



# Florida's Invasive Species

## Science, Social Studies and Language Arts

### Brief Overview

This lesson will explore specific species that have become invaders in Florida, why Florida's climate makes it a sentinel state for invasive species, and the top four invasive species of Florida. It will discuss how they were introduced and whether or not they were eradicated.

### Objectives

By the end of this unit the students will be able to:

1. Identify five specific invasive species that are serious problems in Florida and why;
2. Map areas where five invasive species are problems in Florida;
3. Identify how and/or why those invasive species became problems;
4. Explain the economic and environmental damage those invasive species are causing or may cause to Florida;
5. Describe how the damage explained above affects the rest of the U.S. and/or world; and
6. Detail how invasive species impact biodiversity.

### Getting Started

1. View the PowerPoint presentation "Non-Native Species" available at <http://www.floridaaquaculture.com/publications/INTRO%20Presentation.pdf>
2. View the Power Point presentation "Thinking Locally: Acting Neighborly" at [www.floridainvasives.org/toolbox/Jan09\\_CISMA\\_basics\\_compressed.ppt](http://www.floridainvasives.org/toolbox/Jan09_CISMA_basics_compressed.ppt). Decide if you will you both or either power point to start invasive species discussion.
3. Make copies of the student case studies handouts.

### Materials Needed:

- Copies of the Case Studies
- Computers with Internet Access
- LCD Projector to show PowerPoint Presentation



## **Background**

In this day of global travel, a global economy, global tourism, immigration (legal and illegal), and trend of exotic pet ownership, non-native species can travel across continents and oceans in hours. Travelers carrying fruits, vegetables, or meats may inadvertently carry foods that contain invasive diseases or insects as they fly across the globe. Immigrants craving foods from their native lands (not understanding laws that prevent those foods from being imported) may smuggle foods or spices that contain invasive species as happened in Great Britain introducing Foot and Mouth disease in an improperly cured ham from China. Aquatic plants and animals have been introduced by improperly disposing of aquarium waste or unwanted animals such as Burmese Pythons in the Everglades. Hurricane damage may also introduce species that become invaders as wind damage and flooding destroys homes and carries species to waterways.

Some invasive species become invaders after repeated introductions from cars traveling up and down highways or ships sailing to and from ports introducing the same species over and over. This allows for multiple opportunities of introduction rather than one accidental introduction. Invasive species may coexist with native species for a long period of time until the invasive species ability to out compete becomes apparent or when conditions change to allow a population explosion of the invader.

As an international tourism mecca, year-round warm climate with plentiful moisture, global importer of foods, global immigration magnet, and ease of access by all modes of transportation, Florida is a prime location for invasive species. These invasive species become a problem for biodiversity, agriculture, human health and the rest of the country as they spread from Florida.

### **Activity One – Introductions of Species that Become Invasive**

1. To introduce the unit on invasive species use either or both of the PowerPoint presentations in the Getting Started section.
2. You can use this video to show students the effect nationally. [http://www.cbsnews.com/8301-3445\\_162-20127579/the-threat-of-invasive-species/](http://www.cbsnews.com/8301-3445_162-20127579/the-threat-of-invasive-species/)
3. Discuss with the students why Florida is such a prime location for invasive species.
4. Divide the class in half and have half brainstorm and record a master list of all the reasons why and group them into categories. (*Tourism, trade, immigration, international culture, climate, diverse agriculture, etc.*)
5. Have the other half of the class brainstorm and record a list of what is brought into the state of Florida, by whom, and from where.
6. Have each half share their list and discuss what invasive species might be introduced from all of these factors. Make sure to include diseases and “pets.”

## Activity Two – Five Serious Invaders

1. Ask the students to select one of the five case studies of serious invasive species in Florida. That selection makes the student a member in one of five groups. Or put the students into groups and assign them a case study. Print out *Case Study* handouts.
2. Using that case study as the basis for this activity each group should expand on the content and create a program on the species for their fellow classmates. The program should contain three components:
  - A. A program using one or more audio visuals (posters, PowerPoint Presentations, Video clips, news reports, school audio announcements, print ads, etc.) including maps of infestation areas, economic damage and impact on biodiversity.
  - B. Student handout or questionnaire with a map
  - C. Test questions.
3. Have students use the invasive species information on the following websites: <http://plants.ifas.ufl.edu/node/634>, <http://www.invasivespeciesinfo.gov/>, <http://plants.ifas.ufl.edu/node/677> , <http://www.protectingsnow.org/>, <http://www.freshfromflorida.com/pi/> . The University of Florida site and Department of Agriculture and Consumer Services and to a lesser extent Protect U.S. contains short video clips (2-3 minutes) which the students may wish to display for the class and depict why the species is so competitive.
4. Have each group develop an evaluation rubric for group presentations.
5. Have each group share their presentations for each of the five species and using the rubrics created, evaluate each presentation.

## Activity Three – Why Should We Care?

1. Discuss why invasive species are a problem. Ask, “Do they impact your life?” Have the students brainstorm these areas:

Competition with native species – to extinction?

Food for wildlife

Habitat and Shelter for Wildlife

Competition with food crops

Damage to fresh food

Damage to stored food

Disease transmission

Biodiversity



2. Consulting the Websites listed in Activity two, have the students develop a personal action plan to prevent the expansion of these invasive species in Florida.
3. Have students create a list of the individual whose actions can have the greatest impact (both positive and negative) for each disease and how those individual can cooperate to control or eradicate those invasive species.

### **Evaluation**

1. Evaluate the cooperation, work and presentations of each group and include their self-assessments using rubrics they have created.
2. Have students write a paper detailing why Florida is such a prime location for invasive species introduction and spread. Indicate that they should approach the paper from two factors - climate and human movement.
3. Edit and combine the test questions students developed to make a test for the class.

### **Extension or Variation**

Ask the students to imagine that they are scientists working to solve one of these pest problems. They may choose to be either an entomologist and research the Medfly and White Fly or plant pathologist and research the Citrus Canker, Laurel Wilt and Citrus Greening. Indicate that they need to propose a hypothesis to either control, prevent or eradicate these pests and design a research project to test their hypothesis.

Make sure their experiments include:

- Formulating A Hypothesis
- Researching The Topic
- Experimental Design
- Control and Experimental Groups
- Testing Hypothesis
- Recording Data/Observations
- Coming To A Conclusion Concerning the Hypothesis

