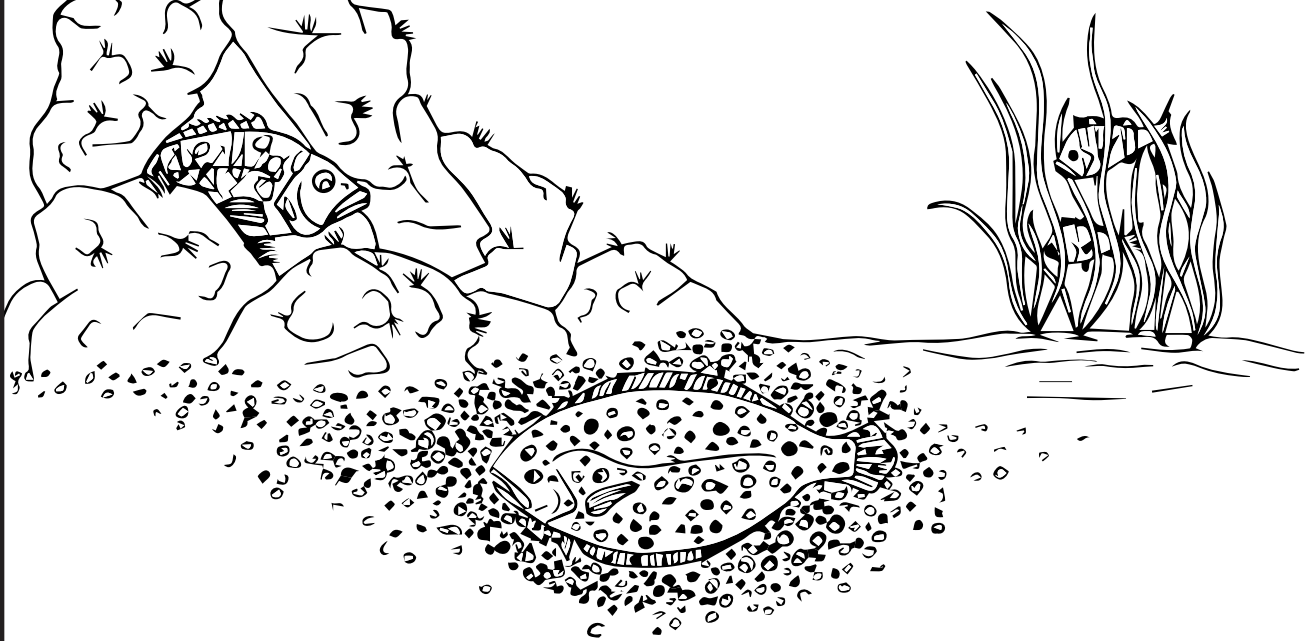


COLOR and Learn

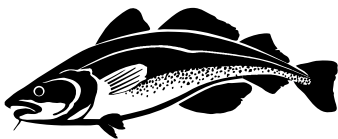
all about

Marine Habitats



This book belongs to: _____

Marine Fisheries
Commonwealth of Massachusetts



What is a habitat?

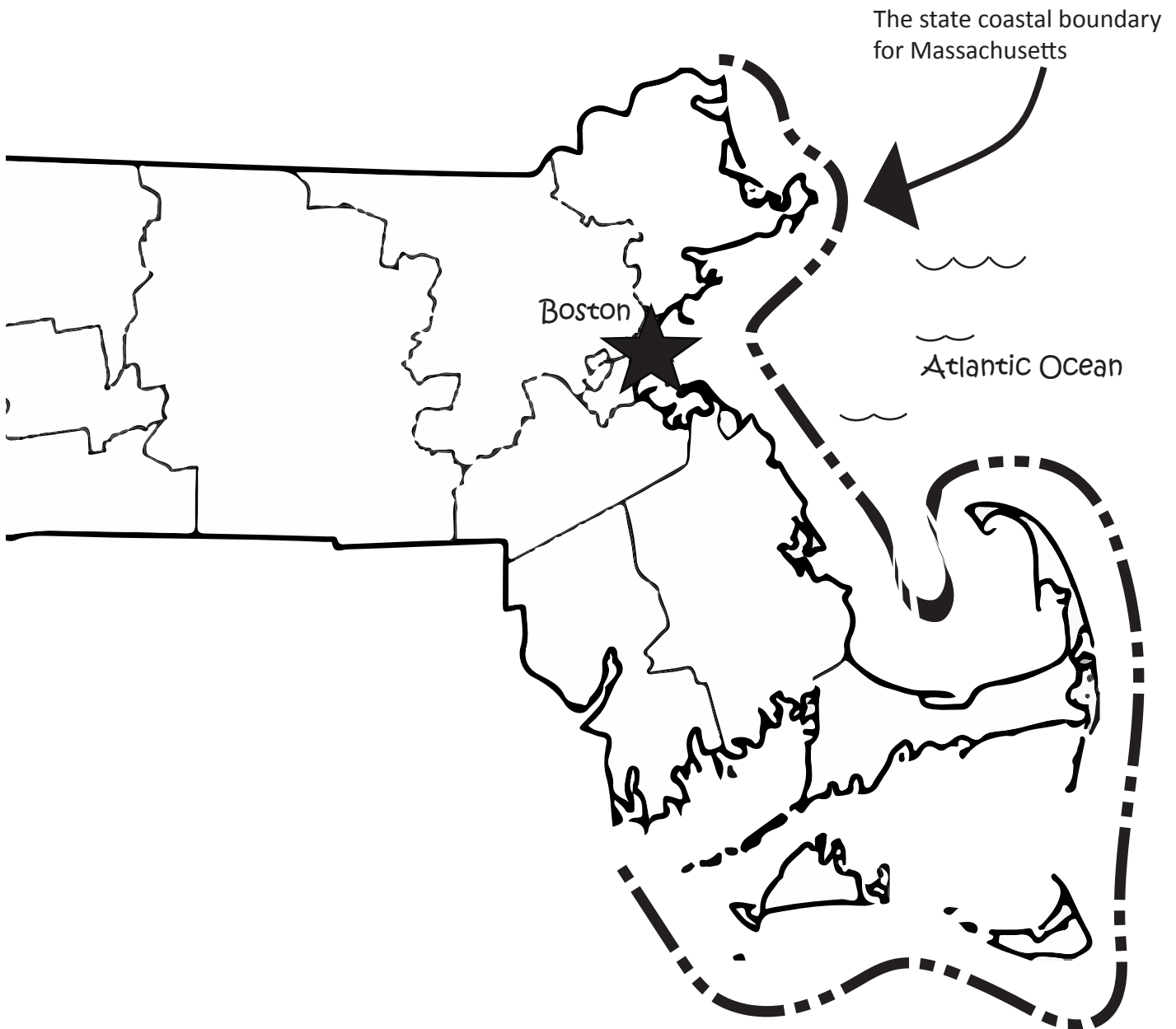


A **habitat** is where something lives. It's an area that provides food and shelter. Habitats come in all different shapes and sizes. From rainforests to the Arctic tundra, from tidepools to the deepest trenches in the ocean, nearly every corner of Earth is a habitat to something.

Some might think the ocean is one big habitat. In a way, it is. Everything living in the ocean needs **saltwater** to survive. The ocean can be divided into different areas. Many animals like only specific areas. Massachusetts has many of these marine **ecosystems** and is very close to those that are offshore. Let's learn about the marine habitats Massachusetts has...

