____ | Cogon Grass |
| 11. _____ | _____ | *Some can be used twice!* |
| 12. _____ | _____ | |

What color are the berries of the Brazilian Pepper? _____

What color is the flower of the creeping wedelia? _____

Describe the leaf of the snakeplant. _____

What color is the fruit of the carrotwood? _____

Which three invasive plants grow as vines? _____

Which three invasive plants can grow to be trees? _____

What color is Caesar weed's flower? _____

Describe the shape of air potato leaves. _____



Spot the Plant Cards Student Handout



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- | | |
|--------------------------------|---------------------------|
| 1. ____ Balsam Apple _____ | Brazilian Pepper |
| 2. ____ Air Potato _____ | Balsam Apple |
| 3. ____ Rosary Pea _____ | Australian Pine |
| 4. ____ Brazilian Pepper _____ | Snakeplant |
| 5. ____ Brazilian Pepper _____ | Carrotwood |
| 6. ____ Australian Pine _____ | Creeping Wedelia |
| 7. ____ Caesar Weed _____ | Caesar Weed |
| 8. ____ Cogon Grass _____ | Air Potato |
| 9. ____ Australian Pine _____ | Rosary Pea |
| 10. ____ Carrotwood _____ | Cogon Grass |
| 11. ____ Creeping Wdelia _____ | *Some can be used twice!* |
| 12. ____ Snakeplant _____ | |

What color are the berries of the Brazilian Pepper? ____ red _____

What color is the flower of the creeping wedelia? ____ yellow _____

Describe the leaf of the snakeplant. _____ long, thin, pointed at one end _____

What color is the fruit of the carrotwood? _____ can be orange or red _____

Which three invasive plants grow as vines? ____ rosary pea, air potato, balsam apple _____

Which three invasive plants can grow to be trees? ____ Australian pine, Brazilian pepper, carrotwood _____

What color is Caesar weed's flower? _____ purple or pink _____

Describe the shape of air potato leaves. _____ heart-shaped _____



Lesson Plans from Other Agencies: Contents



The “INVADERS!” Traveling Trunk also includes a selection of lesson plans created by a variety of different agencies and organizations. There are a number of wonderful resources available and we have chosen to include a selection of “the best of the best.” Many of these lesson plans can easily utilize the BioFacts and Flash Cards included in the traveling trunk. These wonderful resources are listed below.

Lessons for Grades 6th to 8th:

- Teaching Points About Non-Native Invasive plants
 - *A FAQ list of points to cover when teaching about invasive plants, specifically in the state of Florida.*
 - *Created by the University of Florida for the “Invasive Plant Poster” series.*
- Poet-Tree
 - *Students use poetry to describe local weeds.*
 - *Created by the Center for Invasive Plant Management.*
- Design-A-Weed
 - *Students will work to create a “super weed” that can survive in the harsh conditions in a habitat scenario.*
 - *Created by the Center for Invasive Plant Management.*
- Munching Insects
 - *In this science activity, students will work to design an experiment to discover what types of plants particular insects prefer.*
 - *Created by the Center for Invasive Plant Management.*
- World Travelers
 - *Students will read a selection that introduce the concept of invasive species and then respond to FCAT-style questions and prompts.*
 - *Created for Project WILD K-12 Curriculum.*
- One Mean Weed!
 - *Students will learn more about the reproductive ability of an aggressive plant and will understand how roots can help a plant to compete better.*
 - *Created by the Tampa Bay Estuary Program.*
- Invaders Galore!
 - *Students use graphs to learn more about wildlife populations and the ways invasive species can affect them.*
 - *Created by the Tampa Bay Estuary Program.*
- Classroom Takeover!
 - *Students will create their own invasive species and will learn how their classroom environment changes with the introduction of their species.*
 - *Created by the Tampa Bay Estuary Program.*
- By Land, By Sea, By Air...
 - *Students will research the vectors which can spread non-native species and will create a storyline about the arrival of a particular species.*
 - *Created by the Tampa Bay Estuary Program.*
- Seed Need
 - *Students discover the many different ways seeds are spread throughout the ecosystem with a special focus on the role wildlife play in seed dispersal.*
 - *Created for Project WILD K-12 Curriculum.*
- Seed Starter
 - *A simple activity that will allow students to first collect seeds and then sprout them.*
 - *From “Organic Crafts” by Kimberly Monaghan.*
- Plant Handouts
 - *Plant word search, plant word scramble.*



Spot the Plant Cards



Twelve "Spot the Plant" cards are included with this traveling trunk. These cards can be laid out at a station, or shown to the class as a group, allowing for the opportunity to closely study the features of each plant. Students should study each card, paying close attention the highlighted plant's features. They can then complete the accompanying handout, learning to identify each individual plant form.

