

FISH HAUNTS

Students study fish found in both river and lake environments and learn how they differ from one another. Students make and play a fishing game to learn fish habitats.

TEACHER NOTES FOR DISCUSSION

Have many pictures of fish available for students to use to compare different fish body shapes. The Department of Natural Resources (DNR) has charts with pictures of fish from the upper, middle, and lower Mississippi River and other areas. Field guides and fishing magazines will also be helpful for researching and creating the fish cards.

RELATED STANDARDS AND BENCHMARKS

Science

Standard 4. Knows about the diversity and unity that characterize life

- knows ways in which living things can be classified
- knows that animals and plants have a great variety of body plans and internal structures that serve specific functions for survival

Standard 15. Understands the nature of things

- uses simple equipment and tools to gather scientific data and extend the senses
- establishes relationships based on evidence and logical argument
- understands the nature of scientific explanations

Standard 16. Understands the scientific enterprise

- knows ways in which science and society influence one another

Geography

Standard 14. Understands how human actions modify the physical environment

- understands the ways in which human-induced changes in the physical environment in one place can cause changes in other places

Mathematics

Standard 4. Understands and applies basic and advanced properties of the concepts of measurement

Objectives

By the end of this activity, students should be able to:

- classify several species of fish found in lakes, ponds, and the Mississippi River.
- explain why some fish are better suited to lakes and others are better suited to rivers.

Time Considerations

Teacher preparation:
20 minutes

Student activity:
three to four classes

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UNDERSTAND YOUR MISSION

By the end of this activity, you will understand how and why the shape of a fish determines where it lives.

LEARN THE LINGO

anal fin	the fin on a fish located on the underside near the tail
bony fish	fish with a skeleton of bones rather than cartilage; most of the world's fish are bony fish; they have a well developed swim bladder, which allows them to control their buoyancy and remain stationary without expending a lot of energy
caudal fin	the tail fin of a fish
dorsal fin	the fins found on the topside of a fish
exothermic	cold blooded; the body temperature changes with the organism's surroundings
fins	thin, flat structures that extend from the fish's body that are used for swimming and maneuvering in the water
gills	the respiratory organ of fishes consisting of thin fleshy filaments filled with tiny capillaries; attached to the bone in the back part of a fish's mouth; gills collect oxygen from the water
pectoral fins	the fins located on the sides of the fish behind the gills
pelvic fin	the fin located on the underside near the head
pike family	freshwater fish that have round, elongated bodies, flattened heads, and duck-bill shaped jaws lined with large, bony teeth (e.g., northern pike, muskellunge, and grass pickerel)
primitive fish	closely approximating ancient ancestral fish species
scales	small, plate-like structures that form the external covering of most fish

Gather Your Supplies

- crayons
- field guides of fish
- fishing magazines
- index cards
- Internet (optional)
- library books
- magnet pieces with adhesive on one side (or use tape)
- sticks to make fishing poles
- string

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BACKGROUND INFORMATION

Did you know that some fish are better adapted to life in a river, while other fish are better adapted to life in a pond? It is fish shape that determines where that fish species will live.

Fish in the Mississippi

Of all the different species of fish living in the Mississippi River, there are seven known jawless fish. The rest are bony fish. There are twenty-two different families of bony fish in the Mississippi River. Some of these are primitive fish like the gar, paddlefish, sturgeon, and bowfish.

Designed for Water Travel

Fish are well designed for life in the water. They have elongated bodies that decrease water resistance and allow them to easily move through the water. The shape of some fish allow them to move easier in rapid moving water, while other fish prefer the slower waters of pools, lakes, and ponds.

Muscles

The shape of a fish is determined by the shape of its muscles. These muscles are concentrated in the back and tail regions on either side of the fish's body. The only other muscles are small ones in the mouth region. Fish with large body muscles are often longer in shape and are adapted to live in rapid flowing streams and rivers, but some long fish prefer to live in lakes. Fish with smaller body muscles are shorter in length and prefer slow moving water.

Fins

All fish have fins that help them navigate the rivers, streams, lakes, or ponds. The shape and size of fins depends on the habitat of the fish and their lifestyle. The fins on top are dorsal fins. The tail fin is the caudal fin. The fins on the sides, directly behind the gills are the pectoral fins. The fin located on the bottom and towards the back is the anal fin and the fin on the bottom to the front is the pelvic fin.

