

## Lake Sturgeon are a locally threatened species

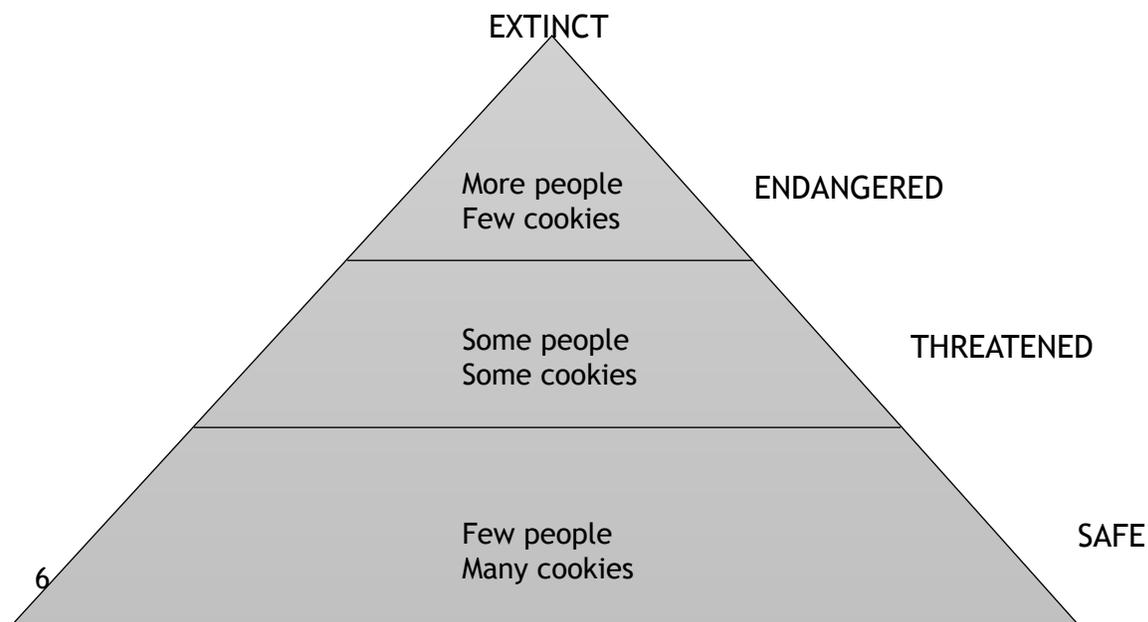
The fingerling Lake sturgeon housed at the Aquarium of Niagara are part of a wildlife management program run by the NY Department of Environmental Conservation, but why does this species need help? Despite being a native fish that has lived in the Great Lakes for millennia, their numbers dropped dramatically in the last 200 years. They are so low in population size that they are currently listed as threatened by 19 of the 20 states they are found in and being considered for the federal Endangered Species List.

The following activities will help explain what threatened and endangered mean, as well as illustrate the causes of the decline in lake sturgeon in the Great Lakes.

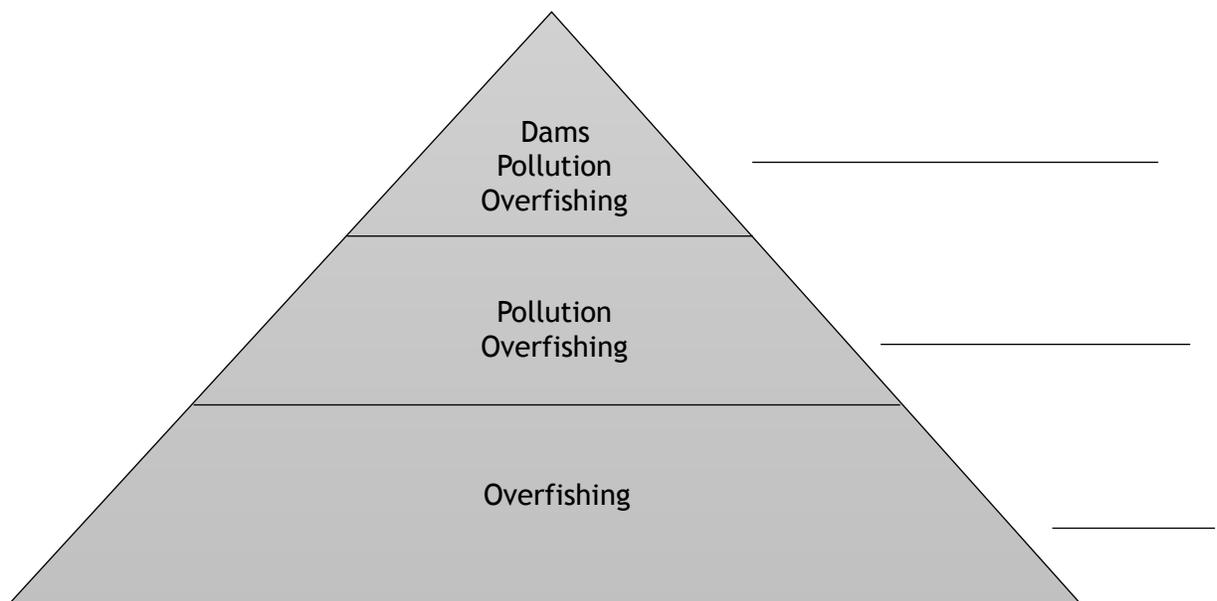
Activities adapted from *Sturgeon for Tomorrow*: <https://www.sturgeonfortomorrow.org/sturgeon-in-the-classroom.php>

### Safe, Threatened, Endangered Triangle

1. Imagine you are baking cookies at your house. Use the triangle below to show what happens to the number of cookies as the number of people coming over to your house and eating the cookies changes.
2. With a few people and many cookies, the cookies will continue to exist at a safe level as you keep baking because there are not too many people to eat them all.
3. As more people visit, the number of cookies decreases even as you keep baking more, and they are now **threatened** to all be eaten.
4. As the number of people visiting continues to increase, the number of cookies continues to decrease and they are in danger (**endangered**) of being eaten to the point that there are very, very few cookies remaining, even as you continue to bake.
5. If so many people visit that they eat all of the cookies you bake, the cookies are considered **extinct**.



