



United Nations  
Educational, Scientific and  
Cultural Organization



**MOUNT  
ARROWSMITH**  
BIOSPHERE REGION

# BIOSPHERE BOOKLETS

Lesson Plans & Activities

## MARINE FOOD WEBS

### SUMMARY/OVERVIEW

**Grades:**  
1-2

**Prep Time:**  
1 hour

**Learning  
Environment:**  
Outdoor & Indoor

**Total Lesson  
Length:**  
4 hours

#### DESCRIPTION:

This booklet introduces students to several aspects of the marine food web, the roles that different organisms play in it, how they interact, and why they are important. It highlights the crucial interdependence of the animals in their ecosystem.

#### CURRICULUM EXPECTATIONS:

##### Processing and Analysing:

- Experience and interpret the local environment

##### Planning and Conducting:

- Make and record simple measurements using informal or non-standard method
- Make and record observations

##### Questioning and Predicting:

- Make simple predictions about familiar objects and events
- Demonstrate curiosity and a sense of wonder about the world

#### BACKGROUND:

Food Webs refer to the predator-prey interactions that different animals and organisms have in their ecosystem throughout their lives. It defines the role they play in the interconnected and delicate balance of life on earth. The marine food web describes specifically the "who-eats-whom" interactions with the creatures that live in the oceans.

### LESSON PLAN

TIME	ACTIVITY	LOCATION	MATERIALS
15 mins	1. Introduction – What are Food Webs?	Indoor	Printed worksheet
1 hour	2. The "invisible" MVP: Plankton!	Indoor OR Outdoor	Craft items
30 min	3. Introduction to Primary Consumers	Indoor	Printed worksheet
45 mins	4. Introduction to Secondary Consumers	Indoors	Printed worksheet
1.5 hours	5. Conclusion	Outdoors	Printed worksheet, clipboard, pen

**TIME**  
15 mins

**ACTIVITY**  
1. Introduction

**LOCATION**  
Indoor

**MATERIALS**  
Printed worksheet

# Introduction: What are Food Webs?

**GOAL:** Introduce Food Webs and the interdependence among organisms.

**PREPARATION:** Print worksheet on page 3.

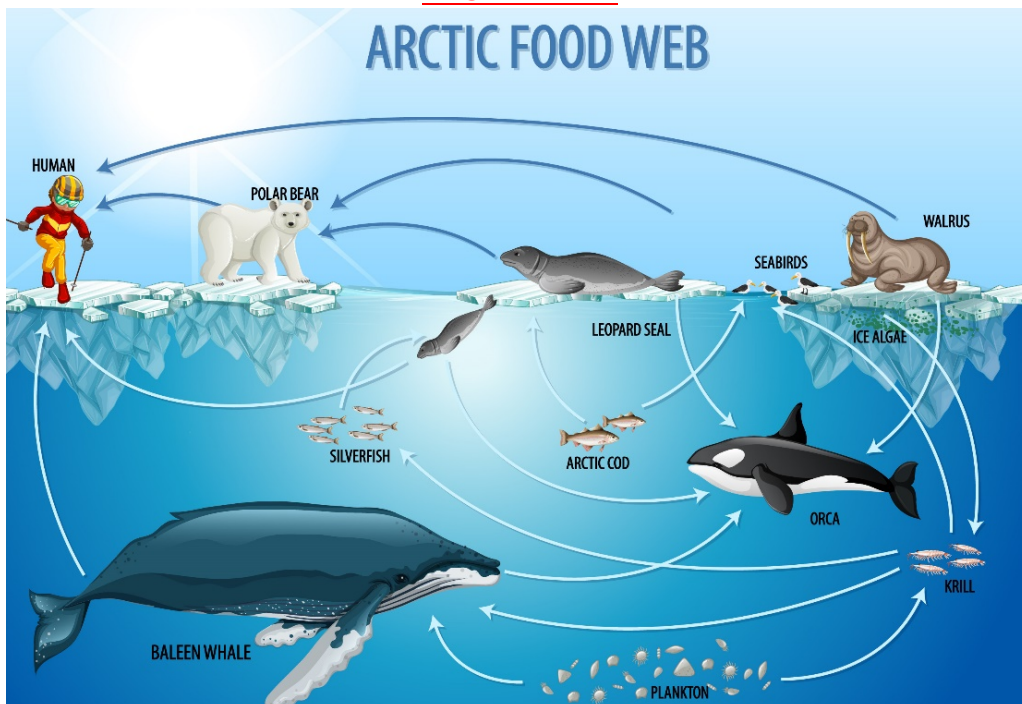
**LESSON PLAN:** Students are given an image of an incomplete food web that they can fill in with the correct arrows corresponding to the predator-prey interactions of the animals. Educators may need to assist and lead as a class. *\*Hint! The arrows move in the direction of energy flow.*

