



DISCOVER THE OLYMPIC COAST

with NOAA's Olympic Coast National Marine Sanctuary



An activity book for students in grades 3 - 5



**NATIONAL
MARINE
SANCTUARIES**



**National
Marine Sanctuary
Foundation**

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Developed by Olympic Coast National Marine Sanctuary:

Cheyenne Palmo, Nicole Harris, and Jacqueline Laverdure

Based on the film "Discover the Olympic Coast" by Florian Graner

Associated curriculum developed by Laura Tucker

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Illustrations by Paulina Barry - Design by Carey Floyd

A special thanks to Haddie McCune and Dayna McLaughlin

Welcome to Olympic Coast National Marine Sanctuary!

Olympic Coast National Marine Sanctuary

is a very special place in the ocean that protects the animals, plants, and habitats off the coast of Washington state. The main habitats of Olympic Coast include sandy and rocky intertidal beaches, offshore islands, kelp forests, open ocean, rocky reefs, and deep-sea canyons. Olympic Coast National Marine Sanctuary is home to many different types of marine mammals, seabirds, fish, and other ocean plants and animals.



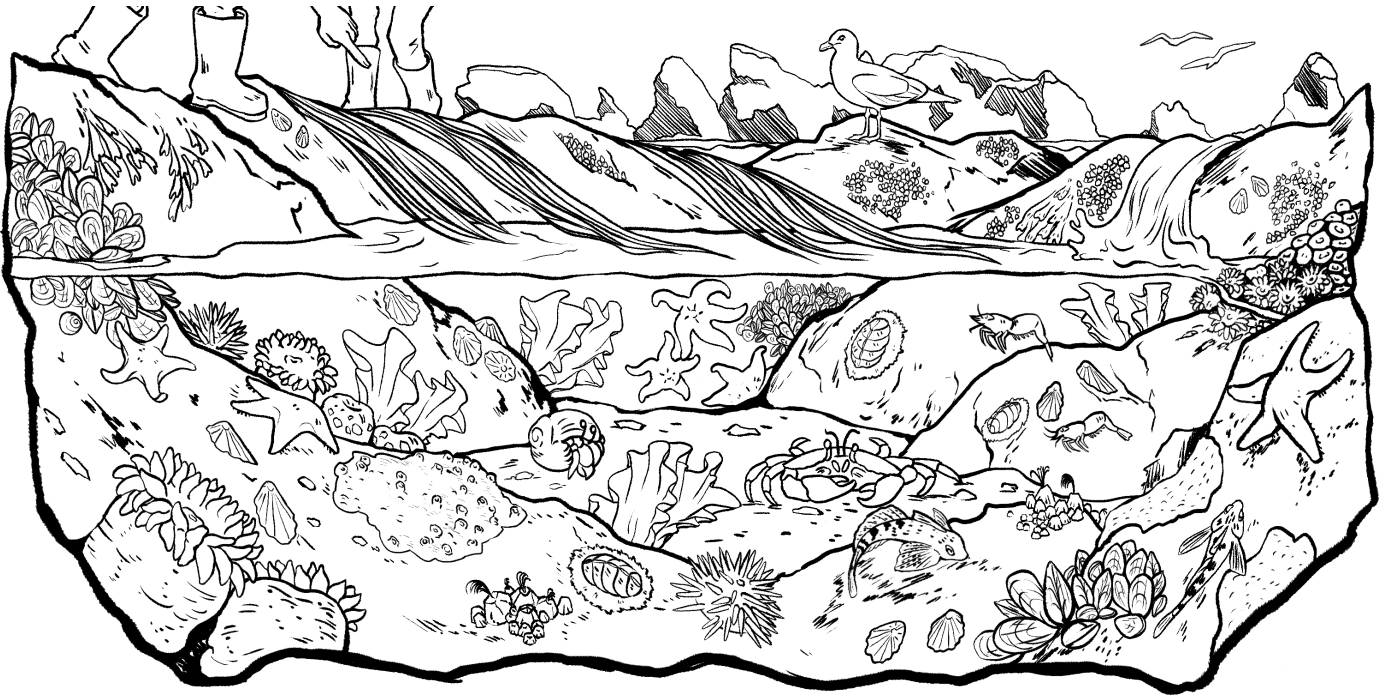
Be sure to look at the **vocabulary list** on page 11 to help you better understand new words as you “Discover the Olympic Coast”.

