

## Invasive Species: Upsetting the Balance

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### Lesson Overview

Students will be introduced to what invasive species are, and how they can negatively affect a food chain/web. Students will view examples of invasive species that are found in Michigan habitats and describe their impact on the environment. Students will read and discuss this topic, create their own invasive species drawing, and have an opportunity to present it to the class.

### Background

Invasive species are often brought into an ecosystem through human activity, most often via transportation of vehicles and goods. These organisms often have no native predators and can spread quickly throughout an ecosystem. Invasive species can unbalance the native species in a food web threatening their existence and negatively impacting other native species down the line. Invasive species can also cause damage to infrastructure and natural resources that humans rely on. The cost to eliminate or control these non-native species can be very high. More information on this topic is available at

<http://www.michigan.gov/invasives/0,5664,7-324-67998---,00.html>

**Grade/Subject:** 5<sup>th</sup> grade, Science

**Time:** 1 class period/classroom setting w/an optional computer lab research period

### Learning Objectives

*Students will be able to:*

- Explain what an invasive species is.
- Give an example of how an invasive species can impact an ecosystem.
- List three invasive species currently impacting Michigan ecosystems.

### Michigan Science Standards

#### 5-LS2-1 Ecosystems: Interactions, Energy, and Dynamics

**Connections iii.** That an introduced species can affect the balance of interactions in a system (e.g., a new animal that has no predators consumes much of another organism's food within the ecosystem)

### Materials:

Goldfish and Elodea in a plastic container

Student reading (1 handout per student)

Powerpoint slides about Invasive Species (computer & projector)

Drawing paper, crayons or pencils (enough for all students)

### Guiding Questions

- Explain the difference between a native species and an invasive species?
- How can an invasive species change (unbalance) a food web/chain?
- How are invasive species introduced into an ecosystem?
- How can we control (slow down) the spread of invasive species in our connected world?

## Procedure

**Engage** Tell students that during a trip to a local pet shop I picked up a new friend “Bruce”. Next pull out a gold fish and some elodea in a clear plastic container, and show it to the students. Ask students if they have any pets like this at home? Then tell students that today we are going to talk about organisms like this that are not found in our state of Michigan. Introduce the term “native” and ask students if they are familiar with this word? If not define it for them before the reading is handed out. Tell students that “Bruce” and the plant are not native to Michigan and are in fact invasive species which can unbalance an ecosystem. Today we are going to focus on invasive species. Who can remind us what a species is? Species are the same organism.

**Explore** Tell students that we will read about this topic. Have a student pass out one copy of the Invasive Species Handout to each student. Read together and have students underline or highlight key terms that already have been discussed. Facilitate discussion on the reading and ask students some guiding questions, accept their answers and refine if needed. Next tell students that we will now take a look at some invasive species found in Michigan and some of the damage they can do. Show PowerPoint slides and discuss with the class. Have students write down on their handout three invasive species they learned about in the presentation. Ask students which one of these invasive species most resembles our friend “Bruce”? Students should answer the Grass or Asian Carp. Tell students that Bruce is actually related to these invasive species and then ask students how Bruce could cause trouble in a food chain of native organisms in the Great Lakes?

**Explain/Elaborate** As a class draw an aquatic food chain on the board beginning with the sun, phytoplankton, small fish, bigger fish etc. Now here comes Bruce. Discuss how Bruce might disrupt the food chain. Ask students questions regarding the green plants in the food chain. Where do they get their energy? By what process? Which organisms eat the plants? What might Bruce eat? Who might eat Bruce? Does an animal like Bruce have any natural predators? How could Bruce have come into the food chain? When the food chain discussion has worked itself out steer students to answer how we can keep invasive species out of the environment? Take their suggestions and add examples like burning and clearing out invasive plants, managing ballast water in tankers and electric fences to deter non-native fish species.

**Evaluate** Round up discussion by telling students that they will now create their own invasive species. Pass out “Wanted Poster” and explain to students that they will draw an invasive species from their imagination and what we’ve learned today. Tell them not to hold back and make an organism that looks like trouble! Circulate among the kids while they draw and answer any questions they may have and suggest adaptations that could make their invasive species more formidable. Ask students where would their invasive species fit in a food chain/web? At the end of the period, collect their handouts with the three invasive species written down. Give students additional time to draw their invasive species, if needed.

## New Vocabulary

Species – a group of living organisms consisting of similar individuals capable of having offspring.

Native species - A species that occurs naturally in an area, and its presence is not a result of human activity.

Invasive Species - A species that enters an area and causes harm to species that are already there. Invasive species can cause environmental or economic harm, and/or impact public health.

## **Invasive Species – student handout**

An Invasive Species can be a plant, fish, mammal, insect or other living organism that is not native, doesn't occur in a place naturally. It does not belong in the ecosystem! Invasive species become a threat to the natural environment when they can out compete native species for food and space. They often do not have a natural predator and can sometimes reproduce quite rapidly.

Most invasive species are brought into an environment by human activity. Organisms can hitch a ride from a box of produce from another country, or in the ballast water of a freighter from another continent. Sometimes a non-native plant or pet can escape and find a home where it doesn't belong. A common pet store turtle, the Red-Eared Slider, can be found in many Michigan wetlands, but originally it was found in the southeastern United States and Northern Mexico. It can push out local turtles like Michigan's Painted Turtle.

The State of Michigan spends millions of dollars each year to prevent and eradicate invasive species, but once a species is established it can be close to impossible to get rid of. Education of the public is key to stopping invasive species; the State's latest campaign to do this is called RIPPLE Reduce Invasive Pet and Plant Escapes! To learn more go to <http://www.michigan.gov/invasives>.

# **Invasive Species: Upsetting the Balance**

Teacher: Mr. Karl Hartwig, Hutchinson School

# Emerald Ash Borer



# Damage done by the ash borer larvae



# Clearing a wetland of Purple Loosestrife



# Feral Pigs damaging farmland



# Zebra and Quagga Mussels



# Zebra Mussel covered beach



# Sea Lamprey



T. Lawrence, GLFC

# Sea Lamprey attached to Lake Trout



# Red-Earred Slider, Yabby, and Grass Carp



# Is the Asian Carp coming to a Great Lake near you?



# Wanted

## Invasive Species

**Name:** \_\_\_\_\_

**Description:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_