

The background of the cover is a vibrant underwater scene. In the upper left, a large grey shark swims towards the right. In the upper right, a blue stingray glides. The middle ground is filled with various fish, including a school of silver fish and a single blue fish. The bottom of the image shows a diverse coral reef with pink, orange, and brown corals, and many small, colorful fish swimming around it.

# Fishes

**A Compare and Contrast Book  
by Marie Fargo**

# Fishes

Fishes live all over the world in both fresh and saltwater and in tropical, temperate, or polar habitats. Some fishes have bones while others have cartilage skeletons. Sizes vary from tiny goldfish to huge great white sharks, with all kinds of sizes in between. From flat bottom-dwelling to torpedo fast-swimming, their body shapes match their needs. Some fishes, like flounders and seahorses, even have body shapes to camouflage themselves. Colors can range from grays and browns to bright reds, yellows, or blues. Explore the similarities and differences in this latest addition to the Compare and Contrast Series!

Arbordale Publishing offers so much more than a picture book. We open the door for children to explore the facts behind a story they love.

The *For Creative Minds* includes

- Can You Find the Fish?
- Design a Fish
- Match the Fish to its Habitat

Thanks to Mary Gunther, former zookeeper and current instructor at Salisbury University for verifying the information in this book.

Arbordale's interactive ebooks read aloud in both English and Spanish with word-highlighting and adjustable audio speed. Available for purchase online.

**Marie Fargo** is a naturalist and environmental educator who is happiest when she is on, in, or near a lake. She loves animals and has worked with them in a variety of settings, including nature centers, a residential environmental center, and an aquarium. She is currently the Climate Change Instructional Resources Coordinator at Climate Generation. Marie lives in Minnesota, where she enjoys birding, canoeing, and cross-country skiing with her partner, Dylan, and hiking with her dog, Merlin.



Marie Fargo

## A note for parents and caregivers

Helping young children develop critical thinking skills is a gift they'll have for life. The book you are holding can help you to help them do just that.

Before reading the book, ask the child(ren) how they think these animals are alike or different. That helps you to understand what they already know or if they have any misconceptions.

After reading, go back through the book together looking at photos to find and discuss things. Ask verbal children to describe or explain what they see. Even young, non-verbal children can find and point to things. For example, have children find or point to:

- fishes of similar (or different) shapes
- bright or similar colors
- scales, gills, fins, unique tail shapes
- stripes or spots
- light bellies and dark backs (countershading)

Look at some of the sizes mentioned and measure them out. Have child(ren) find something of a similar size or weight.

