Teacher Notes: Great Barrier Reef Rescue (Song Bird) by Karen Tyrrell

Book Trailer on You Tube: https://www.youtube.com/watch?v=X4P5fhgmw-8

ABC Radio Podcast: Letter from Sir David Attenborough
https://www.youtube.com/watch?v=32oN7-txwdw

A read-aloud, junior novel suitable for children 7+, teachers, librarians, parents, superhero fans.
Age Level: 7 – 12+ years Word Count: 25K
Reviews: Readlilearn, 'Educate. Empower', Just Write for Kids, Reading Time, Buzz Words, Juliet Sampson, Goodreads, Amazon, teacher & author reviews, children, parents.
Aligned with Kids Matter & primary **STEM** Science curriculum

Discussion Ideas

Knowledge and Literal Understanding

- Marine creatures like turtles and dugongs have become endangered.
- Children can save the reef and endangered marine creatures with positive actions.
- Superhero powers can be explained by STEM science, science fiction & engineering.
- We can empower ourselves to live strong with humour, resilience, perseverance, brain power and working as a team.

Inferential and Critical Thinking

- Great Barrier Reef is bleaching because of Climate Change.
- How can we help save reefs, coral and endangered marine creatures?
- Why does Rosella Ava Bird go to Coralania?
- What part does the power of friendship play in Great Barrier Reef Rescue?
- How can Song Bird's super powers be explained by STEM science, engineering, technology and science fiction?

Literacy Skills

Word Building

- *Word Endings* – adding '*ed'- pleaded, flattened, zoomed, curled, reached, yelled, whistled, hummed, swerved, gripped, hovered, perched, whizzed, ,*
- Ending rule - change y to i – *bullied, terrified, scurried, hurried, emptied, worried,*
- Adding ING*: spinning, shimmering, trailing, rushing, spiralling,*
- Vocabulary ***Great Barrier Rescue****: Pacific Ocean, Green Turtle Island, dolphin, dugong, coral, boat, submarine, dive, swim, lighthouse, portal, flippers, waves.*
- Emotion Words: brave, feeling, screamed, heart thumping, worried, evil, worry, laugh, terrify grim, shiver, smile, cry, embarrass, bawl, terror, disappoint,
- High Frequency Words –*song, bird, flew, sang, super, kids, friend, family, brother, sister, Mum, Dad, save, rescue, find, wheelchair,*
- Onomatopoeia – (see Drama) CRACKLE, WHOP, BUMP, CLUNK, THUD, WHOOSH, CRUNCH, SCREECH, SLIDE, SKID, RATTLE, BZZZ, ZOOM, & more.

Grammar

- Naming Words – nouns – find the naming words in the story.
- Action Words – verbs – (see also Word Endings and Drama)

Comprehension

- Song Bird 4 Quiz Questions - Activity sheet
- Great Barrier Reef Quiz Questions - Activity sheet
- Aquatic Mythical Creatures Quiz Questions - Activity sheet
- Endangered marine creatures

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Literature

- Read fiction and non-fiction texts about reefs, seas, marine creatures
- What's the difference between fiction, fact, legends and myths? (ie fantasy aquatic creatures or characters).

Writing

- When did you help the waterways and beaches? What did you do? What challenges did you face? Write a true account or a story from your imagination.
- Have you ever wished you had SUPER Powers? What would YOU do?
- Acrostic Poem – REEF– RESCUE – CORAL – TURTLE
- Creative Writing Activity Sheets – Create a SUPER hero or SUPER villain

Maths

- SUPER maths race/ challenges with speed OR amount of sums completed
- How many sums can you complete in 10 minutes?
- Timer: how long does it take you to do 10 20 50 100 sums ….and get them right?
- Geometry: How do you draw Superhero symbols and logos? ie star, lightning bolt,
- **Mathematical Superpowers:** Times tables, problem solving, calculations, maths problems, fluency. **http://www.oakham-primary.rutland.sch.uk/mathematics/**

Craft

- Create Great Barrier Reef Rescue ***p*osters**. *Use textas, crayons, paint, pencil, collage, art paper, cardboard,*
- *Great Barrier Reef Diorama with living and non-living things (inside shoe box)*
- *Origami Fish – paperfolding square of coloured paper*
- *Create Superhero stick puppets*
- *Create Superhero masks/ logos*
- *Create Superhero* onomatopoeia *words and slogans*

Art

- Illustrate a scene from the text or from the story as outlined in *Writing.*
- ***Great Barrier Reef Rescue*** colour-in sheets using bright colours. Activity sheets

Drama

Body language:

- Show how to stand and walk likes a superhero. Hero pose: head up, smile, shoulders back, hands on hips.
- Walking a straight-line showing self-confidence: walking tall, shoulders back, chin up.
- Imitate real, villain & mythical marine creature movements: shark, dolphin, mermaid, Aqua Man/ Ocean Boy, Destructo's sneaking, dog robots.

Present ***Great Barrier Reef Rescue*** as a PLAY or pantomime.

Show range of GOOD emotions using facial expressions and hand gestures … Determined helpful, scared, sad, confident, assertive, friendly, guilty, proud, nervous, caring, **EVIL emotions:** unfriendly, mean, aggressive, frightening, scary, bully, black, slink, hide.

History

- Who were the first Superheroes? What is the history of DC and Marvel comics?
- ***Song Bird's Mentors –*** Leonardo Da Vinci (flying machines) & Amelia Earhar

Social Skills

- Discuss how to make and keep a friend?
- How can you work with a team … to succeed?
- How do friends and families look after each other?
- How can you be a Superhero in saving *Great Barrier Reef* and endangered marine creatures?

Cross Curricular

The Australian Government wants schools to increase student engagement in **STEM**

Science
Technology
Engineering
Mathematics

STEM Science

- List and draw: types of corals, marine animals, water vehicles
- Children sort garbage into recycling and perishables.
- Diary journal with drawings and notes on daily/ weekly care of an aquarium.
- How do you identify types of coral?

Great Barrier Reef … Hands on STEM Science activities.

SUPER POWERS

- How can SUPER powers be explained by STEM science?
- How does Song Bird fly? How does she lift up off the ground? How does she move?
- How is singing produced by your vocal chords? How is singing explained by science?
- How do you sing louder? higher? Hold a note for longer? How could singing shatter windows?

