



NSF GK-12 Graduate Fellows Program
Award # DGE-0139171
University of North Carolina at Wilmington

Alien Invaders: An Invasive Species Game

Activity Instructions

by

Patrice Gallagher, Department of Biological Sciences

an adaptation of

Rival for Survival by ESCAPE (SeaGrant)

<http://www.iisgcp.org/edu/escape/>

Alien Invasion

(Adapted from “Rival for Survival” by ESCAPE: Exotic Species Compendium of Activities to Protect the Environment, a project of the Illinois-Indiana Sea Grant College –Program)

Objective

This activity is designed to give students an introduction to invasive species and how they affect the ecosystems they now occur in. More specifically, the students will learn basic life histories of several invasive species that are of regional and/or national importance. They will learn how these species are detrimental to the ecosystem by competing with the native species. They will also have the chance to make sound environmental decisions when confronted with situations that involve the possible spread of invasive species. This activity demonstrates how changes in habitat may affect organisms (Objective 2.03).

Background

No matter how you refer to them, invasive, exotic, non-native, bioinvader, or alien species, the definition is the same. Any species that is brought into an ecosystem that is not their own. Upon arriving in a new ecosystem, these invasive species try to fill niches that are already occupied by native species. There is a limited quantity of resources in any environment. The introduction of new species means that the native species will have more competition for these resources. If an invasive species does well in its new environment, usually due to lack of predation, the native species population will begin to decline due to the newfound competition. Exotic species are introduced into new environments both intentionally and unintentionally. Some were introduced for a specific purpose that had unpredicted results. Others are accidentally transported or released; this is especially prevalent now that people are having more and more contact with other ecosystems in the global community.

The Game

Before playing the game, students should be given an introduction to invasive species, ways they affect different environments, and how we deal with the spread of these species. The game is set up as a board game. The students answer questions as they move their pieces around the board. For each correct answer the student accumulates points, therefore the winner is the student with the most points not the student who gets around the board first. There are also questions that refer to newspaper articles that accompany the game.

Materials

Game board
Question cards
Scientific articles
Moveable game pieces
Dice
Paper to keep score
Pencil

Before you begin: Print out a copy of the game questions. You may want to print them on card stock to make them more durable. You will also need to print out copies of the scientific articles to read. These can be laminated for durability.

How to Play

1. Each person rolls the die, the person with the highest number goes first. Play can go either clockwise or counterclockwise from the first person.
2. The player rolls the die and moves his game piece the number of spaces shown on the die. The player then picks up a question card and hands it to the person on his left to read the question.
3. The player then answers the question and his points are recorded on the score sheet.
4. If the player lands on a space that requires him to move his piece forward or backward, the game piece is moved before picking a question card.
5. If the player lands on a space referring to a newspaper article, he must read the article and then answer the question.
6. The game is over when all players have reached the finish or time expires.

Follow up

After the game has been finished there should be a discussion about what has been learned about invasive species and what affect they have on ecosystems.

<p>Zebra mussels each filter</p> <p>A. 0.25 liters of water per day 0pts B. 0.50 liters of water per day 0 pts C. 1.0 liters of water per day 3 pts</p>	<p>You find a beautiful plant while on vacation in Mexico, do you</p> <p>A. Take a picture 3 pts B. Dig it up and take it home -1 pt C. Pick the flowers 0 pts</p>
<p>Indigenous plants and animals are those</p> <p>A. That are naturally found in an ecosystem 3 pts B. Are imported to a ecosystem 0 pts C. Make you sick if you eat them 0 pts</p>	<p>The effect that zebra mussels have on water intake pipes is that they</p> <p>A. Help rebuild them 0 pts B. Clog them 3 pts C. Clean them 0 pts</p>
<p>How many of these species are considered exotic species in this country: goldfish, purple loosestrife, sea lamprey, starling?</p> <p>A. One 1 pt B. Three 2 pts C. Four 3 pts</p>	<p>How could you gain information about exotic species in your area?</p> <p>A. Contact the local Fish and Wildlife Service 1 B. Do an internet search 1 pt C. Both A and B 3 pts</p>
<p>The role an organism has in its environment is its niche. Exotic species</p> <p>A. Try to take the niche of a native species 3 pts B. Have no niche 0 pts C. Are not organisms 0 pts</p>	<p>How many of these are nuisance exotic species carp, kudzu, nutria, zebra mussels, sea lamprey</p> <p>A. Two 1 pt B. Three 2 pts C. Five 3 pts</p>

