Which Fish Is This?

Overview

Learning to distinguish features between saltwater fish species is a valuable angler skill. Some characteristics that can be easily compared include:

- Shape, location and number of fins
- Mouth position and shape of the snout
- Body and tail shape

Working with a set of fish cards, players will use a dichotomous key to identify common Massachusetts saltwater fish species. Players will then explore various underwater habitat features and discuss how these adaptations support survival.

Materials

Each pair / group receives:

- Printed set of saltwater fish cards
- Printed dichotomous key
- Printed "Which fish is this?" worksheet
- Scratch paper

- Crayons, pencils and / or paint
- Molding clay (optional extension material)
- Shoe boxes (optional extension material)
- Glue, tape (optional extension material)

Background Information

Most fish are poikilothermic (cold-blooded), aquatic chordates—they have a backbone. Cold-blooded means a fish's body temperature changes with the temperature of its environment.

All fish have gill structures. Most fish respire (get oxygen from the water) through the gills, however, some have lung structures for breathing air.

It's difficult to say all fish have bones. The skeleton of a fish is made of either cartilage or bone. Cartilaginous fish include sharks and rays. Fish come in all different shapes, sizes, and colors, but most will have fin for swimming and scales covering their body.

Having the skill to identify a fish allows an angler to make quick decisions concerning whether or not you must release a fish to swim another day. Regulations are put in place to support a healthy and balanced population of fish for humans to utilize.

A dichotomous key is used to identify a plant or animal. Each question presents descriptions of two distinguishing features, with a direction to another stage in the key, until the species is identified.

Engage

Guiding Questions: What is a dichotomous key? Why is it important to be able to identify different species of fish?

1. Taking turns, share some different kinds of saltwater fish you know of, or your favorite species of fish. Encourage and accept all answers.
2. Explain that fish all have unique physical characteristics that help them survive in their underwater habitat. Today you will be using photos of common saltwater fishes and a dichotomous key to identify different species of saltwater fish. This activity will help us become fish ID experts!

TIP: if printing the activity in black and white, it is helpful to have the fish up for viewing on the screen if players need to identify color patterns.

Explore

1. Working off the worksheet, discuss the question "what makes a fish a fish?". Share out your lists of physical features that fish have in common (gills, vertebrate, cold blooded, scales). Discuss answers that may not fall into ALL groups of fish, such as "lay eggs".
2. Talk about why its important for scientists and anglers to be able to classify and identify fish. Talking points are listed on the answer key at the end of this document.
3. Continuing with the worksheet, have players label as many parts of the fish as they can. Check work with the answer key at the end of this activity.
4. Give players the saltwater fish cards and a dichotomous key. Pick a fish from the deck and model how to use the key by going through each of the questions until you identify the fish species. Have players complete the rest of the cards, writing down the name of the fish on the bottom of each card.
5. Check your work with the answer key at the end of this activity.

Explain

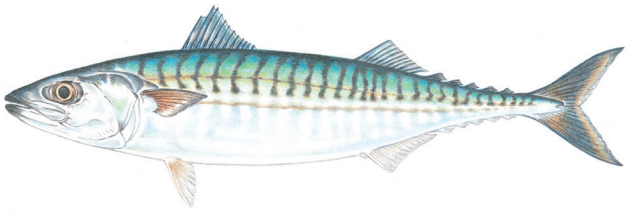
7. After everyone has had the opportunity to label the cards come together as a group. The final activity is to take the cards and group them. Ask players to make two piles of cards, based on whatever criteria they like (this could be color, shape, number of fins, type of food they eat, where they are found...). Then challenge players to reorganize the cards into three, then four, then five, etc. number of groups. Each time players change the piles have them write down how they grouped them on a scrap sheet of paper.
8. After the activity is complete congratulate the players on their observations and critical thinking skills! Anglers have a commitment to know the different species of fish that live in Massachusetts coastal waters. Learning about the physical characteristics and behaviors of fish will help them target specific species and quickly identify if they can keep or must release their catch.

