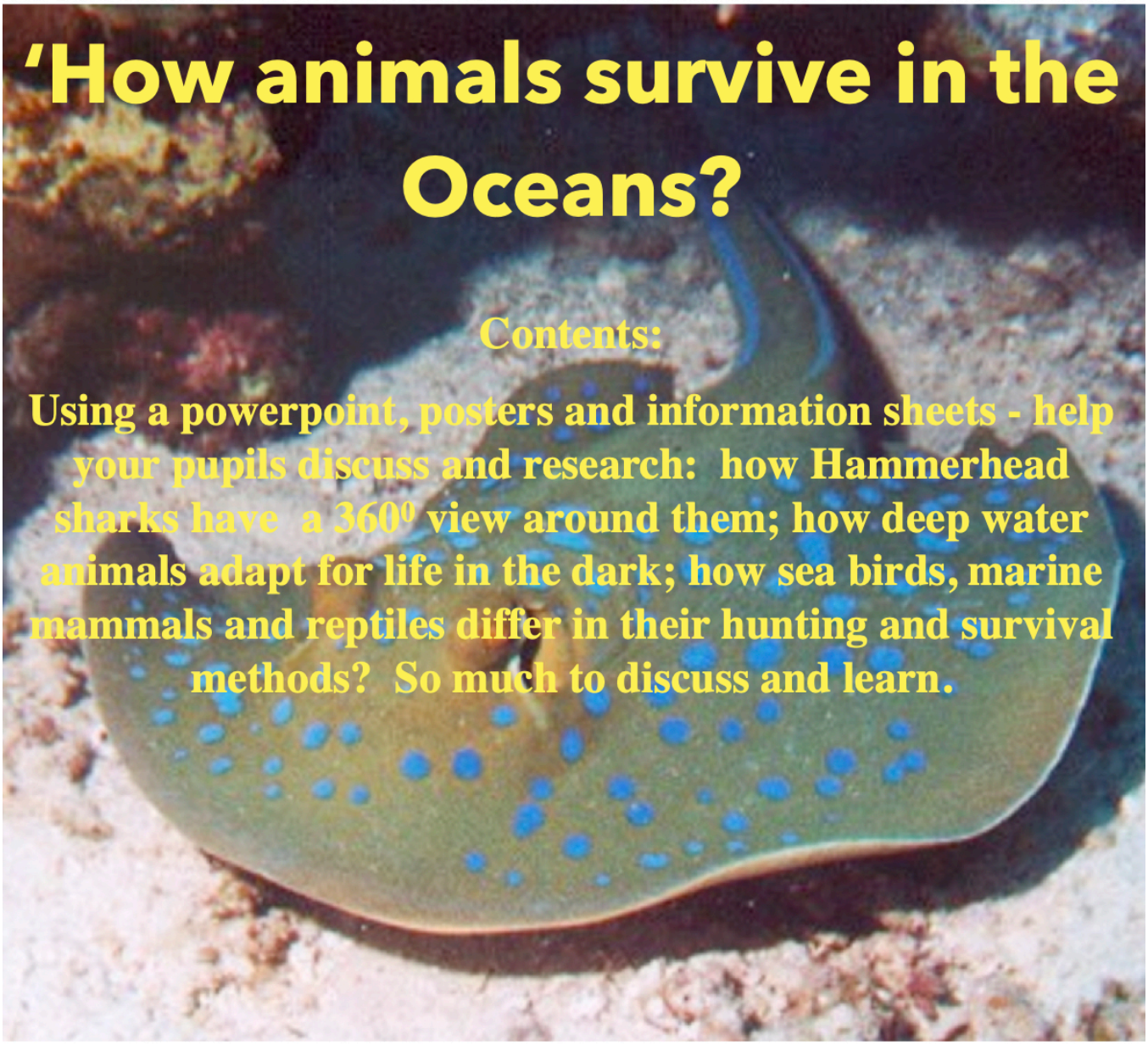
The Weird Fish Lady

Ocean World
Lesson SIX



‘How animals survive in the Oceans?

Contents:

Using a powerpoint, posters and information sheets - help your pupils discuss and research: how Hammerhead sharks have a 360⁰ view around them; how deep water animals adapt for life in the dark; how sea birds, marine mammals and reptiles differ in their hunting and survival methods? So much to discuss and learn.

