**[Minnesota Sea Grant](http://www.seagrant.umn.edu/)**

[**Aquatic Invasive Species Quiz**](http://seagrant.umn.edu/ais/quiz/index.php)

**Question 1**

Top of Form

**How many non-native species have been reported in the Great Lakes?**

1.  33
2.  105
3.  180
4.  550

Bottom of Form

**Answer:**

**Correct!**

The Great Lakes ecosystem has been severely damaged by more than 180 invasive and non-native species since the 1800s, including plants, fish, algae, and mollusks. Species such as the [**zebra mussel**](http://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?SpeciesID=5&Potential=N&Type=1&HUCNumber=DGreatLakes), [**quagga mussel**](http://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?SpeciesID=95&Potential=N&Type=1&HUCNumber=DGreatLakes), [**round goby**](http://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?SpeciesID=713&Potential=N&Type=1&HUCNumber=DGreatLakes), [**sea lamprey**](http://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?SpeciesID=836&Potential=N&Type=1&HUCNumber=DGreatLakes), and [**alewife**](http://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?SpeciesID=490&Potential=N&Type=1&HUCNumber=DGreatLakes) reproduce and spread, ultimately degrading habitat, out-competing native species, and short-circuiting food webs.  Non-native plants such as [**purple loosestrife**](http://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?SpeciesID=239&Potential=N&Type=1&HUCNumber=DGreatLakes) and [**Eurasian watermilfoil**](http://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?SpeciesID=237&Potential=N&Type=1&HUCNumber=DGreatLakes) have also harmed the Great Lakes ecosystem.  http://www.regions.noaa.gov/great-lakes/index.php/great\_lakes-restoration-initiative/invasive-species/Great Lakes:

**Question 2**

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**Which of these invasive species has devastated Lake Superior the most?**

1.  Sea Lamprey
2.  Spiny Waterflea
3.  Zebra Mussel
4.  Eurasian Ruffe

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**Answer:**

**Correct!**

Sea lamprey slipped through the Welland canal then devastated the commercial fisheries and fish populations of the Great Lakes. The Great Lakes Fishery Commission reports that sea lamprey control, assessment and research cost $15 million annually. Although zebra mussels are arguably more disruptive in other Great Lakes, they haven't been able to colonize Lake Superior.

**Question 3**

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**How are sea lamprey controlled?**

1.  Lampricide treatment of streams
2.  Dewatering of spawning streams
3.  Barriers to upstream migration
4.  They aren’t controlled
5.  a and c

Bottom of Form

**Answer:**

**Correct!**

Sea lamprey control involves: 1) using chemicals to kill lamprey larvae while they are maturing in streams, 2) sterilizing males, and 3) constructing barriers to prevent them from spawning in streams.

**Question 4**

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**Which of the following is considered the pathway most non-native species use to reach the Great Lakes?**

1.  Swimming from the ocean
2.  Release by anglers and/or boaters
3.  Release by aquarium/water gardeners/pond owners
4.  In the ballast water of large ships

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**Answer:**

**Correct!**

**Thirty percent of invasive species in the Great Lakes** ... including zebra mussels, round gobies, Eurasian ruffe, and spiny waterfleas ... have likely been discharged along with the ballast water of ships… **have been introduced through ship ballast water.** In the early 1990s, the U.S. Coast Guard began requiring ships to exchange their ballast water, or seal their ballast tanks for the duration of their stay. The Coast Guard later used their success in the Great Lakes to develop a ballast management program for the entire nation. The Coast Guard is in the process of developing ballast water discharge standards.

**Question 5**

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**Which of these fish is a Great Lakes native?**

1.  Chinook Salmon
2.  Coaster Brook Trout
3.  Rainbow Smelt
4.  Rainbow Trout
5.  Rainbow Fish

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**Answer:**

**Correct!**

Like native lake trout, coaster brook trout are members of Lake Superior's natural fauna; salmon and other trout are intentionally introduced; smelt accidentally escaped into Lake Michigan and reached Lake Superior by 1930.

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How many

**Question 6**

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**Aquatic invasive species introductions into the Great Lakes have…**

1.  increased rapidly since 1970.
2.  declined since 1970.
3.  not caused any problems.
4.  frozen during the winter.
5.  come mostly from the southern part of the United States.

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**Answer:**

**Correct!**

Most introductions of invasive plants and animals into Great Lakes have been discovered since 1970. As human activity has increased in the Great Lakes Watershed, the rate of introduction of exotic species has increased – more than 30% of the organisms have been introduced in the past 30 years. http://www.great-lakes.net/envt/flora-fauna/invasive/invasive.html

**Question 7**

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**Which of the following is an invasive plant in the wetlands of the Great Lakes?**

1.  Tamarack (larch)
2.  Poison Ivy
3.  Purple Loosestrife
4.  Pitcher Plant
5.  Sphagnum Moss

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**Answer:**

**Correct!**

Purple loosestrife is an invasive plant from Europe. It and the other plants listed (except for poison ivy, which prefers drier feet) might be found in one of Lake Superior's wetlands.

**Question 8**

Top of Form

**What can boaters do to prevent the spread of aquatic invasive species?**

1.  Remove vegetation and animals from boat before leaving a landing
2.  Dry boat and equipment for 5 days before launching into a different waterbody
3.  Wash/rinse the boat, motor and trailer
4.  Learn to identify aquatic invasive species
5.  All of the above

Bottom of Form

**Answer:**

**Correct!**

Boaters can take actions to reduce the spread of aquatic invasive species. To learn more about the specifics, visit <http://www.protectyourwaters.net/>.

