CCMI

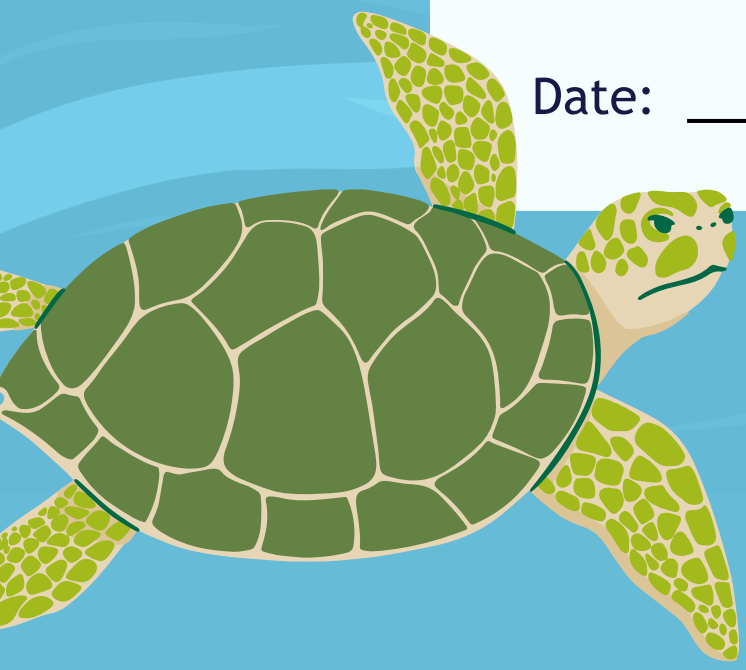
REEFS GO LIVE

Teacher answer booklet

Reefs Go Live 2026 Booklet

Name: _____

Date: _____



REEF DEFENDER CHALLENGE

REEF CHALLENGE 2026

MISSION BRIEFING

Coral reefs are complex, connected ecosystems.
In this challenge, you will investigate how reefs survive, how energy moves through the system, and how these ecosystems protect islands.

What's your reef defender name?

First letter of your name

A — Coral
B — Tidal
C — Reef
D — Ocean
E — Storm
F — Deep
G — Current
H — Mangrove
I — Blue
J — Wave
K — Lagoon
L — Drift
M — Horizon
N — Salt
O — Anchor
P — Seagrass
Q — Abyss
R — Coastal
S — Tide
T — Mariner
U — Pelagic
V — Barrier
W — Crest
X — Depth
Y — Kelp
Z — Nautical

