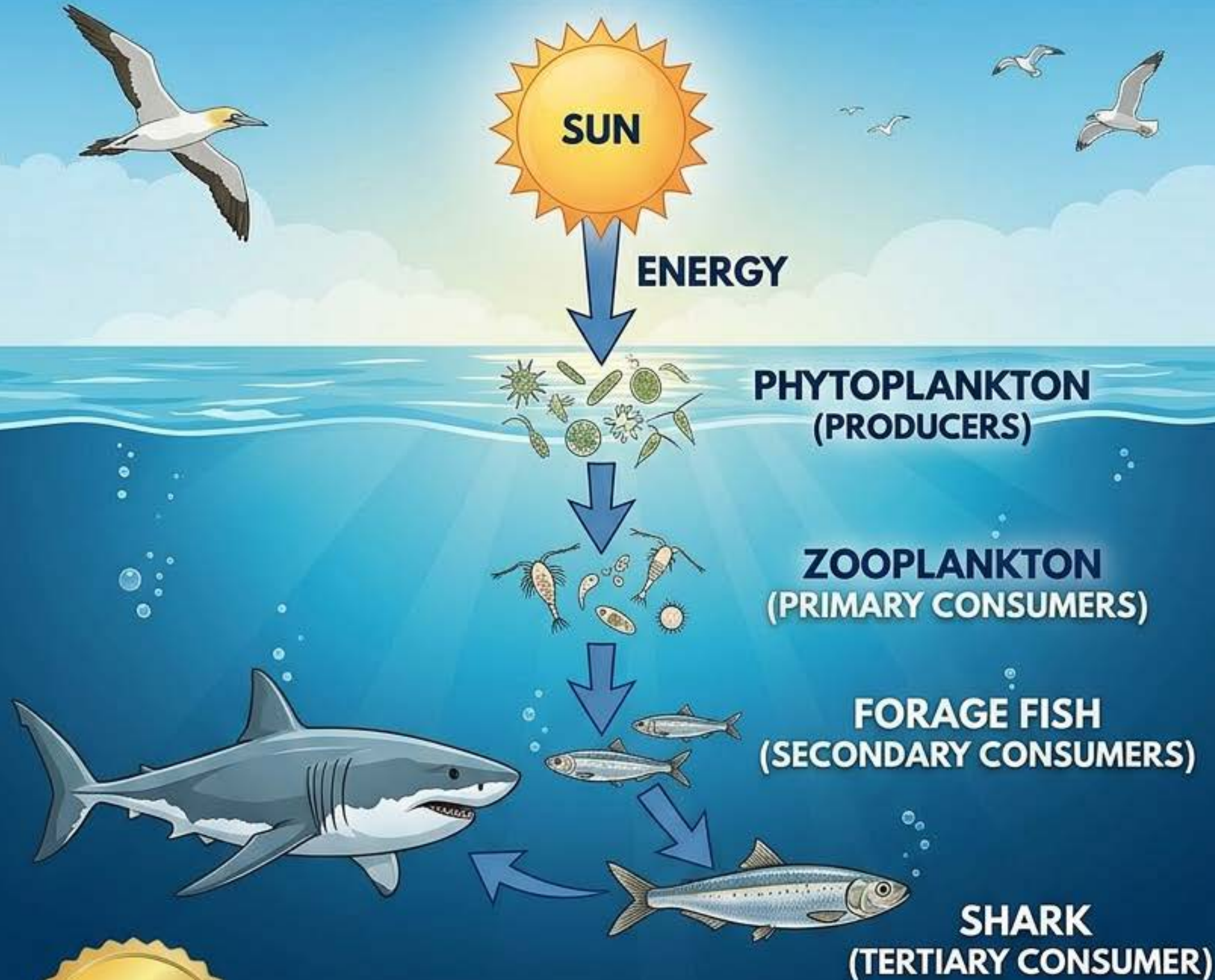


OCEAN ADVENTURES

TEACHER RESOURCE

YEAR FIVE

UK CURRICULUM



www.barnettauthor.co.uk

Gloria Barnett
The Weird Fish Lady

SCHOOL NAME: _____

TEACHER NAME: _____

YEAR FIVE CONTENTS

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OCEAN ADVENTURES

Year Five – UK Curriculum

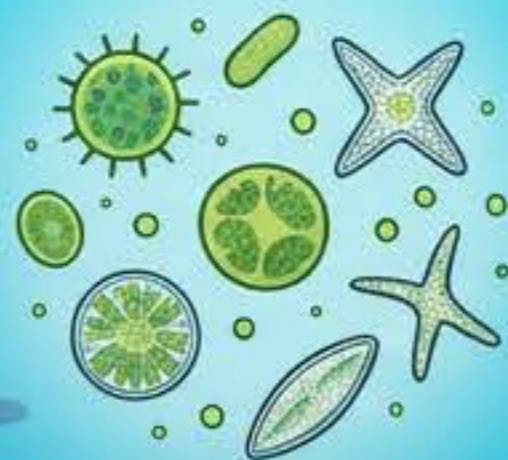


PHYTOPLANKTON

ZOOPLANKTON

SMALL FISH

SHARK



Phytoplankton

Zooplankton

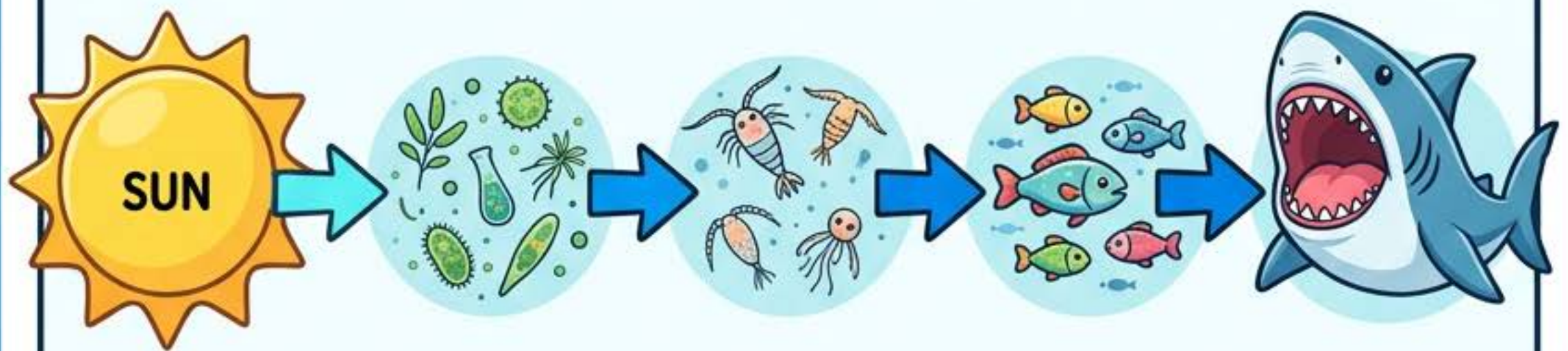
Small Fish

Shark

Ocean Food Chain

– Knowledge Organiser –

Designed for UK primary school pupils (Years 4-6)



SUN

Light Energy

PHYTOPLANKTON
(Producers)

Make their own food using sunlight

ZOOPLANKTON
(Primary Consumers)

Eat phytoplankton

SMALL FISH
(Secondary Consumers)

Eat zooplankton

SHARK
(Tertiary Consumer)

Eat other fish



Key Vocabulary

- **Producer:** Makes its own food.
- **Consumer:** Animals that eat to get energy.
- **Primary Consumer:** Eats producers (herbivore).
- **Secondary Consumer:** Eats primary consumers (carnivore).
- **Tertiary Consumer:** Eats secondary consumers.
- **Herbivore:** Eats only plants.
- **Carnivore:** Eats other animals.
- **Omnivore:** Eats both plants and animals.
- **Prey:** Animal that is hunted.
- **Predator:** Animal that hunts.



Key Facts

- An ecosystem is all the living things and their environment.
- Arrows show the path energy takes from one living thing to another.
- Food chains always begin with a producer (like plants or algae).
- The sun is the ultimate source of energy for most food chains.
- **Decomposers** break down dead organisms (e.g., fungi, bacteria).



Remember

- A change in one population affects the entire food chain.
- Energy is lost at each level as heat and moving around.
- Food webs show complex links between many food chains.
- Arrows always point in the direction energy flows (into the eater's mouth!)

Ocean Adventures – Year Five

Preview Description

Complete Ocean Science & Environmental Resource for

Year FIVE (ages 9-10)

Take learning to the next level with this dynamic and thought-provoking **Year 5 Ocean World Teacher Resource**.

Designed for pupils aged 9–10, this structured three-session programme builds scientific depth, strengthens analytical thinking and develops confident use of scientific vocabulary. Through carefully planned lessons, engaging discussion and high-quality non-fiction texts, pupils explore food chains, adaptation and marine environments in meaningful and memorable ways.

Why Choose This Year Five Resource

Using *The Amazing World Beneath the Waves* alongside the popular *50 Incredible Facts about Oceans*, this resource supports comprehension, scientific reasoning and enquiry-based learning.

Each session includes ready-to-use plans and visually engaging PowerPoints to support classroom delivery.

What's Included

- Three fully structured sessions of learning
- Ready-to-use
- Supporting PowerPoints
- BIG Question discussion prompts
- Scientific vocabulary focus
- Enquiry-based and analytical learning opportunities

This resource is the companion for:

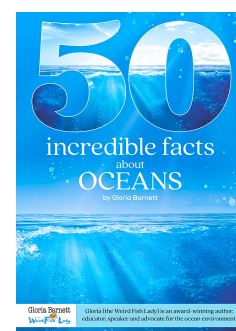
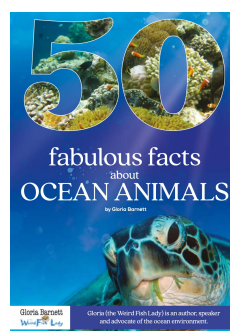
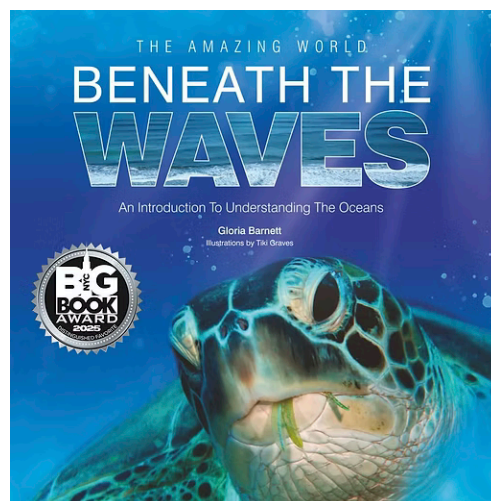
“The Amazing World Beneath the Waves”

and

’50 Fabulous Facts about Ocean Animals’

’50 Incredible Facts about Oceans’

(See information on book purchasing on page 7 of this document)



Session 1: Food Chains

Pupils investigate how marine organisms depend on one another for survival. They explore producers, consumers and predators, energy transfer and the impact of disruption within ecosystems.

BIG Questions encourage deeper thinking:

- What happens if one species disappears from a food chain?
- Why are food chains essential for ocean balance?

Session 2: Adaptation

Students examine how marine animals survive in challenging underwater environments. Physical and behavioural adaptations are explored through structured comparison and scientific discussion.

BIG Questions include:

- How do adaptations help animals survive in extreme environments?
- Could humans survive in the deep ocean?

Session 3: Marine Environments & Ecosystems

This term focuses on coral reefs, deep-sea habitats, polar oceans and coastal environments. Pupils analyse how physical conditions shape life and consider the consequences of environmental damage.

BIG Questions include:

- Why are different ocean environments important?
- What are the consequences of damaging marine habitats?

By the End of Year 5, Pupils Will:

Understand complex marine food webs
 Explain adaptation using accurate scientific vocabulary
 Describe diverse marine environments
 Analyse environmental impact
 Participate confidently in structured scientific discussion

This comprehensive Year 5 programme strengthens literacy within science, encourages critical thinking and fosters a deeper understanding of how interconnected — and fragile — our ocean world truly is.

Ocean Adventures Teachers' Resource

YEAR FIVE

Upper Key Stage 2 – Ages 9–10

A Teaching Resource in Three Structured Sessions

This Year Five Ocean Adventures programme deepens scientific understanding, strengthens analytical thinking and develops confident use of subject-specific vocabulary.

Designed to build on prior learning from Lower Key Stage 2, this resource explores **food chains, adaptation and marine environments** through structured lessons, engaging discussion and enquiry-based learning.

Each session includes ready-to-use PowerPoints with teacher narration, worksheets, research tasks and literacy opportunities to support cross-curricular development.

SESSION ONE

Food Chains

BIG Question:

Where does our food energy come from?

Using *The Amazing World Beneath the Waves* (pp. 26–28), pupils explore energy transfer in ocean ecosystems and the vital role of phytoplankton and photosynthesis.

Resources Included:

Ocean World PowerPoint (19 slides) with teacher narration

Worksheets 5a, 5b, 5c, 5d1, 5d2, 5e, 5f

Activity Sheet Guide for teachers

Key vocabulary and literacy focus

Structured BIG Question discussion

Core Learning Focus:

- Photosynthesis and the importance of the Sun
- Producers, herbivores, omnivores and carnivores
- Energy transfer in food chains
- Predators and prey
- The global importance of plankton and algae
- Oceans as major oxygen producers

Pupils develop scientific reasoning through discussion, research and structured writing tasks.

SESSION TWO

Habitats & Adaptation

BIG Question:

How have animals managed to survive in the oceans?

Using *The Amazing World Beneath the Waves* (p. 65) and *50 Fabulous Facts about Ocean Animals*, pupils investigate physical and behavioural adaptations in marine species.

Resources Included:

Ocean World PowerPoint (21 slides) with narration
 Information Sheets and research prompts
 Poster and Identification Sheet
 Activity Sheet Guide for teachers
 Structured comparison literacy task

Core Learning Focus:

- Physical adaptations
- Behavioural adaptations
- Predator and prey strategies
- Survival in extreme environments
- Comparison of species (e.g. Penguin vs Albatross)
- Research into marine animal survival strategies

Opportunities for higher-level thinking and presentation are embedded throughout.

SESSION THREE

Marine Environments & Habitats

BIG Question:

Where do all these creatures hang out?

Pupils explore the diversity of ocean environments and understand how animals are adapted to specific habitats (niches).

Resources Included:

Ocean World PowerPoint (14 slides) with narration
 Information Sheets on seven marine environments
 Activity Sheet Guide for teachers
 Research and extension tasks

Habitats Explored:

- The Big Blue (Open Ocean)
- The Deep
- Coral Reefs
- Seagrass Meadows
- Ice World
- Rock Pools
- Island Life

Pupils consider environmental impact, endangered habitats and conservation issues, including research into coral reef decline and climate challenges.

Programme Impact

By the end of Year Five, pupils will:

Understand marine food chains and energy transfer
 Explain adaptation using scientific vocabulary
 Describe diverse marine environments
 Analyse environmental impact and conservation issues
 Engage confidently in structured scientific discussion

This Year Five resource develops scientific depth, literacy within science and a deeper appreciation of how interconnected and fragile our ocean world truly is.

UK National Curriculum Links

Year Five – Ocean Science Programme

This programme supports the following objectives from the **National Curriculum for Science (Key Stage 2 – Upper Key Stage 2)**.

Term 1: Food Chains Science – Living Things and Their Habitats (Year 5)

Pupils should be taught:

By exploring food chains and marine ecosystems, pupils develop understanding of how living things depend on one another for survival.

Science – Animals Including Humans (KS2 link)

- Identify that animals, including humans, need the right types and amount of nutrition.

Cross-Year Link (Year 4 Objective – Reinforcement)

Although food chains are formally introduced in Year 4, this resource deepens prior knowledge by extending understanding to:

- Constructing and interpreting food chains.
- Identifying producers, predators and prey.
- Exploring energy transfer and marine food webs.

Working Scientifically (Upper KS2)

Pupils will:

- Plan different types of scientific enquiries to answer questions.
- Identify scientific evidence to support or refute ideas.
- Use relevant scientific language to discuss findings.

Term 2: Adaptation

Science – Living Things and Their Habitats (Year 5)

Pupils should be taught:

Exploring marine adaptations supports understanding of observable traits and survival strategies.

While formal teaching occurs in Year 6, this unit introduces early conceptual understanding of:

- How animals are adapted to suit their environment.
- How physical and behavioural features support survival.

Working Scientifically

Pupils will:

- Identify patterns and relationships.
- Report and present findings using scientific vocabulary.
- Use evidence to support explanations.

Term 3: Marine Environments & Ecosystems

Science – Living Things and Their Habitats (Year 5)

Pupils should be taught :

Understanding habitats and environmental conditions supports classification and ecosystem awareness.

