



All About

Freshwater

Fish



What is a Fish?

Fish are water dwelling, coldblooded creatures in the animal kingdom. Freshwater fish live in rivers, lakes, streams, ponds, and swamps. They do not live in saltwater. **Three characteristics** define a fish:



1. All fish have _____, which allow a fish to maneuver through the water.



2. All fish have _____, which they use to obtain oxygen from the water.



3. All fish are _____; they have a backbone.



Do all fish have scales? The answer is **no**.

Some fish, like the catfish, do not have scales. They have skin.



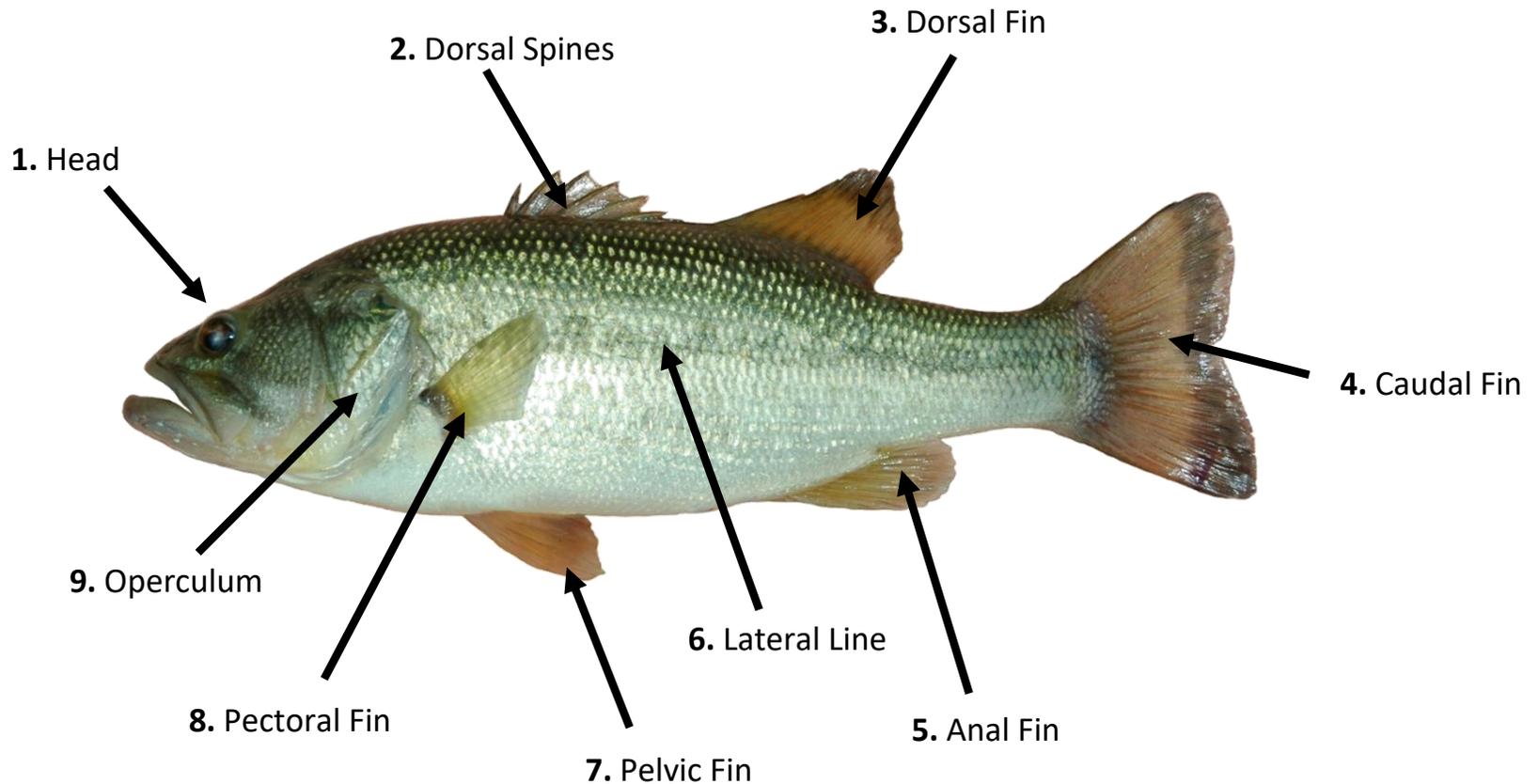
Answers:

