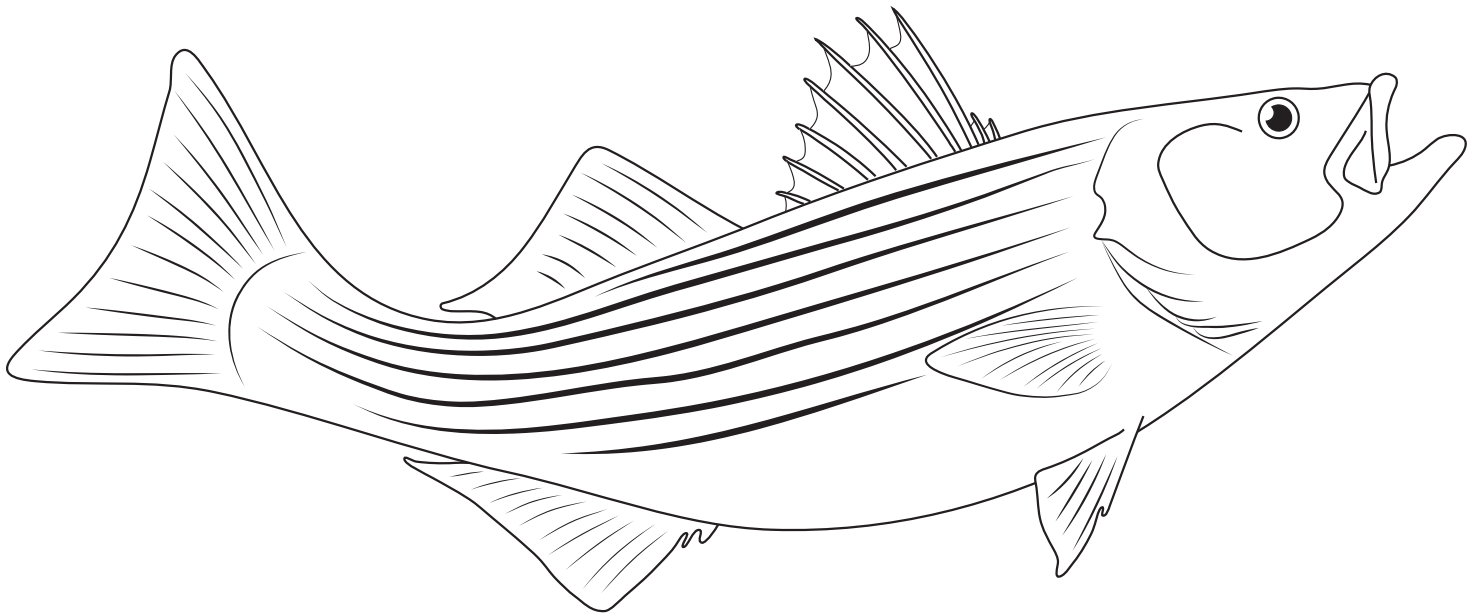


# COLOR AND LEARN: ***SALTWATER FISH OF MASSACHUSETTS!***



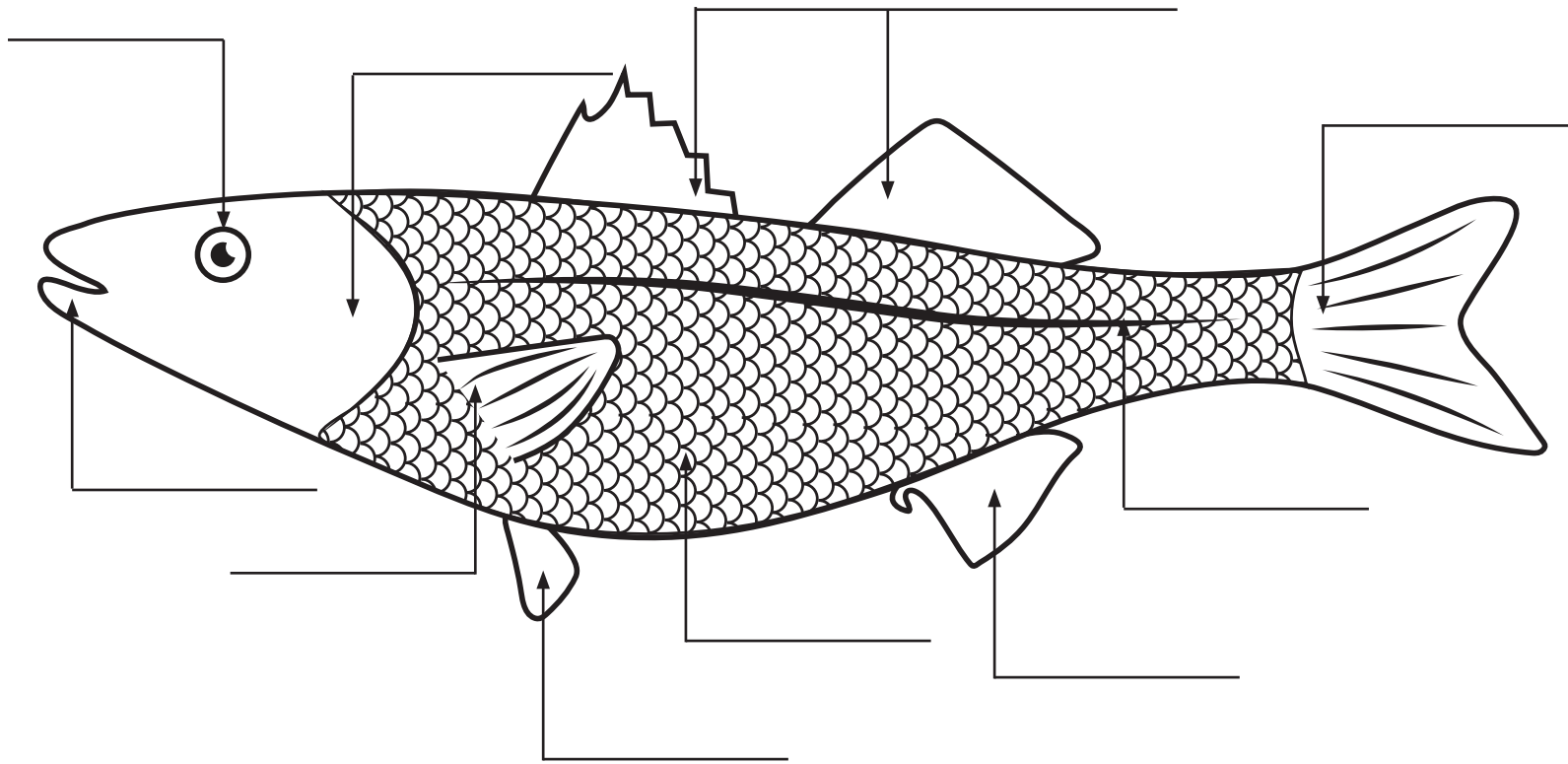
This book belongs to: \_\_\_\_\_





# WHAT IS A FISH?

Fish are animals that live in water, have fins, and use gills for breathing. They are cold-blooded (or “**ectothermic**”) and have bones inside of their body. “Bony fishes” have skeletons made of hard bones. Other fish, like sharks and rays, have skeletons made of cartilage.



*Can you label the different parts of a fish?*

**dorsal fins**

**scales**

**operculum**

*(gill cover)*

**caudal (tail) fin**

**anal fin**

**mouth**

**lateral line**

**pelvic fin**

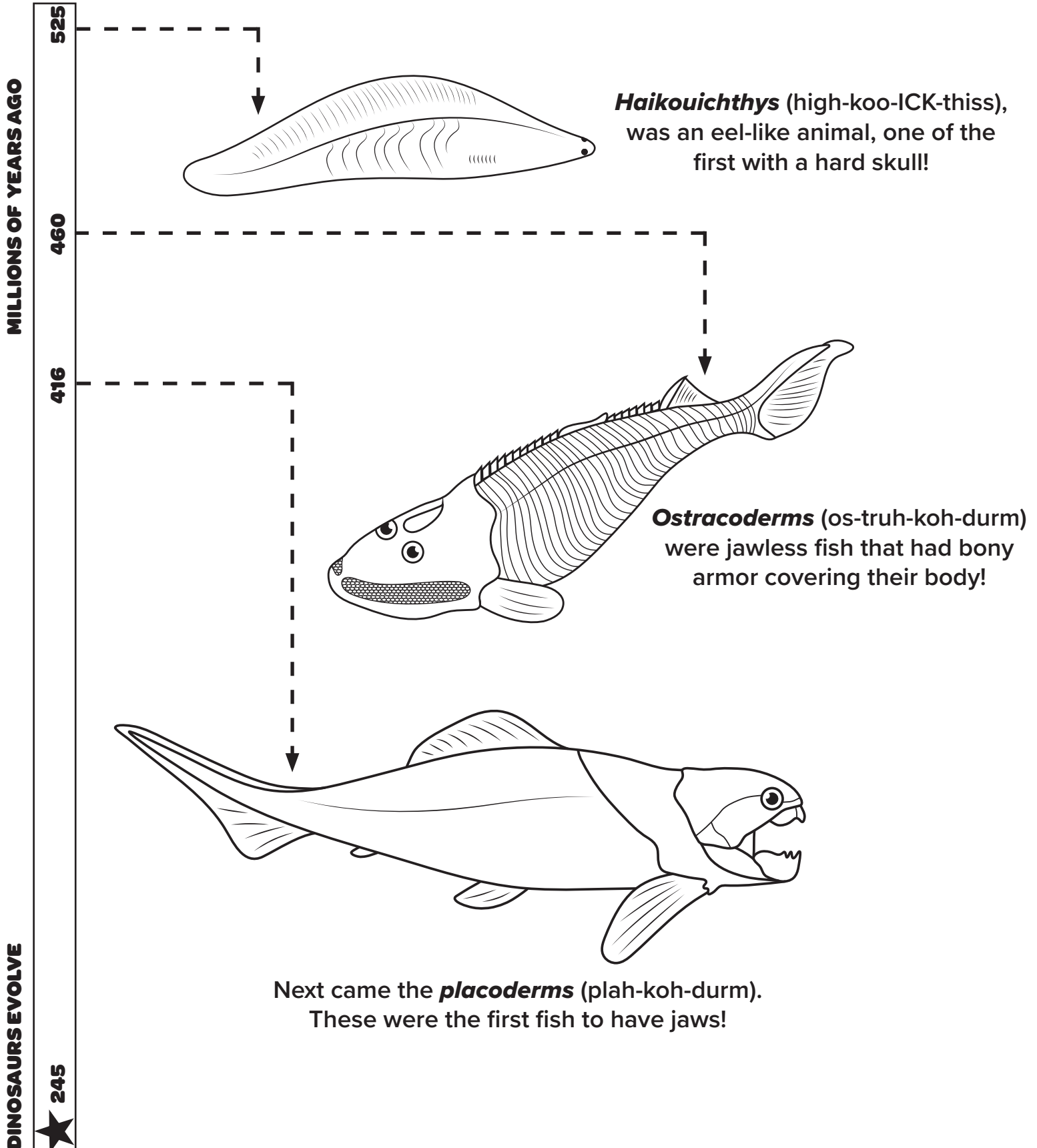
**pectoral fin**

**eye**

Massachusetts coastal waters provide ideal habitat for many different kinds of fish all year round! Saltwater fish provide food, outdoor recreation through fishing, and species diversity to our region. Read on to learn more about these fascinating animals!

# HOW LONG HAVE FISH BEEN ON EARTH?

Fish have survived mass extinctions, big changes to the planet, and have changed countless times over millions of years!

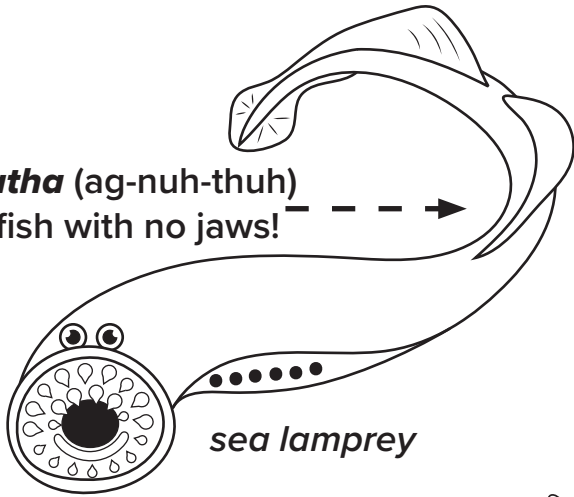


# HOW MANY DIFFERENT KINDS OF FISH ARE THERE?

There are over 33,000 species of fish in the world! 58% of those species live in saltwater, 41% live in freshwater, and 1% can live in both fresh and salt!

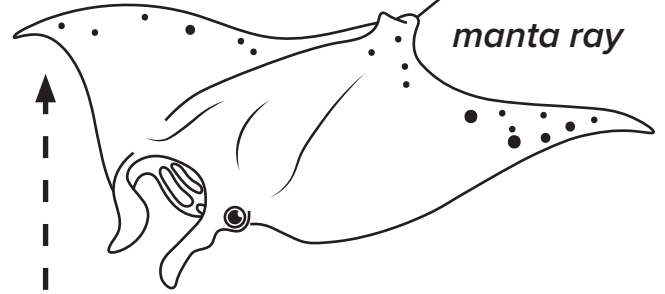
**FISH** are grouped into three superclasses:

**Agnatha** (ag-nuh-thuh)  
are fish with no jaws!

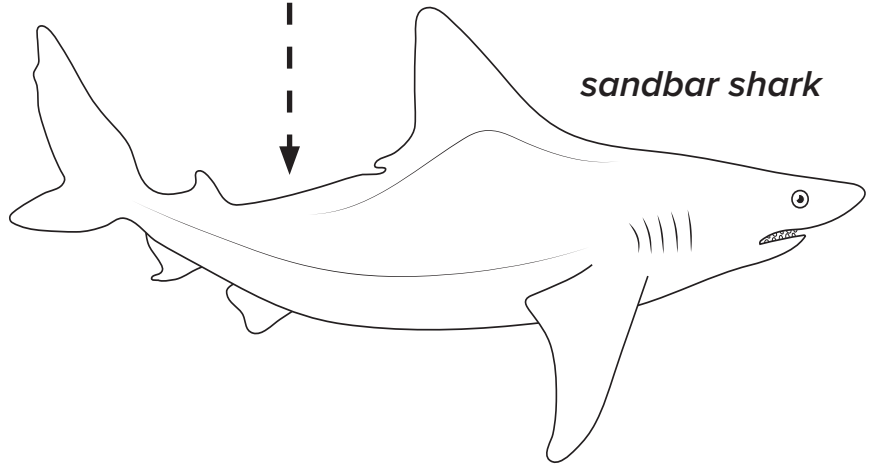


*sea lamprey*

**Chondrichthyes** (kan-drik-thee-ez)  
are fish with cartilage skeletons!

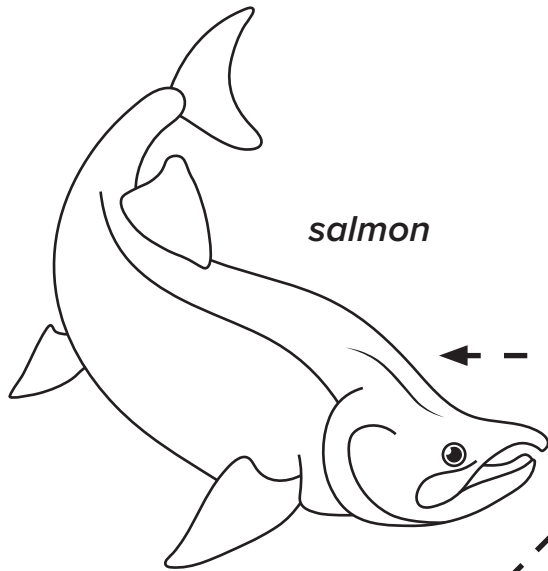


*manta ray*

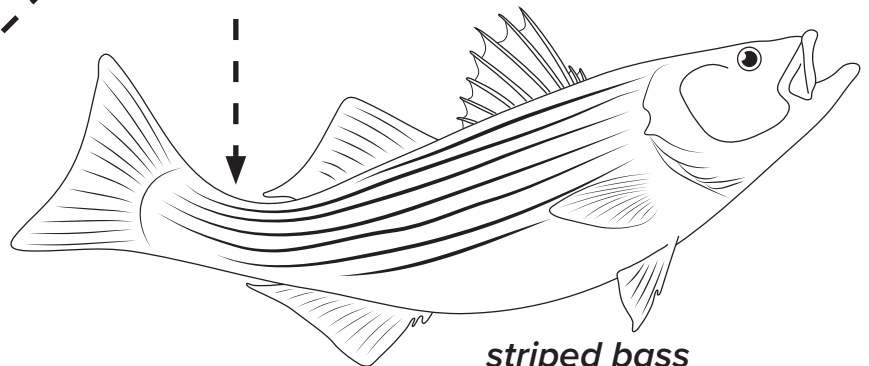


*sandbar shark*

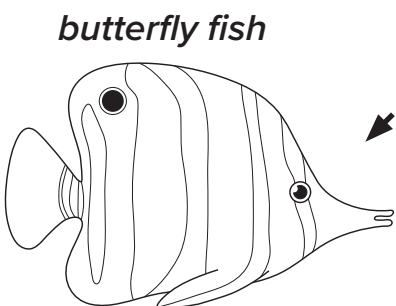
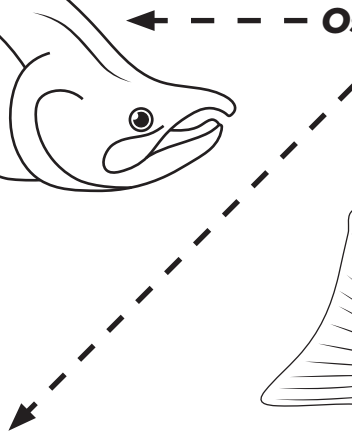
**Osteichthyes** (os-tee-ik-thee-eez)  
are fish with bony skeletons!