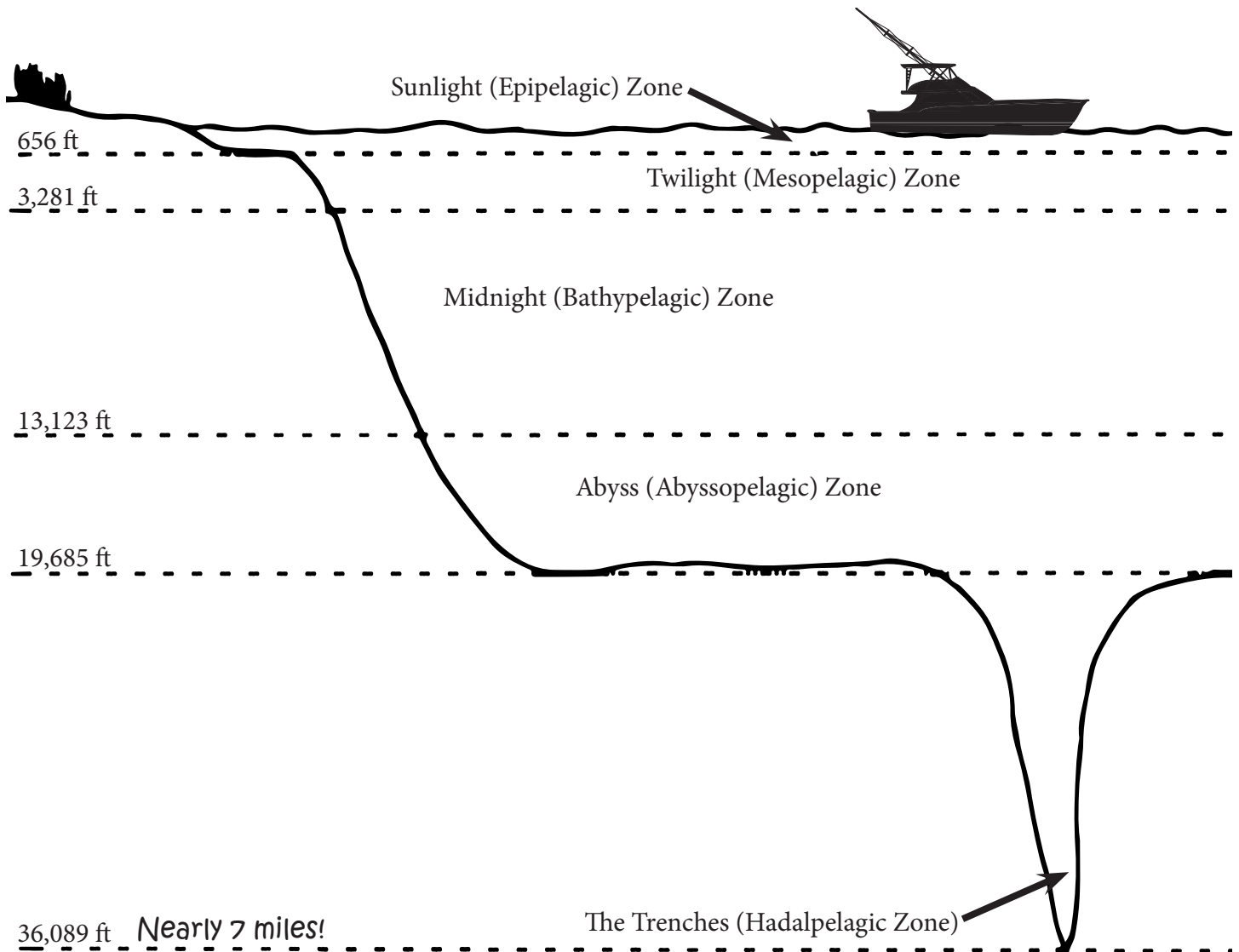


Massachusetts Marine Waters



State **territorial waters** run from the shoreline to three miles out at sea. This seemingly small area of the ocean has more different kinds of habitats than you might think!

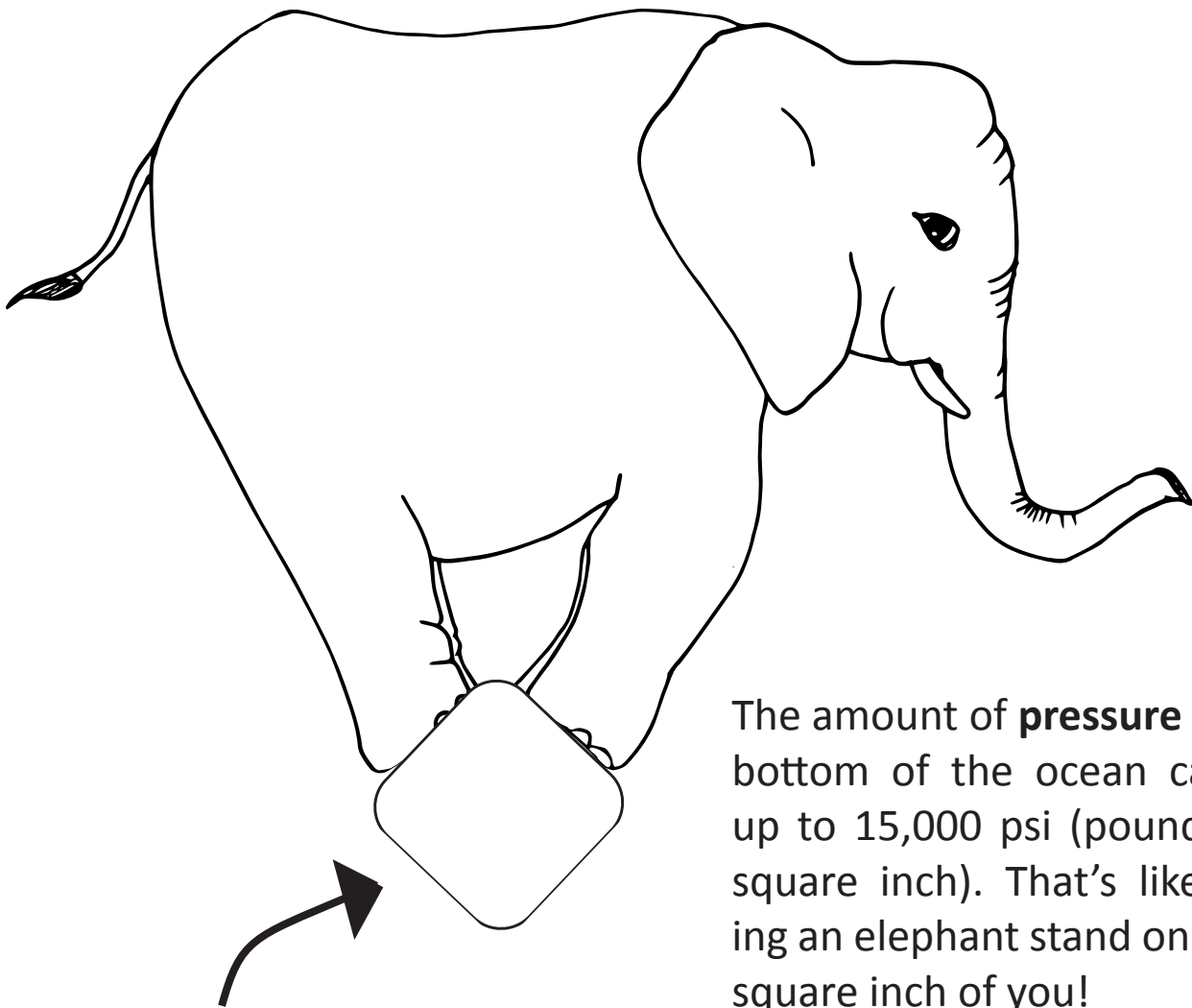
Levels of the Ocean



When we go to the beach, or even on a boat in the middle of the ocean, we only see the very top of the water. On average, the ocean is a little over two miles deep. **Challenger Deep**, the deepest part of the ocean, is almost seven miles down! Scientists divide the ocean into different sections so that they are easier to describe as new things are discovered about them.

Challenges of marine habitats

Living in the ocean isn't easy. Not all animals can live everywhere in the ocean. The amount of oxygen, temperature, pressure, and light all play a part in where animals live.

