

Rival for Survival

Exotic Species in the Great Lakes

START →

A sea lamprey hitched a ride on your boat. Take an extra turn.

Free roll

Leaping lamprey! Jump ahead 3 spaces.

Fishhook flea competes with native fish for prey. Go back 3 spaces.

Zebra mussels clogged your path. Go ahead 4 spaces.

Spotted purple loach. Go back 1 space.

Encountered Eurasian watermilfoil. Trade spots on the board with the person on your right.

Go back 1 space for not dumping your bait water in the lake.

FINISH →

Exact number required to arrive at the Great Lakes.

Use the map to identify the five Great Lakes. If you name them correctly, go back 4 spaces.

Caught on alewife. Jump back 2 spaces.

Sea Grant
Great Lakes Network

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Rival for Survival Game Instructions _____

Materials

Game board
Movable pieces
Game cards
Score paper
Die
Pen or pencil

Number of Players

2–5

Objective

To have the **most points** when all players have reached the “Finish” position, at the Great Lakes.

Directions

1. Each player rolls the die, and the player with the highest number goes first.
2. Player 1 rolls the die and moves the playing piece the number of spaces shown on the die. Player 1 chooses a question card and hands it to the player on the left, who reads the question aloud. Player 1 chooses the best answer.
3. Points received are based on the player’s answer and are recorded on the score sheet.
4. When landing on a space that requires the player to move ahead or backward, the player moves the game piece before picking a question card.
5. Some answers will cause a player to lose points. If the player has no points, however, he or she cannot go below zero, even if told to subtract a point.
6. Play continues in a clockwise direction until all players reach the Great Lakes region or the time limit is reached. The player with the **most points** is the winner—not the player who reaches the Great Lakes first. Finishing first may not necessarily be a good thing in this game!

Game Cards—Front a

- Q** Your aquarium is no longer functioning. You decide to get rid of the fish. You should
- flush them.
 - find them a new home in another aquarium.
 - drop them in the local pond.

- Q** To prevent the transfer of exotic species from one lake to another, you should
- pull your boat quickly from one lake to another.
 - inspect your boat trailer and equipment.
 - wash your boat in cold water.

- Q** How many of these species are exotic: goldfish, purple loosestrife, sea lamprey, starling?
- one
 - three
 - four

- Q** Bringing in natural predators may be the way to handle exotic species such as purple loosestrife. Choose a potential problem with the above idea.
- Purple loosestrife would decrease.
 - Predators may not die out after plants are gone.
 - Native plants would repopulate area.

- Q** Some exotic species can be a nuisance. How many of these are nuisance species: carp, alewife, purple loosestrife, zebra mussels, sea lamprey?
- two
 - three
 - five

- Q** You find a beautiful plant while on vacation in Mexico. Do you
- take a picture?
 - dig it up and transplant it in your garden?
 - pick the flowers off of it?

- Q** The role an organism has in its environment is its niche. Exotic species
- try to take over the niche of another organism in an ecosystem.
 - have no niche in an ecosystem.
 - are not organisms.

- Q** Zebra mussels each filter about
- 0.25 liter of water per day.
 - 0.50 liter of water per day.
 - 1.0 liter of water per day.

- Q** How could you gain information about exotic species in your area of the country?
- Contact the Wildlife Service.
 - Complete an Internet search on the topic.
 - Both a and b.

- Q** The sea lamprey is an exotic species in Lake Erie. Why is it so damaging to other fish?
- It eats their eggs.
 - It carries a large number of diseases.
 - It sucks out the blood and body tissues of other fish through its suckerlike mouth.

- Q** In any ecosystem, there is a limited amount of resources. If an exotic does well in a new ecosystem, that usually means native species are
- getting more resources than before.
 - getting the same amount of resources than before.
 - getting less resources than before.

- Q** Exotic species are
- rare organisms.
 - organisms brought into an environment not their own.
 - worth a lot of money.