In this activity book, you will:

- Learn about the different habitats in Olympic Coast National Marine Sanctuary.
- Match **organisms** (plants and animals) with the **habitat(s)** that they live in.
- Develop your own Olympic Coast **food web**.
- Learn how **adaptations** help organisms survive.
- Learn why certain organisms survive better in groups.

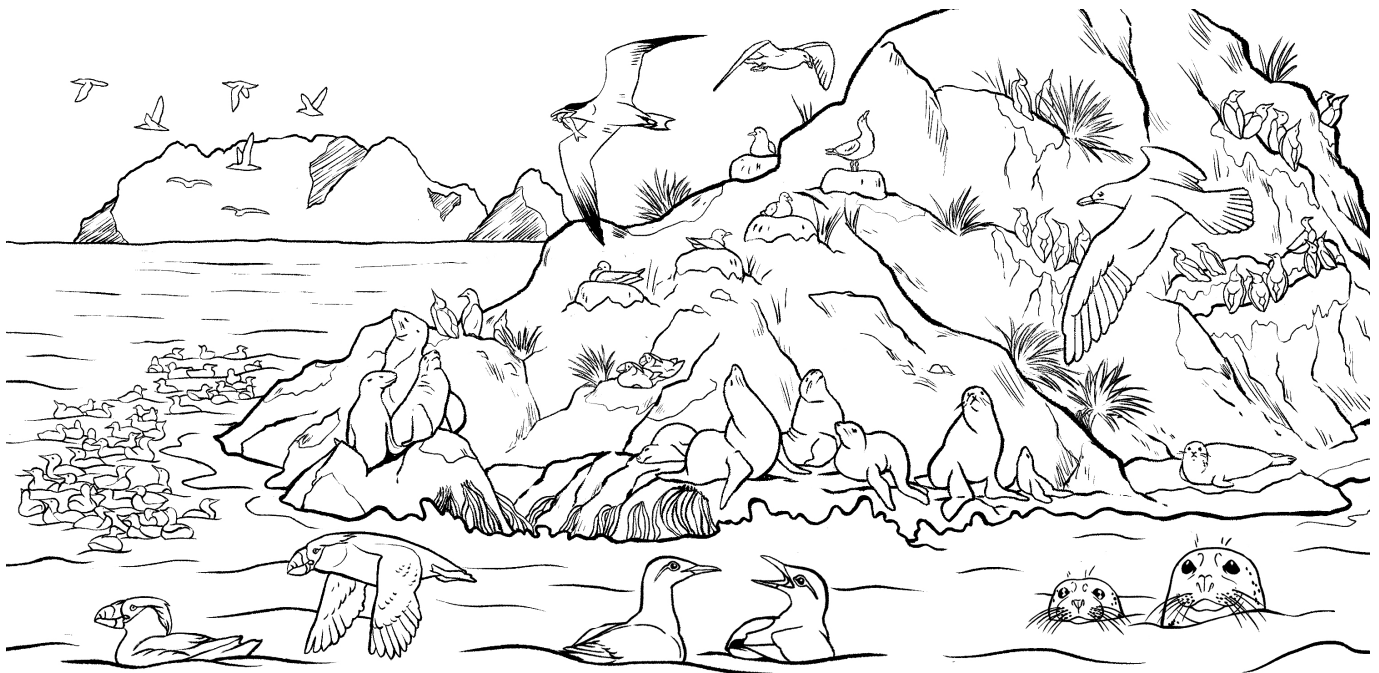
Habitats of Olympic Coast

A **habitat** is a place in nature that is home for plants and animals. It is where they find food, water, shelter, and space — everything that is needed in order to survive.
Color the habitats below and count how many plants and animals you find!