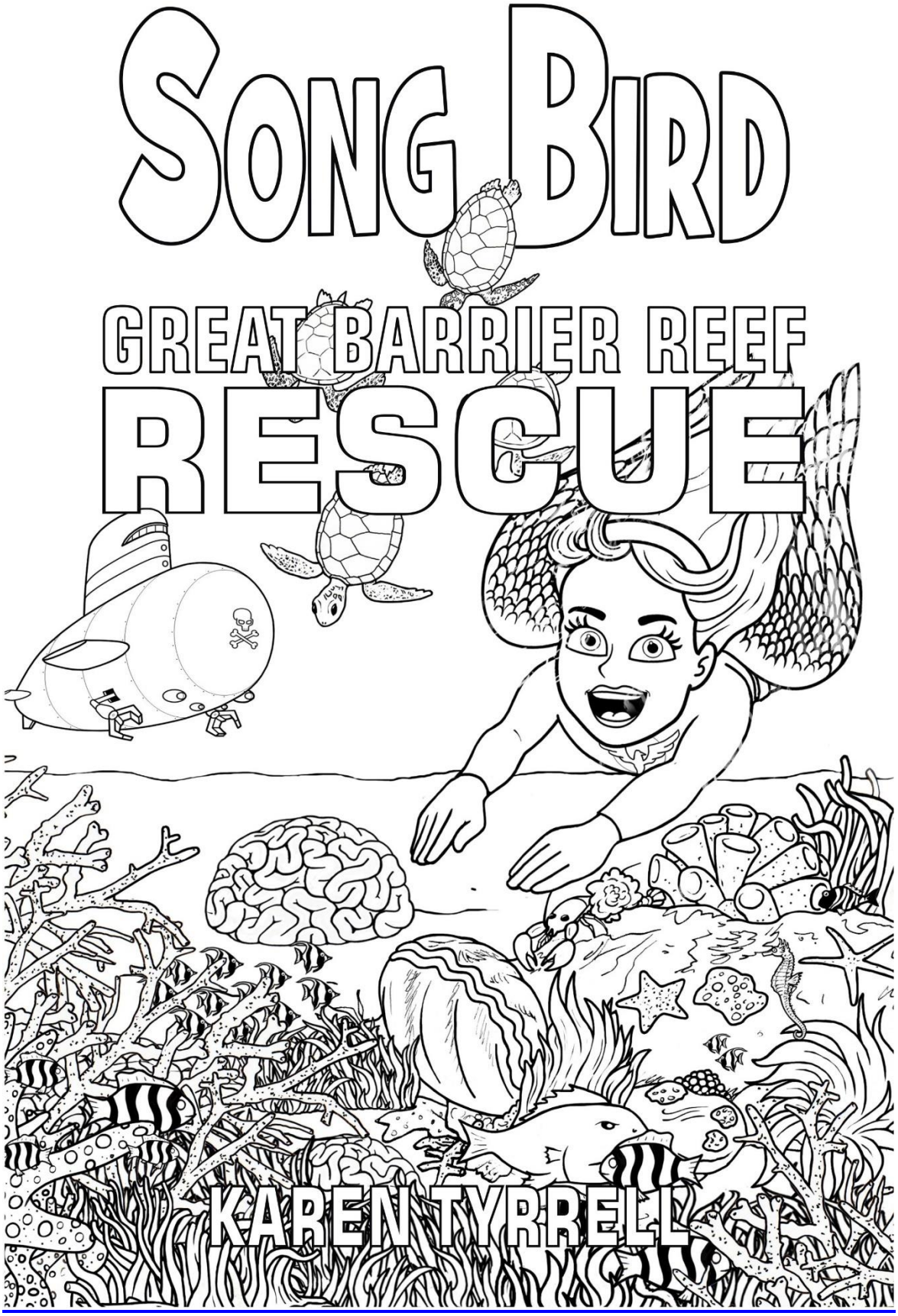
Links: STEM Science & Superpowers
10 Inventions that gave us Superpowers:
http://scienceonthego.griffith.edu.au/superpowers/

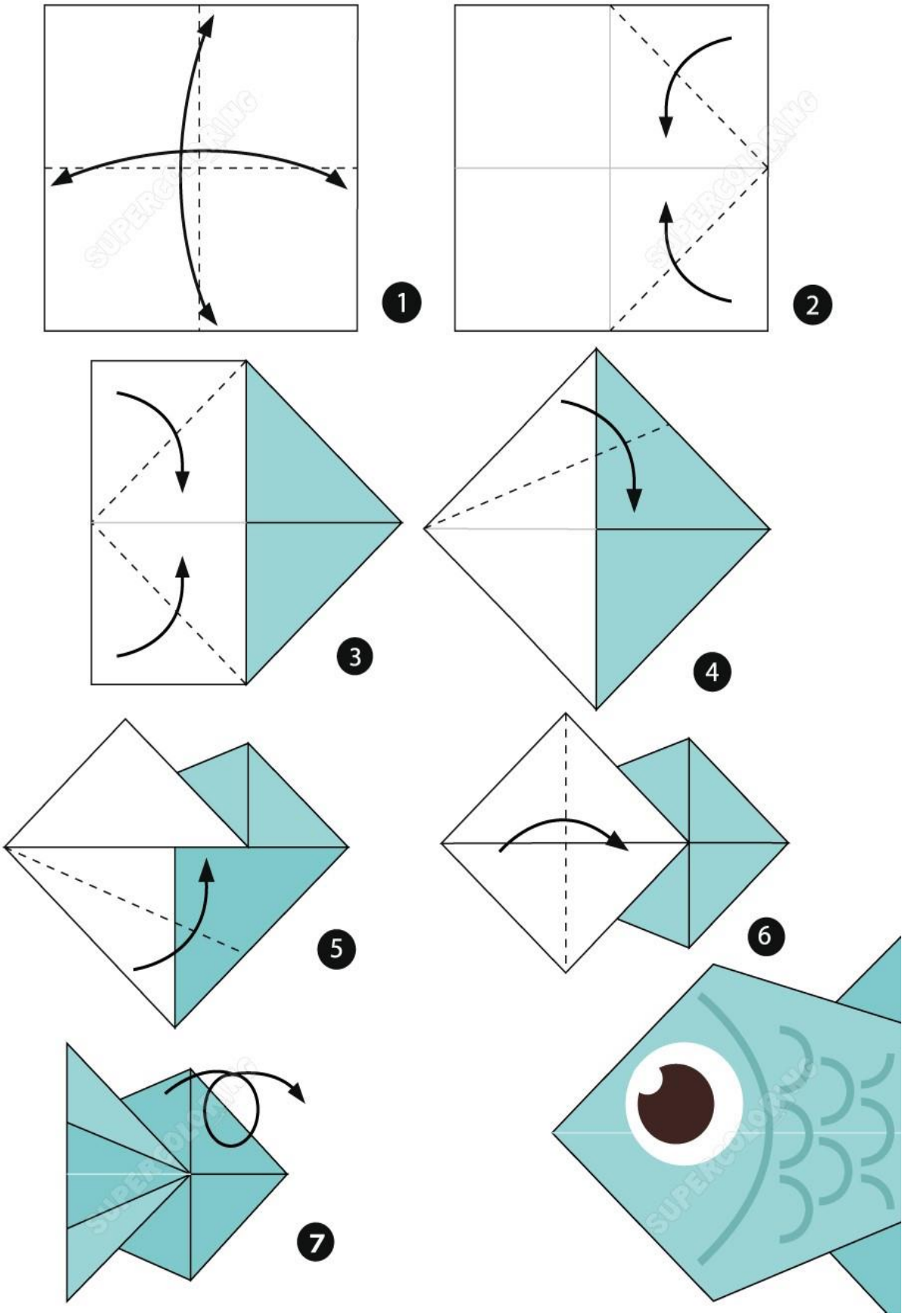
Science of Super Powers
http://www.stemfinity.com/The-Science-Of-Super-Powers-Camp
Science of Superpowers VIDEO **https://www.youtube.com/watch?v=JMhew8yRjvA**

Superpowers on Wiki **http://powerlisting.wikia.com/wiki/Superpower_Wiki**

Download the 'Love the Reef' APP at www.lovethereef.org packed with games, created by Queensland Government

SONG BIRD SUPERHERO. REEF DEFENDER.

