

Home School Series: 6 & Up

May: Invasive Aliens

Start Up: (5-10 min)	Posters and pictures of invasive plants and animals, Mussel Math (<i>Trees for Teens</i>), Weed i.d. keys, field guides
Welcome/Introduction: 1 min.	Staff/Volunteer Names Today's Topic-Invasive Aliens Question: How do some animals and plants cause problems by living here?
Opener: 10 min.	Ask students to look at posters and reports of invasive alien species. Have them take turns reading short excerpts that they find interesting or surprising.
Background/Exploration: 20-25 min.	Ask the students what they think an introduced, exotic or alien species is. A species brought here from its native environment somewhere else. What does it mean when a species is invasive ? An alien species that harms the environment, economy, or human health. <ul style="list-style-type: none">♣ Many non-native species have been introduced to North America since European Colonization (50,000).♣ Some of these are species are used for livestock or crops, but others cause problems when they establish themselves in their new environment.♣ Invasive plants (over 1400 species) threaten North America's biological diversity and ecological stability.♣ Plant invasives cost the U.S. economy \$142 billion annually.♣ Each year, another 3 million acres are infested with these weeds (an area twice the size of the state of Delaware).♣ The National Fish & Wildlife Foundation is building partnerships among federal and local agencies to coordinate effective control of problem species. Discuss with students the types of problems invasive species can cause (see below). Discuss why and how alien/exotic problem species were introduced. Ask students what methods could be used to control a specific invader.
Activity: 20 min.	Saga of the Gypsy Moth (<i>Trees for Teens</i>)-Divide the students into small groups to read background on the Gypsy Moth and advocate for various control methods. Encourage discussion and consensus. Discuss control methods in general (pesticide/herbicide, hand removal, etc.). Share examples where biological control has worked and why it is preferable when feasible.
Prepare to go Outside: 5 min.	Restroom break. Bring: Water bottles Apply: Sunscreen, Bug Repellant (if necessary) Trail Rules (see The First Program). What we will do/What to look for -Signs of animals, plant populations Predictions -What areas will have invasive plants or animals?

**OUTDOOR
EXPLORATION:**
75-90 min.

Walk through a natural area and help students identify alien vs. native flora.
Look for invasive plants.
Try to detect detrimental effects on the environment.

Activity:

Woodland Invasive Plants Survey (*Trees for Teens*)-

- Walk through a woodland and record any invasive plants.
- Note their abundance and location (you could enlarge an area on a topo map).
- Explain how students may do their own surveys at other locations and turn the record form into the DNR.

Look for alien insects and other non-native wildlife (starlings, sparrows, etc.).

Activity:

Find a patch of Garlic Mustard to pull in the woods, thorny invaders to clip in the prairie, or some honeysuckle or buckthorn to cut down.
Teach students proper methods of disposal of invasives (Garlic mustard w/flowers should be put in garbage bags).
Check for mud on shoes and clean them off before leaving the area.

Closing:
5 min.

Invasive species are a big problem. We need to learn about them and cooperate in eradicating them and keeping them from spreading.

Send Off:
1 min.

Goodbye!

Take Home:

Parent Outline
At-home activities
Invasive species info.

Vocabulary

Alien, exotic, non-native, introduced, invasive, ecosystem, integrated pest management (IPM)

References for Naturalists and Parents

- <http://www.mobot.org/invasives> Links to sites on invasive plants, advice on native garden species
- http://www.nrem.iastate.edu/Invasive_Species/Invasives.html IA Woodland Invasive Species Inventory
- www.fws.gov U.S. Fish & Wildlife Service
- <http://www.nfwf.org/programs/pti.htm> National Fish and Wildlife Foundation partnership initiatives
- www.invasivespecies.gov National Invasive Species Council
- www.invasive.org Invasives in North America (USDA & U of Georgia, etc.)
- www.conservationbiology.org Society for Conservation Biology
- <http://www.na.fs.fed.us/spgo/alb> Asian longhorned beetle information
- www.njaudubon.org/Conservation/CatsIndoors Cats Indoors! program

Czarapata, Elizabeth J., "Why We Cannot Ignore Invasive Plants", *Wild Ones Journal*, July-August 2002, p. 18.

Field Notes, U.S. Fish & Wildlife Service (New Jersey Office). Spring 2004.

Issue devoted to invasive plants and animals and their control, plus related issues.