*salmon*



*striped bass*

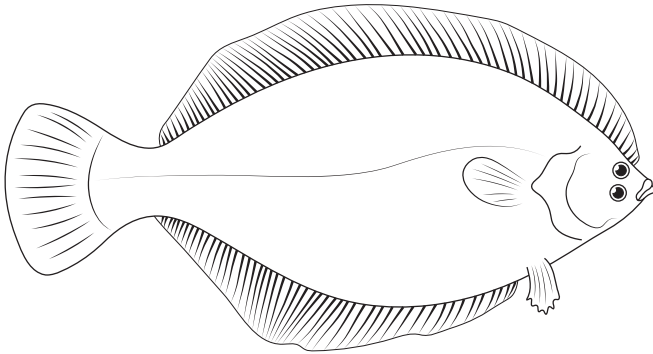


*butterfly fish*

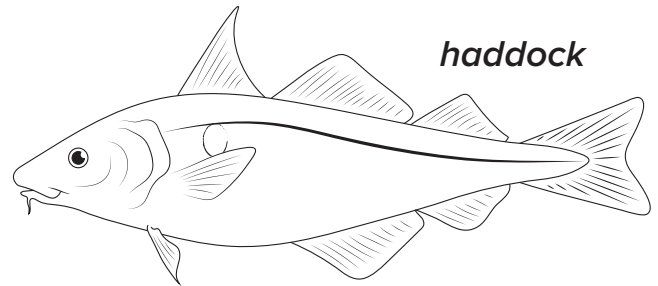
# HOW DO FISH SURVIVE UNDERWATER?

Fish have all different kinds of body parts and behaviors that help them find food, reproduce, and live comfortably underwater. These are called **adaptations**.

- 1 **Colors and patterns** on fish can help camouflage them from predators.

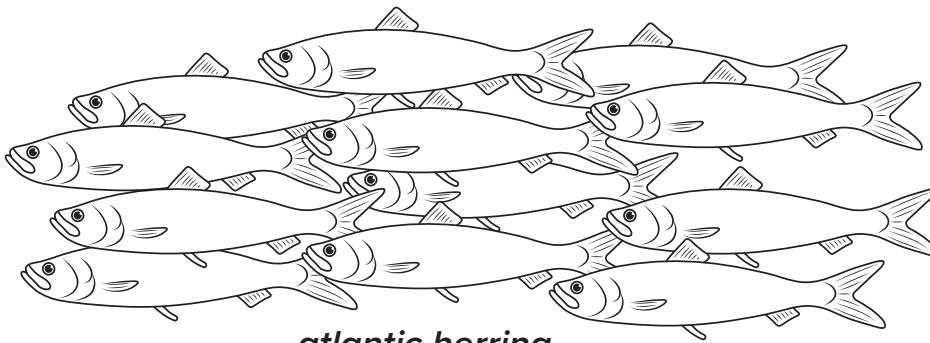


*Many flounders can change color to match the bottom of the ocean!*



*A dark back and white belly helps fish blend in with the sky AND shadows!*

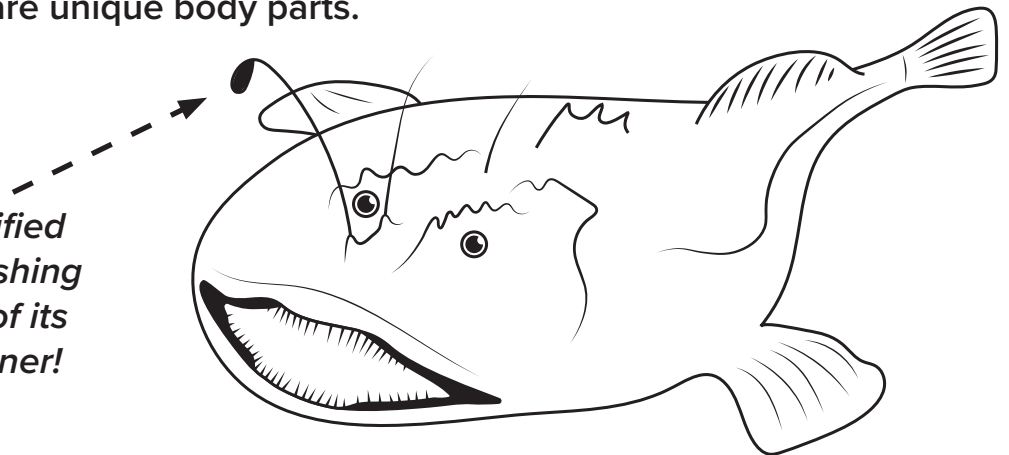
- 2 **Behavioral adaptations** are actions fish make to survive.



*When fish “school” in large groups it makes it hard for predators to pick out individual fish!*

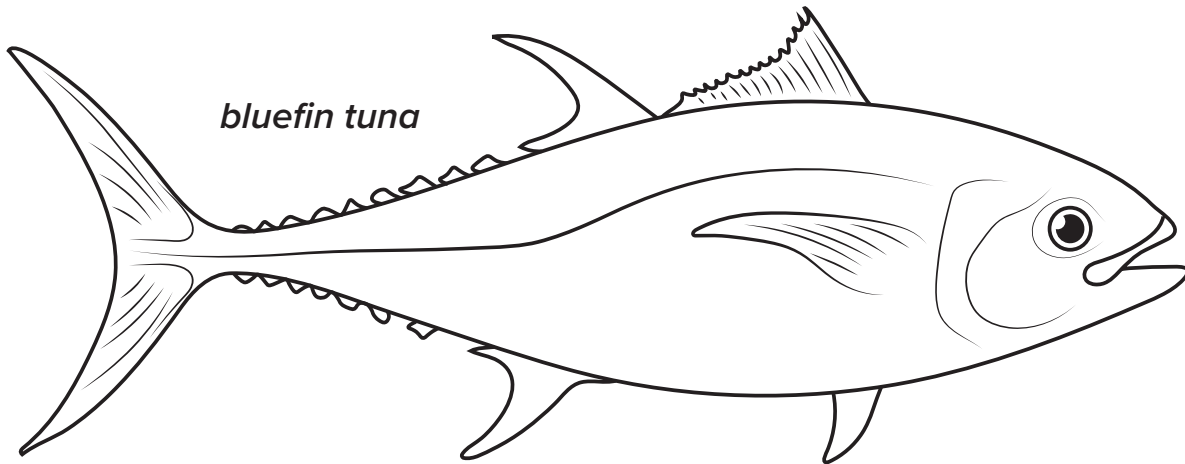
- 3 **Specialized structures** are unique body parts.

*The **goosefish** has a modified dorsal fin that acts like a fishing lure—it wiggles it in front of its huge mouth to attract dinner!*

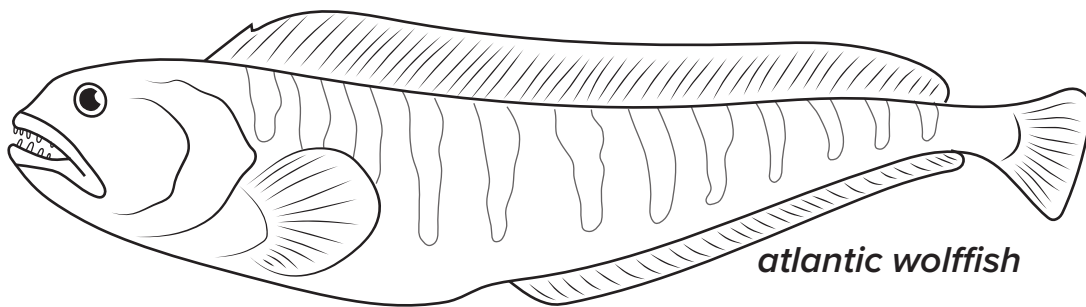


# HOW DO FISH SWIM?

Fish swim by moving their tail fin and body back and forth with strong muscles, while pectoral fins help with steering and lift. Many bony fish have a **swim bladder**, which is a special organ in their body that fills with gas to help them float!

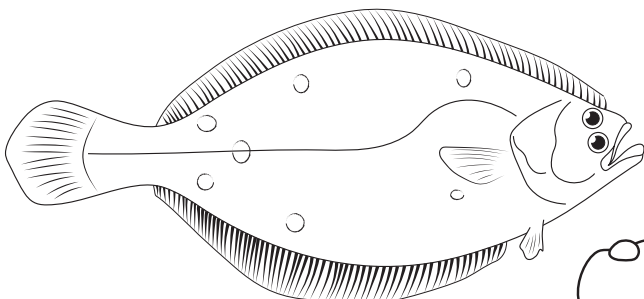


Fast swimming fish like the tunas have stiff, forked tails and strong muscles to help them move forward quickly.

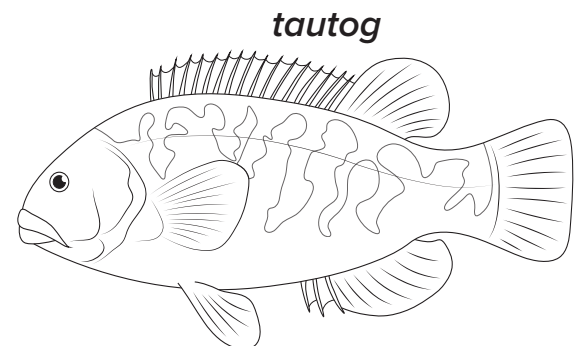
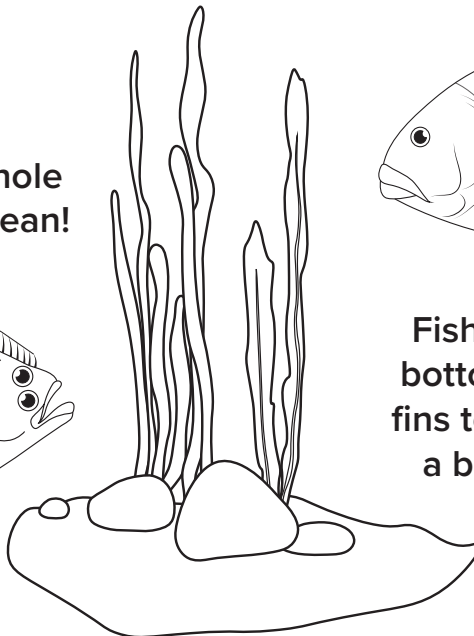


Eel-like fish swim by moving the whole back portion of their body in a wave—they are slow swimmers!

Flatfish swim by waving their whole body along the bottom of the ocean!



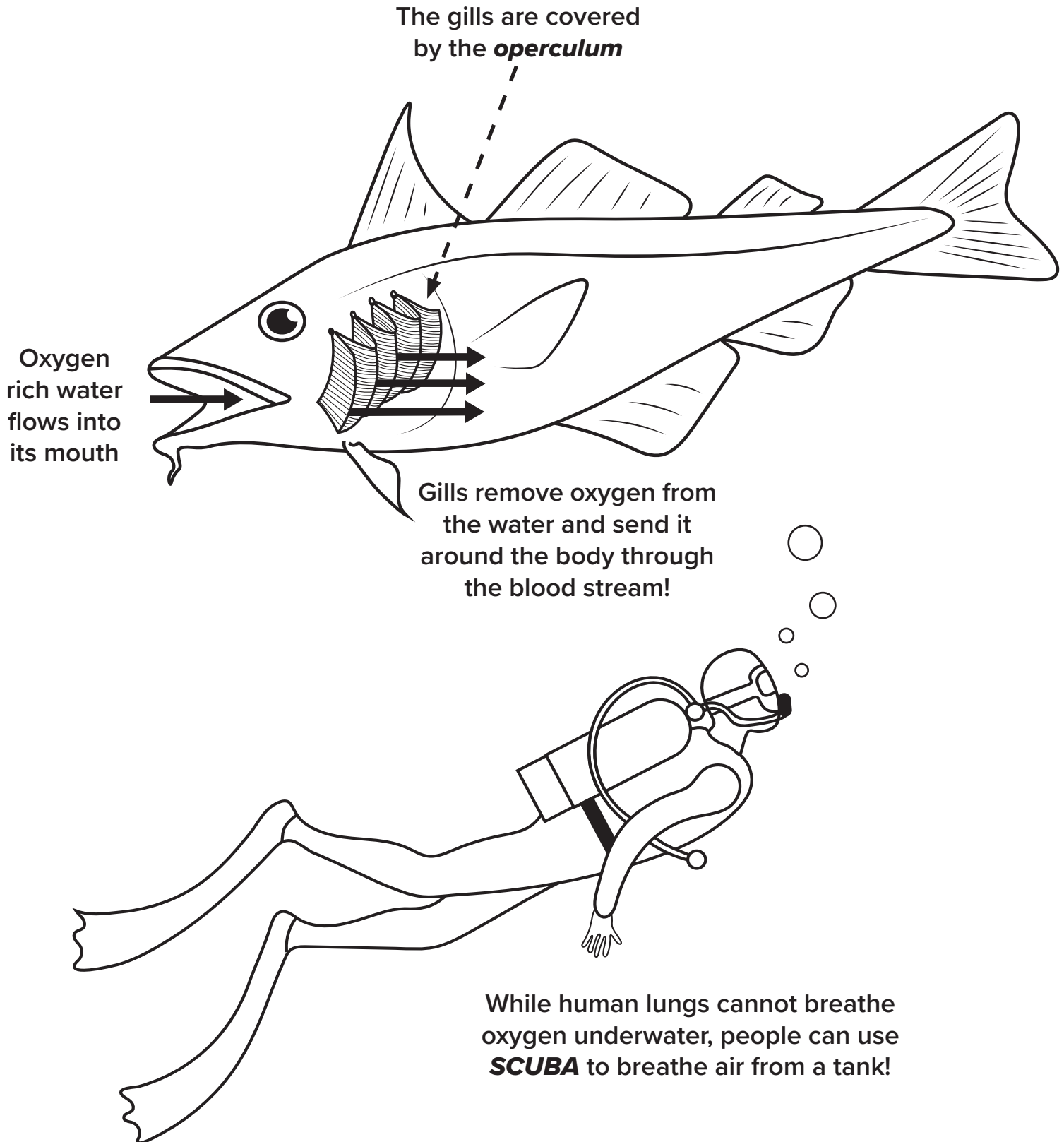
summer flounder



Fish living in and around rocky bottoms use their large pectoral fins to swim and steer—they look a bit like they are flying when they swim!

