



## LEARNING LABS

### GREAT LAKES: PUZZLING POPULATIONS

Behind the scenes at Shedd, students apply problem-based learning to discover why fish populations are declining in the Great Lakes. Students explore exhibit habitats and measure the health of an aquatic system by performing water-quality tests. They are then challenged to use their results to solve the puzzle of the population decline.

**GRADE LEVEL:** 6-8 | **CAPACITY:** 30 students | **DURATION:** 90 minutes

#### KEY CONCEPTS

Population dynamics, ecosystems, ecological impact, life history, invasive species, human impact

#### SKILLS

Scientific method and investigation, collaboration and communication, data collection and analysis, experimentation, prediction

#### IL STATE LEARNING STANDARDS

- 11.A.3a, 11.A.3c, 11.A.3f, 11.A.3g
- 12.B.3a, 12.B.3b
- 13.A.3a, 13.B.3c, 13.B.3d, 13.B.3e, 13.B.3f

#### WHAT TO EXPECT FROM THE LEARNING EXPERIENCE

- Students work in groups using scientific tools to explore factors affecting fish populations
- Students pursue investigations to answer questions
- Teachers and chaperones may participate
- Students use technology such as SMART Boards and multimedia resources
- Students may have the opportunity to go behind the scenes



For more information contact  
[studentprograms@sheddaquarium.org](mailto:studentprograms@sheddaquarium.org)



## FURTHER EXPLORATION

### Shedd Educational Adventures *Animal Behavior*

<http://sea.sheddaquarium.org/sea/>

### The IUCN Redlist of Threatened Species

<http://www.iucnredlist.org>

### Encyclopedia of Life

<http://www.eol.org/>

### PBS.org

#### *Parasite Perils and Sharks at Risk*

<http://www.pbs.org/teachers/>

### Nab the Aquatic Invader!

<http://www.iiseagrant.org/NabInvader/>



## CONNECTIONS TO THE EXHIBITS

Shedd Aquarium is a big place with a global fish collection.

Below are suggestions to help you focus your field trip explorations.

### Local Waters Gallery

The lake sturgeon habitat is at the far end of this gallery. The lake sturgeon's shrinking population concerned wildlife biologists for several years, but now the species' numbers are stable or increasing. Have students observe this prehistoric fish, taking note of its habitat. What ideas can you come up with that could explain why the population was decreasing? What kind of human impacts might cause a population to decline, both historically and currently? Don't forget to look at the exhibits adjacent to the lake sturgeon.

### Rivers Gallery

Find the highly specialized paddlefish in a habitat at the far end of the gallery. This species has declined in population over the years. As students observe these large fish, have them discuss how late maturation combined with human impacts might affect them. How might the introduction of another aquatic species intensify the decline? What conservation actions can be taken to increase the paddlefish population?

### Wild Reef

Expand your students' understanding of Great Lakes issues through a global perspective. Wild Reef's shark exhibit is home to several shark species, each with a unique life history. These apex predators are declining in population worldwide. What could cause an apex predator to decline? What are the consequences of a population decline? What other animals are affected? Are humans affected?

## CONNECTIONS TO THE CLASSROOM

- Before visiting the aquarium, prepare students by having them learn more about both the native and the invasive species that live in Lake Michigan. Have half the class research native species and the other half invasives. Follow up with a food web activity to see how these animals affect each other. Don't forget to include humans in the food web!
- After your visit, have the class look at a few species that are declining in the Great Lakes. Students can research how state and federal policies affect fish populations. You can discuss how policymakers use the IUCN Red List statuses of species to make management and conservation decisions.



John G. Shedd Aquarium  
1200 South Lake Shore Drive  
Chicago, Illinois 60605