Intertidal rocky and sandy beach habitats are areas where the ocean and land meet between high and low tides. Plants and animals that live here are able to live in between the wet and dry worlds!

I found ___ (#) different types of plants and animals living in the intertidal zone.

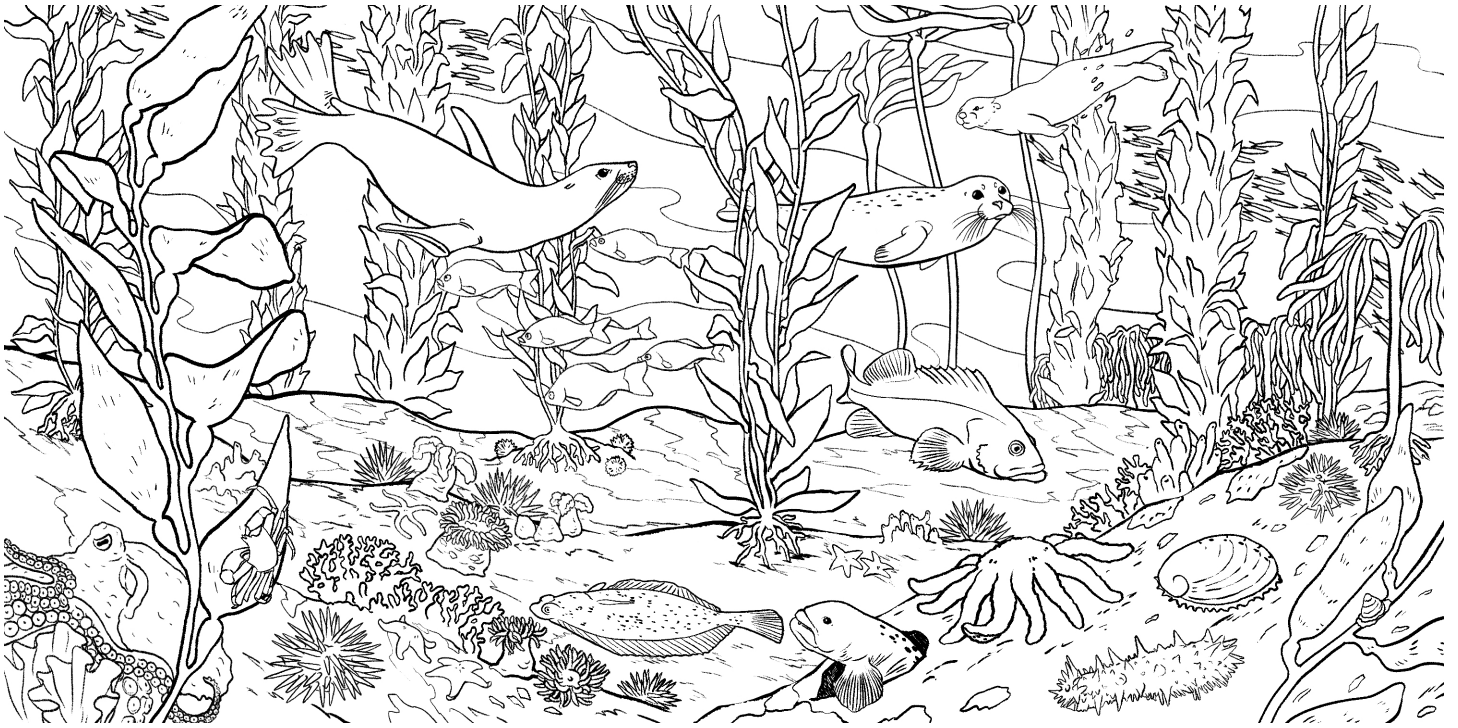


Offshore islands and sea stacks provide important nesting habitat for seabirds.

Seals and sea lions also use the islands to rest and take care of their young.

I found ___ (#) different types of plants and animals living in the offshore island habitat.

Habitats of Olympic Coast



Kelp forests grow in shallow areas, where sunlight can reach, usually in depths of 90 feet or less. Many animals use the dense kelp to hide from predators or find food! These habitats support a lot of different plants and animals, including plankton!