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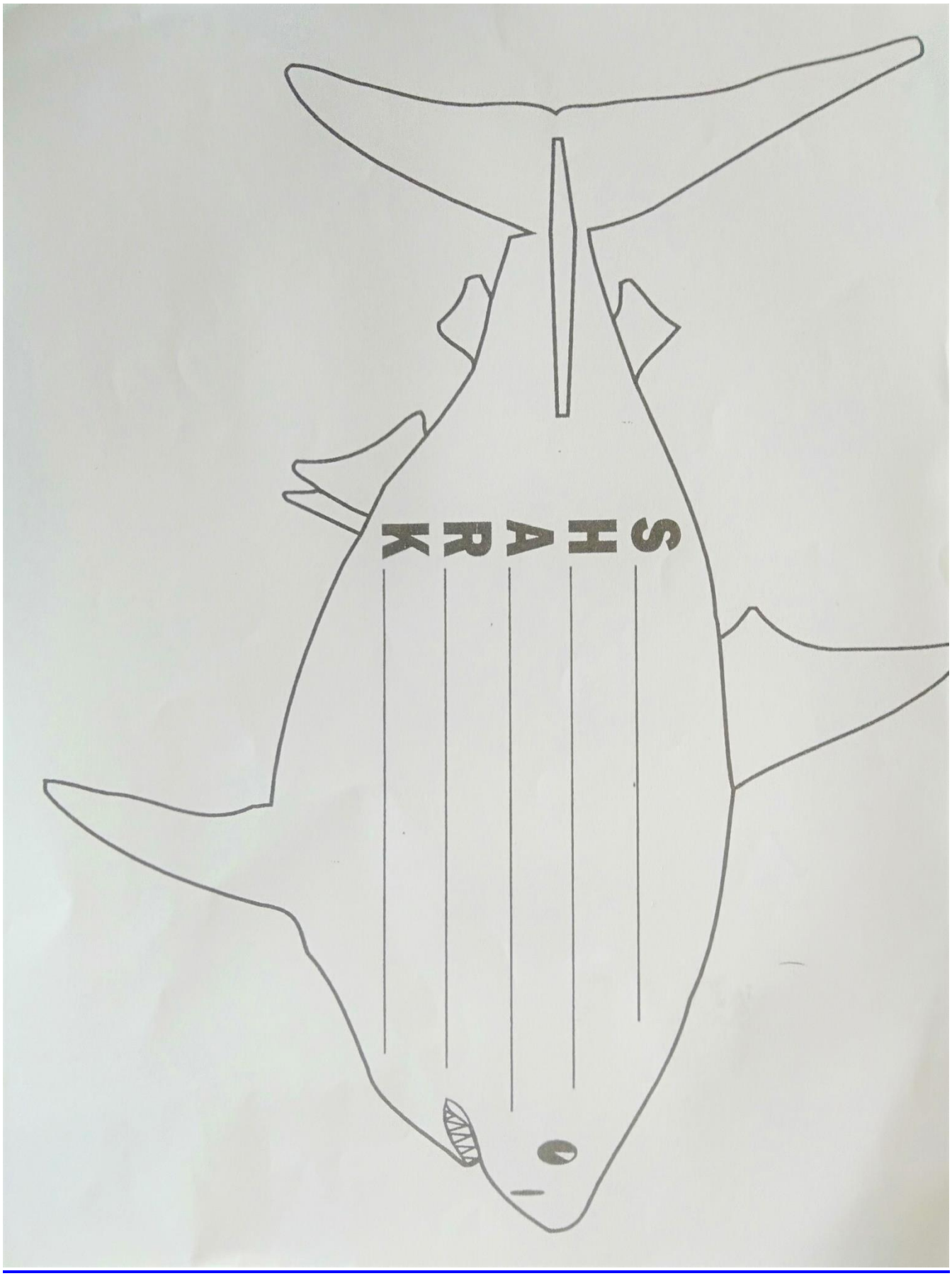

KRAIS

Beach Safety

Circle the correct answer.

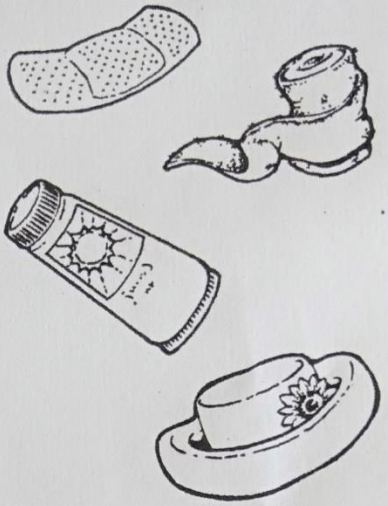
1. If you see a shark or hear a siren while swimming at the beach, you should
   - a. scream very loudly.
   - b. swim to shore quickly and quietly.
   - c. float out to sea.
2. If something stings you while you are swimming, you should
   - a. ignore it, it's probably nothing.
   - b. wait until it becomes painful.
   - c. treat the area immediately.

Complete the answers.

1. While you are in the sun, you should:
   - a. wear a tee-shirt;
   - b. wear a hat; and
   - c. _____
2. When swimming, always:
   - a. swim where your feet can touch the sea-floor;
   - b. swim between the flags; and
   - c. _____

_____

Unjumble these words and match them to the safety items.



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dadanbi

_____

nsutha

_____

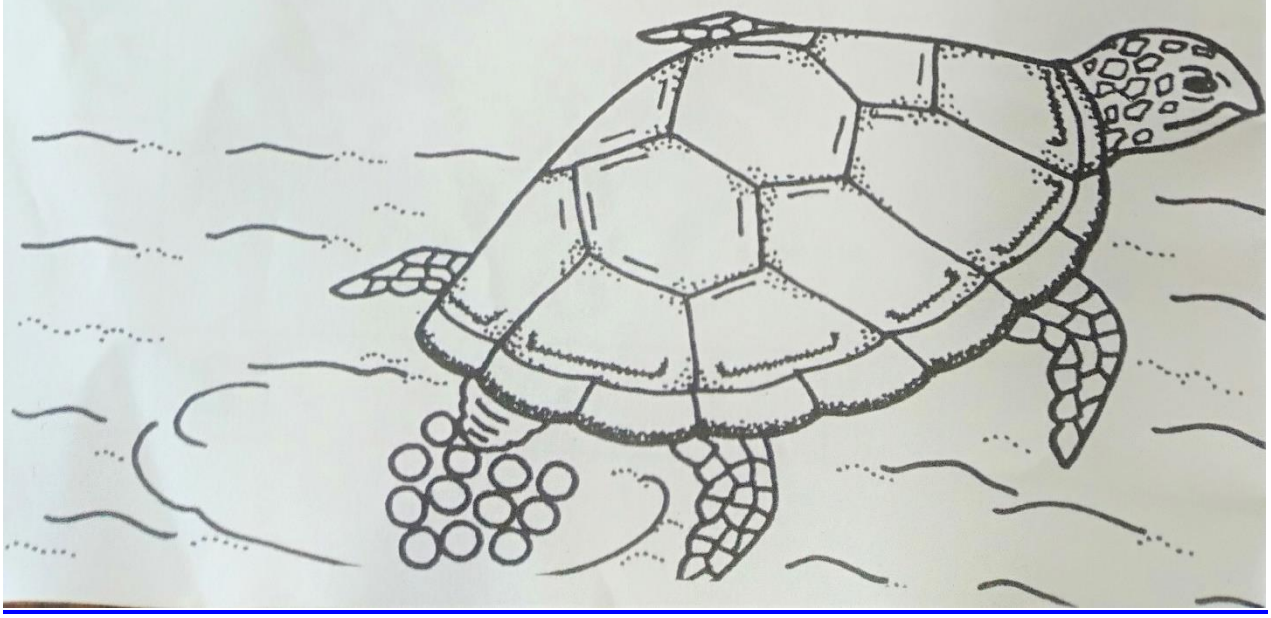
aaenbdg

_____

A TURTLE

1. A turtle is a reptile with cold _____.
   (blood, water)
2. A turtle has four _____. (feet, flipper
3. On its back is a hard _____.
   (shell, saddle)
4. It likes to eat _____. (fruit, fish)
5. A turtle swims in _____. (water, mud
6. A female turtle only comes on land to lay
   _____. (eggs, bricks)

Draw 12 more eggs in the hole.



