Great Lakes Aquatic invasions!

Prepared by the Great Lakes Sea Grant network

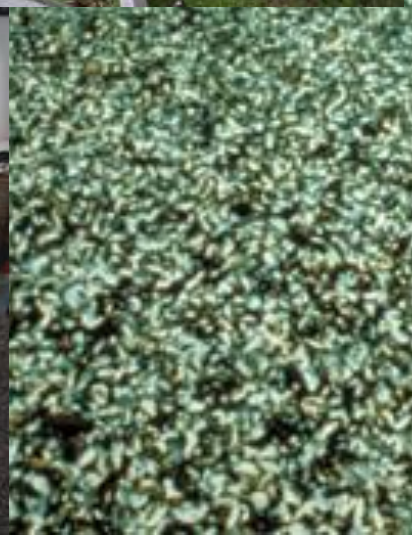
Adapted from Michigan State University's W.K Kellogg Biological Station GK-12 Project

What is an invasive species?

- Introduced from another location
- Causes harm
  - Ecological harm (ex. Can outcompete native species and take away habitat)
  - Economic harm (ex. Can cost people a lot of time and money)
  - Harm to human or animal heath (Can carry diseases)

Do you know of any invasive species?

Zebra Mussel



Asian carp

"To combat these and other invasive species, which could threaten the Great Lakes ecosystem and its $7 billion fishing industries, the resources defense council has proposed physical barriers to separate Chicago waterways and Lake Michigan from the Mississippi."

- NY Times November 2011

Eurasian Watermilfoil

Sea Lamprey

What makes a good invader?

- Adaptable: can tolerate a wide range of environmental conditions
- Grow quickly
- Reproduce frequently and in large numbers
- Lack of natural predators

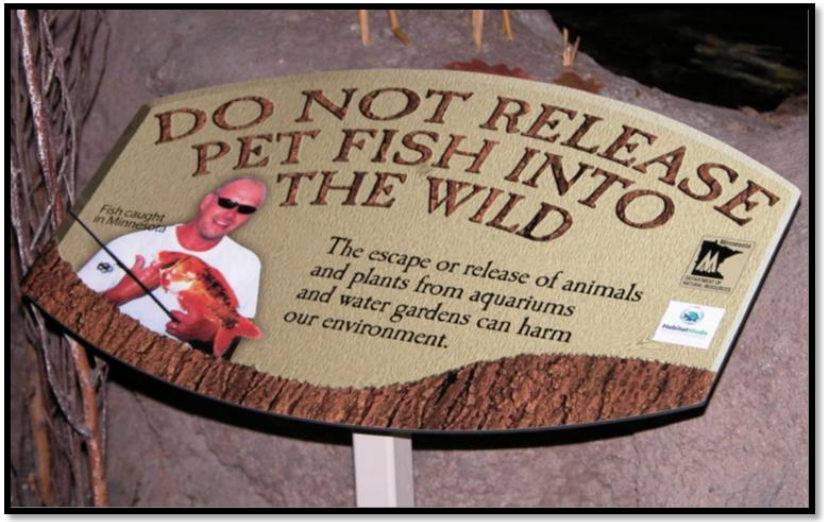
A warming climate…

- Warming temperatures and changing precipitation patterns can impact species distributions and movement
- Who will have the upper hand? Native or invasive species?

Don't release your pets!

Habitattitude™
PROTECT OUR ENVIRONMENT
DO NOT RELEASE FISH AND AQUATIC PLANTS

- Aquarium pets and plants could survive in a natural environment and become invasive!
- Climate change could increase this problem, since many aquarium pets are tropical or sub-tropical species that would otherwise not be able to handle the cooler temperatures.



You can help prevent the spread!

- CHECK for and remove any plants, mud, or aquatic life from boats, equipment, clothing, or anything that touched the water before transporting
- DISPOSE of unwanted live bait in the trash, not on land or in water
- DRAIN water from boat, live well, bilge, bait bucket, and equipment before transporting
- CLEAN boat and gear wit hot water, or
- DRY everything for at least five days

Let's play a game!

Invasive

Purple loosestrife

Native

Showy goldenrod

PURPLE LOOSESTRIFE

Move forward:

Growth: 

Reproduction: 

Spread: 

Climate Change: 

Move backward:

Adaptability: 

Temperature: 

Flood: 

Drought: 

Climate Change: 

GOLDENROD

Move forward:

Growth: 

Reproduction: 

Spread: 

Climate change: 

Move backward:

Adaptability: 

Temperature: 

Flood: 

Drought: 

Climate Change: 

PURPLE LOOSESTRIFE

Move forward:

Growth:

Reproduction:

Spread:

Climate Change:

Move backward:

Adaptability:

Temperature:

Flood:

Drought:

Climate Change:

- All species can grow, reproduce, and spread
- Abilities differ between species
- Climate change will impact species in different ways

PHRAGMITES

Move forward:

Growth:

Reproduction:

Spread:

Climate Change:

Move backward:

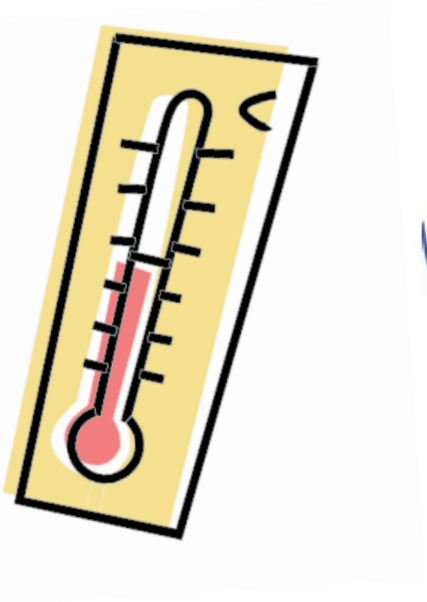
Adaptability:

Temperature:

Flood:

Drought:

Climate Change:



- Some actions harm native species more than invasive species
- These actions facilitate invasion

ALEWIFE

Move forward:

Growth:

Reproduction:

Spread:

Climate Change:

Move backward:

Adaptability:

Temperature:

Flood:

Drought:

Climate Change:

- Some actions harm invasive species more than native species
- These actions resist invasion

Invasive Species in the Great Lakes: What makes a good invader?

Overview

Students will learn about invasive species in the Great Lakes, characteristics that make species good invaders, factors that can influence invasive communities, and the role that climate change may play in causing and proliferating invasions.

Objectives

At the conclusion of the lesson, students will be able to:

- Provide examples of invasions causing harm in the Great Lakes
- Identify characteristics (traits) that are common among many invasive species
- Present information on the role that climate change can play in the establishment and spread of invasive species
- Recognize some common native and invasive species in the Great Lakes
- Talk about populations, communities, and the niche

Length of Lesson

This lesson can be completed in 1 hour if the activity is played once. Ideally it should be played multiple times so students can observe different outcomes depending on what events were spun on the wheel and to redistribute the species cards so each student can be a new species with different traits than their first. Ideally, a 1.5-hour session would be best.

- 10 minutes- Introduction: Do you know of any invasive species?
- 10 minutes- Examples of invasive species in the Great Lakes
- 5 minutes- Summary of introduction: students should now be able to describe characteristics that make a good invader
- 5 minutes- describe the rules of the activity
- 45 minutes- play 2-3 rounds of the activity
- 15 minutes- Summary: have students describe what got them "into the community". Do the characteristics that made them a good invader match the ones we discussed in the introduction?