**CONTENT:** Organisms in a community are linked through what they eat and what eats them. Fill in the food web chart below (page 3) with arrows corresponding to the animal's role in the food web as predator or prey. In a Food Web, the main direct consequence is the transfer of energy in nature, from the prey to whichever predator is eating it.

Q: Can you name the three oceans that Canada is surrounded by?

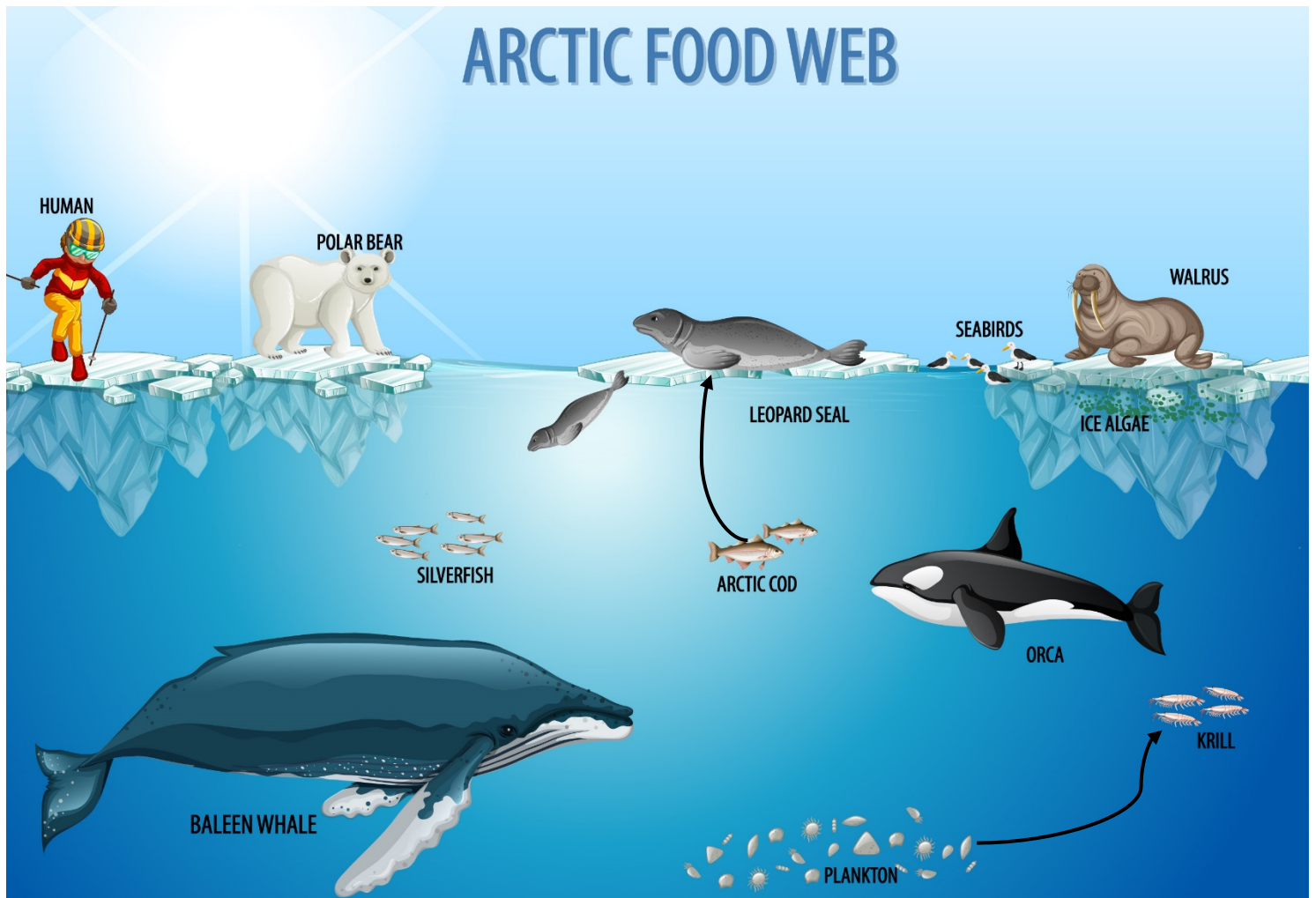
A: Pacific Ocean, Atlantic Ocean, and Arctic Ocean.