Science – Earth and Space (Year 5 link)

- Describe the movement of the Earth relative to the Sun. This links to understanding sunlight as the primary energy source for ecosystems.

Geography – Key Stage 2

Pupils should:

- Describe and understand key aspects of physical geography, including climate zones and biomes.
- Understand how environments can be affected by human activity.

This unit supports learning about marine biomes, environmental impact and conservation.

Working Scientifically

Pupils will:

- Ask scientifically relevant questions.
- Use evidence to justify conclusions.
- Communicate ideas clearly in structured discussion.

Summary

This Year 5 Ocean Programme:

Reinforces prior KS2 knowledge (food chains)
 Develops Upper KS2 scientific reasoning
 Introduces age-appropriate adaptation and environmental concepts
 Supports cross-curricular Geography links
 Embeds Working Scientifically skills

UK National Curriculum Outcomes

Year Five – Ocean Science & Environmental Understanding

By the end of this programme, pupils will be able to:

Scientific Knowledge & Understanding

Living Things and Their Habitats

Pupils will:

- Explain how marine food chains and food webs demonstrate interdependence within ecosystems.
- Identify and describe producers, primary consumers, secondary consumers and apex predators.
- Explain how energy is transferred through a food chain.
- Describe how animals are adapted to suit their marine environment.
- Classify marine organisms according to observable characteristics.
- Describe how environmental conditions (depth, temperature, light) affect marine life.

Adaptation & Survival

Pupils will:

- Identify physical adaptations that support survival in different ocean environments.
- Identify behavioural adaptations that increase survival chances.
- Compare species and explain how adaptations suit specific habitats.
- Use scientific vocabulary accurately when discussing adaptation and survival.

Environmental Awareness & Impact

Pupils will:

- Explain why biodiversity is important in marine ecosystems.
- Describe how disruption to one species can impact an entire food web.
- Analyse the consequences of environmental damage to marine habitats.
- Discuss conservation in an informed and balanced way.

Working Scientifically (Upper Key Stage 2)

Pupils will:

- Ask relevant scientific questions linked to ecosystems and adaptation.
- Use evidence from texts and discussion to support explanations.
- Identify patterns and relationships within food chains and habitats.
- Present findings using structured scientific vocabulary.
- Engage confidently in analytical discussion using reasoning and justification.

Literacy Within Science

Pupils will:

- Retrieve and summarise scientific information from non-fiction texts.
- Use subject-specific vocabulary accurately in written and spoken explanations.
- Construct reasoned responses to BIG Questions.
- Present scientific ideas clearly and logically.

End of Year 5 Impact

By the end of Year Five, pupils will demonstrate:

Secure understanding of marine food webs
 Clear explanation of adaptation and survival
 Improved scientific vocabulary
 Increased confidence in analytical discussion

OCEAN ADVENTURES

Teachers' Resource

YEAR FIVE -

SESSION ONE

Ocean Adventures – Food Chains

BIG Question:

“Where does our food energy come from?”

Classroom Reading Reference:

- *The Amazing World Beneath the Waves* (Pages 26–28)

Session Structure

Starter

Ask:

- Where does the energy in your breakfast come from?
- Does food give us energy? How?
- What would happen if the Sun disappeared?
- Do oceans produce oxygen?

Recap (from Year 4):

- Producers
- Consumers
- Predators
- Prey

Key Teaching Point:

All food energy originally comes from the Sun.
In the ocean, plankton (algae) are the main producers.

Vocabulary (on board)

Plankton, Algae, Photosynthesis, Producer, Herbivore, Carnivore, Omnivore Energy, Oxygen, Glucose

Discuss - Use:

- **Ocean World PowerPoint** (Food Chains – 19 slides, with **narration**)

Teaching Points:

- Oceans produce 50–80% of Earth's oxygen.
- Rainforests produce around 20%.
- Plankton (microscopic algae) convert sunlight into food energy.
- Photosynthesis creates glucose.
- Oxygen is a waste product of photosynthesis.
- Without plankton, life on Earth could not survive.

Pause to ask:

- Why are plankton so important?
- Are rainforests or oceans more important for oxygen?
- Why is oxygen called a “waste product”?

Encourage respectful debate.

Learning Time

Use **Worksheets:**

5a, 5b, 5c, 5d1, 5d2, 5e, 5f

Children:

- Construct ocean food chains
- Label producers and consumers
- Identify herbivores, carnivores and omnivores
- Draw a food chain including plankton

Activity

Create a Food Chain Diagram

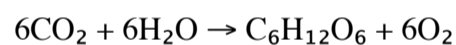
Children must:

- Start with the Sun
- Include plankton
- Add at least three levels
- Label energy flow

Extension:

Research the full chemical equation for photosynthesis.

Carbon Dioxide + Water = Glucose + Oxygen



Discuss:

Which makes more glucose — rainforest plants or ocean plankton?

Literacy Link

Children write:

“One reason plankton are essential to life on Earth is...”

Encourage use of key vocabulary.

Plenary

Quick Check:

- “Energy in food comes from animals.”
- “Plankton use photosynthesis.”
- “Oxygen is made during photosynthesis.”

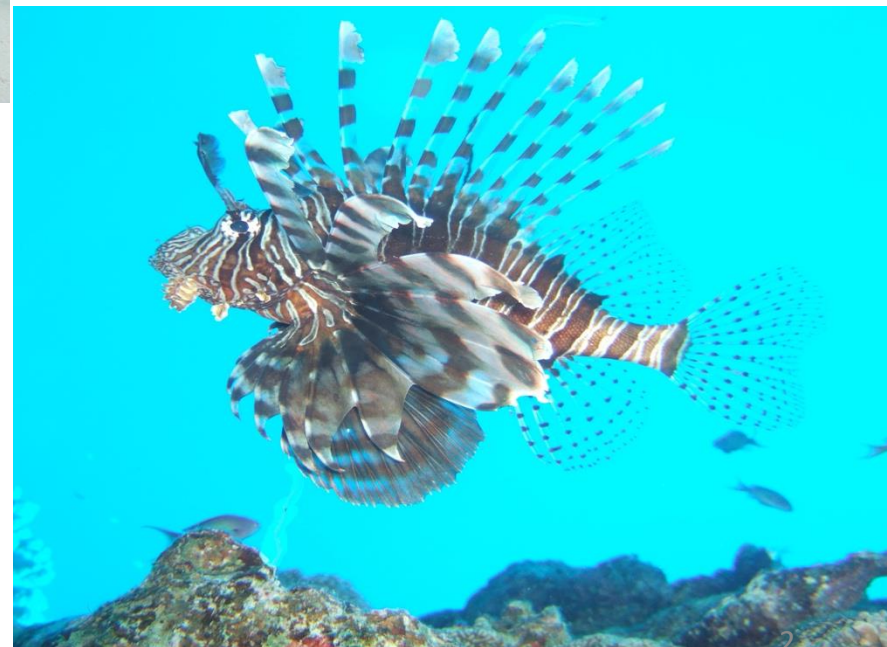
Exit Question:

Where does our food energy REALLY come from?



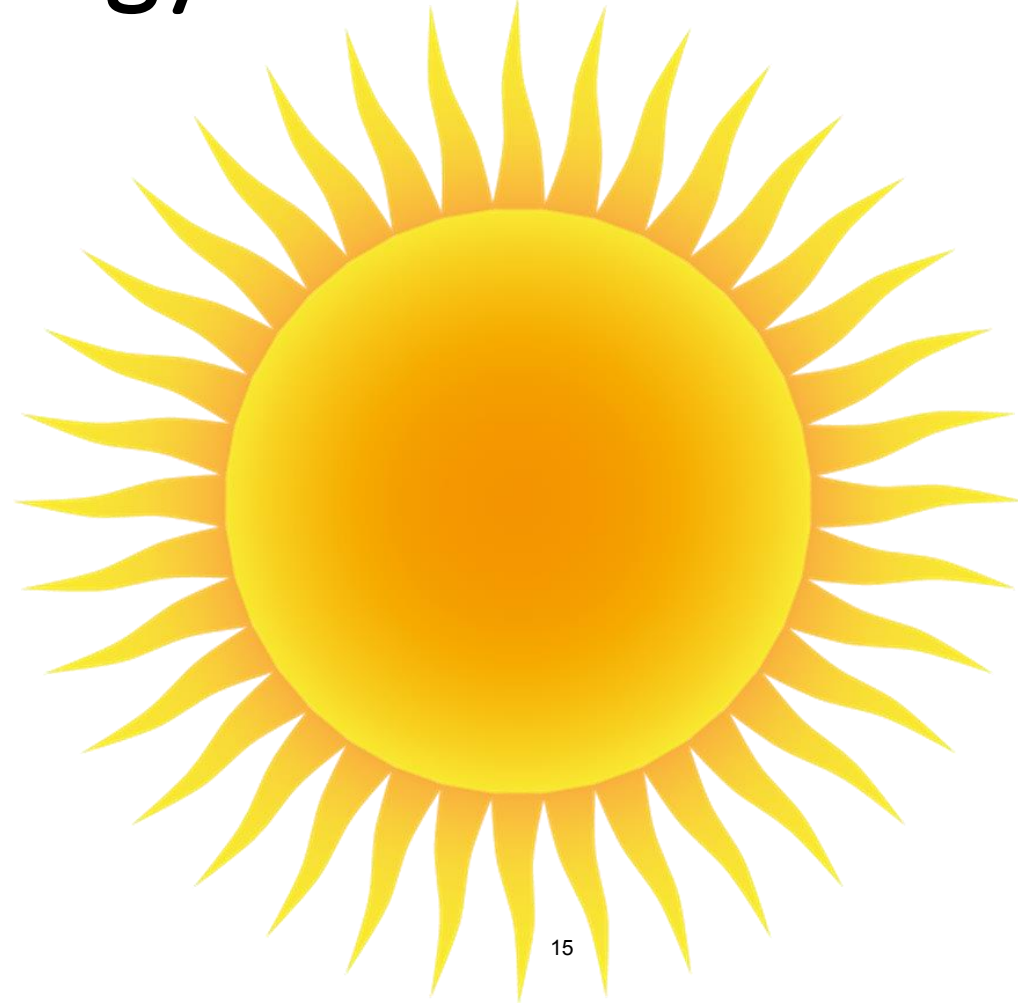
Food Chains in the Ocean

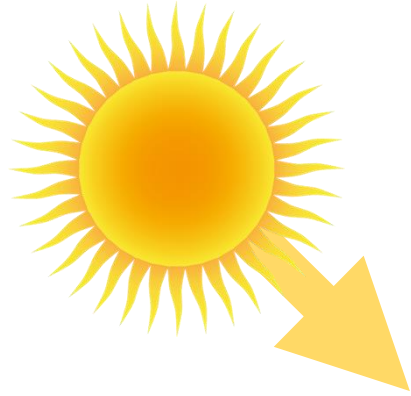
Why do all animals need energy ?



Where do sea creatures
get their energy from?

All animals on land or in the sea get the initial energy for food from the Sun

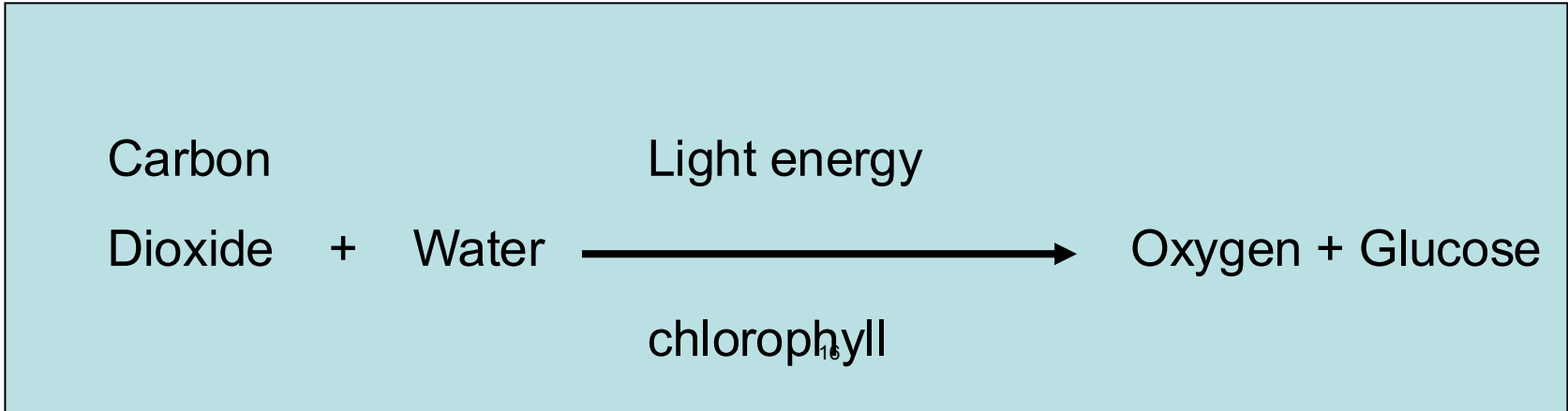


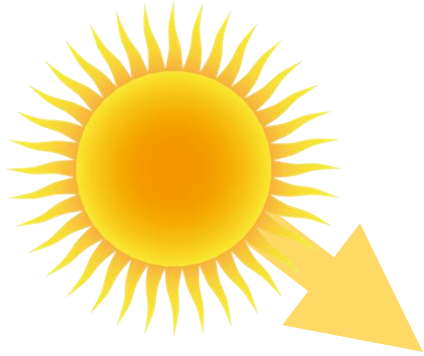


The Sun is at the beginning of all Food Energy Chains

On land plants absorb the Sun's energy and make oxygen and glucose

Plants use photosynthesis
changing light energy to food energy





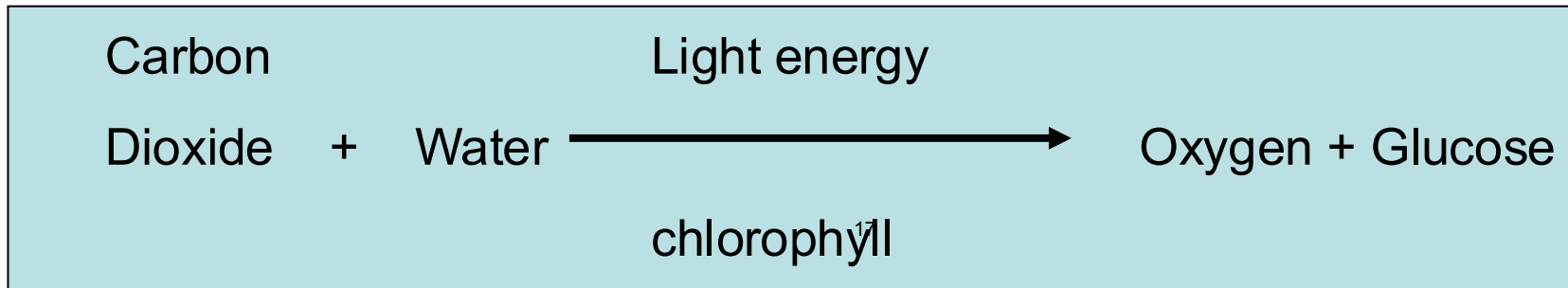
In the ocean the same thing is happening but

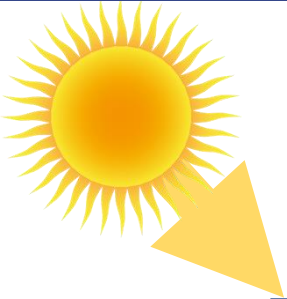
there is only one type of plant – sea grass.

Algae, which is not a plant, makes the most energy for all sea life. Algae and sea grass can absorb the sun's energy to make oxygen and glucose.

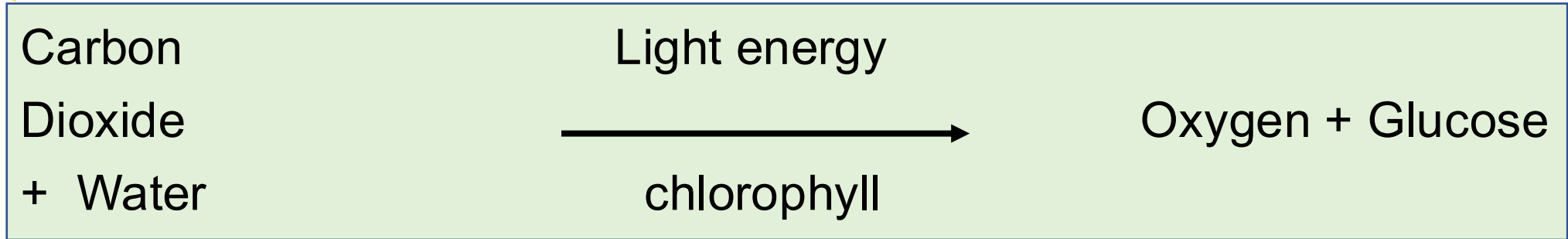


Algae and Seagrass use photosynthesis to change light energy to food energy





The Importance of Photosynthesis



As well as making glucose energy for other animals to eat, algae and sea grass also produce **oxygen** as a product of this chemical reaction.