1. fins

2. gills

3. vertebrates

Exterior Parts of a Fish:



1. A fish's head contains two eyes, two holes that resemble nostrils, and one mouth.

2. Dorsal spines are part of the dorsal fin.

3. The dorsal fin is the top fin, which keeps a fish upright in the water. The dorsal fin is sometimes separated into two fins on a fish's back.

4. The tail fin is called the caudal fin. This fin propels a fish through the water.

5. The anal fin, like the dorsal fin, also keeps a fish steady in the water.

6. The lateral line is covered in sensory nerves that allow a fish to "feel" vibrations in the water. These "nerves" are located under the scales or skin.

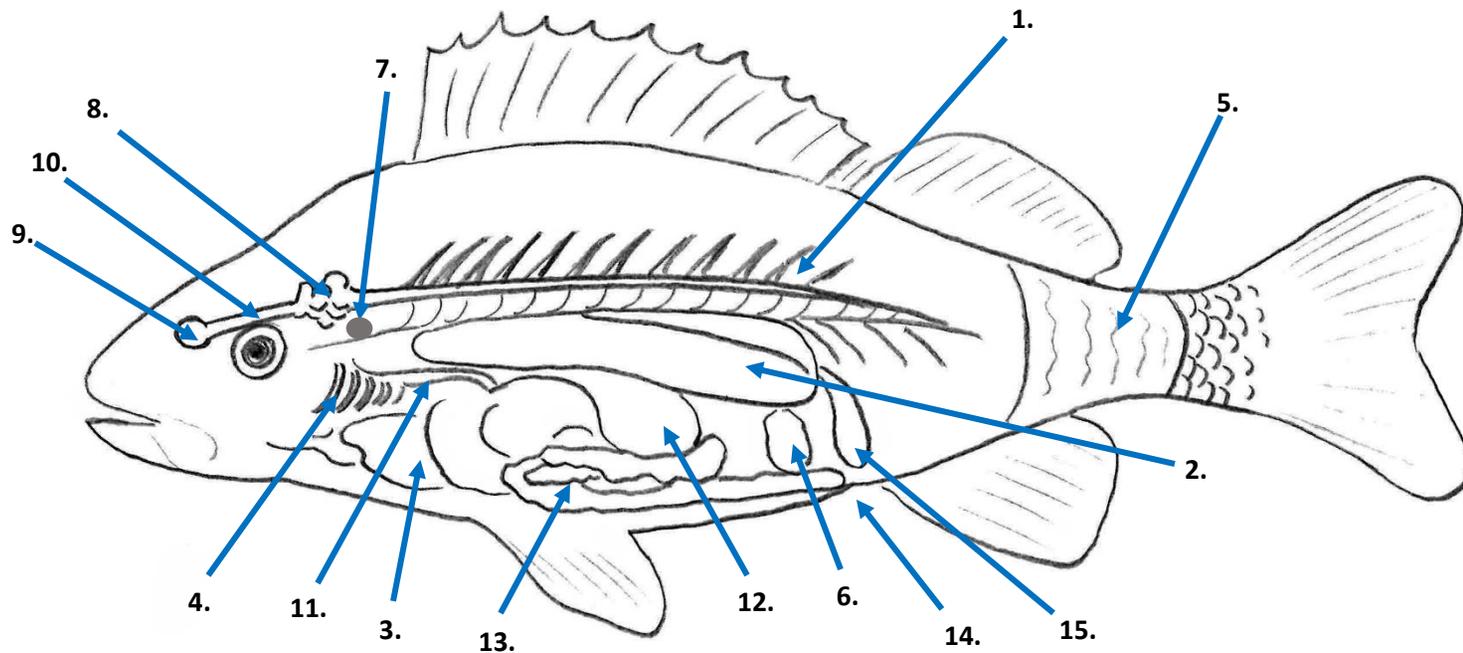
7. The pelvic fins on each side of the fish act like brakes when a fish needs to slow down.