<p>There are limited resources in any ecosystem. If an exotic species is doing well, it usually means the native species</p> <p>A. Are getting more resources 0 pts B. Getting the same amount of resources 0 pts C. Getting less resources 3 pts</p>	<p>You are visiting the Great Lakes and find zebra mussels on the beach, you should</p> <p>A. Leave them there 3 pts B. Take them home 0 pts C. Put them in a pond near your house -1 pt</p>
<p>Kudzu was first introduced in this country in 1876 over the years it has been used as</p> <p>A. A landscaping plant 3 pts B. For erosion control 3 pts C. Food for livestock and humans 3 pts</p>	<p>The sea lamprey is an exotic species in the Great Lakes, why is it so damaging to other fish?</p> <p>A. It eats their eggs 0 pts B. It carries diseases 0 pts C. It preys on other fish by latching on to them and sucking their blood and body fluids 3 pts</p>
<p>To prevent the transfer of exotic species from one lake to another you should</p> <p>A. Pull your boat quickly from one lake to another 0 pts B. Inspect your boat, trailer, and equipment carefully 3 pts C. Wash your boat in cold water 0 pts</p>	<p>Zebra mussels probably entered the Great Lakes</p> <p>A. By traveling in the ballast water of freighters 0 pts B. By attaching to large fish 0 pts C. Due to voluntary human introduction 0 pts</p>
<p>While traveling through another part of the country you encounter a small tortoise, do you</p> <p>A. Put it in a aquarium 0 pts B. Sell it to a pet store 0 pts C. Leave it alone 3 pts</p>	<p>Your aquarium is no longer functioning, what should you do to get rid of the fish?</p> <p>A. Flush them down the toilet 0 pts B. Find them a new home in another aquarium, or donate them to a pet store 3 pts C. Drop them in a local pond -1 pt</p>

<p>Exotic species are</p> <p>A. Rare organisms 0 pts B. Organisms brought into an environment that is not their own 3 pts C. Worth a lot of money 0 pts</p>	<p>Bringing in natural predators may be a way to handle exotic species. What is a potential problem with this?</p> <p>A. The exotic species numbers would decrease 0 pts B. The predators may become a new exotic species 3 pts C. Native species would repopulate 0 pts</p>
<p>A female zebra mussel can produce up to</p> <p>A. 10,000 eggs per year 0 pts B. 100,000 eggs per year 0 pts C. 1,000,000 eggs per year 3 pts</p>	<p>Exotic species are also referred to as</p> <p>A. Native species 0 pts B. Invasive species 3 pts C. Endangered species 0 pts</p>
<p>Kudzu is also known as</p> <p>A. Mile-a-minute 1 pt B. The vine that ate the South 1 pt C. Both A and B 3 pts</p>	<p>One reason nutria, a large wetland rodent, is considered a nuisance exotic is</p> <p>A. Its activity in the wetland destroys vegetation and leads to erosion 3 pts B. It chases peoples' pets 0 pts C. It eats many of the fish 0 pts</p>
<p>There have been 185 species of invasive fishes found in US waters. What percent of these invasives are due to the release or escape of aquarium fish?</p> <p>A. 5% 0 pts B. 25% 0 pts C. 50% 3 pts</p>	<p>Giant Salvinia is an aquatic fern from South America. It is a serious threat to wetlands in the country because</p> <p>A. It eats fish 0 pts B. It grows very rapidly, crowding out other species 3 pts C. It isn't a threat 0 pts</p>

<p>West Nile virus can be passed to humans</p> <p>A. From mosquitos that have bitten infected birds 3 pts B. From drinking contaminated water 0 pts C. From eating fish from the Nile River 0 pts</p>	<p>Kudzu can grow</p> <p>A. 3 inches a day 0 pts B. 12 inches a day 3 pts C. 36 inches a day 0 pts</p>
<p>Viruses and other pathogens can be exotic species</p> <p>A. True 3 pts B. False 0 pts</p>	<p>The US is the only country that has a problem with invasive species</p> <p>A. True 0 pts B. False 3 pts</p>
<p>Round gobies can eat up to</p> <p>A. Five sea lampreys a day 0 pts B. One pound of purple loosestrife per day 0 pts C. 78 zebra mussels per day 3 pts</p>	<p>Purple loosestrife is an invasive species that is invading North American</p> <p>A. Deserts 0 pts B. Forests 0 pts C. Wetlands 3 pts</p>
<p>Exotic species</p> <p>A. Are good for the environment that they enter 1 pt B. Are bad for the environment the enter 1 pt C. Can be either good or bad, and some have no effect on the environment they enter 3 pts</p>	<p>Purple loosestrife was brought to the US to</p> <p>A. Beautify wetlands 0 pts B. Be used in landscaping 3 pts C. Feed large herbivores 0 pts</p>

<p>Exotic species are</p> <p>A. Plants 1 pt B. Animals 1 pt C. Both 3 pts</p>	<p>A sea lamprey can grow</p> <p>A. Up to 6 inches long 0 pts B. Up to 36 inches long 0 pts C. Up to 18 inches long 3 pts</p>
<p>Exotic or invasive species are also referred to as alien species</p> <p>A. True 3 pts B. False 0 pts</p>	<p>Boaters or anglers can prevent the spread of zebra mussels</p> <p>A. By wearing gloves while fishing 0 pts B. Emptying their bait bucket on land only 3 pts C. Washing their boat and equipment in hot (104 degree F) water 3 pts</p>
<p>Why do round gobies make fishermen angry?</p> <p>A. They eat all the eggs of native fish 1 pt B. They tease the fishermen about not catching anything 0 pts C. They aggressively take bait from the fishermen's hooks 3 pts</p>	