I found ___ (#) different types of plants and animals living in the kelp forest.



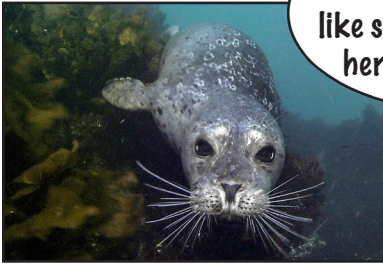
The **deep-sea** habitat is very cold and dark because the sun does not reach that far! Animals that live here are able to live under a lot of pressure, in cold water, and with limited light.

I found ___ (#) different types of plants and animals living in the deep-sea habitat.

There's no place like home!

Organisms (plants and animals) have adaptations – these are special features or behaviors that make them better suited to live in their environment.

Draw a line from the organism to the habitat(s) where they are best adapted to live!



Harbor Seal

I am a harbor seal. I love eating fish, like smelt, salmon, and herring.

ROCKY
INTERTIDAL

I am a sea star. I like to eat mussels and other small organisms in tide pools.



Sea Star



Blue Mussel

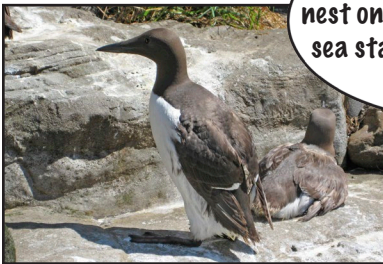
I am a blue mussel, and I live in the rocky intertidal zone. Sea stars love to eat me!

OFFSHORE
ISLANDS

I am zooplankton, a primary consumer. A lot of organisms rely on me for food!



Zooplankton



Common Murre

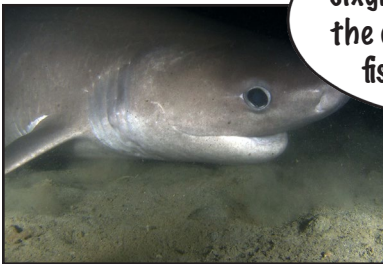
I am a common murre! I love to nest on offshore islands and sea stacks. I eat small fish, like herring!

KELP
FOREST

I am a Steller sea lion. I love to eat a lot of fish. I love raising my young on offshore islands!



Steller Sea Lion

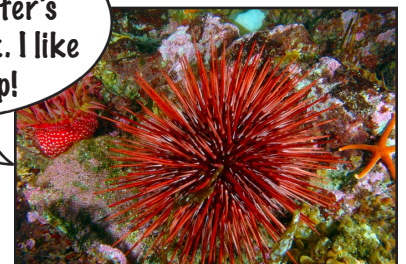


Sixgill Shark

I am a sixgill shark. I live in the deep sea and eat fish like halibut.

DEEP
SEA

I am a sea urchin. I am a sea otter's favorite snack. I like to eat kelp!



Sea Urchin

Food Webs

Food webs describe who eats who in an **ecosystem**.

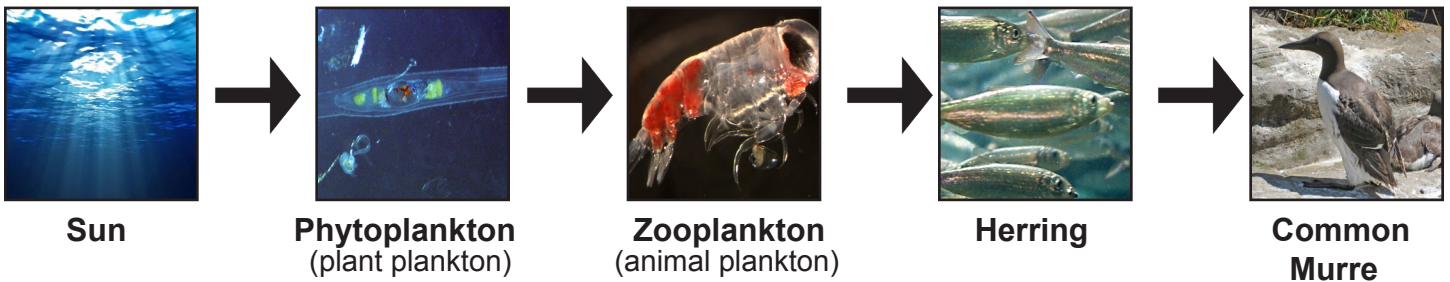
Made up of many connected **food chains**, food webs help us understand how changes to ecosystems — like removing a top predator — may affect many different species.