Game Cards—Back a

A a = 0 pts. No! You might transfer species from one body of water to another.
b = 3 pts. Good decision! You ensure there are no organisms transported on your boat.
c = 1 pt. You're trying to remove all organisms—use 140°F water.

A a = 0 pts. Not a good choice!
b = 3 pts. This is the best thing to do.
c = -1 pt. Take a point away. You could be introducing a new species to the pond and upsetting the ecosystem!

A a = 0 pts. This is what we would want to happen!
b = 3 pts. Could be a very real problem. You'd just be trading one exotic species for another.
c = 0 pts. This is a positive effect of introducing a natural predator; the question asked for negative effect.

A a = 1 pt.
b = 2 pts. All four are exotic!
c = 3 pts.

A a = 3 pts. Correct! You can enjoy the plant without damaging it or carrying it into an ecosystem not its own.
b = -1 pt. Take a point away. You risk creating an invader species that could damage the ecosystem back home.
c = 0 pts. This could damage the plant.

A a = 1 pt. True, but not the best food answer.
b = 2 pts. You are getting closer.
c = 3 pts. This is right! All are nuisances!

A a = 0 pts. Not right!
b = 0 pts. Closer, but still not right.
c = 3 pts. You got the right answer!

A a = 3 pts. They try to do this.
b = 0 pts. No.
c = 0 pts. All living things are organisms.

A a = 0 pts. Not true.
b = 0 pts. Not the problem.
c = 3 pts. Gross, but true.

A a = 1 pt. Good choice, but not the best!
b = 1 pt. Good choice, but not the best!
c = 3 pts. This is the best choice!

A a = 0 pts.
b = 3 pts. This is the correct answer.
c = 0 pts. b is a much better choice.

A a = 0 pts. Have new competition for and usually get less.
b = 0 pts. No! If there are more organisms trying to eat the same food, they won't get as much.
c = 3 pts. Correct, because there are more species competing for the resources.

Game Cards—Front b

- Q** You find some zebra mussels on a beach. You should
- leave them where they are.
 - take them home.
 - put them in a pond near your home.

- Q** Exotic species are
- plants.
 - animals.
 - both.

- Q** Zebra mussels are believed to have entered the Great Lakes
- by traveling in the ballast water of commercial freighters.
 - by attaching to large fish.
 - because people brought them here to increase the mussel population.

- Q** Purple loosestrife was brought into the United States to
- beautify wetlands.
 - be used in landscaping.
 - feed large herbivores.

- Q** While traveling through another part of the country, you encounter a small tortoise. Do you
- put it in your aquarium?
 - sell it to a pet store?
 - leave it alone?

- Q** Purple loosestrife is an exotic species that is invading North American
- deserts.
 - forests.
 - wetlands.

- Q** Indigenous plants and animals are those
- that are naturally found in an ecosystem.
 - are imported into an ecosystem.
 - make you sick if you eat them.

- Q** Exotic species
- are good for the environment they enter.
 - are bad for the environment they enter.
 - can be either good or bad, and some have no effect.

- Q** The effect zebra mussels have on water intake pipes is to
- help rebuild them.
 - clog them.
 - clean them.

- Q** Round gobies can eat up to
- five sea lampreys per day.
 - 1 pound of purple loosestrife per day.
 - 78 zebra mussels per day.

- Q** How are yellow perch affected by aquatic invaders?
- The round goby eats yellow perch eggs.
 - The fishhook flea competes for the same food as the yellow perch.
 - The yellow perch swallows zebra mussels that get stuck in its digestive system.

- Q** The fishhook flea keeps from being eaten because
- its long tail, shaped like a fishhook, makes it difficult for larger fish to swallow.
 - it latches on to fishhooks and escapes when fishermen pull their poles out of the water.
 - it stays away from fishhooks and thus is not eaten by fish.

Game Cards—Back b

A a = 1 pt. True, but not the best choice.
b = 1 pt. Also true, but not the best choice.
c = 3 pts. Exotic species can be plants or animals.

A a = 3 pts. This is the best choice.
b = 0 pts. You risk spreading them to new locations.
c = -1 pt. Take 1 point away. This is a very poor choice because you may infest the pond.

