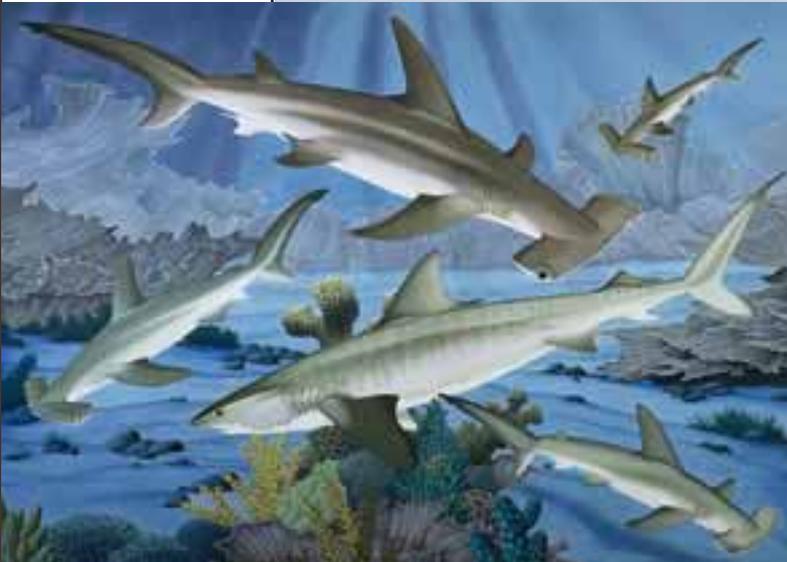


Sharks and Safety in Queensland



This booklet is written for young Australians who have an interest in the ocean's top predator. It is intended to introduce the shark as part of the ocean's natural environment.

Here in Queensland, going to the beach is part of our way of life. Like all outdoor activities care needs to be taken when swimming or surfing in the ocean. By understanding what is in the water and observing some simple rules, these activities will be a safe and enjoyable experience.

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The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland's primary industries on a sustainable basis.

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Sharks and Safety in Queensland

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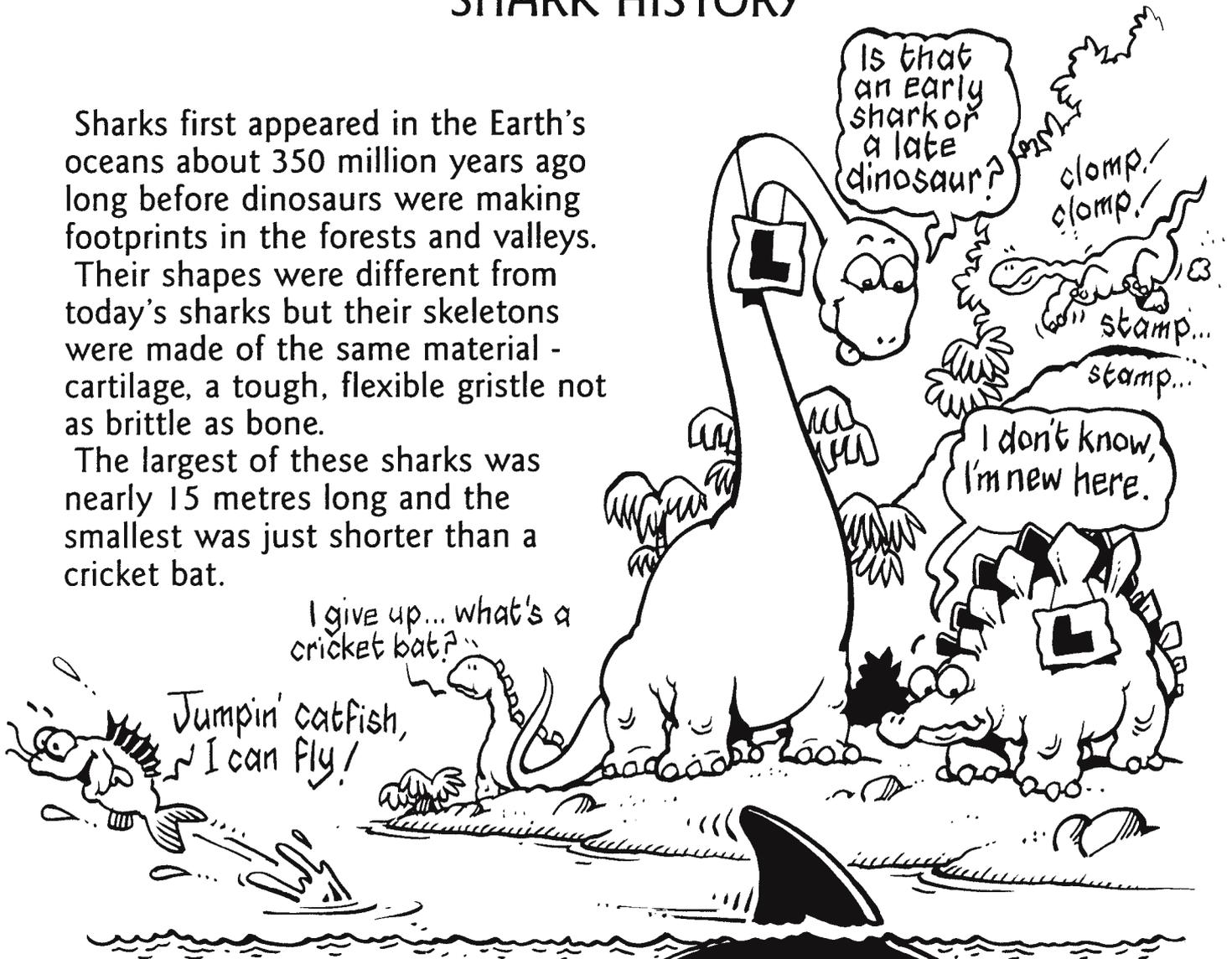
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SHARK HISTORY

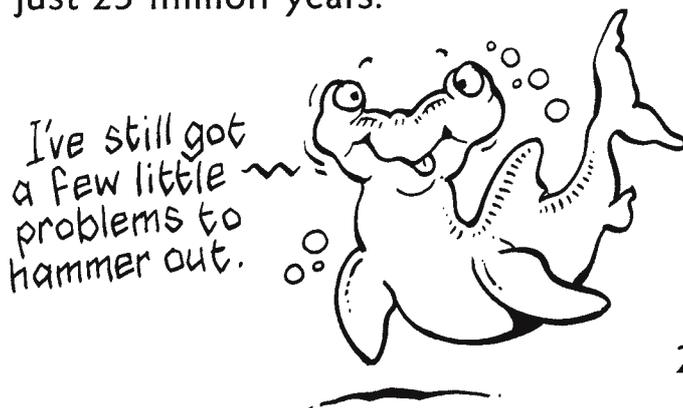
Sharks first appeared in the Earth's oceans about 350 million years ago long before dinosaurs were making footprints in the forests and valleys.

Their shapes were different from today's sharks but their skeletons were made of the same material - cartilage, a tough, flexible gristle not as brittle as bone.

The largest of these sharks was nearly 15 metres long and the smallest was just shorter than a cricket bat.