# HOW DO FISH BREATHE?

Instead of lungs, most fish use ***gills*** to remove oxygen from the water.

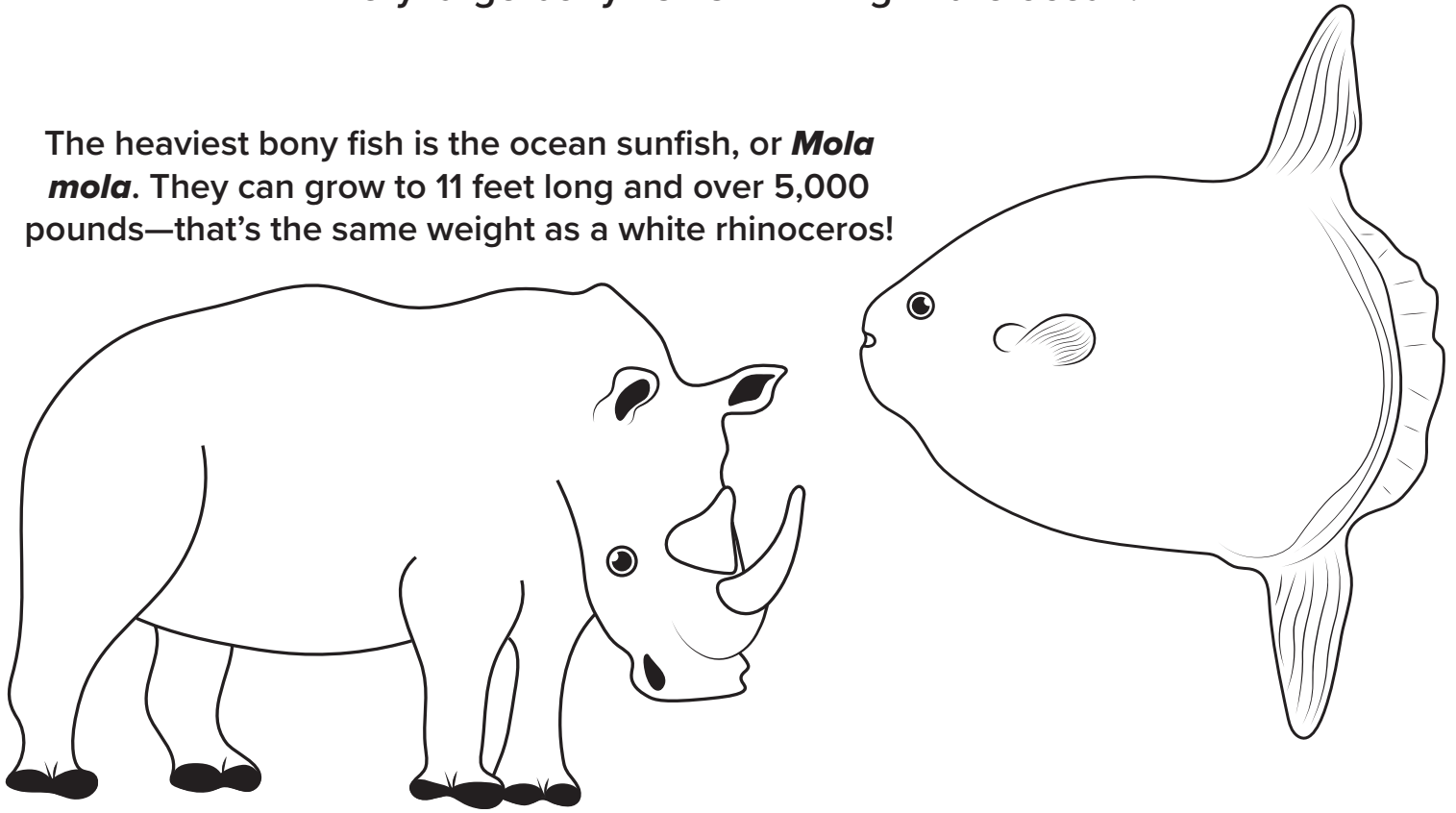




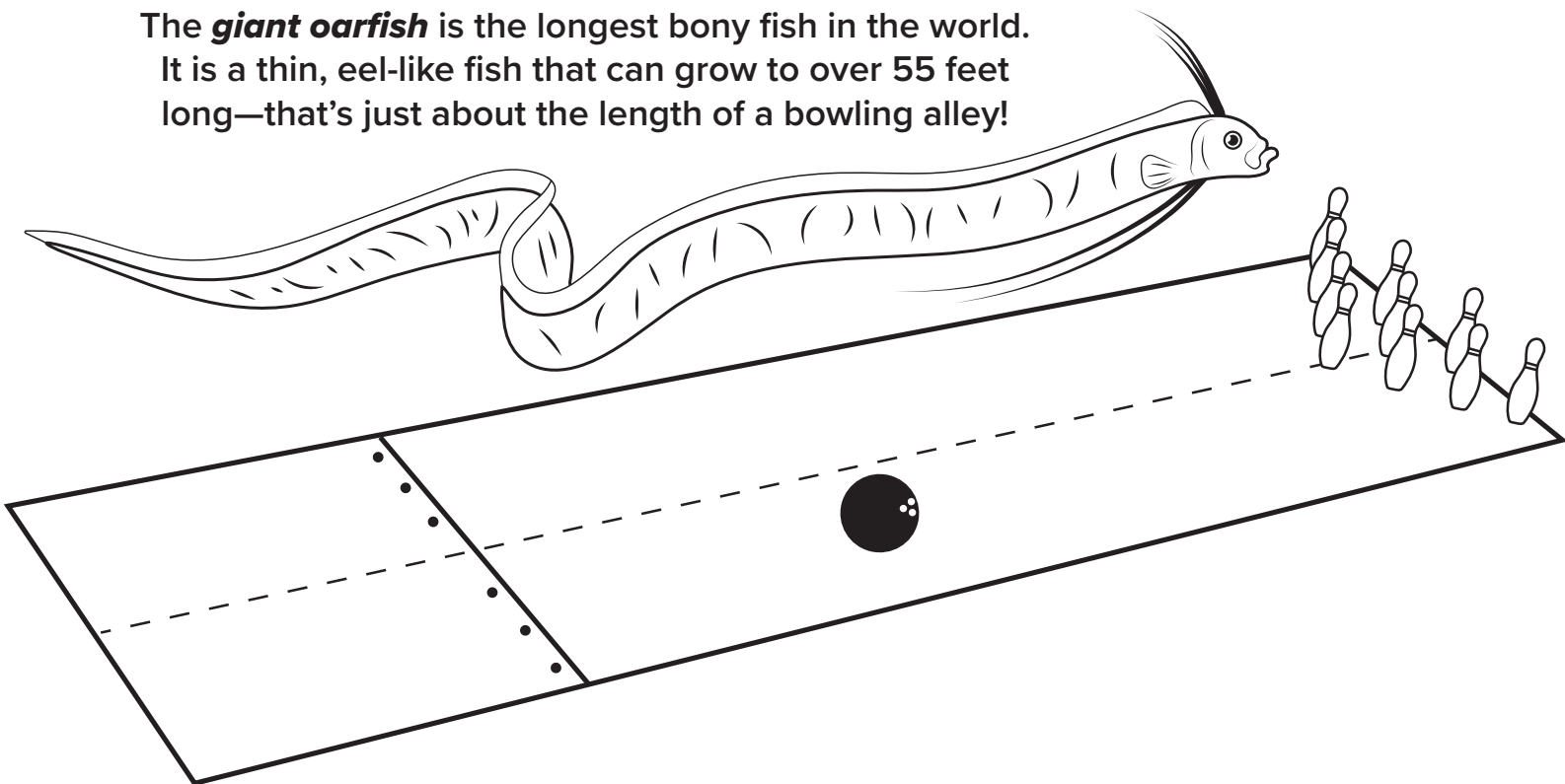
# HOW BIG DO FISH GET?

The largest fish of any kind is the whale shark, but there are also some very large bony fish swimming in the ocean!

The heaviest bony fish is the ocean sunfish, or ***Mola mola***. They can grow to 11 feet long and over 5,000 pounds—that's the same weight as a white rhinoceros!



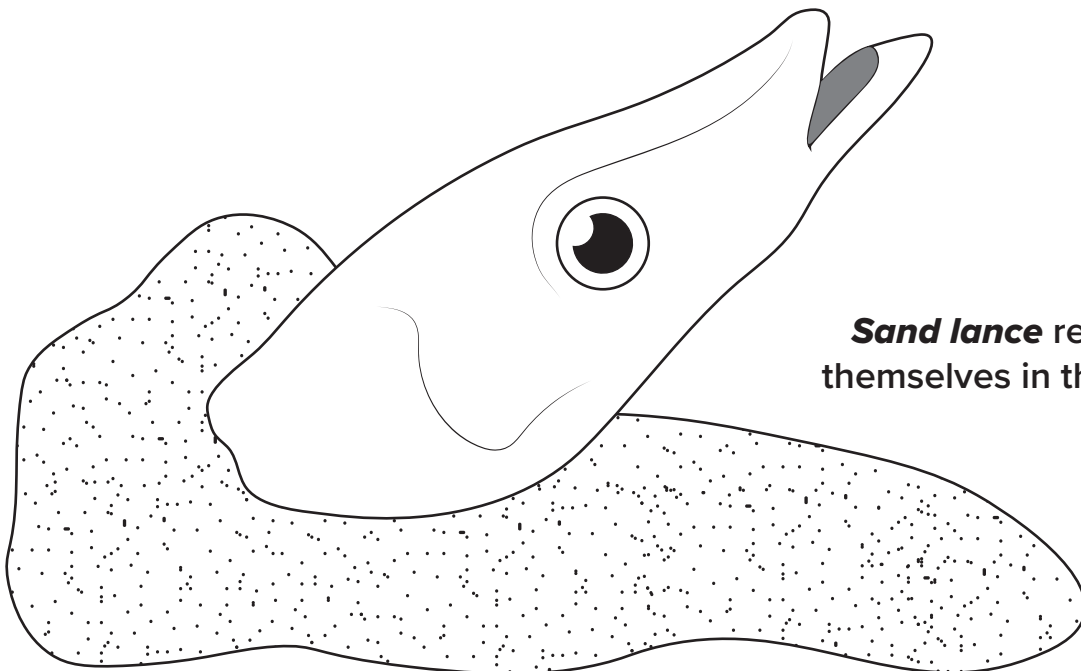
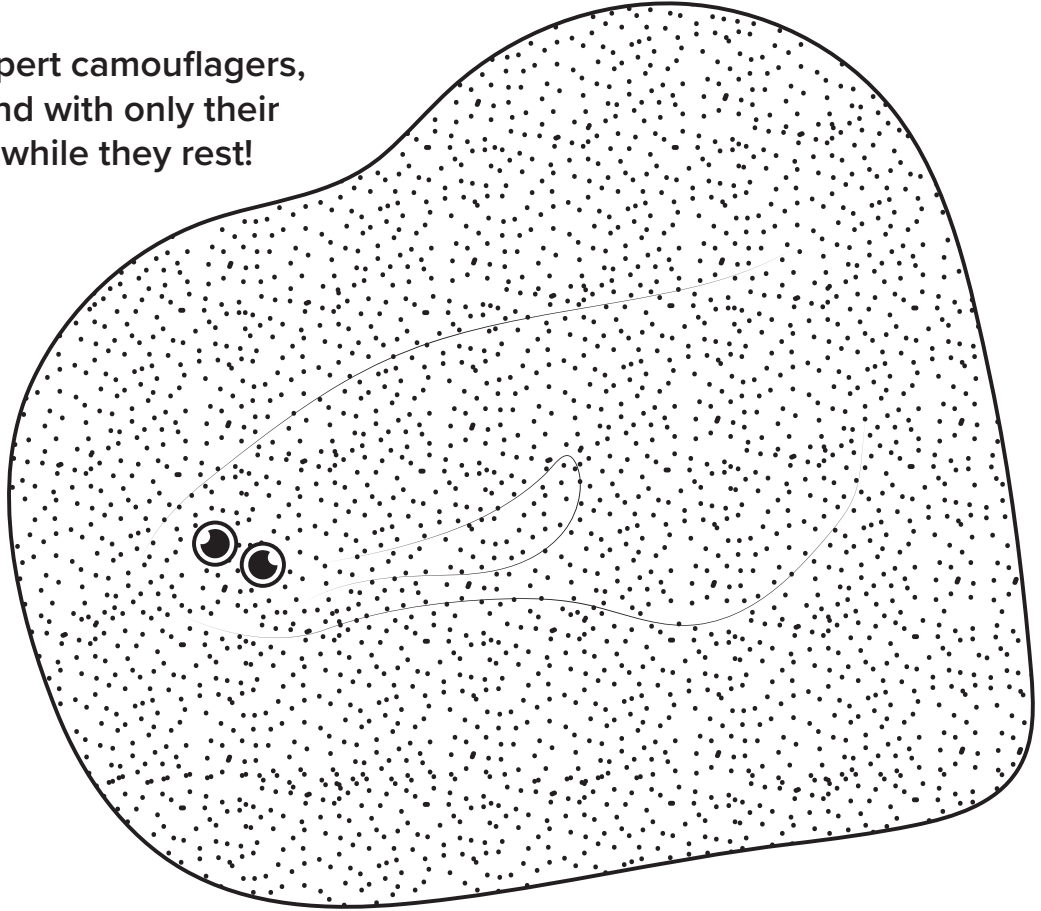
The ***giant oarfish*** is the longest bony fish in the world. It is a thin, eel-like fish that can grow to over 55 feet long—that's just about the length of a bowling alley!



# DO FISH SLEEP?

All fish rest, but they do not close their eyes and sleep the same way humans do. Many fish will find a place to hide or bury into the bottom so they can relax. Open water swimmers will rest part of their brain while still swimming!

**Flounders** are expert camouflagers, hiding in the sand with only their eyes showing while they rest!



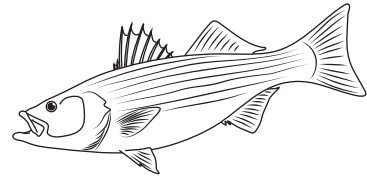
**Sand lance** relax by burying themselves in the sand at night.

# WHERE DO FISH GO IN THE WINTER?

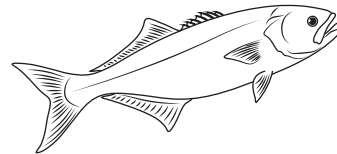
While some fish stay in the same place throughout their lives, others will migrate to different areas to reproduce, find food, or find the warm waters of the south!

Striped bass and bluefish have a spring **migration**, and a fall migration.

★ Summer location



Striped bass will travel between Massachusetts in the summer and Maryland, Virginia, or North Carolina in the winter.