**ANSWER KEY:**



# Food Webs & Energy Flow

Organisms in a community are linked through what they eat and what eats them. Fill in the food web diagram below with arrows that connect animals which interact with each other as predator or prey. *\*Hint! The arrows move in the direction of energy flow. Ex. see arrow going from Arctic Cod to Leopard Seal since the seal eats the cod*



## Did you know?

Canada is surrounded by 3 different oceans! Can you name all of them?

**TIME**  
1 hour

**ACTIVITY**  
2. The “invisible” MVP: Plankton!

**LOCATION**  
Indoor or outdoor

**MATERIALS**  
Worksheet + craft materials below

# The “Invisible” MVP: Plankton!

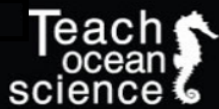
**GOAL:** To introduce students to PLANKTON and their crucial role as the base of the food web.  
*MVP = “Most Valuable Player” in sports and often receive awards.*

**PREPARATION:** Gather the following materials for each student  
(Or ask them to bring in):

- Sponge pieces
- Popsicle sticks
- Small googly eyes
- Pipe cleaners
- Clothes pin
- 2 L \*TRANSPARENT\* pop bottles
- Scissors
- Colorful rubber elastics
- Straws
- Toothpick
- Paper clips
- Colorful beads



Lesson Source:



Lesson Source: <https://bit.ly/37G6TDf>

**LESSON PLAN:** Students will create their own plankton creature made of the materials they have available. The plankton needs to float inside their pop bottle once it is filled halfway with water. Illustrations on the pop bottle are encouraged. Their plankton will be made with a variety of materials; some will add weight to the plankton (lowering it in their pop bottle “ocean”), and other materials will allow it to float to the top of the ocean. Students are to explore the materials and their properties (foam floats, wood floats, pin adds weight, etc.). Students may add googly eyes and other decorations to make a fun plankton! Page 6 is available to print for students to draw the plankton they created and describe how they made it.