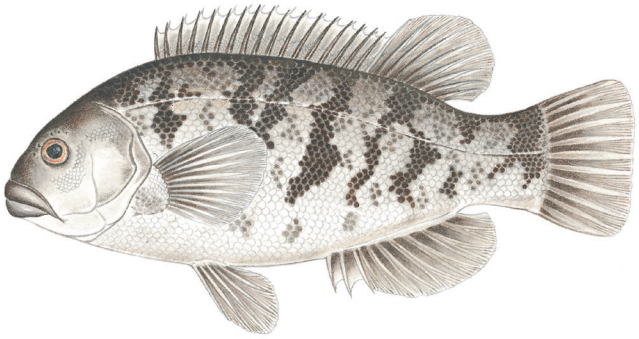
Extension Activity

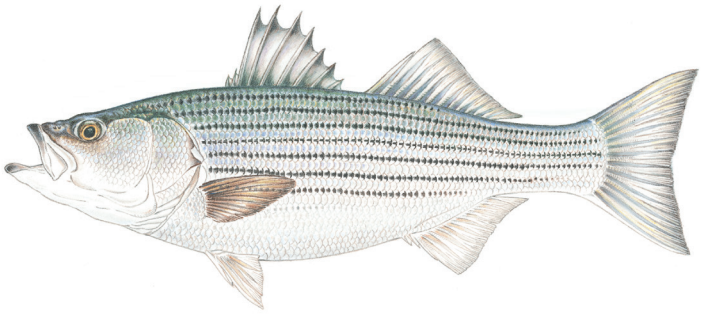
Guiding Questions: What kinds of habitats are present in Massachusetts coastal waters? What adaptations do fish have for surviving in these habitats?

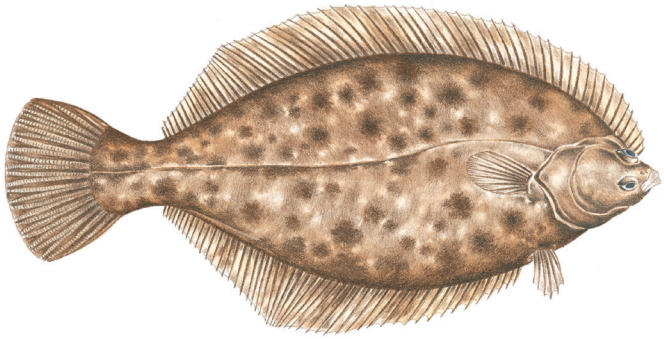
1. Now that players have explored the physical attributes of several saltwater fish species, they will next explore the habitats these fish live in and visit.
2. Encourage players to look up photos of different habitats found along the Massachusetts coastline and throughout the Stellwagen Bank National Sanctuary.
   - https://flickr.com/photos/mamarinefisheries/
   - https://stellwagen.noaa.gov/pgallery/videography.html
3. Instruct players to design and create an underwater saltwater habitat. Players can draw, sculpt and mold, or diorama this underwater scene using an old cereal or shoe box. Encourage players to think about what features of the habitat support food, shelter, and reproductive health of the fish living there.
4. When players finish their underwater habitat scenes ask them to present to you and/or the group. Discuss which kinds of fish are most likely to be found in this habitat using the saltwater fish cards.

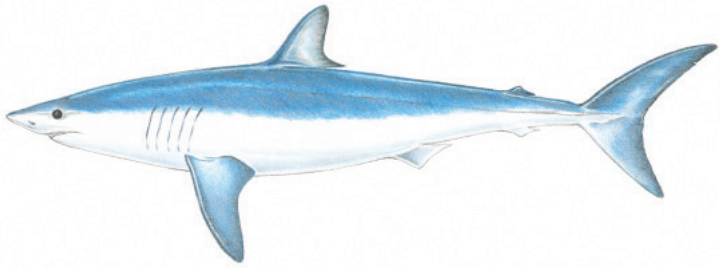
Saltwater Fish Cards 1 (note: fish are NOT to scale)

