Student Guide Activity 9 Hudson River Fish Life Cycles and Habitat

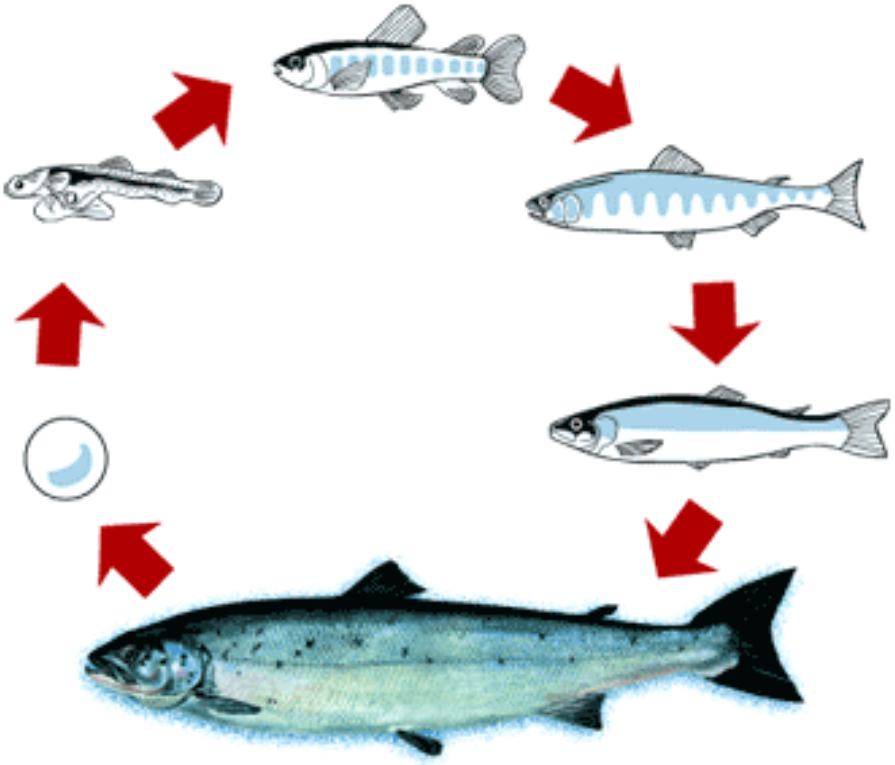
Introduction

In the previous activity, you looked at the constantly changing salinity in the Hudson River Estuary. Can fish adapt to such conditions? Are there some fish that simply cannot survive in such conditions? Do they need different environments at different stages of their lives? In this activity, you'll learn about several fish in the Estuary and River, and try to find answers to these questions.

Fish in the Hudson River

There are more than 210 species of fish living in the Hudson River, each having a wide variety of requirements. Some must be in cold water while others have a wide temperature tolerance. Some are bottom feeders while others feed in the water column between the surface and bottom. Some are native species while others have been introduced and have become invasive (they compete with local species). Almost all have specific requirements for fresh and /or salt water.

Below is a typical fish life cycle, from egg to hatchling (larva) to juvenile to adult and then to spawning (depositing eggs and sperm in water). Some fish need fresh river water for all these life stages while others require salt water in the Atlantic Ocean. Many need the brackish water (a mixture of fresh and salt water) found in the Estuary. Some fish need one type of water for certain life stages and a different type of water for others.



Source: http://www.megahowto.com/how-to-understand-the-development-of-the-fry

A. Research Project - Fish Habitat Requirements at Different Life Stages

Below is a list of thirteen fish commonly found in the Hudson River. You and your classmates will use the **Resources** listed below to learn about the life stages of these fish and which environments they need – river, estuary or ocean - for each stage. Use your Journal to describe your findings.

You may find that some sources give specific salinity ranges (15-20, for example) while others just say "river" or "estuary." Write down whichever is offered and use the chart below to help you enter the details in your report:

Salinity Chart

Type of water	Where found	Salinity
Fresh water	Rivers, lakes, ponds	0 - .5
Brackish	Estuary	.5 - 30
Salt	Ocean	30 - 50

Your teacher will help you select which fish to research so that the class will eventually have complete information on all the fish on the list.