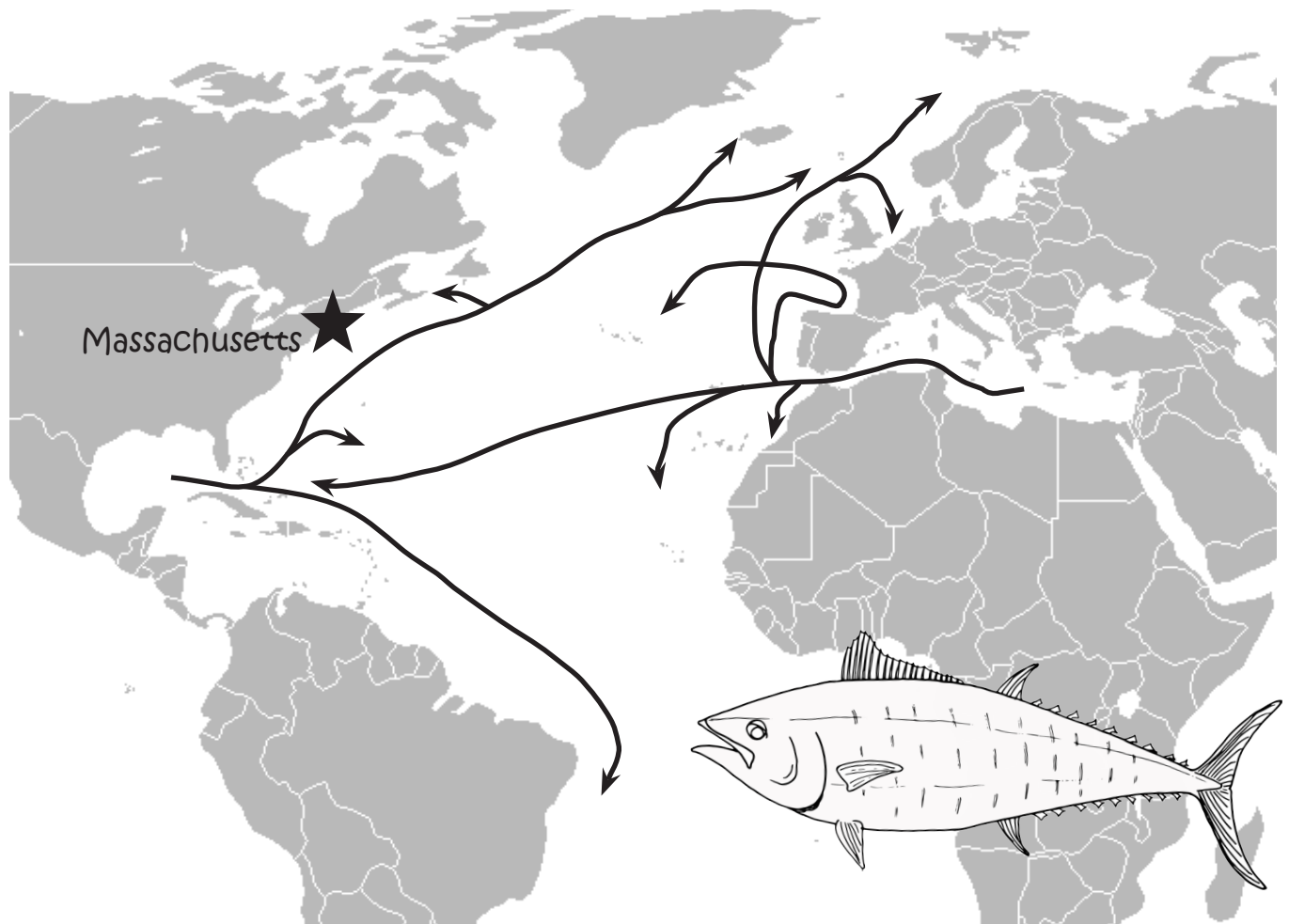


This is one square inch!

The amount of **pressure** at the bottom of the ocean can be up to 15,000 psi (pounds per square inch). That's like having an elephant stand on every square inch of you!

Migration

This is the migration pattern of Atlantic bluefin tuna. They are born in the Gulf of Mexico or the Mediterranean and move all along the Atlantic Ocean.



While some animals live in one place, others migrate from one area to another. In the ocean, these **migrations** can be a few feet or thousands of miles. Fish and marine mammals, among many other ocean animals, migrate to Massachusetts waters to feed or give birth. Striped bass, bluefin tuna, and humpback and right whales are some of the most well known ocean animals to migrate to Massachusetts waters.

Wordfind

Find the words below in the wordfind! They can be up, down, backward, forward, or diagonal.

H	X	Z	G	Q	E	D	H	P	E	L	S	Z	D	N
H	A	B	I	T	A	T	N	C	H	S	L	G	N	O
R	Q	D	E	S	P	D	O	T	A	T	S	O	I	I
S	E	D	A	I	S	S	A	R	M	E	E	C	C	T
C	Z	T	L	L	Y	Y	G	A	T	R	A	R	H	A
T	G	I	A	S	P	L	B	B	U	R	W	Z	H	R
Y	N	P	T	W	E	E	I	A	Z	I	E	S	B	G
G	E	E	H	E	T	P	L	B	D	T	E	F	N	I
T	M	F	F	C	D	L	P	A	D	O	D	E	I	M
S	H	S	R	A	M	E	A	E	G	R	K	E	F	Y
P	K	O	L	P	R	G	E	S	L	I	F	R	V	G
B	N	X	X	M	H	S	T	P	M	A	C	U	X	H
T	I	D	E	P	O	O	L	H	C	L	G	B	B	J
I	T	M	R	V	I	A	V	H	L	L	I	I	U	D
P	E	E	D	R	E	G	N	E	L	L	A	H	C	M

Abyss

Hadalpelagic

Reef

Challenger Deep

Marsh

Saltwater

Ecosystems

Migration

Seaweed

Eelgrass

Pelagic

Territorial

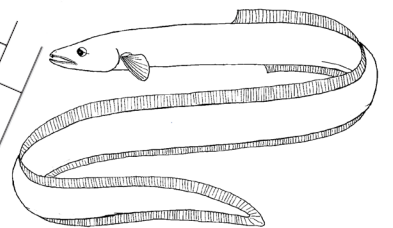
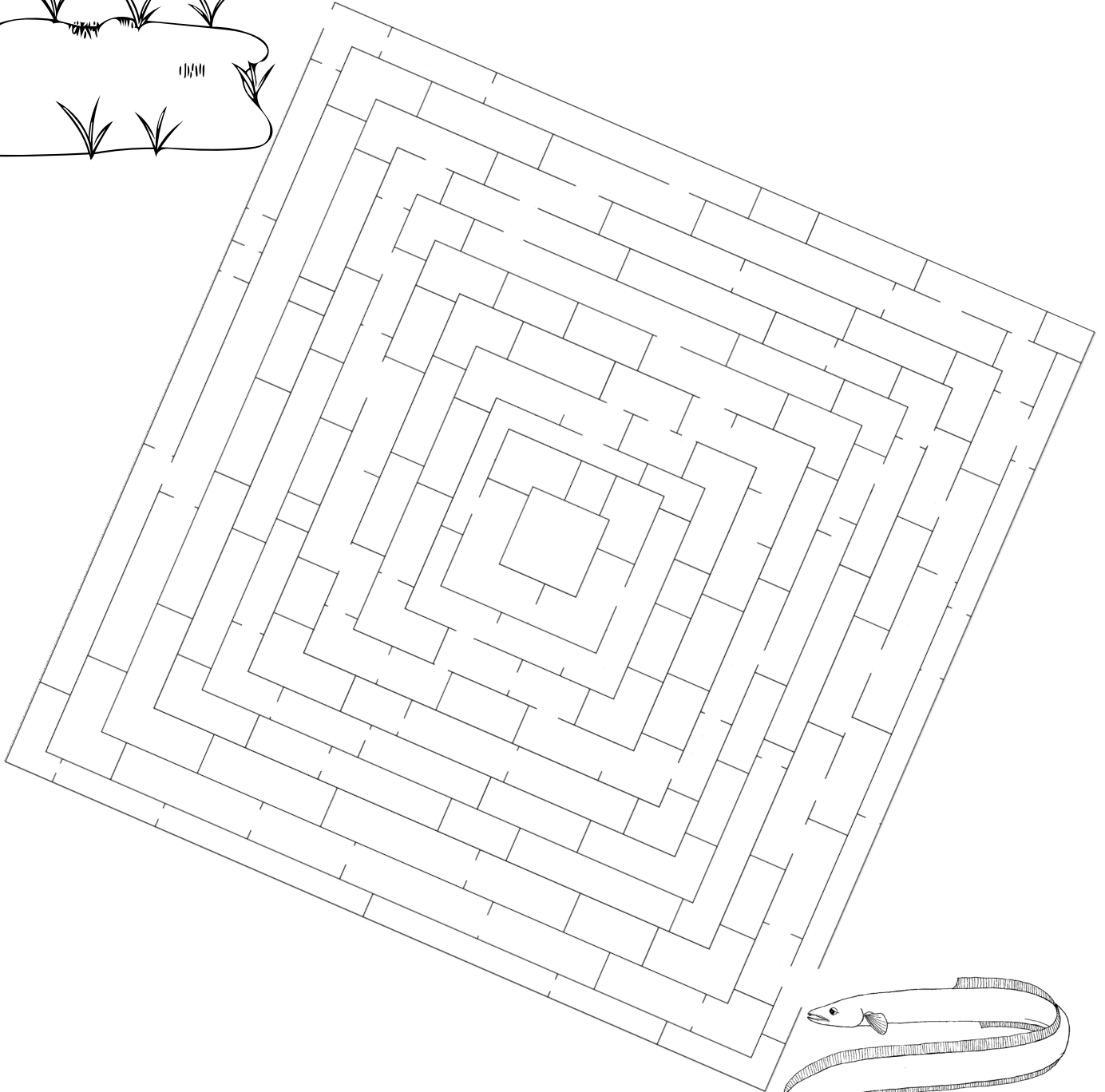
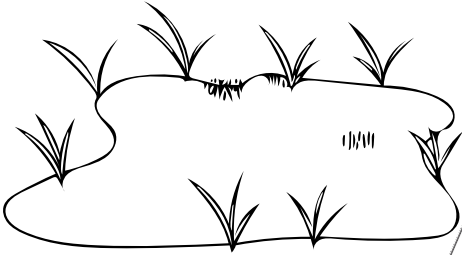
Habitat