Photosynthesis in the ocean happens a lot. Plankton, the microscopic algae, which float around the surface of the Ocean, make between

50% and 80% of all oxygen on the Earth. *

Without plankton it is unlikely that life on Earth would continue.

Plants and trees in rain forests on land only make about 20% oxygen.

* The amount of oxygen made depends on the time of the year, and the amount of Sun shining on the Ocean in different parts of the world.

Who Eats What ?



Shark



Sea Grass



Turtle

How can we show who eats what ?



Sea Grass



Turtle



Shark

Arrows show the energy moving through the food chain



Sea Grass

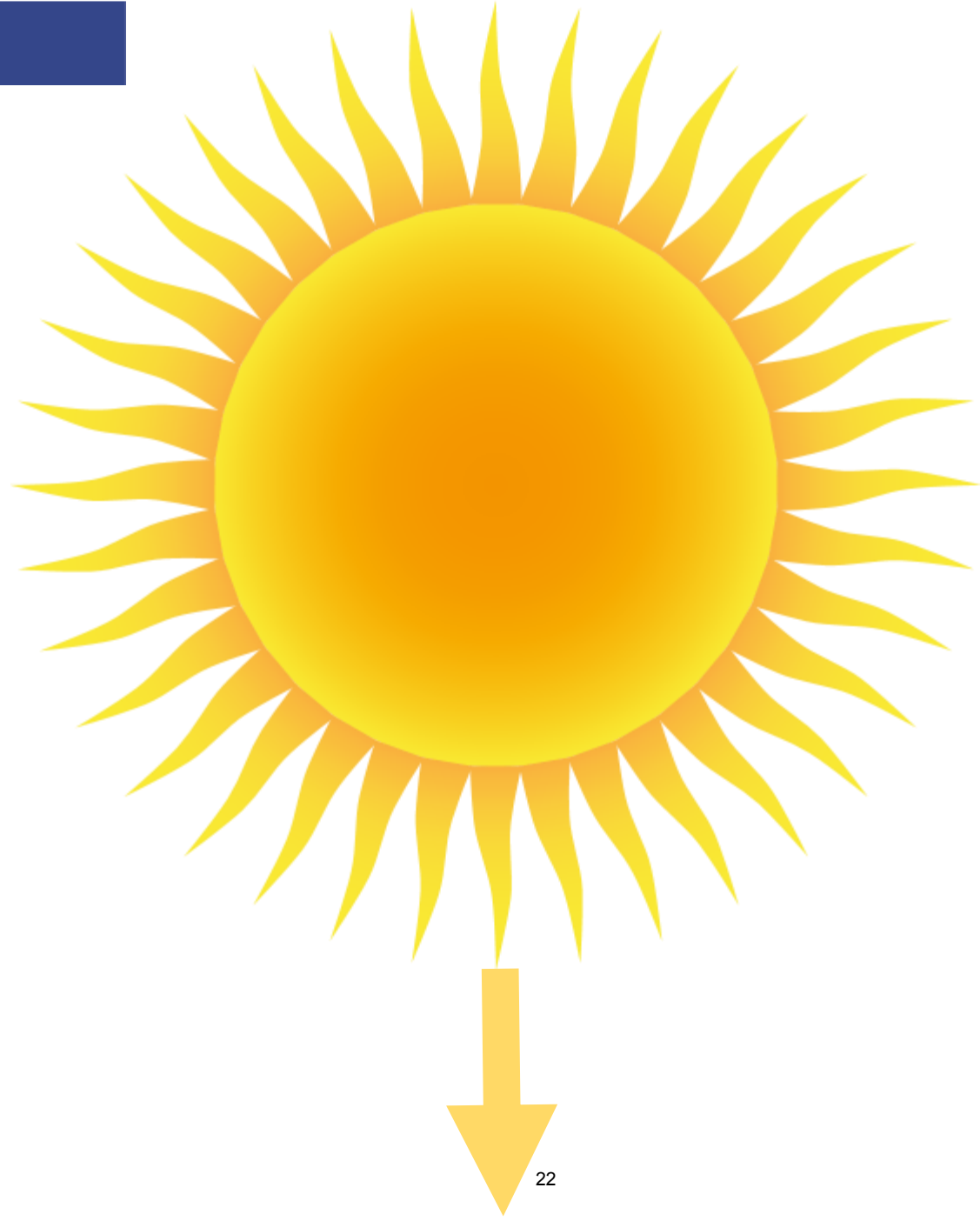


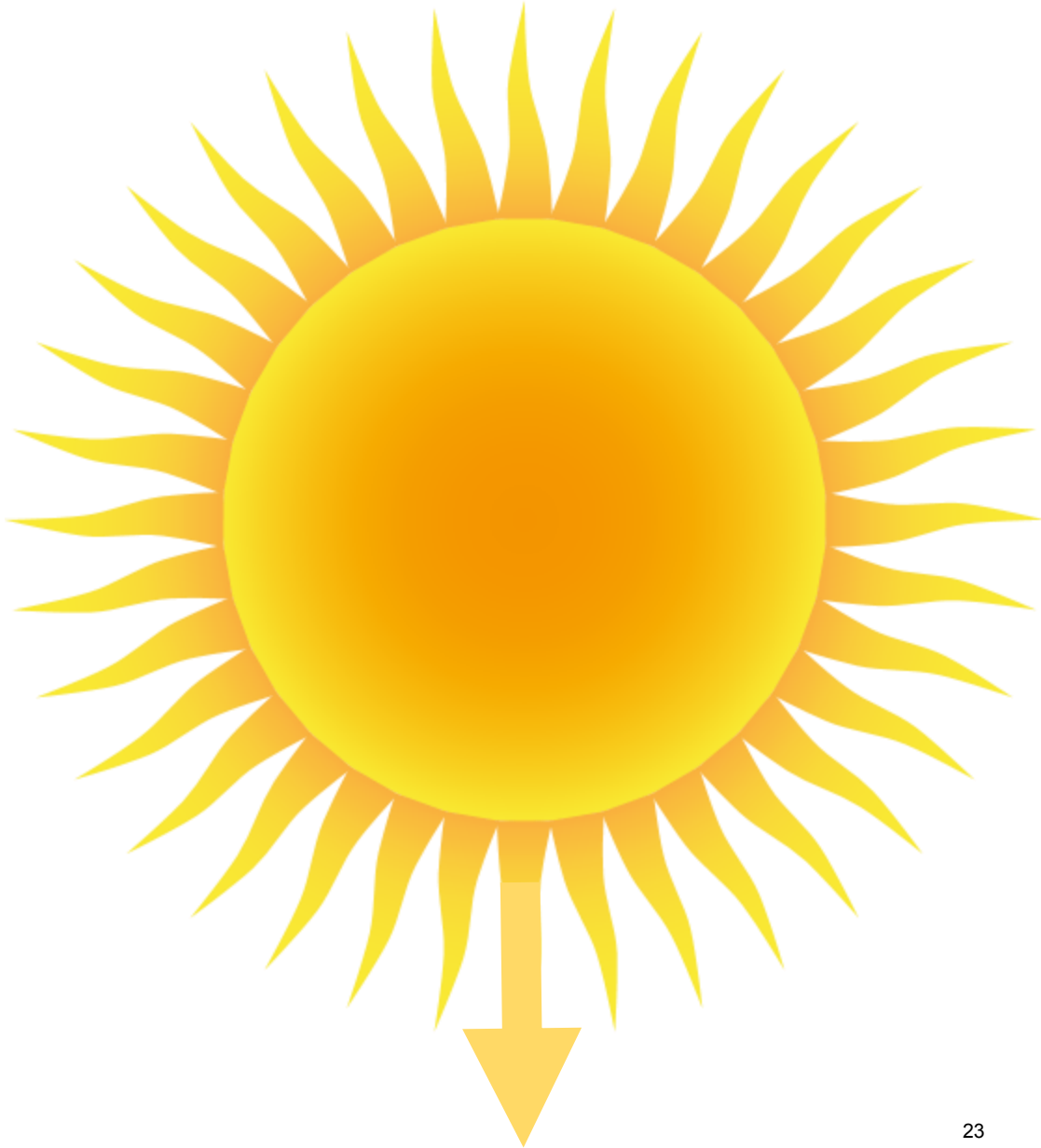
Turtle



Shark

This is a food chain – but what's missing?





The Sun is at the
start of every food
chain

It supplies the light
energy

Algae and Sea Grass are called **Producers** because they produce food energy.

They change the light energy from the Sun into chemical energy for food



Animals who eat algae and sea grass are also called



Herbivores

Some animals eat sea grass, algae and meat

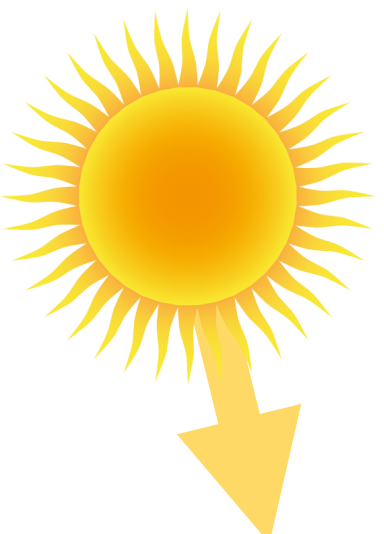


These are called Omnivores

Animals which only eat meat



are called Carnivores



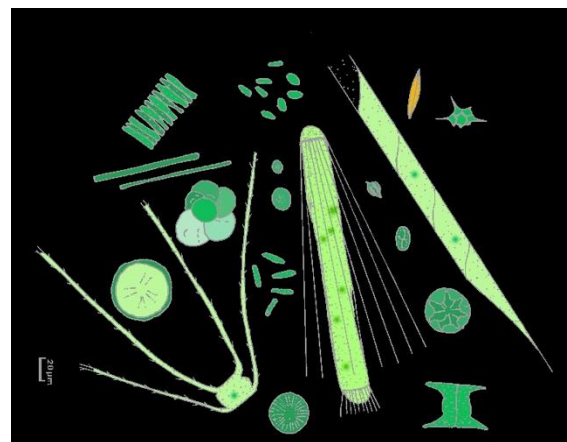
Food Chain



Producer

**Primary
Consumer**

**Secondary
Consumer**



Producers



Herbivores

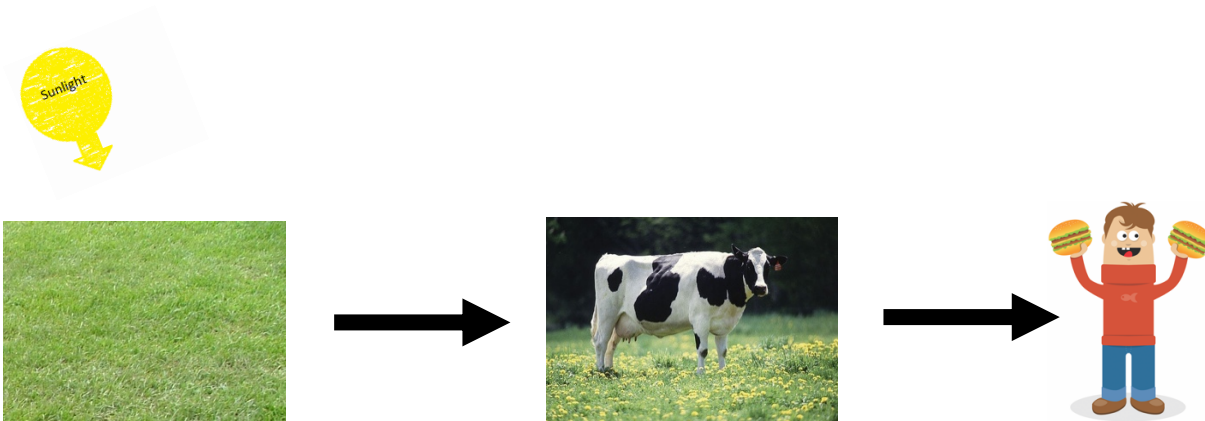


Carnivore

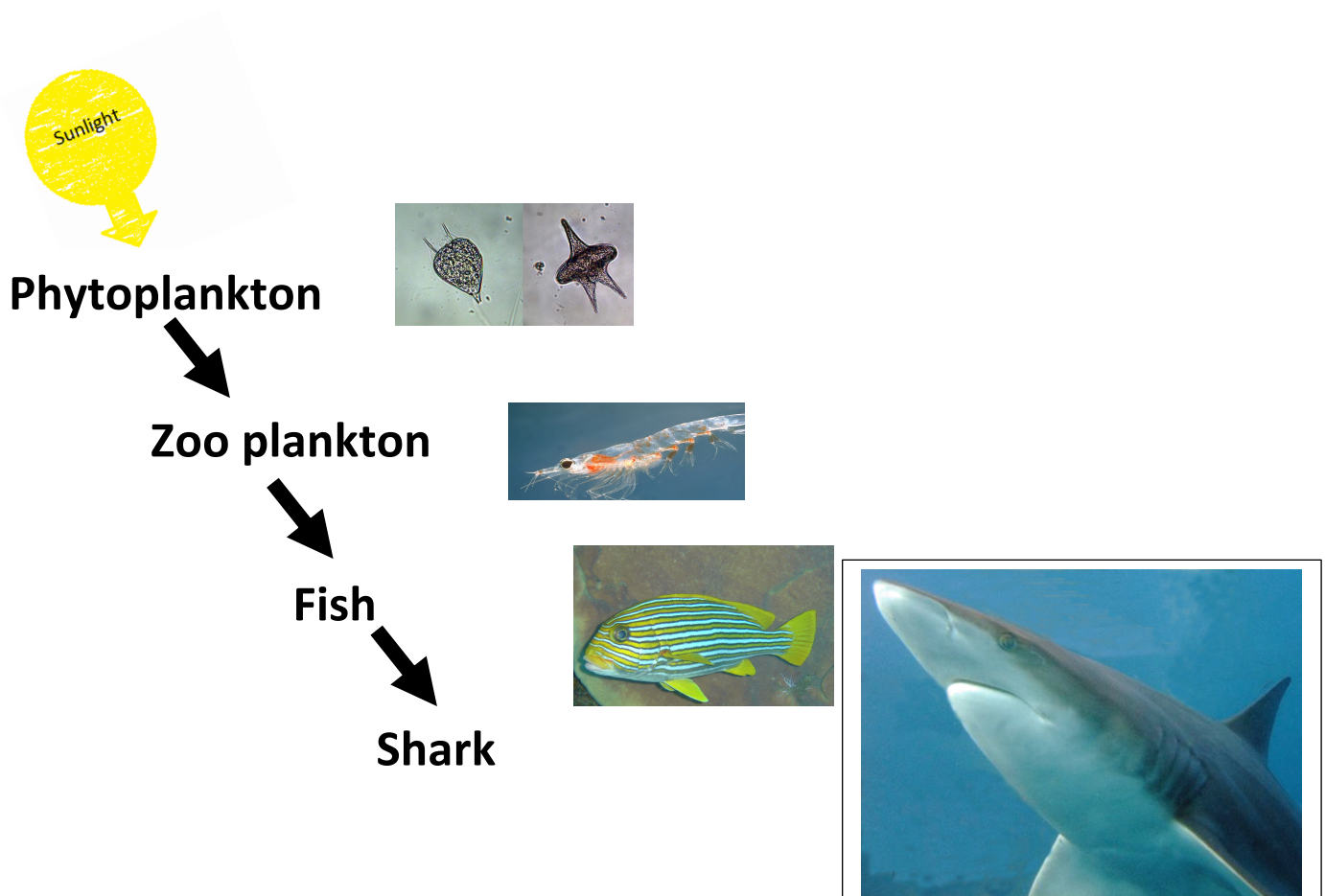
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Food Chains

1. A food chain on land



2. A food chain in the Ocean



Plants in the Ocean

We know that green plants on land make energy from the Sun, but what happens in the oceans?

Not all the green things that live in oceans are plants.

Seagrass is the **only plant** that lives in the oceans. There are other living things in the oceans that are green such as

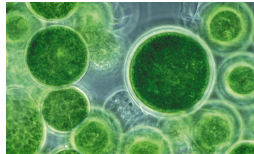
types of seaweed which belong to the 'algae' family of living things.