**STEP 1:** Cut and remove the top of your pop bottle. Make sure to not leave any pointy edges behind!





**STEP 2:** Assemble pieces of different materials to form your plankton!



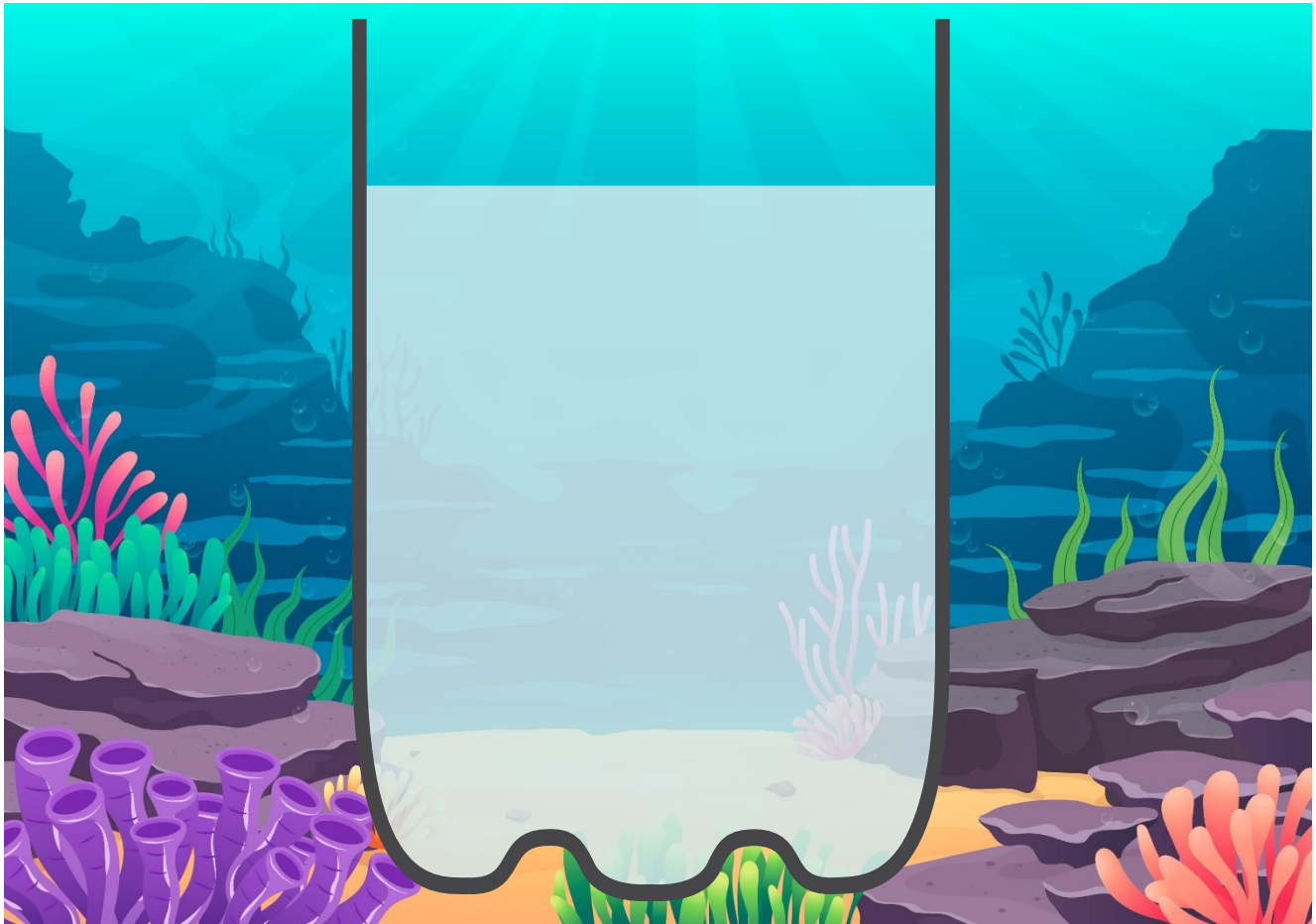
**STEP 3 (optional):** To add complexity to the activity, ask the students to build both a PHYTOPLANKTON (in green tones) **\*and\*** a ZOOPLANKTON. The phytoplankton created needs to float above the zooplankton, but the zooplankton cannot touch the bottom of the pop bottle.

**CONTENT:** Ask students if they have heard of the word “Plankton” before. If so, ask them to describe what it is. “Plankton” is a term used to describe any **animal that drifts** in the sea, meaning **they cannot swim against the ocean currents** and waves. They are mostly microscopic and serve as the very base of the food web. This means that many animals depend on plankton directly or indirectly. Phytoplankton are eaten by zooplankton, and zooplankton are eaten by small forage fish, baleen whales, bivalve mollusks (clams and mussels), crustaceans (crabs, lobsters, shrimp), corals, etc. These, in turn, are eaten by bigger fish (tuna, sharks, rays) and other animals such as octopus, squid, marine birds (seagulls, kingfishers, herons), marine mammals (seals, sea lions, orcas), and many more. There are 2 different types of plankton: phytoplankton (plant-plankton) and zooplankton (animal-plankton).

- What floating materials did you use? **Examples: sponge, toothpick, straws.**
- What sinking materials did you use? **Examples: paper clips, rubber elastics, pipe cleaners.**

- What floating materials did you use? \_\_\_\_\_
- What sinking materials did you use? \_\_\_\_\_

**Draw the plankton you created:**



**TIME**

30 mins

**ACTIVITY**

3. Primary Consumer

**LOCATION**

Indoor

**MATERIALS**

Printed worksheet

# Primary Consumers

**GOAL:** Introduce primary consumers, what role they play, and what types of animals they are.

**PREPARATION:** Print page 8 for students to complete a matching game about primary consumers in the ocean.

**LESSON PLAN:** Introduce what primary consumers are and what role they play in the ocean. Have students make the connection of what types of animals are considered primary consumers.