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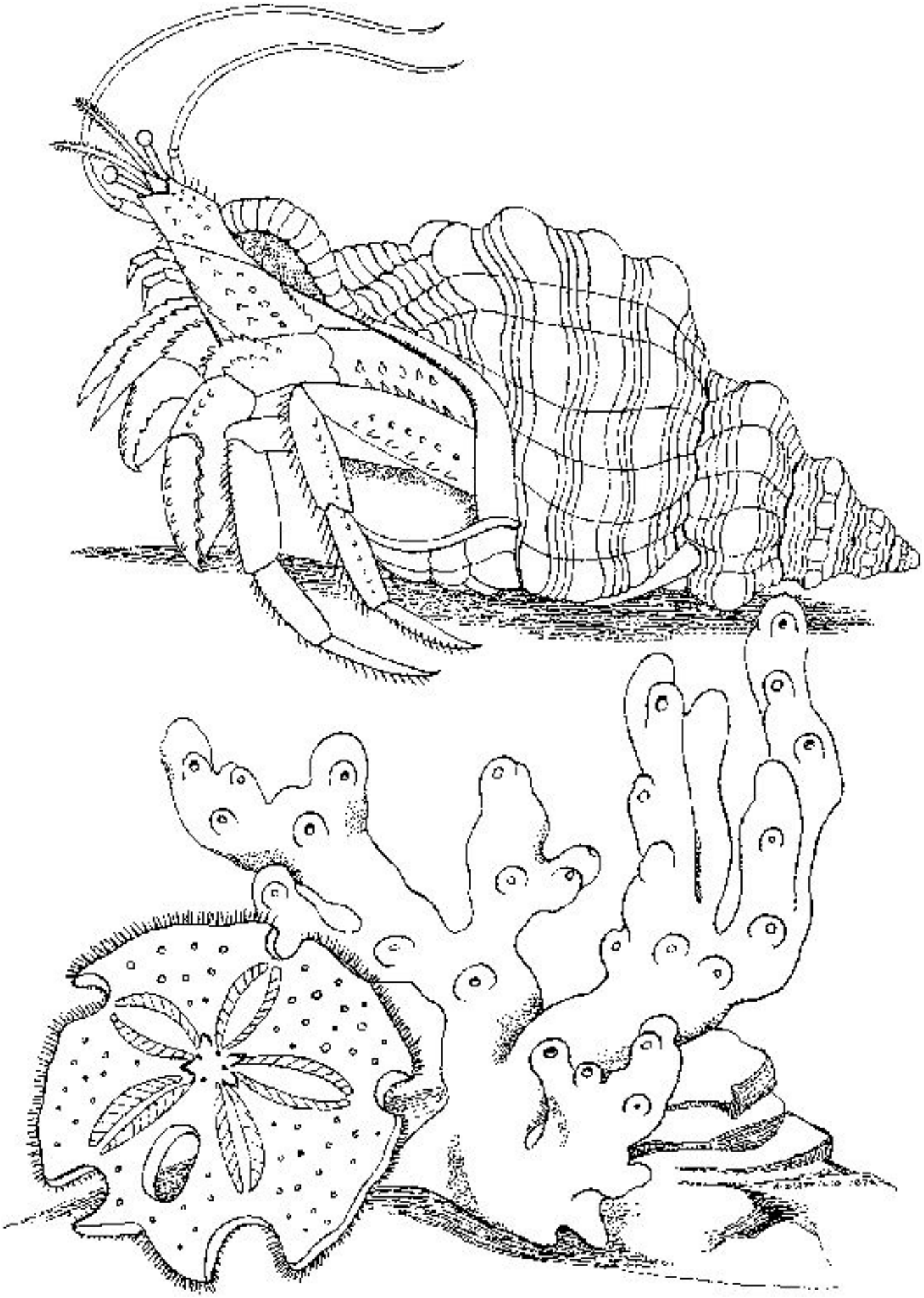
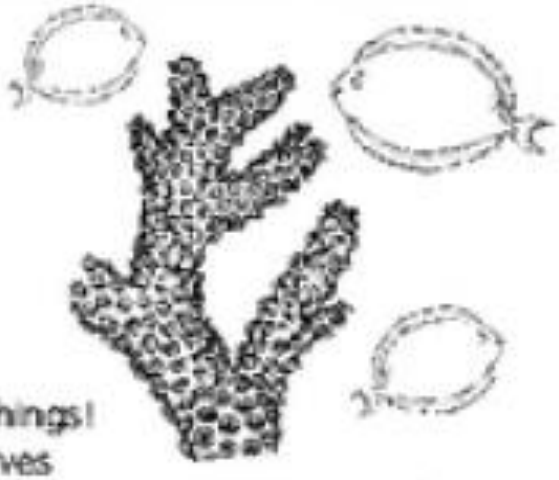


GREAT BARRIER REEF

WHAT IS THE GREAT BARRIER REEF?

The Great Barrier Reef is the largest coral reef in the world. It is 2300 kilometres long and is 180 metres high in some places. It covers a huge area of 35 million hectares - that's about 70 million football fields.



The Great Barrier Reef is not one single reef, but a system of about 3000 individual coral reefs and islands stretching from Cape York to Gladstone off the Queensland coast. Coral reefs are also found in other warm Australian waters.

Coral reefs do a number of amazing things!

