

Subject links:

Science

Curriculum links:

UK wildlife, Biodiversity, Food webs, Ecosystems, Human impact

Ocean Literacy Principles:

5. The ocean supports a great diversity of life and ecosystems

Learning Objectives:

- To understand the difference between a food chain and a food web
- To be able to create a marine food chain and define producers, consumers and predators
- To understand food chains can be affected by external threats

Resources provided:

[Food Chain Fact File](#)

[Underwater poster \(student\)](#)

[Underwater poster \(teacher\)](#)

[Food Web Elements](#)

[Food Web worksheet \(student\)](#)

[Food Web worksheet \(teacher\)](#)

Extra resources required

String

© Val Pierce via Unsplash

Create a food web

Sustainability Goals:



Step 1

Background

All plants and animals need energy from their food to live. A food chain shows this transfer of energy, or who eats who. Within an ecosystem, there are many food chains interlinked to create a food web. These webs show the interconnection between species within an ecosystem. Diversity of species is important for ecosystem health.

You can find more information in the [food chain fact file](#).

Step 2

Set the Scene

5-10 minutes – Carnivores/Herbivores/Omnivores/Scavengers

Show students the [underwater poster](#) and together identify some of the marine life shown. Students should fill in the labels with the species names. See the [completed poster](#) for the answers.

In pairs, students should discuss who they think eats who and then share their ideas with the class. Ask students to think about the types of food humans eat. Discuss and compare eating meat (carnivores), with vegetarians (herbivores). Explain how the same is true in the ocean and give examples, like sharks (carnivores) and seahorses (herbivores). Discuss how animals who eat both are called omnivores like the Green turtle, and some are scavengers (crabs).

Step 3

Activities

Activity 1: 10 minutes – Producer/Consumer/Predator

Explain that today's topic is going to focus on food chains, and ask if the children know what a food chain is. Explain that food chains are the transfer of energy between species. Introduce the terms 'producer', 'consumer' and 'predator'.

In pairs, give students a few minutes to think of a food chain for plants and animals on land, and decide what in their food chain is a producer, consumer, predator. Discuss answers and then introduce the 'primary' and 'secondary consumers' and 'apex predators'.

Activity 2 (Part 1): 15 minutes – Making a food web

Move to an open space, like a school hall or outside. Explain that together you're going to make a marine food web. Ask if students know what a food web is (a connection of food chains).

Hand out the [food web elements](#) cards to some students (there won't be enough for one each) and stand in a large circle. Draw attention to the smaller text showing where the organism gets its energy. Remind children this is really important for the game. Start with the sun, and ask who gets their energy from the sun (plankton and seaweed). Connect these to the sun using string. Now ask who gets their energy from

seaweed, and link with string. Work through one food chain at a time and continue until all cards are linked together using string. This will form a visual web.

Activity 2 (Part 2): 10 minutes – Threatened food webs

Ask students what they think might happen to the food web if one of the animals disappeared, for example, if shellfish were overfished. Then remove shellfish (person holding shellfish lets go of string). Children should identify the impact, i.e. animals feeding on shellfish would have less food, possibly impacting their numbers. Those students holding cards that eat shellfish should then be removed by letting go of the string.

Observe how this has impacted the web. Discuss how creatures that shellfish feed on may increase in number because of lack of prey. Explain that each element within a food web can affect the others.

Activity 3: 15 minutes – Drawing a food web

Back in the classroom, students should use the [food web worksheet](#) to write up the food web they created.

Digitally display the [food web elements](#) on your whiteboard to help students remember creatures in the food web.

Step 4

Extend

5 minutes - Diversity

Define the term 'diversity'. Refer back to what happened to the food web when an ocean threat like overfishing occurred.

Explain that diversity of animals in the ocean is important, as many of the animals are interlinked.

Step 5

Reflect

5 minutes

What is a food chain? What is a food web? Name one marine producer. Name one marine predator. What happens if one creature becomes extinct or reduces in numbers? Relate this to the need to reduce ocean threats like overfishing or pollution.

Step 6

Follow up

To learn more about threats to the ocean, take a look at our lesson, [How do we use the sea?](#)

To study creature interactions in more detail, complete our lesson, [How do creatures adapt?](#)

Food Chain Fact File

What are food chains?

All plants and animals need energy from their food to live. A food chain shows this transfer of energy. Within an ecosystem, there are many food chains interlinked to create a food web. These webs show the interconnection between species within an ecosystem.

