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Have you ever looked out at Lake Superior, and seen just how big and majestic it is? Have you ever jumped in the cold water, and felt just how cold it is, even near shore where the water is a bit warmer? Once, when I was out at Artists' Point along the North Shore, I looked out across the water and all I could see was water. A bit later, I was swimming Even really close to the shore the water was over my head and cold, really cold. It seems unlikely that something so gigantic, so majestic, so big, and so powerful could possibly be harmed, but the truth is it can. Lake Superior and the land, rivers and streams around it as well as the creatures that live there are a carefully balanced ecosystem. All the species need each other so much that something that affects one of them can affect the entire lake, the areas around the lake and the species there. We do things that harm the Lake Superior ecosystem, such as introducing invasive species, destroying natural habitats and polluting. However, we can also learn to change our behavior in order to help protect the Lake Superior ecosystem.

At River Quest, we started out on the boat, the Vista Star. I learned that one of the things people sometimes do that can be harmful to Lake Superior and the surrounding area is releasing exotic species into the lake. When I say exotic species, I don't just mean super weird looking fish from warm tropical rain forests. I mean any species of fish that isn't native to that area. Whether that exotic fish which is an invasive species is from a lake nearby or a body of water half way around the world, it can cause serious problems.

Two major problems that invasive species cause are decreasing the native species' food and introducing new diseases to the native species. How are two fish from someone's old fish tank going to affect a gigantic lake like Lake Superior? Well, what can happen is that the invasive species will compete with one or more the native species for food, which means that there probably won't be enough food. Two more widely known invasive species in Minnesota are Zebra Mussels and the Round Gobies. At one of the stations at River Quest, they passed around a Round Goby in a jar. It didn't look like the other fish that I usually catch when I go fishing. There are many other types of invasive species. We were given cards with pictures of common invasive species so that if we find any we'll know they are invasive and can report them to the DNR.

At that same station, I heard a story about an invasive species that didn't compete with the native species for food but still were harming the native fish. Some goldfish had been released into a pond that had a river flowing out of it. The goldfish stirred up the mud and made the water too dirty for the native trout that lived in the stream. Luckily for the trout, people were able to capture and remove all the goldfish. Not all invasive species are that easy to stop.

Another thing that can happen when invasive species are released into Lake Superior waters is that it can spread a new disease, a disease that native species may be more susceptible to getting. This can make them really sick and/or kill a lot of fish. This can also happen when fish from that lake have been around fish from other places and are released back into the lake they came from.

Have you ever played the game "Jenga"? If you have, then you know how just one block being moved can cause the whole tower to fall down. Lake Superior and surrounding area are kind of like a tall "Jenga" tower and invasive species are like that one block that is removed causing the whole tower to fall over.

Another thing people do that can be harmful to Lake Superior and the surrounding area is destroying animals' habitats. When we do that, the animals and plants that relied on that habitat for food, water, and shelter, can no longer find what they need to survive. Imagine if someone came to your home, yelled really loud, stole your food, made your water so dirty you couldn't drink it and put big holes in your house. You wouldn't like that, would you? That's what happens when we destroy animals' habitats. The animals then may become endangered or extinct (die out).

One of the endangered species I learned about during River Quest is the piping plover that used to live on the beaches along Lake Superior near Duluth. The piping plover is a bird the size of a robin that makes its nest out of pebbles on sandy beaches. If they feel like their nest is no longer safe, they may abandon their nest even if there are eggs in the nest. Some things that could scare piping plovers away are people and dogs coming too close to their nesting area, too many loud noises and people driving on the beach. In the past few years a few piping plover have been seen along beaches near Lake Superior but none of them have stayed long enough to make a nest and hatch their eggs. They must not have felt safe enough to stay. This is very sad, and I hope that sometime very soon the piping plover will return to the beaches where they used to nest, and some day the piping plover will no longer be an endangered species.