Algae is NOT a plant. Algae make their own food from the light of the Sun.

There are different types of seagrass in different parts of the world.

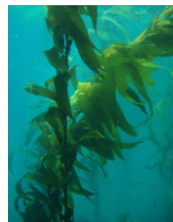
Algae is not a plant

Algae can be very small – and only seen as tiny dots living inside coral.



Algae can live together and look like green carpets on the sea bed.

Some algae can grow very large like these Giant Seaweeds.



Seagrass is a plant

Seagrass can be a nursery for baby fish to grow safely away from predators

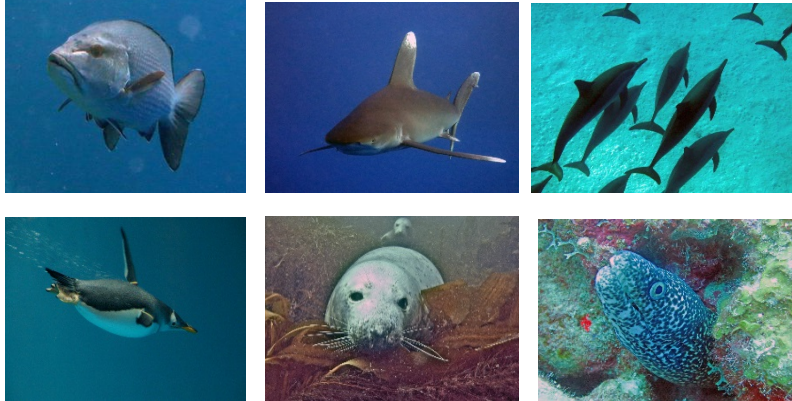


Seagrass is a good supply of food for large herbivores, such as this Dugong.



Carnivores, Omnivores and Herbivores in the Ocean

Carnivores eat other animals



Can you name all these marine carnivores? You should be able to find a seal, shark, penguin, moray, dolphins and a black trevally fish. Do you know which is which?

Omnivores eat algae and other animals



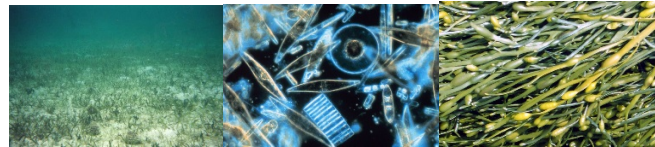
Turtle

Blue Trigger Fish

Herbivores eat algae or seagrass

1. Coral live on the reef and take algae from the water as it floats by.
2. Fish dig out the algae from between hard coral structures.
3. Manatees eat seagrass.
4. Krill are tiny shrimps that eat small algae from the water.

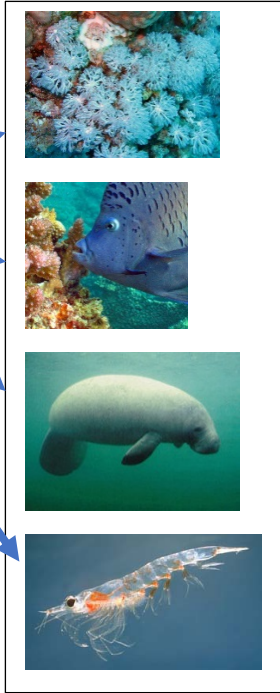
Seagrass is the only real plant in the Ocean
 Algae is very common in the Ocean and can be found as plankton, and seaweed. Plankton is very small, but seaweeds can be giant structures.



Seagrass

Plankton (algae)

Seaweed (algae)



If an animal doesn't move around it is probably a herbivore.
Are these animals herbivores or carnivores?



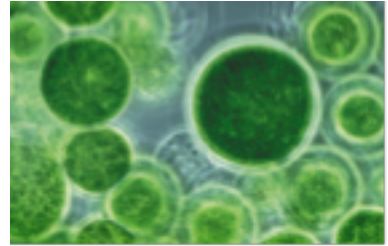
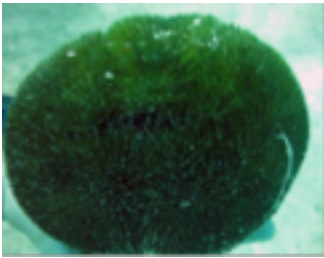
Giant Clam



Napoleon Wrasse

Producers

Algae



Seagrass



Herbivores



Anemone Fish



Masked Butterfly



Sea Star



Sea Slug



Dugong

Omnivores



Turtle



Trigger Fish

Carnivores



Shark



Moray Eel



Lionfish



Dolphins

Who Eats Who in the Ocean?

1. Look at the image cards 5d1 and 5d2 which sort out the creatures into producers, herbivores, omnivores and carnivores.
2. Write one sentence each to explain the words:
 - producer
 - herbivore
 - omnivore
 - carnivore
3. Write out a food chain:

Put the word sunlight at the beginning of your food chain and **an arrow** going from the Sun to the producer. Then choose some animals from the image sheet to put in the chain.
4. Write underneath the names of the animals, then label each one with one of these words; producer, herbivore, omnivore and carnivore.
5. Write a sentence to explain why SUN should be at beginning of the food chain.
6. Remember to put arrows between all the animals with the arrow going to the animal who is getting energy from the food it is eating. (The arrow represents the energy moving from one animal to the next.)

How Many Animals in a Food Chain?

There needs to be large numbers of small creatures to feed the larger creatures on the next level. Animals get bigger – but the **number** of animals in each level get smaller as the ‘pyramid’ grows. This is because larger animals need lots of smaller animals to eat.

Convert a food chain into a picture like the one below and give an estimate of the numbers of the animals on each level. Use squared paper to help show your pyramid more accurately.

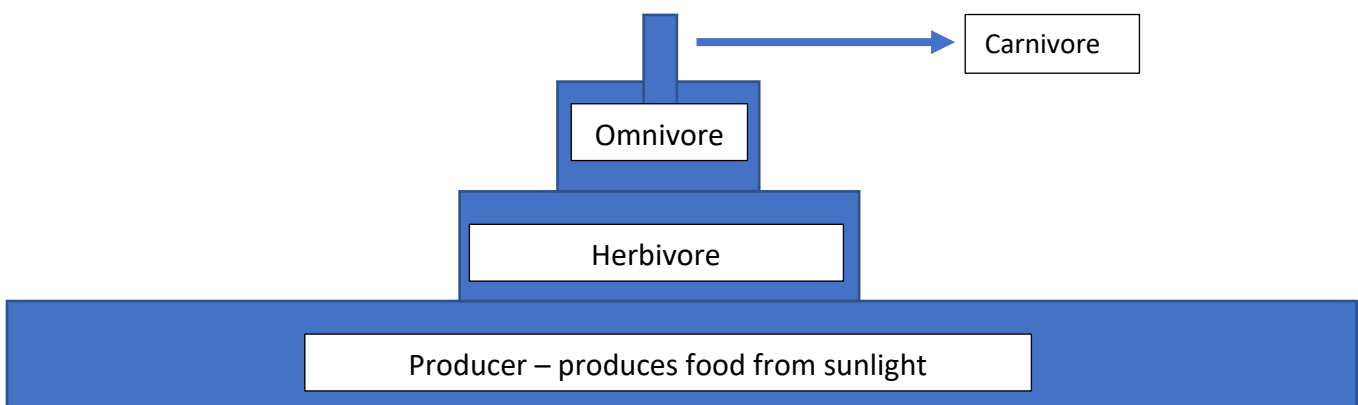
An example of numbers in a Sea Food Chain is:

Producer – Plankton (or Algae) – 200 animals

Herbivore – Jellyfish – 20 animals

Omnivore – Lionfish – 4 animals

Carnivore – Moray Eel – 1 animal



SESSION TWO

Ocean Adventures – Adaptation & Survival

BIG Question:

“How have animals managed to survive in the oceans?”

Reading Reference:

- The Amazing World Beneath the Waves (p.65)
- 50 Fabulous Facts About Ocean Animals

Starter

Ask:

- Why don't deep-sea fish need sunlight?
- Why do penguins not freeze?
- Why do fish swim in groups?

Recap:

Physical vs Behavioural Adaptation

Key Teaching Point:

Adaptations increase survival chances.
They can be physical (body) or behavioural (actions).

Vocabulary (on board)

ADAPTATION
SURVIVAL
PHYSICAL
BEHAVIOURAL
NOCTURNAL
SHOALING
CAMOUFLAGE
PREDATOR
PREY

Discuss

Use:

Adaptation **PowerPoint** (21 slides + **narration 6a**)

Teaching Points:

- Hammerhead sharks have wide-set eyes for 360° vision
- Deep sea animals adapt to darkness
- Penguins have blubber and dense feathers
- Dolphins surface for air
- Puffer fish inflate for protection
- Coral stings to defend

Pause to ask:

- Why do fish shoal?
- Why do turtles swim to the surface?
- Why do octopuses change colour?
- Why are sharks and rays related?

Learning Time

Use **Info Sheet 6b**:

Compare Penguin vs Albatross.

Children:

- Write a comparison paragraph
- Identify physical and behavioural differences
- Suggest reasons for differences

Activity

Research Task:

Choose a marine animal and list:

- Physical adaptations
- Behavioural adaptations
- Survival strategies

Extension for Higher Level

Research: Booklet on 'Penguin Behaviour'

Video: Penguins in South America

Plenary

Quick Check:

- “Adaptation helps survival.”
- “All adaptations are physical.”
- “Shoaling is behavioural.”

Exit Question:

How does adaptation help ocean animals survive?



© Ocean World

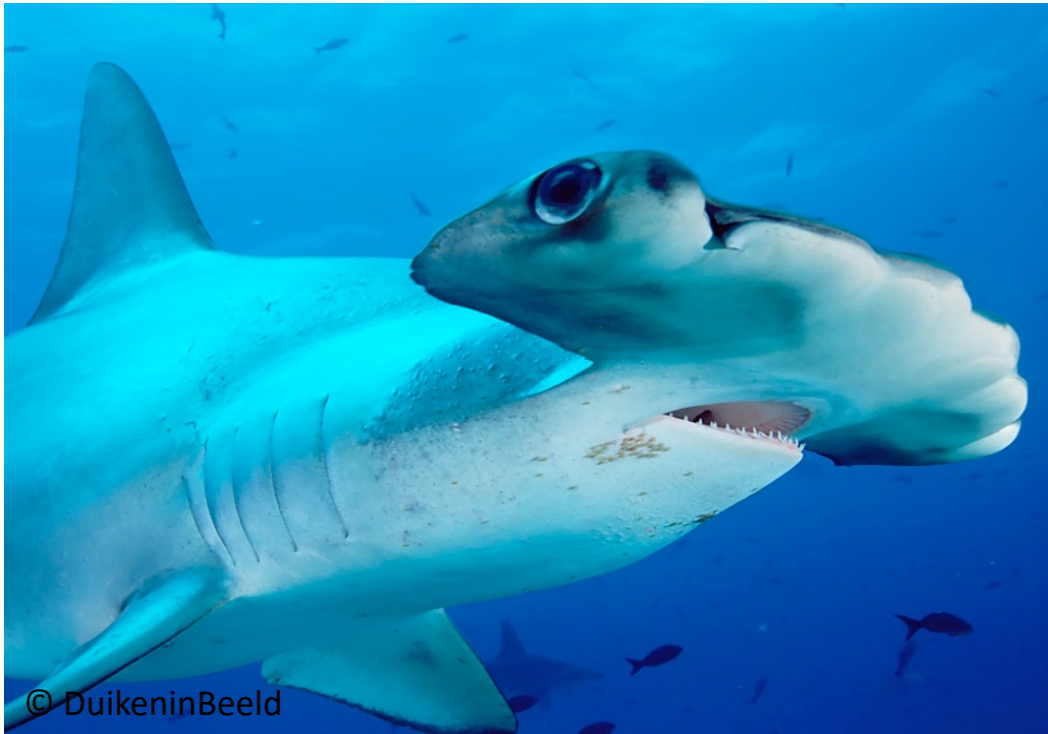
Adaptations of Marine Animals

All Adaptation is related to survival



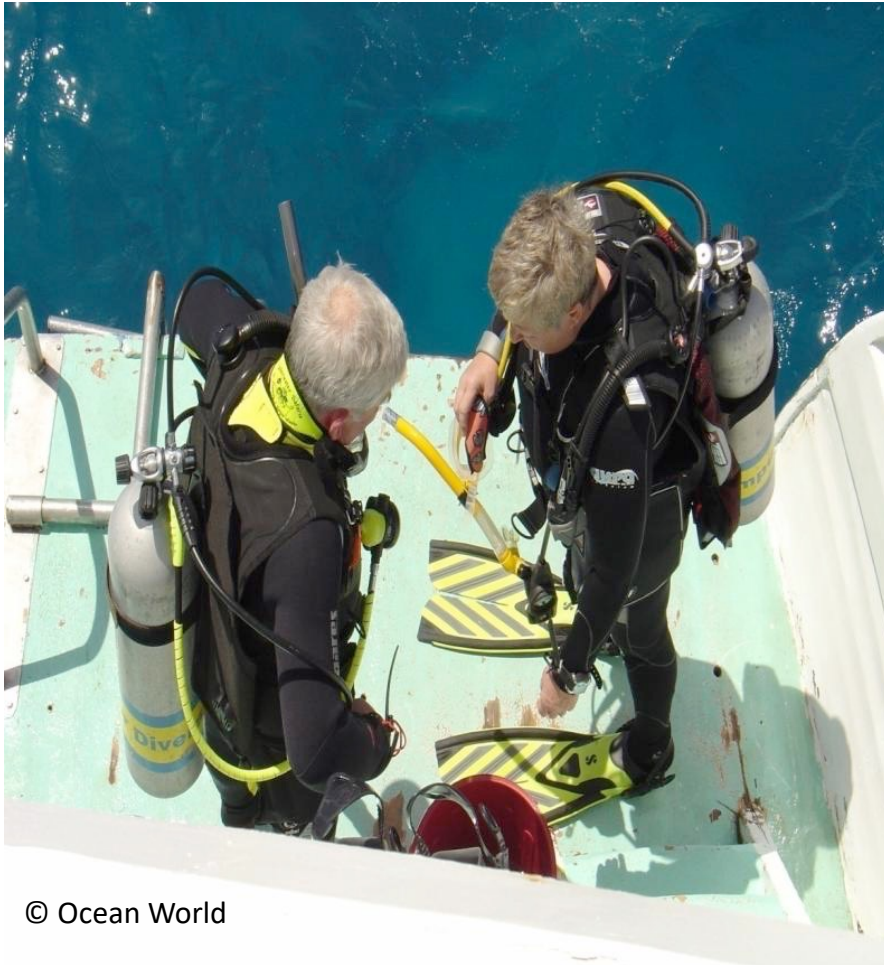
To eat whilst avoiding being eaten

A marine environment ...