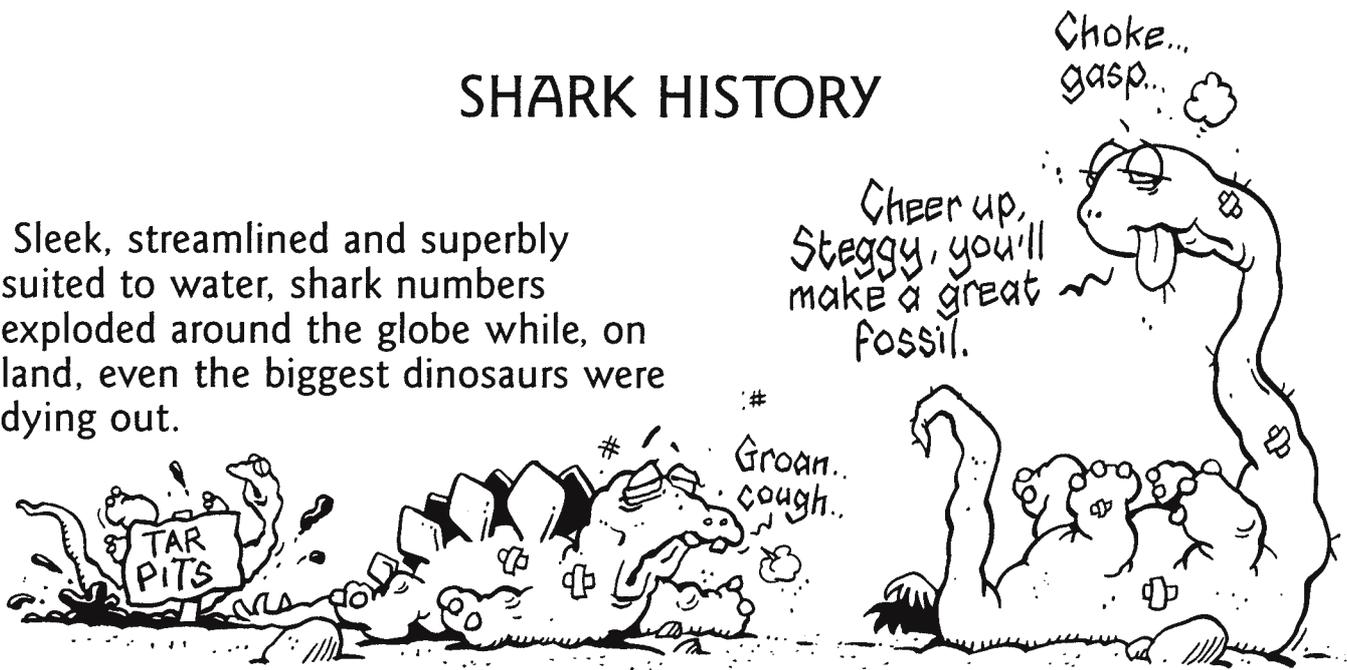


'Modern' sharks have been around for roughly 135 million years and the Hammerheads even less than that, just 25 million years.

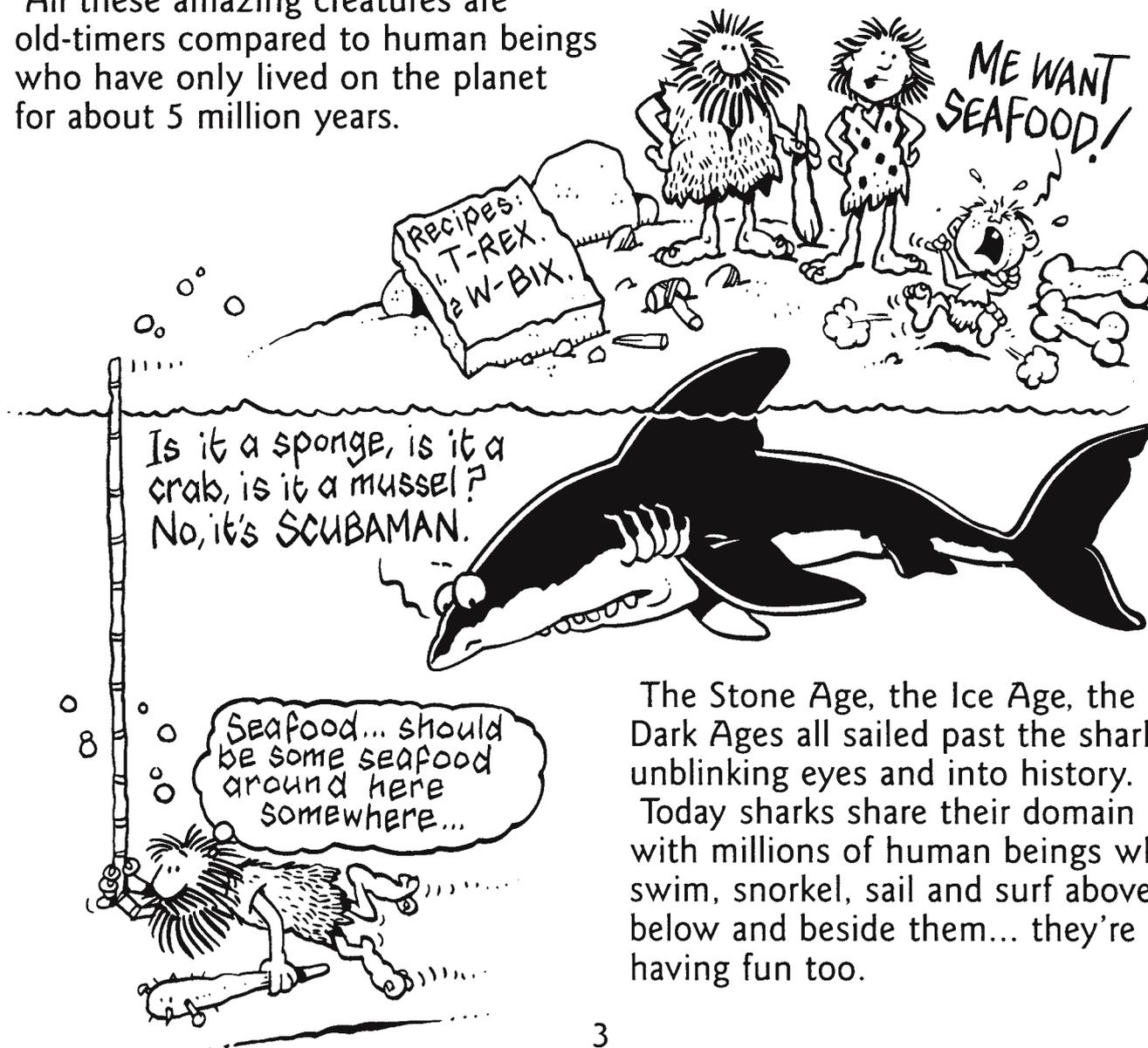


SHARK HISTORY

Sleek, streamlined and superbly suited to water, shark numbers exploded around the globe while, on land, even the biggest dinosaurs were dying out.



All these amazing creatures are old-timers compared to human beings who have only lived on the planet for about 5 million years.



