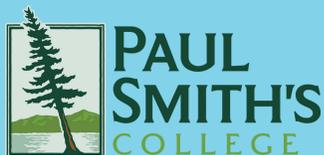


Name:



# Become a Junior Watershed Steward!

## Follow the steps below:

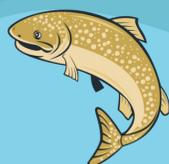
- 1 With this workbook in your hands, you are ready to become a Junior Watershed Steward. Follow along through this workbook and do your best to answer the questions.
- 2 After completing the workbook, take the Junior Watershed Steward Pledge to protect against aquatic invasive species.
- 3 The last step is visiting a Watershed Steward. On your visit you will ask the Steward a few questions and after recording your answers to the questions, you will be given your Junior Watershed Steward Welcome Kit!

**All materials needed to become a Junior Watershed Steward are included in this workbook.**

## What is a watershed?

Describe what the word "watershed" makes you think of:

My name is Colby! I'm a lake trout, and I am dependent on cold, clean water. I'm here to help you on your way to becoming a Junior Watershed Steward with tips and information!



Lots of wildlife species live in a watershed. Lake Trout like Colby are just one of many species of fish that might live in a watershed.



# What is a watershed?

A watershed is an area of land that drains rainwater and surface water into a common body of water, such as a lake or river.



A watershed is also called a basin. A basin is the area of land over which surface run-off flows through streams, rivers, and ponds into a larger body of water, such as a lake or sea.

A watershed can be large or small. Large watersheds often contain smaller watersheds. Watersheds cover all of the land on Earth. You're in one right now!

Lake Champlain is a large lake. The Saranac River, Ausable River, and Boquet River are a few rivers that eventually drain into Lake Champlain. These rivers carry water from other lakes and streams from higher elevation areas.

A raindrop from the summit of Mt. Marcy (5,344') has the ability to reach Lake Champlain, which could be a journey of over 100+ miles by river!

## What lake does the Saranac River and Ausable River flow into?



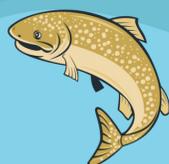
Lake Champlain



The Hudson River is the longest river in New York State. It flows nearly 300 miles from north to south, draining into a much larger body of water.

## What waterbody does the Hudson River flow into?

It can be helpful to think of a watershed as a funnel. Water from high on a mountain or hill will eventually collect into a larger lake or river. I prefer to live in a larger lake that is cold and well oxygenated!



# Let's take a look at a watershed.

To the right is a map of the Lake Champlain Basin. The Lake Champlain Basin is a large watershed that is made up of several small watersheds. Lake Champlain is 120 miles long and is the 13th largest lake (by surface area) in the United States!

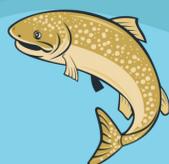
Within this large watershed there are many smaller lakes and ponds. One example is Mirror Lake, shown here:



Mirror Lake is in the village of Lake Placid, NY. The water from this lake flows into the Ausable River. The Ausable River eventually flows into Lake Champlain, which is about 13,000 x larger than Mirror Lake!