Teachers' Resource

'Ocean World'

KS2 - Year 5/6 - UK Curriculum: Science

Lesson Six
'How have animals managed to survive in the Oceans?

Resources in this unit are:
1.Ocean World Powerpoint (21 slides.)
2.Info Sheets and ideas for discussion and research: How Hammerhead sharks can see a 360^0 view of food or dangers around them; how deep water animals adapt for life in the dark; how sea birds, marine mammals and reptiles differ in their hunting and survival methods? So much to discuss and learn.
3. Activity Sheet Guide for teachers, includes key words, ideas and literacy work.
4. Poster and Identification Sheet
5. A list of 'Sea music' is also included for use throughout the eight-lesson project.
6.The BIG Question (pupils are encouraged to discuss and/or write a sentence to answer - The BIG question: - 'How have animals managed to survive in the Oceans?'

Teachers can establish pupil progress when discussing with pupils what they have learnt so far. It is suggested that work can be glued into a BIG BOOK/JOURNAL where pupil's work can be built up over the full teaching unit of 8 lessons.

Marine Adaptations

ACTIVITY 6

How have animals managed to survive in the Oceans?

Resources:

6: Adaptations | Info Sheets: 6a,b | Poster

Suggested Activities:

A: Teacher led discussion– Use PPT 6: "Adaptation of Marine Animals"

Discussion:
Narration **(Info Sheet 6a)** can be for the teacher **OR** given to students – one slide each to read out as the class watch the presentation. The slide presentation can take place as a whole – or can be delivered more slowly, a few slides each day.
Show and discuss the whole presentation as an overview of **Activity 6……OR**

B: .....break the presentation down into the 7 parts

B1. Teacher led activity – Introduction Slides 2 – 4.
Survival in the Marine Environment
Pupils to discuss what they have learnt from the Power Point slides and add their thoughts, interesting facts and questions to their individual 'Learning Journal'.

Teacher to set the scene:
"We have just seen how marine animals exist in their environment but as researchers we need to understand how they are able to do that."

Open Questions:

1: Think about **HOW** you could escape from a predator
2: **HOW** does it feel to be hunted (prey)?
3: **HOW** does it feel to be the hunter (predator)?

B2. Slides 5 - 8
Importance of Oxygen;
Fish Gills; Adaptation of 6 gill shark; breathing from the surface.
Open Question: Why do the heaviest creatures in the world live in the ocean?
(Info: the largest – the Blue Whale has a tongue the size of one elephant!)

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This is the Angler Fish's cousin – the Hairy Angler – because it is so dark he can't

Marine Adaptations

ACTIVITY 6

B: .....break the presentation down into the 7 parts

Continued. . .

B3. Slides 9 - 12
Deep Water Adaptation

Open Question: There seem to be two large flaps on the side of the DS Octopus' head. How do you think these flaps help the animal survive in the deep Ocean?

B4 Slides 13 – 14
Adaptations of Marine Mammals

Open Question: HOW many body differences can you find between an Orca and a Walrus. You might want to draw up a table of facts for each animal and compare them?
Open Question: HOW do Orcas and Walrus differ in the way they hunt for food?

B5 Slide 15
Adaptation of Sea Birds

Open Question: HOW are sea birds adapted to a life at sea?
Open Question: HOW does an albatross stay on the wing for so long?

B6 Slide 16
Adaptation of Marine Reptiles

Open Question: HOW does the adaptation of strong tails help an iguana live its life?

B7 Slides 17 – 21
Adaptations of Fish

Open Question: HOW does it help you as a Hammerhead shark to be able to see a 360º view?

C: Pupils to Consolidate their Learning

Literacy Activity: Using Info Sheet 6b

Comparison of a Penguin and an Albatross. Although both birds, they are very different both physically and behaviourally. You can use this fact sheet in many ways – but it is a good development of literacy/reading for understanding if the pupils write a comparison of the two birds. Pupils may want to suggest why the birds are different.

D: Use the poster

Teacher led discussions:

On adaptations of all creatures. Pupils to think about behavioural adaptations too. (Think shoaling, hiding, nocturnal or diurnal activity.) Remember 'survival'.