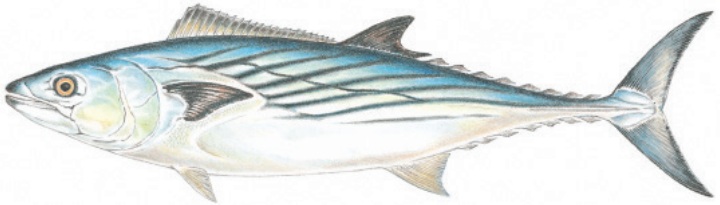


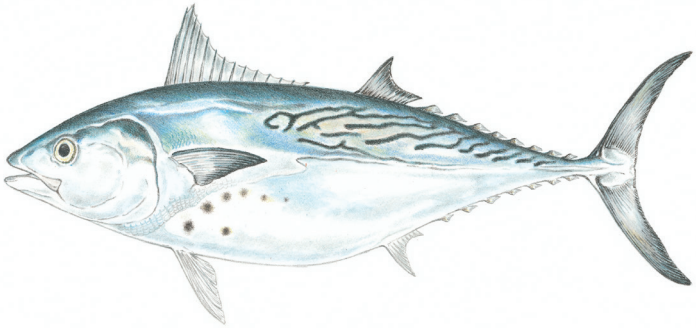




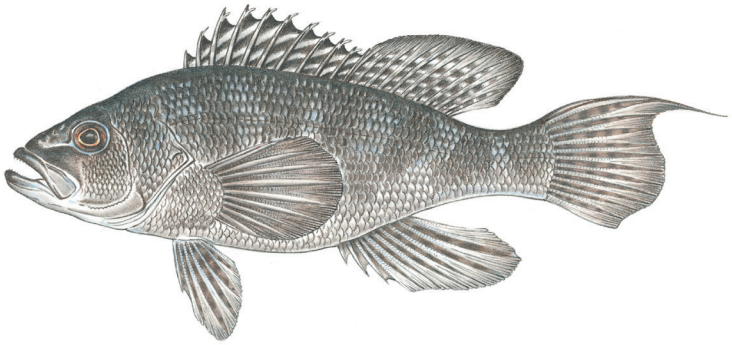


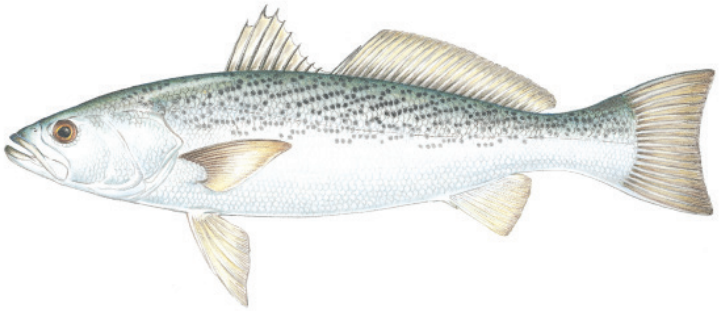


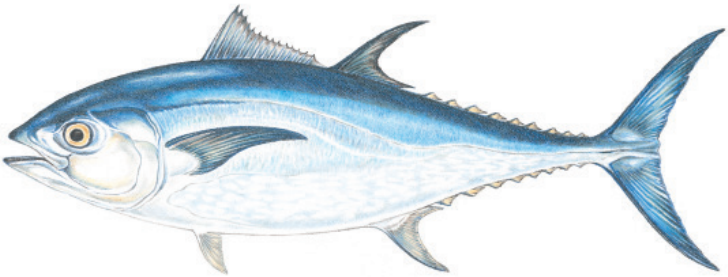


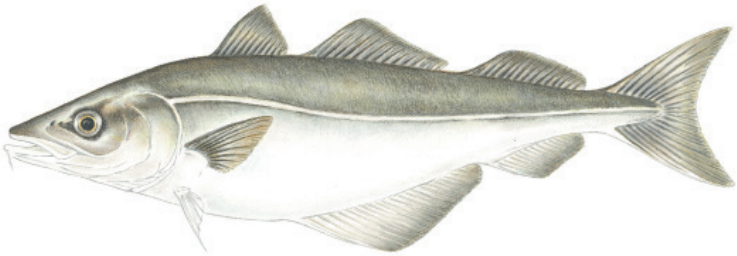


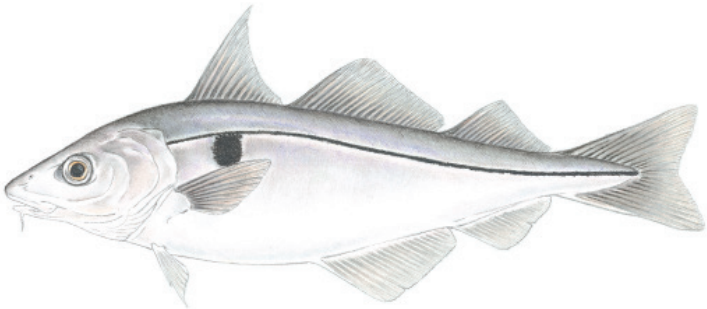
Saltwater Fish Cards 2 (note: fish are NOT to scale)