A a = 0 pts. Not true.
b = 3 pts. This was why people brought purple loosestrife into the United States.
c = 0 pts. Purple loosestrife has no natural enemies in the United States.

A a = 3 pts. True. Ballast water is used by freighters to keep the ship evenly weighted.
b = 0 pts. Sea lampreys attach to fish; zebra mussels do not.
c = 0 pts. Not true.

A a = 0 pts. Wrong.
b = 0 pts. Wrong.
c = 3 pts. Purple loosestrife is a wetland plant.

A a = 0 pts. While this wouldn't hurt the environment, it could be an endangered species and should be left alone.
b = 0 pts. Same reason as choice a.
c = 3 pts. Best choice. Allows the animal to remain in its ecosystem; wouldn't negatively affect another ecosystem.

A a = 1 pt. Might be true, but unlikely.
b = 1 pt. True often, but not always.
c = 3 pts. This is the best choice.

A a = 3 pts. This is the correct definition of indigenous.
b = 0 pts. This is the definition of nonindigenous.
c = 1 pt. Some may make you sick, others may not. Not the best choice.

A a = 0 pts. This would be helpful, but it is not true.
b = 0 pts. This is also incorrect.
c = 3 pts. This is correct.

A a = 0 pts. No, zebra mussels do not help rebuild pipes.
b = 3 pts. Yes! Zebra mussels cause problems because they clog water intake pipes.
c = 0 pts. This is also incorrect. They clog pipes, not clean them.

A a = 3 pts. Exactly! This is why it is called the fishhook flea.
b = 0 pts. Sorry, this is incorrect.
c = 0 pts. This is also a wrong answer.

A a = 3 pts. Good answer!
b = 3 pts. This is also a correct answer!
c = 0 pts. The yellow perch do not eat zebra mussels.

Game Cards—Front c

Q Boaters or anglers can prevent the spread of zebra mussels by

- wearing gloves while they are fishing.
- emptying their bait buckets on land only.
- washing their boat, tackle, trailer, and other equipment in 104° F water.

Q A sea lamprey can grow

- up to 6 inches long.
- up to 36 inches long.
- up to 18 inches long.

Q The fishhook flea most likely traveled to the United States

- attached to other fish migrating toward the United States.
- because it got lost.
- in the ballast water of freighters.

Q How might a native brown trout be killed by an aquatic invader?

- Round gobies could eat eggs of the brown trout.
- A sea lamprey could carve a hole in the side of the brown trout and suck out its bodily fluids.
- The brown trout could try to swallow a fishhook flea and get it stuck in its digestive system.

Q A female zebra mussel can produce up to

- 10,000 eggs a year.
- 100,000 eggs a year.
- 1 million eggs a year.

Q What do round gobies do to make fishermen angry?

- They eat all the eggs of the native fish, leaving no more fish to catch.
- They tease them that they can't catch fish.
- They aggressively take bait from hooks used by fishermen.

Game Cards—Back c

A a = 0 pts. Sea lampreys can get bigger than that!
b = 0 pts. Wow, that would be one giant sea lamprey.
c = 3 pts. That is correct!

A a = 0 pts. Unfortunately, wearing gloves has nothing to do with it.
b = 3 pts. Good job! This will help prevent the spread of zebra mussels.
c = 3 pts. This too will aid in the prevention of zebra mussel infestation.

A a = 2 pts. This is close. Round gobies eat the eggs of the lake trout.
b = 3 pts. Exactly, this is why the sea lamprey is so dangerous!
c = 1 pt. This might be possible.

A a = 0 pts. No, it is the sea lamprey that attaches to fish.
b = 0 pts. This is incorrect.
c = 3 pts. You got it!

A a = 1 pt. This is a possibility.
b = 0 pts. This is unlikely.
c = 3 pts. That's right!

A a = 0 pts. This isn't even close.
b = 1 pt. This is getting closer.
c = 3 pts. Yes, this is correct.