8. The pectoral fins on each side of a fish allow a fish to move up, down, forward, and backward in the water.

9. The operculum covers the gills.

Interior Parts of a Fish:

Use the information below to find out more!



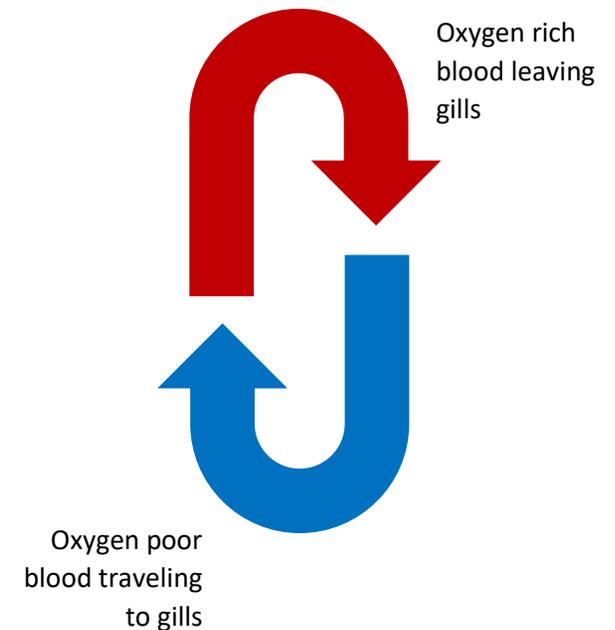
1. Fish, like all vertebrates, have a skeleton for support, which includes the **spine** (backbone).
2. This "**gas bladder**" (or swim bladder) acts like a balloon. If it fills with air, the fish will rise in the water. If air is released, the fish will sink.
3. The **heart** pumps blood throughout the body, including to and from the gills.
4. **Gills** allow fish to take oxygen from the water.
5. **Muscles** are connected to the skeleton and allow the fish to move.
6. **Eggs** are found in female fish. Fish spawn (release their eggs) in the spring.
7. The **otolith** is a small bone in the fish's head. You will learn more about this later!
8. Like humans, fish also have a **brain**.
9. The **olfactory bulb** receives information about smells and sends it to the brain. **Remember! Fish have small holes that look like nostrils. Sensory pads located here allow fish to identify smells!**
10. The **olfactory nerve** sends messages to the brain from the olfactory bulb.
11. The **esophagus** moves food to the stomach.
12. The **stomach** starts food digestion; the stomach is connected to the intestines where more digestion takes place.
13. The **intestines** lead to the anus where solid wastes are removed from the body.
14. The **anus** is the wastes removal site.
15. The **urinary bladder** collects liquid wastes from the body.

How Do Fish Breathe?

Obviously, fish cannot live out of water. They do not have lungs like humans.

Gills allow fish to take oxygen from the water. So, how do gills work?

Water with oxygen passes through the mouth and over the gills, which are basically red tissue filled with blood vessels. These blood vessels are located very close to the tissue surface. Oxygen passes through the vessels and into the fish's blood stream. From there the heart pumps oxygen rich blood throughout the body and takes blood low in oxygen back to the gills.



How does oxygen get into the water? Plants living in or under the water are known as **aquatic plants**. Oxygen is released by these plants into the water through the process of **photosynthesis**. Oxygen can also dissolve into the water from the atmosphere above.

How Do Fish Swim?

Fins come in all sizes and shapes. For example, fish can have different types of tail fins. The most common are the rounded tail and the forked tail.

