



unesco



Voice of the Ocean
Foundation

OCEAN DREAMS

Educational Activities Guide

ACTIVITY 3

Finding the Balance

Build Your Own Ecosystem

 LATOUR

DEEP SEA

SK Films

INTRODUCTION

The ocean is the blue heart of our planet. It produces much of the oxygen we breathe, provides food for billions of people, and plays a crucial role in regulating Earth’s climate. Life on Earth began in the ocean, and even today, all living systems remain connected through its waters. What happens on land — from the choices we make to the resources we use — directly affects the health of the ocean, even far from the coast.

Ocean Dreams takes us to places where marine life has been given the chance to recover, showing how ecosystems can return and flourish when they are protected and carefully restored. Through powerful images and personal stories, the film highlights both the challenges facing the ocean and the hope that emerges when people act wisely. It reminds us that the ocean is not separate from our lives, and that small actions can create far-reaching impacts.

UNESCO’s Ocean Literacy Program emphasizes that understanding the ocean is essential for caring for it. By observing how marine ecosystems function, recognizing how they change over time, and understanding the role humans play within them, students can begin to connect knowledge with responsibility. These activities are designed to support that learning journey — encouraging reflection, curiosity, and discussion — while empowering students to think about how informed choices can help protect, restore, and support the recovery of ocean ecosystems, for the benefit of life both below and above the waves.

From the Film:

Ocean Dreams is a Giant Screen journey into the hidden world beneath the ocean’s blue surface — a story of breathtaking beauty, fragile ecosystems, and extraordinary resilience.

While human activity has pushed marine environments to the brink, this film reveals something equally powerful: the ocean’s remarkable ability to recover when given protection and space. From the icy fjords of Norway to the vibrant reefs of Raja Ampat and the surprising rebirth of Bikini Atoll, ***Ocean Dreams*** showcases real-world conservation success stories where marine life has returned in astonishing abundance.

Through immersive large-format cinematography, audiences are invited to experience the ocean not as a distant wilderness, but as a living system deeply connected to our own survival.

At its heart, ***Ocean Dreams*** is a story of hope — a reminder that when we protect the ocean and its inhabitants, we protect ourselves.



Ocean Literacy Principles

The Ocean Literacy Principles are a globally recognized framework that helps educators guide students toward a deeper understanding of the ocean's influence on us and our influence on the ocean. These seven principles describe the essential knowledge students need to develop environmental awareness, scientific curiosity, and a sense of stewardship for our blue planet.



Earth has one big ocean with many features

Even though we use different names — Atlantic, Pacific, Indian, etc. — all of these are actually connected and form one single, continuous ocean system. Water, currents, heat, and marine life move freely across the planet.



The ocean and life in the ocean shape the features of Earth

The ocean constantly reshapes our planet. Waves and currents shape coastlines, marine organisms help form sand and reefs, and ocean processes influence the physical structure of Earth.



The ocean is a major influence on weather and climate

The ocean absorbs, stores, and moves heat around the planet. This controls weather patterns, rainfall, storms, and long-term climate conditions everywhere — even far from the coast.



The ocean makes Earth habitable

The ocean helps regulate Earth's temperature and produces much of the oxygen we breathe through microscopic plankton, making life on Earth possible.



The ocean supports a great diversity of life and ecosystems

The ocean contains more living organisms and ecosystems than anywhere else on Earth — from coral reefs and kelp forests to deep-sea trenches full of species we still know little about.



The ocean and humans are inextricably interconnected

Humans depend on the ocean for oxygen, food, climate regulation, transportation, recreation, culture, and inspiration — and our actions directly affect ocean health.



The ocean is largely unexplored

Most of the ocean remains a mystery. We have only explored a small portion, and new species, ecosystems, and geological features are discovered all the time.

Overview

Description

In this activity, students build their own ocean ecosystem using illustrated organism cards. By creating food chains and exploring what happens when changes occur, students discover how marine life is interconnected and why balance is essential.

Learning objectives:

Students will:

- Identify simple food chain relationships (who eats whom)
- Understand that each species has a role in the ecosystem
- Recognize that changes in one species affect others
- Explore how ecosystems can become unbalanced and recover
- Collaborate and participate in a group activity

Ocean Literacy Principles

- Principle 5: The ocean supports a great diversity of life and ecosystems
- Principle 6: The ocean and humans are interconnected

Next Generation Science Standards (NGSS)

5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

5-LS2-2: Develop a model to describe the movement of matter among organisms in an ecosystem (food chains/webs).

3-LS4-4: Make a claim about how changes in the environment affect the survival of organisms.

5-ESS3-1: Obtain and combine information about ways communities can protect Earth's environments.

Materials:

- Printed organism cards (one set per group):
 - Coral Reef: Sunlight, Phytoplankton, Zooplankton, Coral, Parrotfish, Shark
 - Kelp Forest: Sunlight, Kelp, Sea Urchin, Sea Otter
 - Open Ocean: Sunlight, Phytoplankton, Krill, Blue Whale
 - Scenario Cards
 - Positive Action Card
- String, yarn, or arrows (to connect species)
- Scissors and coloring materials



Background: Ecosystem

An ecosystem is a community of living organisms and the environment in which they live. It can be as large as a rainforest or as small as the space between rocks on a coral reef. In every ecosystem, life is connected through relationships of dependence, interaction, and balance.

Now imagine stepping beneath the ocean surface as easily as walking through a forest. A vast world would open up in every direction—filled with movement, diversity, and life. From shallow coastal waters to the deepest parts of the sea, the ocean is home to an incredible variety of organisms, far greater than on land.

Across all these environments, life is deeply interconnected. No matter the size or location of a species, each one depends on others in some way. These relationships form food chains, which link together into complex food webs that exist everywhere—from tropical coral reefs to cold polar seas, and even in the dark depths where no sunlight reaches.

Within these systems, life is organised into producers, consumers, and predators, each playing a role in maintaining balance. From the smallest plankton drifting in open water to the largest marine animals, every organism is part of this global network of life.

Despite the extreme differences between habitats, one principle remains the same: the ocean is built on connection and balance. Life not only survives in these environments—it adapts, persists, and thrives, even in the most extreme conditions on Earth.

But because everything is connected, changes in one part of the ocean can affect many others. This is what makes marine ecosystems both powerful and fragile at the same time.

Key words: *Ecosystem, Interconnection, Biodiversity, Food web, Adaptation*

Lesson Plan

Step 1 — Prepare Your Ocean

Format: Whole-Class Discussion

Time: ~10 minutes

To get started, screen the **short video “Ocean Dreams – Ecosystems”**, which introduces students to what an ecosystem is, the different marine environments, and how food chains work.

Print the **“Printing Materials”** (Pages 16 to 25) and cut each page in half along the line marked “cut here,” so that you have two cards per page. The printing materials include three types of cards: **Marine Species**, **Problem Scenario**, and **Positive Action** cards.

Important: At this stage, students should receive only the **Marine Species** cards. Keep the **Problem Scenario** and **Positive Action** cards aside for later use.

The cards represent three different food chains. You can identify each group by the label on the card:

- Tropical Coral Reef
- Open Ocean
- Kelp Forest

NOTE. See *Page 6* for reference of the food chain for each group.

Give one **Marine Species** card to each student and ask them to color their species using any art materials available (crayons, markers, colored pencils, etc.). If your class has more students than available Marine Species cards, you may print additional copies as needed.

Once the coloring is complete, ask students to carefully read the information on their card.

The teacher can then guide a short discussion by asking:

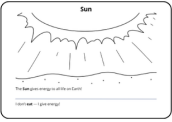
- ***In which marine environment do you think your species lives? (e.g., Tropical Coral Reef, Open Ocean, Kelp Forest, Mangrove Forest)***
- ***Can you share one characteristic or interesting fact about your species?***

Finding the Balance


Lesson Plan

Reference of the food chain for each group.

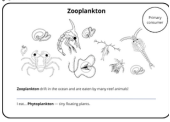
1. Tropical Coral Reef



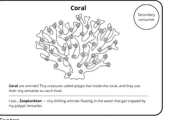
SUN →



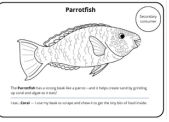
PHYTOPLANKTON →



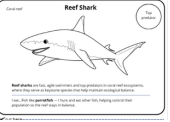
ZOOPLANKTON →




CORAL →




PARROTFISH →



SHARK

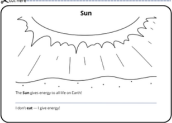


PROBLEM SCENARIO




POSITIVE ACTION

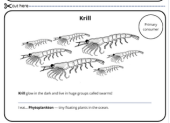
2. Open Ocean



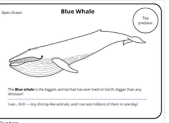
SUN →




PHYTOPLANKTON →




KRILL →



BLUE WHALE

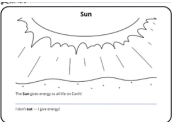


PROBLEM SCENARIO




POSITIVE ACTION


3. Kelp Forest




SUN →



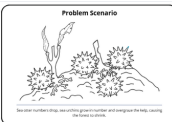
KELP →




SEA URCHIN →



SEA OTTER



PROBLEM SCENARIO



POSITIVE ACTION

Lesson Plan

Step 2 – Build the Ecosystem

Format: Whole-Class Discussion

Time: 10 minutes

Students will now begin building marine food chains using their **Marine Species** cards.

- If the **activity is indoors**, ask students to place their cards on a wall or blackboard. Provide tape so they can attach their cards. Cards should be placed randomly at first.
- If the **activity is outdoors**, students should keep their cards with them and move freely in the space.