Food chains show the **transfer of energy** from one organism to the next.

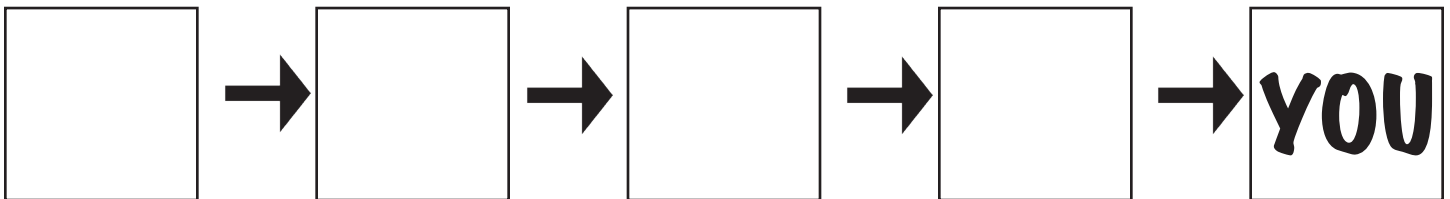
Food chains start with the sun, the main source of energy for life!

Here is an example of a simple food chain.

See that the arrows go in the direction of the transfer of energy (from prey to predator).



Use the space below to create your own food chain, with **YOU** as the top predator!



How does a food web work?

We use arrows to connect a food web. The arrows point from the **prey** (eaten) to the **predator** (eater) to demonstrate the transfer of energy. Organisms with a lot of arrows pointing away from them means they are preyed on, or eaten, a lot. Organisms with a lot of arrows pointing to them means they eat a lot of different organisms.

Draw arrows from each prey (organism that is being eaten) to each predator (organism that is the eater) for each of the organisms below.

Prey → Predator

This is an example of a simple food web.