- Lacks oxygen
- Lacks light
- Has intense pressures
- Gets colder at depth
- Predators & Prey live close together

Humans are not adapted for life in a marine environment



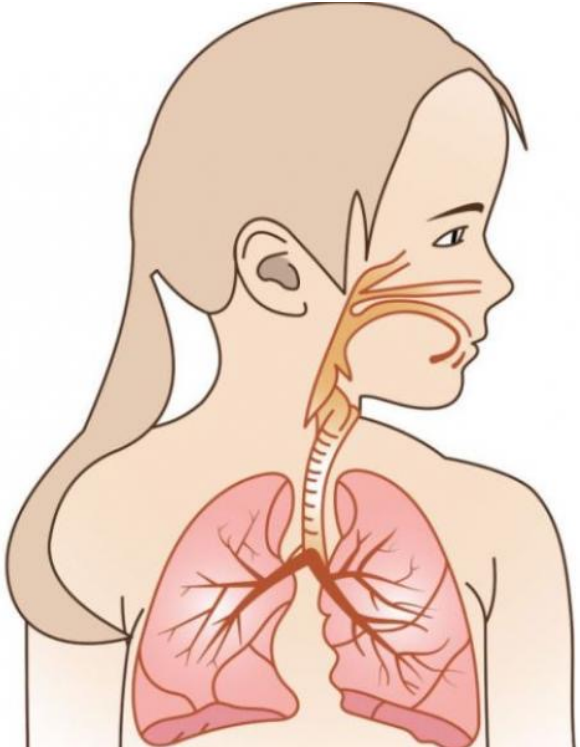
© Ocean World

Need:

- Fins
- Mask
- Weights
- Buoyancy aid
- Wet Suit
- Breathing Apparatus (hoses and air tank)

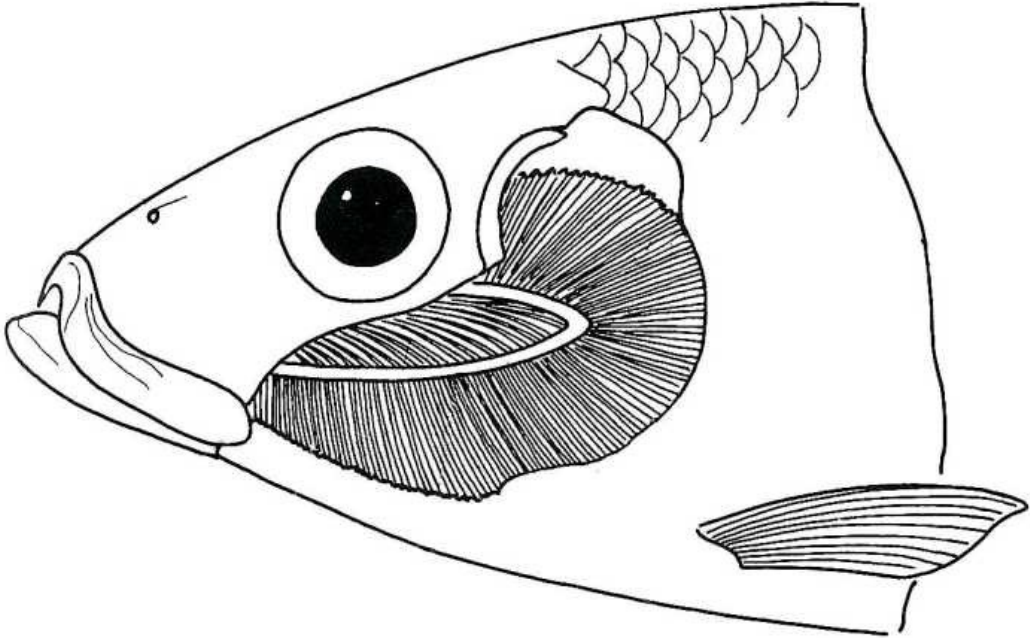
Oxygen

There is 20% oxygen in the atmosphere



©D KidsHealthorg.nz

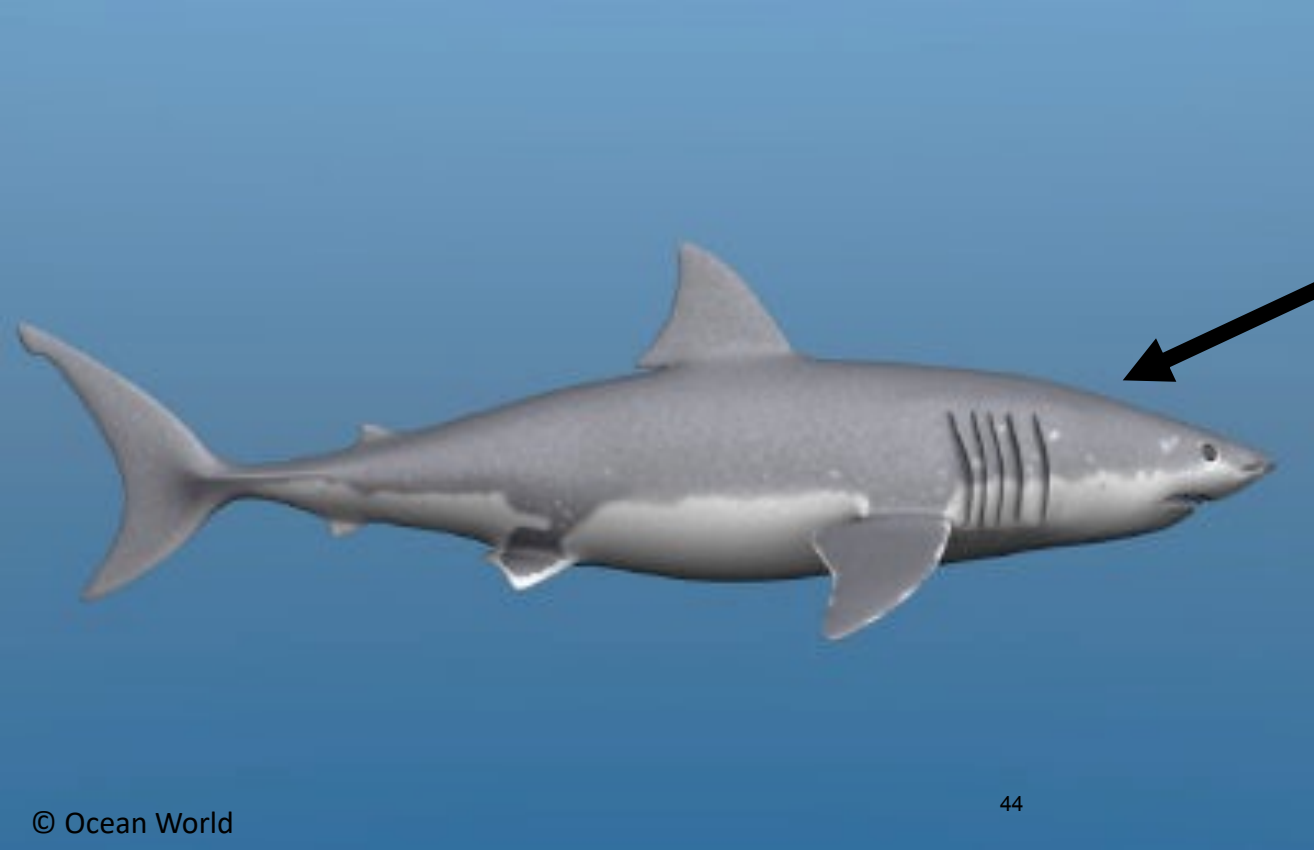
There is only 1% dissolved oxygen in sea water.



© D G Mackean

Fish Gills

Sharks are fish – they force water over their gills by swimming



Can you see their 5 gill slits here?

Adaptation - Six Gill Shark



This shark lives in the deep, dark ocean - a long way from the surface. There are no plankton down here to make oxygen from the Sun – so there is less oxygen in the water.

Breathing air from the surface



© CC wiki

Humpback Whale (Mammal)



© Ocean World

Turtle (Reptile)

Creatures from the Deep



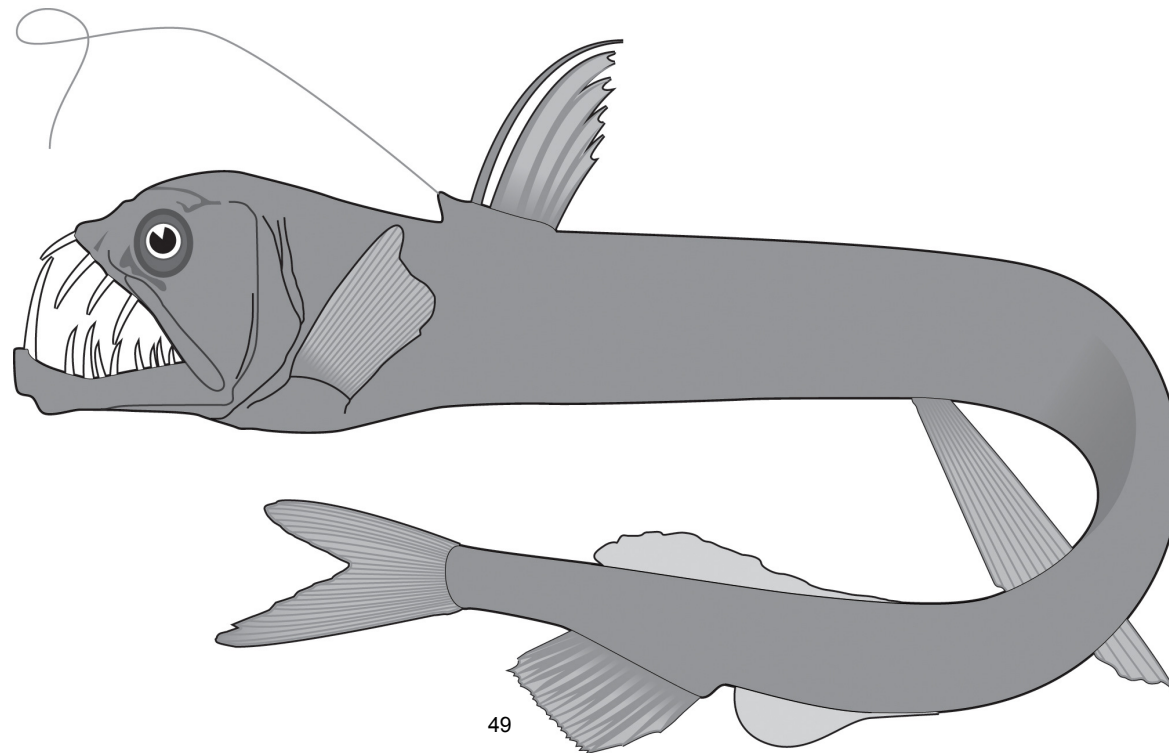
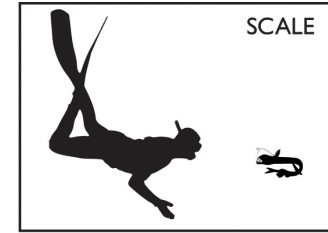
Angler Fish

It's really black but if we didn't change the colour on the photo – we wouldn't see it against the black background of the dark ocean water.

Vampire Squid



Deep Sea Viperfish



Deep Sea Octopus



© deepseanews

Adaptations of Mammals



© factzoo.com



© nationaldigitallibrary



© jjharrison CC wiki



© CC wiki

Birds & Reptiles



© Ocean World

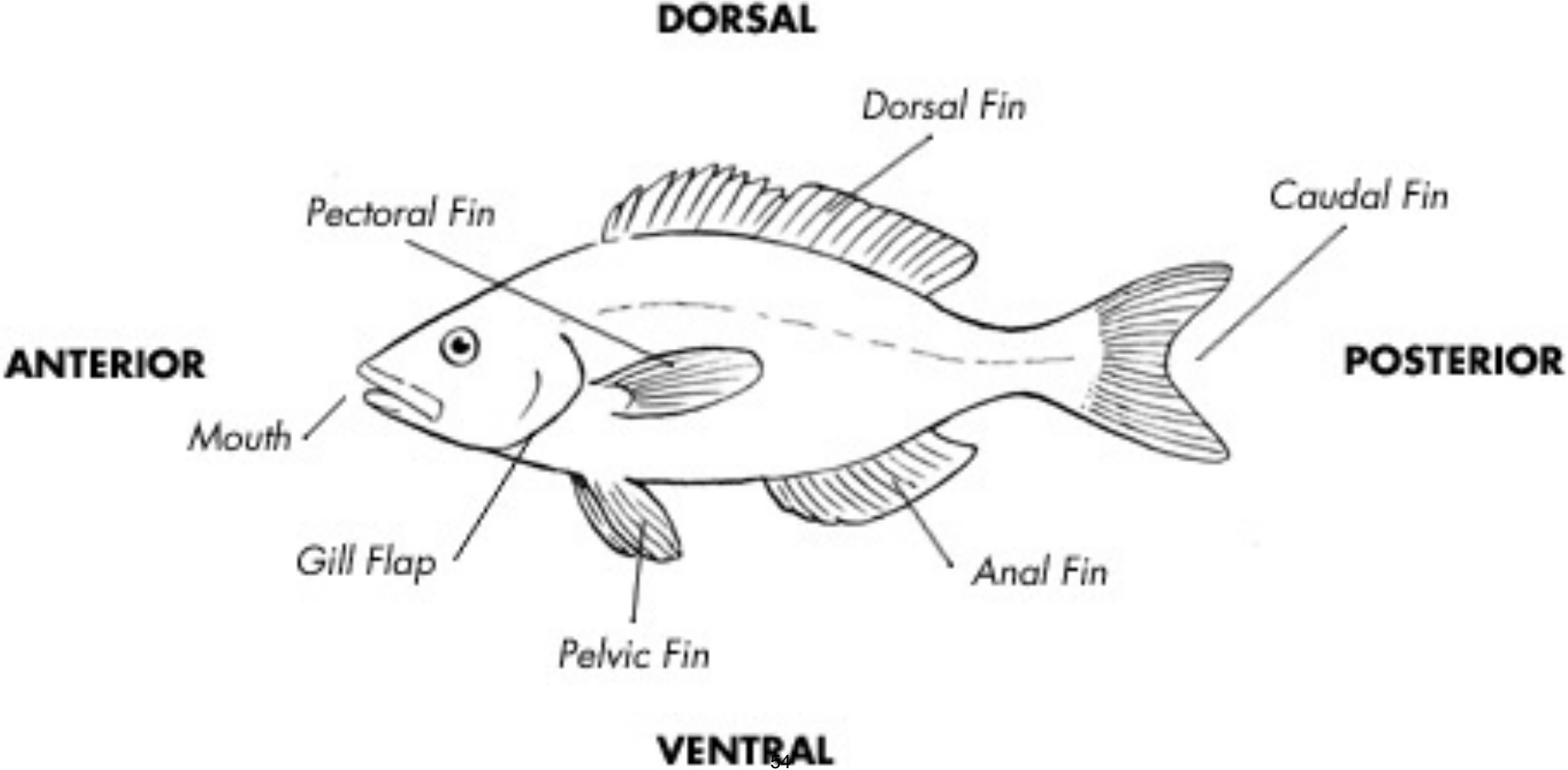
Island Life - Marine Iguanas



© Ocean World

SHAPE

Are all fish - fish shaped???



Flatfish



© Ocean World



Sharks & Rays are fish too !



© Ocean World



© Ocean World

Crocodile Fish



© Ocean World

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Read this information in conjunction with Powerpoint Presentation 4 – Adaptations of Marine Animals**Slide 1**

An adaptation can be physical (what an animal looks like) or behavioural (how an animal acts).

Slide 2

All animals need to find a place where they are safe, where they can eat and where they can reproduce. It's all about survival – and not getting eaten.

Slide 3

(First – read the slide)

A marine environment is very harsh – all these things make life more difficult.

Slide 4

Humans are definitely not adapted to live in the ocean – to go into the sea we need specialized diving equipment like this or a submersible. *(we talked about this in PPT 1 – Ocean World)*

Slide 5

Humans collect oxygen from the air into our lungs. Fish do not have lungs, but their gills can take oxygen from water. There is very little oxygen in water – so fish have to be very efficient. Gills can take in amazing amounts of oxygen – this is an example of developing a different part of a body to deal with survival. All fish have gills.

Slide 6

Sharks are fish – so they have gills too – but different species of shark have different adaptations. The sharks which live near the surface of the ocean have 5 gills to absorb oxygen from the water. Other sharks, which live deep in the Ocean, have adapted to have 6 gills as there is less oxygen in the deeper water.

Slide 7

(First – read the slide)

Sharks have adapted to life in the dark by having an extra gill. Extra water passes over the six gills and the shark can absorb a bit more oxygen than if he only had five gills.

Slide 8

Marine Mammals and Marine Reptiles have not got gills so they go to the surface to breathe.

Slide 9

(Read the slide - about the colour of the fish first)

This is an Angler Fish – it lives very deep down in the Ocean. It has adapted an extra 'organ' on the top of its head which sticks out and has a flashing light on it. This is called a photophore. The flashing light can be seen in the water, but the Angler Fish is camouflaged in the dark. Small fish get attracted to the light – come towards the Angler Fish and it gobbles them up.

Slide 10

This is the Angler Fish's cousin – the Hairy Angler – because it is so dark he can't see to catch his dinner – so the hairs which cover his body are adapted to pick up the vibrations in the water of the food he wants to catch. He can work out the size and distance from the vibrations – and it helps him to find his food.

Slide 11

This deep sea fish has a photophore (light organ) underneath its chin. It pushes the photophore out in front of him into the dark, then it gradually pulls it back towards its mouth. Poor little fish get fooled by the light and follow it. Another easy meal for the Dragonfish!

Slide 12

How would you like to meet up with a strange Deep Sea Octopus? Luckily this photo was taken from a submersible – with the humans safely inside. There seem to be two large flaps on the side of its head – perhaps they help it to swim? Perhaps you can think of another reason why it is adapted this way? How do you think these flaps help the animal survive in the deep Ocean?

Slide 13

All animals are adapted in different ways. On the top left photo the Orca Whale is showing how big and sharp its teeth are – its teeth are adapted to eat meat, as it is a carnivore. The photo on the right is a walrus. It lives on the land – but gets its food from the sea – so it is a Marine Mammal. Its strange teeth help it to move across ice, and to find other walrus.

Slide 14

The whiskers on the walrus are highly adapted. The Walrus eats clams which it collects from the seabed. The walrus uses its sensitive whiskers to find the clams.