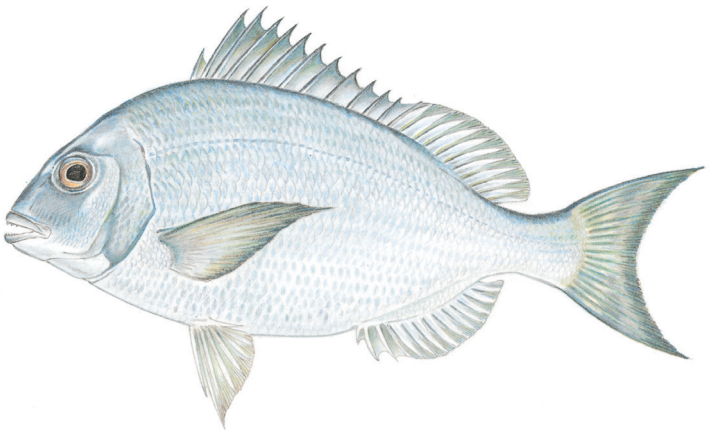


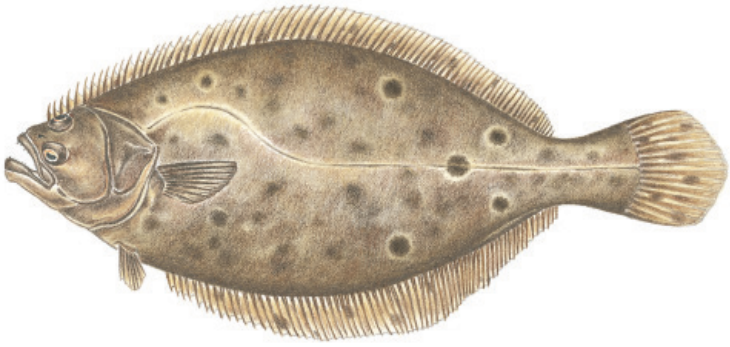




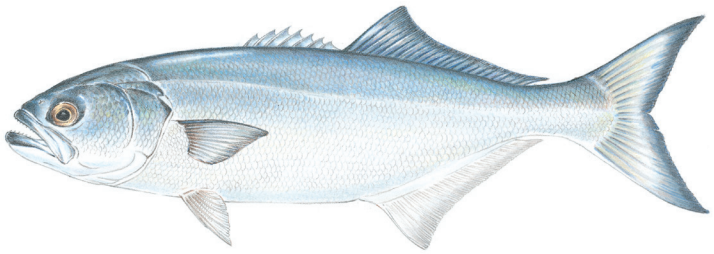


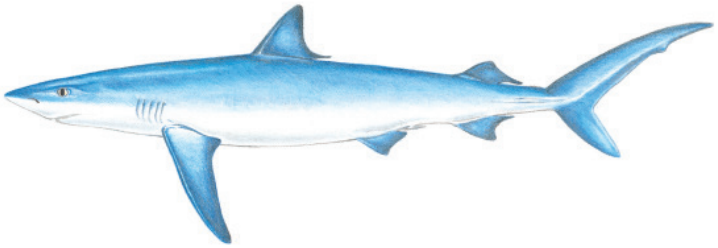


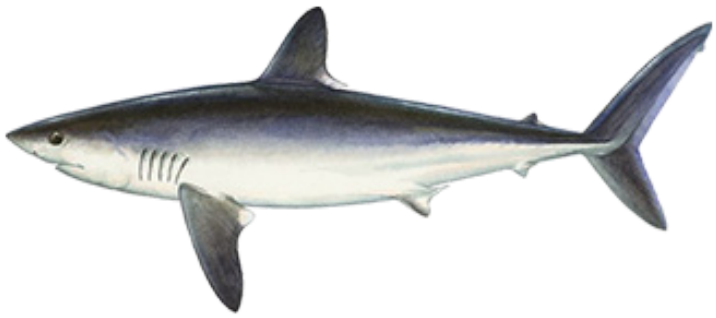


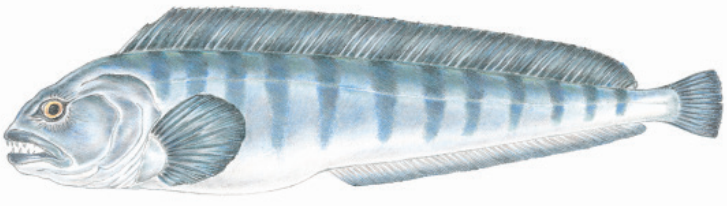


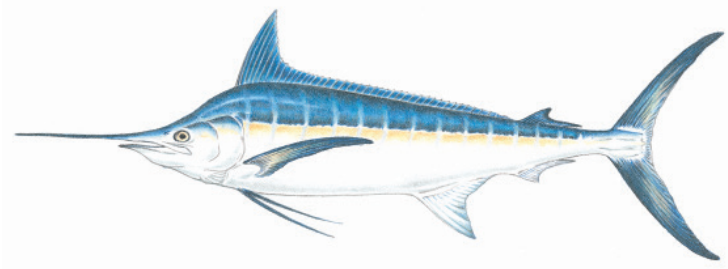
Saltwater Fish Cards 3 (note: fish are NOT to scale)