**CONTENT:**

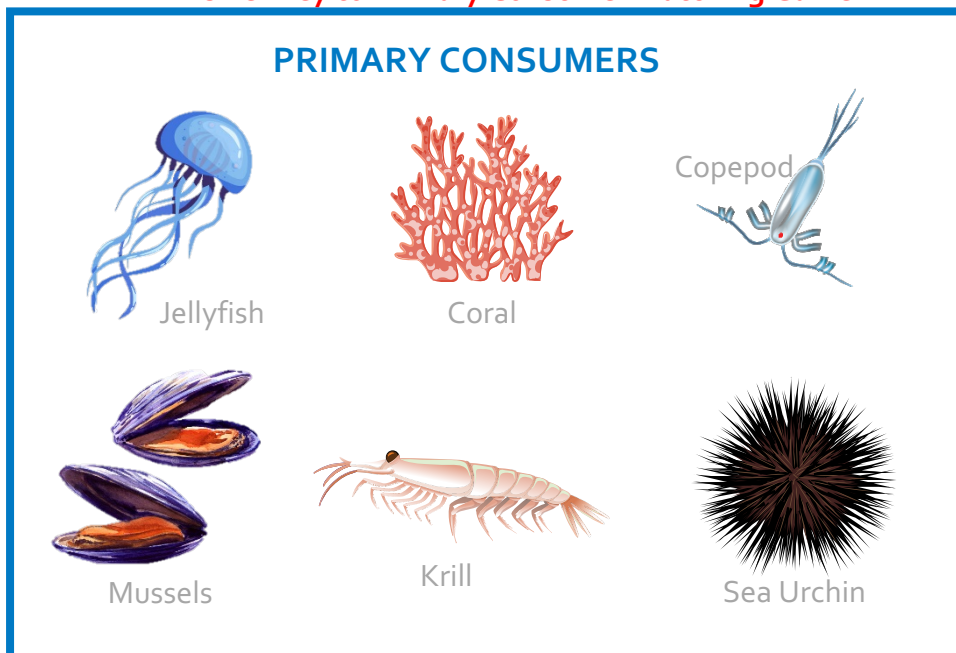
**Primary Consumers** in the ocean: the first to eat other things (more specifically, plants)! The primary consumer is an organism that eats a primary producer, which includes most zooplankton, sea snails, sea urchins, sea sponges, etc.

This video provides a great introduction to the sea creatures that can be found along Eastern Vancouver Island. The first half of the video focuses on primary consumers:

<https://youtu.be/GB3VO4wPNPc>.

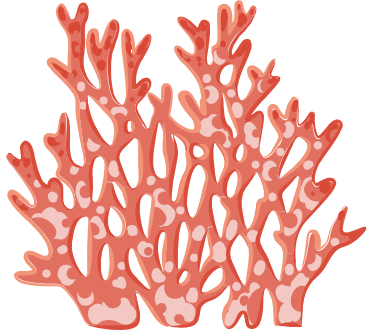
After watching the video, have students try completing the primary producer matching game found on page 8.

**Answer Key to Primary Consumer Matching Game**



# Who's that primary consumer?

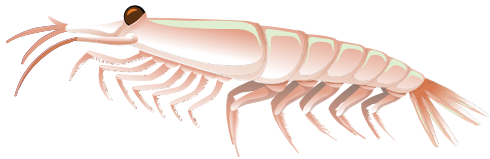
Match the name of the animal with the correct picture of it, each name only has one match.



Sea Urchin



Jellyfish

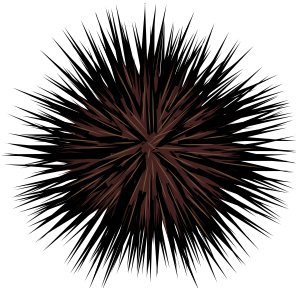


Mussel



Coral

Krill



Copepod





**TIME**  
45 mins

**ACTIVITY**  
4. Secondary Consumers

**LOCATION**  
Indoor

**MATERIALS**  
Printed worksheet

## Secondary Consumers

**GOAL:** Introduce secondary consumers, what roles they play in the ecosystem and what animals they are.

**PREPARATION:** Print activity pages from the "[Secondary Consumers Activity Booklet](https://www.mabr.ca/teaching-resources)" which can be found on the same page this booklet came from, <https://www.mabr.ca/teaching-resources>.