The Stone Age, the Ice Age, the Dark Ages all sailed past the shark's unblinking eyes and into history. Today sharks share their domain with millions of human beings who swim, snorkel, sail and surf above, below and beside them... they're having fun too.

SHARK HABITS AND HABITATS

Sharks live in all the world's oceans from the warm tropics to the icy polar waters, from the blue-black depths to the emerald green shallows and some have even been found thousands of kilometres up freshwater rivers.

The average cruising speed of most sharks is about 3 or 4 kilometres per hour but, with a few flicks of the tail, some sharks can top 35kph in short bursts.



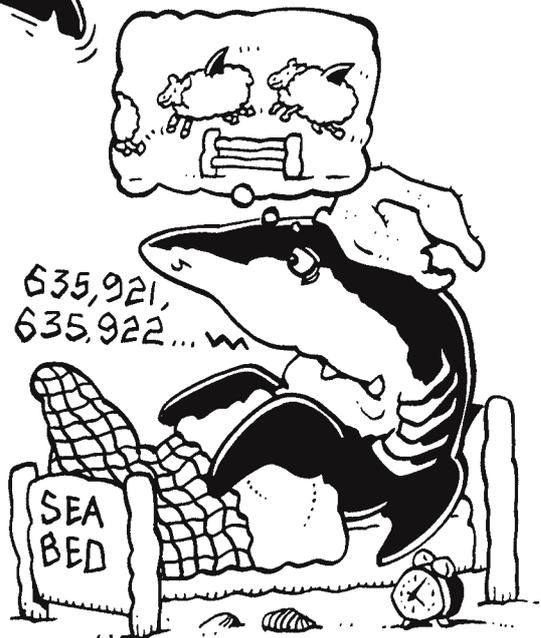
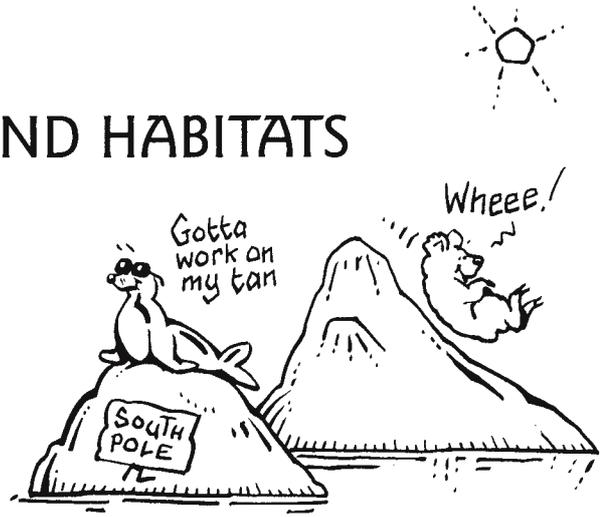
Oops... better not flick my tail

Most sharks must keep swimming in order to breathe. Oxygen is taken from water passing through the mouth and out of gill slits on each side of it's head as the shark surges forward.

If the shark stops still it ceases taking in oxygen and quickly suffocates...so they never sleep but at least they don't snore.

A small number of sharks can remain stationary on the sea-bed because they are able to breathe using the same mouth and gill pattern as other fish.

Cool water has more oxygen than warm water so a shark may swim a little slower in cold water and still get all the oxygen it needs.



SHARK HABITS AND HABITATS

Sharks are carnivores, this means they prefer to eat live food although they have been known to swallow a wild assortment of things including dead sea creatures, boat parts, plastic bottles, tins, watches...

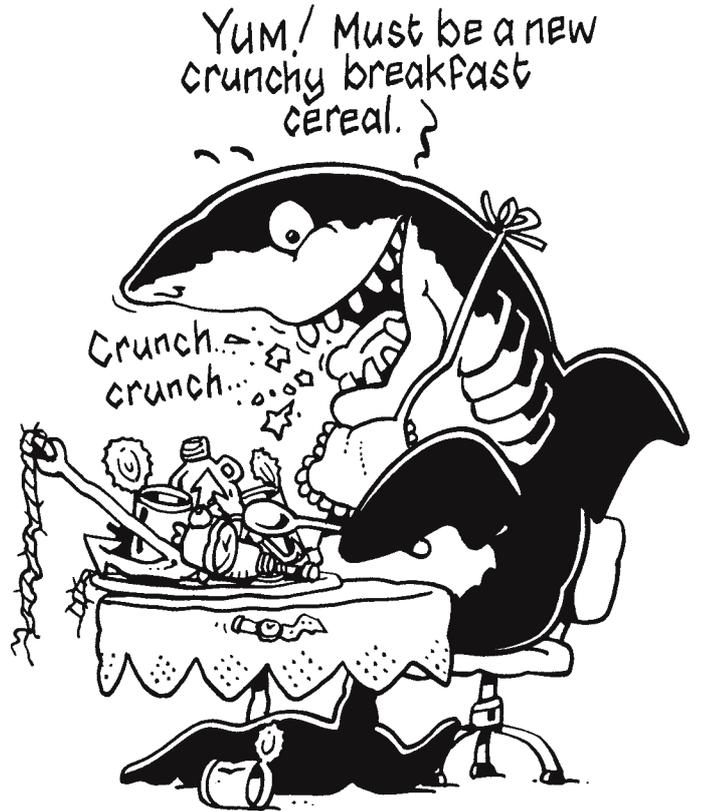
Sharks may hunt alone or in groups called schools, they don't eat for fun and most sharks are harmless to human beings.

They often feed between early dusk and dawn so that's not a great time to try out your new bathing togs.

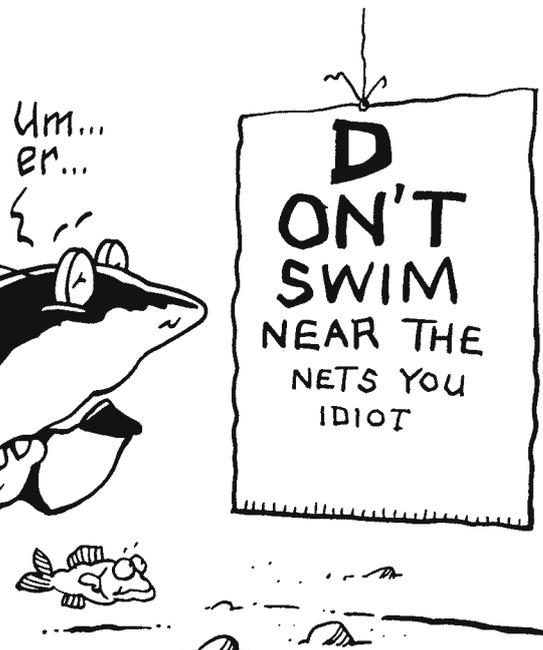
Some kinds of sharks feed at all times of the day.



Because of the darkness sharks sometimes get tangled at night in the long nets that protect popular bathing beaches. The mesh stops them swimming or using their gills and they die quickly from lack of oxygen.