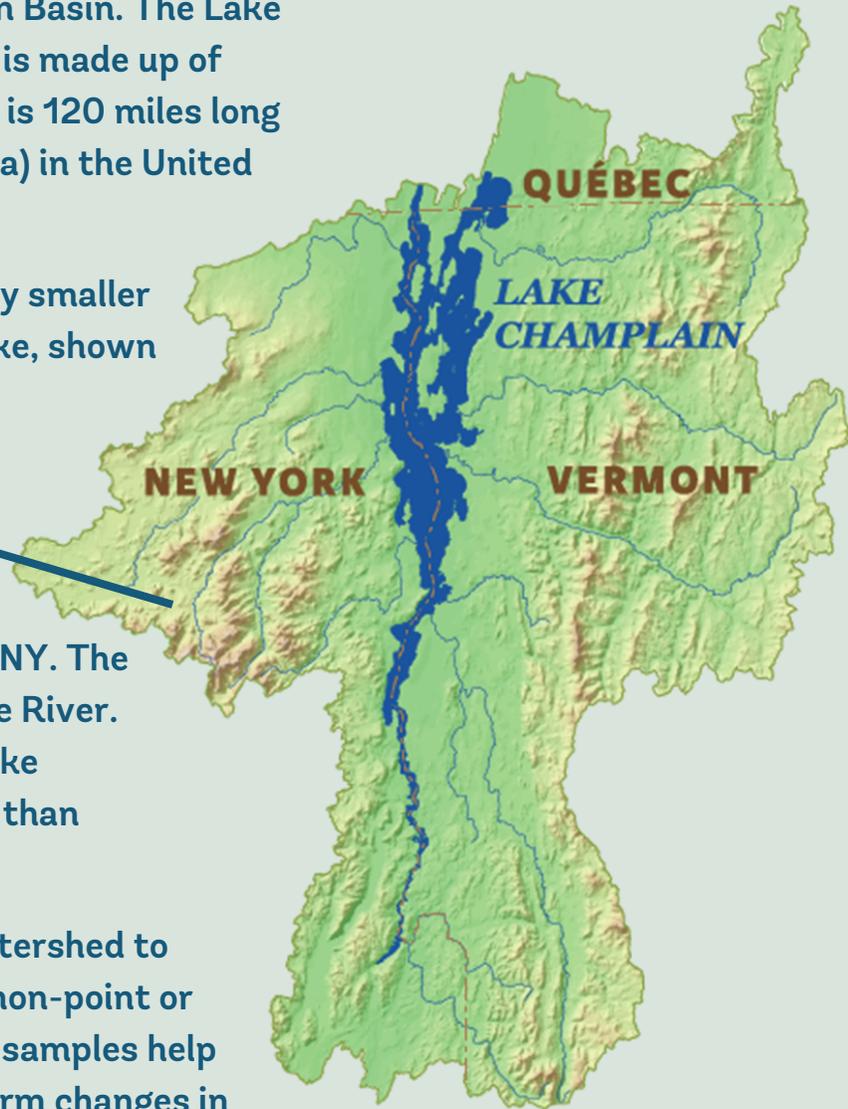
Scientists collect water samples in the watershed to test for contaminants that could be from non-point or point-source pollution. Additionally, these samples help researchers better understand the long-term changes in water quality and water temperature.

A healthy watershed provides clean drinking water and creates habitat for plants, animals, and other organisms, like me! It is also important for the communities and businesses that depend on it.



If Mirror Lake has clean water and is a healthy lake, it can give us clues as to how healthy the rest of the watershed is.

This map shows how big a watershed can be. Within this map there are hundreds of lakes, ponds, and streams that all flow into Lake Champlain.



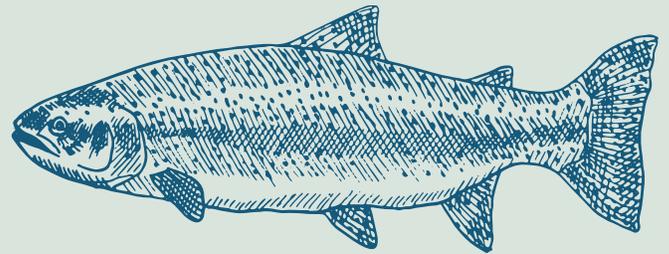
# What challenges do watersheds face?

Watersheds face many challenges. Impacts from climate change, pollution, and invasive species are some of the challenges that are being studied by scientists.

Over time, scientists have noticed that many lakes are warmer than they were in previous years. Warmer waters and warmer air temperatures have contributed to less lake ice, and reduced habitat for cold water fish species such as Lake Trout.

Lake Trout need cold, freshwater lakes with high oxygen in order to survive. As lakes warm, less oxygen is available, and species such as the Lake Trout must adapt, or leave, in order to survive.

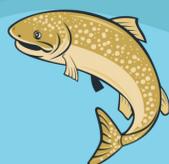
Earlier we discussed non-point source, and point-source pollution. Non-point source pollution is when the pollution can't be traced to a single location. Point-source pollution is when we know where the pollution is coming from, such as a vehicle, factory, or house.



Invasive species cause many problems for our watersheds. Invasive species are living things like plants, animals, and other organisms that are not originally from the environment that they use as a habitat. They are often transported by humans via car, boat, or the movement of other materials. These organisms compete with other organisms for the same habitat, and often cause shortages of food, space, and other nutrients.

**Can you think of other challenges our watersheds might face?**

Fish like me often prefer certain water conditions. Although I prefer colder water, some fish prefer slightly warmer water and can survive with less oxygen.