To begin organizing the activity, the teacher can call students by ecosystem group (*Tropical Coral Reef, Open Ocean, Kelp Forest*), based on the label shown on their cards.

Start with the **Sun** as the main source of energy in all ecosystems. The teacher can introduce this idea by asking:

- ***Which marine species need sunlight to live?***

Students with photosynthetic species (such as kelp or phytoplankton) should come forward.

- **Indoor:** these students place their cards on the wall as the first level of the food chain
- **Outdoor:** these students stand in a line and begin forming a “human chain”

The teacher then introduces the concept of food chain levels, explaining key terms in simple language:

- **Primary Producers** (organisms that use sunlight to make their own food)
- **Primary Consumers** (animals that eat producers)
- **Secondary Consumers** (animals that eat other animals)
- **Top Predators** (animals at the top of the food chain)

Next, guide students step by step with prompts such as:

- ***Who has a species that feeds on these organisms?***

Students who identify their role (for example, those with zooplankton or herbivores) should join the chain:

- **Indoor:** they place their card next to the species they feed on
- **Outdoor:** they hold hands with the student they depend on, extending the human chain

SETS of foodchain + problem solution

Lesson Plan

Step 2 – Build the Ecosystem

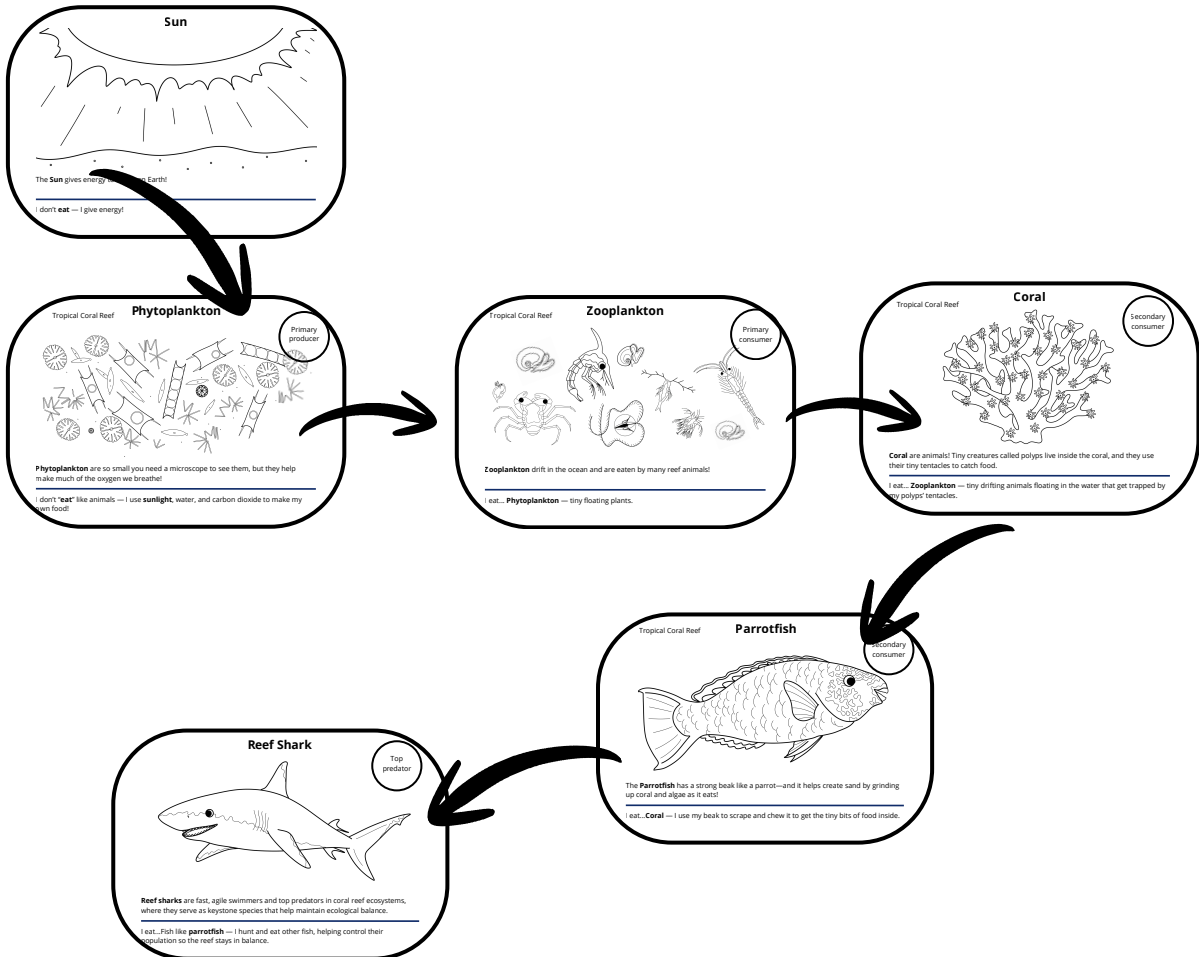
As each new level is added, the food chain will gradually form.

The teacher can support understanding by:

- Drawing or placing arrows between cards (indoors) to show “who eats whom”
- Encouraging students (outdoors) to physically connect in sequence

Repeat this process until all levels are connected, building the three different food chains (Tropical Coral Reef, Open Ocean, Kelp Forest).

For reference see the Picture below:



SETS of foodchain + problem solution

Lesson Plan

Step 3 – What if...

Format: Whole-Class Discussion

Time: 15–20 minutes

Students now test the food chains they have built.

Teacher explains (in simple terms):

“In the ocean, things don’t always stay the same. Let’s see what happens when the balance of the ecosystem changes.”

Round 1

Each group chooses one **Marine Species** from their food chain to remove (for example: a shark, sea otter, or phytoplankton).

- **Indoor:** students remove the card from the wall
- **Outdoor:** the student steps out of the human chain

Ask students to carefully observe what happens to their food chain once that species is removed.

Guiding questions:

- ***Which species can no longer find food?***
- ***Which species might increase too much?***
- ***Which species might disappear over time?***

You can also give simple examples to guide thinking:

- ***If there are no sharks, what might happen to the fish?***
- ***If nothing eats sea urchins, what could happen to the kelp?***

Encourage students to look at the connections (arrows or hand-holding) to understand the impact. See reference picture in Page 10.

Group reflection

Each group briefly shares their observations:

“We removed _____, and we think _____ will happen.”

Teacher tip (optional but helpful)

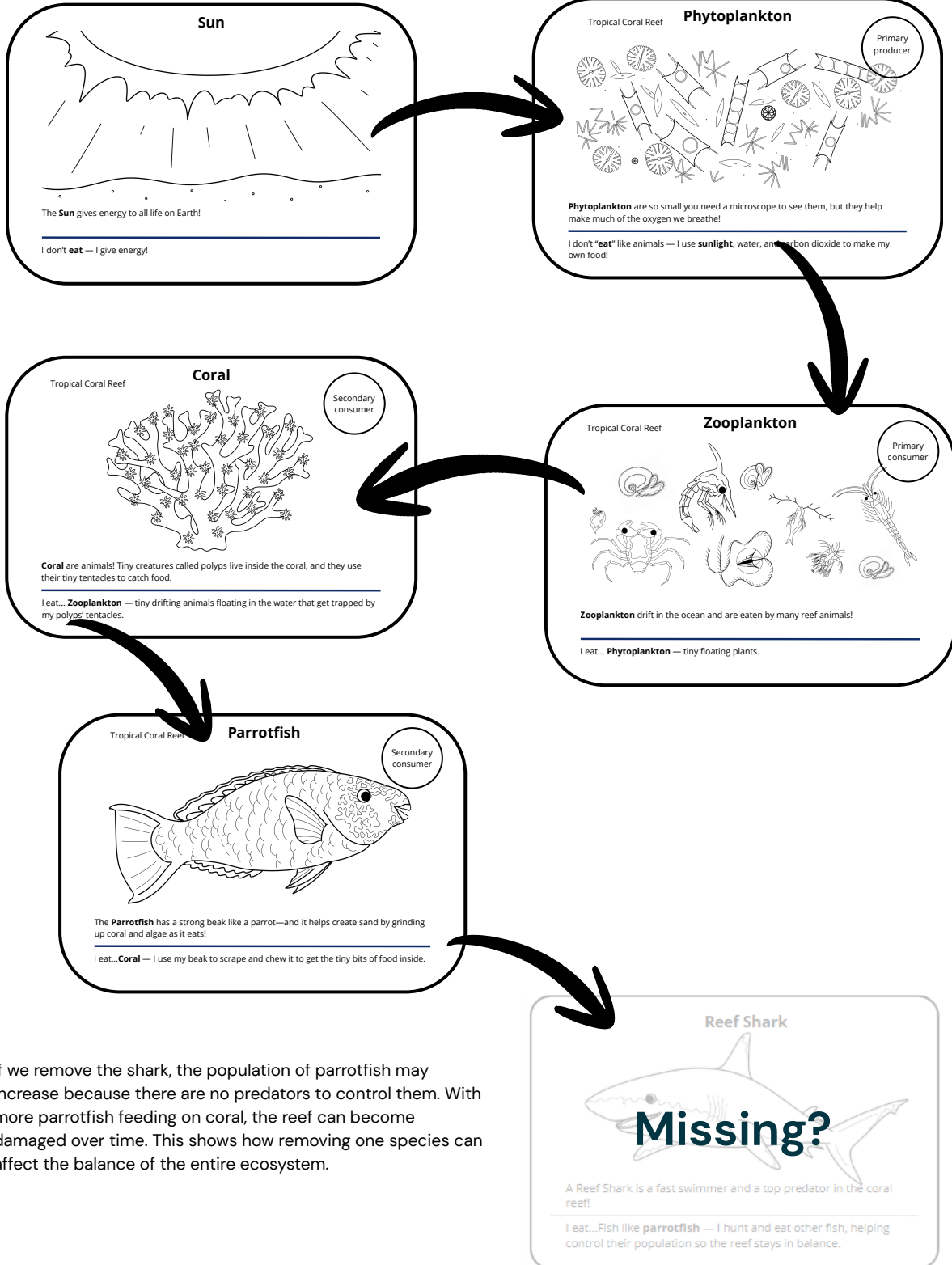
If students struggle, guide them toward removing:

- ***a top predator (to show overpopulation effects)***
- ***a primary producer (to show collapse of the whole chain)***

Finding the Balance

Lesson Plan

Example



If we remove the shark, the population of parrotfish may increase because there are no predators to control them. With more parrotfish feeding on coral, the reef can become damaged over time. This shows how removing one species can affect the balance of the entire ecosystem.

