

FRIENDS OF THE
MISSISSIPPI RIVER

ONLINE LESSON
SERIES: INVASIVE
SPECIES



2020



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INTRODUCTION

Friends of the Mississippi River engages people to protect, restore, and enhance the Mississippi River and its watershed in the Twin Cities region. This in-person classroom lesson has been adapted for homeschooling and remote teaching. This lesson also has a corresponding video and presentation that can be found on the FMR website (<https://fmr.org/events-online-education-watersheds101>), and other educator resources can be found on our Online Environmental Education with FMR Facebook Group (https://www.facebook.com/groups/202957270996905/?source_id=81498431082).

A **biome** is a community of living things that have been shaped by the physical environment they exist in. There are both **terrestrial biomes**, on land, and **aquatic biomes**, on or under water. A tropical rainforest, for example, is a terrestrial biome that is rainy, has lots of moisture and is very warm. These defining aspects of a tropical rainforest's physical environment have made a home for lots of plants, insects and animals that love moisture, warm weather and can live in tall trees. Biomes are large, and can contain many smaller habitats within them. A **habitat** is the natural environment where a particular living thing lives. A living thing's habitat is the area where it can find food, shelter, protection and others of its kind.

An **ecosystem** is made up of the living and non-living things that interact with each other in a specific area. In other words, an ecosystem can be made up of overlapping habitats. In a healthy ecosystem, the living and non-living things exist in balance with one another. It rains enough for the plants grow, some animals eat the plants, and some animals eat other animals.



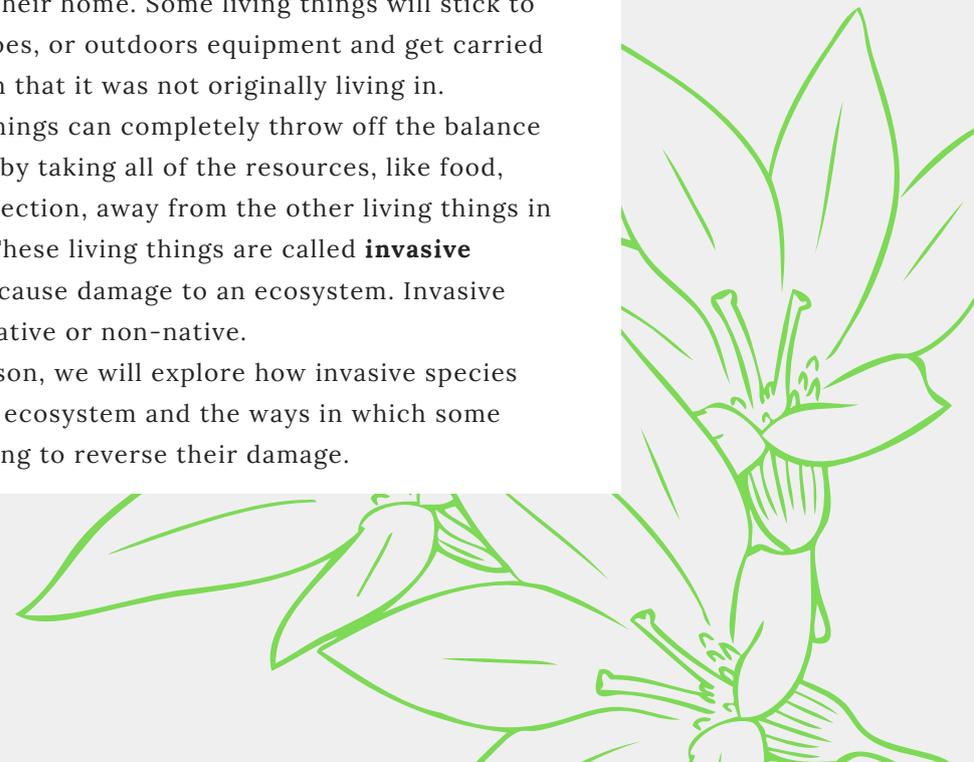
Let's think about a pond ecosystem that could be found in Minnesota. At our pond, great blue herons, turtles, minnows and mosquitos can be found at different times of the year. In this ecosystem, minnows eat mosquito larvae, and turtles eat minnows. One year, there are a lot of turtles at the pond, and they eat a large amount of minnows. Because there are not as many minnows eating the mosquito larvae, there might be more mosquitos at the pond that year. The next year, very few turtles visit the pond because some of them got eaten by herons and the weather was too dry and hot for the turtles to reproduce. Fewer minnows are eaten by turtles, and therefore, more minnows are eating mosquito larvae. This year, there will probably be less mosquitos at the pond. This is how an ecosystem changes year to year, but still stays in balance on its own.

Herons, turtles, minnows, and mosquitos are all native to Minnesota. A **native** species is a living thing that is found in an ecosystem due to natural processes. No humans brought a native species to an ecosystem, it happened on its own over thousands and thousands of years.

Sometimes a new living thing is brought into an ecosystem on purpose or by accident. A **non-native** species is not originally part of the ecosystem it is currently living in. This can happen when people plant an exotic plant in their yard because it looks nice, and the plant spreads into the woods near their home. Some living things will stick to your clothes, shoes, or outdoors equipment and get carried to a new location that it was not originally living in.

Some living things can completely throw off the balance of an ecosystem by taking all of the resources, like food, shelter, and protection, away from the other living things in the ecosystem. These living things are called **invasive species** and can cause damage to an ecosystem. Invasive species can be native or non-native.

In today's lesson, we will explore how invasive species can take over an ecosystem and the ways in which some people are working to reverse their damage.