- A food chain always starts with the **sun**, as the source of energy for the producers
- Plants are **producers**, as they produce their own energy from the sun
- **Primary consumers** are animals that eat producers (plants)
- **Secondary consumers** are animals that get their energy by eating other animals
- **Tertiary consumers** eat secondary consumers
- Further up the food chain are **predators**
- At the top of food webs are **apex predators** who have few natural threats

Other key terms:

Herbivores are animals that only eat plants

Carnivores are animals that only eat other animals

Omnivores eat both plants and animals

Scavengers eat anything, including dead animals

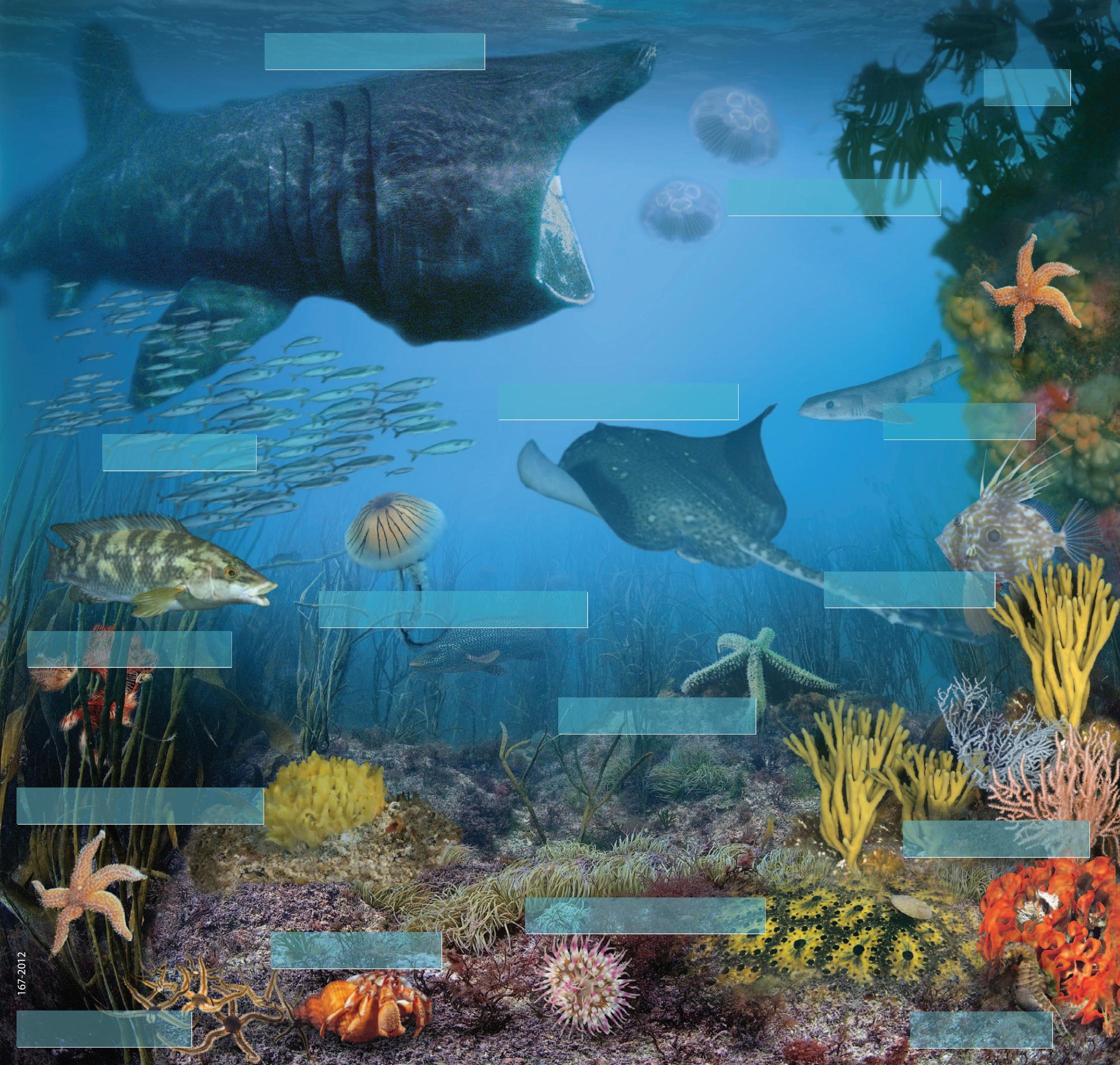


Thorny seahorse
© Laura Dts via Shutterstock

Why is biodiversity important?

Biodiversity means 'variety of life,' and can be measured as the number of different living things in an area, and the quantities of each.

Biodiversity is vital for ecosystem health. All living things play an important role in their environments. Most organisms are dependent on, or at least affected by, each other. The interconnections between creatures creates a complex web of who eats who.