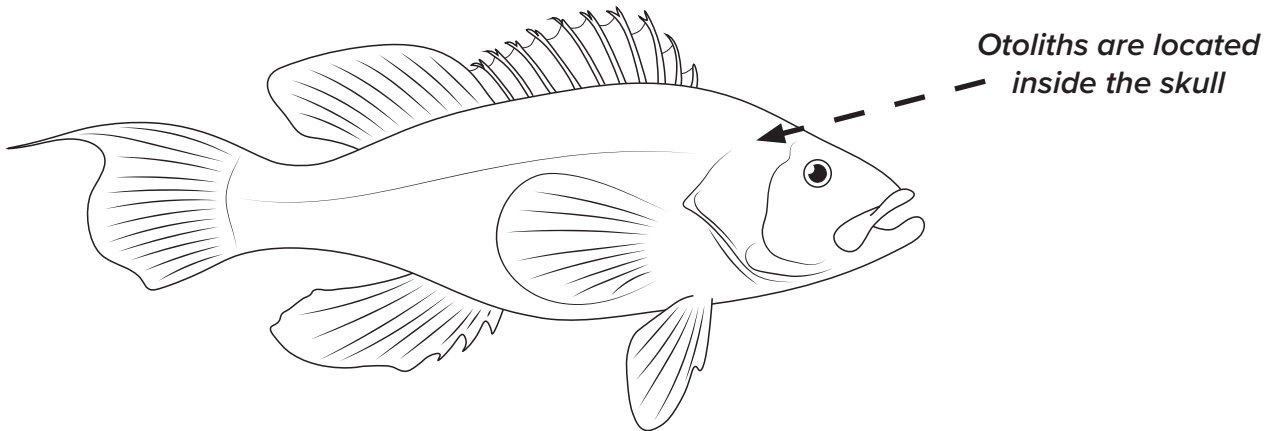


Bluefish migrate from Massachusetts in the summer to North Carolina, and sometimes as far as Florida in the winter!

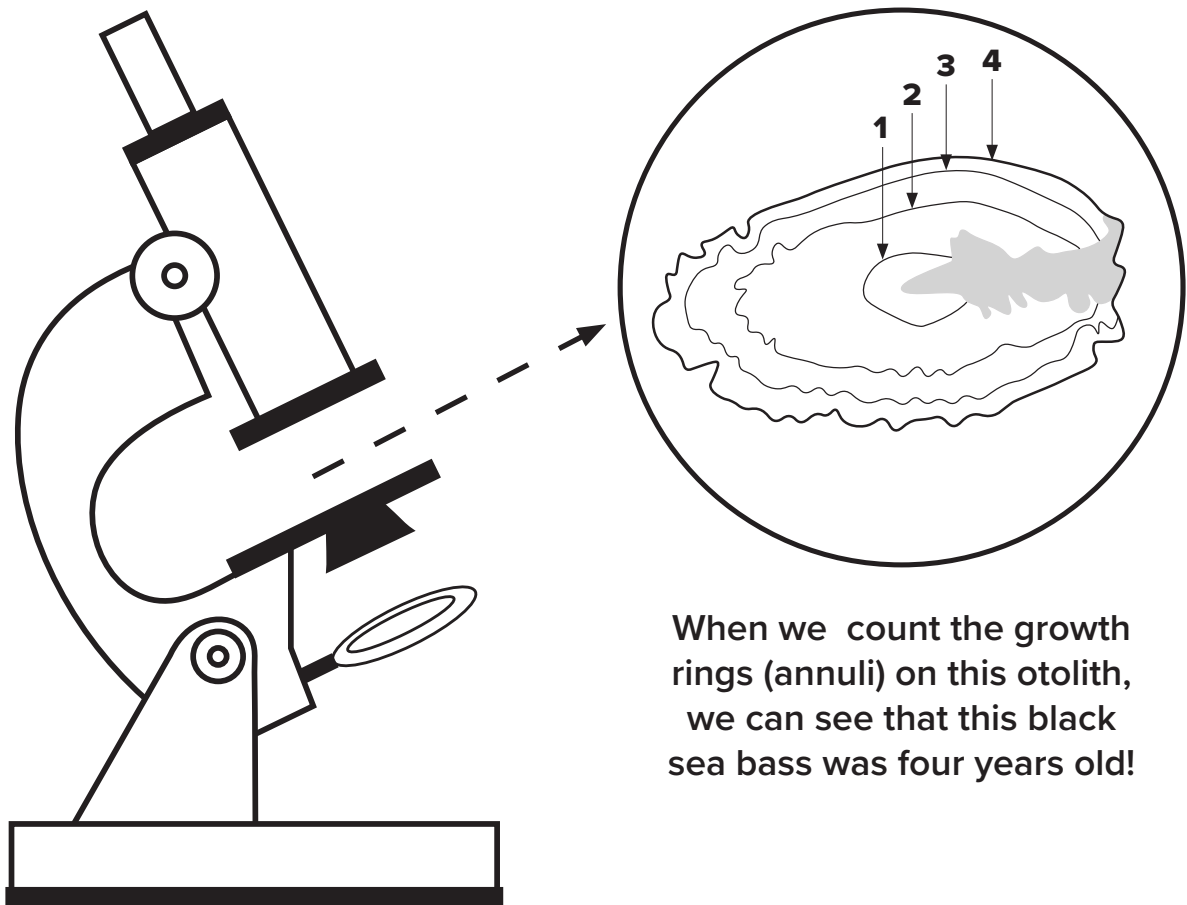
**Can you draw arrows between the states to show the migration pattern for bluefish and striped bass? Use a different arrow color for each fish.**

# HOW DO WE KNOW HOW OLD A FISH IS?

Samples taken from fish (like scales, fin spines, and otoliths) can help scientists learn more about how old a fish is.

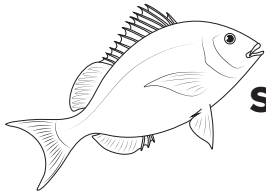
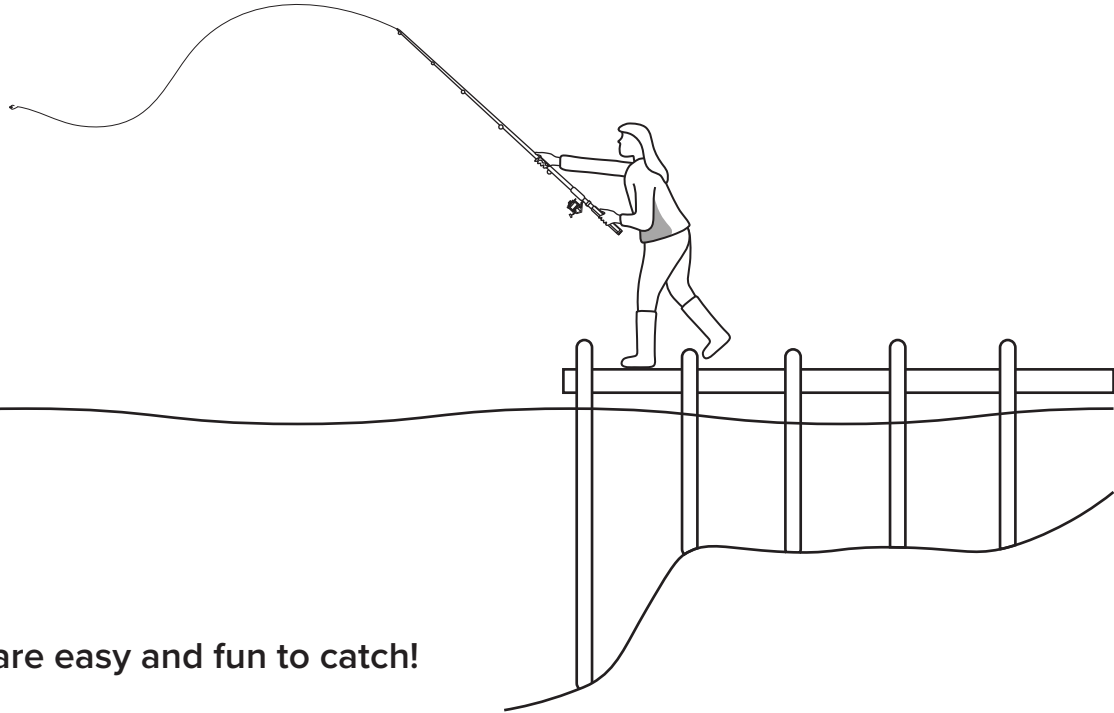


**Otoliths** are special ear bones that help the fish find its balance and aid in hearing. Scientists can look at otoliths under a microscope and count age rings, just like we do with tree rings!

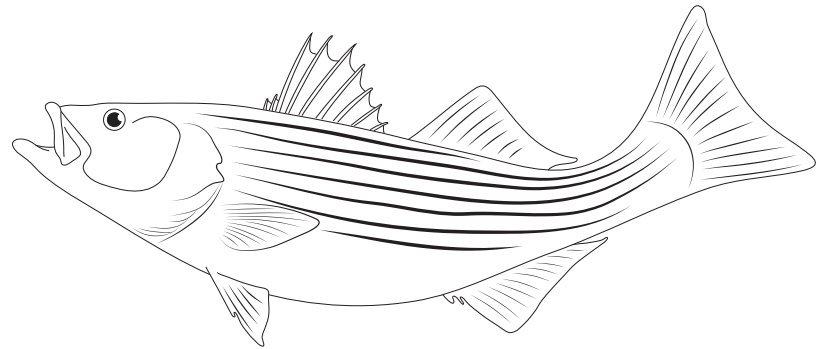


# WHAT IS A “SPORT FISH?”

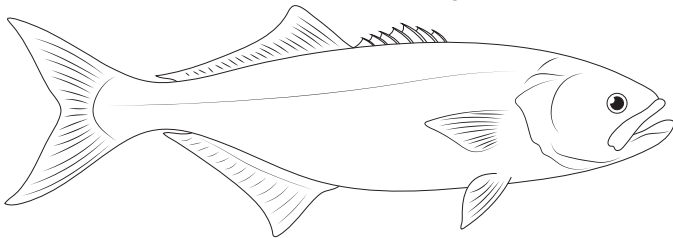
A “**sportfish**” is a fish that people enjoy fishing for. There are dozens of sportfish, and each one takes different kinds of gear, skill, and patience to reel in. Each year hundreds of thousands of people get their saltwater fishing permit here in Massachusetts!



**Scup** are easy and fun to catch!

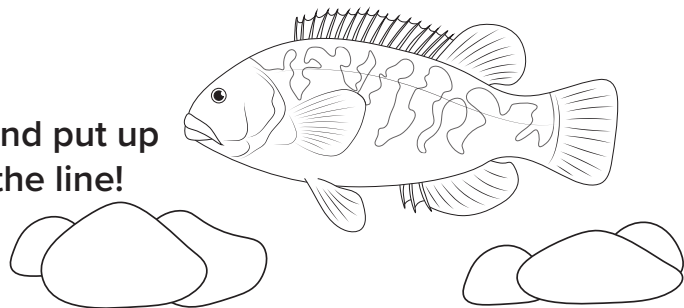


**Bluefish** will go after almost any bait, and are a quick and lively fish to catch!



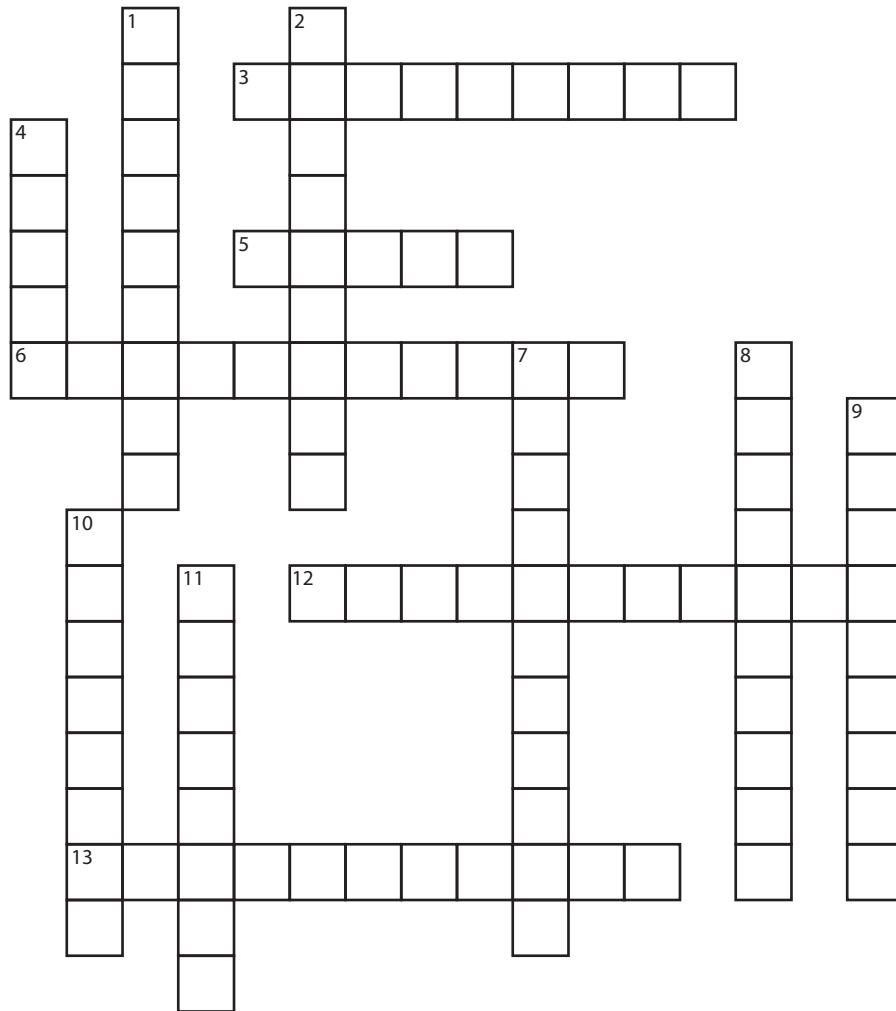
**Striped bass** is the most popular saltwater fish to catch in Massachusetts! Many people catch and release these large, migrating fish.

**Tautog** are found on rocky bottoms, and put up a good fight once you get them on the line!



# CROSSWORD!

For extra help, look for the **BOLD** words throughout this book!