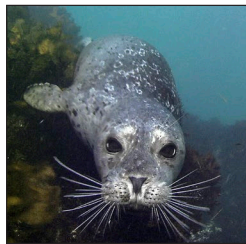
Salmon



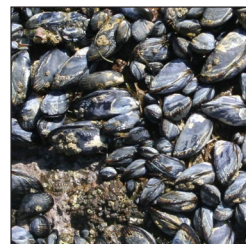
Sea stars



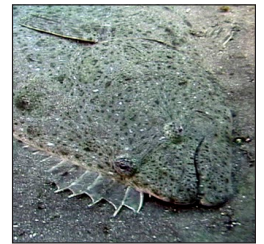
Humans



Harbor seal



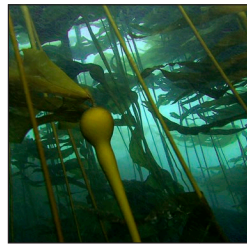
Mussels



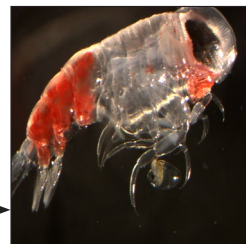
Flounder



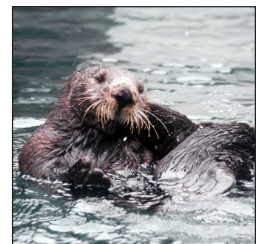
Herring



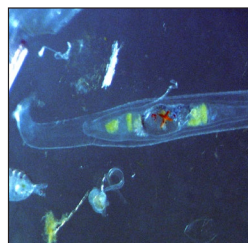
Kelp



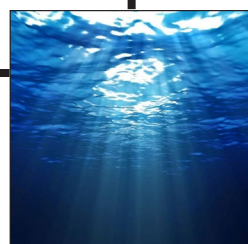
Zooplankton



Sea otter



Phytoplankton



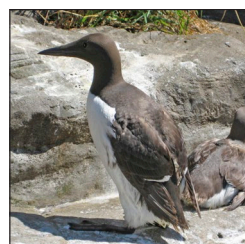
Sun



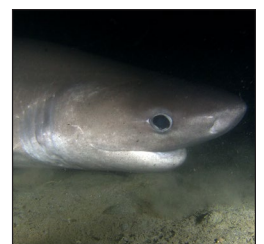
Sea urchin



Small fish



Common murre



Sixgill shark

Let's talk about the food web

Producers are organisms that create their own energy.

Who are the producers in your food web?

Consumers are organisms that get their energy from living things.

Who are the consumers in your food web?

What organisms are preyed on most? (Who gets eaten the most?)

What organisms are the strongest predators? (Who eats the most prey?)

If we remove the SIXGILL SHARK from your food web:

a. Does this have a big impact on the rest of the food web? (circle one)

Yes

No

b. Why?

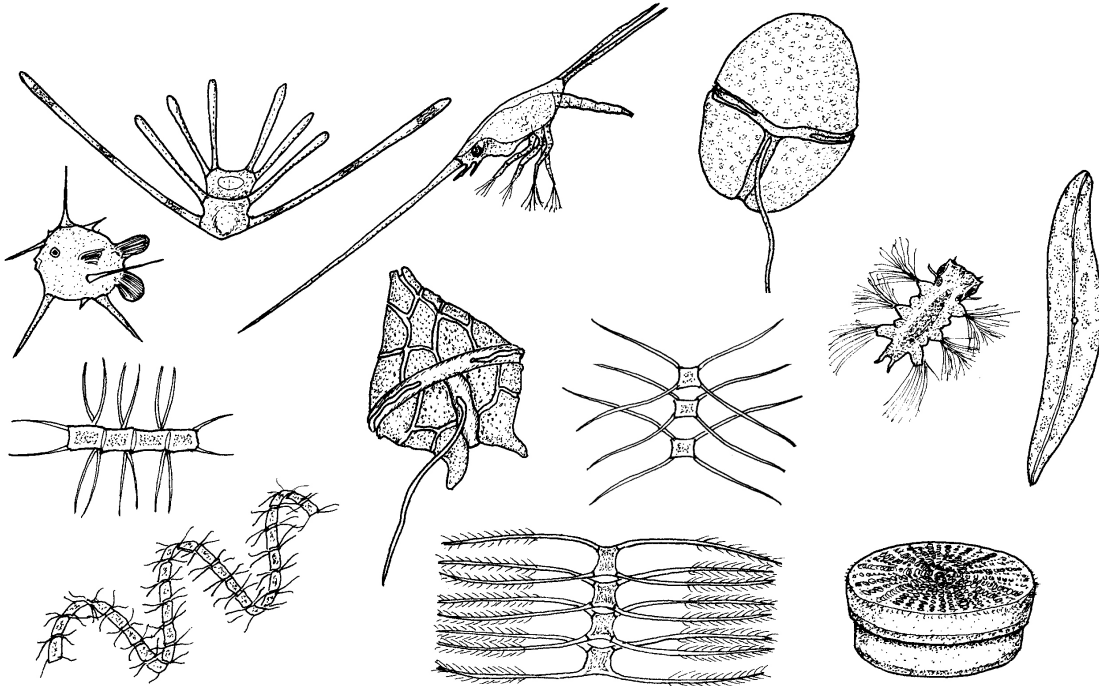
Now, what if we remove the HERRING from your food web:

a. What organisms eat the herring?

b. How would removing the herring impact the food web?

The Importance of Plankton

Plankton are tiny plants and animals (frequently microscopic) that drift with ocean currents and provide food for lots of organisms in the food web. In fact, these phytoplankton (plant) and zooplankton (animal) are at the very base of the food web. They have adapted to live in many different habitats in our ocean, which make them **SUPER** important to the marine ecosystem.