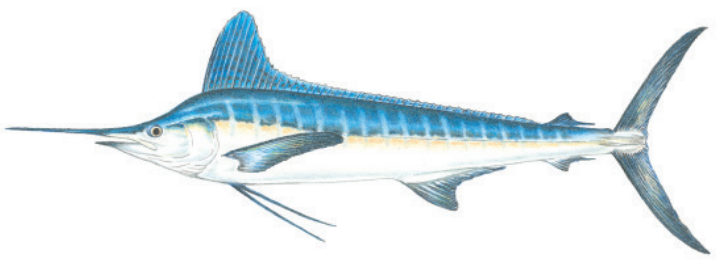




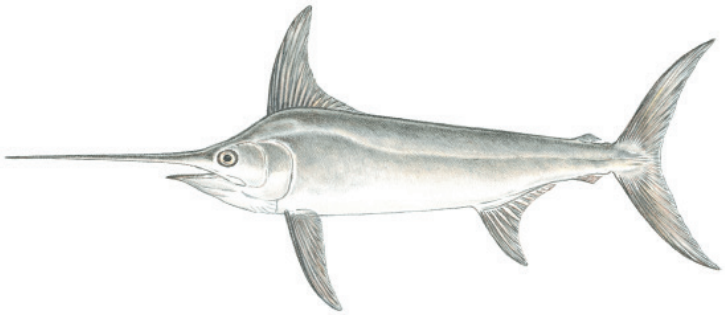


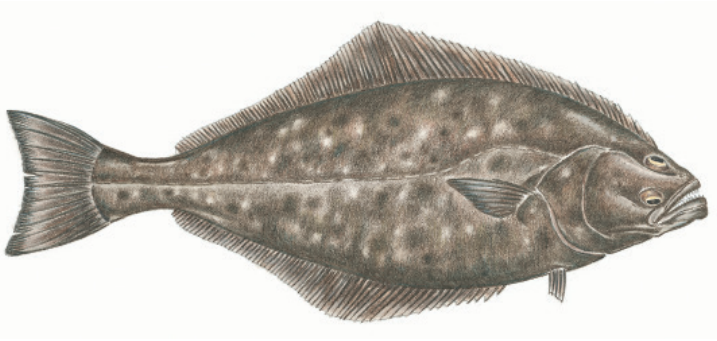






Saltwater Fish Cards 4 (note: fish are NOT to scale)





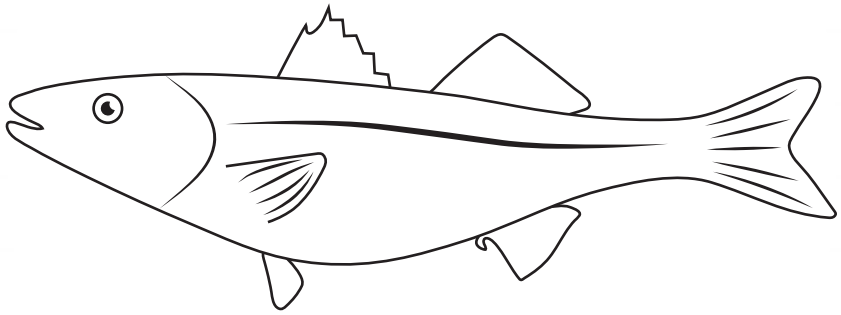
Are we missing one of your favorite fish species? Draw your fish in one of the empty spaces and add questions and arrows to the dichotomous key to identify your fish!

Which Fish Is This?

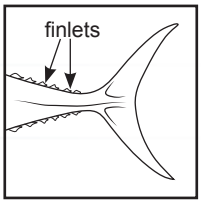
What makes a fish a "fish"?

Why is it important for scientists and anglers to be able to tell the difference between fish species?

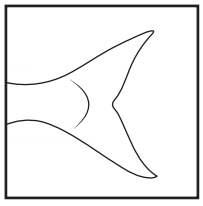
Label the following parts on the fish below: dorsal fins, pectoral (pec) fin, pelvic fin, anal fin, caudal fin, lateral line, caudal peduncle

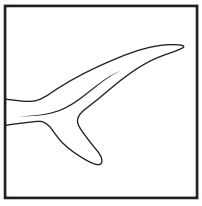


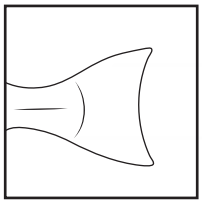
Caudal (tail) fin shape examples:



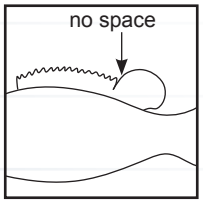
Lunate, with finlets


Forked

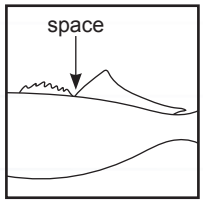

Asymmetrical


Emarginate

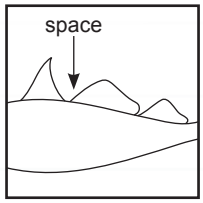
Dorsal (back) fin shape examples:



One



Two



Three

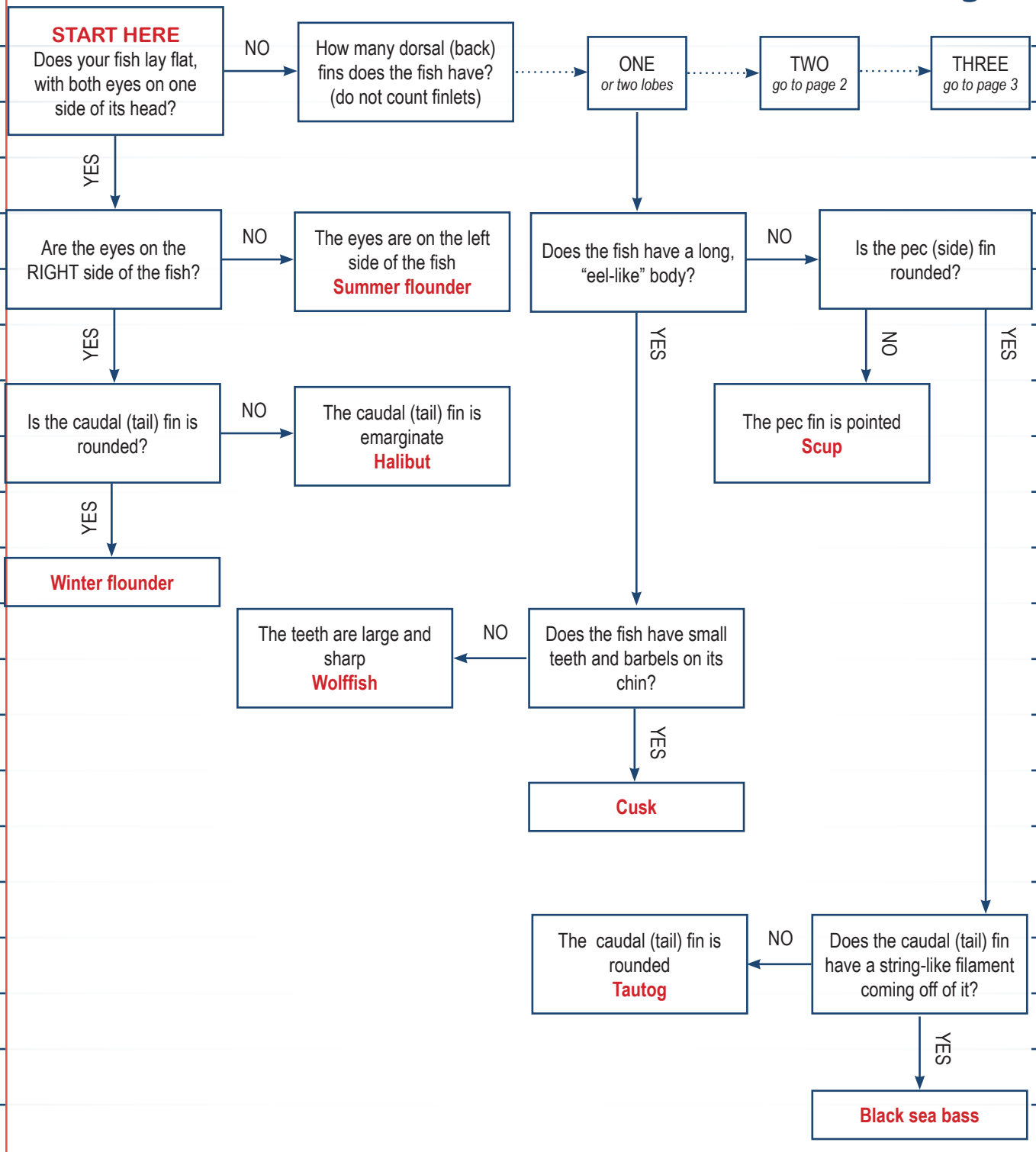
Note: The example shown for one dorsal fin has two LOBES, or different sections, with no space in-between.