1. The round tail is good for fast swimming, but not for very long.

2. The forked tail allows for faster swimming and for longer times.

3. Some fish tails are shaped between a rounded and forked tail.

4. Other fish have tails shaped like the sturgeon. A sturgeon's tail is larger on top than bottom. This is not good for fast swimming, but it allows the fish to easily swim or "hover" along the bottom of a lake or river.



Mouths:

Subterminal mouths are located under the head and usually are “tubed” or “sucker-like” in appearance. This mouth allows fish to feed on the bottom of a lake or river.

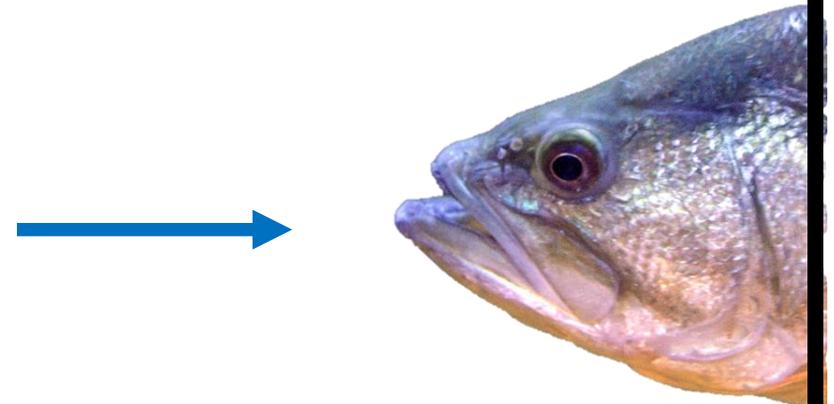
Examples of freshwater fish with subterminal mouths are sturgeon, river carpsucker, and smallmouth buffalo.

Terminal mouths are good for snapping and grabbing prey. Fish, like the gar species, have terminal mouths.

Upturned mouths are just as they are described. These mouths are turned upwards. Fish with this mouth usually chase after their food with mouth open to “gulp” in their prey.

Examples of fish with upturned mouths are largemouth bass and crappie.

Some fish have **jawless mouths** like the parasitic lamprey. These fish have a circular mouth lined with rows of teeth. They use these teeth to attach to host fish and suck fluids from them.



What Do Fish Eat?

Carnivores – Feed on meat (smaller fish or large invertebrates)

Herbivores – Feed mainly on plants

Omnivores – Feed on both plants and animals

Planktivores – Feed primarily on plankton, microscopic plants and animals in the water

Detritivores – Feed on decaying matter that remains on the floor of a water body



Colors and Patterns:

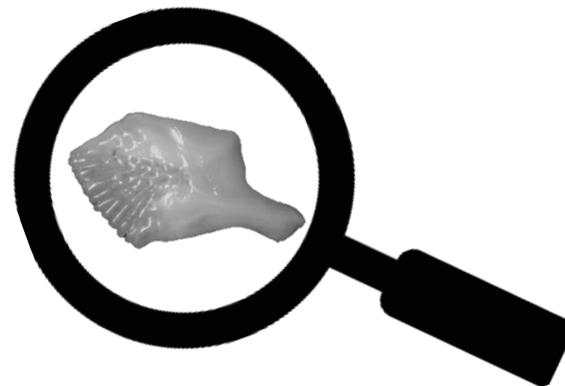
Fish are different, sizes, shapes, and colors. Some fish like the spotted gar are covered in a pattern that allows for good camouflage when hiding from predators or when “lying in wait” for prey.



Did you know?



Different fish have different types of scales. Gar are covered in very hard scales that act like armor. These hard, thick scales are called “ganoid” scales.