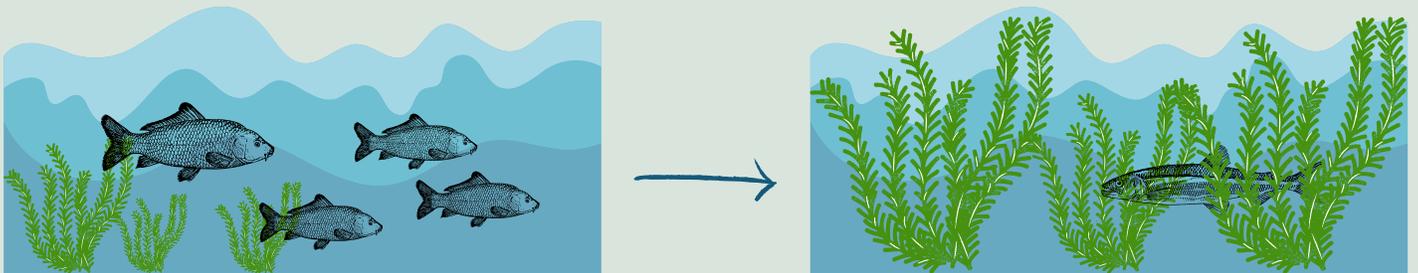


# What are aquatic invasive species?

Invasive species invade a new ecosystem as a competitor. Under the right conditions these organisms can completely take over a habitat. Aquatic invasive species (AIS) are invasive species that spend most of their life in water. These organisms invade lakes, ponds, rivers, and streams and create changes throughout the ecosystem.

Eurasian Watermilfoil is a common aquatic invasive species. This plant grows rooted underneath the water and can reach the water's surface by sometimes growing up to 33 feet tall! That's about the height of a three-story building!

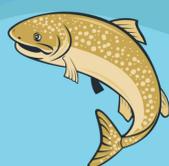
AIS can make it difficult for native organisms to survive. Many aquatic invasive plants grow faster than the native plants, outcompeting the native plants for sunlight and nutrients.



Not only do Aquatic Invasive Species outcompete native species, but they also reduce biodiversity and are known to elevate toxin levels.

**Can you think of a species that is native to our watersheds that would be impacted by AIS?**

Invasive species are one of the greatest threats to native wildlife. Almost half of threatened or endangered species are at risk due to the spread of invasive species.



# AIS cause problems in our watersheds.

Eurasian watermilfoil form thick floating mats that restrict native plants from growing. These thick mats limit sunlight, making it difficult for other organisms to survive. Plants such as milfoil can make the habitat less desirable for native plants and animals.

Water Chestnut is another common aquatic invasive species. Similar to Eurasian watermilfoil, this plant grows in thick mats, but the Water Chestnut is a floating leaved plant. Both of these plants are found in water bodies around the Adirondacks.



Eurasian watermilfoil ↗

In addition to invasive plants, there are other organisms such as Zebra mussels, Round Goby, and Spiny Water Flea that are considered invasive. Zebra mussels are an invasive mollusk that are around the size of a fingernail. They are dark in color, with zig-zagged stripes on each shell. These filter feeding mollusks filter out phytoplankton that native species need for food.

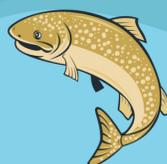


Zebra mussels

The Round Goby is another invasive species of concern in our watersheds. These bottom dwelling fish outcompete native fish for food and habitat, and prey on eggs of fish such as largemouth bass.