## ACROSS

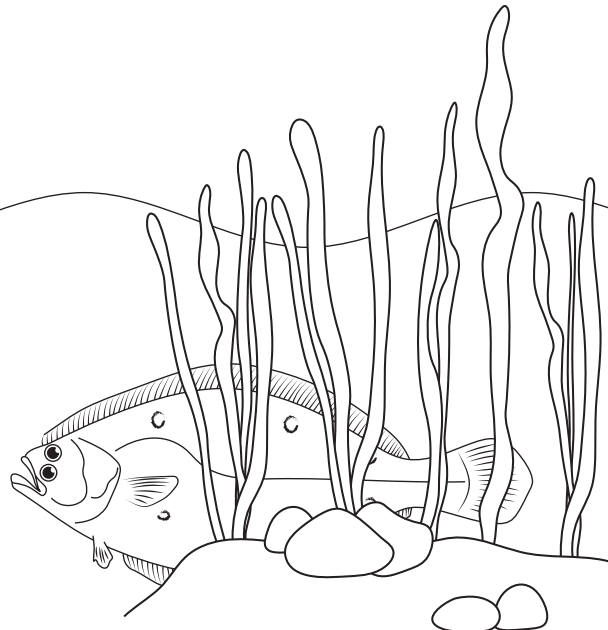
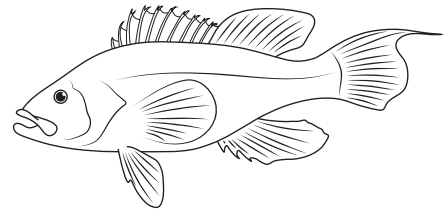
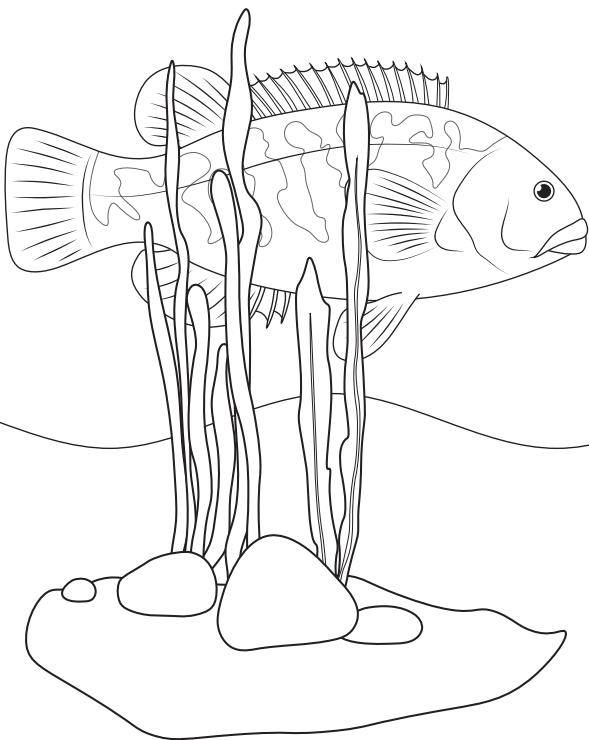
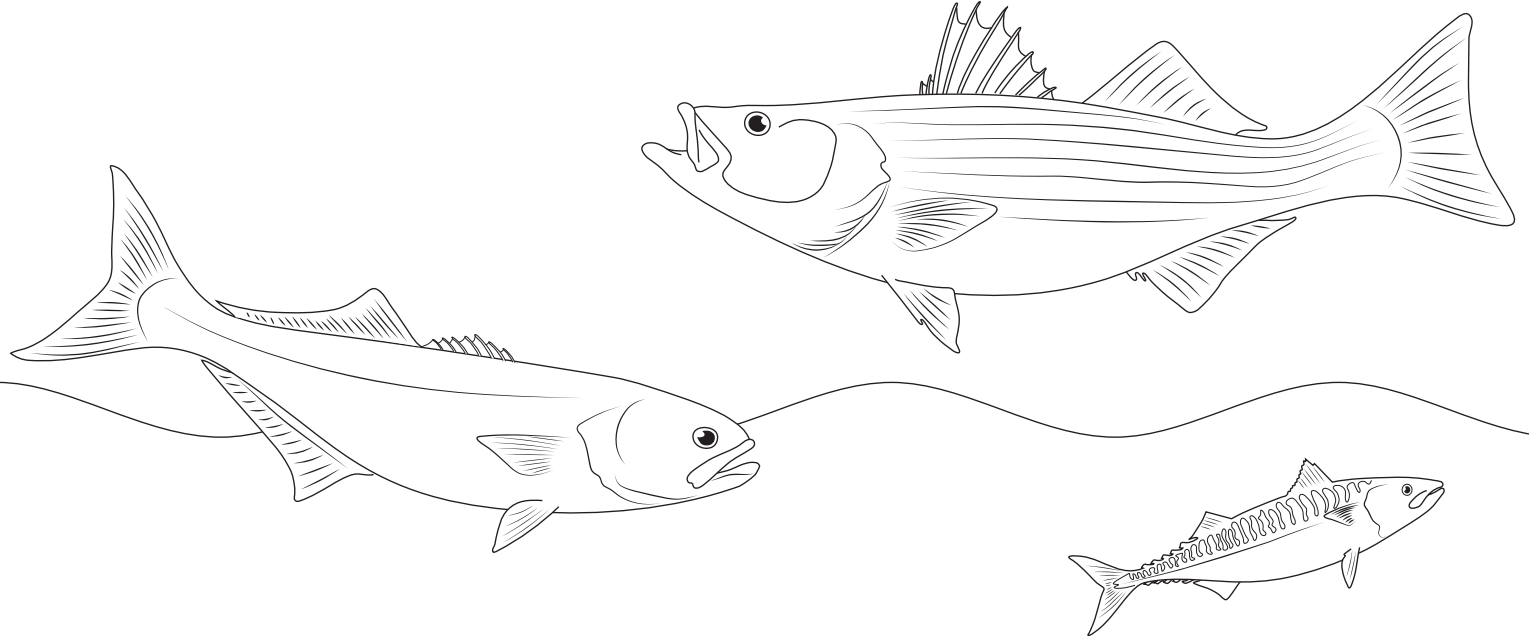
- 3. People enjoy fishing for \_\_\_\_\_
- 5. What divers use
- 6. A gas filled organ that helps a fish float
- 12. Specialized structures are an example of \_\_\_\_\_
- 13. This is found running along the side of a fish

## DOWN

- 1. Traveling from one place to another
- 2. Structure that covers the gills
- 4. How fish pull oxygen out of the water
- 7. "cold-blooded"
- 8. The first jawed fish
- 9. Found on the back (top) of a fish
- 10. The largest bony fish in the world
- 11. We can use \_\_\_\_\_ to age a fish

# RAINBOW FISH!

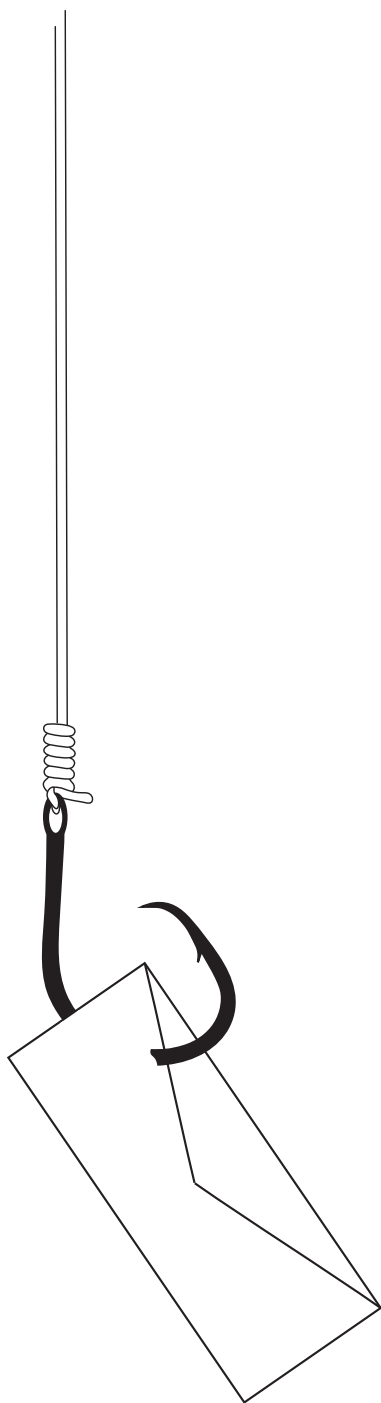
Identify and color each species the following: Black sea bass (green), Striped Bass (light blue), Mackerel (yellow), bluefish (purple), tautog (orange), fluke (red)



# WORD SCRAMBLE!

Unscramble the saltwater fish names below and write the letters in the boxes.

Use the letters in the shaded boxes (from top to bottom) to solve the riddle!



DOC					
-----	--	--	--	--	--

**MACEKELR** ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐

DDOCKHA ☐ ☐ ☐ ☐ ☒ ☐ ☐

PUSC ☐ ☐ ☐ ☒

FISHLBUE ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐

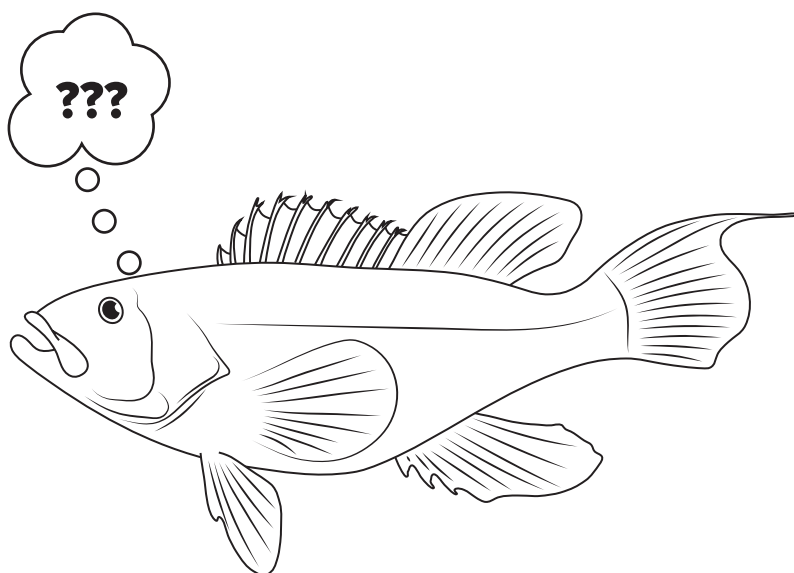
TINWRE ☐ ☐ ☐ ☒ ☐ ☐ FLOUNDER

G O T A U T ☐ ☒ ☐ ☐ ☐ ☐

ELFKU ☐ ☒ ☐ ☐ ☐

NUNREC ☐ ☐ ☒ ☐ ☐ ☐

**S E A L K A C B** [ ] [ ] [ ] [ ] [ ] [ ] [ ] **BASS**



## WHAT IS THE BEST WAY TO GET IN TOUCH WITH A FISH?

□ □ □ □      □ □    □    □ □ □ □ □



# MAD LIBS!

Grab a friend to help you fill in this funny fishing story! Have your friend give answers to the words under each open space, without reading the full story. Once all thirteen words are filled in read the story out-loud!

**Noun:** a person, place or thing

**Adjective:** word to describe (example: yummy, smart, fuzzy)

**Verb:** and action or state of being (example: dream, eat, walk)

**Adverb:** tells how an action is done (example: quickly, happily, quietly)

Today I am going fishing with \_\_\_\_\_ to see if we can catch some Massachusetts salt-

(friend name)

water sportfish! The weather today is \_\_\_\_\_, so we made sure to bring along extra

(adjective)

\_\_\_\_\_. We got to the dock at \_\_\_\_\_ after a short ride on our \_\_\_\_\_.

(plural noun)

(time of day)

(mode of transportation)

Today we are going to try and catch \_\_\_\_\_, so we have our fishing poles, circle

(MA saltwater fish)

hooks, and extra \_\_\_\_\_. After casting our fishing line for \_\_\_\_\_ minutes we

(food item)

(number)

caught a \_\_\_\_\_. We reeled it in \_\_\_\_\_ and made sure to quickly remove

(MA saltwater fish)

(adverb)

the hook. After one quick picture with our \_\_\_\_\_ camera we gently put the fish back in

(adjective)

the water to swim another day! Saltwater fishing is so much fun, maybe next time we'll catch a

\_\_\_\_\_...that would be so \_\_\_\_\_!

(MA saltwater fish)

(adjective)