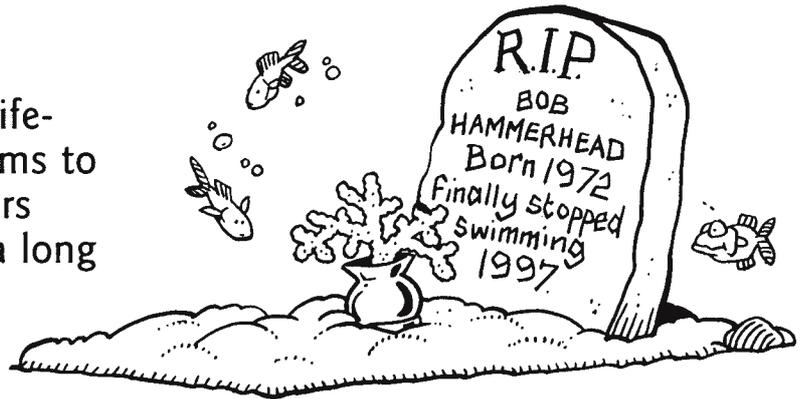


Broken teeth are constantly and quickly renewed and, in its lifetime, a shark can use up hundreds of sets. Imagine, no fillings, drilling or false teeth. FANTASTIC!



HOW A SHARK WORKS

Not a lot is known about the life-span of sharks but research seems to indicate they average 20-30 years with some as old as 70, that's a long time to swim without a rest though...

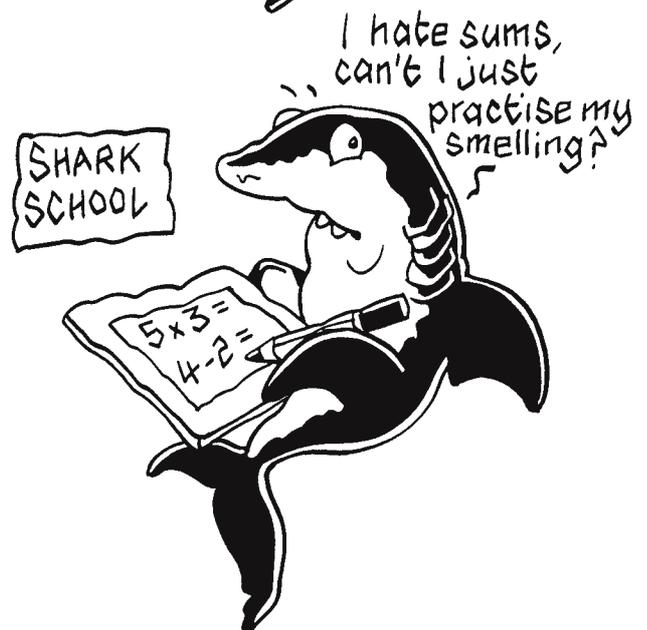


Baby sharks are called pups and are usually born in litters of between 4 and 10, but litters of 20 or more occur in some species. Also a small number of sharks lay eggs among the sea grasses, on rocks and coral. When it's time, baby sharks hatch out of these shells and begin their lives with all the other sea dwellers. The eggs of the whale shark can be up to 40cm long!



Sharks see better than we do underwater and their eyes always seem to be staring because they can't blink like we can, their eyelids don't close at all.

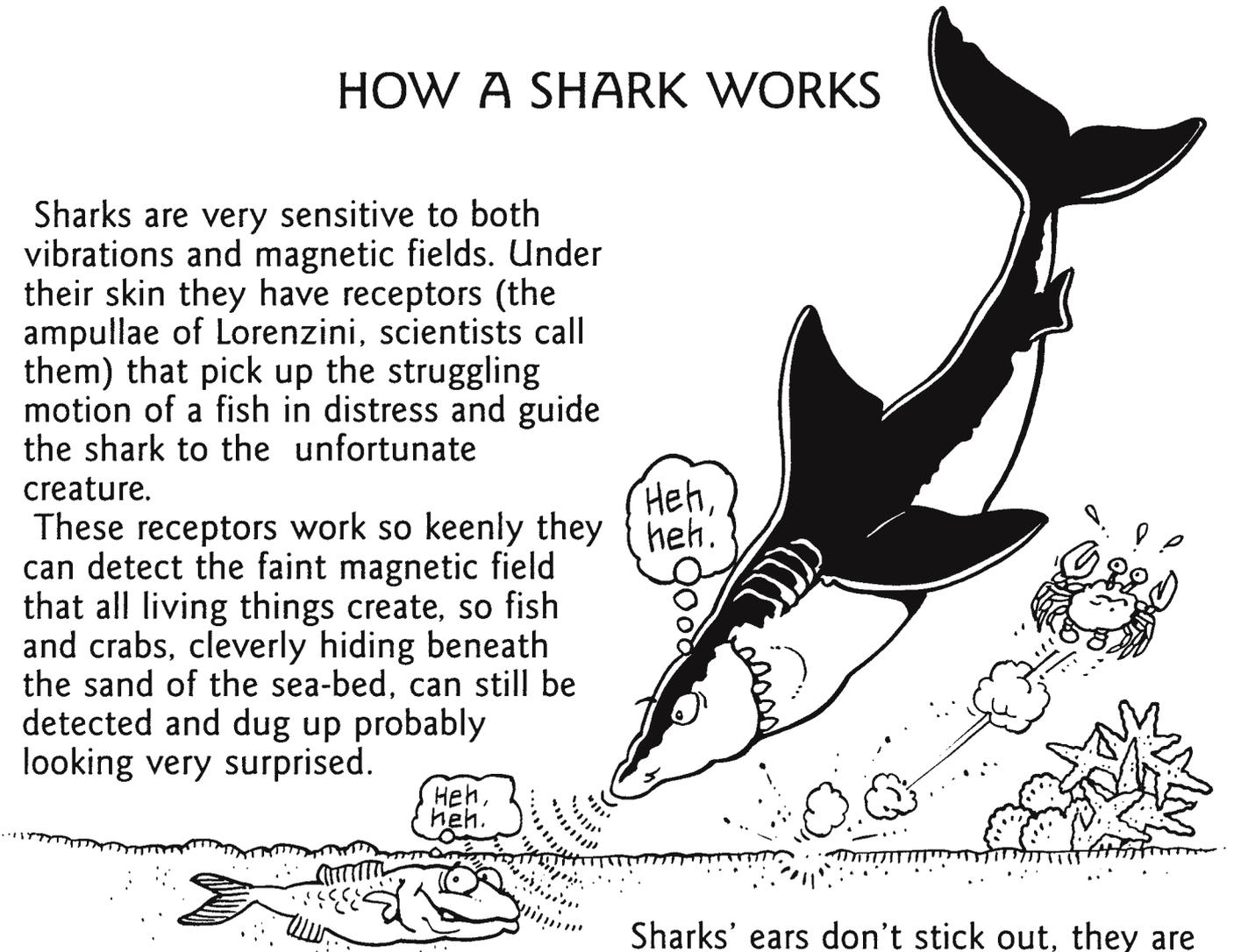
They have a large brain and use over half of it just to polish up their sense of smell, which is **SIMPLY THE BEST!** If one drop of blood is mixed with a million drops of water they can sniff it.