Each of the representative exotic species on the Spot the Plant Cards are also included as BioFact specimens in display boxes. The Spot the Plant Cards can be utilized individually or combined with the BioFact display boxes to give students an idea of the real-life appearance of the plant.

Spot the Plant Cards Key:

1. Balsam Apple (*Momordica balsamina*)
2. Air Potato (*Dioscorea bulbifera*)
3. Rosary Pea (*Abrus precatorius*)
4. Brazilian Pepper (*Schinus terebinthifolius*)
5. Brazilian Pepper (*Schinus terebinthifolius*)
6. Australian Pine (*Casuarina equisetifolia*)
7. Caesar Weed (*Urena lobata*)
8. Cogon Grass (*Imperata cylindrica*)
9. Australian Pine (*Casuarina equisetifolia*)
10. Carrotwood (*Cupaniopsis anacardioides*)
11. Creeping Wedelia (*Wedelia trilobata*)
12. Snake Plant or Mother In Law's Tongue (*Sansevieria trifasciata*)



NRD Lessons: Contents



The “INVADERS!” Traveling Trunk includes a selection of lesson plans created by Manatee County’s Natural Resources Department. The lessons in this section are listed below:

INVADERS! Lessons for Grades 6th to 8th:

- Friend or Foe?
Can harmful invasives actually be helpful? This lesson will lead students on a cross-cultural, globe-trotting research hunt on the various purposes for “unwanted” exotics.
- Lasting Impressions
Each student creates his or her own plant press, collects plants, preserves them and then makes a mini-herbarium.
- Neighborhood Watch
Why isn’t there an “easy” solution to the invasive plant problem? Students will play a simulation game, using UNO cards, to learn more about the methods of controlling invasives and the way these plants can overtake a habitat.
- Plant Anatomy and Identification
Students will learn the basics of plant identification, including the different types of roots and leaves.
- Sowing the Seeds
Seed dispersal is the key to successful plant growth. In this lesson, students examine familiar seeds, observe their growth, and learn more about the various methods seeds can spread.
- Wanted!
Invasive plants are considered “dangerous criminals” in Florida habitats. This lesson will have students combining creative art skills with reading, writing, and research as they create a “wanted poster” to profile a specific plant.
- Weed Watchers
Just how DO those invasives grow? Using graphs and tables, students will chart the growth of a selected site of invasives.
- Internet Resources
A selection of websites and links including educational reference, databases, organizations, and the laws and regulations that govern invasive species.
- Removing Exotic Plants Tip Sheet
Directions for instructors who would like to arrange an exotic plant removal workday.



BioFacts Information



The "INVADERS!" Traveling Trunk includes a variety of real items that include real plant materials. The inventory list below details the items included in the trunk:

BioFact Inventory List:

- 1 Invasive Plant Seed Box
- 1 Australian Pine Display Box
- 1 Wedelia and Air Potato Display Box
- 1 Carrotwood Display Box
- 1 Cogon Grass Display Box
- 1 Balsam Apple/Pear Display Box
- 1 Caesar Weed and Snake Plant Display Box
- 1 Brazilian Pepper Display Box
- 1 Rosary Pea Display Box

BioFact care and handling:

The biofacts in this trunk are one-of-a-kind items and have been carefully prepared for classroom use. These natural items have all been cleaned and preserved however they are delicate items and must remain in their display cases. Please do not open any of the biofact containers or boxes. Handle these display boxes with care and please be sure that students are equally careful with each item.

BioFact station set-up:

These items work best when used at a learning station. All of these items can be placed at one station or they can be separated for use at several different sites. The items can be used to accompany the specific biofact handouts included with this booklet or they can be used for interdisciplinary learning in any of the following ways:

- Math: measure the various plants and compare leaf, stem, flower size; graph the results
- Art: create botanical illustrations of these plants from the preserved specimens
- Science: make photocopies of the laminated herbarium sheets and ask students to label the plant parts
- Art: use the preserved specimens to sculpt 3-dimensional replicas of the entire plant or its parts
- Music/Language Arts: make up songs about these different plants, describing their characteristics and their predilection for invasion
- Language Arts: Create a poem about each one of the plants represented in the collection



Trunk Use/Set-Up (p. 1)



Natural Resources Department Traveling Trunks are designed to provide educators with a bevy of hands-on educational activities to supplement learning. These activities are interdisciplinary and meet Sunshine State Standards.