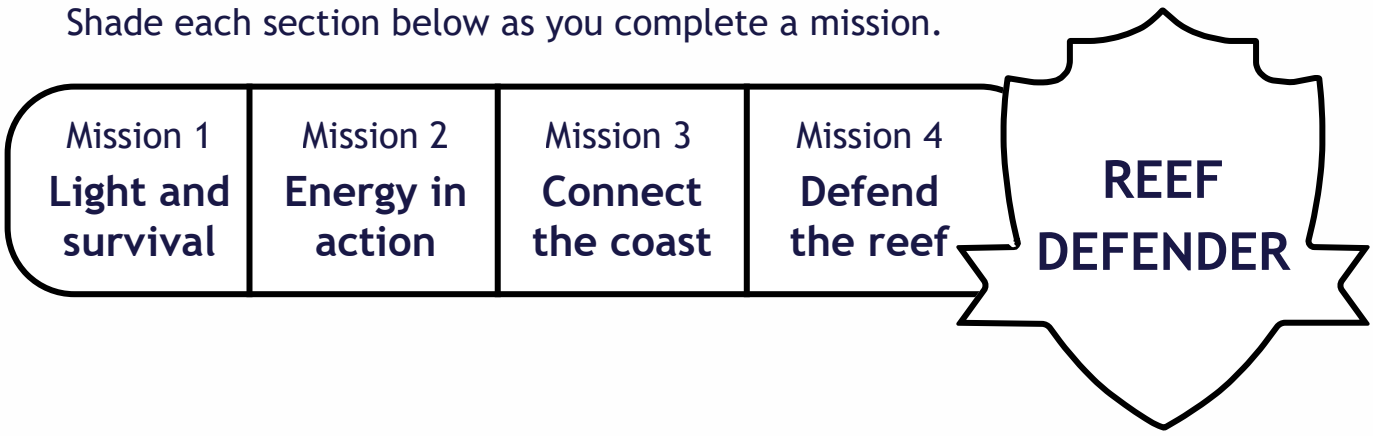
Birth month

Jan — Cadet
Feb — Scout
Mar — Explorer
Apr — Diver
May — Navigator
Jun — Ecologist
Jul — Lieutenant
Aug — Specialist
Sep — Investigator
Oct — Guardian
Nov — Defender
Dec— Commander

Your new name: _____

Reef defender meter

Shade each section below as you complete a mission.



Your reef journey begins now!

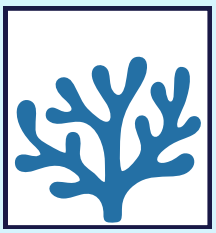
REEF DEFENDER FIELD GUIDE

KNOW YOUR ALLIES

Reef defenders don't work alone. The eight allies below help coral reefs survive, recover, and protect islands. Learn their roles as you will meet them for this season's missions.

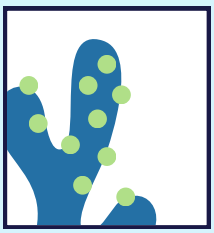
Coral

- Reef builder
- Creates habitat and protects coasts



Zooxanthellae

- Energy partner
- Powers coral growth through photosynthesis

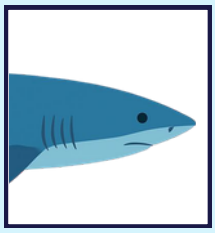


Parrotfish

- Algae controller
- Prevents algae from taking over

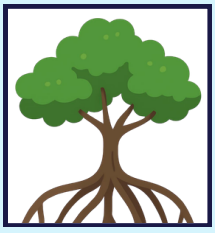
Reef shark

- Top predator
- Keeps the food web balanced



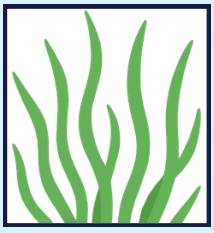
Mangroves

- Coast protector
- Reduce waves and shelter young fish



Seagrass

- Carbon keeper
- Stores carbon and supports marine life

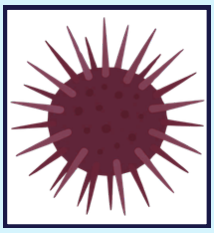


Phytoplankton

- Primary producer
- Starts ocean food chains

Sea urchin

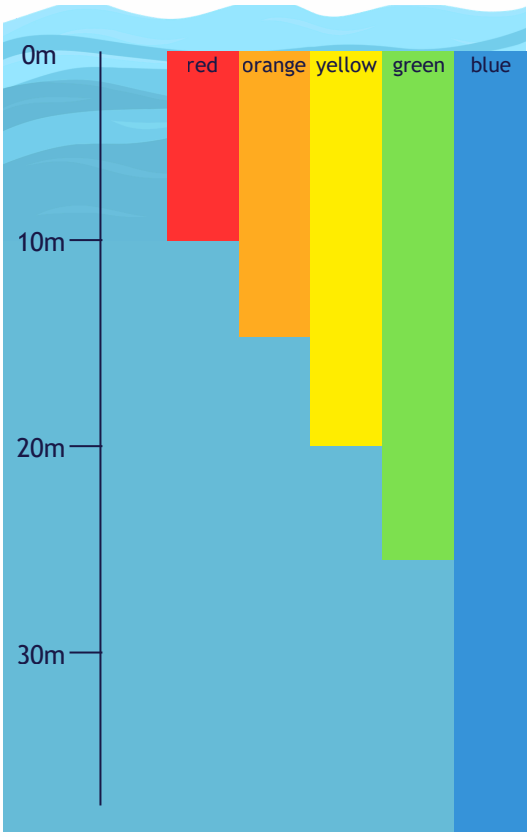
- Grazer
- Helps control algae when fish numbers drop