- Reefs protect shorelines from big waves
- Are a safe place for fish to spawn (release eggs into the water)
- Provide habitats for a large variety of organisms
- Provide food for many people living along coastlines

What is the Great Barrier Reef? _____

_____

_____

Where is it located? _____

_____

_____

How big is it? _____

_____

About the Great Barrier Reef - Geography Hidden Word Game For Kids

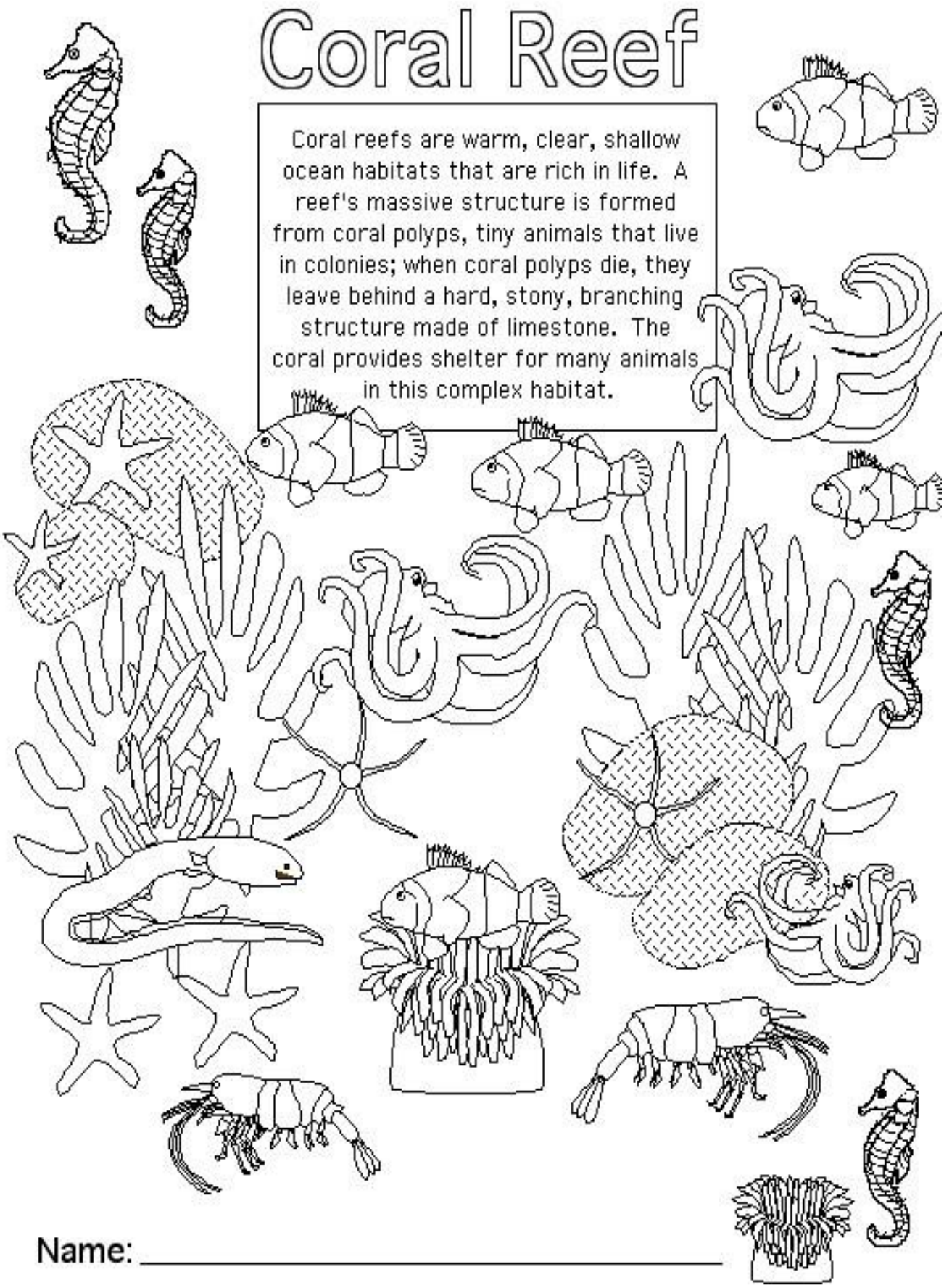
Read the sentences below. Visit our Easy Geography for Kids page The Great Barrier Reef to find the missing words.
Write them in the empty spaces and find these hidden words in the puzzle!
[Words might be hidden horizontally, vertically and perhaps even back to front...!]

1. **The _____ is at least 20,000 years old.**
2. **Coral reefs provide _____ for thousands of animals.**
3. **The Great Barrier Reef is a world _____ site. It is protected from _____.**
4. **_____ and birds come here to lay their eggs and butterflies come in _____ to rest over the _____.**
5. **Coral are marine animals that make calcium _____, which forms a hard _____.**
6. **The reef is home to 400 different kinds of coral, as well as fish, birds, worms and _____.**

A	L	L	E	H	S	G	A	S	R	E	T	L	E	H	S
D	F	H	E	R	I	T	A	G	E	J	A	C	K	S	T
F	I	S	H	I	N	G	I	S	W	A	R	M	S	G	O
W	I	N	T	E	R	W	A	T	E	R	S	H	E	F	D
S	H	E	B	N	M	S	E	L	T	R	U	T	A	E	S
C	A	R	B	O	N	A	T	E	B	R	O	W	N	E	D
A	S	T	N	I	C	R	U	S	T	A	C	E	A	N	S
G	R	E	A	T	B	A	R	R	I	E	R	R	E	E	F

Coral Reef

Coral reefs are warm, clear, shallow ocean habitats that are rich in life. A reef's massive structure is formed from coral polyps, tiny animals that live in colonies; when coral polyps die, they leave behind a hard, stony, branching structure made of limestone. The coral provides shelter for many animals in this complex habitat.