- a. 200 years ago, there were many lake sturgeon. Native Americans revered the Nahmay, or sturgeon, and considered it to be the Chief of the Fish Clans. It was also called “Ogimah” which translates into “King of the Freshwater Fishes.” Lake sturgeon were an important part of their culture and community.
  - b. Early commercial fishermen (before 1850) however, slaughtered and destroyed sturgeon because they were considered a nuisance species that got caught in large fishing nets. In the mid-late 1800s, sturgeon were viewed in a new light. They became a highly sought-after fish for their flesh, oil, eggs (as caviar), and isinglass (substance in the swim bladder that can be used to clarify liquids and make jams and jellies). Their population dropped sharply due to the overfishing that took place.
  - c. In addition to overfishing, other factors that contributed to the decline in lake sturgeon populations include various forms of pollution and the installation of dams. Pollution types include but are not limited to habitat loss, habitat degradation, thermal pollution, erosion and sedimentation, excess fertilizer and pesticide use, and litter. Dams were installed on many rivers to create electricity. Their presence barred the lake sturgeon from making their way to their spawning grounds upstream.
7. A second triangle can be formed showing how the threats added up to change the population of lake sturgeon over time. Can you fill in the words **safe**, **threatened**, and **endangered** in the blanks where they best fit the change in population?



## Habitat Destruction Activity

### Materials needed:

- 2 chairs
- 2 cups of water
- Several different colors of food coloring
- 2 people/placeholders

### Instructions:

1. Two people/placeholders will act as the last remaining lake sturgeon on Earth and take a seat in the two chairs. The chairs are symbolizing their habitat, or home. In this case, that home is a river.
2. Give each person/placeholder a glass of water. The water represents the food and water the sturgeon need to survive.
3. A business owner wants to build a bigger, better building for their operation. It needs to be on a river because water is used in the business. The site chosen is on the bank of the river where the last two remaining lake sturgeon live.
  - a. One of the chairs is removed and the sturgeon whose chair was removed may now stand behind the other lake sturgeon that is still seated.
4. A farmer wants to grow crops that are healthy and strong, so they put a lot of extra fertilizer on the crops to make sure they grow well. The plants do not need as much as they are given, and the next time it rains, the extra fertilizer is picked up by the rainwater runoff. The runoff flows into the nearby river where the last two remaining lake sturgeon live.
  - a. Add green food coloring to each of the cups of water to represent the excess fertilizer.
5. A homeowner wants to have the most beautiful flower garden in their neighborhood. They start to see that the flowers are being attacked by some type of insect, a pest. Without looking at the weather report, the homeowner sprays their flowers with a chemical pesticide to get rid of the pest. It rains just an hour after the plants were sprayed, and the chemical washes into the nearby storm drain. The storm drain empties into the river where the last two remaining lake sturgeon live.
  - a. Add red food coloring to each of the cups to represent the chemical pesticide.
6. A mechanic often changes the oil in their customer's cars and dumps the used oil onto the ground outside the back of the shop. People have not yet started to realize the harm this does. The oil soaks into the ground and eventually into the groundwater, which makes its way to the river where the last two remaining lake sturgeon live.
  - a. Add blue food coloring to each of the cups to represent the oil.
7. The food and water are now filled with fertilizers, pesticides, and oil, making it very hard for the sturgeon to survive. Set the cups of water aside on a table away from the sturgeon, because there is very little left for the sturgeon to use.

8. An invasive species is introduced to the river where the last two remaining lake sturgeon live. They don't care about the native plants and animals that live in the river and want it all for themselves.
  - a. Remove the last chair.
9. An angler visits the river to go fishing. There are no laws in place restricting what type and how many fish they can catch. They hook one of the last two remaining lake sturgeon.
  - a. Remove one of the lake sturgeon from the scene, as they have been taken home for the angler's dinner.
10. Recap what happened:
  - a. Business owner altered the river environment by building on the riverbank.
  - b. Farmer used too much fertilizer which ended up washing into the river.
  - c. Homeowner used chemical pesticides that washed into the river because they did not pay attention to the weather forecast.
  - d. Mechanic poured used motor oil on the ground instead of recycling it and it ended up in the river.
  - e. Invasive species came to the river and took over all the habitat of the native species.
  - f. Angler hooked one of the last two remaining lake sturgeon because there were not any laws telling them they couldn't.
11. There is only one lake sturgeon left. The lake sturgeon cannot reproduce on its own; it has nowhere to live and nothing to eat. The species is no longer only threatened, it will go extinct when the last sturgeon dies.
12. Each person or species did something to reduce the lake sturgeon's survival. Each person could also do something to help the sturgeon survive. What can individuals do to help lake sturgeon?
  - a. Reduce what we use, especially one-time-use items; reuse items when possible; recycle as a last resort when the other two options are not possible.
  - b. Make sure you follow hunting and fishing laws.
  - c. Follow the directions on labels of fertilizer to make sure you do not use too much, and use natural fertilizers, like compost, when possible.
  - d. Listen to weather reports before applying fertilizers and pesticides.
  - e. Help control invasive species by washing all boating equipment after use.