MISSION 1: LIGHT AND SURVIVAL

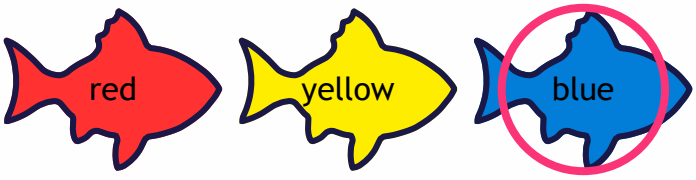
WHY DOES THE REEF CHANGE COLOUR?

Sunlight looks white, but it's made of many colours. As light travels through water, different colours disappear at different depths. This changes how animals look and how they survive.



Activity 1: Predict the Reef

At 20 m depth, which fish would still look bright? Circle one.



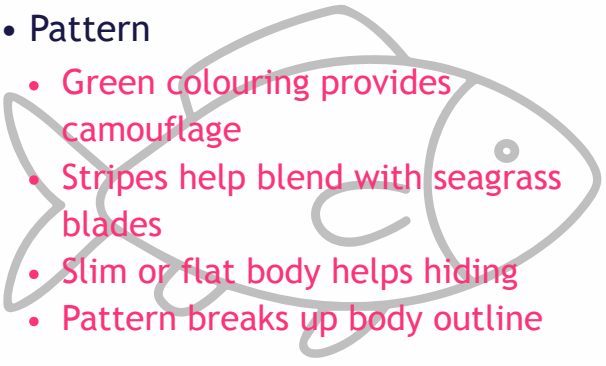
Explain why:

- Blue light travels furthest through water
- Red and orange light are absorbed quickly
- At deeper depths fewer colours remain
- Blue objects still reflect available light
- Therefore blue fish appear brighter at 20 m depth

Activity 2: Design for survival

Design a fish that would survive in each habitat. Label one adaptation that helps your fish survive. Think about:

- Colour
- Pattern



- Green colouring provides camouflage
- Stripes help blend with seagrass blades
- Slim or flat body helps hiding
- Pattern breaks up body outline

Seagrass habitat

- Bright colours help communication or camouflage
- Spots or patterns match coral surroundings
- Body shape allows hiding in reef gaps
- Colour helps avoid predators