Lesson Plan

Step 4 – Restore the Balance

Format: Whole-Class Discussion

Time: 15–20 minutes

Round 2 – Introduce a Problem

Give each group one **Problem Scenario** card that matches their ecosystem (Tropical Coral Reef, Open Ocean, or Kelp Forest). You may read the card aloud to the class if needed. See Page 12 as reference.

Explain clearly what the scenario means and how it could affect their food chain.

For example, guide students to think about:

- **Which species might decrease?**
- **Which species might increase?**
- **What happens to the rest of the chain?**

Students then adjust their ecosystem based on the scenario:

- **Indoor:** move, remove, or rearrange cards on the wall
- **Outdoor:** students step out, move, or break connections in the human chain

Allow time for students to observe and discuss the changes.

The teacher can reinforce the concept by explaining in simple terms:

“A balanced ecosystem means all living things have enough food, and no species grows too much or disappears.”

Round 3 – Take Positive Action

The teacher introduces the next phase:

“The good news is that people can help ecosystems recover. Scientists and communities work to protect the ocean.”

Give each group one **Positive Action** card that matches their ecosystem (Tropical Coral Reef, Open Ocean, or Kelp Forest). You may read the card aloud to the class if needed. See Page 13 as reference.

Students update their ecosystem again based on the action:

- **Indoor:** add back or reposition cards to rebuild the food chain
- **Outdoor:** reconnect the human chain as balance is restored

Encourage students to observe how the ecosystem improves and becomes more stable.

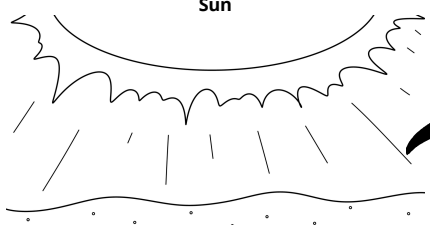
The teacher concludes with a simple idea:

“The more we understand the ocean, the better we can protect it.”

Lesson Plan

Example "Problem Scenario" card introduced:


Sun



The **Sun** gives energy to all life on Earth!

I don't **eat** — I give energy!

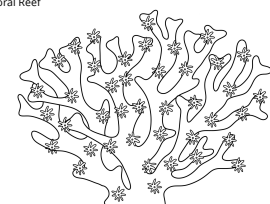
Tropical Coral Reef **Phytoplankton** Primary producer



Phytoplankton are so small you need a microscope to see them, but they help make much of the oxygen we breathe!

I don't **eat** like animals — I use **sunlight**, water, and carbon dioxide to make my own food!


Tropical Coral Reef **Coral** Secondary consumer



Coral are animals! Tiny creatures called polyps live inside the coral, and they use their tiny tentacles to catch food.

I eat... **Zooplankton** — tiny drifting animals floating in the water that get trapped by my polyps' tentacles.


Tropical Coral Reef **Zooplankton** Primary consumer



Zooplankton drift in the ocean and are eaten by many reef animals!

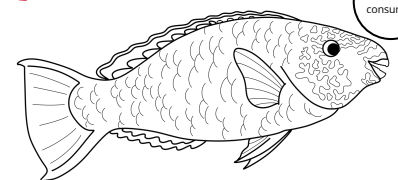
I eat... **Phytoplankton** — tiny floating plants.

Tropical Coral Reef **Problem Scenario**



A disease has destroyed much of the coral, so the reef is damaged and many fish lose their home!

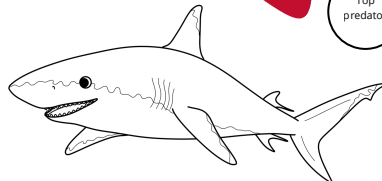
Tropical Coral Reef **Parrotfish** Secondary consumer



The **Parrotfish** has a strong beak like a parrot—and it helps create sand by grinding up coral and algae as it eats!

I eat... **Coral** — I use my beak to scrape and **grind** to get the tiny bits of food inside.

Reef Shark Top predator



Reef sharks are fast, agile swimmers and top predators in coral reef ecosystems, where they serve as keystone species that help maintain ecological balance.

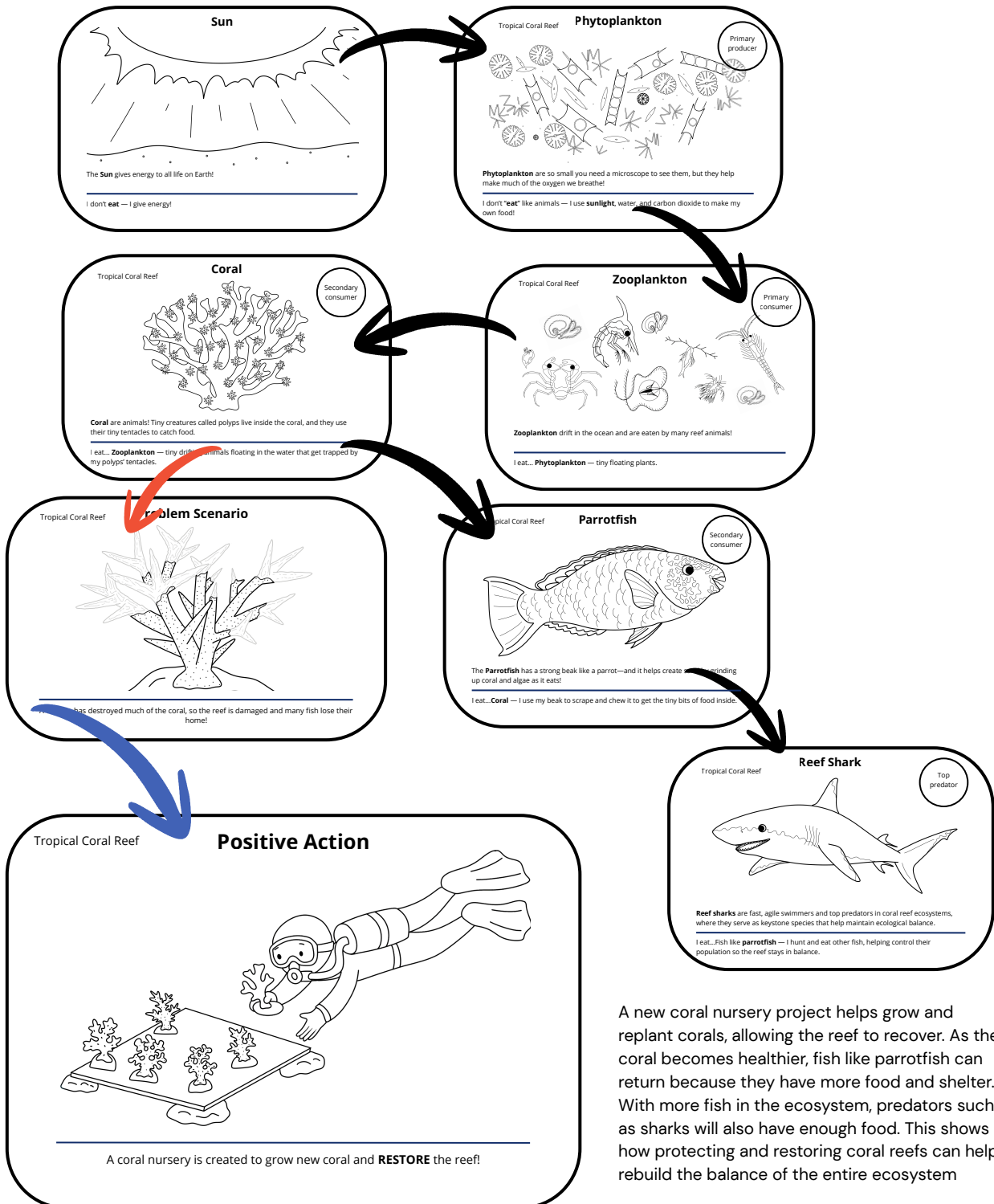
I eat... Fish like **parrotfish** — I hunt and eat other fish, helping control their population so the reef stays in balance.

"If a disease affects the coral, the reef can start to disappear. Many fish, like parrotfish, depend on coral for food and shelter, so their population may decrease. As the number of parrotfish goes down, sharks may also be affected because they have less food available. This shows how damage to coral can spread through the entire food chain and affect the balance of the ecosystem"

Finding the Balance

Lesson Plan

Example "Positive Action" card introduced



A new coral nursery project helps grow and replant corals, allowing the reef to recover. As the coral becomes healthier, fish like parrotfish can return because they have more food and shelter. With more fish in the ecosystem, predators such as sharks will also have enough food. This shows how protecting and restoring coral reefs can help rebuild the balance of the entire ecosystem

Lesson Plan

Step 5 – Closing Activity

Format: Whole-Class Discussion

Time: 15–20 minutes

Round 4 – Create Your Own Food Chain

Now that you understand the basics of a food chain, it is your turn to build one or expand the existing ones. In the **Printing Materials**, you will find a page with blank cards that you can use to create new marine species or add new connections to the food chains provided.