Invasive Species: Plants and Animals Threatening Our Natural Resources, DNR, Trees Forever, ICEC, ... poster

Project Wild: Activity Guide. 1992. Western Regional Environmental Education Council, Inc., Bethesda, MD. Pp. 174-175 Who Lives Here?

Project Wild Aquatic: Education Activity Guide. 1992. Council for Environmental Education, Gaithersburg, MD. Pp. 100-103 Aquatic Roots-research and present on exotic species

Trees for Teens. 2002. Iowa Department of Natural Resources, Des Moines. (Iowa Invasive Species.)

P. 5 Invasive species threatening Iowa; background information, activities;

p. 14 Gypsy Moth Saga; p. 17 Mussel Math; Pp. 20-21 Woodland Invasive Plant Survey

Invasive Species Alerts and information are available from a variety of sources

Background on some invasive species

Pigeons and Starlings-Eat grains and fresh fruits, damaging crops in the field and in storage.

Norway & Black Rats-Extensive damage on farms; cause \$19 billion in damages/year.

House Cats-Control rats, but some go wild (feral). Kill millions of native songbirds each year.

Fish-140 alien species cause \$3 billion annual damage to commercial/sport fishing.

Zebra Mussel-Degrades aquatic substrate conditions, now infests half our inland waters.

Gypsy Moths-Eat tree leaves, killing trees; forests have been destroyed; \$11 million in damage/year.

Purple Loosestrife-Brought here as an ornamental for spikes of purple flowers; a wetland weed that chokes out native vegetation; dense stands slow water flow, causes \$45 million in damages/year.

Buckthorn-Shrub brought as an ornamental, shades out native forest vegetation, aggressively competes with native vegetation, still sold legally as an ornamental.

Multiflora Rose-Brought for use as a living fence & habitat, chokes out native prairie plants.

Garlic Mustard-Brought over as an herb; a more recent invader; spreads rapidly, shades out woodland plants; deer don't eat it!

Wild Parsnip-Problem in open sunny areas; invades slowly but spreads quickly; causes severe blisters if sunlight shines on plant juices on skin.

Honeysuckle-Bush types used as ornamentals, but invade woods; dense thickets shade out natives; causes erosion.

Why and how?

- A species is invasive when it can flourish in a new environment and out-compete native species.
- This can be due to absence of natural competitors and diseases that would keep a species in check in its native environment. (Up to 85% introduced plant species cause little harm.)
- Invasive plants often have a longer growing season than native plants, making it easier for them to compete for water and nutrients.
- They usually also have a large capability to reproduce rapidly (many seeds), and can colonize disturbed soil easily due to fast growth rates.
- Many of these plants are also adapted to a wide range of growing conditions.
- The harm caused to native species by invasives can degrade habitat for related wildlife, reduce crop yields, decrease native plant vigor, hinder recreational activities, and affect water quality.
- Most problem species got out of control because they were not detected controlled early enough. Now we spend billions of dollars per year trying to reduce their negative effects.
- Human activities have broken down the limits of natural boundaries like oceans, mountains, and deserts, which previously prevented the rapid spread of alien species.
The rate of spread of alien organisms has increased in recent decades as humans travel farther and more frequently.
- Many problem species were brought by humans for their usefulness, but without consideration of how their introduction would affect native ecosystems.
Many plants were brought for food, medicinal, and ornamental uses.
Some weeds and insects were brought by accident when seeds or bugs were in crop seeds, or came here in infested wood products.

What can we do?

We can reduce the chances of spreading invasive species by not taking living animals, insects, plants or plant parts on vacation, and cleaning equipment (boats/trailers) and clothing (shoes/boots) before traveling to a new place. Being educated about invasive species can help greatly in preventing their spread.

Extensions/Alternate Activities/Rainy Day

Discuss with students how to prevent spreading the Zebra Mussel and Eurasian Water Milfoil when boating.

Invite a weed control specialist to visit and discuss the management of invasive plants.

Supplies:

Invasive plant/animal posters
Invasive plant/animal pictures
Field guides/weed i.d. pictures

Gloves
Clippers and/or
Loppers
Garbage bags

Clipboards
Pencils
Topo map of area

Gypsy Moth Saga materials
Mussel Math
Woodland Invasive Plant Survey

Advance

Copy activity pages to use during program.

Preparation:

Copy invasive species information to send home with students.

Scout out some areas that could use attention for students to help remove invasive plants.