Body Sizes and Shapes:

Spear shaped



Pan shaped



Streamlined



Eel shaped



Small



Large



Flattened



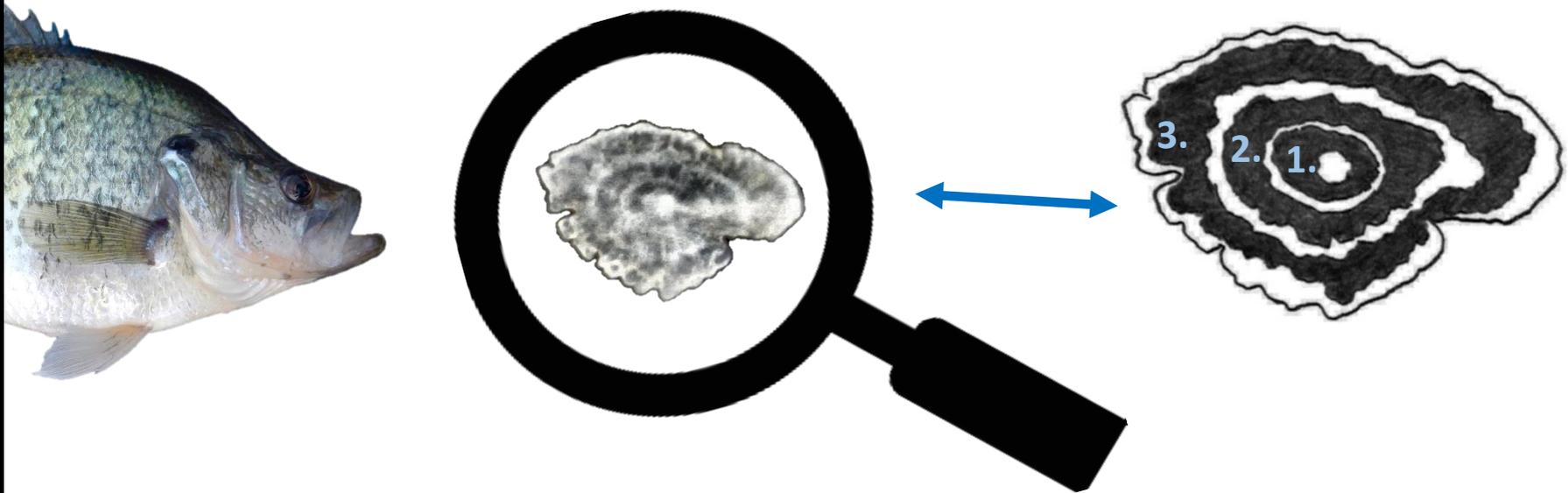
Shovel-nosed



How Do You Determine the Age of a Fish?

All fish with a bony skeleton have small, round bones in their head known as “ear stones” or “otoliths.” As fish grow, new layers are added to this bone. Fish growth slows in the colder parts of the year, so growth rings appear very close together to form one dark ring every year. Biologists take these bones and count the rings like a tree.

Fish scales also form these rings in the same way, but remember, not all fish have scales!



Slime Layer:

Fish have a layer of mucous slime covering them. This slime protects the fish from parasites and bacteria, keeping the fish healthy.

Fish Development:



Fish hatch from eggs. They develop and change as they grow.

In the wild, fish lay eggs in depressions on the bottom of a water body or attach them to underwater plants.

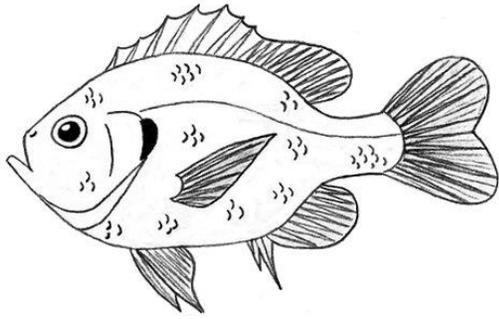
Fish can lay anywhere from a few hundred to a few thousand eggs!

Some animals have one or two young, and take care of those young until they can survive on their own. Other animals, like fish, have many young but do not provide long-term care. As soon as young fish are feeding and swimming on their own, the parents no longer care for them.

At the Bob Tyler Fish Hatchery, fish eggs are collected and kept inside the hatchery. Newly hatched fish are called fry and are very small.