Use these cards to either:

- **Create a completely new food chain, or**
- **Expand one of the existing ecosystems by adding new marine species and connections**

You can also include new **Problem Scenario** cards and **Positive Action** cards to explore what might happen when the ecosystem changes and how it can be restored.

Remember to think about the basic structure of a food chain:

Sun → Primary Producers → Primary Consumers → Secondary Consumers → Top Predators

Be as creative as you like and work together with your classmates. Explore the biodiversity of different marine environments and imagine how each species might interact within the ecosystem.

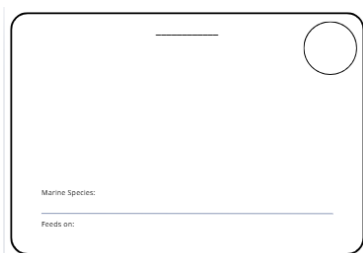
Once completed, each group will briefly present their food chain to the class, explaining how their ecosystem works and what happens when changes are introduced.

Closing reflection question:

What happens if one species in your food chain disappears or returns?

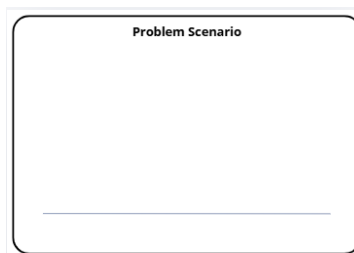
Use the following to create your cards (Printing Material – Pages 26 and 27):

Marine Species



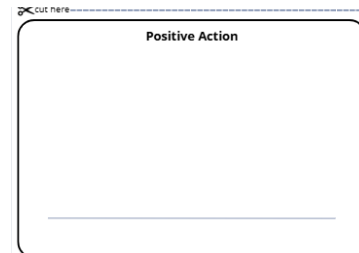
A rectangular card template with a rounded top-right corner. It features a horizontal line near the top center and a small circle on the right side. At the bottom left, there are two lines of text: "Marine Species:" followed by a horizontal line, and "Feeds on:" followed by a horizontal line.

Problem Scenario



A rectangular card template with rounded corners. It has the text "Problem Scenario" centered at the top. Below it is a horizontal line.

Positive Action



A rectangular card template with rounded corners. It has the text "Positive Action" centered at the top. Below it is a horizontal line. A small "cut here" icon is visible at the top left corner.

An underwater photograph of a mangrove forest. The scene is dominated by dark, vertical mangrove roots that rise from a dense, colorful coral reef at the bottom. The water is a deep, clear blue, and the lighting creates a serene, slightly dim atmosphere. The coral reef is composed of various types of coral, including branching and table corals, in shades of yellow, orange, and brown. Small fish are visible swimming in the water.

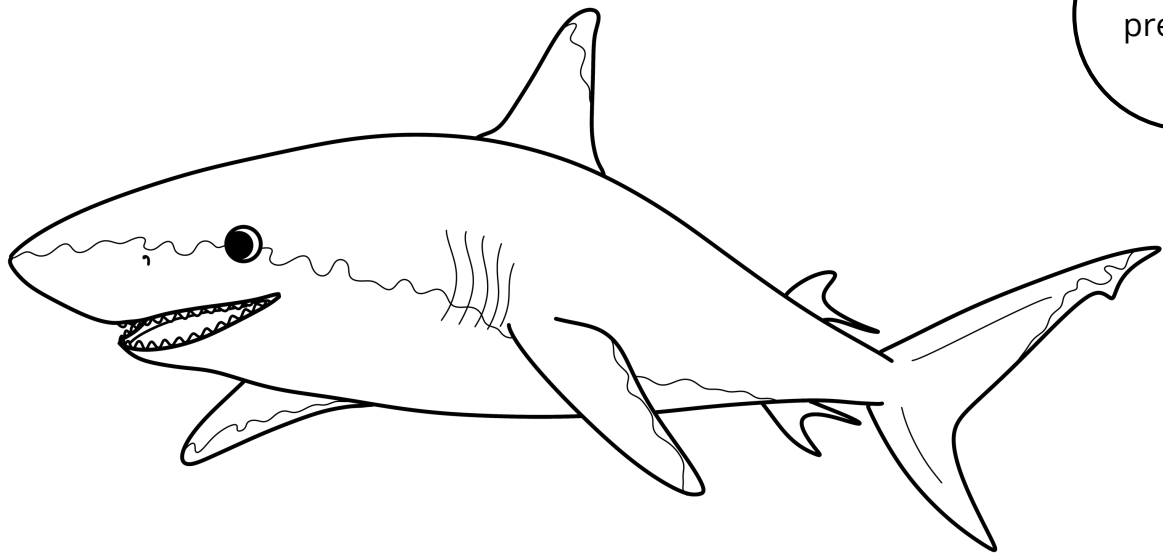
Printing Materials

Marine Food Chains

Tropical Coral Reef

Reef Shark

Top predator



Reef sharks are fast, agile swimmers and top predators in coral reef ecosystems, where they serve as keystone species that help maintain ecological balance.

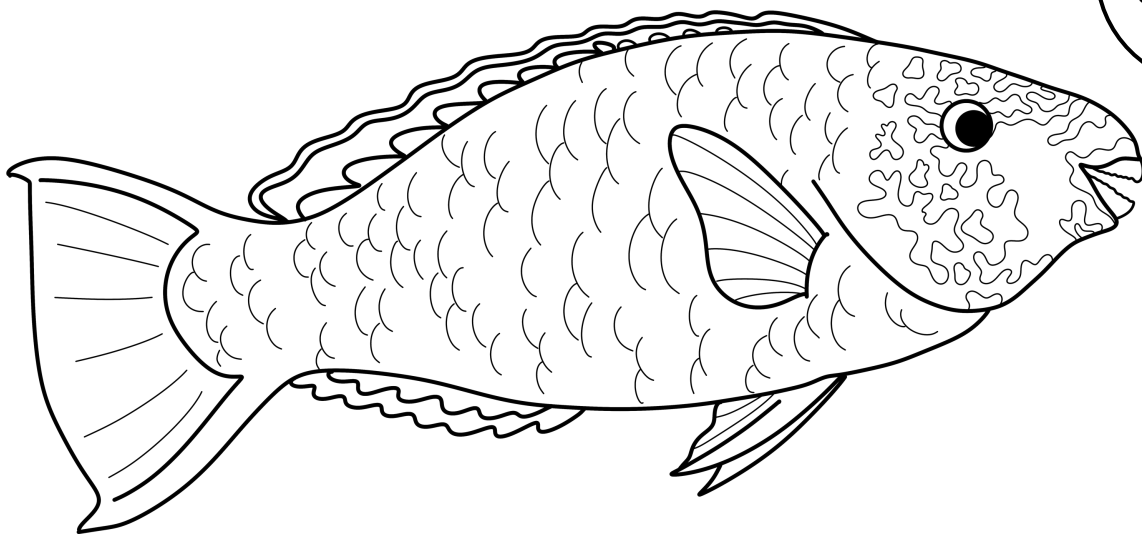
I eat...Fish like **parrotfish** — I hunt and eat other fish, helping control their population so the reef stays in balance.

✂ cut here

Tropical Coral Reef

Parrotfish

Secondary consumer



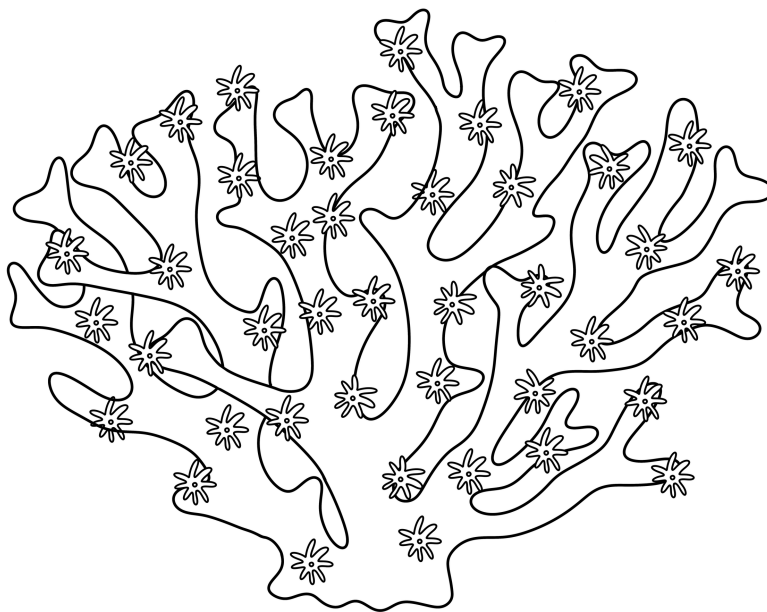
The **Parrotfish** has a strong beak like a parrot—and it helps create sand by grinding up coral and algae as it eats!

I eat...**Coral** — I use my beak to scrape and chew it to get the tiny bits of food inside.

Tropical Coral Reef

Coral

Secondary
consumer



Coral are animals! Tiny creatures called polyps live inside the coral, and they use their tiny tentacles to catch food.