Slide 15

All seabirds are adapted in different ways too. The albatross (top left) has the widest wingspan of any bird. The albatross can fly for two years over the Ocean, just occasionally landing in the sea to eat its food. It returns to land only to reproduce. These birds fly around mainly in the Southern Ocean, where the winds are very strong.

A penguin (bottom left) swims underwater to find its food. Its body is streamlined to help it swim quickly in the water, and in its mouth it has bristles on its tongue to hold on to the fish it catches for its dinner.

The turtle has to breathe at the surface – but has adapted to holding its breath underwater without oxygen for up to 6 hours.

Slide 16

Marine Iguanas live on the land at night and sit in the sun during the day. They are cold blooded reptiles, so only warming up in the sun gives them enough energy to move. They go underwater using **strong tails** to push them along. They search for food as they swim down to the seabed and scrap algae from the rocks with their **sharp claws**. They get rid of the salt they've swallowed when underwater in the salty sea, by **sneezing** – that's what the white mark above the nose is – in this picture – it's the dried salt that has been sneezed out. (Three adaptations in this animal – look at the words in bold)

Slide 17

Not all fish look alike – fish come in all shapes and sizes

Slide 18

A Flatfish for example – is born as a round ‘normal’ looking fish – but within a few days of birth, one eye has moved around to the other side of his head, and its mouth goes to one side too. The body flattens out and the fish ends up flat with a camouflage pattern on the upper side, with both eyes and the mouth on one side. It has adapted in this way so it can hide flat on the sandy sea bed.

Slide 19

A Hammerhead shark has adapted a very strange head – it has a 360° view and can see any fish that it wants to eat, coming up from behind it. It doesn’t look like a ‘normal’ shark at all.

Slide 20

Sharks and Rays are cousins, they had a common ancestor, but they have adapted in different ways. The Ray’s fins have turned into a skirt-like structure that look like wings. This means the ray can hide under coral for protection from predators, as its almost flat body can squeeze underneath.

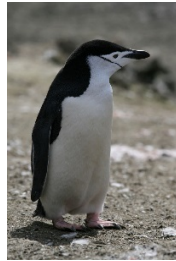
Slide 21

This crocodile fish is very strangely adapted. Although it is called a crocodile fish, it’s not related to a crocodile, which is a reptile. Where a crocodile has legs, this fish has fins. Its eyes also move around individually looking in different directions. It lays on flat coral or sand and stays very still. Its body is camouflaged so fish don’t see it and it snaps its mouth open and shut very quickly to catch its dinner.

Slide 22

Thank you for listening.

Penguin



Penguins:

- cannot fly but have streamlined bodies to help them swim
- chase their food in the ocean and eat fish, squid and krill
- have a hooked bill to help catch their food
- cannot breathe underwater, but can hold their breath and stay underwater for up to 25 minutes
- have black and white feathers and a layer of blubber under their skin to keep them warm
- penguin babies are called chicks
- marine predators are seals, and orcas. On land, foxes and snakes can eat the chicks

All penguins live in the Southern Hemisphere

Draw a line on this world map to show where penguins live.



Albatross



Albatross:

- are the biggest seabirds
- have the longest wings of any bird (up to 3 metres)
- use the wind to glide over oceans, often not flapping their wings for hours
- weigh up to 10 kg
- can float on the ocean to rest but are in danger from marine predators such as sharks
- have just one chick every breeding season

Albatross are threatened with extinction, as they get caught up on fishing lines.

Find out what this means.



Ocean Adventures Teachers' Resource

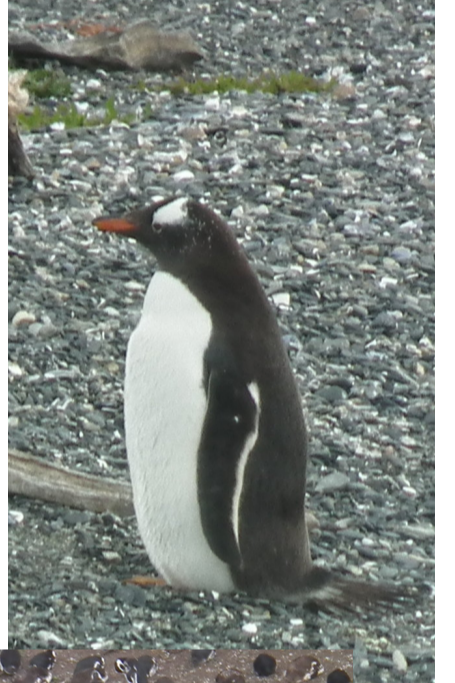
YEAR FIVE

Video Resource

Narrated Video Penguins Beagle Chnl

Video link

<https://youtu.be/ANk3ythl2es>



Animal Behaviour Penguins



FABULOUS FACTS ABOUT OCEAN ANIMALS

Animal Behaviour 1 : Penguins' Lifestyle

Comparison: 1. Penguins at the southern tip of Africa v. 2. Penguins at the southern tip of South America.

Film: Penguins in Africa: Penguins in South America.

Research : Distance from Antarctica? Temperature of water: Food source: Behaviour (way of keeping warm?)

Research: Southern Ocean. Effects of Climate change?

Compare locations and explain any differences between penguin behaviour.

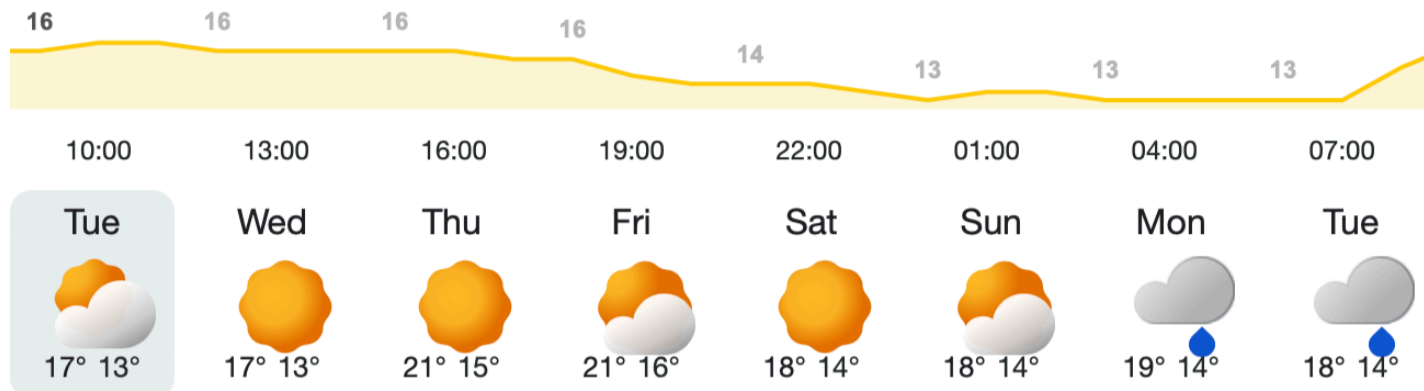
	Penguins in South Africa	Penguins in South America
Water temperature		
Behaviour? Where do they live? Open spaces or Burrows		
How does their food source protect them from the cold?		
Activity (Protection against cold?) Length of time in Water?		

Results for **Table Mountain National Park, Cape Town** · [Choose area](#) ⋮


16 °C | °F
 Precipitation: 20%
 Humidity: 79%
 Wind: 11 mph

Weather
 Tuesday 09:00
 Mostly cloudy

Temperature | Precipitation | Wind



The temperature at the bottom of the ocean around South Africa is cold, typically around 4°C (39°F) below approximately 200 meters (650 feet) of depth. Surface temperatures, however, vary significantly from a cold 10°C (50°F) on the Atlantic Seaboard to a warm 22°C (72°F) in False Bay, depending on location and the seasonal influence of the Indian or Atlantic Ocean currents. [🔗](#)

Factors affecting water temperature











- **Depth:** The deep ocean is consistently cold, as sunlight does not penetrate to warm it.
- **Ocean Currents:** South Africa's coasts are influenced by two major currents, resulting in different water temperatures:
 - **Atlantic Ocean:** The Benguela current brings cold water from the Antarctic, leading to cooler temperatures on the Atlantic coast, such as in Cape Town.
 - **Indian Ocean:** Warm currents from the Indian Ocean make the waters warmer on the eastern and southern coasts.

The most southerly part of South America, near Darwin's Passage (which is a part of the Drake Passage), has a **cool, maritime climate with high winds, heavy cloud cover, and abundant precipitation** throughout the year, with temperatures averaging around 5.2°C (41.4°F) but with frequent strong squalls and winds over 100 km/h (62 mph) possible in all seasons. [🔗](#)








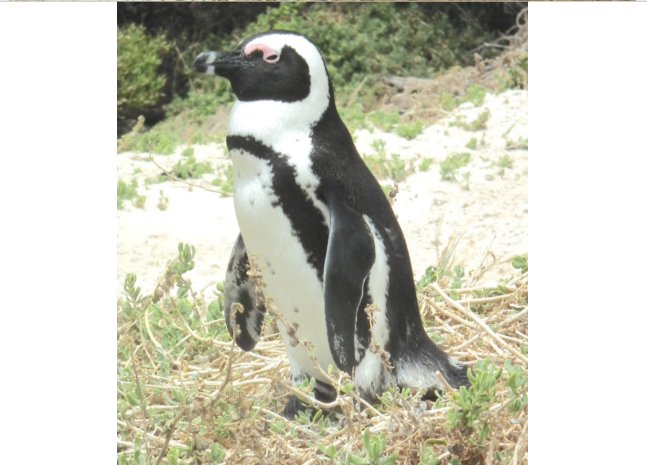
Water temperatures in the Drake Passage vary significantly, ranging from about 43°F (6°C) in the north to as low as 30°F (-1°C) in the south, with a sharp drop occurring at the Antarctic Convergence Zone. The water is part of the fast-flowing Antarctic Circumpolar Current, where cold Southern Ocean water mixes with warmer Atlantic water. [🔗](#)

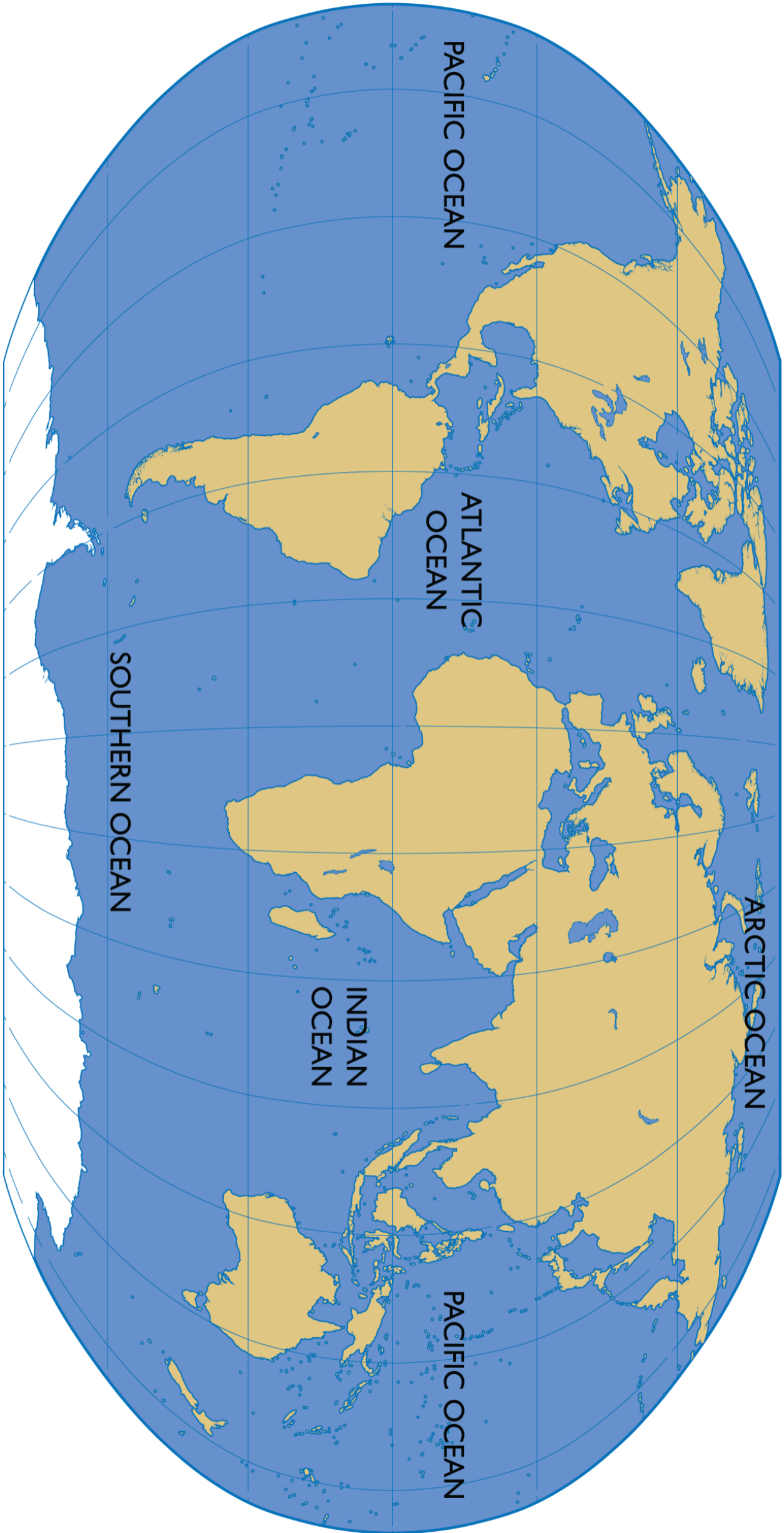
Watch the Penguin film of life in the Beagle Channel at the bottom of South America.	Check out the photos of both areas? Can you answer the questions?	How are the penguins behaving in South America?
How are the penguins behaving in South Africa?	Which area - South Africa or South America is nearest the Antarctic?	What effect does the distance between the continents make to life at the tip of South Africa and the tip of South America
Check out the weather conditions on land?	Check out the temperatures of the water?	What do YOU think is affecting the penguins behaviour the most?

Penguins in the Beagle Channel - South America

<p>Why do lots of penguins gather in the same place?</p>				
<p>The penguins with brown fur are babies. Why do some penguins lie down?</p>				
<p>They seem reluctant to enter the water. Why?</p>				
<p>Why do they have to enter the water?</p>				
<p>They don't stay in the water for long. Why?</p>				

Penguins in the Table Mountain National Park /Boulder Park - in South Africa

<p>South African Penguins - Table Mountain National Park</p>		
<p>Describe the conditions where the penguins live</p>		
<p>Why do the younger penguins lie down?</p>		
<p>Human activity -areas separated for plant growth keeps the penguins from destroying the National Park</p>		



SESSION THREE

Ocean Adventures – Ocean Habitats

BIG Question:

“Where do all these creatures hang out?”

Reading Reference:

Resources: Books ‘*Amazing World Beneath the Waves*’ and ‘*50 Fabulous Facts about Ocean Animals*’

Starter

Ask:

- Do all ocean animals live in the same place?
- What is a habitat?
- What is a niche?

Key Teaching Point:

Each ocean habitat has different conditions.
Animals are adapted to suit their niche.

Vocabulary (on board)

HABITAT
ENVIRONMENT
NICHE
CORAL REEF
SEAGRASS MEADOW
DEEP SEA
INTERTIDAL
ICE WORLD

Discuss

Use:

Habitats PowerPoint (14 slides + narration - 7a)

Slides focus on:

- The Big Blue (open ocean)
- The Deep
- Coral Reefs
- Seagrass Meadows
- Ice World
- Rock Pools
- Island Life

Pause to ask:

- Why is the deep sea dark?
- Why are coral reefs so colourful?
- Why do animals in Ice World need insulation?

Learning Time

Children:

- Match animals to habitats
- Explain why they live there
- Identify environmental challenges

Activities - Four choices:

a) Choose habitat to research - see

Worksheet 7b

b) Create a Habitat Card game

c) Write a habitat description for

three animals - include habitat, adaptations and food sources.

d) Create a Habitat Poster using a

'Knowledge Organiser' style

Extension: Higher Level

Research and report to class.

Are coral reefs endangered?

Why are they dying?

Can coral regrow in warmer or more acidic water?

Research Focus:

The Great Barrier Reef — size, location, importance.

Plenary

Quick Check:

- “All ocean animals live near coral reefs.”
- “Every animal has a niche.”
- “Habitats affect survival.”

Exit Question:

Why don't all ocean animals live in the same place?



© Ocean World

Marine Habitats

Why are ocean habitats so special ?

Size – 70% of Earth Is Ocean

Deepest (11 km) in
Mariana Trench
Pacific Ocean.

Ocean hides
mountain ranges
with more
volcanoes than on
land.