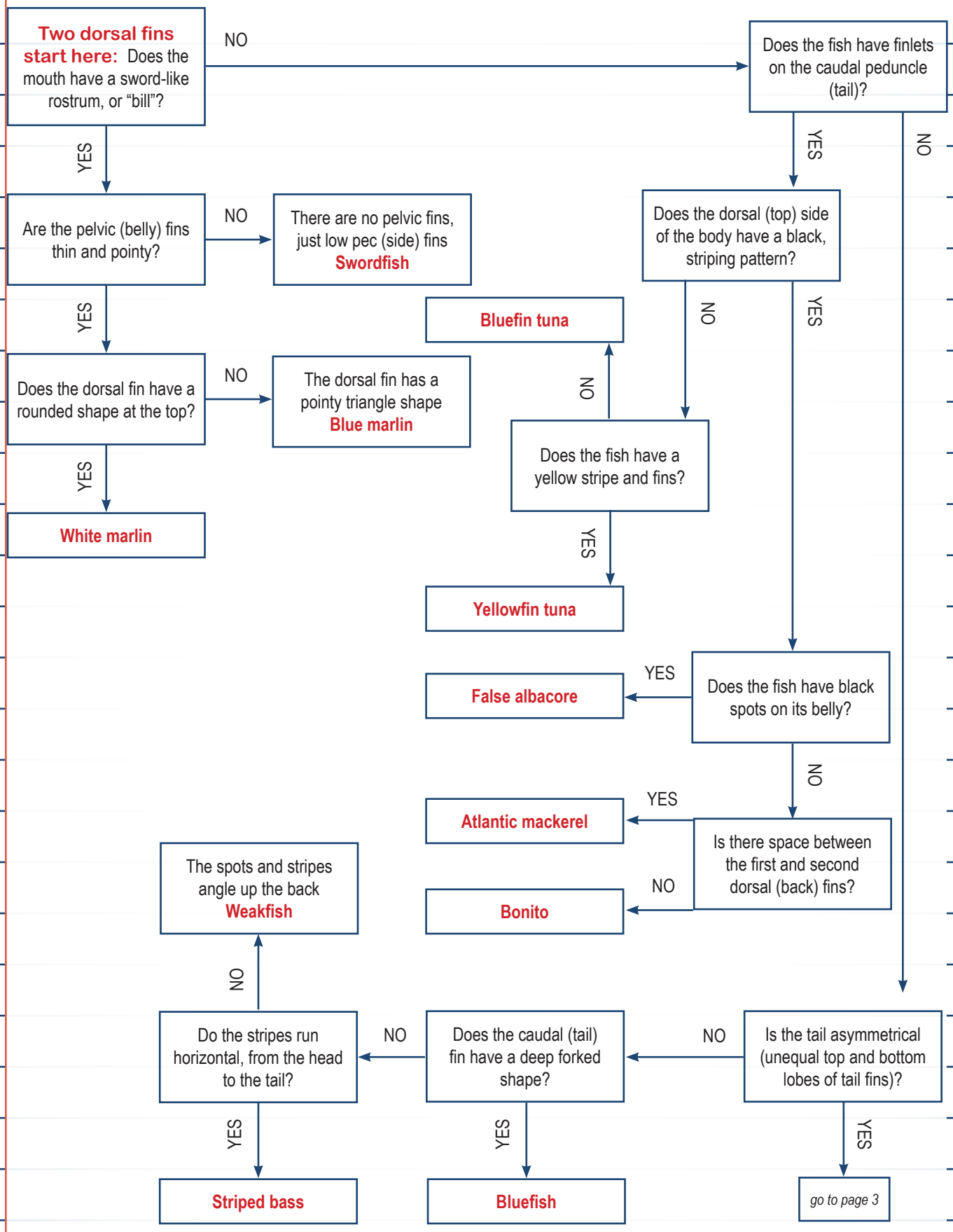
The two and three fin examples have space in-between each fin.