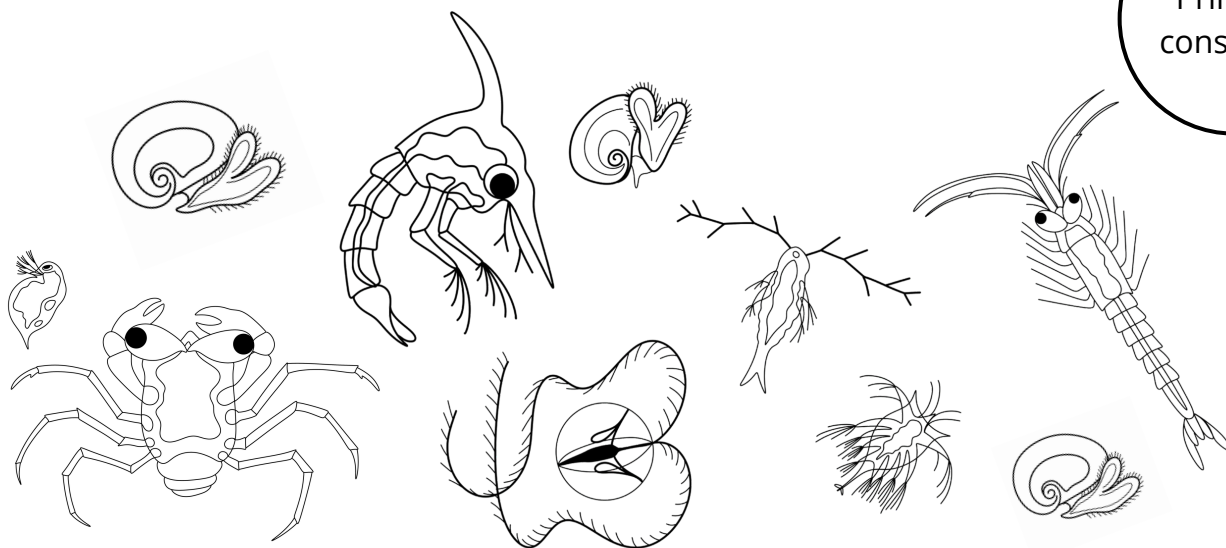
I eat... **Zooplankton** — tiny drifting animals floating in the water that get trapped by my polyps' tentacles.

✂ cut here

Tropical Coral Reef

Zooplankton

Primary
consumer

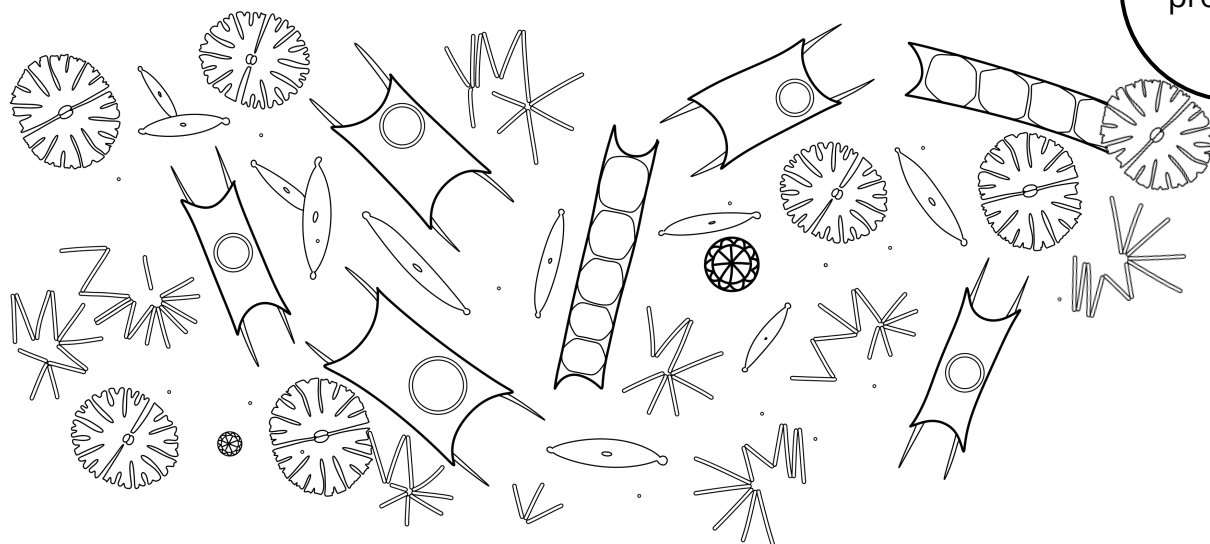


Zooplankton drift in the ocean and are eaten by many reef animals!

I eat... **Phytoplankton** — tiny floating plants.

Phytoplankton

Primary
producer

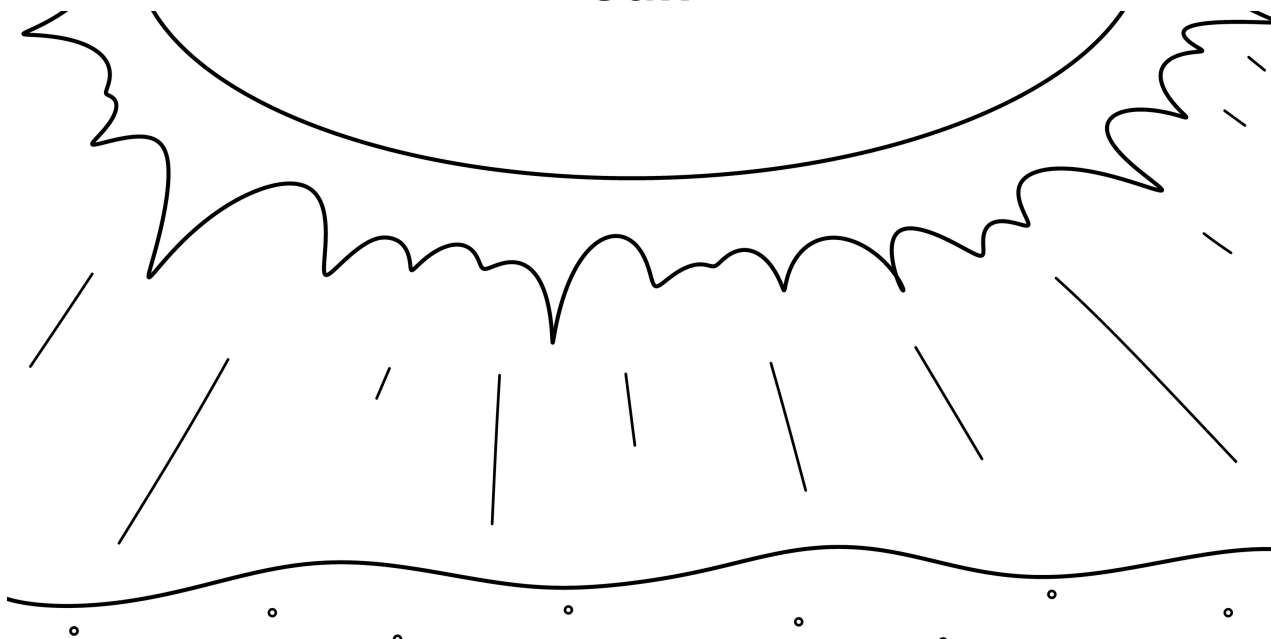


Phytoplankton are so small you need a microscope to see them, but they help make much of the oxygen we breathe!

I don't **"eat"** like animals — I use **sunlight**, water, and carbon dioxide to make my own food!

✂ cut here

Sun



The **Sun** gives energy to all life on Earth!

I don't **eat** — I give energy!

Tropical Coral Reef

Problem Scenario

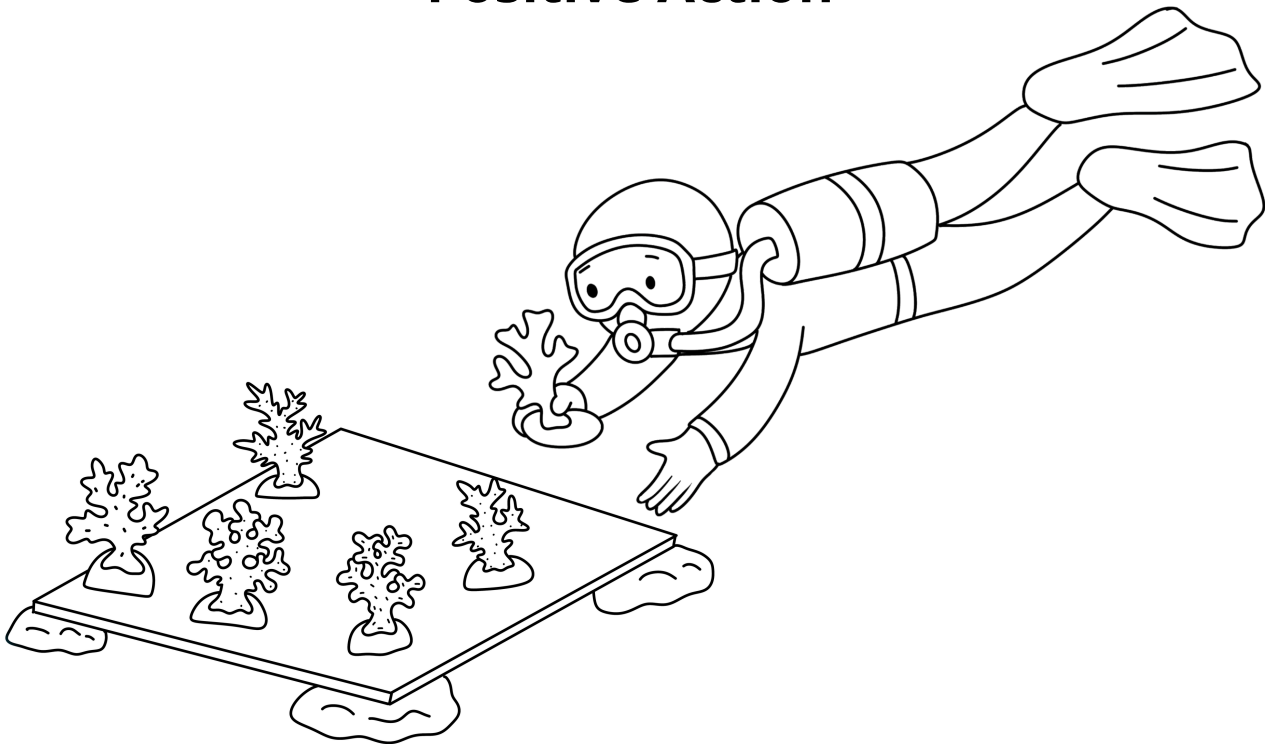


A disease has destroyed much of the coral, so the reef is damaged and many fish lose their home!