## PLAY AGAIN!

friend name: \_\_\_\_\_

adjective: \_\_\_\_\_

plural noun: \_\_\_\_\_

time of day: \_\_\_\_\_

mode of transportation: \_\_\_\_\_

MA saltwater fish: \_\_\_\_\_

food item: \_\_\_\_\_

number: \_\_\_\_\_

MA saltwater fish: \_\_\_\_\_

adverb: \_\_\_\_\_

adjective: \_\_\_\_\_

MA saltwater fish: \_\_\_\_\_

adjective: \_\_\_\_\_

## PLAY AGAIN!

friend name: \_\_\_\_\_

adjective: \_\_\_\_\_

plural noun: \_\_\_\_\_

time of day: \_\_\_\_\_

mode of transportation: \_\_\_\_\_

MA saltwater fish: \_\_\_\_\_

food item: \_\_\_\_\_

number: \_\_\_\_\_

MA saltwater fish: \_\_\_\_\_

adverb: \_\_\_\_\_

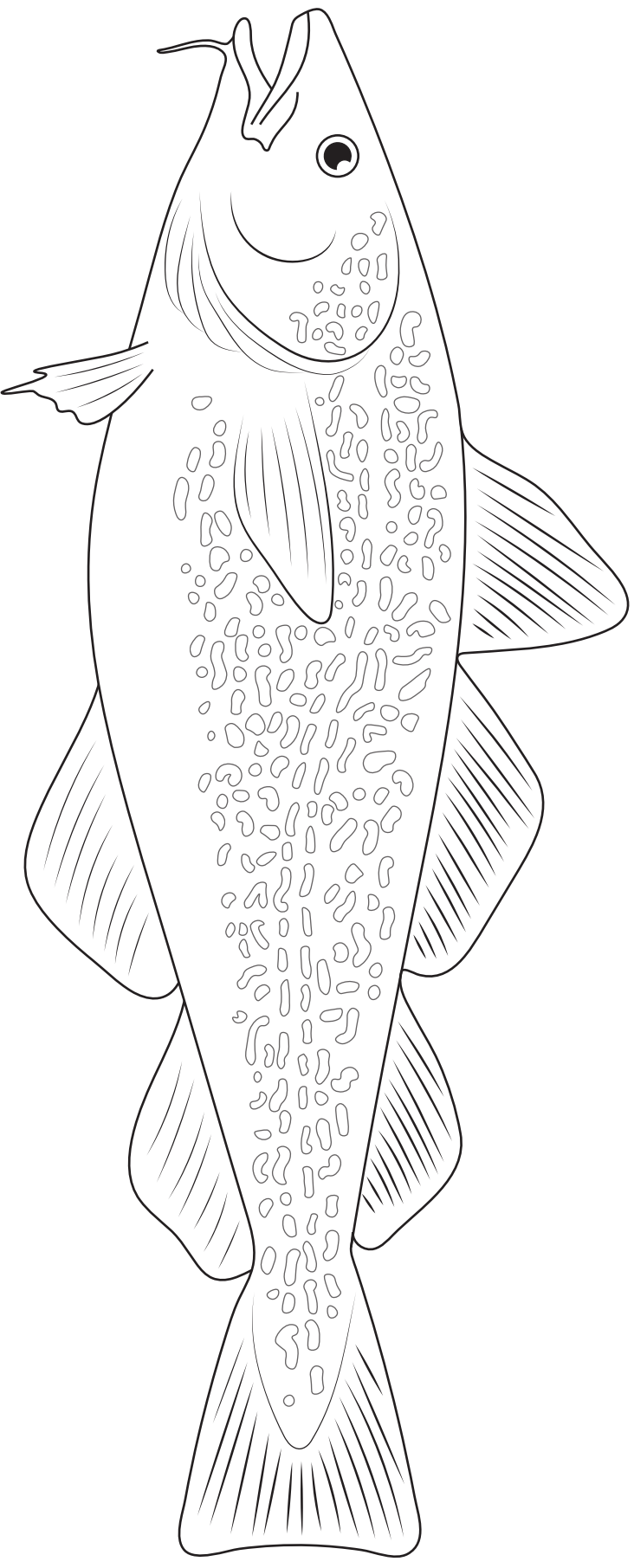
adjective: \_\_\_\_\_

MA saltwater fish: \_\_\_\_\_

adjective: \_\_\_\_\_

# ATLANTIC COD

*Gadus morhua*



**Eastern United States Range:** Northern Canada to Cape Hatteras, North Carolina

**Habitat:** Found near irregular hard bottoms, usually between 200 and 440 feet deep

**Size:** Average of 25–35 inches long and 10–20 pounds, but some can grow to be six feet long and 70 pounds!

**Massachusetts State Record:** 92 pounds

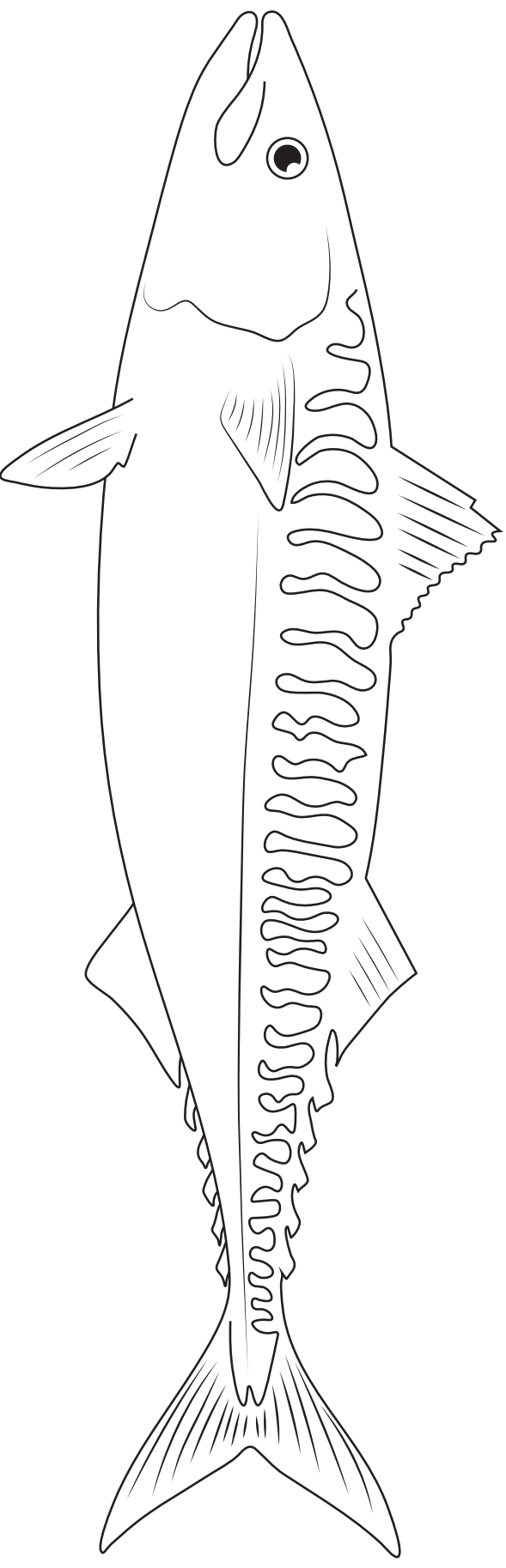
**Color:** From light yellowish-green to red and olive, usually with darker speckles on the body and a white belly

**Diet:** Small Atlantic cod eat shrimp and other small crustaceans while adults eat many types of shellfish as well as herring, mackerel, capelin, and young haddock

**Fun Fact:** Atlantic cod spawn (reproduce) in the winter, and large females can have up to 9 million eggs! State and federal agencies are working to protect cod and spawning areas to help build population numbers.

# ATLANTIC MACKEREL

*Scomber scombrus*



**Eastern United States Range:** Newfoundland, Canada to Cape Hatteral, North Carolina

**Habitat:** Open water

**Size:** Average of 12–14 inches long and 1–2 pounds

**Massachusetts State Record:** 3 pounds, 8 ounces

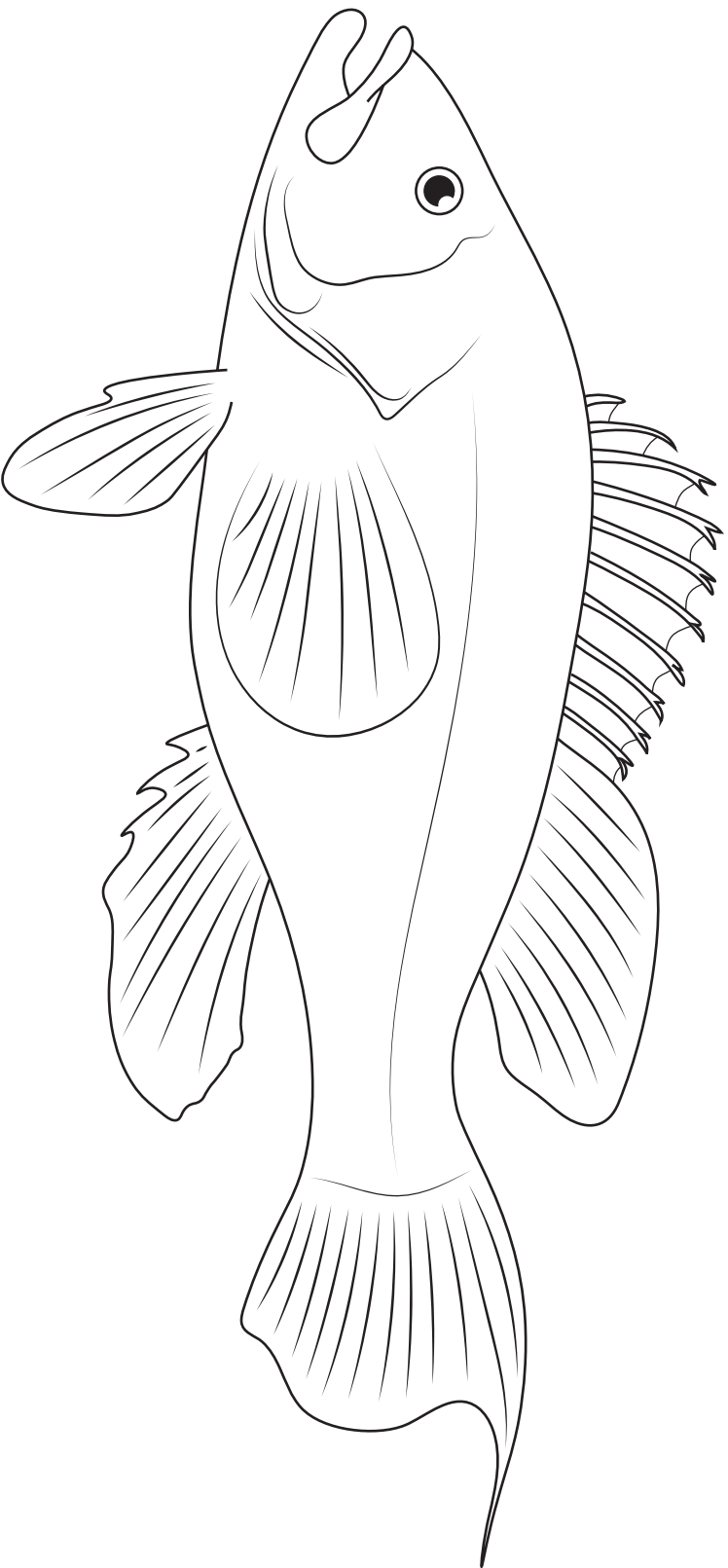
**Color:** Metallic blue-green on the back, fading to silver on the sides and belly. There are 20-30 wavy black bars running down the sides.

**Diet:** Shrimp, krill, squid and other small fishes

**Fun Fact:** Atlantic mackerel are in the same family as tuna!

# BLACK SEA BASS

*Centropristis striata*



**Eastern United States Range:** Maine to Florida and Gulf of Mexico

**Habitat:** Shallow continental shelf water, over and in structure

**Size:** Average of 12–20 inches long and 3–5 pounds

**Massachusetts State Record:** 8 pounds, 15 ounces

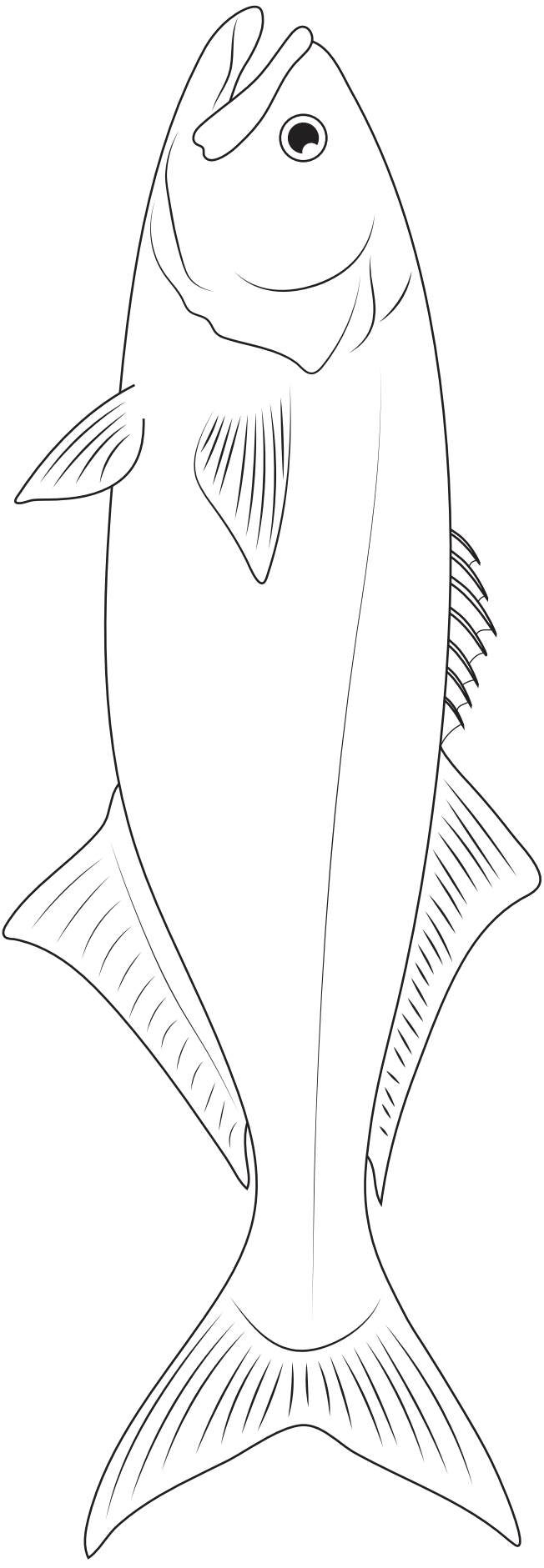
**Color:** Blue-black on top with a paler white belly. Their dorsal (top) fins often have white stripes on them.

**Diet:** Crabs, shrimp, worms, small fish, and clams

**Fun Fact:** They are protogynous hermaphrodite, which means most black sea bass start out as females, and as they mature and grow some will become males!

# BLUEFISH

*Pomatomus saltatrix*



**Eastern United States Range:** Nova Scotia, Canada to South Carolina

**Habitat:** Surface swimmers, both near and offshore

**Size:** Average of 14–30 inches long and 3–12 pounds

**Massachusetts State Record:** 27 pounds, 4 ounces

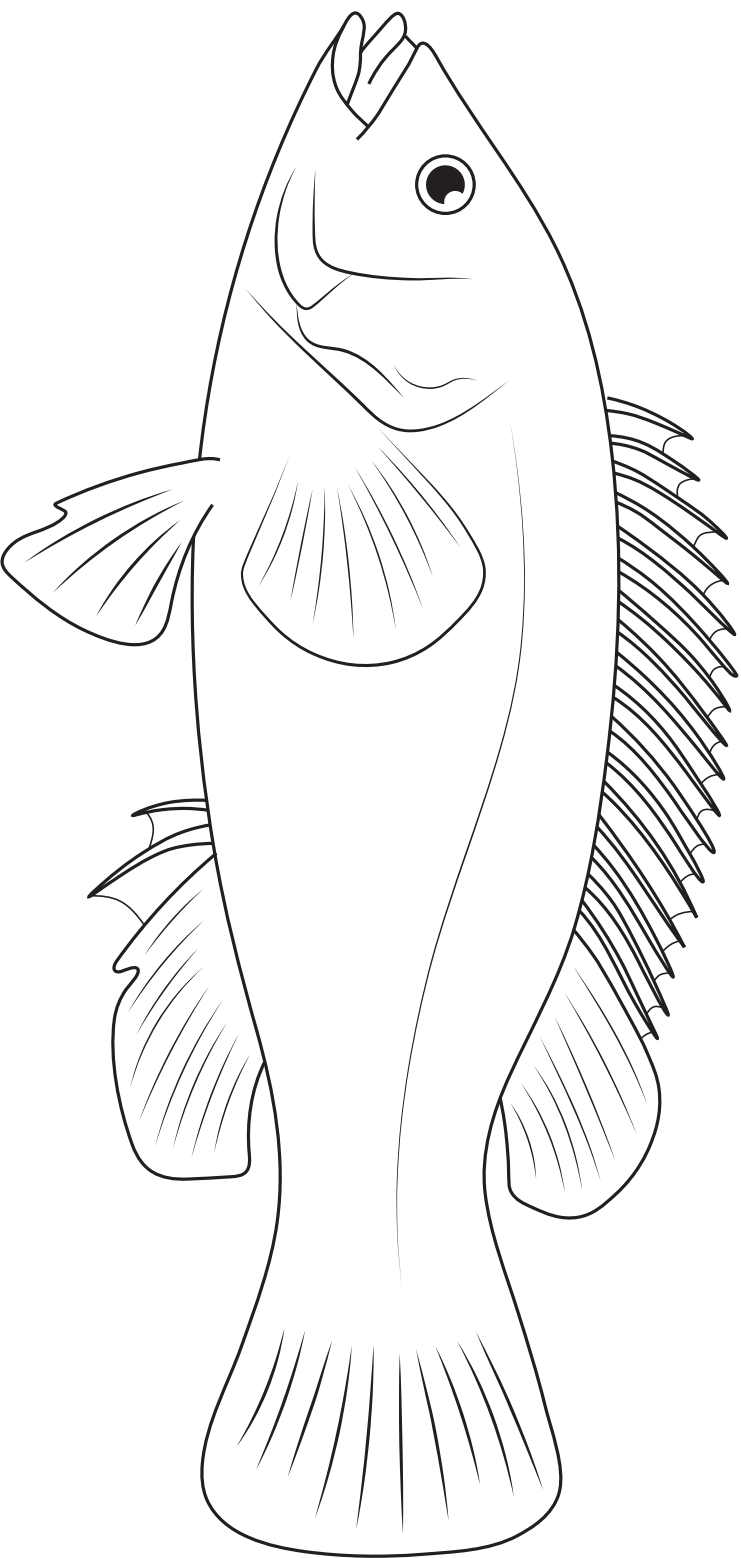
**Color:** Metallic blue-green on top with a silvery / white belly

**Diet:** Squid, menhaden and smaller fish

**Fun Fact:** If you're lucky you might see the "bluefish blitz," where large schools of blue fish attack small fish near the surface, churning the water like a washing machine!