Coral reef habitat

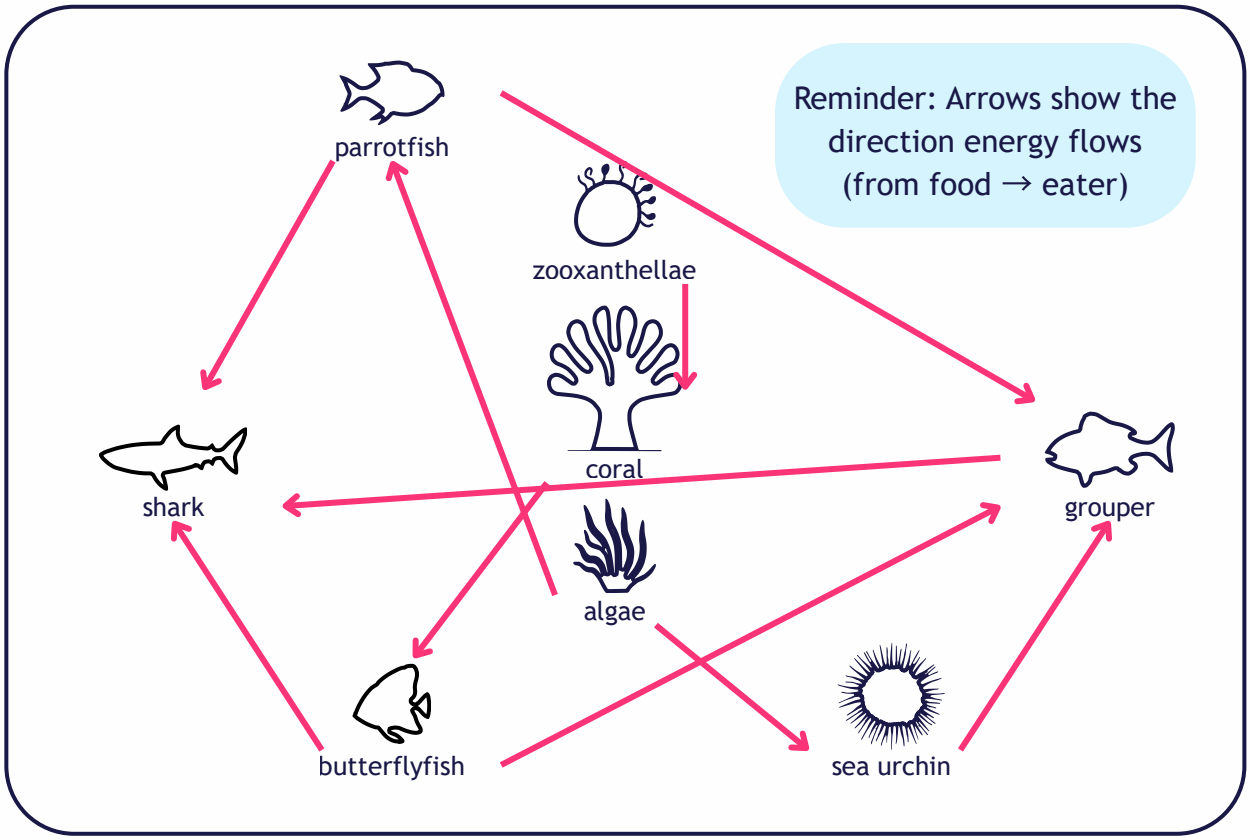
MISSION 2: ENERGY IN ACTION

EVERY SPECIES HAS A ROLE

Coral reefs are made up of producers, herbivores, predators, and decomposers. Each group plays a different ecological role. When these roles are balanced, reefs can thrive.