Piling

Tide Pool

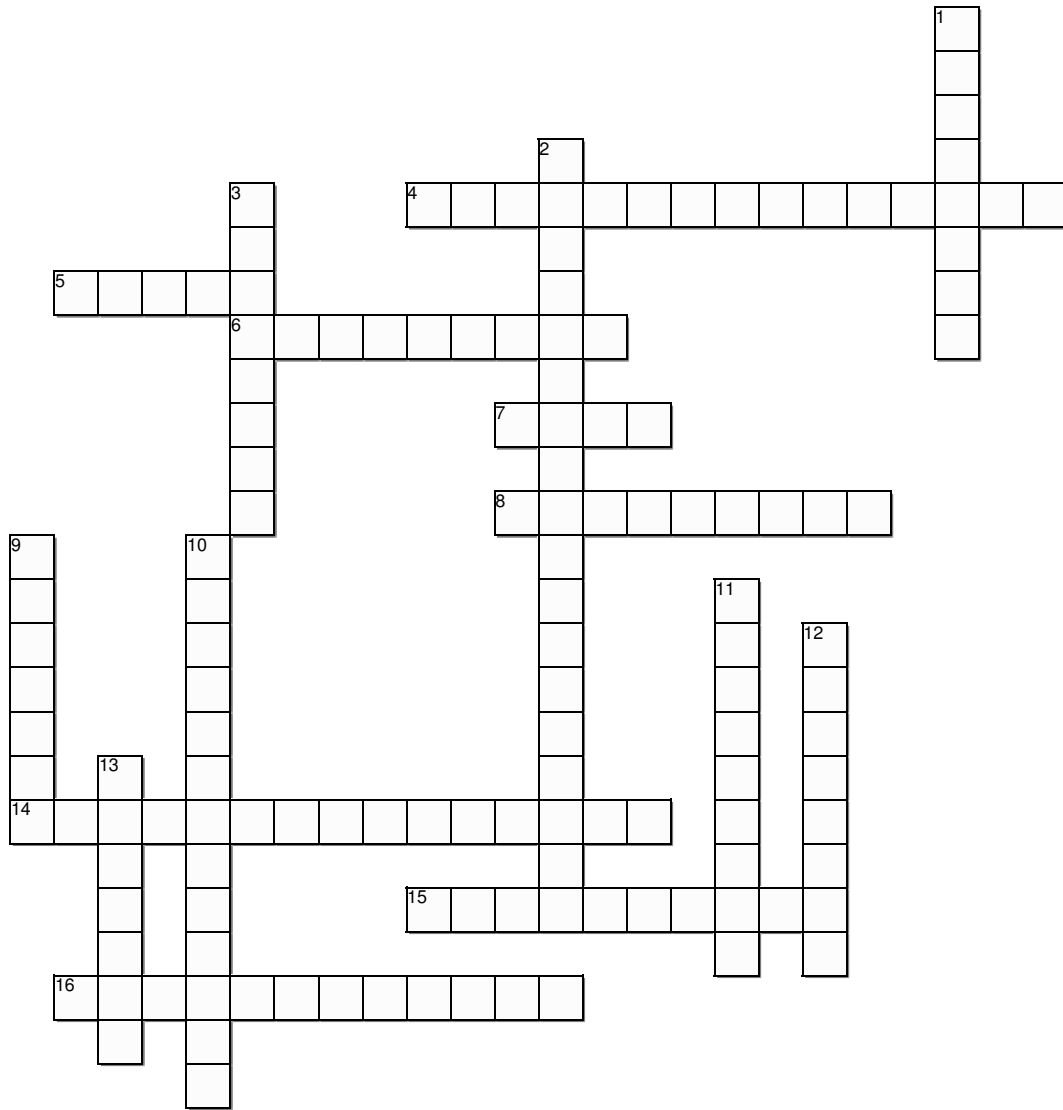
Swim Upstream Maze

Help the American eel make its way from the open ocean to the pond where it would like to live!



Crossword Puzzle

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



Across

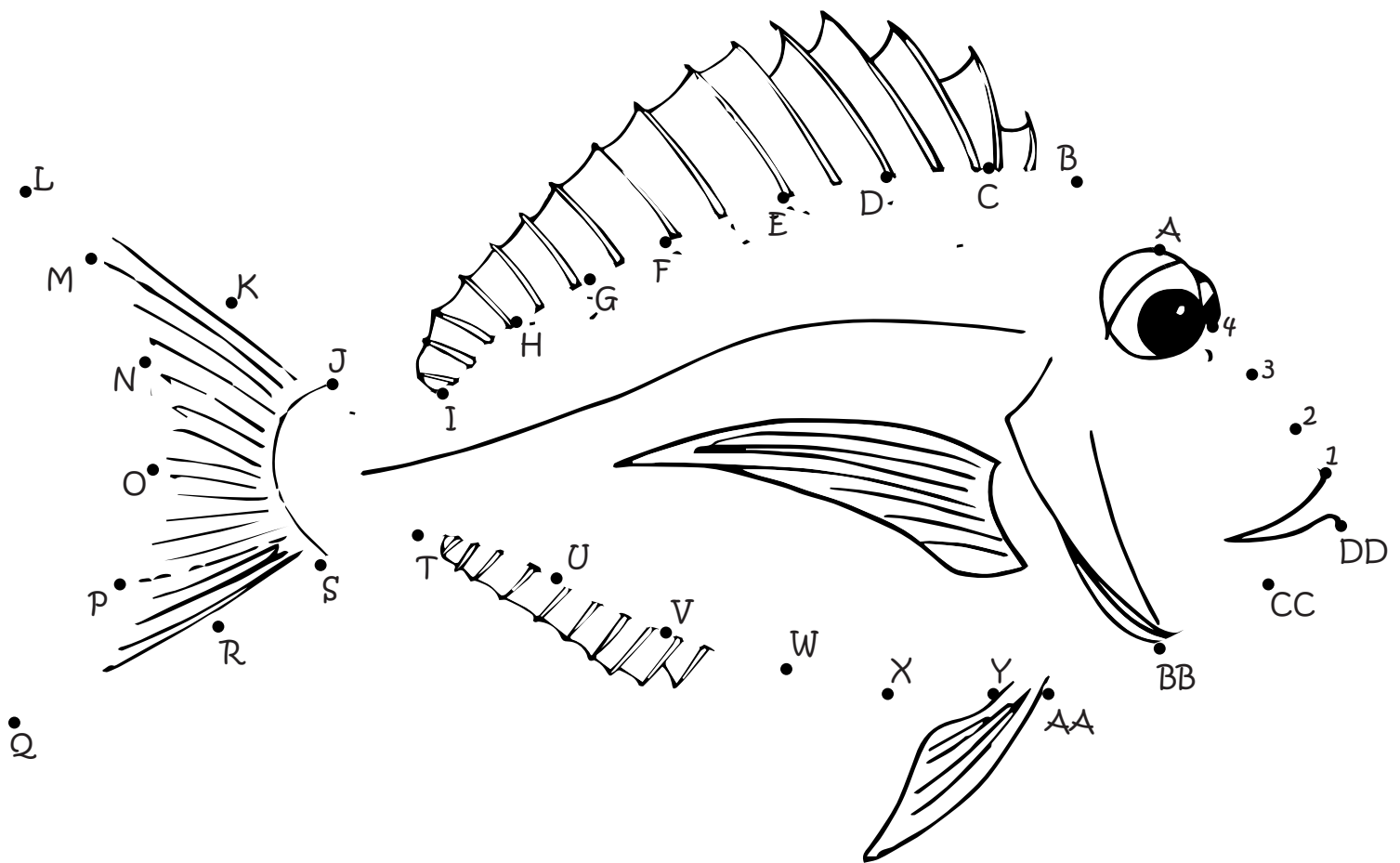
- 4 The area of land on the coast that is effected by tides
- 5 Found in fresh and salt water, also called "seaweed":
- 6 Organisms helping each other survive
- 7 Fish off of this man-made structure
- 8 Movement from one place to another for a particular reason
- 14 The deepest spot in the ocean
- 15 Communities of living organisms and non-living components of the environment
- 16 Challenger Deep is within the zone

Down

- 1 Underwater mountain
- 2 From the coast to three miles out
- 3 The force pushing against something
- 9 The open ocean
- 10 The ocean floor
- 11 What the ocean is filled with
- 12 *Zostera marina*
- 13 Where something lives

Connect the Dots

Connect the dots to see Patricia Porgy!



Eelgrass



Eelgrass is a plant that lives in shallow, coastal waters. It is an important habitat for many different animals like lobsters, crab, snails, mussels, and many species of fish!