# CUNNER

*Tautoglabrus adspersus*



**Eastern United States Range:** Newfoundland, Canada to New Jersey, sometimes in Chesapeake Bay

**Habitat:** Shallow coastal waters around piers and rock piles, and in eelgrass beds

**Size:** Average of 10 - 15 inches long and 1 pound

**Massachusetts State Record:** NONE

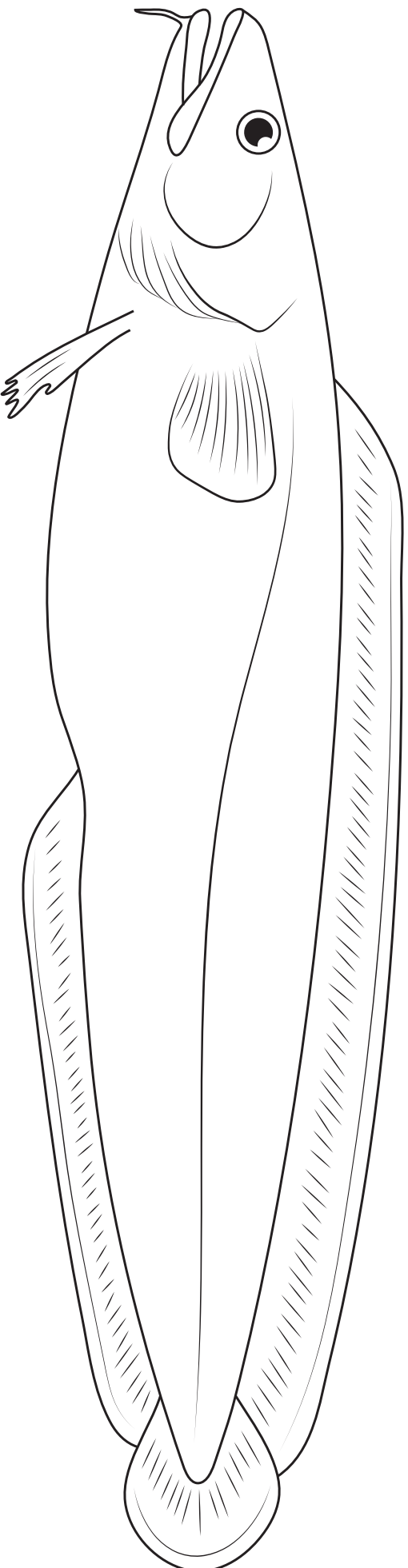
**Color:** Reddish-brown on the top with a paler belly, and a blueish smear all over the body

**Diet:** Barnacles, mollusks, shrimp, crabs, and small fish

**Fun Fact:** They can change coloring with their environment, and also form dark brown stripes!

# CUSK

*Brosme brosme*



**Eastern United States Range:** Newfoundland, Canada to Cape Cod, occasionally as far south as New Jersey.

**Habitat:** Deep water in rocky, hard bottom areas

**Size:** Average of 1.5–2.5 feet long and 5–10 pounds

**Massachusetts State Record:** 34 pounds, 4 ounces

**Color:** Red-brown to green-brown on top with a paler color on the belly. The fins are trimmed along the edge in white.

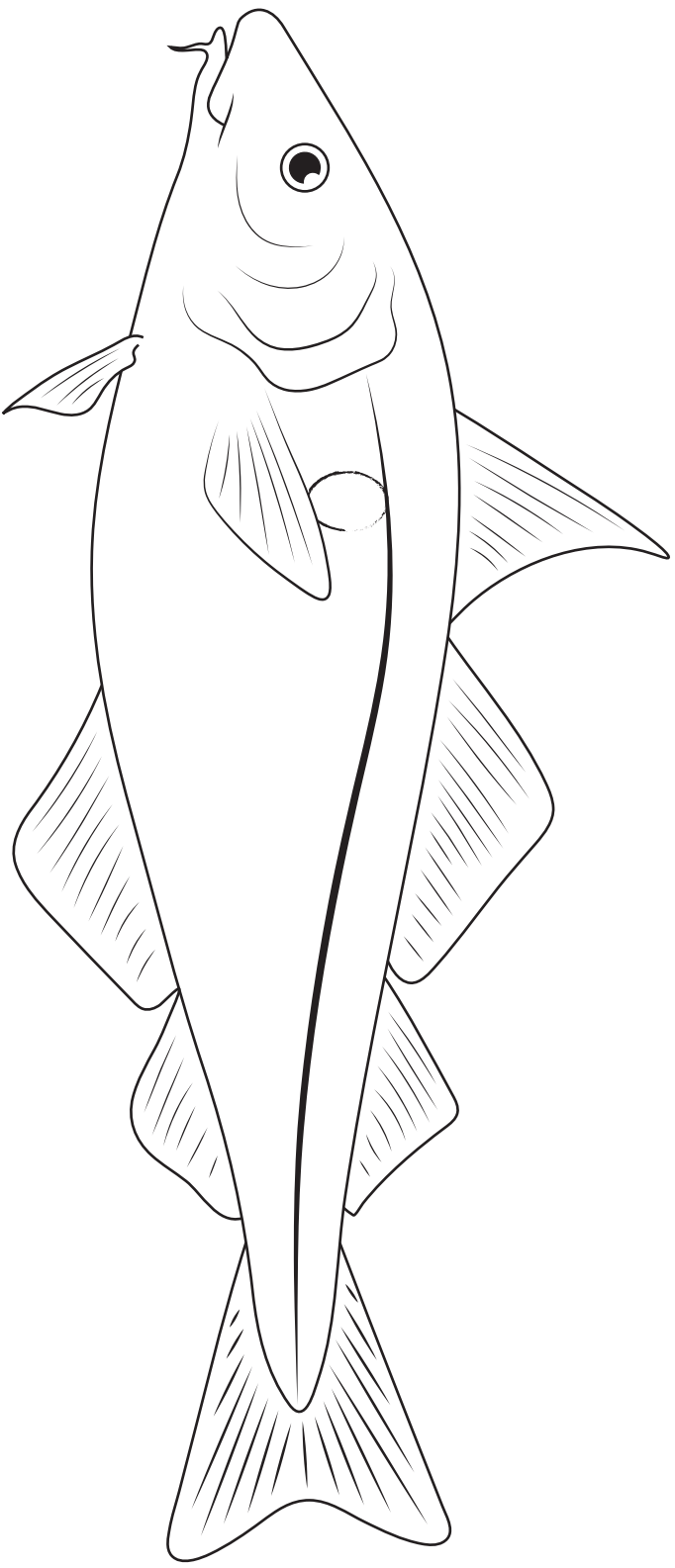
**Diet:** Crabs and mollusks (oysters and clams)

**Fun Fact:** Cusk look like a cross between a cod and an eel!



# Haddock

*Melanogrammus aeglefinus*



**Eastern United States Range:** Newfoundland, Canada to New Jersey

**Habitat:** Found near irregular hard bottoms, usually between 100 and 400 feet deep

**Size:** Average of 16–24 inches long and 4–10 pounds

**Massachusetts State Record:** 20 pounds

**Color:** Silvery-blue on the back, fading to a lighter silver on the sides with a white belly. They have dark purple-gray fins.

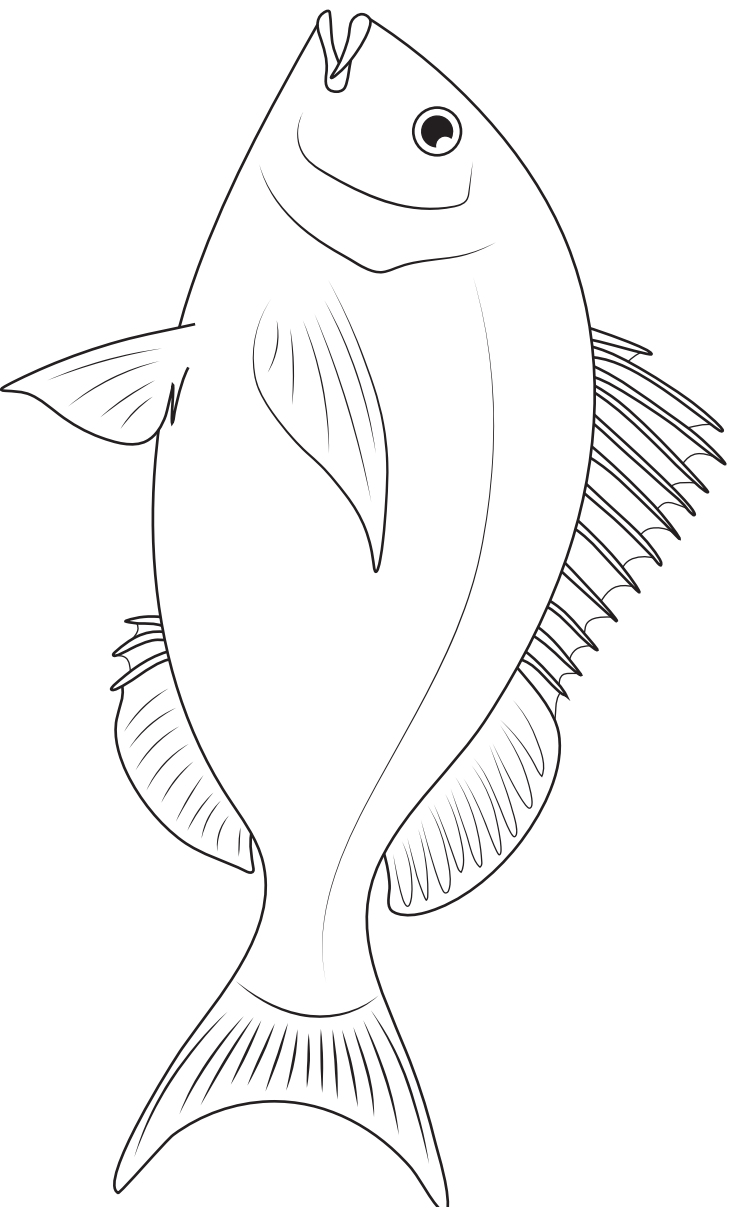
**Diet:** Crabs, clams, sea stars, sea cucumbers, urchins, and squid

**Fun Fact:** The dark gray spot above their pectoral fin is called “the Devil’s thumbprint”!



# SCUP

*Stenotomus chrysops*



**Eastern United States Range:** Nova Scotia, Canada to Florida

**Habitat:** Shallow water in areas with smooth or rocky bottoms, often found around piers, rocks, and offshore ledges

**Size:** Average of 10–18 inches long and 1–3 pounds

**Massachusetts State Record:** 5 pounds, 14 ounces

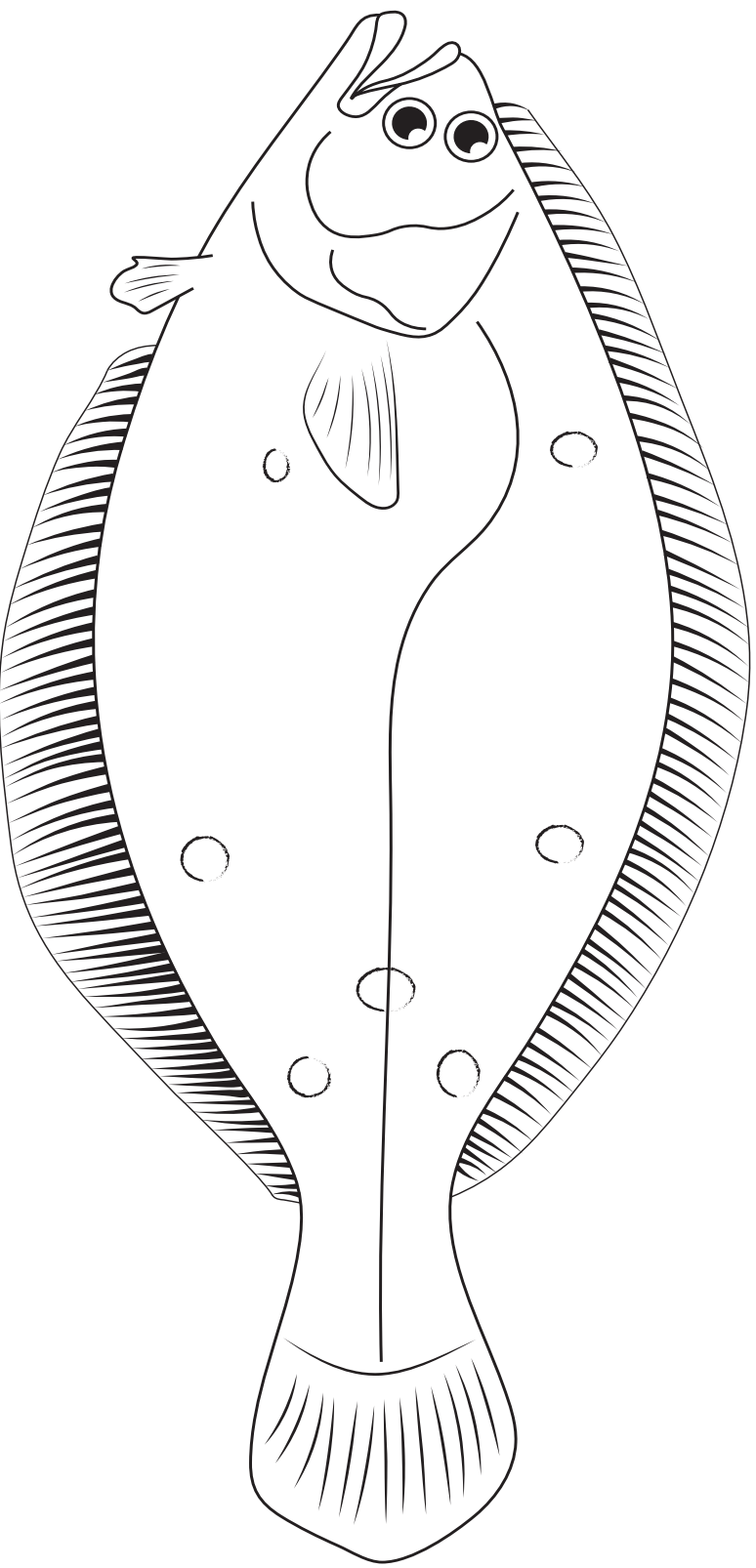
**Color:** Silvery color with light blue specks on the back with dark patches are on the head and a white belly

**Diet:** Crabs, clams, mussels, sea jellies and worms

**Fun Fact:** Another popular name for scup is porgy!

# SUMMER FLOUNDER (fluke)

*Paralichthys dentatus*



**Eastern United States Range:** Nova Scotia, Canada to the east coast of Florida

**Habitat:** During the summer, inshore waters along beaches, inlets, and bays, moving to deeper waters during the winter

**Size:** Average of 12–24 inches long and 2–12 pounds

**Massachusetts State Record:** 21 pounds, 8 ounces

**Color:** Dark to light brown with 5 - 14 spots on top (eye side) with a white belly (bottom side)

**Diet:** Flounder, menhaden, sand lance, bluefish, weakfish, crabs, squid, mollusks

**Fun Fact:** Fluke can change their coloration to camouflage with the ocean bottom, turning shades of gray, blue, green, orange, and even black!