The shape of the fins also helps determine where fish are best adapted. Fish with only one or small dorsal fins usually are found in ponds or lakes, while fish with larger dorsal fins are able to use them to help maneuver in faster flowing rivers and streams.



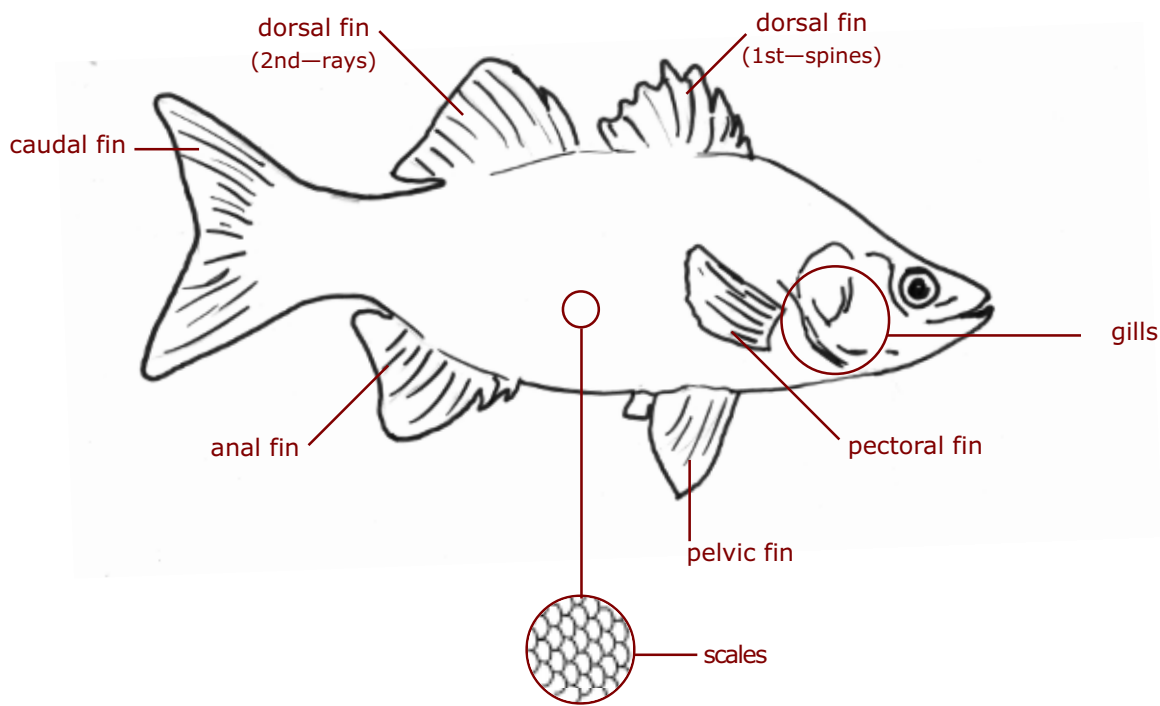
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CHART A COURSE FOR EXPLORATION

1. Choose ten fish from the handout. Write the names of each of the species on an index card (one name per card).
2. Use field guides, the Internet, magazines, and library books to find a picture and general information including: habitat (lake, pond, river), scientific name, average length, and diet of the fish.
3. Draw a picture of each fish on the back of its corresponding index card.
4. Put a paperclip on each index card. Attach a magnet to a string and then attach the string to a stick to create a fishing pole.
5. Put your fish together (picture side up) with the rest of the class or choose groups of 3-5 people. Take turns casting a fishing pole into the pile to catch a fish (other than your own).
6. For each catch, look at the body characteristics and decide if it is jawless or bony. If it is bony, is it a river fish or lake and pond fish? If you are right, you get to keep your fish. If you're teammates judge you to be wrong, you have to throw back your fish. Keep a tally card of right and wrong answers.
7. Turn in your fish cards, classification list, and tally card for credit.

Go Beyond

Research an extinct fish species. Analyze how fin design, body shape, and habitat contributed to its extinction. What other factors were involved? Why did some fish become extinct and others, like the sturgeon, survive?