**Question 9**

Top of Form

**On average, how many new non-native species are found in the Great Lakes each year?**

1.  2
2.  4
3.  6
4.  8

Bottom of Form

**Answer:**

**Correct!**

On average 2.1 species have arrived in the Great Lakes per year over the last 30 years; however the rate has slowed in the past decade.

**Question 10**

Top of Form

**Which of the following is true?**

1.  Ocean-going vessels are required to exchange their ballast water mid-ocean.
2.  Ballast water must be treated with chlorine before it is expelled.
3.  The United States doesn't have federal regulations concerning ballast water; only Canada does.
4.  Ballast water must be boiled before being released into the Great Lakes.
5.  Duluth, and other cities around the Great Lakes use ballast water to clean roads and sidewalks.

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**Answer:**

**Correct!**

The U.S. requires that ocean-going ships either: 1) exchange their ballast water in the open ocean to ensure that high salinity water kills near-shore stow-aways or, 2) carry no ballast to port or, 3) retain the ballast that they have on board. The International Maritime Organization estimates 7,000 different species get transported in cargo ship ballast water every day.

**Question 11**

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**Why aren't zebra mussels successful in Lake Superior?**

1.  They haven’t had enough time to colonize
2.  The lake floor doesn’t have as many good places for them to attach
3.  The water is too cold, too unproductive, and too low in calcium
4.  Lake trout, which are not in the other lakes, eat them

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**Answer:**

**Correct!**

Zebra mussels are only found in a few of Lake Superior's harbor areas and coastal zones. Lake Superior is too cold, the climate too harsh, and the water not rich enough in essential elements for zebra mussels to thrive. **Zebra mussels** are a **problem** in the Great Lakes because they filter water, up to a liter per day, to eat the plankton. Since the **zebra mussels** eat a lot of plankton, they compete with fish for food. They also clog pipes by forming colonies inside of the pipes. Then the water cannot flow through the pipes as easily.

**Question 12**

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**Which of the following is NOT true? Spiny waterfleas…**

1.  are predatory zooplankton.
2.  glob up on fishing gear.
3.  have long pointed tails to deter predators.
4.  infest fish.
5.  are one of Lake Superior’s newer aquatic invasive species.

Bottom of Form

**Answer:**

**Correct!**

Spiny waterfleas are invasive zooplankton, not what we usually think of as "fleas." Their spiky tail gets them tangled on fishing gear and can confound hungry fish.

**Question 13**

Top of Form

**Which of the following native species have invaded other waters?**

1.  Sphagnum Moss
2.  Scud
3.  Lake Sturgeon
4.  Broad-leaved Arrowhead
5.  Lake Trout

Bottom of Form

**Answer:**

**Correct!**

We don't know if the lake trout disrupting Yellowstone Lake are from Lake Superior. However, lake trout, yellow perch, and northern pike - members of the Great Lakes natural fish community - have invaded other North American lakes.

**Question 14**

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**If you find a bizarre species in an unexpected area, you should:**

1.  Leave it alone
2.  Contact your local department of natural resources
3.  Write a description and draw a picture of it, and then contact police
4.  Take it home
5.  Kill it

Bottom of Form

**Answer:**

**Correct!**

To combat the spread of aquatic invasive species, learn to identify them. If you find one outside known areas of infestation you should: kill it, freeze it, and contact:

Terrestrial - MI Dept of Natural Resources, Wildlife Division, 517-342-4514 or norwoodg@michigan.gov

Aquatic Nuisance Control Program – DEQ Water Resources Division, DEQ-WRD-ANC@michigan.gov, 517-284-5593

DNR Fisheries Division, herbstS1@michigan.gov, 517-284-5841 or for invasive carp report electronically at www.michigan.gov/asiancarp

**Question 15**

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**Why do most people care about the spread of aquatic invasive species (AIS)?**

1.  AIS can harm recreation, the environment, and the economy
2.  AIS might make a good food source
3.  AIS make interesting pets
4.  AIS can help control pest populations
5.  AIS smell bad as they rot

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**Answer:**

**Correct!**

Sure, they smell bad when they rot and might make interesting pets, but mostly AIS have the potential to disrupt the ecosystem and create financial mayhem for humans.

**Question 16**

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**Those concerned about the spread of AIS recommend which of the following:**

1.  Release unwanted aquarium fish into the smallest local pond you can find.
2.  Throw your extra water garden plants into a roadside ditch.
3.  Give unwanted aquatic plants and animals to someone who can enjoy them.
4.  Leave non-native aquatic plants and animals at the entrance to the nearest zoo.

Bottom of Form

**Answer:**

**Correct!**

In Michigan, it is illegal to dump unwanted aquarium pets into the wild. Experts suggest you give them away.

**Question 17**

Top of Form

**Which of the following is true?**

1.  Zebra mussels have attached to and sunk small boats.
2.  Zebra mussels can grow to the size of a baseball in Lake Superior.
3.  Zebra mussels can attach to and suffocate native clams.
4.  Zebra mussels can drown fish.
5.  Zebra mussels would be good steamed and served with garlic butter.

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**Answer:**

**Correct!**

Zebra mussels attach to any available hard surface, including native clams and small boats. They can suffocate the former but have not ... to our knowledge ... sunk the latter. They can improve water clarity by filtering plankton from the water; one zebra mussel can filter a liter of water per day. Zebra mussels are too small and possibly too full of contaminants to make a good meal for humans.

**Question 18**

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**What is another common term for AIS?**

1.  Pesky water bugs
2.  Triple-A (abhorent aquatic aliens)
3.  Unwanted life forms
4.  Biological pollution

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**Answer:**

**Correct!**

AIS are also referred to as biological pollution.

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