✂ cut here

Tropical Coral Reef

Positive Action

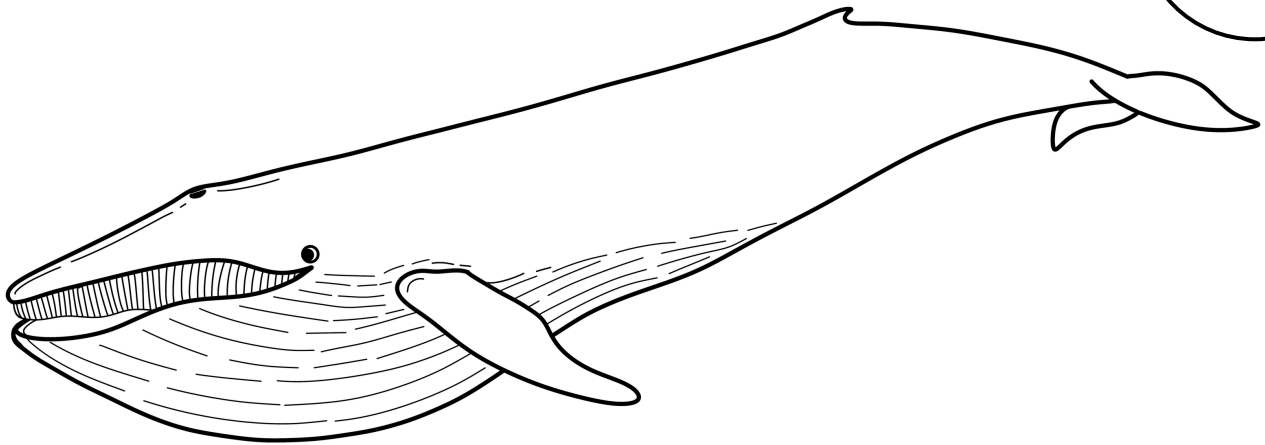


A coral nursery is created to grow new coral and **RESTORE** the reef!

Open Ocean

Blue Whale

Top predator



The **Blue whale** is the biggest animal that has ever lived on Earth, bigger than any dinosaur!

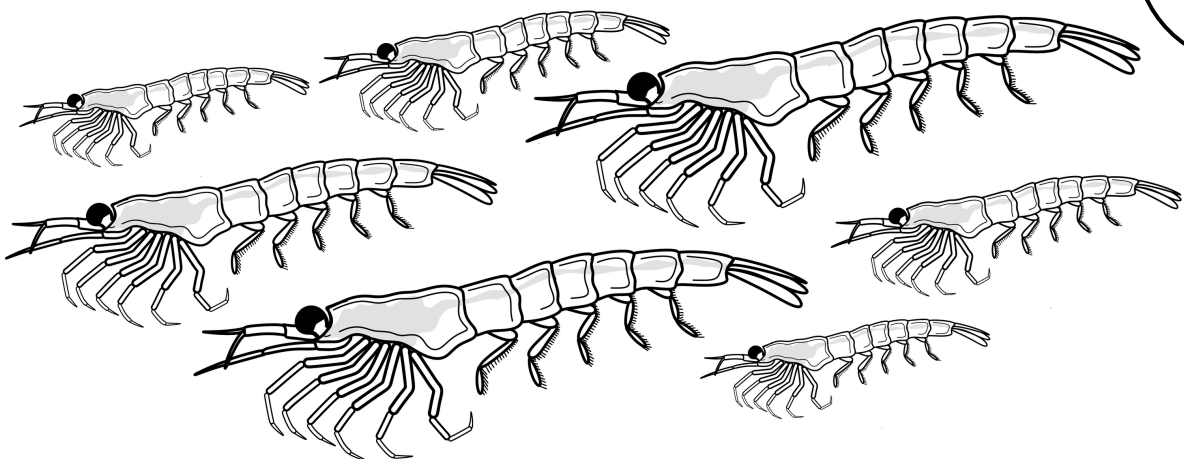
I eat... Krill — tiny shrimp-like animals, and I can eat millions of them in one day!

✂ cut here

Open Ocean

Krill

Primary consumer



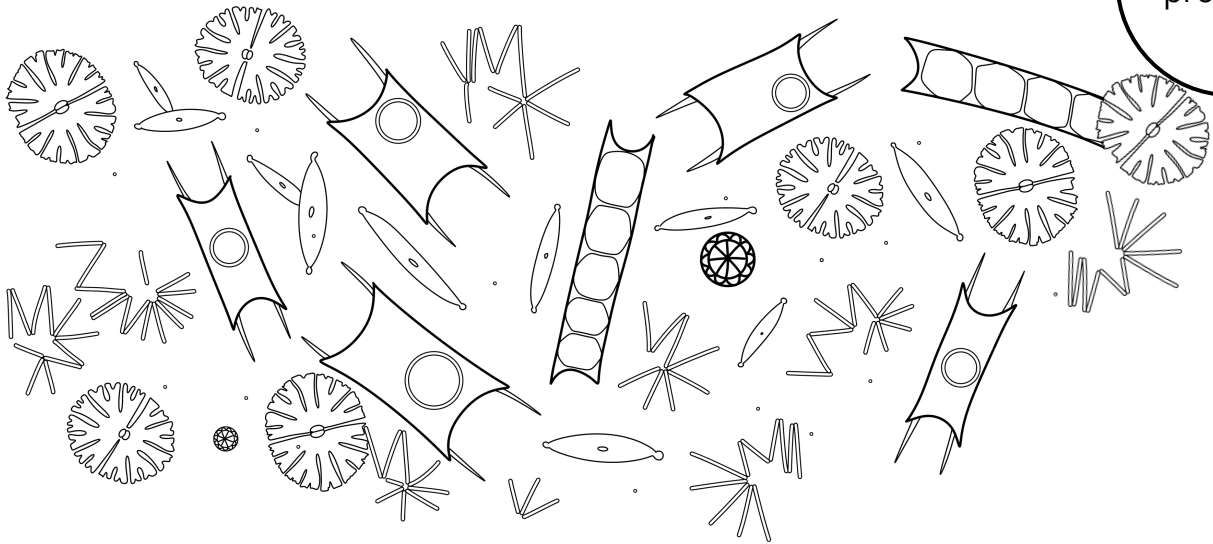
Krill glow in the dark and live in huge groups called swarms!

I eat... **Phytoplankton** — tiny floating plants in the ocean.

Open Ocean

Phytoplankton

Primary
producer

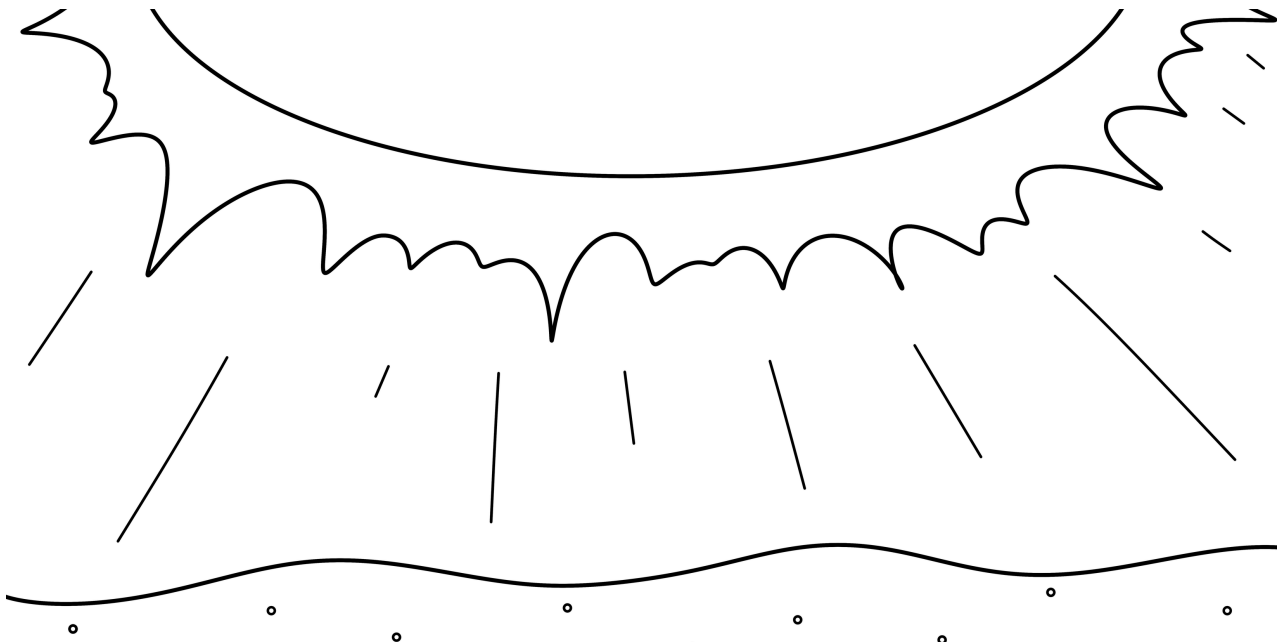


Phytoplankton are so small you need a microscope to see them, but they help make much of the oxygen we breathe!

