STEM ACTIVITY OF THE WEEK

HUDSON RIVER PK

Graphing Fish Ecology Data 101

Theme: Hudson River Ecology; Native Species; Field Science; Species Sampling
Ages: 7-10 years old
Prep Time: 5 minutes
Activity Time: 20-30 minutes

Activity Summary:
Have you ever wondered what it would be like to be a marine scientist? What kind of research do marine scientists do and why is it important? In this lesson, students will be introduced to the Fish Survey, a 30-year research project that monitors the presence of different fish species in the lower Hudson River Estuary. Students will learn about four common Hudson River fish, then step into the role of a Hudson River Park marine scientist to look inside 'fish traps' to examine the catch of the day. The scientists-in-training will identify which fish they caught and tally the total number of each species. Using the data they collect, they will create simple bar graphs that show how many of each species they caught during their Fish Survey.

Objectives:
- Students will identify and learn about four native fish species in the Hudson River Estuary
- Students will identify one way that the Fish Survey provides information about the health of the Hudson River
- Students will create a bar graph and explain what their bar graph shows

Lesson Materials:
- Hudson River Fish Wish Cards
- Fish Trap Graphing worksheet
- Fish in Hudson River Park Poster
- Pencil
- Scissors

Lesson Procedure: What Lives in the Hudson River?

1 - Background- Fish Survey
Scientists at Hudson River Park are working on a research project called the **Fish Survey**. The Fish Survey was started more than 30 years ago by a group of scientists at The River Project. When they began this study back in 1986, a lot of people thought there was too much **pollution** in the Hudson River for animals to be able to live in it. The scientists decided to put **fish traps** in the river to see if that was true.

The marine scientists at The River Project were excited to discover that, in fact, many kinds of **fishes** and other animals were living in the Hudson River! They found fishes like flounder, blackfish, oyster toadfish, and even seahorses in their traps. The scientists decided to check the fish traps every week so they could learn

more about what time of year different fishes were in the Hudson River and what kind of **environment** the fishes need to survive.

The best part about this scientific research is that it actually helped the fishes! Once scientists told the public about all the different fishes they were finding, people realized they needed to do a better job of making the Hudson River a safe and clean environment for the animals that lived there. New York State passed laws to protect the Hudson River and created Hudson River Park to help people learn about and take care of the river. Today, the marine scientists at Hudson River Park continue the Fish Survey to make sure the Hudson River continues to be a good environment for many different kinds of fish.

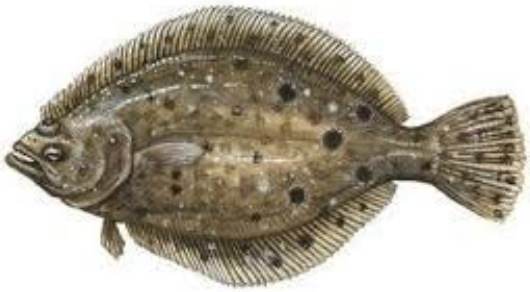
2 - Fish Species in Hudson River Park

In this lesson, you get to play the role of a marine scientist in Hudson River Park! You will look inside fish traps to find out what kinds of fishes are in the Hudson River today and count how many of each fish you caught.

Before you look inside the traps, you need to learn about the fishes you might catch. It is important to be able to **identify** the fishes you catch because you need to tell other people what animals live in the Hudson River. If you catch a lot of a certain kind of fish, that might mean that the Hudson River is a good environment for that fish. If you used to catch a lot of one type of fish in the river, then start to catch fewer and fewer of that fish, that could tell you that the environment is no longer good for the fish. As a marine scientist, you might try to figure out why that fish isn't as common in the Hudson River anymore and what you can do to help make the environment better for the fish.

We are going to focus on four fish that you might catch in Hudson River Park:

Summer Flounder



- Summer flounder are great at camouflage. They have flat bodies and can change color to blend in with the river bottom.
- Summer flounder are called "left-eyed" flatfish because both of their eyes are on the left side of their bodies. The right side of a flounder's body lays flat on the river bottom.
- Many people fish for summer flounder to eat. Summer flounder are sometimes called fluke.

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Blackfish

- Blackfish spend their whole lives in the Hudson River and live near the bottom around rocks or oyster reefs.
- They can grow up to 3 feet and weigh 30 pounds!
- Blackfish have sharp teeth that they use to eat mussels, shrimp, and other small animals.

Oyster toadfish

- They are called toadfish because they look like toads and croak like toads! Male oyster toadfish build nests and then croak to let female toadfish know that they can come lay their eggs there.
- Oyster toadfish have big mouths and very strong jaws that help them bite through the shells of animals like oysters and mud crabs.
- Oyster toadfish live at the bottom of the Hudson River year-round and blend in with rocks, mud, and oyster reefs so that their prey can't spot them.

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Lined Seahorse

- Lined seahorses spend the winter in the ocean and swim into the Hudson River in the summer to have babies.

- Female seahorses make eggs inside their bodies and then put the eggs into a pouch on a male seahorse's stomach. Male seahorses give birth to hundreds of babies at once.

- Line seahorses use their tails to grip onto seaweed and other objects to help them stay in one place, since they are weak swimmers.

3 - Hudson River Fish Wish Matching Game

To practice identifying Hudson River fishes, use the Hudson River Fish Wish Cards to play a matching game.

4 – Fish Trap Graphing

For this part of our lesson, students will use the Fish Trap Graphing worksheet to collect data from 'fish traps' and use the data to make a graph to display the data as an image. Use the graph you create to answer questions on page 4 of the Fish Trap Graphing Worksheet.