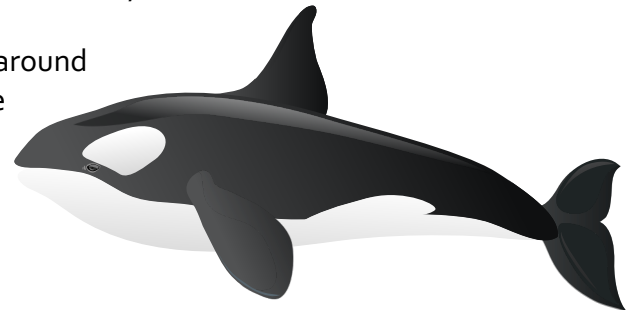
**LESSON PLAN:** Introduce what secondary consumers are and what role they play in the ecosystem, as well as introduce to students what animals are considered secondary consumers. Use activity sheets from the "Secondary Consumers Activity Booklet" to engage students.

**CONTENT:**

**Secondary Consumers** in the ocean: the first to eat other animals!

The secondary consumer is an organism that eats a primary consumer, and includes fish species that feed on the zooplankton. Here are some local animals that are secondary consumers:

**Orcas:** Orcas or Killer Whales are very common to the oceans around Vancouver Island. They are integral to the health of the marine ecosystem, and rely on many different parts of the marine food web to stay healthy! The resident population's most common food item is salmon, but they do eat other sea creatures such as sea lions, seals, other fish, etc.



**Sea Turtles:** Most people think that Sea Turtles just live in tropical parts of the world, but there are actually three different species of sea turtles that have been seen in BC's waters: Leatherback, Green and Olive Ridley. The main reason sea turtles come to the waters along BC's coast is to feed on the abundance of marine life such as jellyfish! Keep an eye out next time you are at the beach or on a boat, you might see a sea turtle!

**Sea Stars:** Sea stars are much, much smaller than Orcas or Sea Turtles but they are still secondary consumers. This is because they eat many types of mollusks such as clams, mussels and oysters. Without sea stars in the ocean, there would be too many mollusks and would crowd out lots of other species of marine life. There are dozens of different species of sea stars in our waters, but one of the most popular is the Ochre Sea Star, also known as the Purple Sea Star.



TIME	ACTIVITY	LOCATION	MATERIALS
1.5 hours	5. Conclusion	Outdoor	Printed worksheet

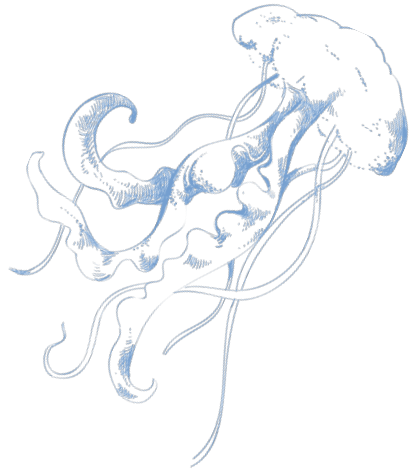
# Conclusion

**GOAL:** Students review all introduced topics by observing their surroundings, identifying and classifying the creatures they see.

**PREPARATION:** Print checklist worksheet (page 11), bring clipboards (optional) and a pen/pencil.

**LESSON PLAN:** Ask students to fill in the checklist based on what they've learned throughout these lessons about marine food webs. This can be done at a nearby beach.

**CONTENT:** Guide the students with information about the food web they see in the intertidal zone of the visited beach. Example: Barnacles are filter feeders, they eat zooplankton and phytoplankton, etc.



# Marine Food Web Checklist

Survey a nearby beach and look for all items in the checklist below!

Identify two (2) **marine birds**  
\_\_\_\_\_

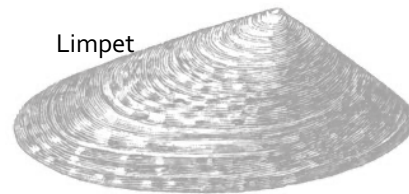
Find a big rock (bigger than 2 feet wide) and count how many **different creatures** you see under and on it.  
How many did you see? \_\_\_\_\_

Identify three (3) types of **algae** and/or **kelp** (can name them by colour)  
\_\_\_\_\_

Find one (1) **sea anemone** (cnidarian – “cousin” of jellyfishes)



Sea Anemone



Limpet

Find one (1) **limpet** (mollusk – cousin of snails and clams)

## SURVEY INFO

Date of Survey:

Name of Surveyor(s):

Location:

Weather:

Time:

Show us your results! Snap a picture and share it with us on social media,  
or email it to the MABR Coordinator at

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