Volume of Ocean
environment has
300x more space for
life than that
provided by land
and freshwater
combined.

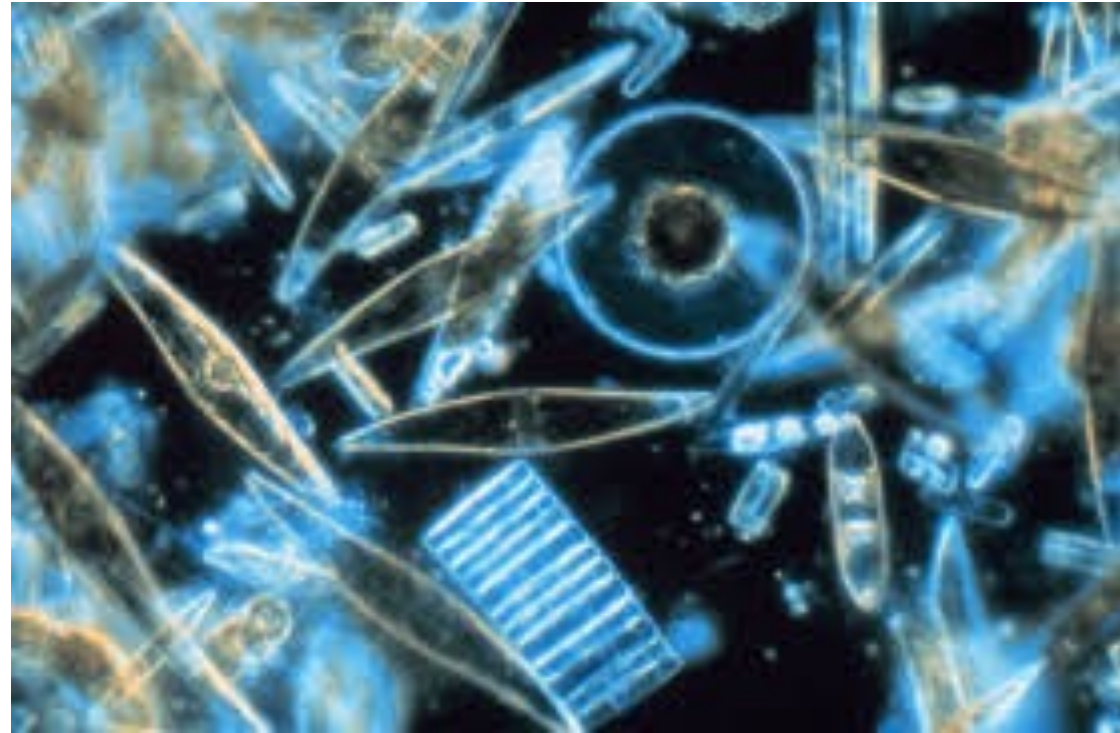
Why are ocean habitats so special ?

Life forms in the Ocean supply our oxygen

Plankton

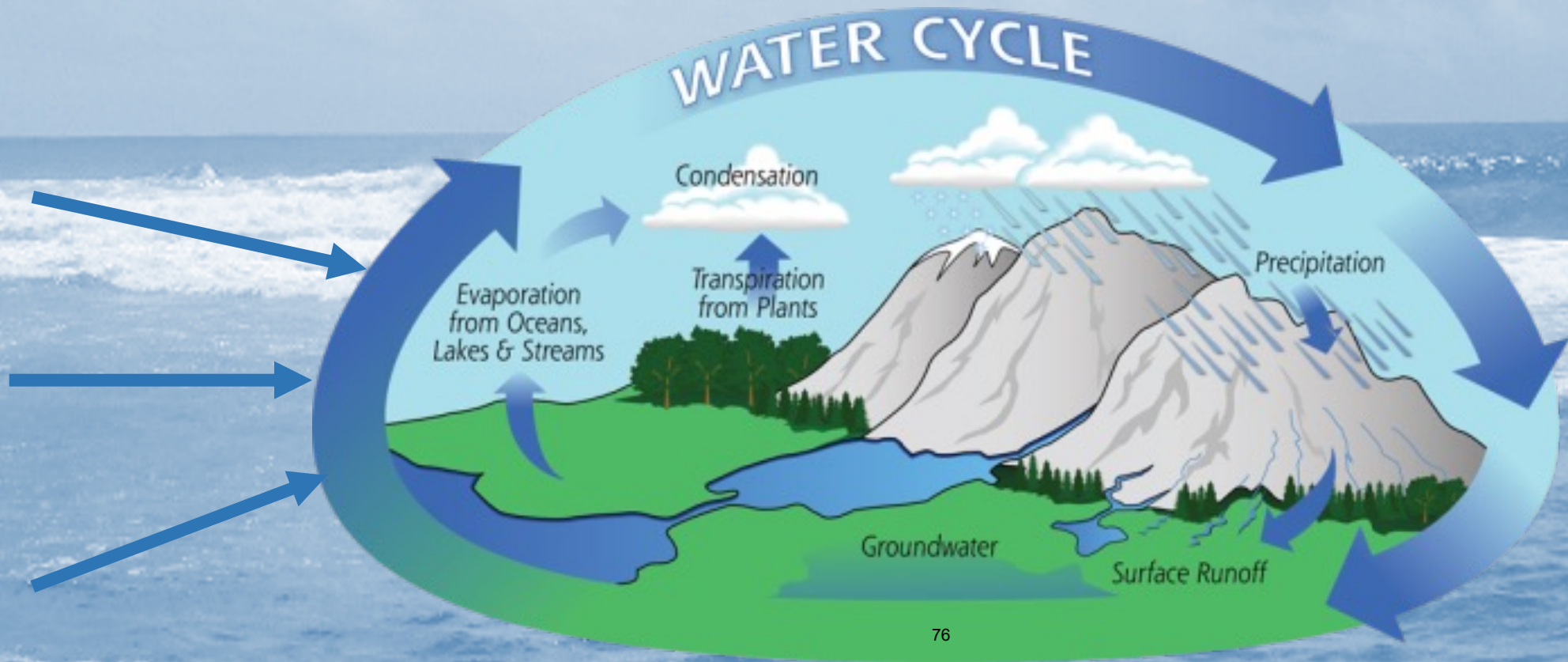
produce
50 % of Earth's
oxygen.

200 million tons of
plankton grows
each year
[10 x mass of
human population]



Why are ocean habitats so special ?

All the water we use comes from the Ocean



Why are ocean habitats so special ?

Life started in the oceans and there are 65% of all animal species living in the sea



Sea Snake



Fish



Sea Cucumber



Coral



Sponge

Ocean Habitats

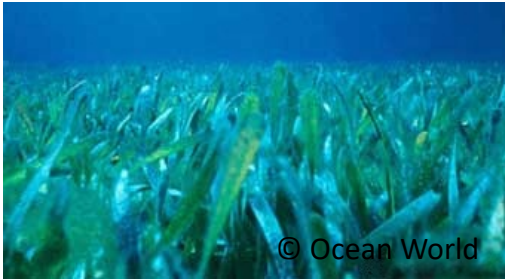
The Big Blue



Deep Sea



Sea Grass Meadows



Coral Reefs



Ice World



Rock Pools



Island Life

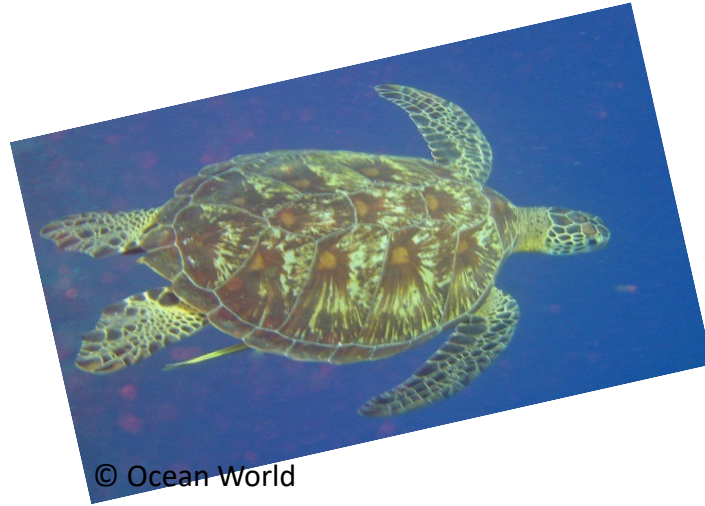


The Big Blue Habitat

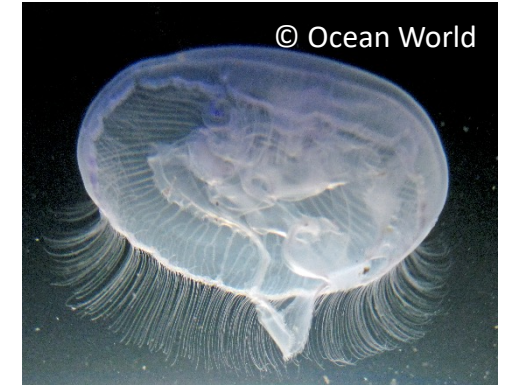
Hunters



Shoals of fish



Reptiles



Drifters

Mammals

Sea Birds



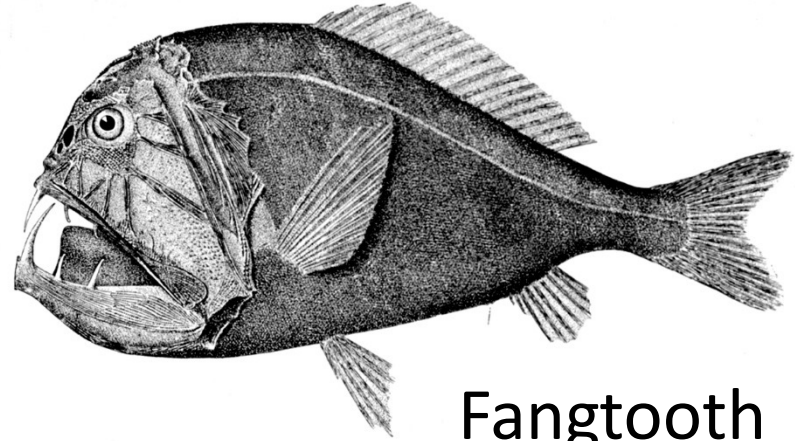
Deep Sea Habitat



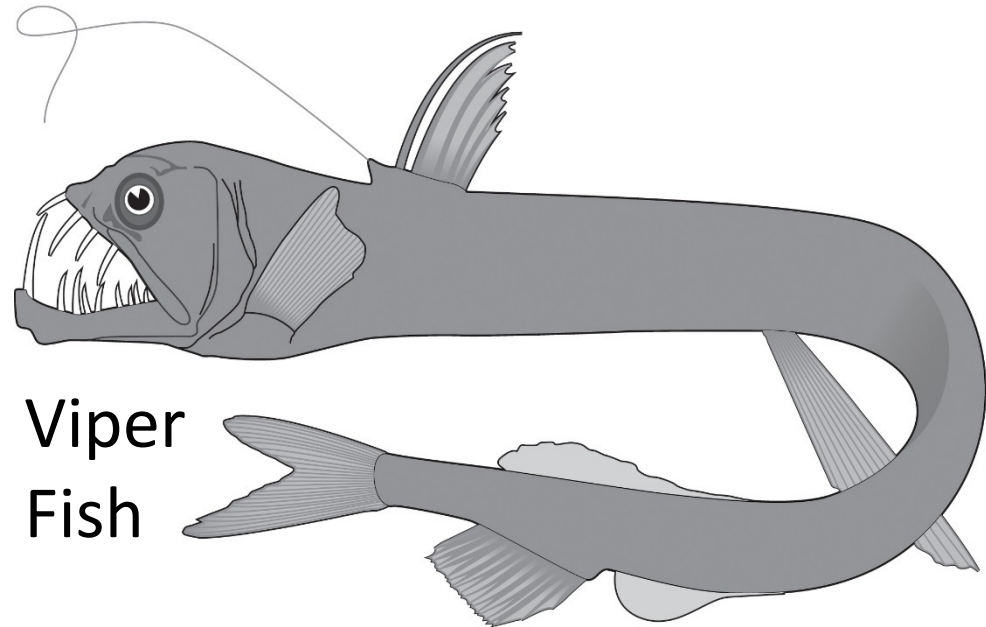
Deep Sea Angler Fish



Vampire Squid



Fangtooth



Viper Fish

Coral Reefs



Lionfish



Angel Fish



Sea Star (Star Fish)



Coral

© CC Vasenin



Anemone Fish

81



Octopus

© Ocean World

Sea Grass Meadows



Seahorse



Dugong

© UN global environment facility



Sea Cow



Ice World Habitat



Walrus

© JG Miller Public Domain



Seal

© mother nature network

Where land meets the oceans- there are rock pools



Crab



Limpets

Islands in the Oceans

– where life relies on food from the sea



Penguins



Marine Iguana

© Educational Materials prepared by
www.footprinttothefuture.co.uk

Read this information in conjunction with Powerpoint Presentation 5 – Marine Habitats**Slide 1**

Habitats – the places where creatures live.

Slide 2

4 facts here – the World Ocean is special because

- a) 70% of the Earth is the Ocean – that is a lot of water
- b) The deepest part of the Ocean is 11km down and that is deeper than the tallest mountain (Everest) is high, 8 km up on land.
- c) Hidden under the Ocean are large mountain ranges, and lots of volcanoes
- d) The space for living things in the Ocean is 300 times that of the space on land

Slide 3

Tiny microscopic algae called plankton is not a plant, yet it makes glucose energy from the Sun just like Plants. It also makes lots of oxygen – between 50% and 80% of the Earth's oxygen comes from plankton. The amount of oxygen plankton makes varies depending on the part of the Ocean and the time of year. There is 10 times the amount of plankton compared to human beings. That's a lot of plankton.

Slide 4

All the water we use comes from the Ocean. Water in the Ocean is sucked up (evaporated) into clouds, leaving the salt behind. The water in the clouds form rain. We collect rain to give us fresh water to drink.

Slide 5

There are more different types of animals living in the Ocean (65%) than on land (35%).

Slide 6

There are seven different types of Ocean habitat.

Slide 7

There are lots of animals living in the wide open Ocean. These are just some of them.

Slide 8

Some of the deep sea creatures look like monsters

Slide 9

The highest number of different creatures in the Ocean live amongst the coral. From tiny invertebrates to giant octopus, they all find their own special place to live. They are in a constant battle for survival.

Top Left: Lionfish swimming near hard Staghorn Coral. Top Middle: a herbivorous Angel Fish. Top Right: a Starfish which is an invertebrate.

Bottom Left: Cup Corals (these are animals too). Bottom Middle Left: A 'Nemo' Fish hiding in an Anemone Coral. Bottom Right: Octopus – an invertebrate.

Slide 10

Seagrass meadows are important as they act as a nursery for small fish. The little fish can hide until they are big enough to swim fast and dart away from anything trying to eat them. The meadows are also a food source for bigger animals like a Dugong (top right).

Top Left: Sea Horse using its tail to hold onto the seagrass. Top Middle: Seagrass growing in a sandy seabed. Top Right: Dugong.

Bottom Left: A fish called a Sea Cow (because it has horns). Bottom middle: a thick, rich meadow of sea grass, Bottom Right: a shoal of fish which can quickly hide in the seagrass.

Slide 11

These three animals live in cold icy conditions. They all get their food from the Ocean by eating mainly fish and crustaceans – crabs, or molluscs - clams.

Slide 12

Rock pools are created by the tide taking the water in and out at a beach where the Ocean meets the land. There are some fascinating animals to find in rock pools. A net and a bucket are definitely needed for this adventure.

Slide 13

Islands surrounded by the sea often have animals living on them which collect their food from the sea. These animals are called Marine or Sea Animals. The penguin on the left has turned his head to clean the feathers on its back, but it makes it look like it doesn't have a head.

Slide 14

Thank you for listening.

Project Work

Habitats in the Ocean

The Big Blue

Research what animals live in the open ocean.

Find out what they eat – and who eats them (food chains).

What is special about their lifestyle?

How far do they travel?

Are they caught by humans fishing for food?

Are they 'endangered' by the human methods of fishing?

Hiding at the bottom of the Ocean

Research what animals hide in the sand and seagrass at the bottom of the sea.

What do they eat, and who eats them (food chains)?

What is special about their lifestyle?

What sort of protection do they have to avoid being eaten?

Are they active during the day or during the night?

Are any human fishing methods endangering their lives?

Living in a Coral Reef

Research what animals live in a coral reef?

What do they eat, and who eats them (food chains)??

What is special about their lifestyle?

How do they behave to avoid being eaten?

Are they active during the day or during the night?