HOW A SHARK WORKS

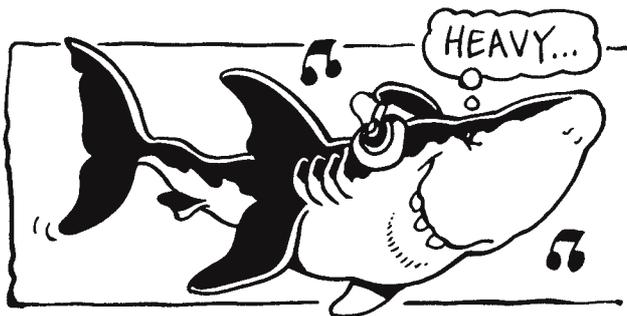
Sharks are very sensitive to both vibrations and magnetic fields. Under their skin they have receptors (the ampullae of Lorenzini, scientists call them) that pick up the struggling motion of a fish in distress and guide the shark to the unfortunate creature.

These receptors work so keenly they can detect the faint magnetic field that all living things create, so fish and crabs, cleverly hiding beneath the sand of the sea-bed, can still be detected and dug up probably looking very surprised.

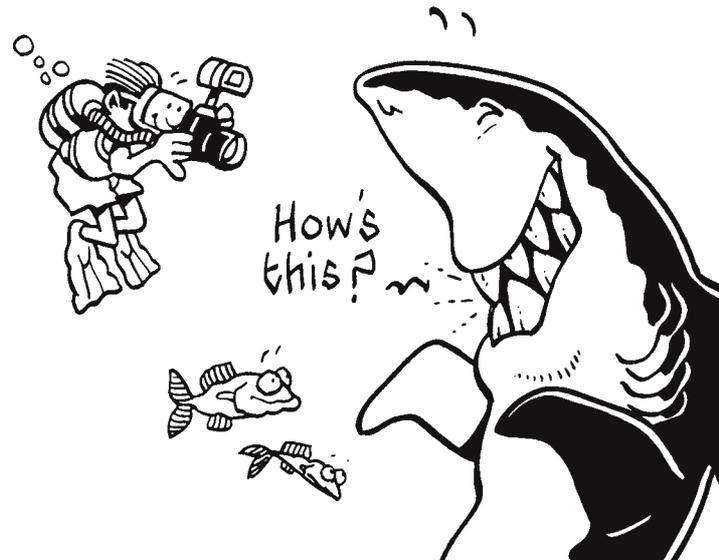


Sharks' ears don't stick out, they are simply holes in the skin along their sides and are tuned in to deep, low sounds rather than high-pitched ones.

Because sound travels faster and further underwater than in open air, the shark's excellent hearing works **EVEN BETTER!**



Just in case all these terrific blessings aren't enough, the shark also has razor-sharp teeth which grow in rows not single-file like ours. If a tooth breaks or falls out, one from another row moves forward and takes its place in a week or two, so the shark always has a big smile and no gaps.



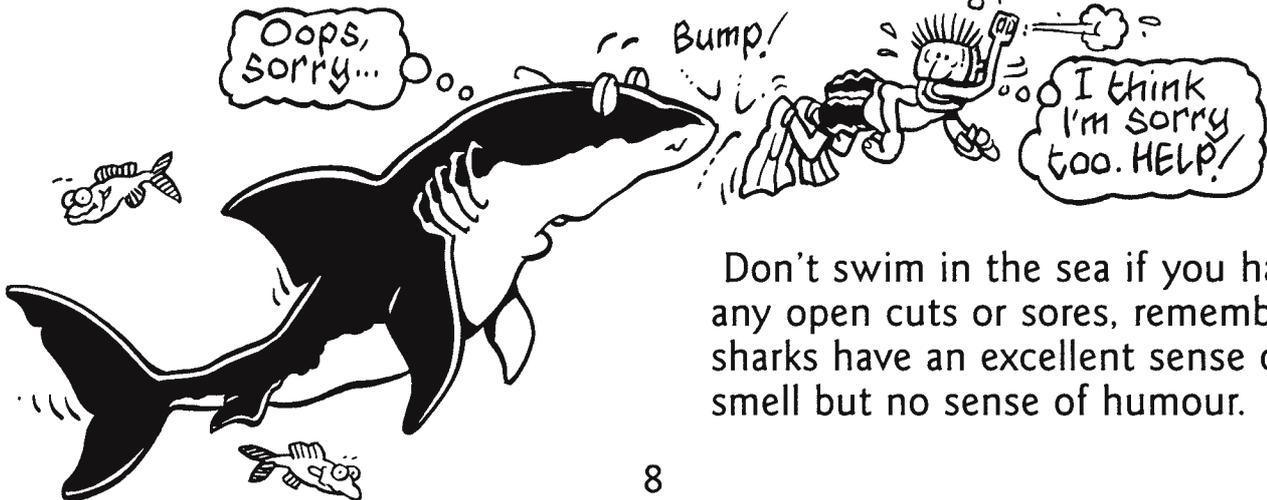
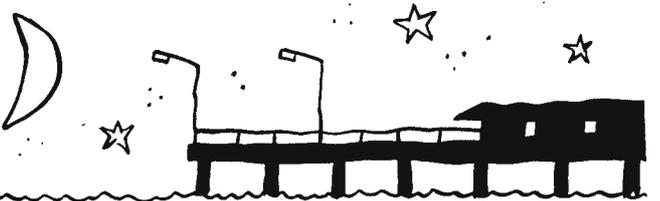
SHARKS AND SAFETY

When we go swimming we leave our natural habitat - land, and enter water, the natural habitat of fish, big and small, shy and friendly and maybe a bit puzzled by our funny shapes and the strange noises we make.

They don't seem to mind making room for us, there's plenty of water to go around but we should remember it's their home and, as visitors, we ought to fit in with their ways a bit too. So we shouldn't spill food or dump rubbish and stuff in their beautiful big pool, eh?



We know it's hard to see clearly underwater at night so avoid bathing after dark. A shark could easily bump into you by mistake, but it's your mistake too.

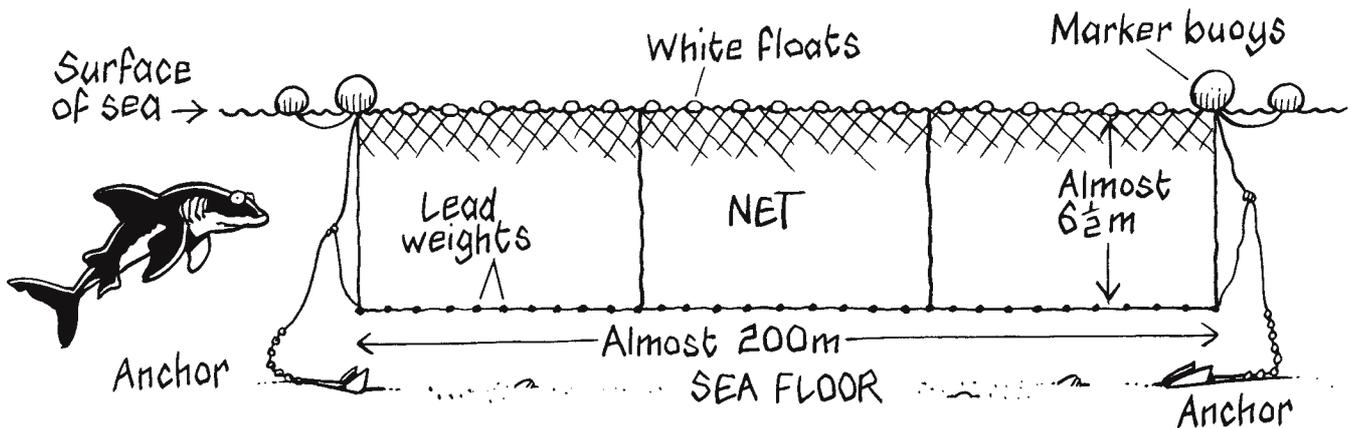


Don't swim in the sea if you have any open cuts or sores, remember, sharks have an excellent sense of smell but no sense of humour.