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FISH	CLASSIFICATION	FAMILY	HABITAT
American brook lamprey	jawless/primitive	lamprey	large rivers
chestnut lamprey	jawless/primitive	lamprey	large rivers
mountain brook lamprey	jawless/primitive	lamprey	large rivers
Ohio lamprey	jawless/primitive	lamprey	large rivers
silver lamprey	jawless/primitive	lamprey	large rivers
southern brook lamprey	jawless/primitive	lamprey	large rivers
Alabama sturgeon	bony/primitive	sturgeons	large rivers
Atlantic sturgeon	bony/primitive	sturgeons	large rivers
lake sturgeon	bony/primitive	sturgeons	large rivers
pallid sturgeon	bony/primitive	sturgeons	large rivers
shovelnose sturgeon	bony/primitive	sturgeons	large rivers
paddlefish	bony/primitive	paddlefish	large rivers
alligator gar	bony/primitive	gars	large rivers
longnose gar	bony/primitive	gars	large rivers
shortnose gar	bony/primitive	gars	large rivers
spotted gar	bony/primitive	gars	large rivers
bowfin	bony/primitive	bowfins	large rivers
American eel	bony	freshwater eels	
Alabama shad	bony	herrings and shads	
gizzard shad	bony	herrings and shads	
shipjack herring	bony	herrings and shads	
threadfin shad	bony	herrings and shads	
goldeye	bony	mooneye	
mooneye	bony	mooneye	
brown trout	bony	salmon, trout, etc.	
grass or redfin pickerel	bony	pikes	
chain pickerel	bony	pikes	
grass carp	bony	minnows	ponds / lakes
goldfish	bony	minnows	
commom carp	bony	minnows	
golden shiner	bony	minnows	
rosyside dace	bony	minnows	
southern redbelly dace	bony	minnows	
flame chub	bony	minnows	
creek chub	bony	minnows	streams
Dixie chub	bony	minnows	
river chub	bony	minnows	
bluehead chub	bony	minnows	

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FISH	CLASSIFICATION	FAMILY	HABITAT	
central stoneroller	bony	minnows	streams/lakes	
largescale stoneroller	bony	minnows		
silver chub	bony	minnows		
suckermouth minnow	bony	minnows		
stargazing minnow	bony	minnows		
riffle minnow	bony	minnows		
blacknose dace	bony	minnows		
flathead chub	bony	minnows		
sicklefin chub	bony	minnows		
sturgeon chub	bony	minnows		
spotfin chub	bony	minnows		
speckled chub	bony	minnows		
Mississippi silvery minnow	bony	minnows		
cypress minnow	bony	minnows		
bigmouth buffalo	bony	suckers	slow moving rivers	
smallmouth buffalo	bony	suckers		
black buffalo	bony	suckers		
quillback	bony	suckers		
spotted sucker	bony	suckers		
creek chubsucker	bony	suckers		
lake chubsucker	bony	suckers		
sharpfin chubsucker	bony	suckers		
northern hog sucker	bony	suckers		
Alabama hog sucker	bony	suckers		
black redhorse	bony	suckers		
river redhorse	bony	suckers		
shorthorse redhorse	bony	suckers		
blacktail redhorse	bony	suckers		
golden redhorse	bony	suckers	rivers/lakes/ ponds	
channel catfish	bony	bullhead catfishes		
blue catfish	bony	bullhead catfishes		
white catfish	bony	bullhead catfishes		
yellow bullhead	bony	bullhead catfishes		
black bullhead	bony	bullhead catfishes		anywhere
brown bullhead	bony	bullhead catfishes		
flathead catfish	bony	bullhead catfishes		
stonecat	bony	bullhead catfishes		
tadpole madtom	bony	bullhead catfishes		