American eel
American shad
Atlantic sturgeon
Blueback herring
Bluefish
Carp
Channel catfish
Mummichog
Shortnose sturgeon
Spottail shiner
Striped bass
White catfish
Yellow perch

Your class will decide how to present the results - as written or oral reports, as a PowerPoint presentation, in a group chart or in some other way that everyone agrees upon. When the chart is complete, decide whether each of the fishes are **anadromous** (migrating from salt water to fresh water to spawn) or **catadromous** (migrating from fresh water to salt water to spawn) or neither.

B. Which Fish Can Live Near the Hudson River George Washington Bridge site?

The Animation gave you a rapid look at the river's changing salinity but did not give precise data that would enable you to know which fish can survive in its waters. To figure that out, you'll examine the salinity graph of data collected during 2009 and try to match the fish requirements found above to that data.

Use the Graphing Tool to select **Hudson River salinity** as the parameter to be graphed, for the dates **July 17-24, 2009**. Then use the graph, together with the chart your class developed, to find which fish might be found in the waters near this site. Record the names and life cycle stages of those fish below the graph.

Resources

American Eel

http://209.191.9.69/Education/Lesson_Plans/Key/American_Eel.pdf
http://www.fws.gov/northeast/newsroom/facts.html
5-minute video
http://www.dec.ny.gov/dectv/dectv76.html

American Shad

http://www.dec.ny.gov/lands/66628.html
http://www.chesapeakebay.net/bfg_american_shad.aspx
http://www.fish.state.pa.us/anglerboater/2005/04julaug/play2cycle.pdf

Atlantic Sturgeon

http://en.wikipedia.org/wiki/Atlantic_sturgeon
http://www.dec.ny.gov/lands/5084.html
http://www.dec.ny.gov/animals/7025.html
http://www.dec.ny.gov/lands/66626.html

Blue Back Herring

http://www.dec.ny.gov/animals/7043.html
http://fishing.about.com/od/fishfacts/a/bluebackherring.htm
http://www.dnr.state.md.us/streams/pdfs/BBHFactSheet.pdf

Bluefish

http://www.edc.uri.edu/restoration/html/gallery/fish/blue.htm
http://en.wikipedia.org/wiki/Bluefish
http://portal.ncdenr.org/web/mf/bluefish

Carp

http://www.in.gov/dnr/files/COMMON_CARP.pdf
http://hudson-river-fishing.com/tag/hudson-river-carp
http://www.ehow.com/how_2077042_identify-freshwater-carp.html

Channel catfish

http://www.dec.ny.gov/animals/7046.html
http://www.dec.ny.gov/animals/52882.html
http://dnr.wi.gov/fish/pubs/catfish.pdf

Mummichog

http://pond.dnr.cornell.edu/nyfish/Cyprinodontidae/mummichog.html
http://www.ceoe.udel.edu/kiosk/mummichog.html
http://www.ehow.com/about_5336848_mummichog-life-cycle.html

Shortnose sturgeon

http://www.conservewildlifenj.org/species/fieldguide/view/Acipenser%20brevirostrum/
http://www.dec.ny.gov/animals/26012.html
http://en.wikipedia.org/wiki/Shortnose_sturgeon

Spottail Shiner

http://www.dec.ny.gov/animals/52663.html
http://www.oars3rivers.org/river/wildlife/fish/description/spottailshiner

Striped bass

http://www.dec.ny.gov/lands/66623.html
http://www.dec.ny.gov/animals/7018.html
http://www.arkansasstripers.com/striped-bass-life-cycle.htm

Three-spined stickleback

http://www.gma.org/fogm/Gasterosteus_aculeatus.htm
http://www.ehow.com/about_5344206_stickleback-life-cycle.html
http://en.wikipedia.org/wiki/Three-spined_stickleback

White catfish

http://www.dec.ny.gov/animals/7046.html
http://www.dnr.state.md.us/fisheries/fishfacts/whitecatfish.asp
http://www.catfishangling.com/white-catfish-facts/

Yellow Perch

http://www.ontariofishspecies.com/perch.html
http://www.utahoutdoors.com/pages/perchfacts.htm
http://www.gotmyfishon.com/washington/fish/yellow-perch#size