Draw your own zooplankton and name it in the box.

Things to consider: How will it eat? How will it move? How will it avoid predators?
Get creative!

My zooplankton name is _____

Adaptations

Sea otters are warm-blooded animals that live in the ocean. Unlike most marine mammals, like dolphins and whales, sea otters do not have a thick layer of blubber to keep them warm. Instead, they have adapted over time to have thick, water resistant fur that helps them stay warm in cool waters like Olympic Coast National Marine Sanctuary!



Sea otters are keystone species in the kelp forest. This means they are important to all of the species in that ecosystem. Sea otters eat sea urchins, which in turn eat the kelp.

If sea otters were removed from the kelp forest habitat, the food web would be disrupted, leaving too many sea urchins. Then, the increased number of sea urchins may eat all the kelp – taking it away from all the other creatures who depend on it.

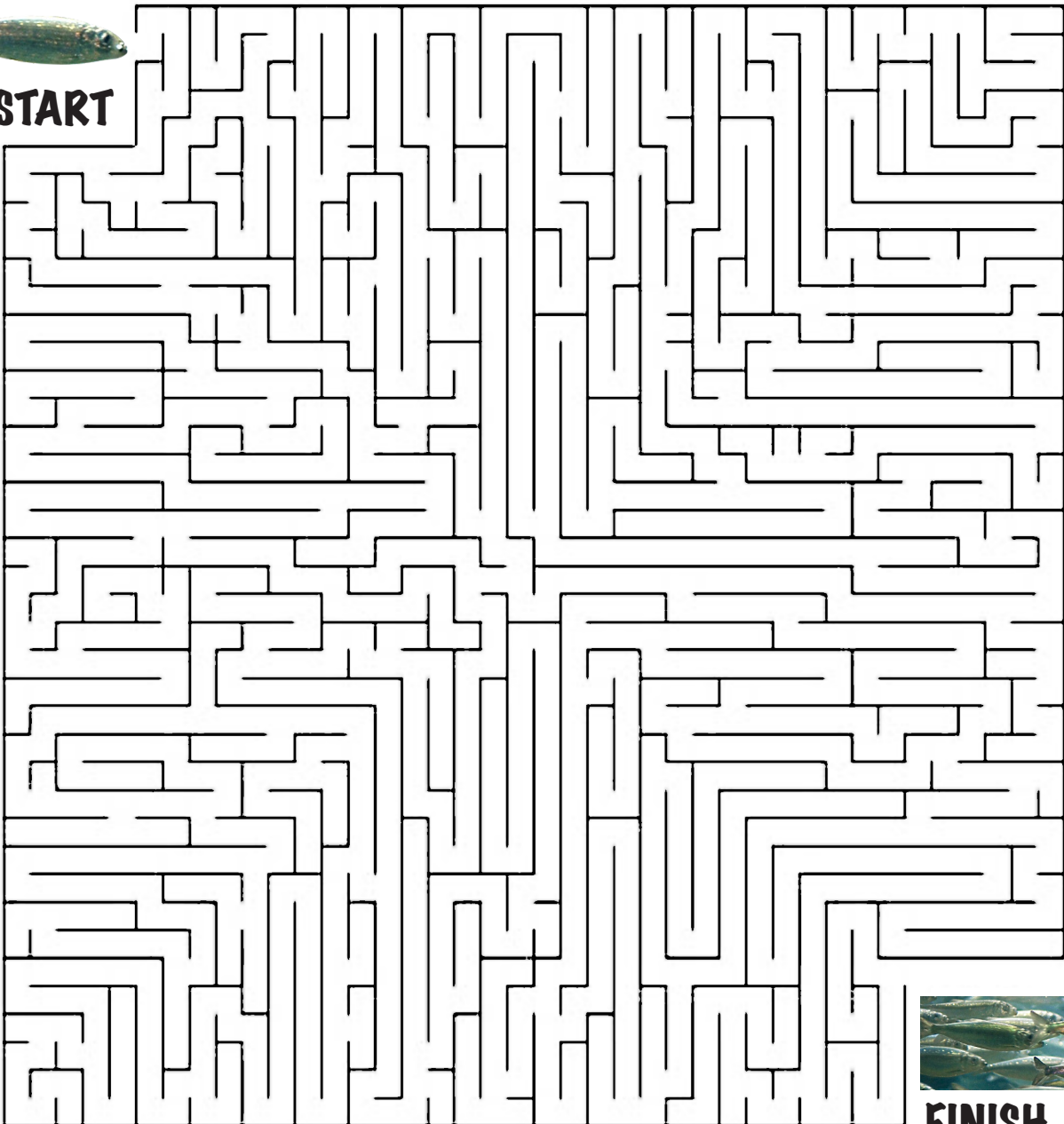
Group Behavior

Herring, like many other types of fish, travel in groups, known as schools. Fish do this in order to protect themselves from predators, improve swimming, and find food more efficiently!

Help the herring find its way back to its school!



START



FINISH

Vocabulary

Search for words forwards, backwards, up and down, and diagonally!

B	E	P	R	R	F	P	S	E	S	E	B	P	E
P	C	F	C	T	W	C	A	N	E	E	E	R	U
R	O	D	M	O	E	A	A	P	I	S	A	O	A
S	S	N	T	E	N	O	O	U	C	C	D	D	C
A	Y	P	G	H	E	S	I	A	E	E	A	U	A
N	S	P	I	W	A	R	U	A	P	I	P	C	E
C	T	R	F	R	F	A	R	M	S	A	T	E	C
T	E	E	O	G	A	O	N	C	E	P	A	R	R
U	M	D	P	S	T	Y	O	E	D	R	T	S	T
A	D	A	N	R	R	E	I	D	E	I	I	U	O
R	I	T	A	I	E	D	N	A	W	U	O	A	A
Y	A	O	E	E	O	Y	N	N	R	E	N	O	C
E	T	R	O	R	G	A	N	I	S	M	B	T	T
B	S	T	A	T	I	B	A	H	T	O	E	T	S

Find These Words

FOODWEB
SANCTUARY
ADAPTATION
SPECIES
ORGANISM
CONSUMER
ECOSYSTEM
PREDATOR
HABITAT
PREY
PRODUCER

Adaptation: Features or behaviors that make a group of organisms better suited to live and reproduce in their environment.

Consumer: An organism that gets its energy from living things. Examples include animals and humans.