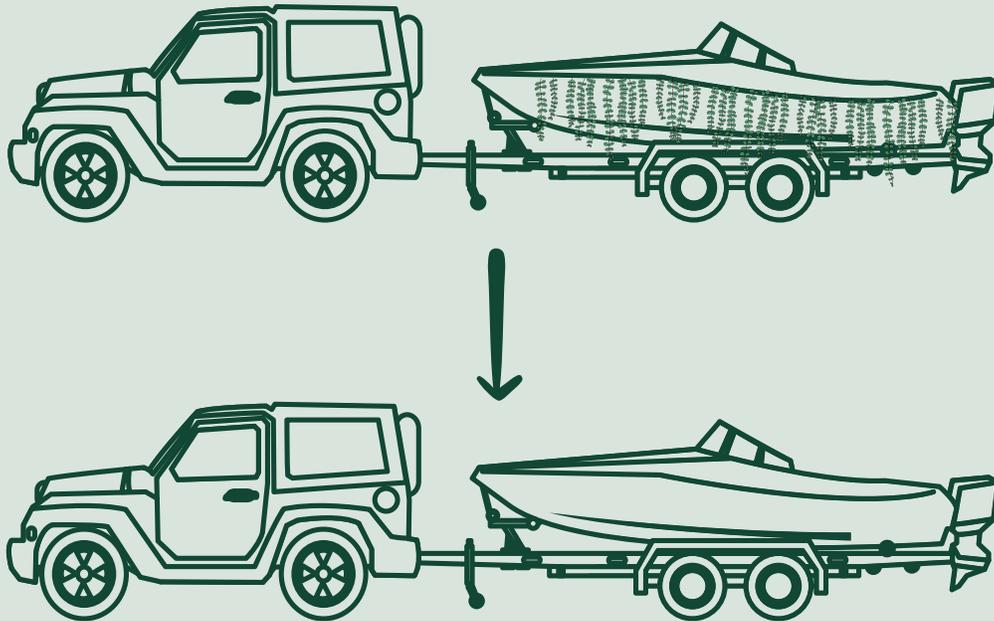
## How do you think aquatic invasive species (AIS) spread?

There are over 50 different Aquatic Invasive Species in Lake Champlain. Zebra mussels, watermilfoil, and water chestnut are just a few of the species that have invaded the lake.



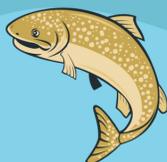
# How do AIS Spread?

Aquatic invasive species are often spread by humans. As we boat, paddle, and recreate in our lakes and ponds, aquatic invasive species will often hitch a ride on our equipment.



In order to prevent the spread of aquatic invasive species, it is recommended that you clean, drain, and dry boats and equipment before use. Watershed Stewards educate the public on AIS and the importance of limiting their spread. The Steward will ask boaters where their boat was last used and do a quick inspection. Often a Steward will decontaminate a boat by cleaning it with a pressure washer with hot water. This helps get rid of any aquatic organisms that might be attached to the boat.

Aquatic invasive species can attach to trailers, fishing equipment, and other parts of a boat. Sometimes AIS are found inside a live well, or in standing water in a motor.



# Test Your Knowledge!

## Complete the following word search:

There are 7 words in the puzzle below. Try and find at least 5 words. Some clues are below:

1. A three letter acronym for aquatic invasive species:
2. An area of land where all water collects in one location - you're in one now!
3. A common species of AIS:
4. Most AIS are spread by movement of \_\_\_\_ from one waterbody to another.
5. The best method of managing aquatic invasive species is \_\_\_\_\_.
6. A three letter acronym for what we should do with our boats before launching them.
7. A \_\_\_\_\_ educates others about AIS. After completing this program, you'll be one too!

D	D	C	S	E	T	B	Z	Y	M
W	A	T	E	R	S	H	E	D	I
G	E	B	T	L	D	C	S	D	L
C	C	X	O	D	H	T	D	N	F
A	G	S	F	A	E	B	B	I	O
V	I	L	J	W	T	U	D	A	I
L	H	S	A	G	C	S	V	L	L
G	P	R	L	R	V	E	J	U	C
N	D	U	K	C	X	C	S	Q	R
P	R	E	V	E	N	T	I	O	N