Activity 3: Build the reef food web

Draw arrows to show who eats who



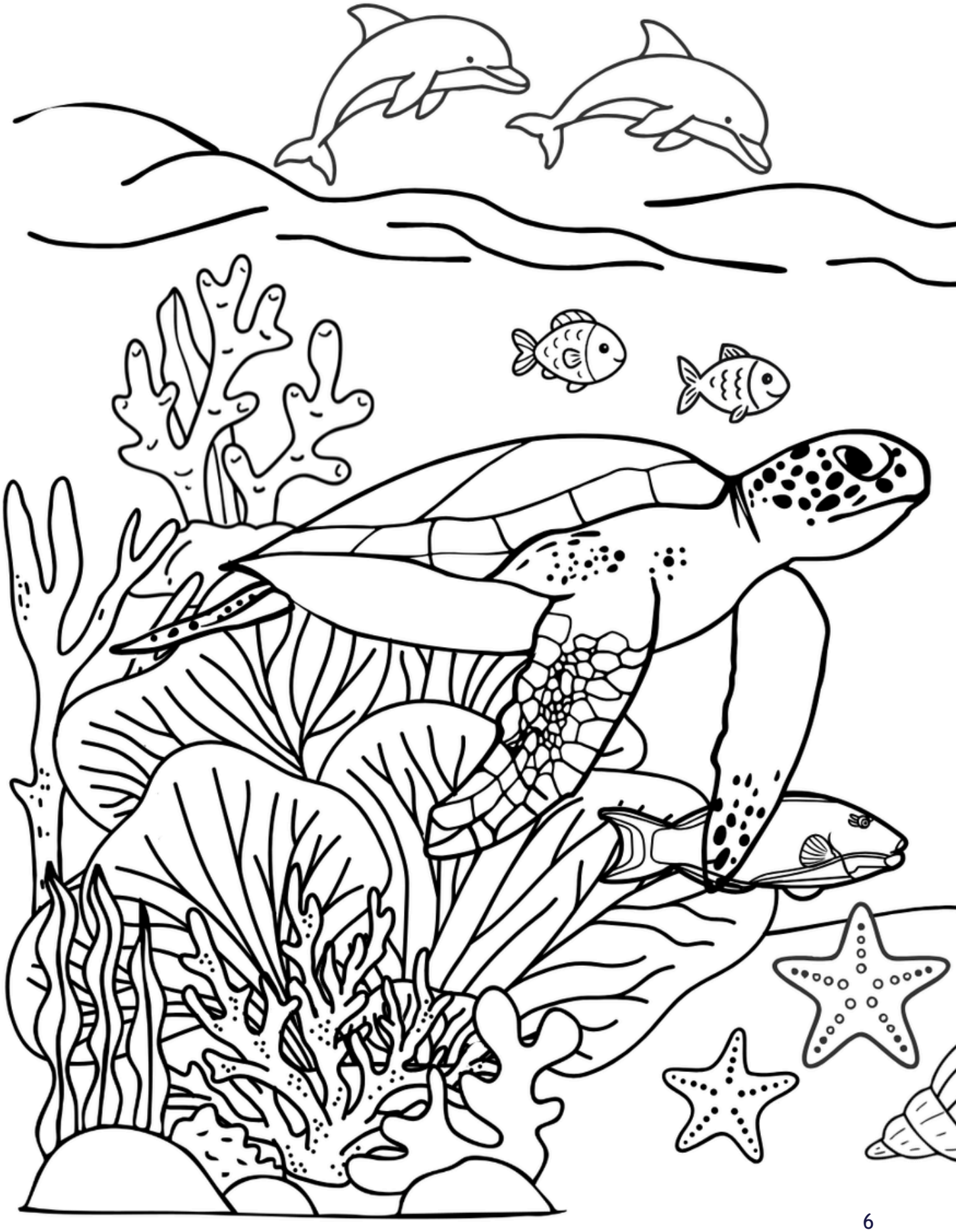
Activity 4: Reef roles

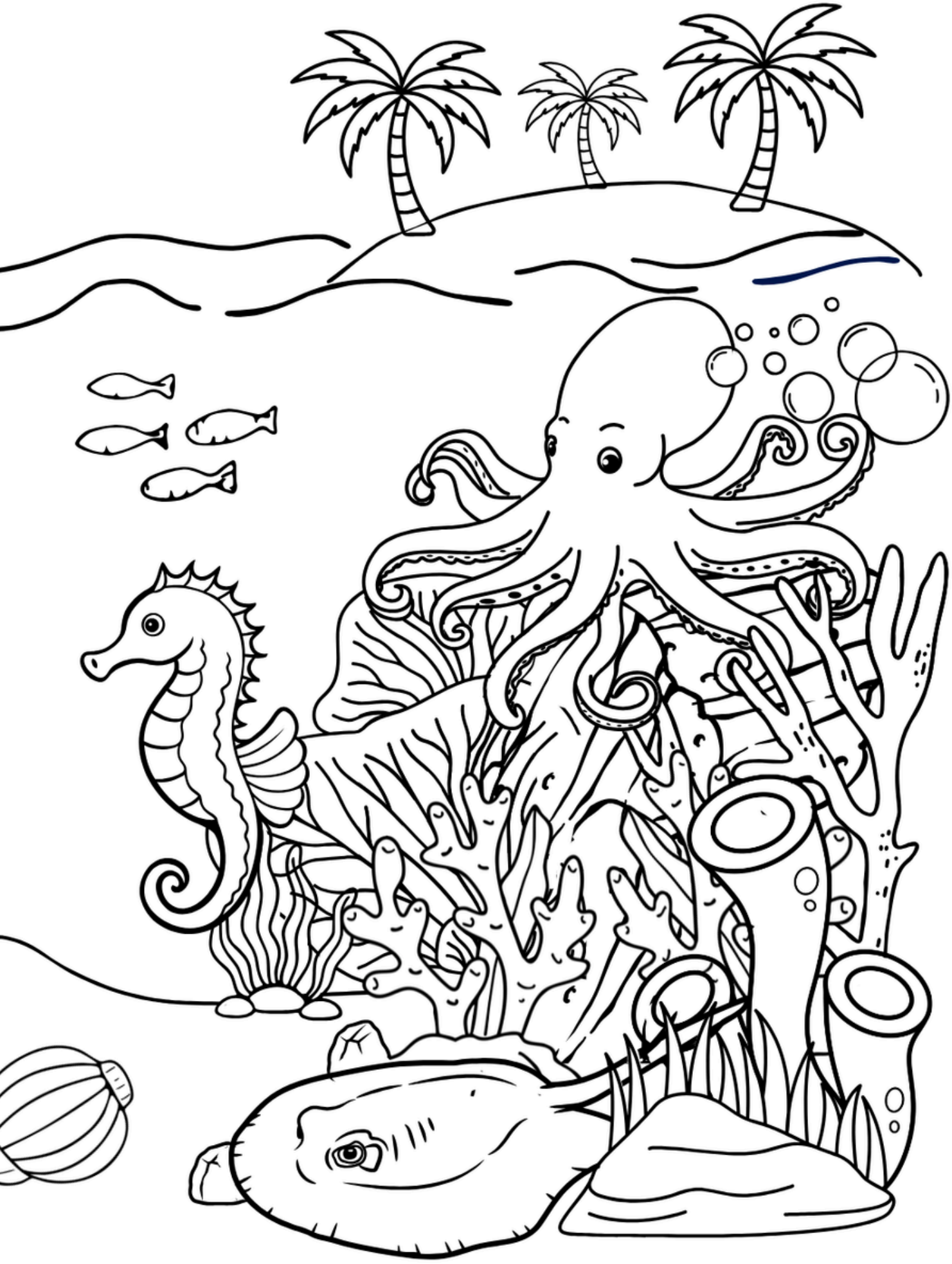
Which species keeps algae from taking over the reef? Explain how it helps.

- Eats algae growing on reef surfaces
- Prevents algae covering coral
- Allows coral space to grow
- Helps maintain reef balance

What might happen to the reef if coral was affected by disease?

- Loss of habitat for reef animals
- Fish populations decrease
- Food web becomes disrupted
- Biodiversity declines
- Reef structure weakens
- Less coastal protection