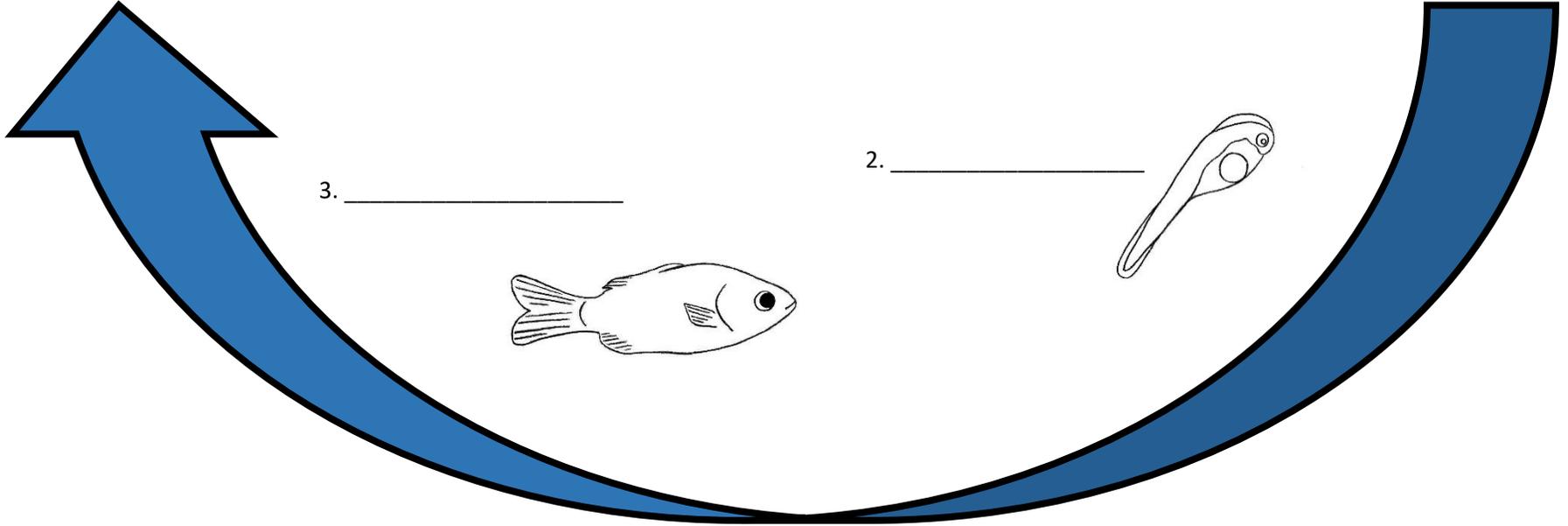
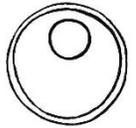
The fry grow larger in hatchery ponds, developing their digestive system and feeding on plankton. These larger fish are called fingerlings because they are the size of your finger. These fingerlings are released into the lakes where they will grow into adult fish.

Label the Fish Stages Below:



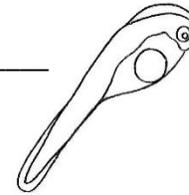
4. _____

1. _____



3. _____

2. _____



4. adult

3. fingerling

2. fry

1. egg

Answers:

Know the Answer?

See if you can match the right answer!



1. Some fish are small; others are _____.
2. Protective covering on scales/skin _____.
3. Some fish have patterns for _____.
4. Fish that feed on plants _____.
5. Acts like a balloon, allowing a fish to rise in the water _____.