I don't **"eat"** like animals — I use sunlight, water, and carbon dioxide to make my own food!

✂ cut here

Sun

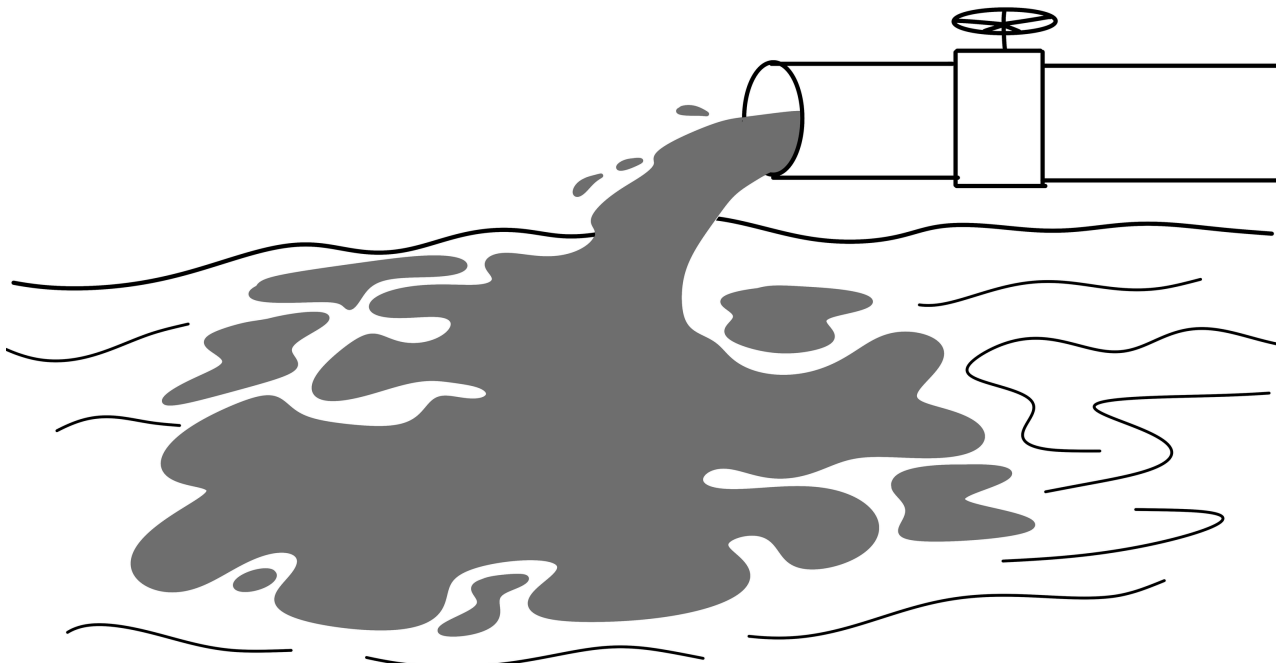


The **Sun** gives energy to all life on Earth!

I don't **eat** — I give **energy**!

Open Ocean

Problem Scenario

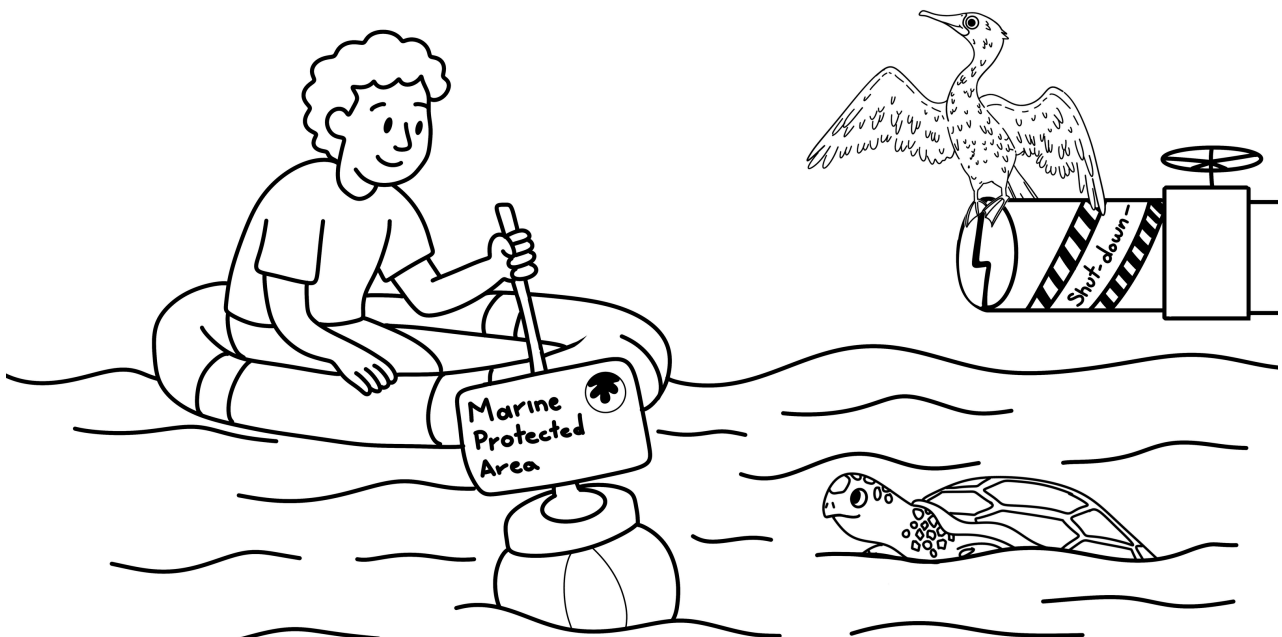


Pollution has entered the ocean, making the water dirty, so phytoplankton decrease and there is less food for other animals!

✂ cut here

Open Ocean

Positive Action



Pollution is reduced, and the water becomes clean again to **PROTECT** ocean life thanks to a new Marine Protected Area!

Kelp Forest

Sea otter

Top predator



Sea otters are keystone species, helping keep kelp forests healthy and balanced, just like wolffish do.

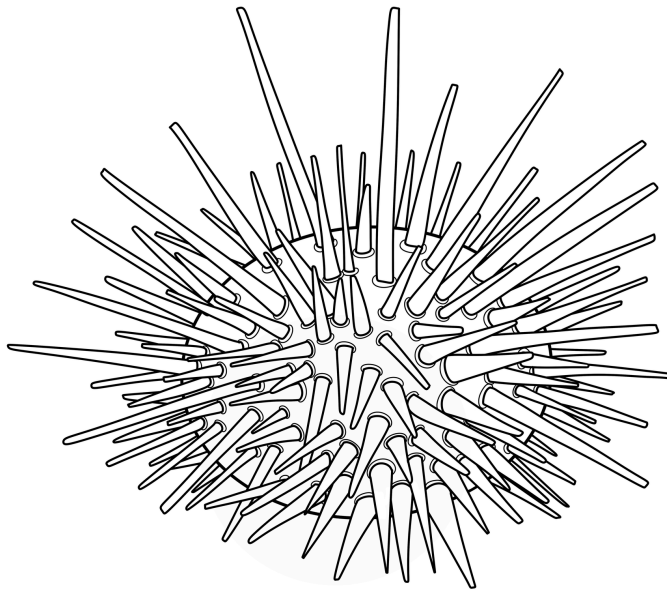
I eat... **Sea urchins**, spiky sea animals that I crack open using rocks to get to the tasty inside.

✂ cut here

Kelp Forest

Sea urchin

Primary consumer



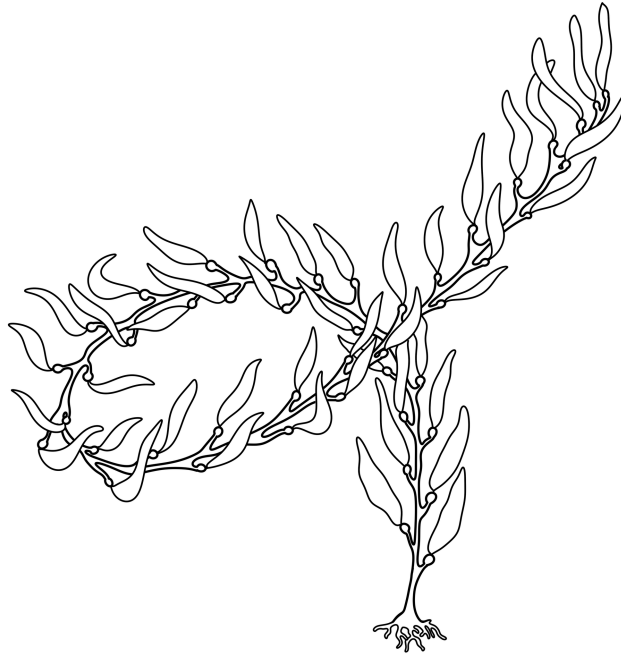
Sea Urchin have four strong teeth that they use to chomp on kelp and scrape algae off rocks!