Name: _____

Name: _____ Date: _____ Class: _____

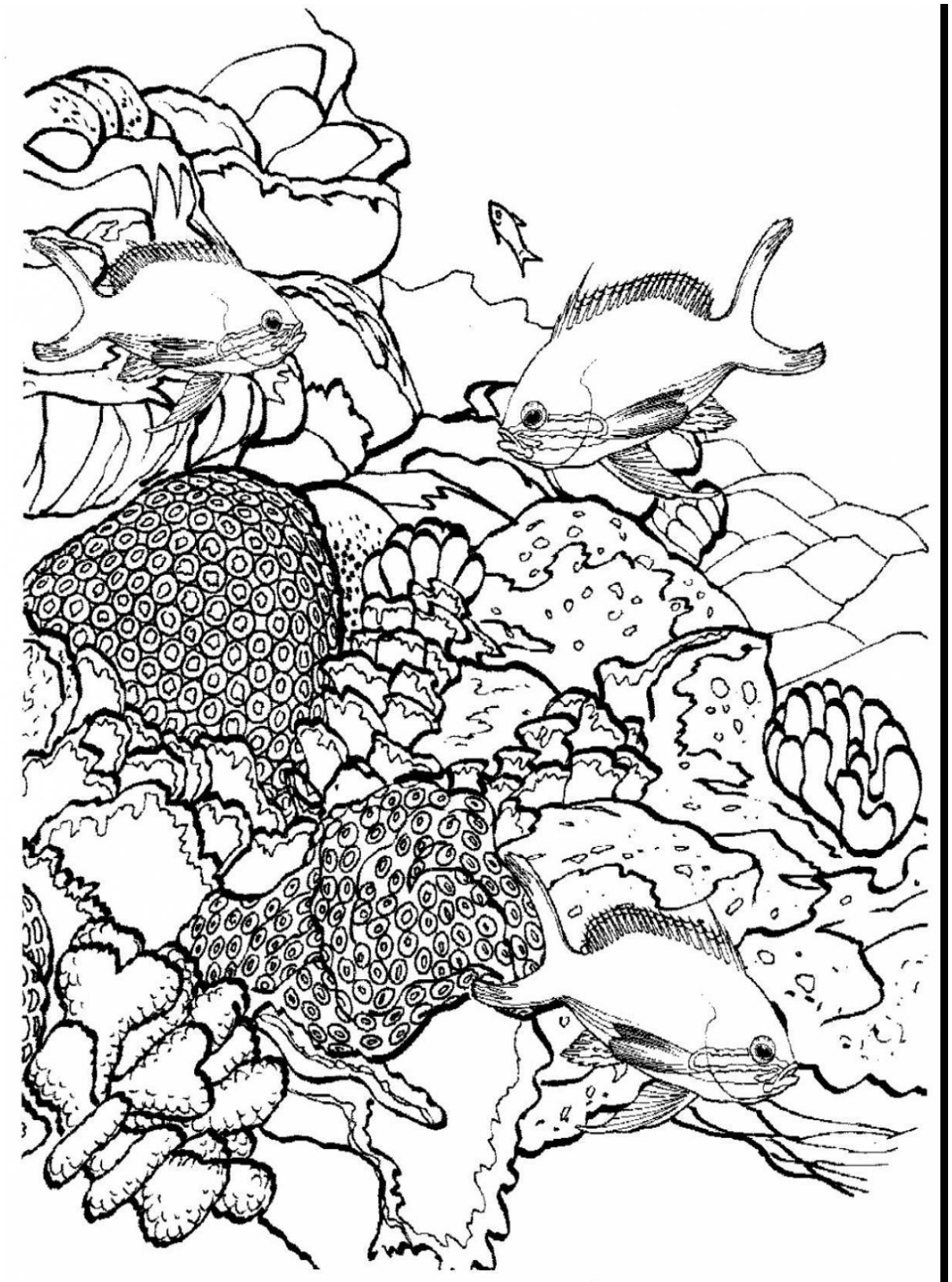
Australia

Word Search Puzzle

K L M A C T X C B D Z J P D W H C X Q D E K R J Z
B G R B Z J D O B K L Y J E J F W G N C N C U U N
O H D F G S J K J P K E A O R N S I K L R A H F S
L U R A U I A U V E R I D A F T W X J U U B Q Q E
N J D Z H R S I Y N N T E I S R H D O Z O T C Z R
T H G I B N A I L A R T S U A T A E R G B U A B N
N V Q B Y A H V M A Y M R D I L V Z W A L O N C F
L S X S R P N S Z F R Y A X E Z E M J Q E K B D V
F B B K O I A Y B C W T G U B Q E D K H M Y E M B
P N R Z O T S N C R D I S N G C N Y A I C G R P T
S Z F B U Z L B R G U V U U T I M O R S E A R G J
K E E R Y E E K A L E O B O A G F X B Z L Z A U F
T I Y L H E C X H N K A M V G K C Z D C H X B L B
G U L F O F C A R P E N T A R I A S Y D N E Y M Z
Y W B L G B K F E E R R E I R R A B T A E R G R B

Adelaide
Australia
Brisbane
Canberra
Darwin
Great Australian Bight
Great Barrier Reef
Gulf of Carpentaria
Lake Eyre
Melbourne
Outback
Perth
Sydney
Tasmania
Timor Sea


Follow the Tide
Marine Biodiversity Exhibition
Save our sealife! Can you find the things that do not belong in the picture?
Festival of Biodiversity
To learn more about the Festival visit http://www.nparks.gov.sg/festivalofbiodiversity
Illustration by Tan Ong Hoon



The largest coral reef is the OK Barrier Reef in Australia.

Useful Websites	**Useful Books**
The Great Barrier Reef Marine Park Authority www.gbrmpa.gov.au Canisius College Ambassadors for Conservation – excellent information about animal and plant relationships on the Great Barrier Reef www.conservenature.org National Geographic – quality images of marine life and of images of polluted waters that could be used for discussion www.nationalgeographic.com PBS – a good interactive activity to show symbiotic relationships http://www.pbs.org/wgbh/evolution/survival/coral/ YouTube link – filmed on the Great Barrier Reef. Good images of coral spawning http://www.youtube.com/watch?v=eRZczb96uDo&feature=related YouTube link – filmed on Ningaloo Reef http://www.youtube.com/watch?v=JYm_WV8-CbU&feature=related YouTube link – good National Geographic clip showing many aspects of the reef http://www.youtube.com/watch?v=wbNeIn3vVKM&feature=fvwrel Queensland Wetlands Program www.wetlandinfo.derm.qld.gov.au	*I'm the biggest thing in the Ocean*, Kevin Sherry (also see YouTube clip) *One Less Fish*, Kim Michelle Toft and Allan Sheather *The Great Barrier Reef Book Solar Powered*, Mark Norman *The World That we Want*, Kim Michelle Toft *Big Picture Book of the Great Barrier Reef*, Steve Parish *Dhyum the Dugong*, Mariana Fuentes

Great Barrier Reef Curriculum Links

https://www.pinterest.com.au/pin/159877855494598063/Great Barrier Reef

http://marinewaters.fish.wa.gov.au/resources/coral-reefs/#.W6sgEvYRU2w

http://www.qm.qld.gov.au/Learning+Resources/Resources#.W6sgTfYRU2w

https://www.teachermagazine.com.au/articles/lesson-planning-events-and-themes-for-2018