- A. Camouflage
- B. Large
- C. Herbivores
- D. Slime
- E. Gas Bladder

Answers:

1. B

2. D

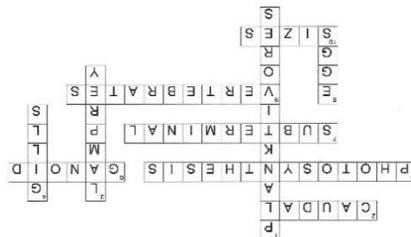
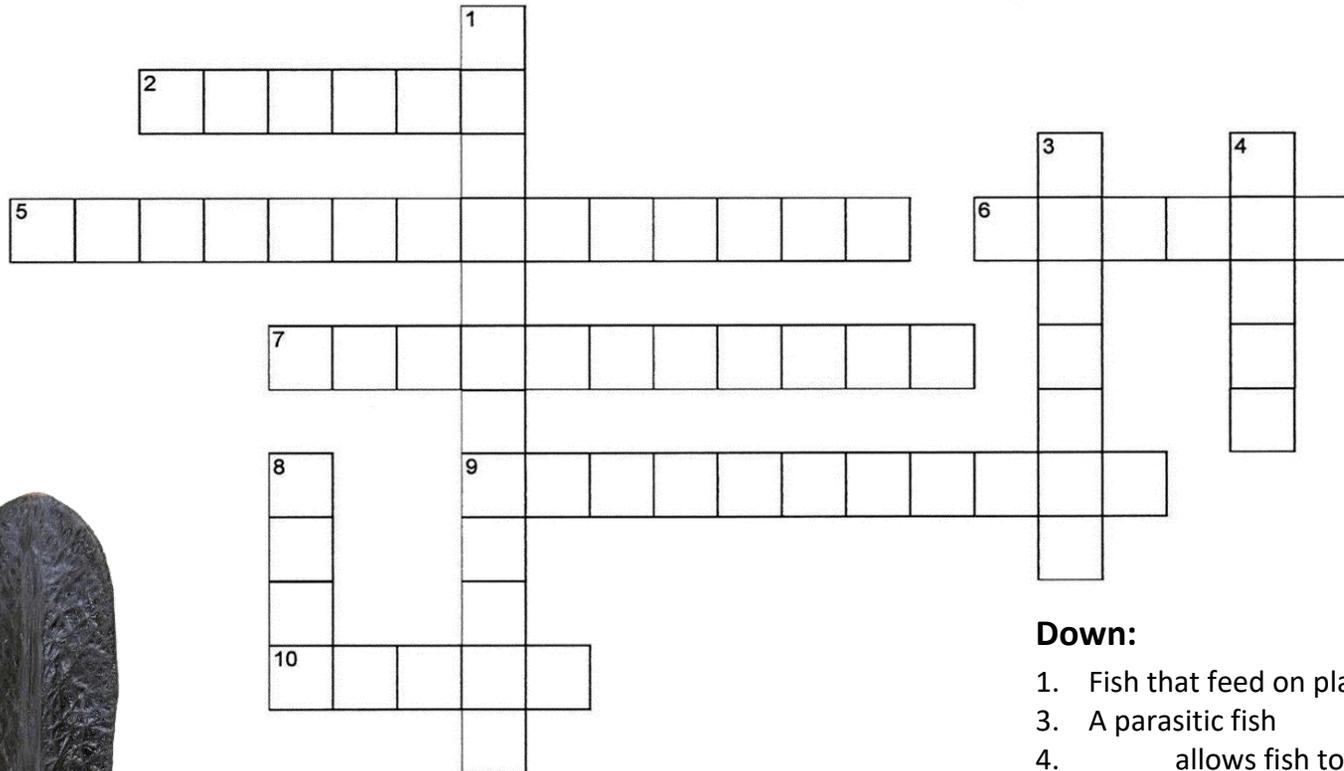
3. A

4. C

5. E

Test Your Knowledge!

Do your best to solve the crossword puzzle below. (Hint: All the answers are in this workbook!)



Down:

1. Fish that feed on plankton
3. A parasitic fish
4. _____ allows fish to take oxygen from the water.
8. Fish hatch from _____.

Across:

2. Another name for the tail fin is the _____ fin.
5. Plants release oxygen through the process of _____.
6. Hard, armor-like scales.
7. A "sucker-like" mouth
9. All fish are _____; they have a skeleton.
10. Fish come in all shapes and _____.

Learn more about freshwater fishing in Mississippi at www.mdwfp.com.

Visitor Education Center

BOB TYLER FISH HATCHERY