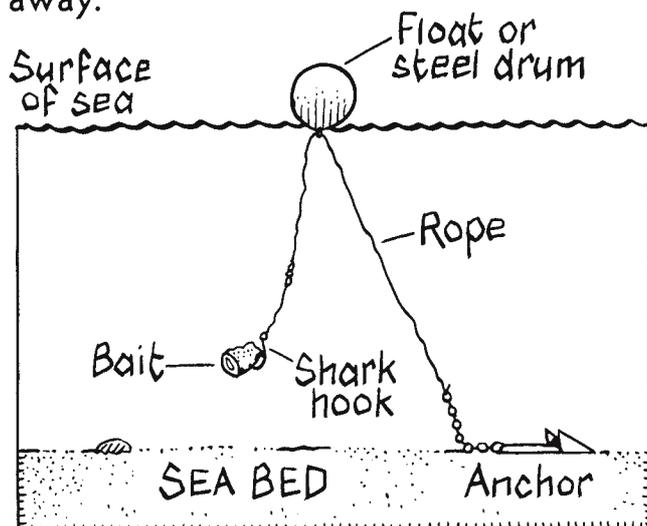
SHARKS AND SAFETY

Almost all major bathing beaches along the Queensland coast have nets suspended in the sea like long underwater curtains just beyond the surf line. Marker buoys are fastened to each end of the nets and a series of white floats keeps them hanging from the surface. Each end is also anchored to the sea floor.

Their job is to capture very large and possibly dangerous sharks that try to reach the bathing beaches, but smaller sharks, less than 2 metres in length are usually not caught in the large-sized mesh. The nets look like this in use...



As well as these nets a drumline is often used. It's made up of a baited shark hook on a chain running up to a float on the surface. The float is attached by rope to a heavy anchor on the sea-bed so that it can't stray away.

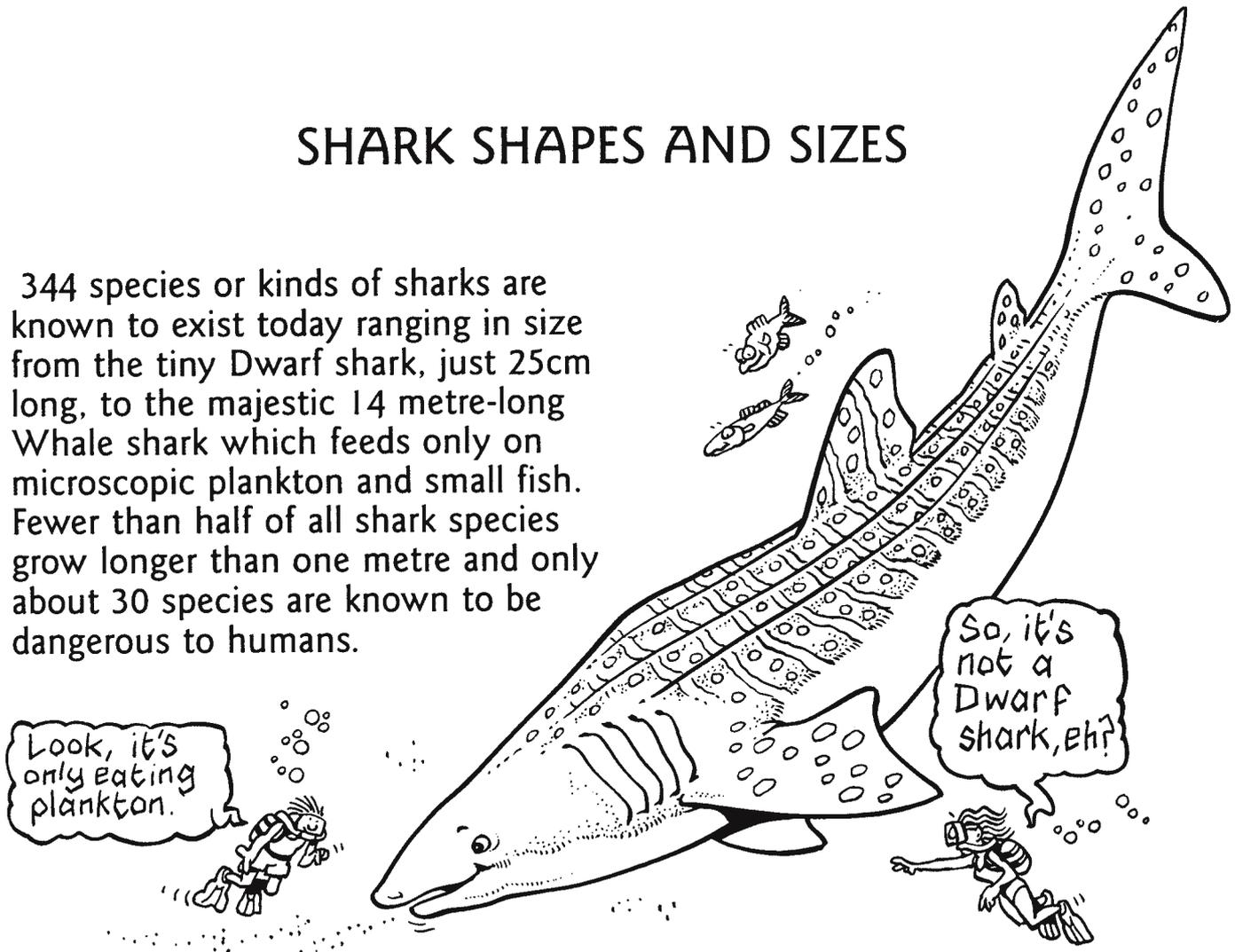


The safest part of a beach for bathing is the area between the two red-and-yellow flags where trained lifesavers keep a sharp lookout and sound an alarm if a shark is anywhere in sight.