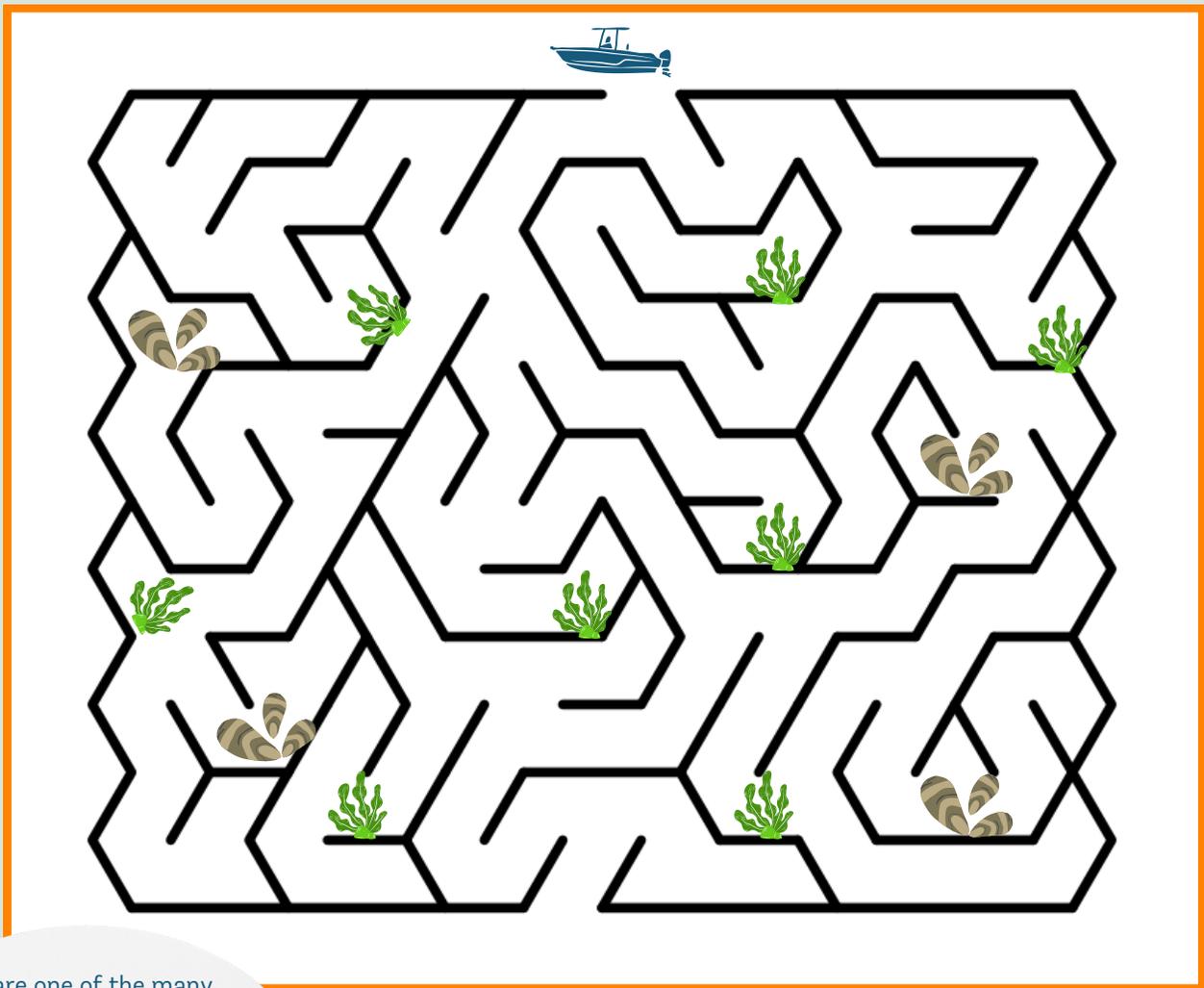
Watersheds are threatened by AIS such as milfoil. With the proper prevention methods such as cleaning, draining, and drying our boats and equipment, we can be good stewards for future generations.



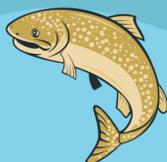
# Test Your Knowledge!

## Complete the maze:

Try to move the boat through the course without picking up any aquatic invasive species.



AIS are one of the many challenges that our watersheds face. In some waterbodies, traveling underwater can feel like a maze because there are so many invasive species!

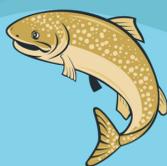


# Pledge to Protect

I, \_\_\_\_\_  
(print your name) pledge to protect clean water. I promise to teach others about the importance of preventing aquatic invasive species from spreading. I will also learn about new ways I can protect the lakes, ponds, and rivers that I visit.

- 1 If you or someone you know is going boating or paddling remember to inspect the boat before and after using it.**
- 2 If there are plants attached to the boat, clean the boat before launching it into a body of water.**
- 3 Educate others about what you've learned about Aquatic Invasive Species!**

Thank you for taking a pledge to protect our watersheds! All that is left is to visit a Watercraft Inspection Steward.



# Visit a Watercraft Inspection Steward

**Ask the steward the following questions:**

What is your name?

What is your job?

Do any AIS live in this lake?

What Aquatic Invasive Species live in this lake?

Congratulations! You are now a Junior Watershed Steward! The Steward will give you your Junior Watershed Steward Welcome Kit. Thank you for helping protect clean water!

Share a picture with your Junior Watershed Steward Welcome kit on Social Media and tag @adkwatershed on Facebook, Instagram, or Twitter with #AWIJuniorWatershedSteward