At one of the stations at the DECC, I learned that when we destroy a forest, we not only harm the animals that live in the forest but we can also harm fish and other water creatures that live in streams and lakes nearby. You might wonder how can we harm the animals that live in the water. As strange as it seems, fish in streams and lakes need the trees and plants of the forest. Trees and plants are important to water creatures because their roots act like a net that holds the soil in place when it rains. Without those trees and plants, rain would wash a lot of dirt straight in to the lakes and streams making the water too dirty for things that live there.
I also learned that another way we can harm fish and things that live in streams and rivers is by changing the way the river flows. How can we change the way a river flows? The way the river flows can be changed when a stream is blocked to put a road over it or a too small culvert is used for water to go under a road or driveway. One way to minimize the change to the river is to build bridges. However, bridges are really expensive. Another way to minimize the change to the river is to use enough culverts that are big enough to handle the water. They demonstrated this at a water and sand table at the DECC.

One last thing people do that can be harmful to Lake Superior is polluting. Pollution can make animals sick or kill them. Imagine if some people came to your home and dumped all their garbage inside your house. You wouldn't like that, would you? That would be gross having to live in all that garbage. Then, imagine someone started adding poison and harmful substances to the garbage. Now it's not only gross, it's dangerous and it could also kill you. This is what pollution is - putting harmful things in animals' homes.

How does this relate to me? I don't put my garbage in the lake, and I certainly don't dump poison in the lake. But it's still possible for your garbage to end up in the lake. You might ask, "How is my garbage that's nowhere near the lake going to end up in the lake?" One way garbage sometimes ends up in the lake is wind and rain. If your trash isn't in a covered container, your trash can get blown or washed into a lake. At River Quest, I learned another way pollution ends up in the lake is through storm drains. Storm drains are grates in the street that attach to pipes underground that take rainwater and snowmelt to lakes or streams. That is fine but sometimes other things end up in the storm drains; like oil from a car or chemicals someone put on their lawn or non-natural soap someone used to wash their car. Those things could poison the creatures that live in the lake. We need to be careful and make sure that this doesn't happen.

You might think, "Yeah, it is bad if poison ends up in the lake but it's okay if my candy wrapper ends up in the lake. Its just one little bit of garbage." You're wrong. Even if it is not poisonous, an animal could choke on it and die. Besides, what would happen if everyone thought that? How many candy wrappers would end up in the lake? A lot. What if you picked up all your candy wrappers and garbage and a bit of someone else's garbage you saw lying around. What if a whole bunch of people did it too? Then a lot less garbage would end up where it shouldn't be.

So as you can see there are many things we do that can affect Lake Superior in harmful ways but there are also ways to stop that from happening. Have you ever heard the saying "An ounce of prevention is worth a pound of cure"? Well, its true. We need to prevent bad things from happening to Lake Superior. I believe that together we can make a difference. I believe it can be done, because if we can fly to the moon then, of course, we must be able to protect our lakes, streams, rivers, forests and wildlife.

There are many things we can do to protect them. Maybe your way of helping is something that may seem small to you - like picking up your trash or not releasing your fish from your aquarium into a river, stream, lake or pond. But maybe it will be in these small ways, we are able to help protect our lakes, rivers and the animals that live there. If we do our part to put an end to the harmful things that are happening, to prevent harmful things that could happen, and hopefully, to repair the damage that has been done, we can make it a better world. Wouldn't it be great if we were able to enjoy it more?

I know it is possible for one person or one kid to start something that could change the world. Just like in this story I heard - a boy who saw this beach covered in

starfish that couldn't get back to the water. There were more starfish than one person could possibly pick up and put in the water. Even though there were so many starfish on just that one beach, the boy began to put the starfish back in the water one at a time. Someone saw him doing this and asked him, "Why are you doing this? You will never be able to get all those starfish back in the water." The boy picked up a starfish, put it in the water and answered, "I know. But I just saved that starfish, and every starfish I pick up is a life I saved and maybe someone will help me get the starfish back in the water."

What if we all help in small ways like that boy did? What if we worked together to save our lakes, rivers, streams and the areas around them? What if we all did do something to help? What if we all worked together?

What If...?