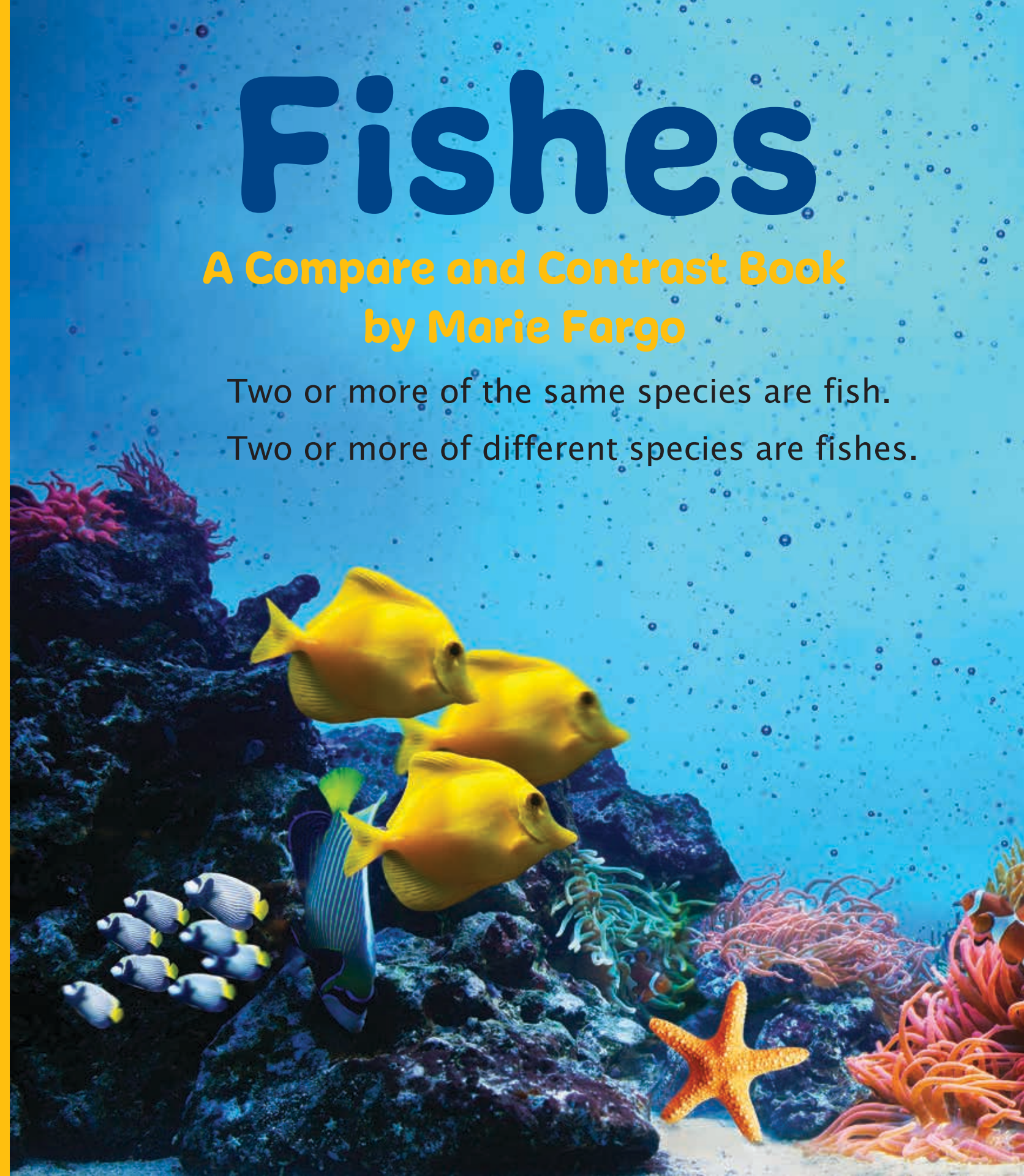
Ask children to describe one new thing they learned or found most interesting.

Do the "For Creative Minds" activities in the back of the book with them.

# Fishes

## A Compare and Contrast Book by Marie Fargo

Two or more of the same species are fish.  
Two or more of different species are fishes.



goldfish



great white shark

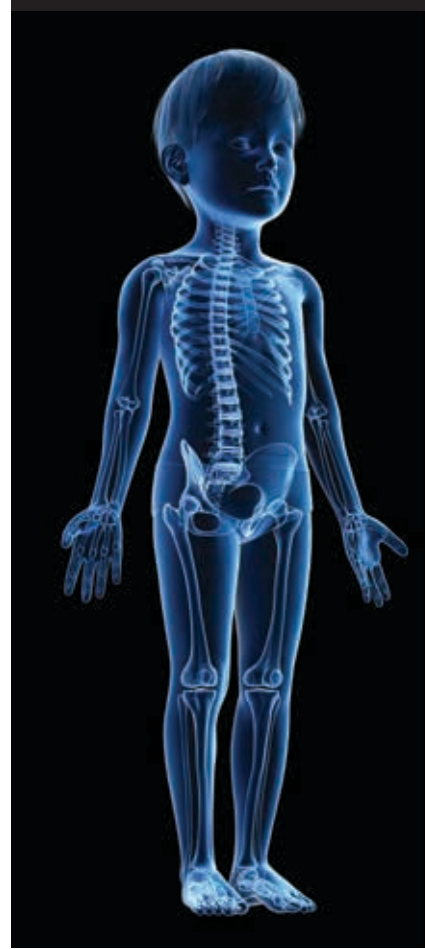


Fishes come in all different shapes, sizes, and colors;  
but they all share certain things in common . . .