[Redacted]

Basking shark

Kelp

Moon jellyfish

Thornback ray

Cat shark

Mackerel

John Dory

Compass jellyfish

Ballan wrasse

Spiny starfish

Common starfish

Pink seafan

Dahlia anemone

Hermit crab

Brittle stars

Seahorse

167-2012

Human

Eats whelk, edible crab, mussels, flatfish and seaweed



Orca

Eats otter



Seal

Eats flatfish



Flatfish

Eats mussels



Mussels

Eats plankton



Whelk

Eats hermit crab and mussels



Hermit crab

Eats seaweed



Otter

Eats urchin



Urchin

Eats seaweed



Edible crab

Eats worm, mussels and seaweed



Worm

Eats whelk, edible crab, flatfish and seaweed



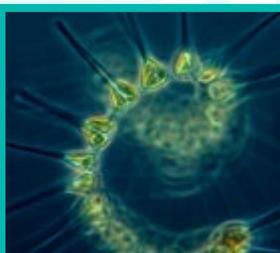
Basking shark

Eats plankton



Plankton

Gets energy from the sun



Seaweed

Gets energy from the sun



Food web worksheet

Apex
Predators

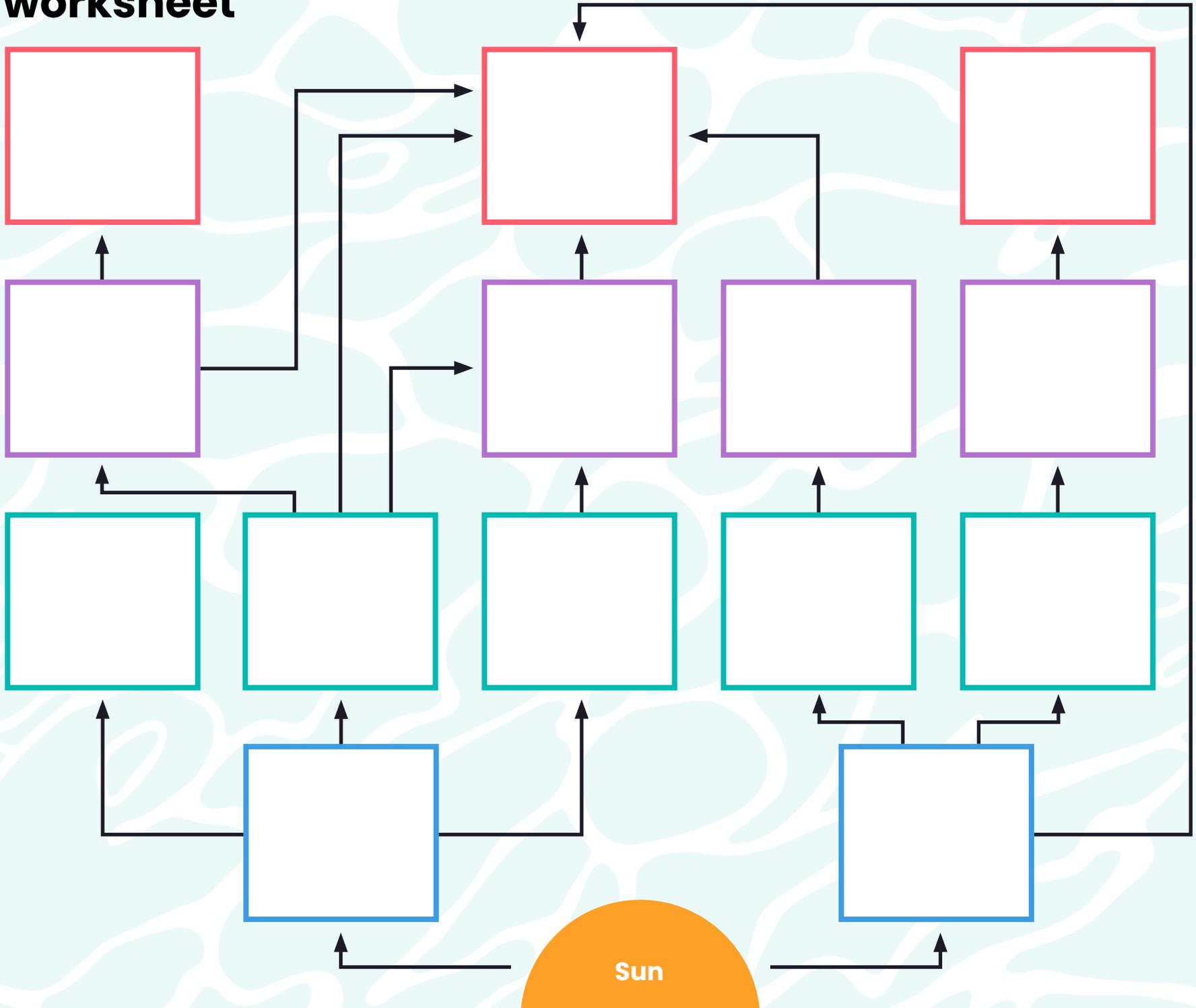
Secondary
Consumers

Primary
Consumers

Producers

Energy

Sun



Food web worksheet

Apex predators

Secondary consumers

Primary consumers

Producers

Energy