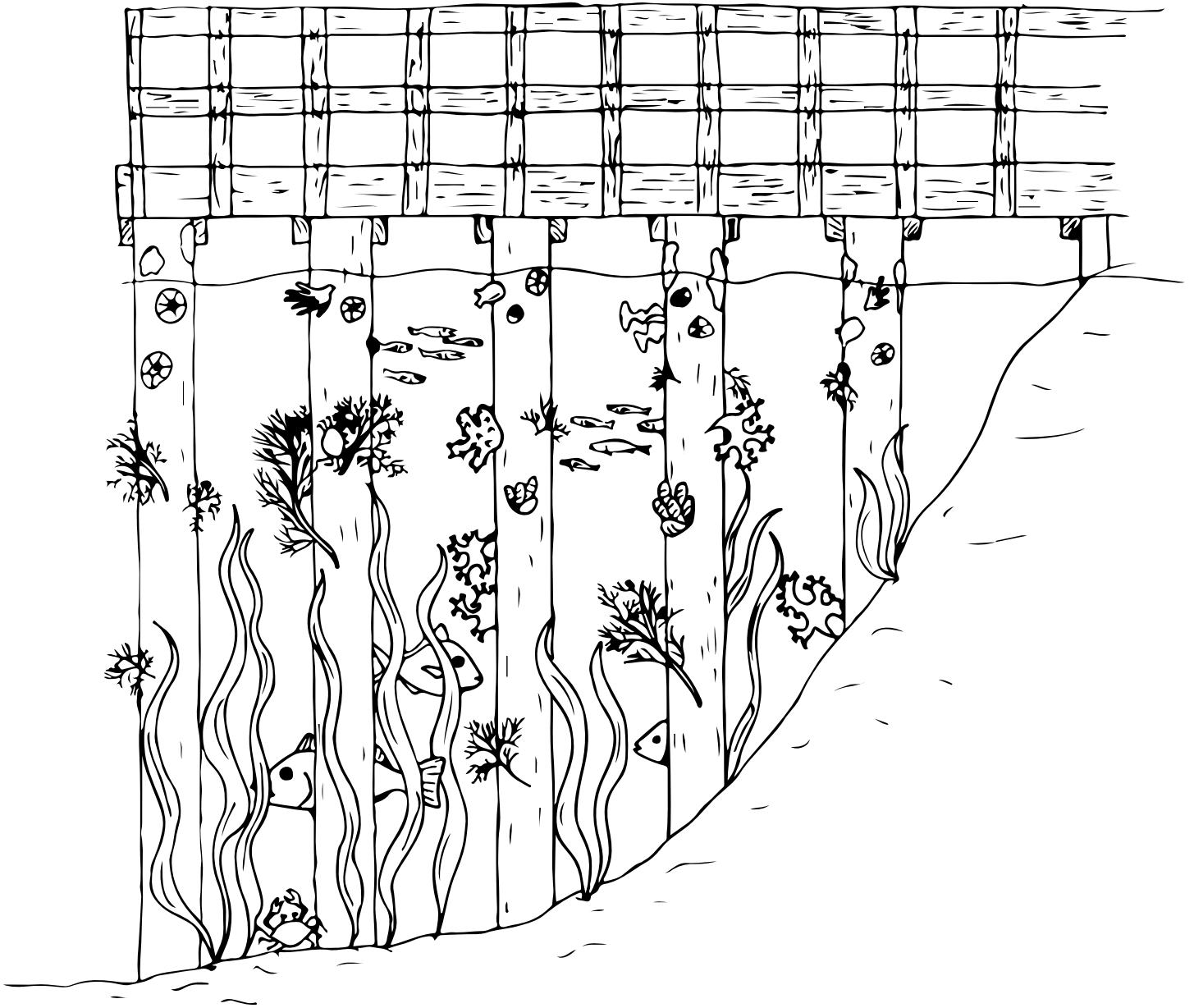
There are 15 different species of marine eelgrass. The species in Massachusetts is *Zostera marina*. Eelgrass usually grows in bays, estuaries, and along beaches.

Salt Marsh



A salt marsh is a coastal habitat in the upper coastal intertidal zone that separates the land from the open ocean. It usually has tall grasses, but sometimes will have shrubs and low trees as well. Since salt marshes are coastal, they are affected by tides—becoming flooded when there is high tide. Salt marshes protect the land from erosion and are an important habitat for both aquatic and terrestrial animals.

Docks and Piers



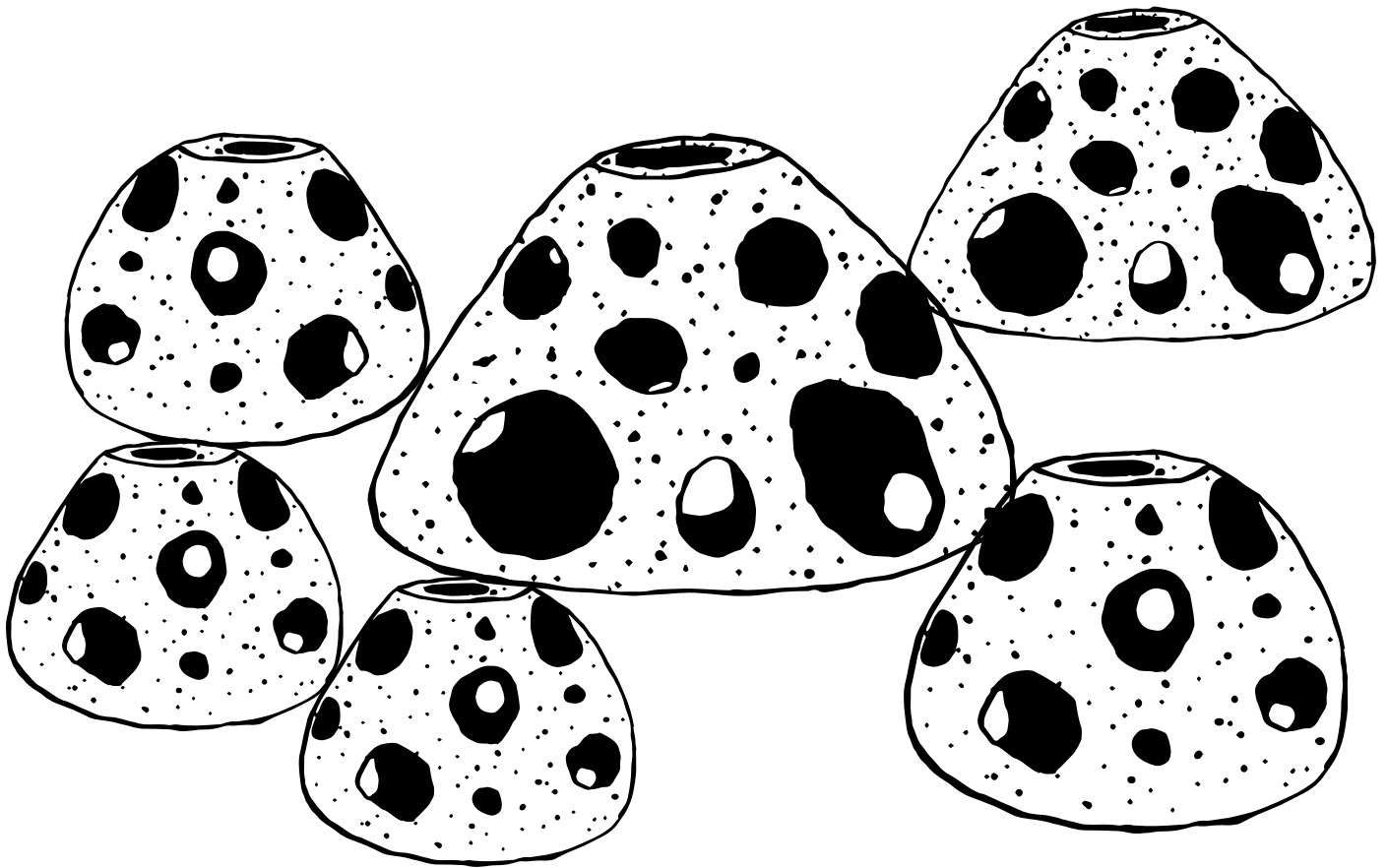
Although **docks** and piers are man-made, over time, they turn into an ecosystem for many marine species. Algae, marine plants, crustaceans, fish, and lots of other marine life use the docks and piers as shelter and a place to find food!

Rocky Reef



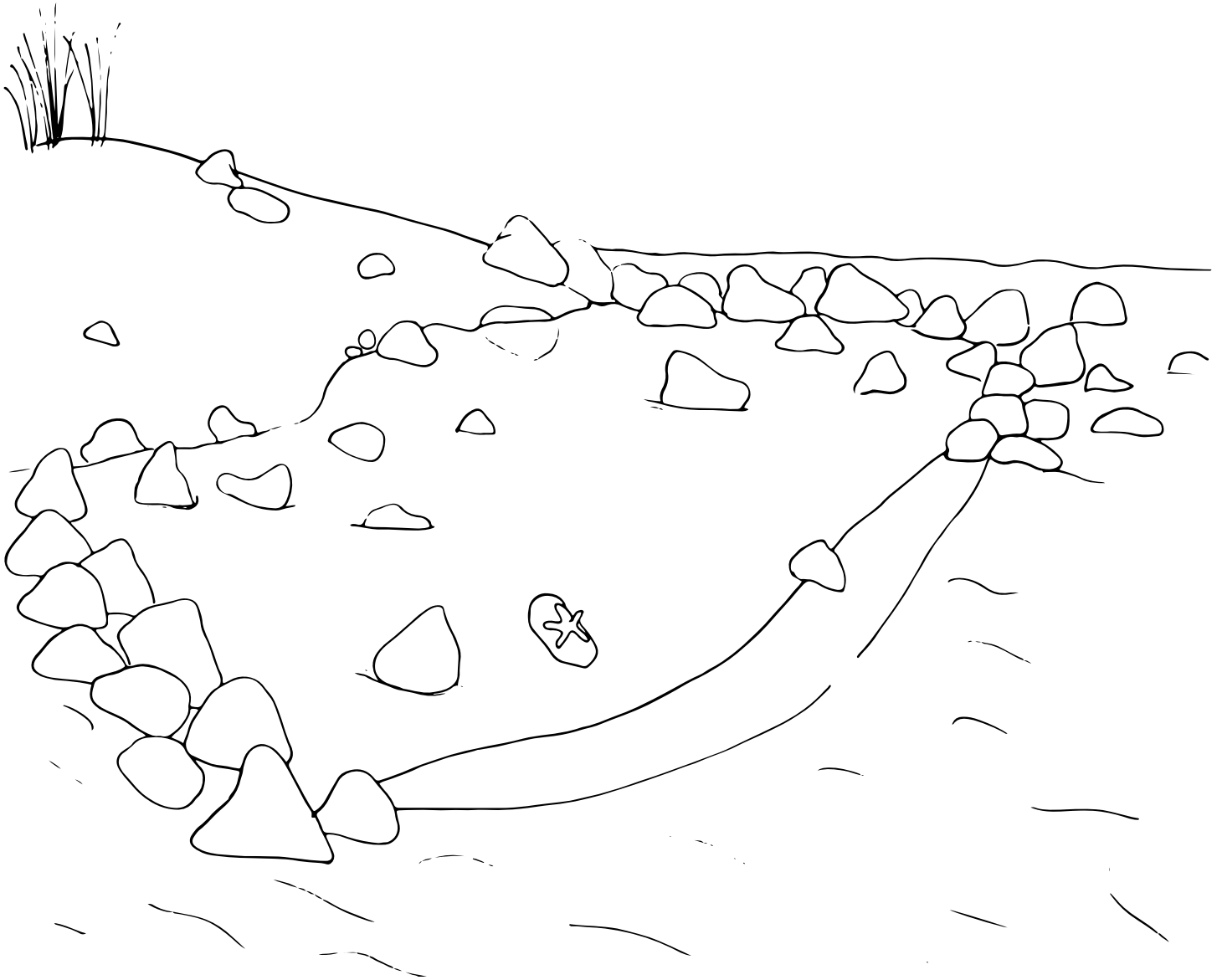
Not all reefs are made of coral! Massachusetts has many rocky reefs along its coastline. Different **algae** and marine plants grow on the rocky reefs, which then attract fish and other marine animals!