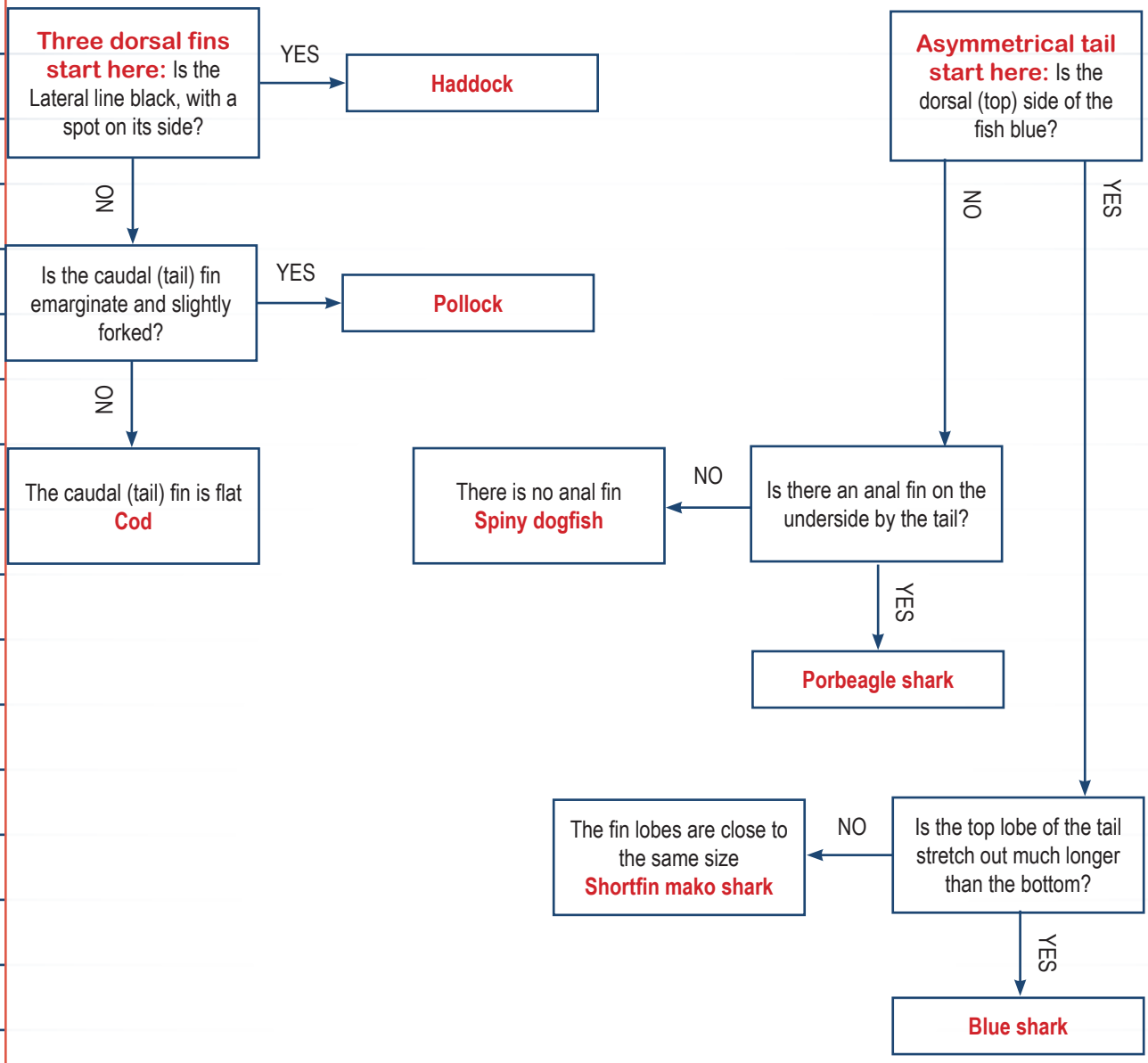
Extension Activity

Sketch your habitat this page. Label any features you think are important for a fish's survival.

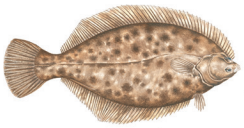
Saltwater Fish Dichotomous Key

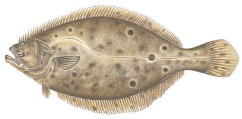


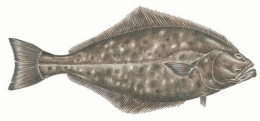

Two dorsal fins start here: Does the mouth have a sword-like rostrum, or "bill"?
NO
Does the fish have finlets on the caudal peduncle (tail)?
YES
NO
YES
Are the pelvic (belly) fins thin and pointy?
NO
There are no pelvic fins, just low pec (side) fins
Swordfish
Does the dorsal (top) side of the body have a black, striping pattern?
YES
NO
YES
Bluefin tuna
Does the dorsal fin have a rounded shape at the top?
NO
The dorsal fin has a pointy triangle shape
Blue marlin
NO
Does the fish have a yellow stripe and fins?
YES
YES
White marlin
Yellowfin tuna
YES
False albacore
Does the fish have black spots on its belly?
NO
YES
Atlantic mackerel
Is there space between the first and second dorsal (back) fins?
NO
Bonito
The spots and stripes angle up the back
Weakfish
NO
Do the stripes run horizontal, from the head to the tail?
NO
Does the caudal (tail) fin have a deep forked shape?
NO
Is the tail asymmetrical (unequal top and bottom lobes of tail fins)?
YES
YES
YES
Striped bass
Bluefish
go to page 3


Three dorsal fins start here: Is the Lateral line black, with a spot on its side?
YES
Haddock
NO
Is the caudal (tail) fin emarginate and slightly forked?
YES
Pollock
NO
The caudal (tail) fin is flat
Cod
Asymmetrical tail start here: Is the dorsal (top) side of the fish blue?
NO
YES
Is there an anal fin on the underside by the tail?
NO
There is no anal fin
Spiny dogfish
YES
Porbeagle shark
Is the top lobe of the tail stretch out much longer than the bottom?
NO
The fin lobes are close to the same size
Shortfin mako shark
YES
Blue shark

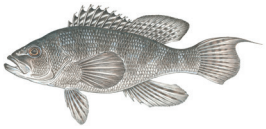
Answer key


Winter flounder


Summer flounder


Halibut


Tautog


Black sea bass


Scup


Cusk


Wolffish

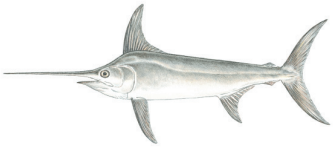

Yellowfin tuna


Bluefin tuna


False albacore

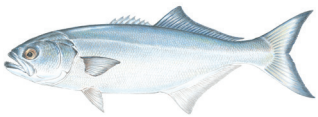

Bonito


Atlantic Mackerel


Swordfish


Yellow marlin


Blue marlin

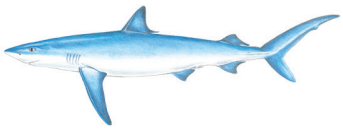

Bluefish

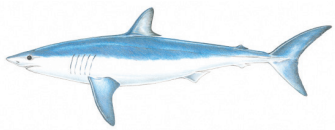

Striped Bass


Weakfish


Spiny dogfish


Porbeagle shark


Blue shark


Shortfin mako


Atlantic cod


Haddock


Pollock

What makes a fish a "fish"? Fish live in water, have gills, are vertebrates, and most are cold blooded.

Why is it important for scientists and anglers to be able to tell the difference between fish species? Classifying living things helps us to understand the relationships between different organisms. Classification also makes it easier to identify species that scientists might want to study. It is important for anglers to be able to tell fish species apart so they can easily identify fishing regulations for each species.