Each activity in the trunk can be used as a stand-alone event or they can be presented in a longer format that incorporates several activities at once. In order to create this type of learning environment, it is best to set up in a “station” format as described below. In either case, students may work individually or together as a group.

Station 1: BioFacts

- Place all of the BioFacts at one station (or several if preferred)
- Place the hand lenses at this station
- Place the BioFact Handouts at the station
- Ask students to complete the handouts as appropriate OR utilize the BioFacts for other activities (see section 6 for additional activity ideas)

Station 2: Invasive Plant Reading (book)

- At station 2 place the Plant Invaders books included in the traveling trunk
- Also include the appropriate comprehension questions
- Students will read the book (or specific assigned sections in it) and answer the reading comprehension questions that accompany this selection. Students may write their answers on notebook paper or copies of the questions may be made for each student/group.

Station 3: Invasive Plant Reading (booklets)

- At station 3 place the “Non-Native Invasive Plants,” “Weeds you Should Get to Know,” “Florida Invaders,” and “Curse of the Honeysuckle” booklets included in the traveling trunk.
- Also include copies of the appropriate comprehension questions
- Students will read the booklets (or specific assigned sections in it) and answer the reading comprehension questions that accompany this selection. Students may write their answers on notebook paper or copies of the questions may be made for each student/group.

*Station 4: Invasive Plant Flash Cards ** , ****

- Place all (or a selection of your favorites) of the Invasive Plant Flash Cards at one station
- Here students will identify the various species pictured on each card. Ask students to write their answers on notebook paper before moving to the next station.

Station 5: Wild Seed Game

- Place the Wild Seed Game at this station.
- Ask students to play the wild seed game with two or more partners.



Trunk Use/Set-Up (p. 2)



*Station 6: Spot the Plant Cards ** , ****

- Place all the Spot the Plant Cards at one station
- Here students will identify the exotic species pictured on each card. Ask students to write their answers on notebook paper before moving to the next station.

Station 7: Make a Herbarium (optional)

- Place two herbariums at the station as examples of the final product along with all necessary materials (see "Lasting Impressions" lesson plan for materials list)
- At this station, students can create their own herbarium to later use in the field.

** For comprehensive directions on how to execute this activity and more ideas, please see section 6.

*** This activity can be done with the entire class or in a station

Additional Materials

In addition to the station format, there are additional materials in the traveling trunk that can be used along with the various lesson plans or to simply promote and facilitate learning.

These materials include:

- Exotic Plant Posters
- Hand-lenses
- Laminated Plant Field Guides
- Laminated Brochures and Fliers

CDs and DVDs

The CDs of images can be used as necessary, to create additional activities according to teacher discretion. The "Non-Native Invasive Plants in the Tampa Bay Area" contains .pdf copies of the information found in the booklet of the same name. This information may be used as necessary by the instructor. The DVD included with this traveling trunk is intended to be shown to the entire class as a group.



Removing Exotic Plants Tip Sheet



One of the biggest ways to make a lasting impact on the environment is to engage in exotic plant removal. This is surprisingly easy to do with children as they frequently enjoy working outdoors and participating in an activity that has a clear, quick, positive result. If your school is in a location with an exotic infestation, consider staging a class, grade level, or school-wide cleanup of the area. Use this tip sheet to help set up your event:

1. Speak with your school administrators in order to gain permission to conduct this event. Determine whether you will be staying on site or conducting this activity at an off-site location. For either case, gather the necessary forms for student permission.
2. Determine the location for invasive species removal and project date (remember to choose a rain date).
 1. If you are conducting an off-site activity, be sure to get permission from the land owner in order to hold the activity. If you would like to conduct this activity in a park or preserve be sure to inform the location's managers.
3. Next conduct a site visit. Check the area for any potential dangers (are there sharp items around? A ditch? Fences?) and be sure to make a mental map of where you would like the students to work. Examine the locations of the exotic plants and gauge the species type and the method that will need to be used in order to remove the species. Most small plants can be hand-pulled, but others (such as Brazilian peppertree, Caesar weed, and carrotwood) may require additional digging tools for a thorough removal.
4. Talk to your school's janitorial staff in order to arrange for plant disposal or plan out a removal plan for the exotics if you are conducting this activity off-site. Consider the following:
 1. Removal of trash bags after the cleanup is complete;
 2. Removal of plant material too large for trash bags;
 3. Transportation for disposing of removed plant material.
5. Gather materials and supplies. Suggested items are listed below:
 1. Gloves
 2. Trash bags
 3. First Aid Kit
 4. Hand trowels or shovels
 5. Plant ID Field Guides (optional)
6. Hold your event! Go over safety rules and removal directions with the students. Review the types of plants the students will be removing and stress safety during the removal process. Remind students that all plants and their seeds must be removed and disposed of in order to not spread the seed source. As the event is occurring, monitor the students' progress, work, and be sure that they are eradicating the entire plant and disposing of it in the proper manner.
7. Once the event is complete, consider arranging for follow up maintenance. Check on the area to be sure there are not large areas of re-growth occurring. If this happens, consider holding follow-up cleanups.



INVADERS!

Traveling Trunk Inventory



The following items are included in this Traveling Trunk:

- INAVERS! Traveling Trunk Teacher's Workbook
- Plant Invaders by D.M. Souza
- 10 Florida Trees and Wildflowers Pocket Naturalist Guide
- 2 Large Plant Presses
- 2 Laminated Plant Press Guides
- 20 Pocket Hand Lenses
- 1 Wild Seed Game
- 1 Invasive Non-Native Plants Poster
- 1 MORE Invasive Non-Native Plants Poster
- 1 Set Laminated Invasive Plant Flash Cards (41 total)
- 1 Set Laminated Native Plant Flash Cards (16 total)
- 1 Set Spot the Plant Cards (12 total)
- 1 Set Invasive Species Promotional Materials (laminated brochures & fliers)
 - 7 Brazilian Pepper Trees Brochures
 - 1 Florida Invaders Newspaper
 - 1 Curse of the Bush Honeysuckles
 - 8 Laminated Brochures
 - 1 Weeds You Should Know Flashcard Set
 - 2 Non-Native Invasive Plants Mini Books
- 1 Eyewitness: Plant DVD
- 1 Wicked Weeds DVD
- 2 Packs UNO Cards for Game
- 1 Non-Native Invasive Plants in the Tampa Bay Area .pdf CD
- 1 Florida Invasive Plant Education Initiative curriculum CD
- Biofacts:
 - 1 Invasive Plant Seed Box (Rosary Pea, Carrotwood, Air Potato)
 - 1 Australian Pine Display Box
 - 1 Wedelia and Air Potato Display Box
 - 1 Caesar Weed and Snake Plant Display Box
 - 1 Brazilian Pepper Display Box
 - 1 Balsam Pear Display Box
 - 1 Carrotwood Display Box
 - 1 Cogon Grass Display Box
 - 1 Rosary Pea Display Box



INVADERS!



Thank you for requesting the “INVADERS!” Traveling Trunk. Please remember that this trunk is designed to be used by students and educators throughout the County and, as such, please respect the items in the trunk and be sure to return all of them in good condition once your class has finished with the trunk.

The master copies and handouts included in this binder may be reproduced and distributed widely. The photographs on the “Invasive Plants” photo CD are the properties of the artists and may be reproduced for educational use only.

The hands-on activities, bio-facts, and lesson plans included in this trunk will provide your students with a better understanding of the invasive exotic plants threatening Florida’s natural areas. If you have any questions about any of the materials or lessons in this trunk please contact the Natural Resources Department’s Volunteer and Education Coordinator at (941) 748-4501 ext. 4605.

Table of Contents

1. Trunk Inventory List
2. Suggestions on Trunk Use/Activity Set-up
3. Lesson Plans and Activities Created by Manatee County Natural Resources Department and Reading Questions
4. Lesson Plans from Other Agencies
5. Brochures & Fliers (Master Copies)
6. Description of BioFacts, Trunk Materials, & Accompanying Handouts

Acknowledgements

Manatee County’s Natural Resources Department would like to thank the kind donor who made the INVADERS! Traveling Trunk possible. Funding for this program was provided by the Florida Exotic Pest Plant Council. This generous agency demonstrates a firm commitment to environmental education and restoration.

Department staff would also like to thank the teachers and volunteers who edited and piloted this program. Thanks also to the photographers who donated their images to this project. Thank you for your suggestions, guidance, and support!