Artificial Reef



Artificial reefs are sometimes placed in the ocean to create fish habitat. These structures—ranging from natural rock to stripped boats to concrete structures called reef balls—are used as a base for algae and other marine organisms. They provide protection for small fish and crustaceans like lobster and crab. These areas are such good nurseries, artificial reefs all over the world have become popular destinations for divers.

Tide Pool



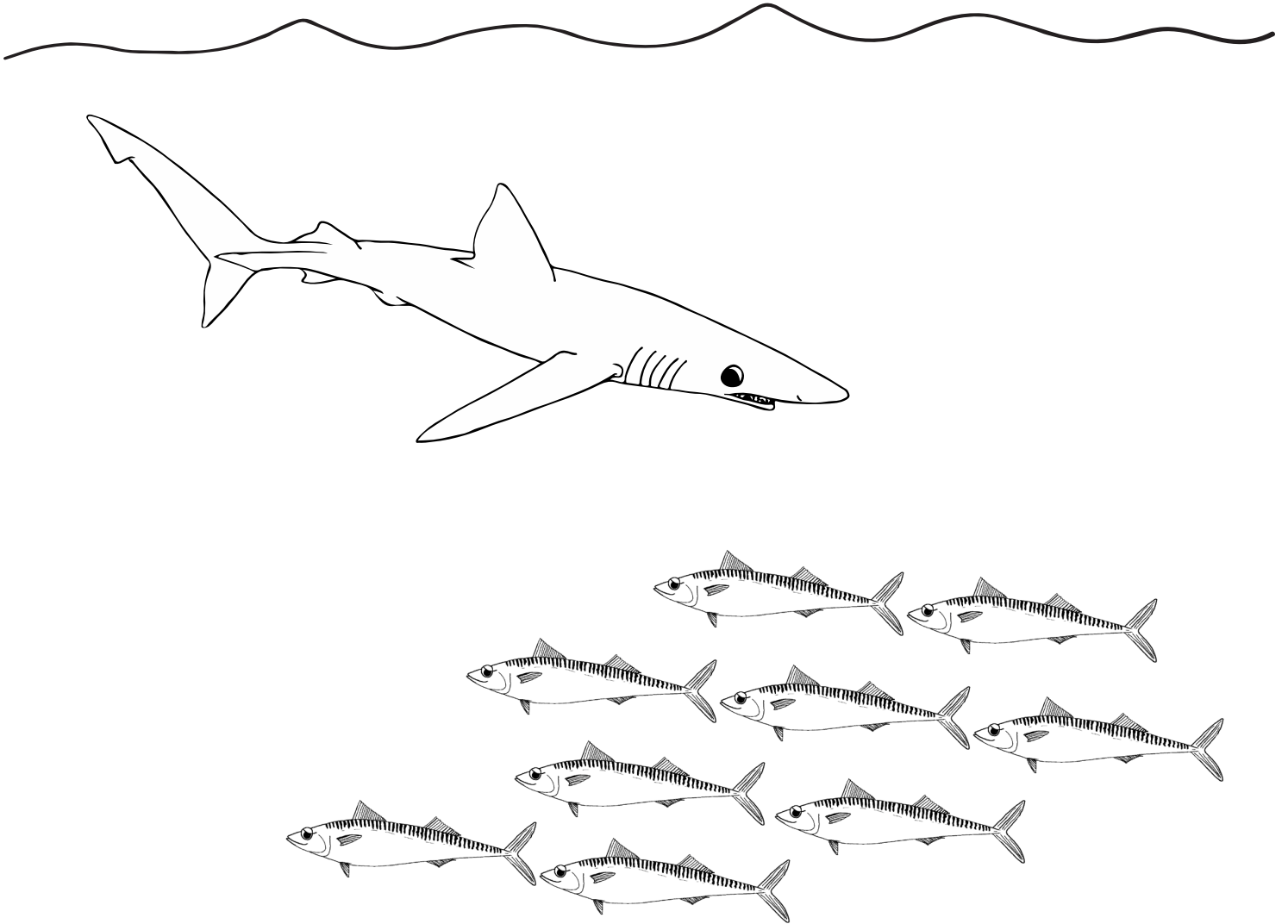
Tide pools are common along the Massachusetts coastline. They fill as the tide comes in and are usually separated from the rest of the ocean when the tide goes out. The water that stays trapped in this rocky pool, creates a habitat for many marine animals including sea stars, crabs, shrimp, and smaller fish! Tide pools are found in the **intertidal zone**.

Floating Seaweed



It might just look like flotsam and jetsam to most people, but floating seaweed is a habitat to a lot of marine animals! Seaweed acts like a drifting boat that some smaller animals, like crabs and American eels, use as part of their migration. For others, the floating seaweed acts like a pit stop for animals swimming in **pelagic** waters.

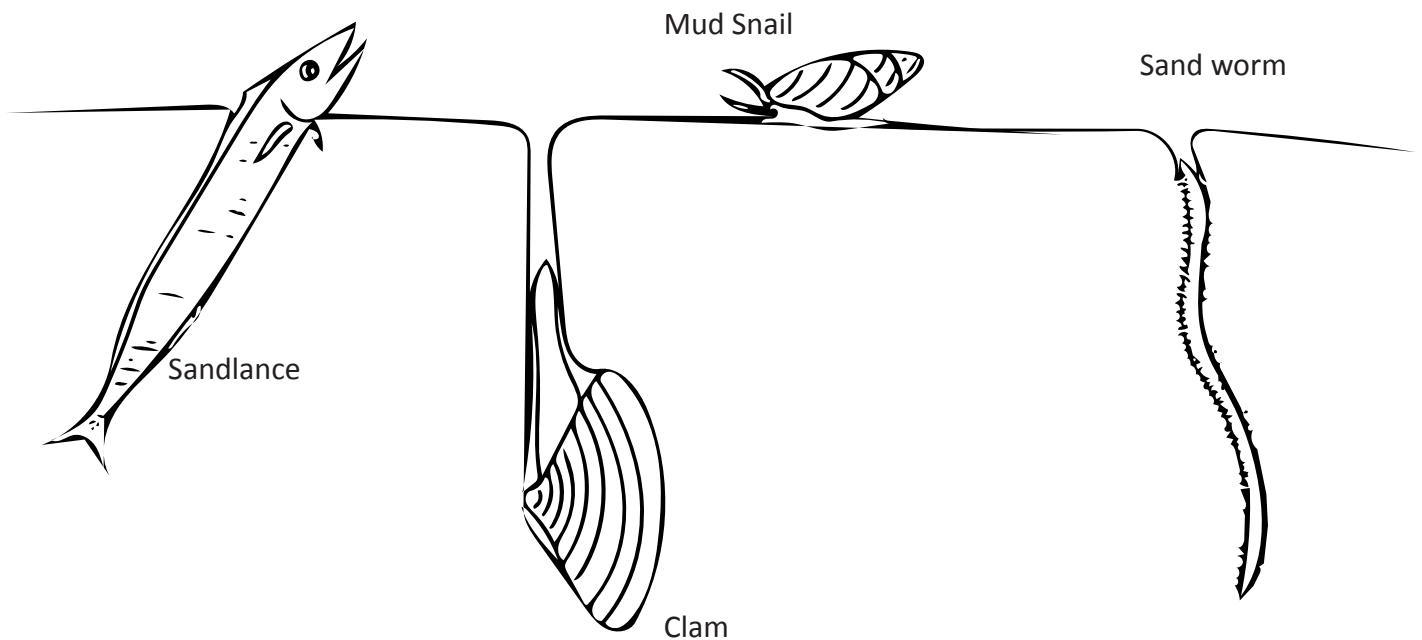
Pelagic



Pelagic waters include the largest area—the open ocean! From the epipelagic to the hadalpelagic, marine organisms are continuously in open water. Unless they are on the continental shelf, on the **abyssal plain**, or in the deep hadalpelagic zone, these animals will never touch or see the bottom!