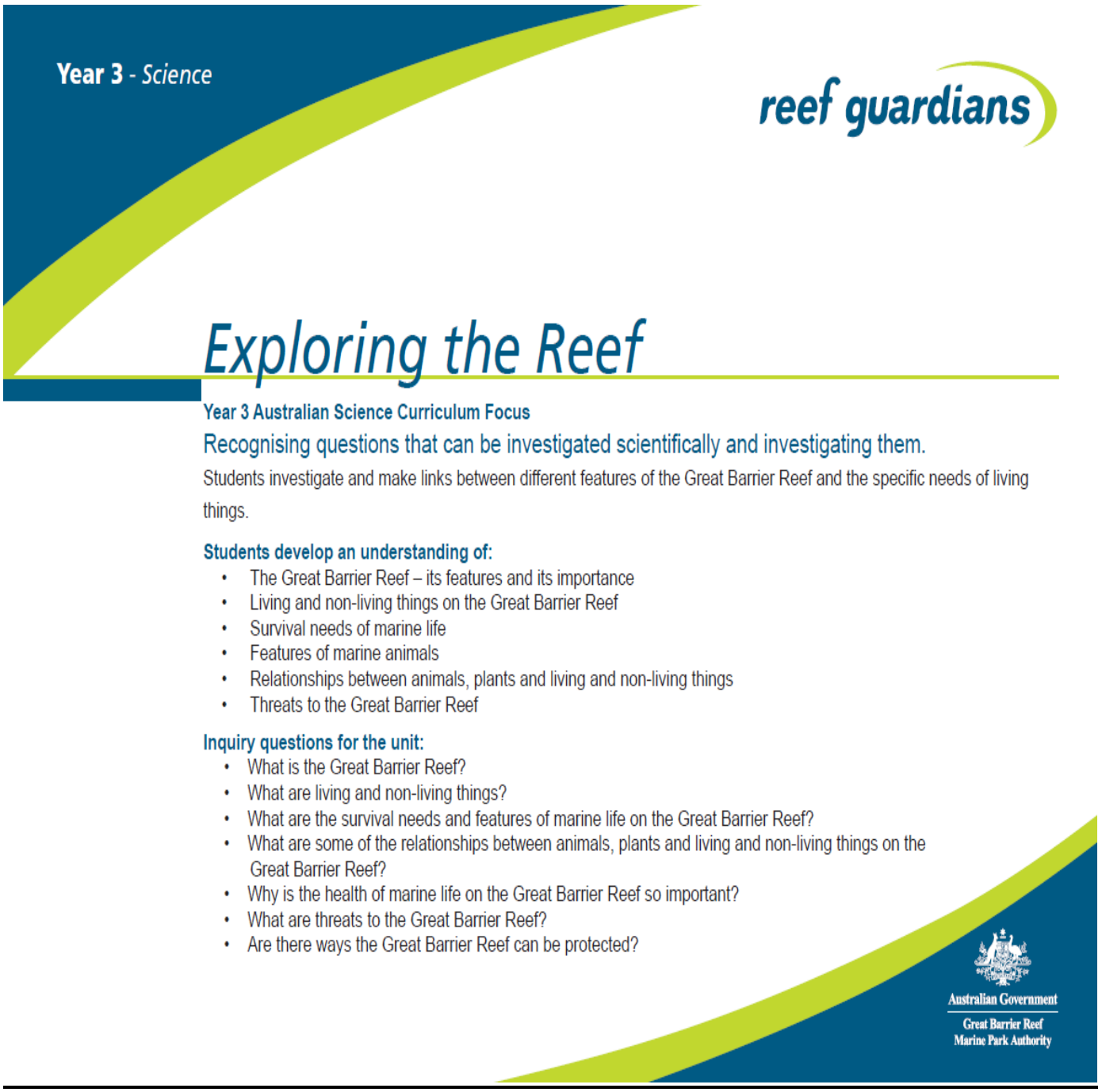
http://www.olliesworld.com/

https://wetlandinfo.ehp.qld.gov.au/wetlands/resources/education/

http://www.ga.gov.au/about/projects/marine/northern-australia-bathymetry

Reef Guardians: Great Barrier Reef Marine Park Authority

www.gbrmpa.gov.au



Resource 2 – Fish Fact Sheet

Information and images sourced from the Great Barrier Reef Marine Park Authority – www.gbrmpa.gov.au

Fish

The Great Barrier Reef is home to approximately 1500 different types of fish. The fish on the Great Barrier Reef come in all sorts of shapes, sizes and colours. They are a very important source of food for reef predators and for humans as well. Fish also keep reefs healthy by eating algae and other organisms that can overgrow corals.

Types of Fish

The coral reef contains more species of fish than any other marine habitat. They can be divided into six broad categories:

- **Colourful coral associates** like clown anemone fish and butterfly fish
- **Cryptic fish like** blennies, gobies and seahorses that are hard to see because of their camouflage or where they live
- **Grazing fish** like blue tangs, parrotfish and wrasse
- **Pelagic reef associates** like batfish and fusiliers
- **Reef predators** like snapper, emperors, cod, grouper and sharks
- **Nocturnal and cave dwellers** such as eels, scorpion fish, squirrelfish and soldier fish.

Fish Characteristics

The characteristics of a fish include a skeleton made of bone or cartilage, gill openings on each side of the head and a swim bladder. Fish vary widely in size, shape, colour and behaviour. Most fish are covered in scales. A fish's skin or scales protect it from the salty environment in which it lives, and help it to move more efficiently through the water. Reef fish are able to see colour. Their bright colours are important for fish to recognise each other and be protected from each other. Colour patterns can act as a warning to other animals that some fish are poisonous, for example, fire fish. The use of colour as camouflage helps fish to hunt prey and hide from predators. Flatfish, such as rabbit fish, are able to change their colour patterns to suit the colour of the surface they are resting on. Lizardfish are so well camouflaged that smaller fish don't see them until it's too late and they become a meal.

Life Cycle

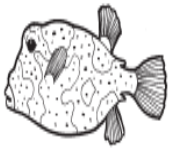
The majority of fish species on the Great Barrier Reef produce a mass of tiny eggs which float away, and never have any further contact with their parents. Most species release large quantities of eggs into the water each year. The eggs float in the water until they are ready to hatch. When the eggs hatch, most baby fish are on their own and they know instinctively how to swim and find food.

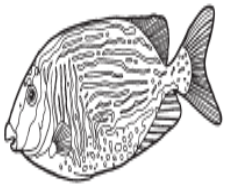
Feeding

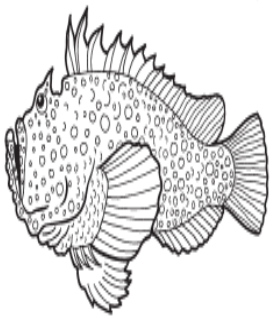
Fish feed on almost all available food on the reef ranging from algae to other fish.

Protection

Reef animals use their shapes, body parts and behaviour in many different ways to help them survive. Many fish have protective spines. The surgeon fish have very sharp 'blades' at the base of their tails. Members of the scorpion fish family have poisonous spines on their dorsal fins that give powerful stings. The well camouflaged stonefish have strong dorsal spines and potent venom.







Resource 9 – Exploring the Reef Task Sheet - *Year 3 Science Report*

Your Task:

Create a diorama or a drawing of a Great Barrier Reef habitat. You will also write a report on a symbiotic relationship found on the Great Barrier Reef.

Your diorama or drawing will need to include:

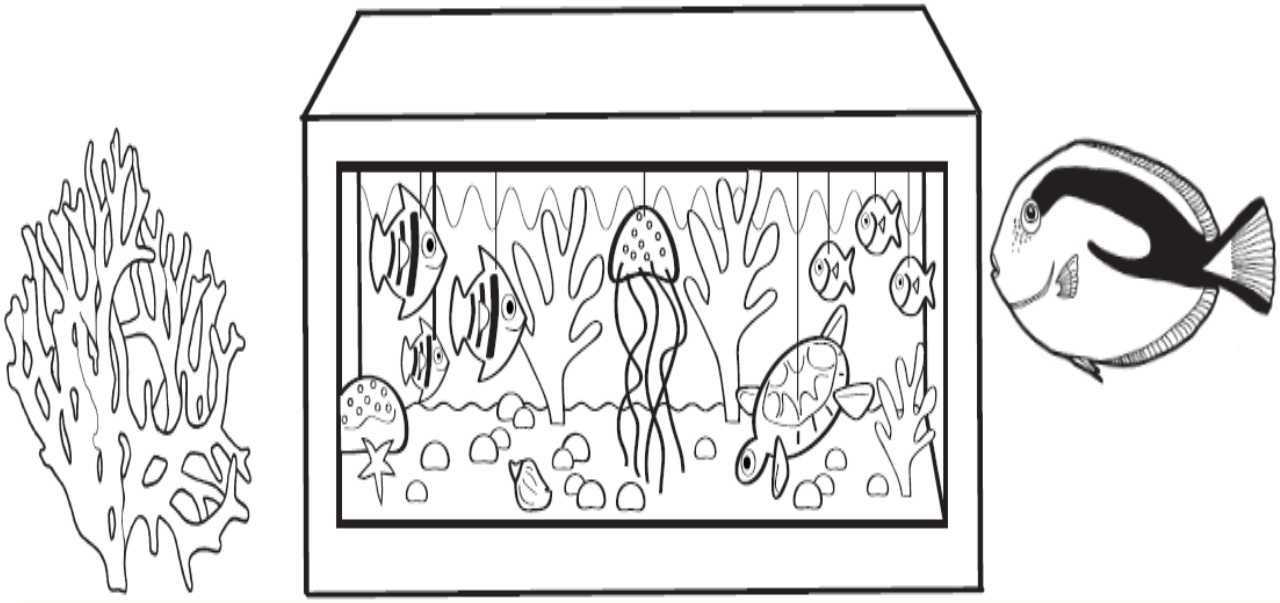
1. Living and non-living things found on the Great Barrier Reef
2. Living and non-living things in your diorama or drawing will need to be labelled with a name and some characteristics (e.g. colour, where it lives, what it eats, what are some of its uses)
3. An example of a symbiotic relationship.