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see to catch his dinner – so the hairs which cover his body are adapted to pick up

Marine Adaptations

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ACTIVITY 6

E: Research answers to the following questions

1. Why do fish shoal?
2. Why does a jawfish hide in the coral?
3. Why does the turtle swim to the surface?
4. Why do dolphins jump above the surface of the water?
5. Why do fish always swim away from a diver with a camera?
6. Why do Puffer Fish puff up their bodies?
7. Why does hard and soft coral sting you?
8. Why are Anemone fish the only fish who live inside Anemones?
9. Compare two large fish Titan Trigger Fish (a fish with large teeth that can bite your finger off); a Napoleon Wrasse (a large fish who makes friends with divers).
10. Rays and Sharks are cousins but one has fins and one has wings – why?
11. The octopus is an invertebrate – how does this help it hide from predators?

F: Creative in the form of mantle of an expert

Prepare a short research presentation based on your findings to the questions above.

G: Teacher to put Key Words on the board.

ADAPTATION **SURVIVAL** **PHYSICAL** **BEHAVIOURAL ADAPTATION**

H: Pupil Activity

Extension: Adaptation can be physical or behaviourial. Research the difference! Watch the film clips "Ocean World'" – can you find three examples of physical adaptation and three examples of behavioural adaptation. Write about what you have found and explain it to the class.
ICT Research: Pupils to research their favourite Marine Animal and list the strategies for survival.

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the vibrations in the water of the food he wants to catch. He can work out the size

Marine Adaptations

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ACTIVITY 6

I: Answer the Big Question

How have animals managed to survive in the Oceans?

The answer is…….?

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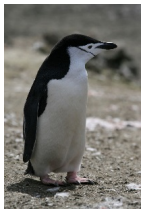
Ocean World

Information Sheet 6b

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

<u>All penguins live in the Southern Hemisphere</u>

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

<u>Albatross are threatened with extinction, as they get caught up on fishing lines.</u>

Find out what this means.

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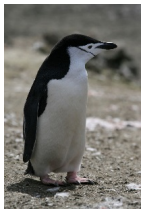
Ocean World

Information Sheet 6b

Penguin



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Sea Music

1	The Mystic	Van Morrison
2	Yellow Submarine	The Beatles
3	https://www.youtube.com/watch?v=GHgE5fQxvW8	
4	The Hebrides (Fingal's Cave http://www.bbc.co.uk/programmes/articles/3Fm3H66YnxN2slLrSX3mMvh/top-six-sea-pieces	Felix Mendelsohn
5	La Mer	Debussy
6	Sea Fever	John Ireland
7	Storm	Benjamin Britten
8	The Flying Dutchman	Richard Wagner
9	Octopuses Garden	Beatles
10	Under the Sea	Little Mermaid
11	Hawaii Five-O	The Ventures
12	Shark Attack	John Williams
13	Wipe Out	The Safaris
14	Sittin' on the Dock of the Bay	Ottis Reding
15	Pirates of the Caribbean	Any
16	Sparticus (Onedin Line Theme)	Kachaturian
17	Preservation / Kyance Cove / Marazion	Keynvor
18	The Aquarium: Carnival of the Animals	Saint -Saens

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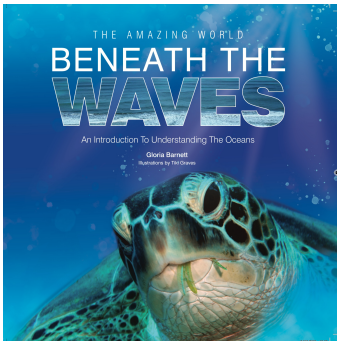
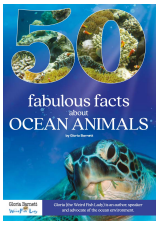
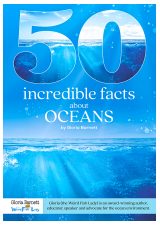
Ideas to enhance this lesson ...