# STRIPED BASS

*Morone saxatilis*



**Eastern United States Range:** New Brunswick, Canada to Florida, and northern Gulf of Mexico

**Habitat:** Inshore areas

**Size:** Average of 2–3 feet long and 5–25 pounds

**Massachusetts State Record:** 73 pounds

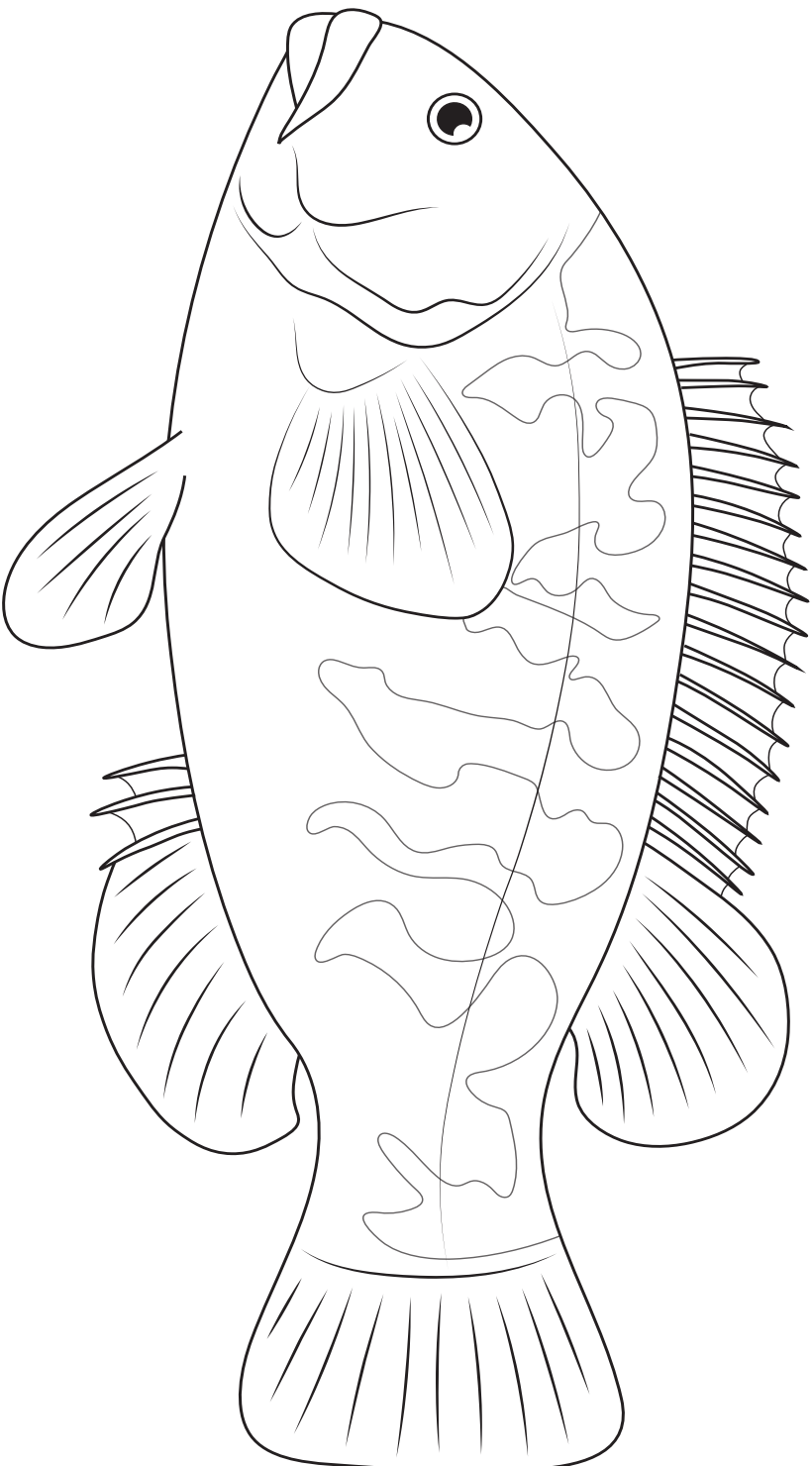
**Color:** Dark brown-green to dark blue on top, silver on the sides with 6-9 black stripes from the head to tail, with a silver-white belly

**Diet:** Alewives, sea herring, menhaden, and other small fish, eels, lobsters, crabs, soft clams, small mussels, sea worms, and squid

**Fun Fact:** Striped bass spawn (reproduce) in freshwater rivers and estuaries! Most striped bass in Massachusetts migrate from Chesapeake Bay, Delaware River, and Hudson River areas.

# TAUTOG

*Tautoga onitis*



**Eastern United States Range:** Nova Scotia, Canada to North Carolina

**Habitat:** Inshore to 60 feet, near built-up substrate like rocks, piers, docks, wrecks, and mussel beds

**Size:** Average of 12–20 inches long and 2–12 pounds

**Massachusetts State Record:** 22 pounds, 9 ounces

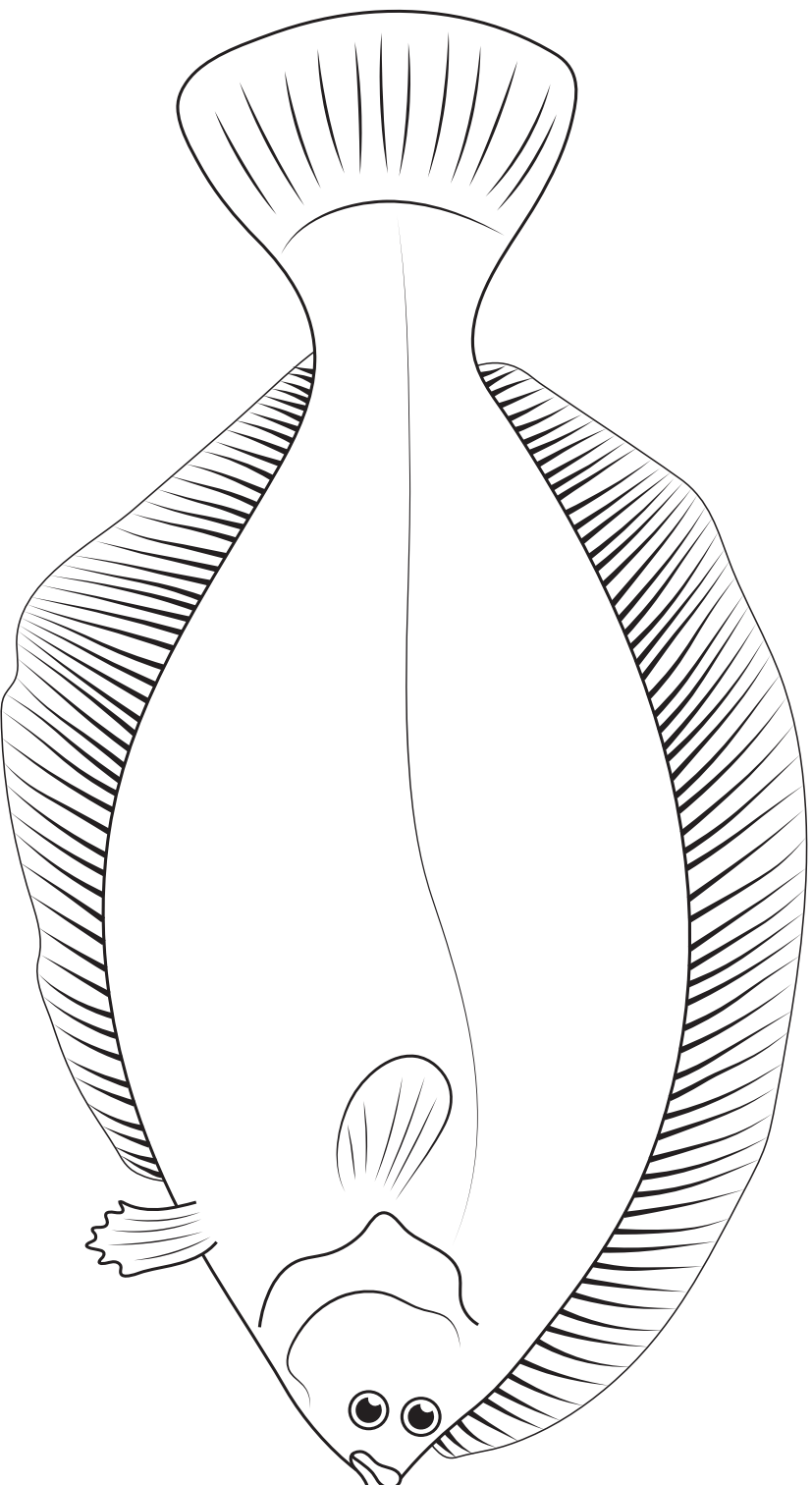
**Color:** Tautog are also called “blackfish” because of their dark, splotchy sides that are either dull black, blackish-green, or blackish-blue, with a pale yellow belly

**Diet:** Shrimp, krill, squid and other small fishes

**Fun Fact:** Adults stay close to their preferred home site and, although they may move away during the day to feed, they return to the same general locations at night where they become dormant and may actually sleep!

# WINTER FLOUNDER

*Pseudopleuronectes americanus*



**Eastern United States Range:** Labrador, Canada to Georgia

**Habitat:** Over mud or sand to 120 feet, sometimes in sea grass beds

**Size:** Average of 12–18 inches long and 1–4 pounds

**Massachusetts State Record:** 8 pounds, 2 ounces

**Color:** Red-brown to green-brown on their back (eye side) with a white belly (bottom side)

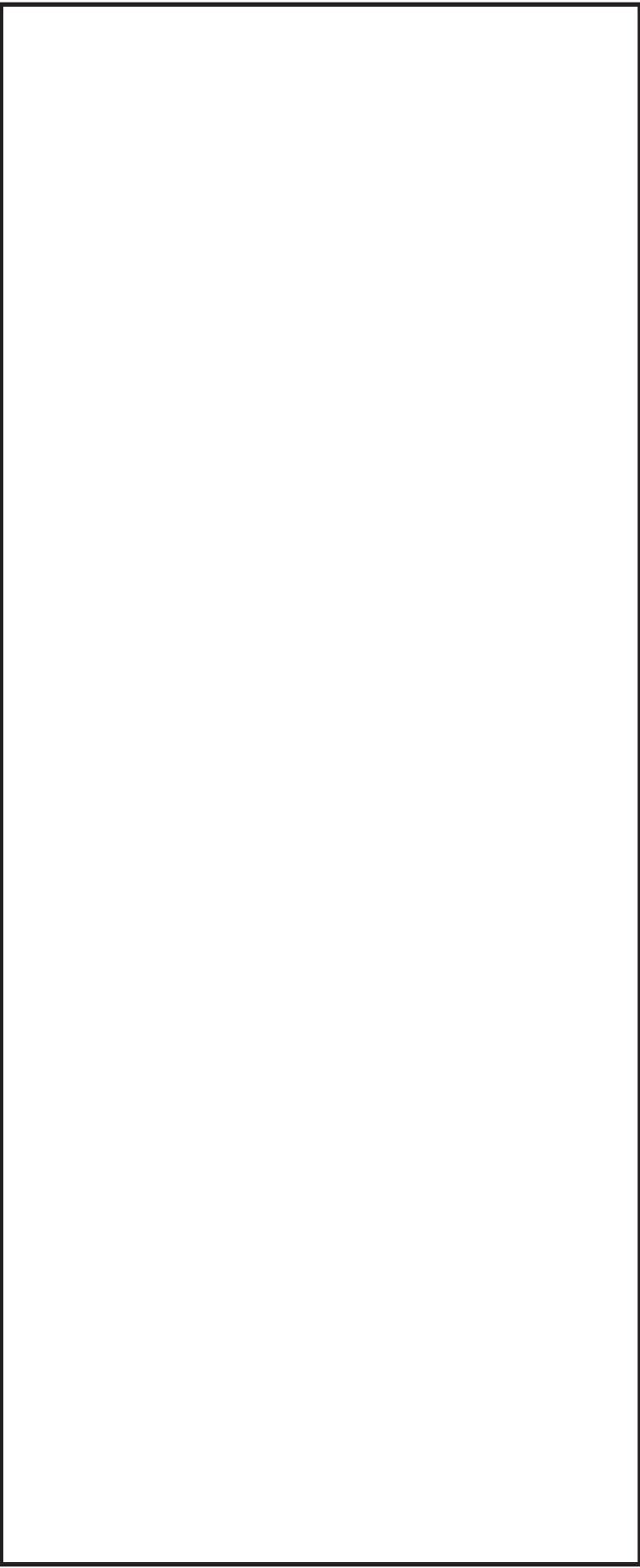
**Diet:** Invertebrates, shrimp, clams, and worms

**Fun Fact:** Newly hatched flounder have one eye on each side of their head, and after a few weeks they settle on the bottom of the ocean and their left eye migrates to the right side of their body and they live the rest of their lives as flat fish!

**COMMON NAME:** \_\_\_\_\_

*Scientific name:* \_\_\_\_\_

*Now it's your turn! Learn about another Massachusetts saltwater fish - draw a picture and fill in the information!*



**Eastern United States Range:** \_\_\_\_\_

**Habitat:** \_\_\_\_\_

**Size:** \_\_\_\_\_

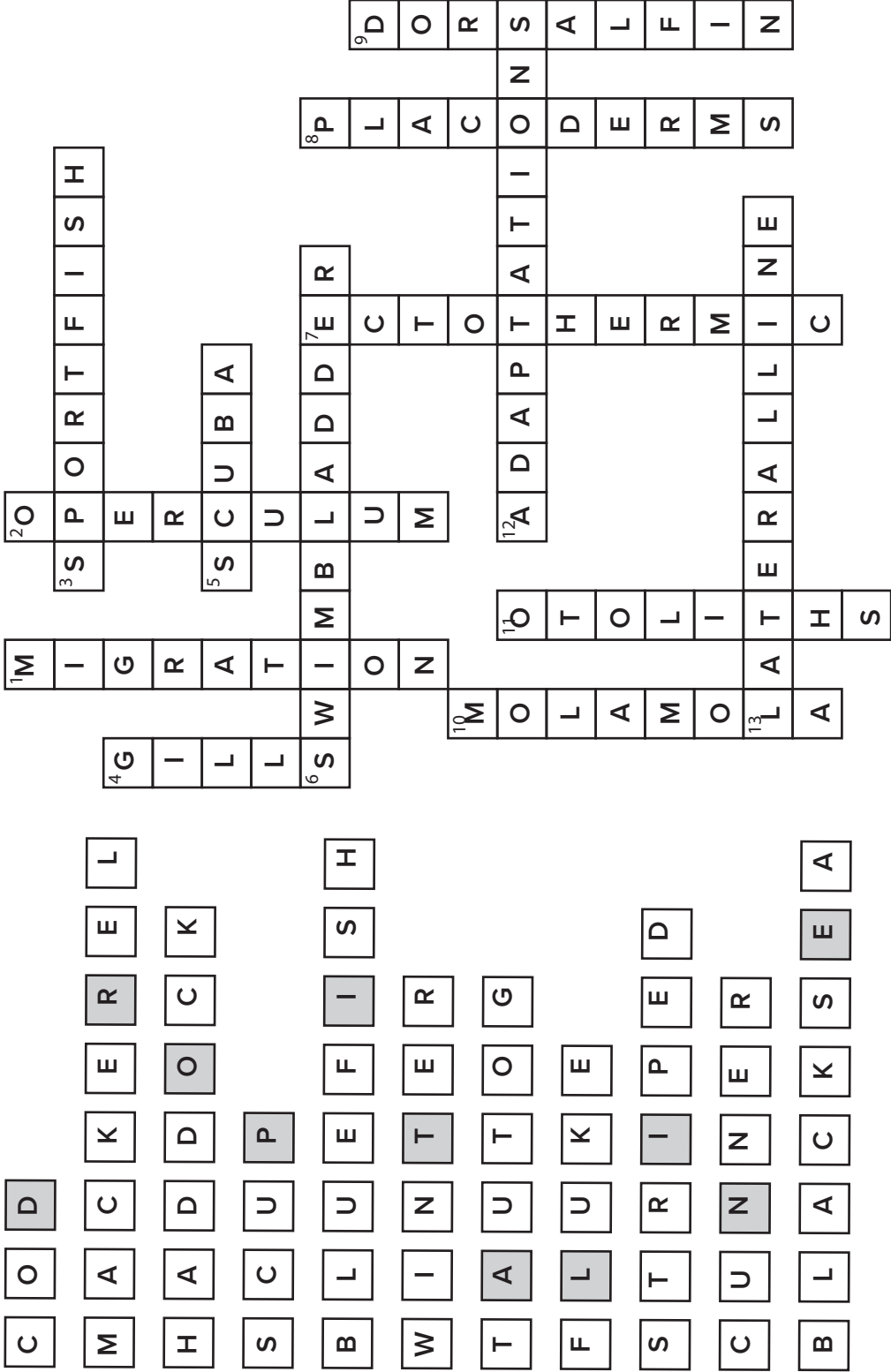
**Massachusetts State Record:** \_\_\_\_\_

**Color:** \_\_\_\_\_

**Diet:** \_\_\_\_\_

**Fun Fact:** \_\_\_\_\_

## answers:



For more information, visit our website!

<https://www.mass.gov/marinefisheries>

Massachusetts Division of Marine Fisheries  
251 Causeway Street, Suite 400  
Boston, Massachusetts 02114