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FISH	CLASSIFICATION	FAMILY	HABITAT
speckled madtom	bony	bullhead catfishes	
black madtom	bony	bullhead catfishes	
brown madtom	bony	bullhead catfishes	
freckled madtom	bony	bullhead catfishes	
marginated madtom	bony	bullhead catfishes	
least madtom	bony	bullhead catfishes	
elegant madtom	bony	bullhead catfishes	
northern madtom	bony	bullhead catfishes	
frecklebelly madtom	bony	bullhead catfishes	
brindled madtom	bony	bullhead catfishes	
pirate perch	bony	pirate perch	
broadstripe topminnow	bony	topminnows and killifishes	
northern studfish	bony	topminnows and killifishes	
golden topminnow	bony	topminnows and killifishes	
blackspotted topminnow	bony	topminnows and killifishes	
southern starhead topminnow	bony	topminnows and killifishes	
rainwater killifish	bony	topminnows and killifishes	
pygmy killifish	bony	topminnows and killifishes	
sailfin molly	bony	livebearers	
mosquitofish	bony	livebearers	
least killifish	bony	livebearers	
brook silverside	bony	silversides	
inland silverside	bony	silversides	
banded sculpin	bony	sculpins	
mottled sculpin	bony	sculpins	
white bass	bony	temperate bass	
yellow bass	bony	temperate bass	
flier	bony	sunfishes and bass	
black crappie	bony	sunfishes and bass	only clear lakes/rivers/ streams
white crappie	bony	sunfishes and bass	large rivers/lakes
shadow bass	bony	sunfishes and bass	
rock bass	bony	sunfishes and bass	
bluespotted sunfish	bony	sunfishes and bass	
largemouth bass	bony	sunfishes and bass	lakes/ponds/quiet rivers
spotted bass	bony	sunfishes and bass	
smallmouth bass	bony	sunfishes and bass	rivers/streams/lakes

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Mississippi River Fish Species List

FISH	CLASSIFICATION	FAMILY	HABITAT
warmouth	bony	sunfishes and bass	lakes and ponds
bantam sunfish	bony	sunfishes and bass	
green sunfish	bony	sunfishes and bass	
spotted sunfish	bony	sunfishes and bass	
bluegill	bony	sunfishes and bass	
redeer sunfish	bony	sunfishes and bass	
longear sunfish	bony	sunfishes and bass	
dollar sunfish	bony	sunfishes and bass	
orangespotted sunfish	bony	sunfishes and bass	
walleye	bony	darters, perches, walleye, and sauger	large lakes/ rivers
sauger	bony	darters, perches, walleye, and sauger	
gilt darter	bony	darters, perches, walleye, and sauger	
blackside darter	bony	darters, perches, walleye, and sauger	
river darter	bony	darters, perches, walleye, and sauger	
swamp darter	bony	darters, perches, walleye, and sauger	
slough darter	bony	darters, perches, walleye, and sauger	
gulf darter	bony	darters, perches, walleye, and sauger	
mud darter	bony	darters, perches, walleye, and sauger	
logperch	bony	darters, perches, walleye, and sauger	
oscar	bony	cichlids	
freshwater drum	bony	drums	

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Design your own fish. Describe its fin design, body shape, and its habitat.

	EXPERT	PROFICIENT	NOVICE
GAME	<input type="checkbox"/> correctly classified more than 75% of the fish caught by type and habitat	<input type="checkbox"/> correctly classified at least 75% of the fish caught by type and habitat	<input type="checkbox"/> correctly classified less than 75% of the fish caught by type and habitat
FISH DESIGN	<input type="checkbox"/> provides realistic information about the needs of the fish as well as being neatly drawn and accurately labeled	<input type="checkbox"/> neatly drawn and accurately labeled	<input type="checkbox"/> lacks either correct labels or neatness
EXPLANATION OF FIN DESIGN	<input type="checkbox"/> provides comparisons of the fins of the designed fish to other fish <input type="checkbox"/> explains how each fin is used	<input type="checkbox"/> explains the use of each fin and how it is beneficial in this habitat	<input type="checkbox"/> does not explain how the fins would be beneficial to the fish in this habitat
EXPLANATION OF FISH SHAPE	<input type="checkbox"/> compares the shape of the designed fish to other fish and includes information about the shape of the fish and the location of muscles	<input type="checkbox"/> explains how the shape of the fish relates to its habitat	<input type="checkbox"/> includes information on the benefits on the location and size of the muscles
EXPLANATION OF HABITAT	<input type="checkbox"/> relates the needs of the fish to the unique characteristics of the habitat	<input type="checkbox"/> explains the unique characteristics of the habitat	<input type="checkbox"/> describes the habitat in general

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