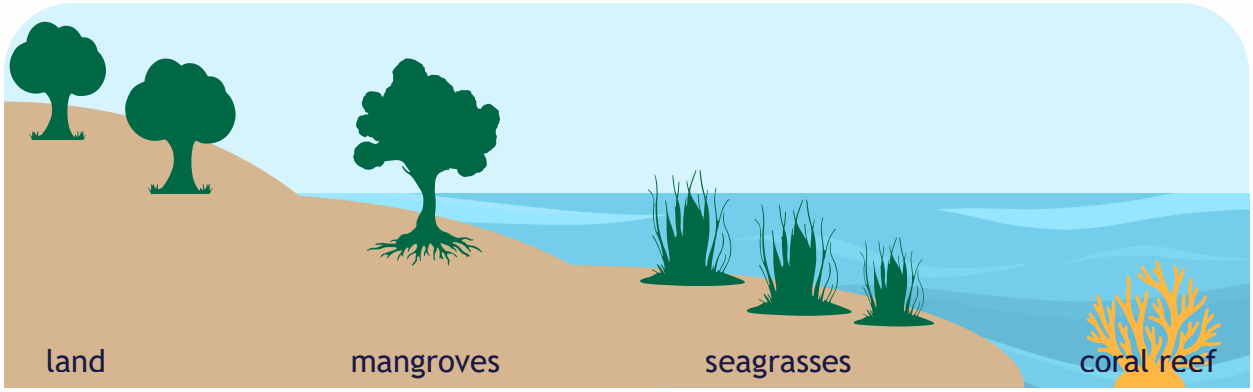




MISSION 3: CONNECT THE COAST

FROM LAND TO SEA, EVERYTHING IS CONNECTED

Mangroves, seagrass beds, and coral reefs work together to protect coastlines and support marine life. When one ecosystem is damaged, the others are affected too.



Activity 5: Connect the coast

Draw lines to match each role to the correct ecosystem(s).

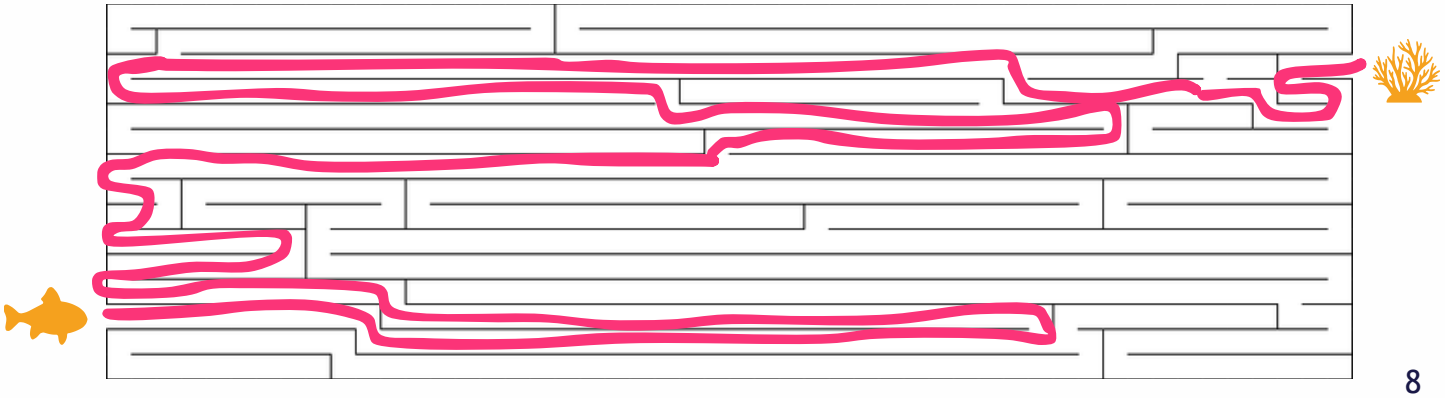
nursery habitat	land
carbon storage	mangroves
storm protection	seagrasses
food supply	coral reef

Why is the coast stronger when all three ecosystems are healthy?

- Ecosystems work together
- Mangroves reduce wave energy
- Seagrass stabilises sediment
- Coral reefs break incoming waves
- Habitats support marine life at different stages
- Damage to one ecosystem affects others

Activity 6: Reef maze journey

A baby fish hatches in the open ocean. It must travel safely to the coral reef as it grows. Help the fish find the safest path.



MISSION 4: DEFEND THE REEF

WHY DO REEFS MATTER?

Reefs are more than beautiful ecosystems. They protect islands, feed communities, and support millions of jobs. When reefs are healthy, people thrive, too.