Buy '*The Amazing World Beneath the Waves -Guide to the Oceans'* or the *'50 Facts'* Books for your classroom from the book section on www.barnettauthor.co.uk







Ocean World

Adaptations of Marine Animals

Ocean World

Adaptations of Marine Animals

1

Ocean World

All Adaptation is related to survival

To eat whilst avoiding being eaten

2

Ocean World

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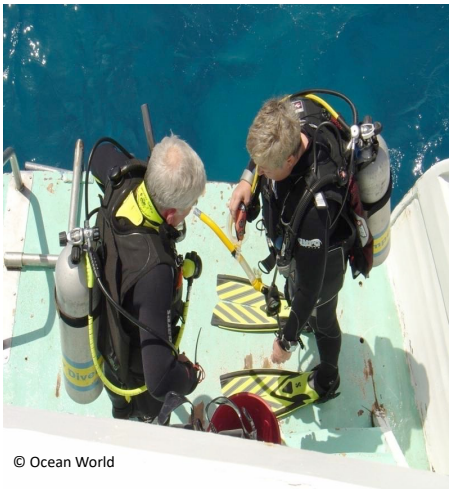
- Lacks oxygen
- Lacks light
- Has intense pressures
- Gets colder at depth
- Predators & Prey live close together

Ocean World

Humans are not adapted for life in a marine environment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Need:
- Fins
- Mask
- Weights
- Buoyancy aid
- Wet Suit
- Breathing Apparatus (hoses and air tank)

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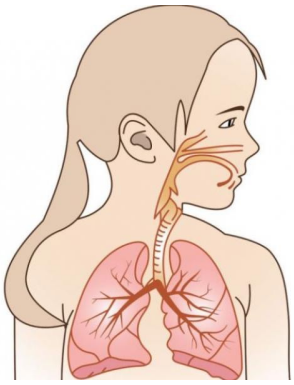
Oxygen

There is 20% oxygen in the atmosphere



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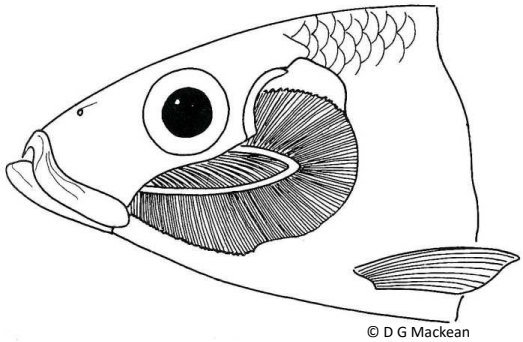
There is only 1% dissolved oxygen in sea water.



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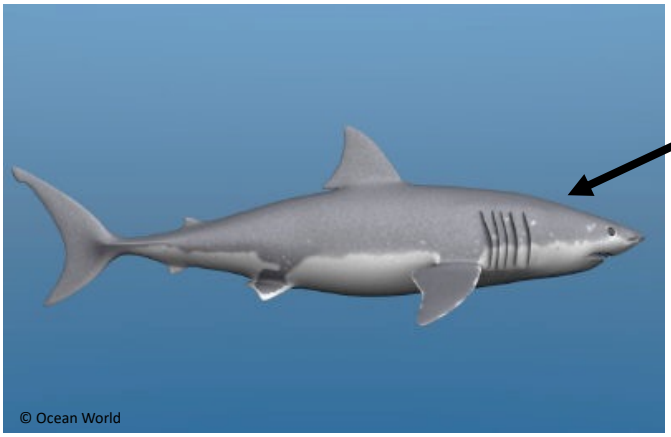
Ocean World

Fish Gills

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



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Can you see their 5 gill slits here?

Adaptation - Six Gill Shark

© subsaga.com

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)

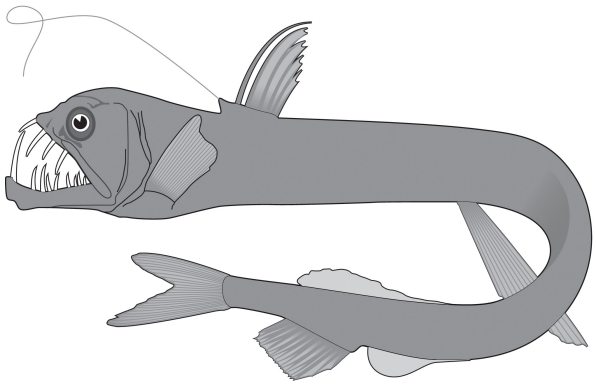
Creatures from the Deep

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

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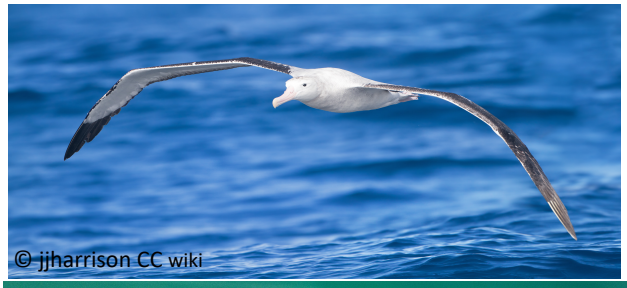
Birds & Reptiles