Ecosystem: All the living and non-living things in an area.

Food chain: Food (and energy) that travels from level to level, beginning with producers.

Food web: Interconnected food chains that describe who eats whom in an ecosystem.

Habitat: The place in nature that is home for plants and animals.

Keystone species: A species that is important to all the species in an ecosystem. Many organisms rely on a keystone species because of what they do for a habitat.

National marine sanctuaries: Nationally significant areas that protect America's most treasured marine and coastal resources through research, management, and education.

Organism: An individual animal or plant.

Predator: An organism that eats other living organisms.

Prey: An organism that is eaten by another organism.

Producer: An organism that creates its own energy, usually by photosynthesis (the sun). Examples include plants, algae, and phytoplankton.

Transfer of energy: A term that describes when energy moves from one place to another.

The **open ocean** is the largest habitat on Earth, supporting a great diversity of life ranging from microscopic plankton to gigantic blue whales. It serves as a highway for world travelers such as humpback whales, albatross, tuna, and leatherback turtles. In areas where ocean currents come together, drifting plankton gather, attracting predators all the way up the food chain.



AMERICA'S UNDERWATER TREASURES



The Office of National Marine Sanctuaries serves as the trustee for a network of underwater areas encompassing more than 600,000 square miles of marine and Great Lakes waters from Washington state to the Florida Keys, and from Lake Huron to American Samoa. From a single Civil War shipwreck to a vast expanse of remote coral reefs and atolls, our sanctuaries protect the extraordinary scenic beauty, biodiversity, cultural history, and economic productivity of these precious underwater treasures.

- National Marine Sanctuary
- ▲ Marine National Monument
- Proposed National Marine Sanctuary