Fishes are vertebrates. They have backbones, or spines, just like humans.

The spine connects a fish's head to its tail. We can see the fishes' spines in these images.

Many fishes have skeletons made with bones. Some, like sharks and rays, have skeletons made of cartilage. You have a spine made of bone, but your ears and the tip of your nose are made of cartilage.



x-ray of a fish



skeleton



Indian glassy perch



Fishes are cold-blooded (ectothermic). A fish's body temperature depends on the temperature of the water around it. They move slowly when the water is cold and can move more quickly when the water is warm.

northern pike



red carp



black-banded sergeant majors, Pacific double-saddled butterfly fish, and stingrays



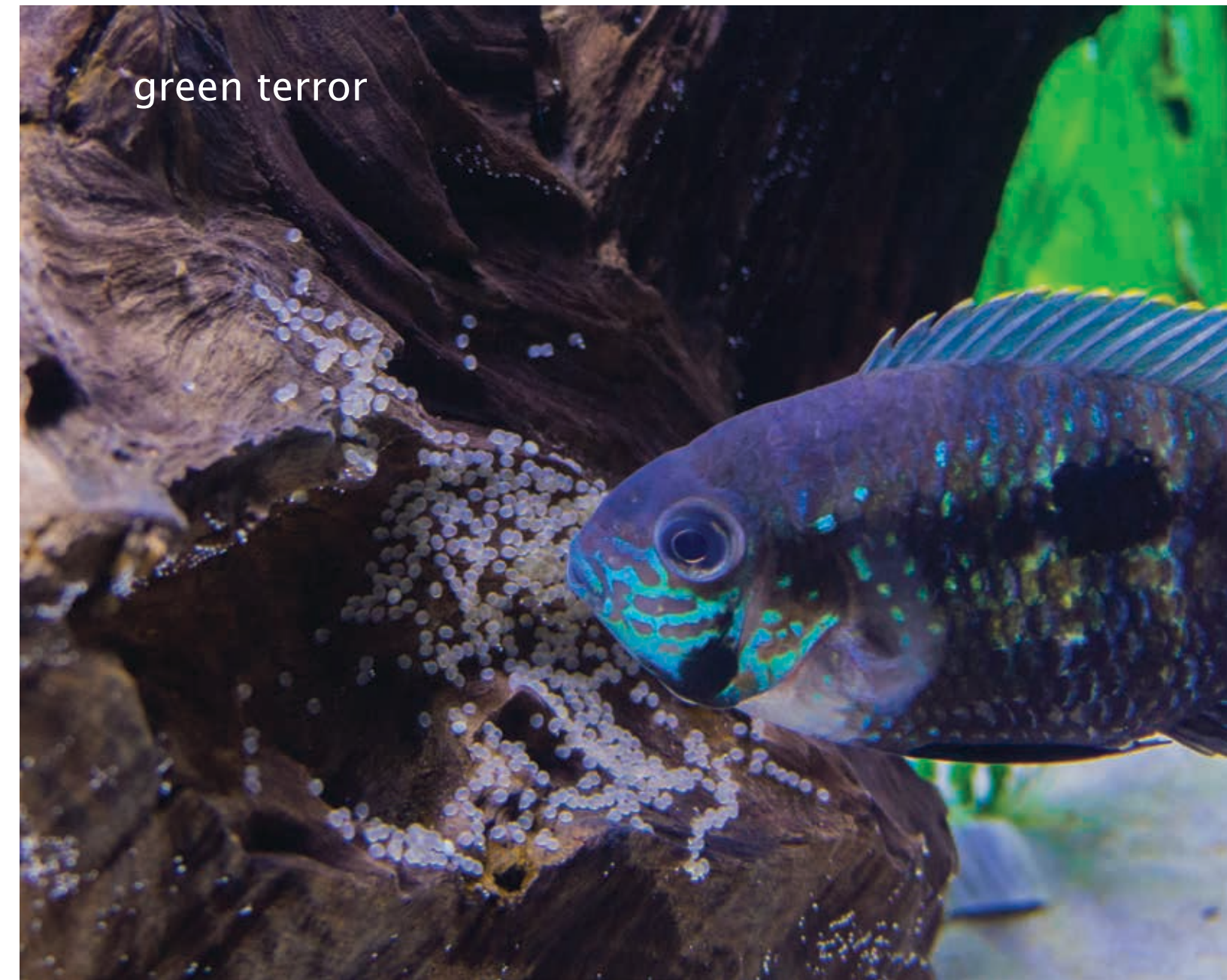


sockeye salmon

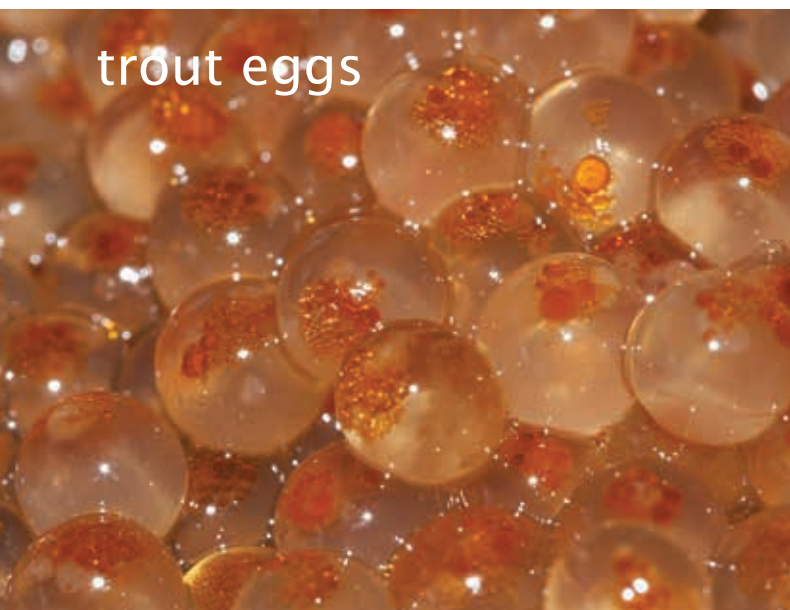
Most fishes lay soft, jelly-like eggs.

Sockeye salmon lay eggs in riverbeds. Their young live on their own once they hatch.

Green terror fish protect their eggs and watch over the young after they hatch.



green terror



trout eggs



clownfish eggs

## For Creative Minds

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### Can You Find the Fish?

Many animals, including fishes, use camouflage to hide from predators or so they can catch prey. Find the hidden fish and learn more about the type of camouflage it uses.

Concealing Coloration: An animal is the same color as its surroundings or habitat.  
*Can you find the flounder?*



Disruptive Coloration: An animal has spots or stripes to make it hard to see the exact outline of their body.  
*Can you spot the razorfish hidden amongst the coral?*



Disguise: An animal's body shape or texture looks like its background or habitat; for example, a tail may be shaped like a plant leaf.  
*Can you spot the Pacific Spotted Scorpionfish?*



Mimicry: A harmless animal tries to look like a more dangerous animal, or a predator tries to pretend that it is prey.  
*Can you tell which of these pictures is the frogfish and which is the toxic, bad-tasting flatworm it's trying to mimic?*



Mimicry answer: the frogfish is on the left

## Design a Fish

Fish come in many different body shapes and sizes. Each body type helps a fish survive in its habitat in different ways.

Look at the wide variety of fish body shapes.

Create your own fish by drawing, painting, or sculpting.

Identify your fish's adaptations and design its ideal habitat.