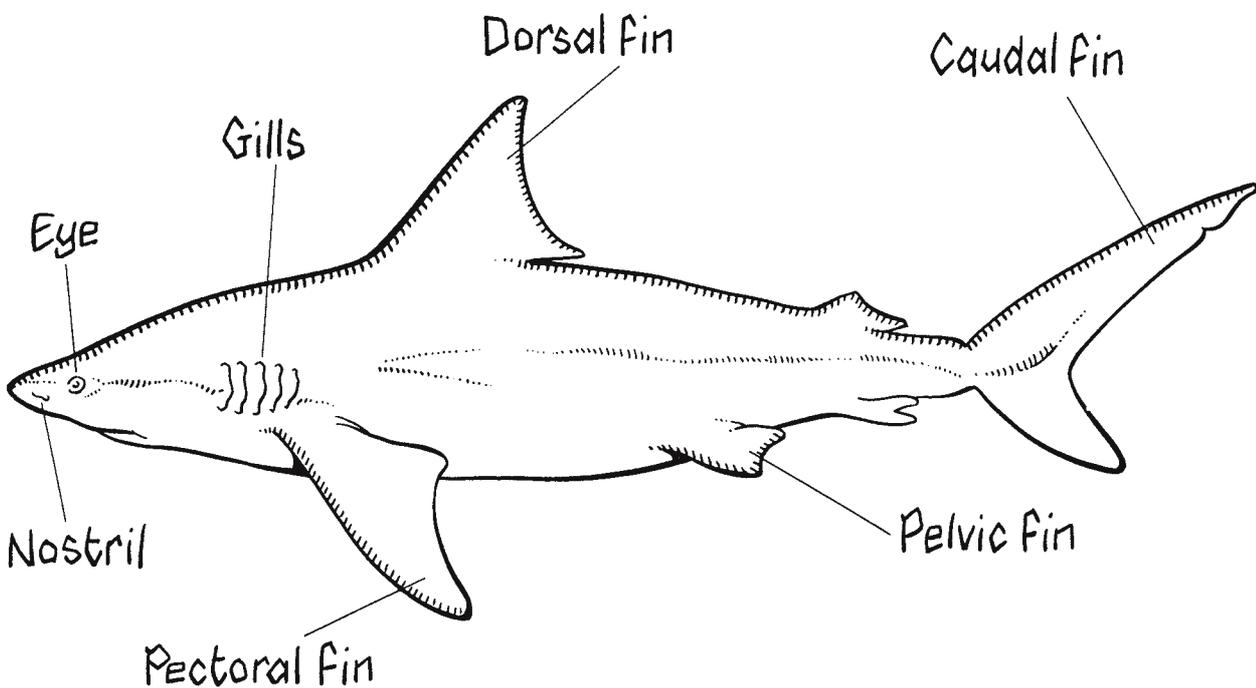
Don't forget to use plenty of sunscreen, it can also save your life.

SHARK SHAPES AND SIZES

344 species or kinds of sharks are known to exist today ranging in size from the tiny Dwarf shark, just 25cm long, to the majestic 14 metre-long Whale shark which feeds only on microscopic plankton and small fish. Fewer than half of all shark species grow longer than one metre and only about 30 species are known to be dangerous to humans.



All sharks have a number of parts in common, regardless of their shape, size or school uniform. They are arrowed on the shark below.



Colour them in if you like.



SHARK SHAPES AND SIZES

The waters of Queensland have an amazing variety of sharks with colourful names to match their looks and size, here are just a few.

Lemon shark.

White tip reef shark.

Wobbegong shark.

White pointer.
(Great white shark)

Hammerhead shark.

Tiger shark.

Thresher shark.

Answers on back cover.

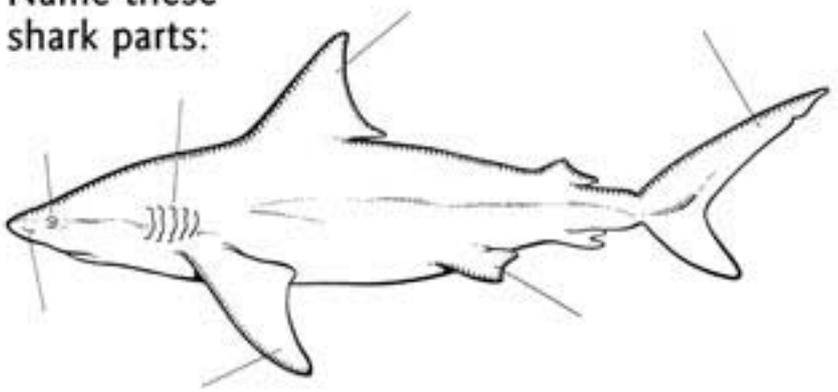
SHARK QUIZZES AND PUZZLES



Write in the correct answers from memory if you can.

1. Sharks first appeared on the earth about _ _ _ million years ago.
2. The largest prehistoric shark was about _ _ metres long.
3. Hammerhead sharks have only existed for _ _ million years.
4. Human beings have been here only _ million years.
5. The average cruising speed of a shark is about _ to _ kilometres per hour.
6. In it's lifetime a shark can use up _ _ _ _ _ of sets of teeth.
7. It is estimated that sharks live an average of _ _ years.
8. There are _ _ _ known species of sharks alive today.

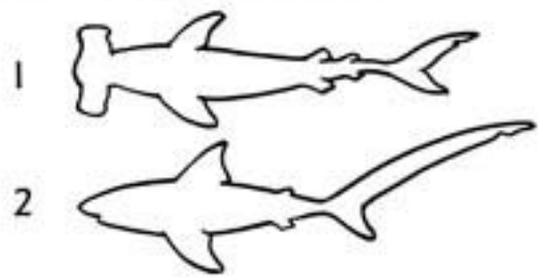
Name these shark parts:



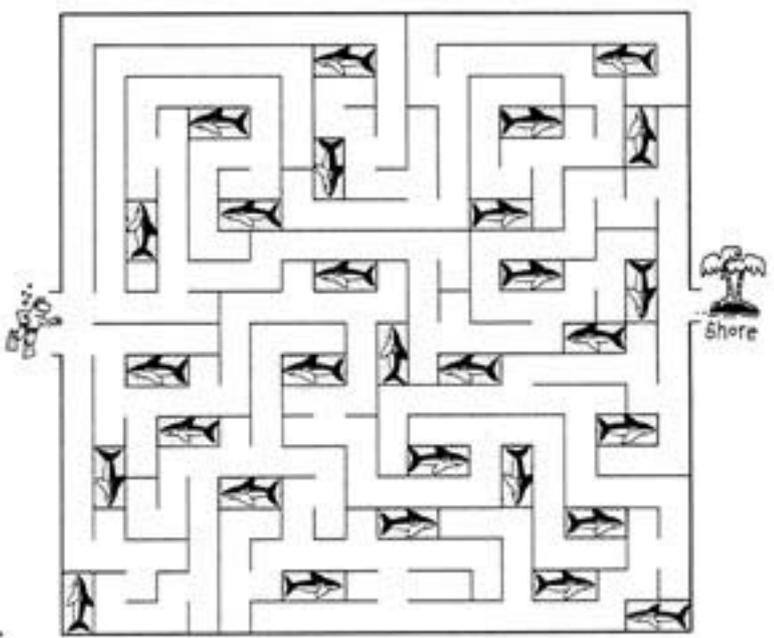
Can you name three types of sharks beginning with the letter W?

SHARKMAZE!

Can you recognise these sharks by their shapes?