INVASIVE SPECIES:
LEVEL 2

1. Describe the terms below:

Ecosystem:

Invasive species:

Non-invasive species:

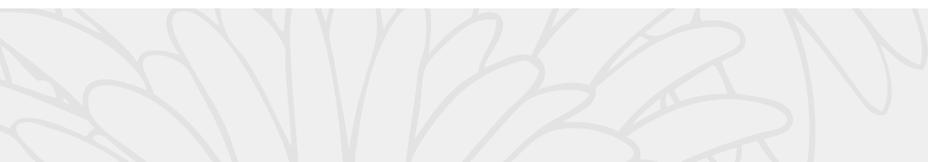
Native species:

Non-native species:

2a. Describe three techniques used to control invasive species:

2b. What are each of their limitations?

3. Why do you think it is difficult to control aquatic invasive species?



4a. Choose one of the plants or animals listed below and research some basic information on their native range. Good resources for information are the MNDNR (www.dnr.state.mn.us) and the MN Native Wildflowers (www.minnesotawildflowers.info) websites. Please share with us on our facebook group at www.facebook.com/groups/202957270996905.

Plants

Goldenrod

Garlic Mustard

Poison Ivy

Sumac

Buckthorn

Curly leaf pond weed

Animals

White Tailed Deer

Zebra Mussels

Emerald Ash Borer

Night Crawlers

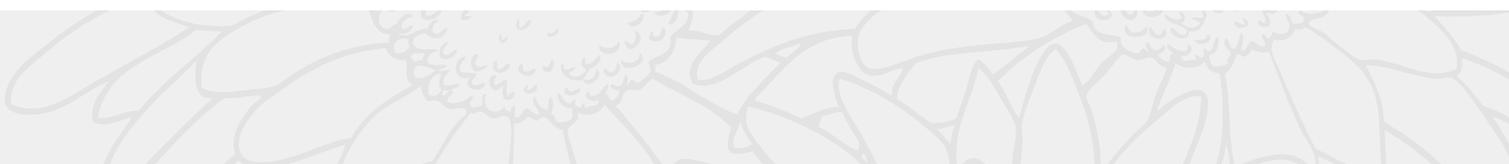
Invasive Carp

4b. Is it considered an invasive species in Minnesota or not?

4c. What is its life cycle?

4d. What, if anything, do humans do to control it? Include a picture along with your research.

5. Two photos in the FMR presentation show the same location a few years apart at the same time of year. What do you think happened to the plants from the first picture to the second?



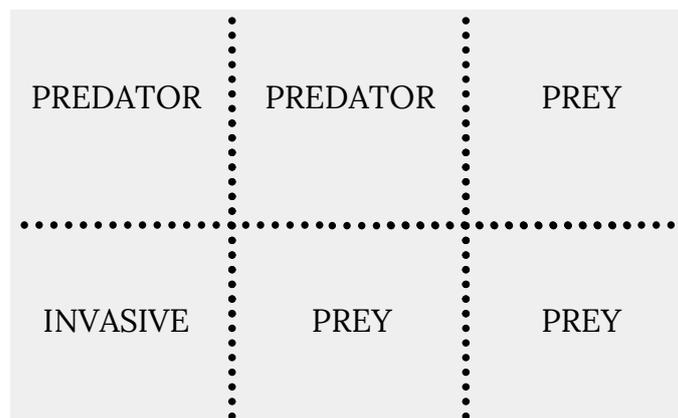
INVASIVE SPECIES: AT-HOME ACTIVITY

MATERIALS

- A pen or pencil and piece of paper
 - Scissors
 - Cups or mugs
- Loose change (or other small items)
- One large baking pan, bowl, or other container
 - Timer

DIRECTIONS

1. Fold your piece of paper in half the hotdog way, then unfold it. Now fold the paper into thirds the hamburger way, and unfold it. You should see six different rectangles on your piece of paper. Write the following words on playing cards and cut on the folded lines you made to create six playing cards, as illustrated below.



2. Place your loose change in the large container and give each player a cup to collect change into. Make sure to have even numbers of each kind of coin.

3. Use the following playing cards depending on the number of players:

Six players: all playing cards

Five players: two predators, two prey, one invasive

Four players: one predator, two prey, one invasive

Three players: one predator, one prey, one invasive

Two players: one prey, one invasive

One player: take turns being prey, followed by predator, then the invasive cards

4. Once you gather the right amount of playing cards, fold your them in half so you can see what they say. Have each player draw a card to determine their role.

5. Predators can use only one hand, with their index finger and middle finger to pick up pennies. Prey can only use one hand with their index finger and thumb to pick up nickels and dimes. Invasives can use both hands and all of their fingers to pick up any kind of loose change.

6. In round one, only predators and prey can play the game. Set the timer for 30 seconds. Each player has 30 seconds to get as many coins into their cup. Remember you can only use one hand and you can only "eat" certain kinds of coins depending on your playing card!

7. Return your coins to the container and repeat step six to play the round again.
8. How many coins did each predator get? How many coins did each prey get? What was harder and easier?
9. Return your coins for a new round. This time, the invasive gets to play! Repeat step six.
10. What happened when the invasive joined the game? How many coins did each role get? Return your coins to the container.
11. Whoever got the least amount of coins becomes an invasive! You can now use both hands to "eat" as many different kinds of coins as you can.
12. Repeat steps 10 and 11 for two more rounds.
13. It is possible to add in other environmental influences to the game. For example, temperatures rise reducing the number of nickels (take five of the nickels out of the tray) and play a few more rounds. Or, have two players go after the same kind of coin to show competition.