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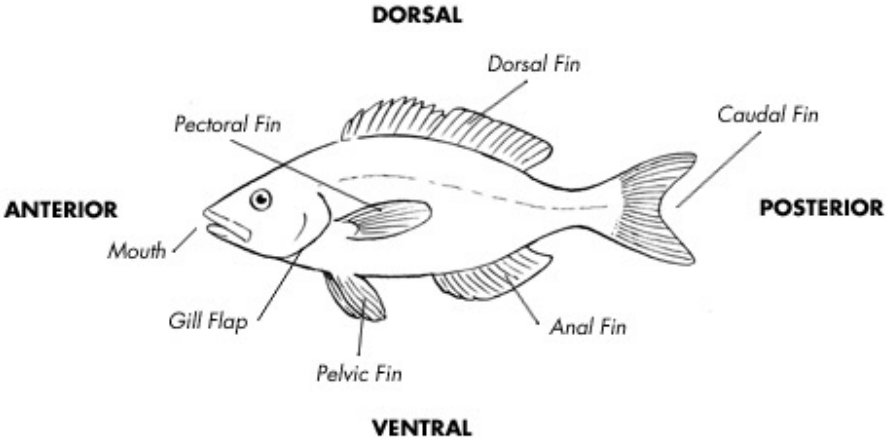
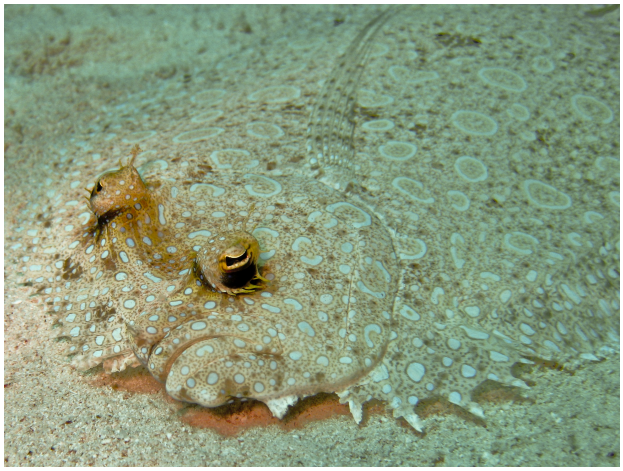
Island Life - Marine Iguanas

SHAPE
Are all fish - fish shaped???



Flatfish



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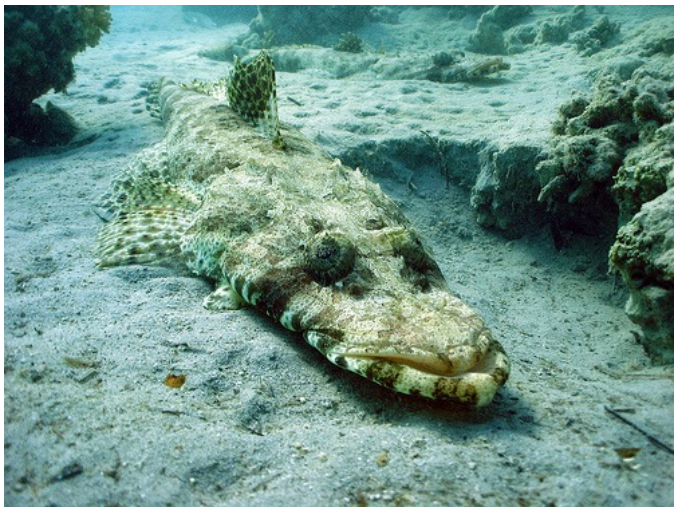
Sharks & Rays are fish too !

Crocodile Fish



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Read this information in conjunction with Powerpoint Presentation 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 360º 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.

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Information Sheet 6a