Activity 7: Protect the island

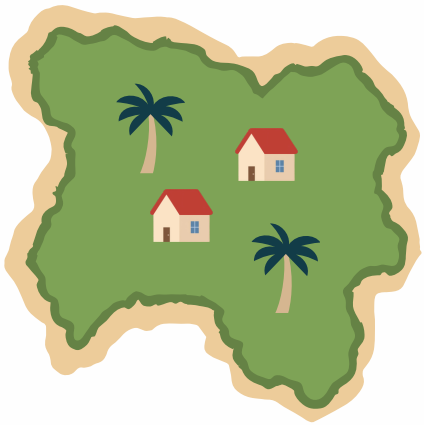
A storm is coming. Which TWO defences protect the island naturally? Circle them.

Coral reef

Mangroves

Concrete wall

Nothing



Explain your choices

- Coral reefs reduce wave energy
- Mangroves slow storm surges
- Roots stabilise coastlines
- Natural ecosystems protect islands from erosion

Activity 8: Ripple effect

Something changes in the reef. Fill in the missing steps to show what might happen next.

Scenario 1:

Coral disease spreads across the reef

fewer coral → less habitat → fish population decreases/reef ecosystem becomes weaker

Scenario 2:

Heavy rain washes pollution from land into the sea

more nutrients in water → algae grows rapidly → coral becomes smothered/reef health declines

Scenario 3:

Too many large predator fish are caught

predator numbers decrease → food web becomes unbalanced/some species increase → reef stability declines

BUILD YOUR ISLAND

You are in charge of a brand new island in the Caribbean.

Your island has just formed; the ocean around it is clear, warm, and full of life. But reefs do not build themselves. You must design a reef system that can survive storms, warming seas, and hungry predators.

Step 1: Build your reef strategy

For each question, circle A, B, C, or D. At the end, count which letter you chose most. That letter reveals the type of reef you created.

A storm hits. What will protect your island?

A) Fast-growing corals
B) Thick, storm-resistant corals
C) Mangroves absorbing wave energy
D) Strict coastal building rules

Tourism increases. You prioritise:

A) Reef restoration and biodiversity
B) Limiting coastal development
C) Protecting mangroves and seagrass
D) Expanding marine protection rules

Coral disease spreads. Your reef relies on:

A) Rapid coral regrowth in healthy areas
B) Structural strength limiting physical collapse
C) Strong ecosystem connections
D) Quick policy response

Algae begins to spread. What controls it?

A) Lots of grazing fish
B) Balanced predator population
C) Healthy seagrass reducing nutrient runoff
D) Fishing limits and policies

Young fish survival is most supported by:

A) Branching coral habitat
B) Balanced predator population
C) Mangrove and seagrass nurseries
D) No-fishing zones

What is your island's long term focus?

A) Biodiversity and colour
B) Stability and strength
C) Ecosystem connection
D) Sustainable management

Mostly A
Colourful Reef
- Fast recovery
- High biodiversity
- Storm-sensitive

Mostly B
Fortress Reef
- Storm resistant
- Structurally strong
- Slow to adapt

Mostly C
Connected Reef
- Strong nurseries
- Land-sea integration
- Ecosystem dependent

Mostly D
Managed Reef
- Carefully regulated
- Governance-driven
- Human-dependent

Step 2: Found your island

You are now the founder of a new island nation. Its identity reflects the reef you designed.

I hereby name this island:

_____

Choose a flag that represents your reef strategy. Will it show strength, connection, recovery, or control?

Step 3: Set the Law

Every island must have one rule to protect its future.

On my island, it is illegal to _____

because _____

Step 4: Bring your reef to life

Draw a picture of your island and reef system. Include habitats, species and protection strategies.

CCMI

REEF DEFENDER CERTIFICATE

This certifies that

.....

has successfully completed the Reef Challenge and designed a reef system for the future.

As a Reef Defender, I will:

- Take small actions every day to protect the ocean
- Consider the environment in my day-to-day decisions
- Talk to others about the importance of our ocean and how they can help

Signature: ..... Date .....