

Invasive Exotic Plant Reproduction

Teacher's Guide

Subject: Integrated Science (Life; Earth-Space)

Topic: Exotic Plant Reproduction

Summary: Students will examine various plants and look for features associated with sexual and asexual reproduction

After completing the field lab, students will be able to:

Objective(s):

1. Determine the reproductive strategies of exotic plants
2. Understand the how they are able to rapidly colonize an area
3. Recognize the importance of eliminating exotics to protect native vegetation

Ecosystem(s): Pinelands? Hammocks? or Scrub?

Equipment:

- Tape measure
- Measuring rod
- Gloves
- Magnifying glass
- GPS receiver
- Bucket of water
- Stopwatch
- Shovel

Background:

- Vocabulary: invasive, exotic, sexual, asexual reproduction
- Reference Material: http://www.fleppc.org/FLEPPC_main.htm; <http://plants.ifas.ufl.edu/melainv.html>; <http://edis.ifas.ufl.edu/AG112>;
- Equipment Training: GPS

Procedure (Engage; Explore; Explain)

1. Engage the students by asking a specific question that gets to the heart of the activity: Exotic plants typically reproduce quickly and have the capacity to colonize degraded areas rapidly and often form canopies that can shade out native species. What are the common reproductive strategies that make invasive species so effective at invading an area and out-competing other plants? Use the students' answers to ascertain what they already know, clarify any misconceptions, and then ask them to formulate their own hypothesis relating to their own expectations of the outcome of the lab.
2. Fill-in your own hypothesis on the top of the student data sheet.
3. Students should collect seeds from a given area and test them. In the event that seed availability is limited, group leaders should pre-collect seeds.
4. In your pre-determined area, complete the observations and measurements identified in the student data sheet. For a more advanced group, remove the set of measures and have the students come up with their own tests or measures to determine how the seed is dispersed.
5. After completing the lab, allow the students to answer the discussion questions as a group and explain their answers relating them to the concepts, processes and skills associated with the activity. Students should record their answers individually. At this time, facilitators can introduce/explain the specific concepts and explanations in a formal manner.

Sunshine State Standards:

Science: SC.D.1.3.3,4; SC.D.2.3.2; SC.F.1.3.1; SC.F.2.3.1-3; SC.G.1.3.2-4; SC.G.2.3.4; SC.H.1.3.4; SC.H.2.3.1

Language Arts: LA.A.1.3.3; LA.C.1.3.1, 4

Mathematics: MA.A.3.3.3

Social Studies: SS.A.6.3.2; SS.B.2.3.6, 9

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Student Data Sheet

General Information

Full Name:		Date:	
School (teacher):		Time:	
Latitude:		Longitude:	

Student Hypothesis and Rationale

If exotic plants are commonly able to quickly colonize degraded areas, then they most likely generate (choose one: many or few) seeds, because . . . _____

Field Observations/Measurements/Data

Plant	Number of seeds per plant/area	Number of clones attached to parent plant	Seed Dispersal Mechanism (wind, water, animal, fire, explosion)	Proposed Management Strategy (physical removal; insecticide; fire; biological control; other)
Brazilian pepper				
Cogon Grass				
Melaleuca				
Tropical Soda Apple				
Rosary pea				

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Assessment

1. Which of the invasive plants had the highest concentration of seeds per plant? Highest number of clones?

2. Did one of the plants have a combination of both high seed production and high clonal reproduction?

3. Do your data support your hypothesis? Whether your hypothesis is supported or not, what can you infer from your observations, measurements, and results?

4. For invasive exotic plants that produce large numbers of seeds, when would be the best time of year to conduct removal activities?

5. People obviously play a role in managing invasive exotic plants, but they are also the primary cause of the problem. Identify some of the ways in which humans contribute to the spread of invasive exotic plants?

Portfolio Journal Prompt

Seeds often travel great distances. Imagine yourself as a seed with multiple dispersal mechanisms. Describe your journey through Florida. Before you begin writing, think about the characteristics associated with each dispersal mechanism and try to include each in your particular seed and its journey.

Invasive Exotic Plants

Reference Chart



Brazilian pepper



Cogon Grass



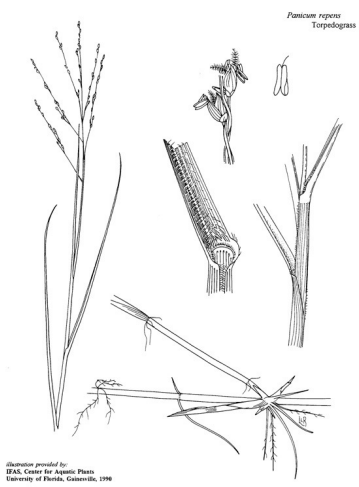
Japanese Climbing Fern



Melaleuca



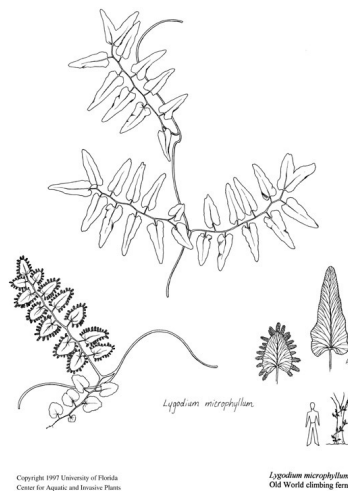
Tropical Soda Apple



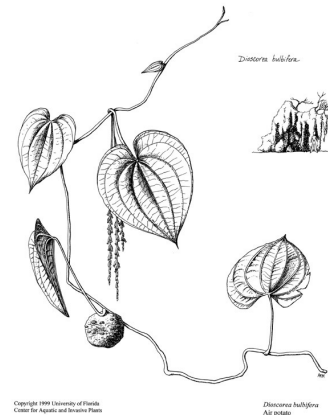
Australian Pine



Rosary pea



Small Leaf Climbing Fern



Air Potato