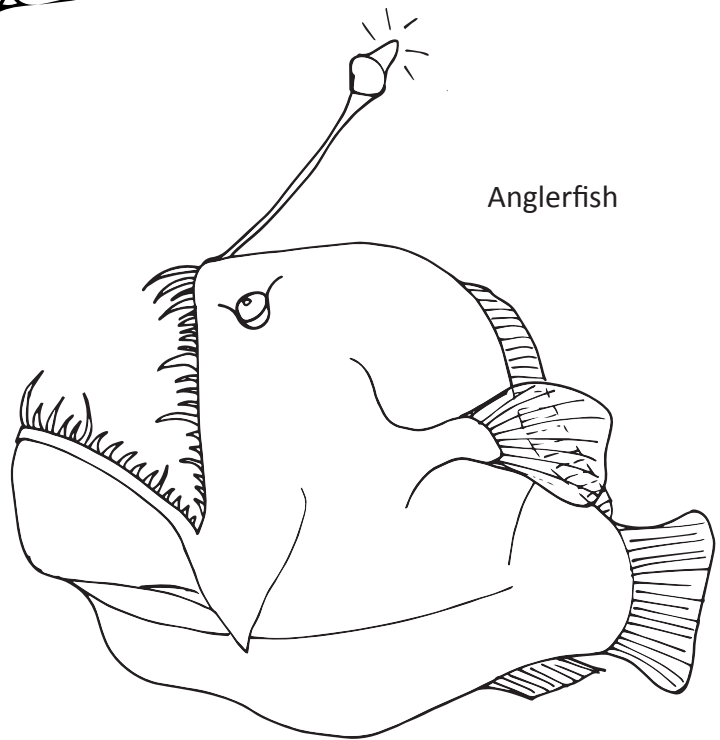
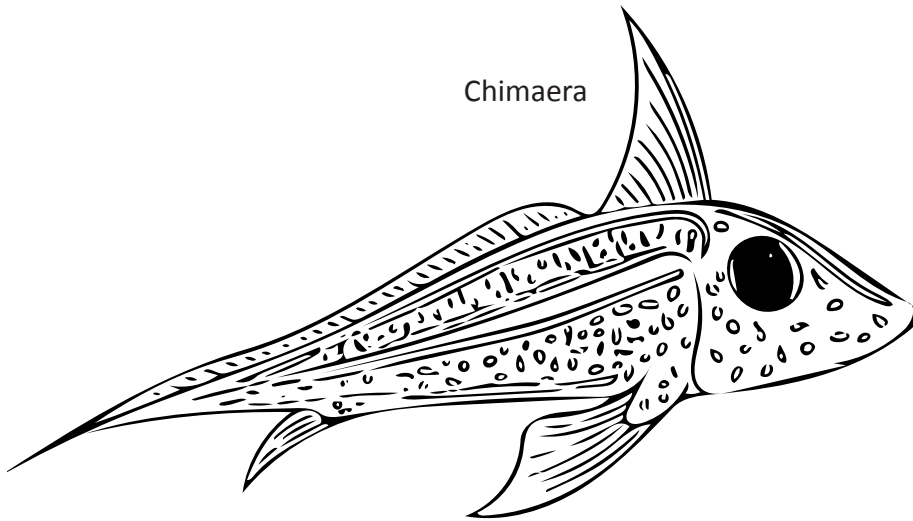
Muddy/Sandy Bottom

Meet some of the animals that live in and on a muddy bottom!



The muddy or sandy ocean floor might seem empty, but it is full of life! Some flounder species like to hide in sandy areas. Stingrays and skates also live in these areas. Clams and other bivalves bury themselves in the softer muddy bottom, along with shrimp and crabs!

Deep Ocean



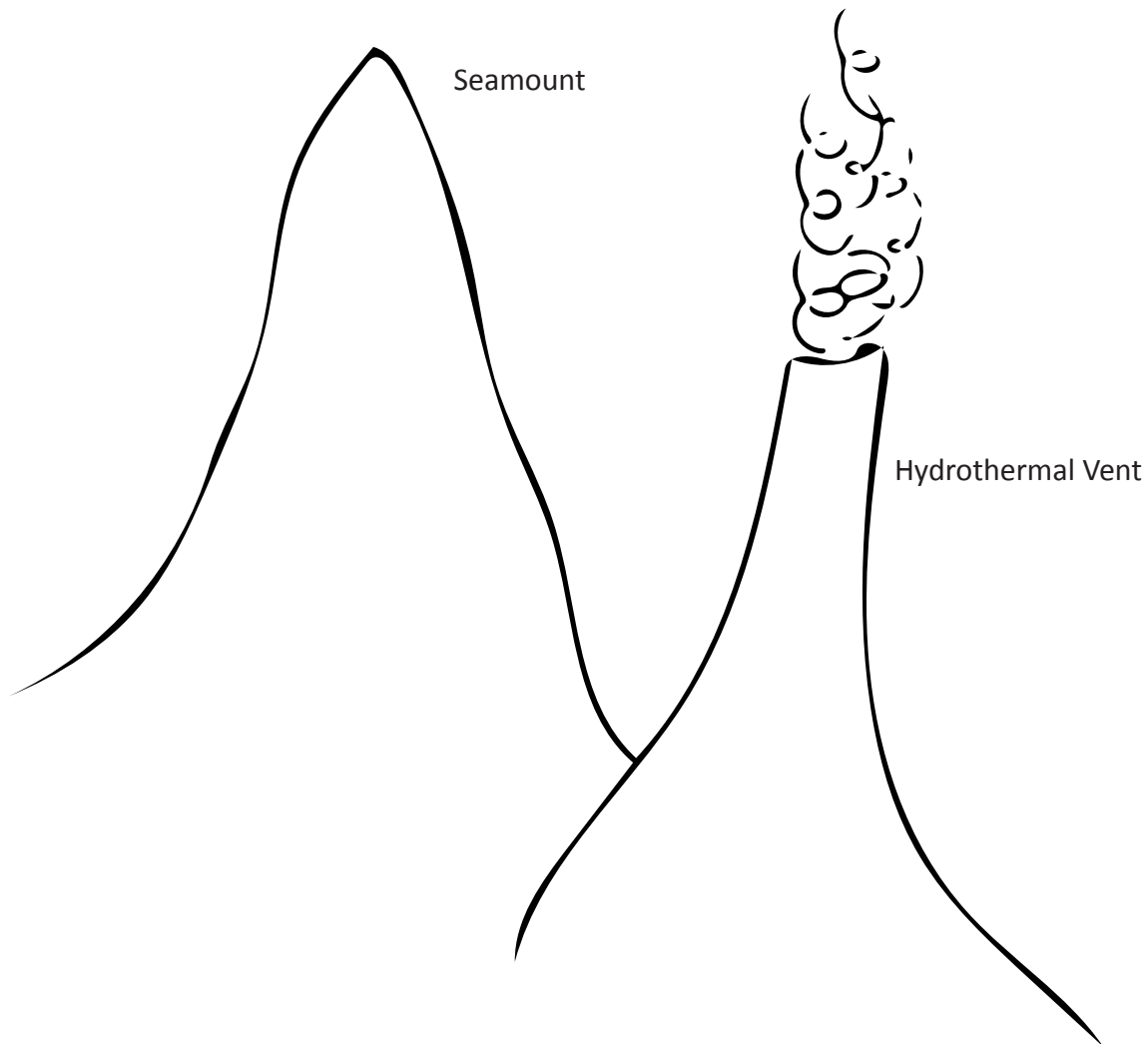
The deep ocean includes the abyssopelagic and **hadalpelagic** zones of the ocean. These are the extreme depths where the water is the coldest, darkest, and exerts the most pressure on the animals living there. The animals here are different than what most people see!

Symbiosis



Symbiosis is when organisms live close together—sometimes within each other—and aid in each other's survival. An example of this is anemones on hermit crabs. The anemones grow on the shell of the hermit crab, keeping predators away while the hermit crab provides transportation and scraps of food for the anemones.