Your report will need to include:

1. An explanation of the symbiotic relationship
2. An explanation of why the symbiotic relationship is important to the Great Barrier Reef
3. An explanation of a threat to the animals in your diorama or drawing. Who or what causes the threat? How does the threat impact the animals?
4. Give ideas about how the threat could be fixed.

What is a diorama?

A diorama is a 3D model that represents the chosen topic. If you do a diorama of the Great Barrier Reef, you will need to make images of living and non-living things found on the Great Barrier Reef to build a 3D model.



Resource 7 – Games

Turtle Danger Game – the aim of the game is to assist students in learning that marine turtles face many pressures to survive.

You will need:

- A large area to run around
- Markers to identify the beach, the sea, a safety strip on the beach side and a safety strip on the sea side (see diagram below)
- A whistle

How to play:

- Discuss with students what dangers marine turtles face as they hatch from their eggs and try to get to the sea. Identify five different dangers e.g. wild pigs, people, birds, crabs, cars.
- Choose five students to be one of the dangers. The rest of the students are hatchlings.
- The hatchlings start on the safety strip on the beach side. When the whistle blows they have to get to the safety strip on the other side of the ocean without getting caught by a danger. If tagged, the hatchling has to sit down out of the game.
- Have a second discussion with the students to identify dangers the marine turtles face in the ocean as they are growing up. Identify five different dangers e.g. sharks, fishing nets, boat propellers, crocodiles, oil pollution.
- Now that the marine turtles are mature they need to get back to the beach safely to lay eggs and start the cycle again. When the whistle blows the mature marine turtles need to get back to the safety strip on the beach without getting tagged by one of the dangers. If tagged, the mature turtle has to sit down out of the game.
- Discuss how many marine turtles survived out of how many were originally hatchlings.
- The activity could be adapted by allowing more dangers to see if this affects how many hatchlings or mature marine turtles are caught. This could lead into a discussion about turtle populations on the Great Barrier Reef.

Resource 1 – Coral Fact Sheet

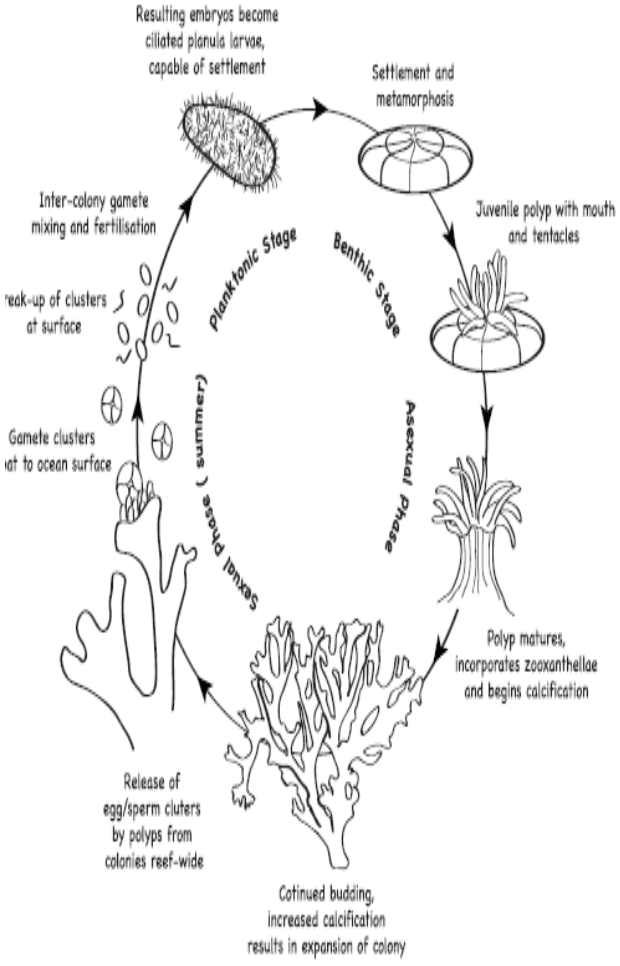
Information and images sourced from the Great Barrier Reef Marine Park Authority – www.gbrmpa.gov.au

Coral

Corals are magnificent creatures. They are responsible for the formation of the Great Barrier Reef. About 400 different kinds of coral are found on the Great Barrier Reef. They come in many different colours, shapes and sizes. Corals can be hard or soft. Corals are an animal that remain in one place throughout their lifetime. Like most creatures, corals need food, water, shelter and sunlight to survive.

Life Cycle

Corals reproduce by spawning eggs.These eggs float through the water until they find a good place to settle on the ocean floor or on top of other corals. Once the egg has settled, it starts to grow into a large colony of coral. Coral grows slowly and can take many years to develop into the large coral colonies you can see on the reef. Some of the really big corals are hundreds of years old.



Feeding

Corals eat tiny animals which drift around in the water. These tiny animals are called zooplankton. Corals also eat very small fish. These animals are caught by the coral's tentacles that are full of specialised stinging cells. The coral lets out its tentacles at night to catch zooplankton and small fish. Corals get most of their food from the tiny plants called zooxanthellae that live inside the coral's cells. Like plants, zooxanthellae use the sun to make food for themselves and the coral. This is why it is very important for coral to live in clear, clean shallow waters where they can get lots of sunlight.

Colouring

Corals can be a variety of beautiful colours. Some corals have orange, yellow, green, blue, red or purple colouring (pigment) in their tissue (their body). They also get their colour from the plants, zooxanthellae, which live inside the coral's cells. The zooxanthellae give many corals their brownish colour. The zooxanthellae only live inside healthy coral.

Threats to Coral

Pollution –Oil and chemicals used at home can be washed down drains and out onto the Great Barrier Reef. Litter from people camping on the beach or thrown out of their boat at sea can be swept up by the waves and washed out to the Great Barrier Reef. Pollution, including pesticides and chemicals are washed out onto the Great Barrier Reef after rainfall, where they can cause huge problems to many animals and plants on the Reef.

Anchor Damage – When people anchor their boats on the Great Barrier Reef they need to make sure they use the right anchor and do not damage the coral. Careless anchoring can damage the coral. Chains and anchors can drag along the coral and easily break the coral. It may take years for the coral to grow back.

Climate Change – Changes in weather patterns around the world mean that the temperature in the ocean is rising. Coral is very sensitive to changes in the water temperature. If the water temperature on the Great Barrier Reef increases too much, the coral will stress and the zooxanthellae will leave the coral. This is called coral bleaching. If the water stays warm for too long, the zooxanthellae will not come back to the bleached coral. Without the zooxanthellae, the coral will starve and die.