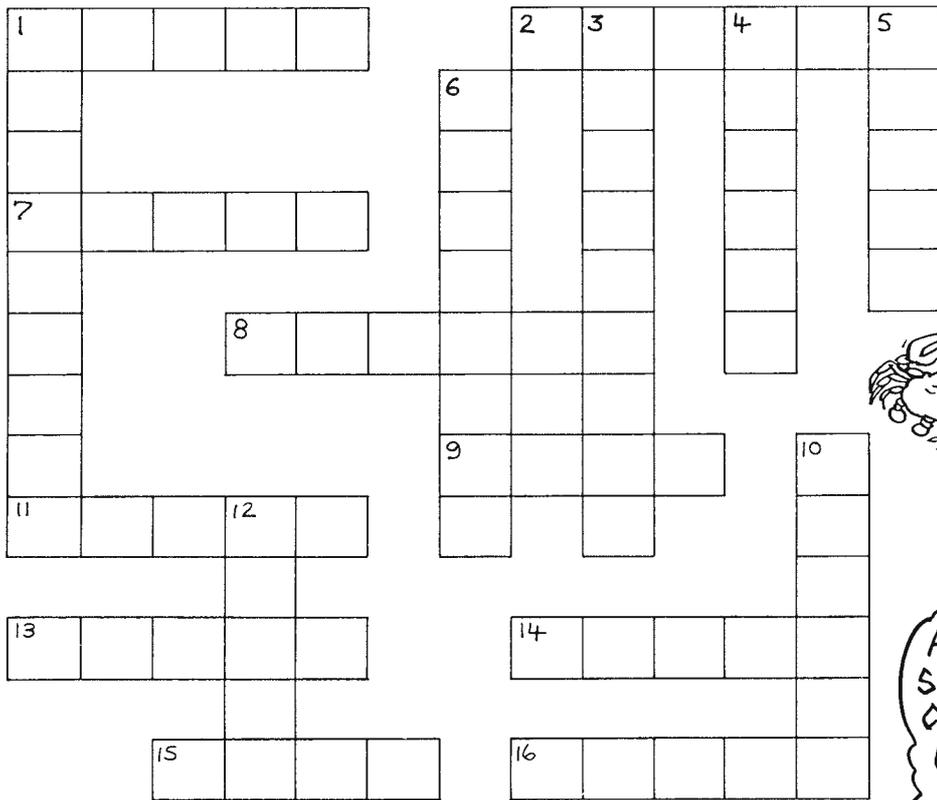


You have to swim to shore. There are two ways to go without bumping into a shark. See if you can find them.





SHARKWORD PUZZLE



And you'll find some of the answers are in the pictures not the words.

ACROSS:

1. The largest shark in existence today.
2. A group of sharks is called a _____
7. Sharks' skeletons have no _____
8. The large fin on a shark's back.
9. A small number of sharks lay _____
11. Sharks breathe through their _____
13. The smallest shark in existence today.
14. Sharks have razor-sharp _____
15. Large sharks are often caught in _____
16. Shark with stripes on it's body. (see pictures)

DOWN:

1. Shark with lots of patterns on it's body.
3. A shark's skeleton is made of _____
4. Cool water has more _____ than warm water.
5. Shark named after a bitter fruit.
6. Shark with huge tail fin. (see pictures)
10. A drumline is attached to the sea-bed by an _____
12. Sharks have a _____ brain.



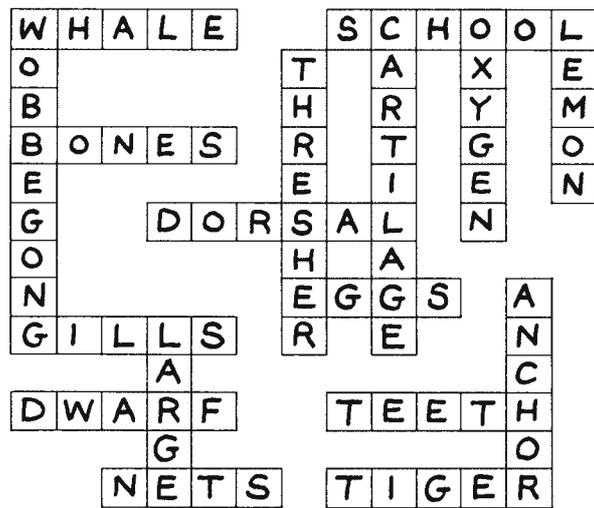
ANSWERS TO SHARK QUIZZES AND PUZZLES

1. 350
2. 15
3. 25
4. 5
5. 3,4
6. Hundreds
7. 25
8. 344

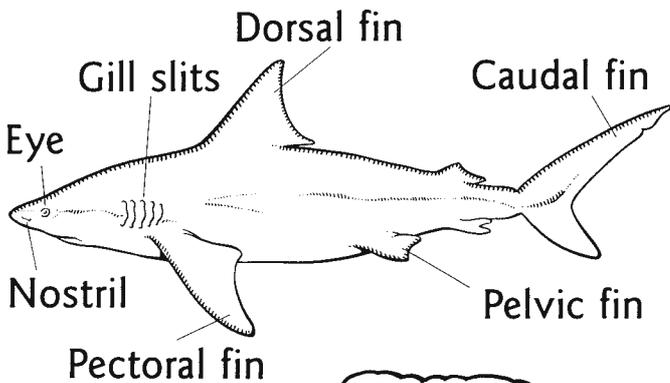
Any three of these:
 Wobbegong
 White Pointer
 Whale Shark
 White Tip Reef Shark



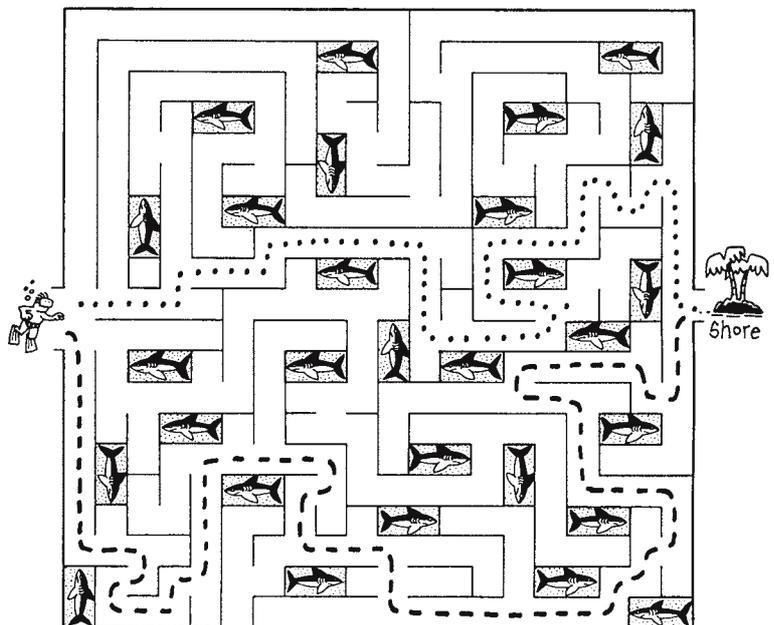
SHARKWORD PUZZLE



Name the shark parts:



SHARKMAZE!



Now, how many did I get right?



SHARK SHAPES

1. Hammerhead
2. Thresher