What type of human fishing methods endanger the lives of ocean creatures?

Ocean Adventures Teachers' Resource

Assessment for Learning

Year 5 – Session ONE

Food Chains

Learning Intention

To understand how energy flows through a marine food chain and how organisms depend on one another.

Success Criteria

Pupils can:

- Identify producers, consumers and predators.
- Construct a simple marine food chain.
- Explain how energy is transferred between organisms.
- Describe what may happen if one species disappears.

Diagnostic Starter (Prior Knowledge Check)

Ask pupils:

- What is a producer?
- Where does energy in a food chain begin?
- Can you name a predator in the ocean?

Teacher notes misconceptions:

- Think plants “eat” food
- Arrows show “who eats who” instead of energy flow
- Believe energy increases along the chain

Formative Assessment During Lesson

Observe pupils:

- Correctly label a food chain diagram
- Use vocabulary accurately in discussion
- Explain energy transfer clearly

Questioning prompts:

- Why does every food chain begin with a producer?
- What would happen if phytoplankton decreased?
- Why are sharks important in ecosystems?

Mini-Plenary Check

Exit Question:

“Explain what might happen if zooplankton disappeared.”

Expected elements:

- ✓ Impact on small fish
- ✓ Impact on sharks
- ✓ Disruption of balance
- ✓ Reduced energy transfer

Evidence of Learning

- Annotated food chain diagram
- Written explanation paragraph
- Discussion contribution
- Exit ticket response

Next Steps

- Support: Reinforce arrow direction and vocabulary.
- Challenge: Extend to food webs and cascading effects.

Assessment for Learning

Year 5 – Session 2

Adaptation

Learning Intention

To understand how marine animals are adapted to survive in their environment.

Success Criteria

Pupils can:

- Identify physical adaptations.
- Identify behavioural adaptations.
- Explain how adaptations support survival.
- Compare adaptations between species.

Diagnostic Starter

Ask:

- What does “adaptation” mean?
- Can you give an example of camouflage?
- Why might animals behave differently in different habitats?

Misconceptions to note:

- Confusing adaptation with choice
- Thinking adaptations happen quickly
- Believing all animals could survive anywhere

Formative Assessment During Lesson

Observe pupils:

- Use scientific vocabulary accurately
- Give clear survival explanations
- Compare two marine animals logically
- Support answers with evidence

Questioning prompts:

- How does blubber help survival?
- Why is camouflage useful in coral reefs?
- Could this animal survive in the deep sea? Why?

Mini-Plenary Check

Exit Question:

“Explain one physical and one behavioural adaptation of a marine animal.”

Expected elements:

- ✓ Clear definition
- ✓ Survival link
- ✓ Appropriate vocabulary

Evidence of Learning

- Adaptation comparison table
- Written explanation
- Presentation or discussion contribution

Next Steps

- Support: Model explanation sentence structure.
- Challenge: Introduce early evolutionary thinking (age-appropriate).

Assessment for Learning

Year 5 – Session 3

Marine Environments & Ecosystems

Learning Intention

To understand how different marine environments support different types of life.

Success Criteria

Pupils can:

- Describe key ocean environments.
- Explain how conditions affect organisms.
- Use vocabulary such as habitat, biodiversity and conservation.
- Analyse the impact of environmental damage.

Diagnostic Starter

Ask:

- What is a habitat?
- How is the deep ocean different from a coral reef?
- Why is temperature important for living things?

Common misconceptions:

- All ocean environments are the same
- Temperature does not affect survival
- Humans do not impact ocean systems

Formative Assessment During Lesson

Observe pupils:

- Accurately describe environmental conditions
- Link conditions to survival adaptations
- Use scientific vocabulary confidently
- Discuss conservation thoughtfully

Questioning prompts:

- Why do coral reefs have high biodiversity?
- How does depth affect light levels?
- What are the consequences of habitat destruction?

Mini-Plenary Check

Exit Question:

“Explain why damaging one habitat can affect many species.”

Expected elements:

- ✓ Interdependence
- ✓ Biodiversity impact
- ✓ Food chain disruption

Evidence of Learning

- Habitat comparison task
- Structured discussion notes
- Written explanation paragraph

Next Steps

- Support: Reinforce vocabulary definitions.
- Challenge: Introduce case study analysis.

Year 5 – Session 1

Food Chains - Self-Assessment Quiz

1. Where does energy in a food chain begin?

- A. The shark
- B. The Sun
- C. The ocean
- D. Small fish

2. What is a producer?

- A. An animal that hunts
- B. A plant that makes its own food
- C. An animal that eats plants
- D. A decomposer

3. What do arrows in a food chain show?

- A. Which animal is strongest
- B. The direction of energy flow
- C. Which animal swims fastest
- D. The order of size

4. What would most likely happen if zooplankton disappeared?

- A. Sharks would increase
- B. Small fish would struggle to survive
- C. The Sun would stop shining
- D. Nothing would change

5. Why are food chains important?

- A. They show which animal is biggest
- B. They show how living things depend on each other
- C. They show where oceans are
- D. They show how fish swim

How confident do you feel?

- A. I need more help
- B. I mostly understand
- C. I feel confident explaining this

Year 5 – Session 2

Adaptation

Self-Assessment Quiz

1. What is an adaptation?

- A. A change an animal chooses to make
- B. A feature that helps an animal survive
- C. A type of food chain
- D. A habitat

2. Which is a physical adaptation?

- A. Hunting in groups
- B. Migration
- C. Blubber to keep warm
- D. Hiding behaviour

3. Which is a behavioural adaptation?

- A. Sharp teeth
- B. Thick fur
- C. Camouflage colouring
- D. Hunting in packs

4. Why do animals need adaptations?

- A. To look interesting
- B. To survive in their environment
- C. To grow faster than others
- D. To avoid sunlight

5. Could a coral reef fish survive in the deep ocean?

- A. Yes, anywhere is the same
- B. Yes, if it swims slowly
- C. No, conditions are different
- D. Only at night

How confident do you feel?

- A. I need more help
- B. I mostly understand
- C. I feel confident explaining this

Year 5 – Session 3

Marine Environments & Ecosystems

Self-Assessment Quiz

1. What is a habitat?

- A. A type of predator
- B. A place where living things live
- C. A food chain
- D. A type of fish

2. Which factor affects life in the ocean?

- A. Temperature
- B. Depth
- C. Light
- D. All of the above

3. What does biodiversity mean?

- A. One species living alone
- B. Many different living things in one area
- C. A deep ocean trench
- D. A migration pattern

4. What could happen if a coral reef is damaged?

- A. Nothing changes
- B. Only one fish is affected
- C. Many species may be affected
- D. The Sun becomes hotter

5. Why is conservation important?

- A. To keep oceans clean and protect species
- B. To make fish grow bigger
- C. To reduce sunlight
- D. To stop waves

How confident do you feel?

- A. I need more help
- B. I mostly understand
- C. I feel confident explaining this

Year 5 – Session 1

Higher Level Quiz Paper

Food Chains

Name: _____ Date: _____

Section A – Knowledge

1. Explain why all marine food chains begin with phytoplankton.
(2 marks)

2. Describe the difference between a food chain and a food web.
(2 marks)

Section B – Application

3. A disease reduces the number of small fish in an ocean ecosystem.

- a) Predict what might happen to zooplankton.
 - b) Predict what might happen to sharks.
- (4 marks)

4. Why are apex predators important for maintaining ecosystem balance?
(3 marks)

Section C – Reasoning

5. Explain why only a small amount of energy passes from one level of a food chain to the next.
(3 marks)

Greater Depth Challenge

6. Suggest two long-term consequences for the ocean if phytoplankton levels fell dramatically. Explain your reasoning.
(4 marks)

Total: 18 marks

Year 5 – Session 2

Higher Level Quiz Paper

Adaptation

Name: _____ Date: _____

Section A – Knowledge

1. Define adaptation using scientific language.

(2 marks)

2. Explain the difference between physical and behavioural adaptations.

(2 marks)

Section B – Application

3. A fish lives in very deep water where there is no sunlight.

a) Suggest one physical adaptation it might have.

b) Explain why this would help survival.

(4 marks)

4. Compare a polar marine animal and a coral reef animal.

How are their adaptations different and why?

(4 marks)

Section C – Reasoning

5. Why would most surface-dwelling marine animals struggle to survive in the deep ocean?

(3 marks)

Greater Depth Challenge

6. Explain how adaptation links to survival over long periods of time.

(Use age-appropriate evolutionary thinking.)

(3 marks)

Total: 18 marks

Year 5 – Session 3

Higher Level Quiz Paper

Marine Environments & Ecosystems

Name: _____ Date: _____

Section A – Knowledge

1. Define biodiversity.

(2 marks)

2. Explain how depth affects life in the ocean.

(3 marks)

Section B – Application

3. Coral reefs are often described as “the rainforests of the sea.”

Explain why.

(3 marks)

4. An oil spill damages a coastal habitat.

Describe two possible impacts on marine life.

(4 marks)

Section C – Reasoning

5. Why are different marine environments important for the overall health of the ocean?

(3 marks)

Greater Depth Challenge

6. Explain how human activity can disrupt entire ecosystems, even if only one habitat is affected.

(3 marks)

Total: 18 marks

TEACHER ANSWER SHEET

Multi-Choice Self-Assessment Quizzes

Session1 – Food Chains

1. B – The Sun
2. B – A plant that makes its own food
3. B – The direction of energy flow
4. B – Small fish would struggle to survive
5. B – They show how living things depend on each other

Confidence question – no right/wrong answer.

Session 2 – Adaptation

1. B – A feature that helps an animal survive
2. C – Blubber to keep warm
3. D – Hunting in packs
4. B – To survive in their environment
5. C – No, conditions are different

Confidence question – no right/wrong answer.

Session 3 – Marine Environments

1. B – A place where living things live
2. D – All of the above
3. B – Many different living things in one area
4. C – Many species may be affected
5. A – To keep oceans clean and protect species

Confidence question – no right/wrong answer.

TEACHER ANSWER SHEET

Higher Level Quiz Papers

(With Mark Guidance)

Session 1– Food Chains

1. Why food chains begin with phytoplankton (2 marks)

- ✓ They are producers (1)
- ✓ They make their own food using sunlight/photosynthesis (1)

2. Food chain vs food web (2 marks)

- ✓ Food chain = single pathway (1)
- ✓ Food web = interconnected chains (1)

3. Disease reduces small fish (4 marks)

- a) Zooplankton may increase due to less predation (2)
- b) Sharks may decrease due to less food (2)

Award 1 mark for simple idea, 2 for explained reasoning.

4. Importance of apex predators (3 marks)

- ✓ Control population sizes
- ✓ Prevent overpopulation
- ✓ Maintain balance in ecosystem

(1 mark each clear point)

5. Energy transfer explanation (3 marks)

- ✓ Energy used for movement/growth
- ✓ Energy lost as heat
- ✓ Only small % passed on

6. Phytoplankton decrease (4 marks)

Possible answers:

- ✓ Collapse of food chains
- ✓ Reduced oxygen production
- ✓ Decline in fish populations
- ✓ Impact on biodiversity

2 marks per well-explained consequence.

Session 2 – Adaptation

1. Define adaptation (2 marks)

- ✓ Feature or behaviour (1)
- ✓ That helps survival in environment (1)

2. Physical vs behavioural (2 marks)

- ✓ Physical = body feature (1)
- ✓ Behavioural = action/way of acting (1)

3. Deep-sea fish (4 marks)

Example answers:

- ✓ Large eyes / bioluminescence / slow metabolism (1)
- ✓ Explanation of survival benefit (1–2)

Full marks for clear link to survival.

4. Polar vs coral reef animal (4 marks)

- ✓ Polar – blubber, thick fur, insulation (2)
- ✓ Reef – camouflage, bright colours, agility (2)

Award marks for comparison and reasoning.

5. Surface animals struggle (3 marks)

- ✓ No light
- ✓ High pressure
- ✓ Cold temperatures

6. Adaptation over time (3 marks)

- ✓ Animals with helpful traits survive (1)
- ✓ Pass traits to offspring (1)
- ✓ Over time species become suited to habitat (1)

Session 3 – Marine Environments

1. Biodiversity (2 marks)

- ✓ Variety of living things (1)
- ✓ In one area/ecosystem (1)

2. Depth affects life (3 marks)

- ✓ Light decreases
- ✓ Temperature changes
- ✓ Pressure increases

3. Coral reefs explanation (3 marks)

- ✓ High biodiversity
- ✓ Many species rely on reef
- ✓ Complex ecosystem

4. Oil spill impacts (4 marks)

Possible answers:

- ✓ Poisoning animals
- ✓ Destroying habitats
- ✓ Food chain disruption
- ✓ Reduced biodiversity

2 marks per explained impact.

5. Importance of environments (3 marks)

- ✓ Support different species
- ✓ Provide balance
- ✓ Contribute to overall ocean health

6. Human disruption (3 marks)

- ✓ Food chains affected
- ✓ Habitat destruction spreads impact
- ✓ Interdependence means ripple effect

Marking Guidance

18 marks per paper

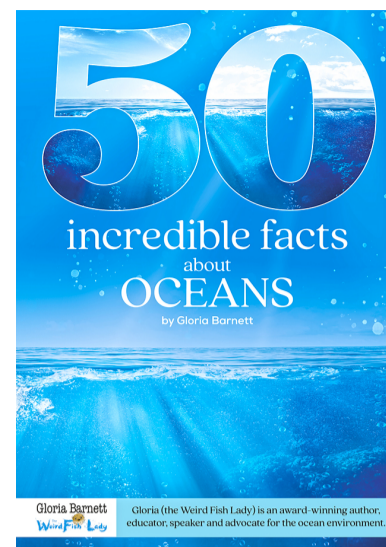
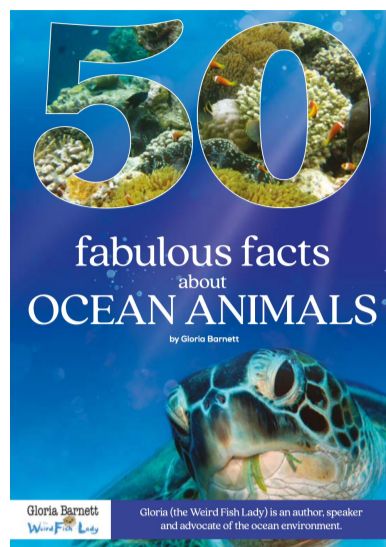
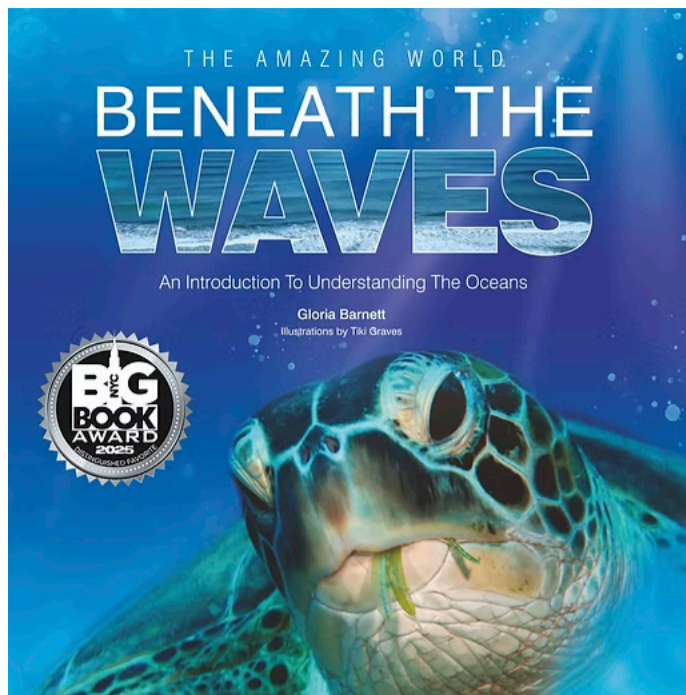
Suggested bands:

15–18 = Greater Depth

11–14 = Secure

7–10 = Developing

Below 7 = Needs Support



**These are the companion books for
Year FIVE Ocean Adventures Teachers' Resources**

50 Fabulous Facts about Ocean Animals: ISBN: 9781838064389

50 Incredible Facts about Oceans ISBN: 9781739308407

The Amazing World Beneath the Waves: ISBN : 9781838064372

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All ideas for the development of teaching strategy for these resources are those of the author Gloria Barnett. The videos are original and have been filmed by Gloria and the books are written by Gloria too. I'd love to hear from you. Contact me with questions or suggestions. Tell me how you heard of the Ocean Adventures Resources or give me a quick review. Why not tell me which parts of this resource your pupils enjoyed the most or get some images of your children's work on my website or on instagram.

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