How does your fish's body shape fit its habitat?

What does it eat and how does it get its food?

How does it protect itself from becoming another animal's prey?



bluespine unicorn



caballito de mar



raya con púa



largemouth bass



hammerhead shark



shaggy frogfish



longhorn cowfish



striped marlin



brook trout

## Match the Fish to its Habitat

**Habitat**—where an animal lives. Habitats have food, water, shelter, and space for animals.

**Adaptation**—what helps an animal live in its habitat. Adaptations can be parts of an animal's body, like tails or claws or scales, or what an animal does, like swimming, digging, or hunting at night.

**Freshwater**—non-salty water found in lakes, rivers, streams, ponds, or wetlands.

**Saltwater**—ocean and sea water with salt.

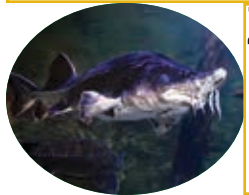
**Brackish water**—water that is a mix of salty and fresh, found where freshwater meets the ocean or sea.

Fishes have different adaptations depending on the type of habitat they live in. Can you match the fishes to their habitats described on the next page?

1 Alligator gars have air bladders to help them stay in one spot without sinking or floating and to help breathe in low-oxygen waters. They prefer freshwater but can survive brackish water.



2 Beluga sturgeon live in cold freshwater for part of their lives and cold saltwater for other parts. They use whiskers near their mouths called barbels to find food.



3 Clownfish need warm saltwater. They live in and around stinging anemones to protect themselves from predators.



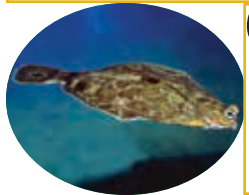
4 Adult electric eels cannot see so they use electrical impulses to navigate in dark, muddy waters—similar to bats using echolocation. The impulses also stun prey and fight off predators. They get oxygen from surface air instead of using gills.



5 Electric yellow cichlids live in warm freshwater. They eat small insects. Other cichlids that live in the lake eat algae, plants, or other fish.



6 Turbots live in cold salt or brackish waters. They are flat-bottomed and skim along the sand.



- A. Amazon River, South America
  - Muddy freshwater is dark and hard to see through.
  - Water is low in oxygen, so it can be hard to breathe underwater.
- B. Baltic Sea, Europe
  - Cold saltwater with a variety of habitats, including sandy seafloor.
  - Multiple rivers flow into the sea, so the water can be brackish (mix of saltwater and freshwater).
- C. Everglades Wetlands, North America
  - Warm, mostly freshwater, though close to the ocean it may be brackish (a mix of saltwater and freshwater).
  - Little oxygen in the slow-moving water, so fish must adapt to breathing differently.
- D. Great Barrier Reef, Australia
  - A large saltwater reef in the Pacific Ocean home to colorful coral, anemones, and many species of fish.
  - Predators like sharks and barracuda live here, so prey fish need to hide, camouflage, or protect themselves in other ways.
- E. Caspian Sea, Eurasia
  - This cold sea is mostly freshwater where rivers such as the Volga flow into it, but it gets saltier further from the rivers.
  - The sea gets 3,300 feet (1005 m) deep, so much of the water is dark and hard to see.
- F. Lake Nyasa/Lake Malawi, Africa
  - One of the most diverse freshwater lakes in the world, it is home to hundreds of species of the same kind of fish.
  - Fish have adapted to be different colors and eat different foods to survive in the same habitat.

Answers: 1C alligator gar-Everglades; 2E beluga sturgeon-Caspian Sea; 3D clownfish-Great Barrier Reef; 4A electric eel-Amazon; 5F electric yellow cichlid-Lake Nyasa/Lake Malawi; 6B turbot-Baltic Sea



To my parents, Tom and Wanda, for sharing the magic of books and nature with me from the beginning; and Thanks to Mary Gunther, former zookeeper and current instructor at Salisbury University for verifying the information in this book.

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