I eat... **Kelp** — large, leafy brown seaweed that grow underwater.

Kelp Forest

Kelp

Primary
producer

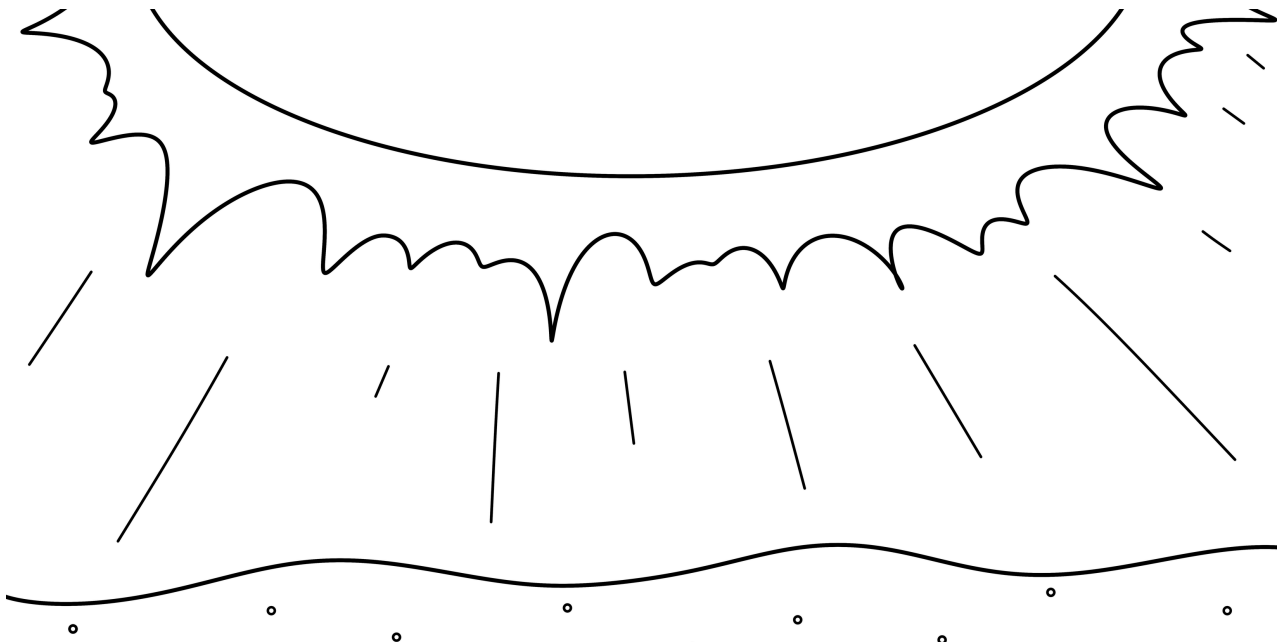


Kelp can grow super fast, sometimes up to 30–60 cm in just one day!

I don't "eat" — I use sunlight to make my own food, and I have tiny gas bubbles that help me float up toward the sun!

✂ cut here

Sun

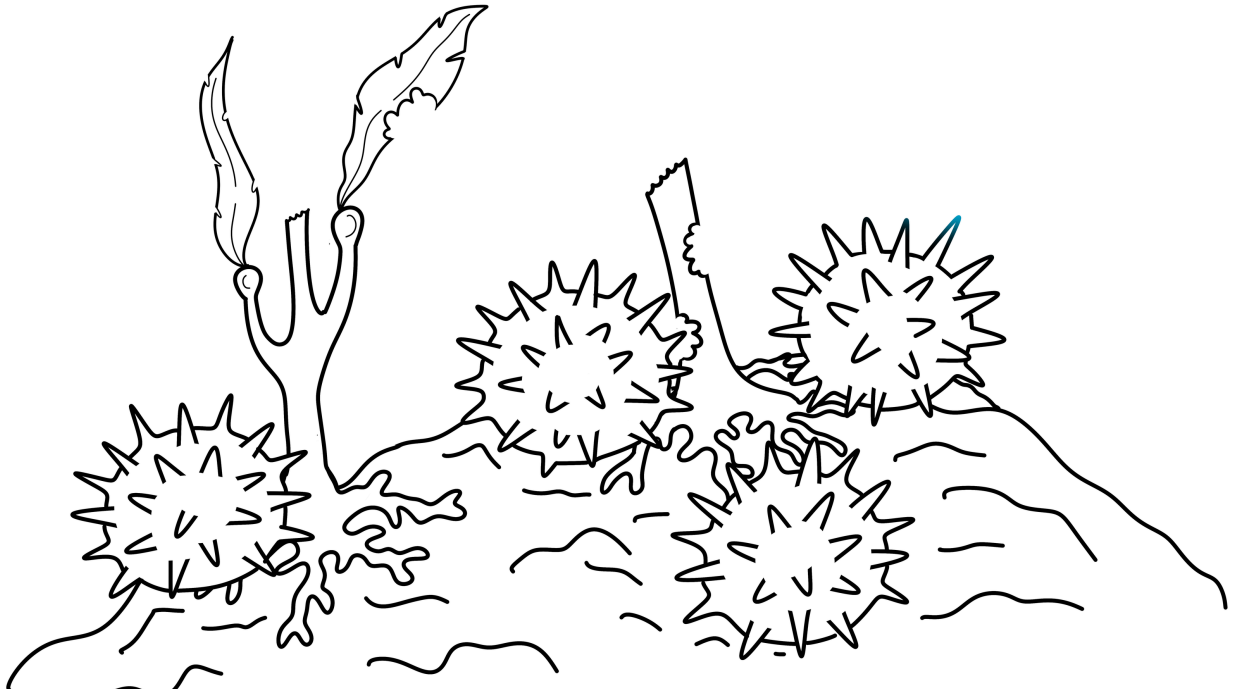


The Sun gives energy to all life on Earth!

I don't eat — I give energy!

Kelp Forest

Problem Scenario

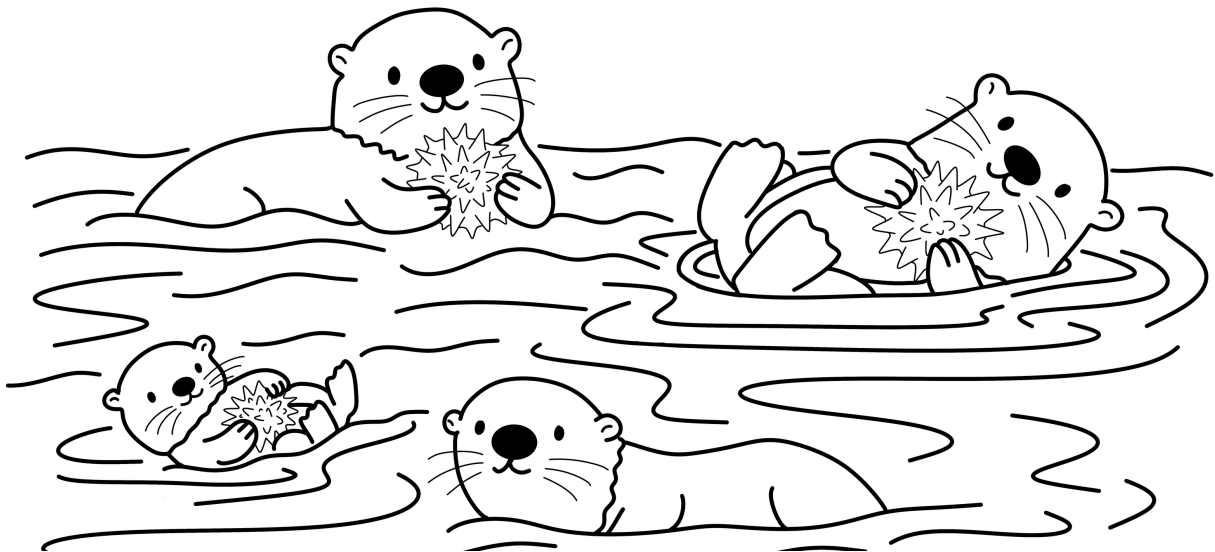


Sea otter numbers drop, sea urchins grow in number and overgraze the kelp, causing the forest to shrink.

✂ cut here

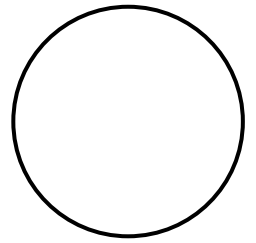
Kelp Forest

Positive Action



A new project is helping sea otter numbers return after a decline. By eating sea urchins, they allow kelp forests to **RECOVER**.

Marine Species: _____

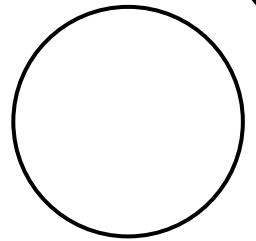


Characteristics:

Feeds on:

 cut here

Marine Species: _____



Characteristics:

Feeds on:

Problem Scenario

 cut here

Positive Action



unesco



Voice of the Ocean
Foundation

OCEAN DREAMS

Educational Activities Guide

This activity, developed in connection with the *Ocean Dreams* film, supports students in building and exploring simple ocean ecosystems to understand how marine life is interconnected and dependent on balance. By modelling food chains and exploring the effects of change, it strengthens understanding of how shifts in one species can impact the whole system and highlights the importance of ecosystem resilience. It contributes to fostering systems thinking, collaboration, and a sense of responsibility toward ocean sustainability.

 L'ATOUR

DEEP SEA

SK Films