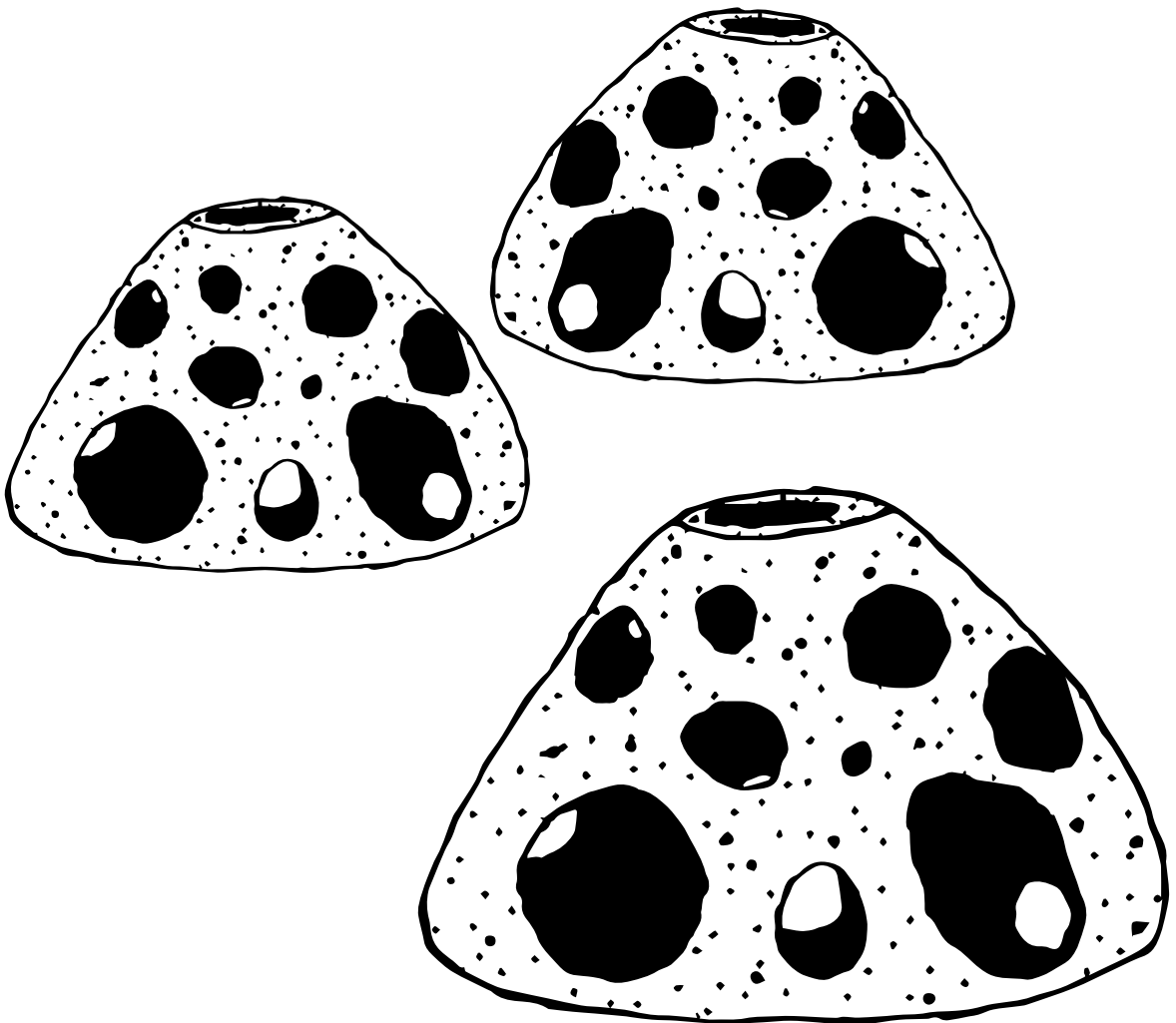
Seamounts and Hydrothermal Vents



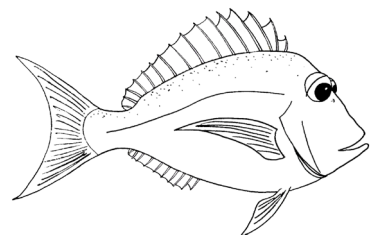
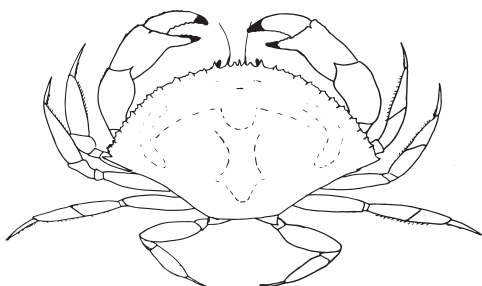
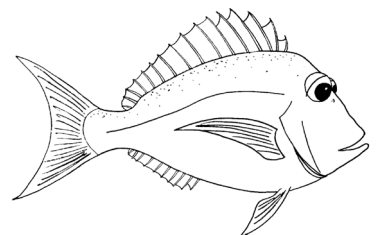
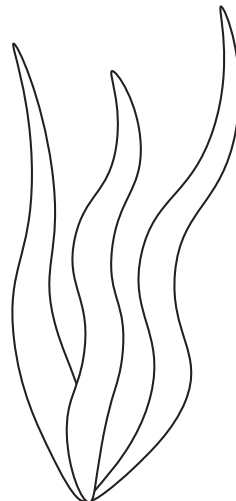
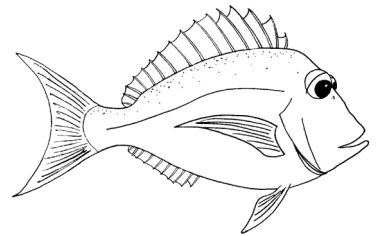
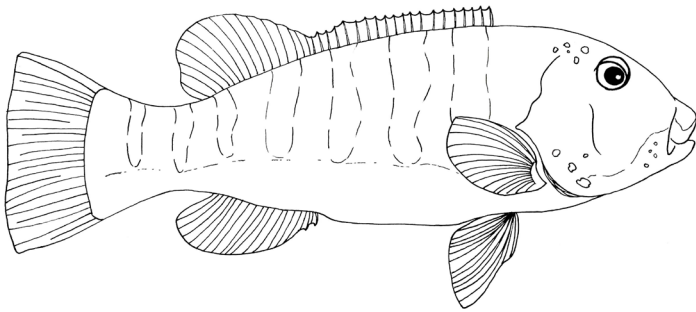
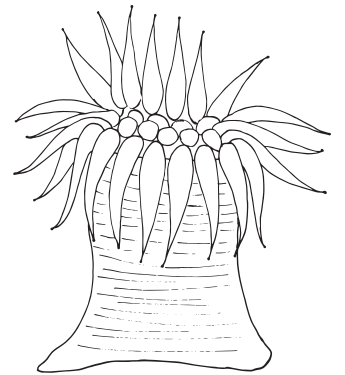
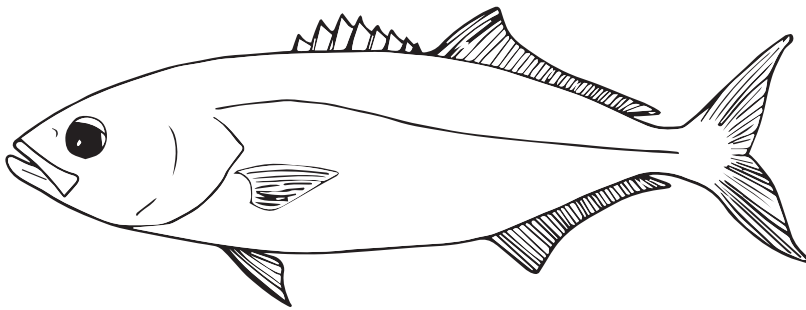
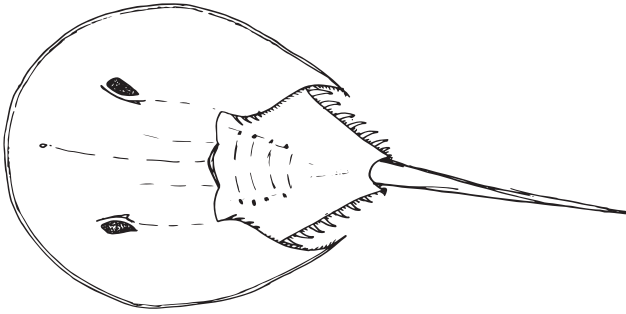
Seamounts are underwater mountains, usually rising in the open ocean. They provide permanent habitat for some species and a stop-over for migrating animals. Hydrothermal vents are areas of the ocean floor where geothermally heated water escapes into the ocean. Because of the different chemicals that come out with the boiling waters, these vents are thriving habitats in a mostly barren ocean floor.

Artificial Reef Activity

With an adult's help, cut out the animals on the next page and put them in the places you think they should go in the artificial reef below!



Cut Out Animals



Create a Habitat

Use what you've learned in this book to create a habitat of your very own! Don't forget to include structure like rocks and marine animals and plants!

For more information, visit our website!
<http://www.mass.gov/marinefisheries>

All content including information, games, and images, are the creation of Elaine Brewer for the Massachusetts Division of Marine Fisheries. She can be reached at: elaine.brewer@state.ma.us

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Marine Fisheries
Commonwealth of Massachusetts

