

MY BOOK ABOUT SHARKS



Earn your wings.
Join the movement.

www.sharkangels.org



Turn the tides for sharks.

As a Shark Angel, I will

Give sharks a chance! Never consume shark products or support stores and restaurants that sell them. Educate on the issue and help others understand my choice.

Get shark smart. Learn more about the issues and stay informed. If possible, meet a shark or two!

Be a positive voice for sharks. Correct the myths. Promote responsible media. Educate everyone I know.

Stand up for sharks. Rally for laws to protect sharks.

Build an army of angels! Encourage my friends, family and other kids to join me.

Take action for sharks. Use my skills and passion to do something locally in my community.

Join the Movement

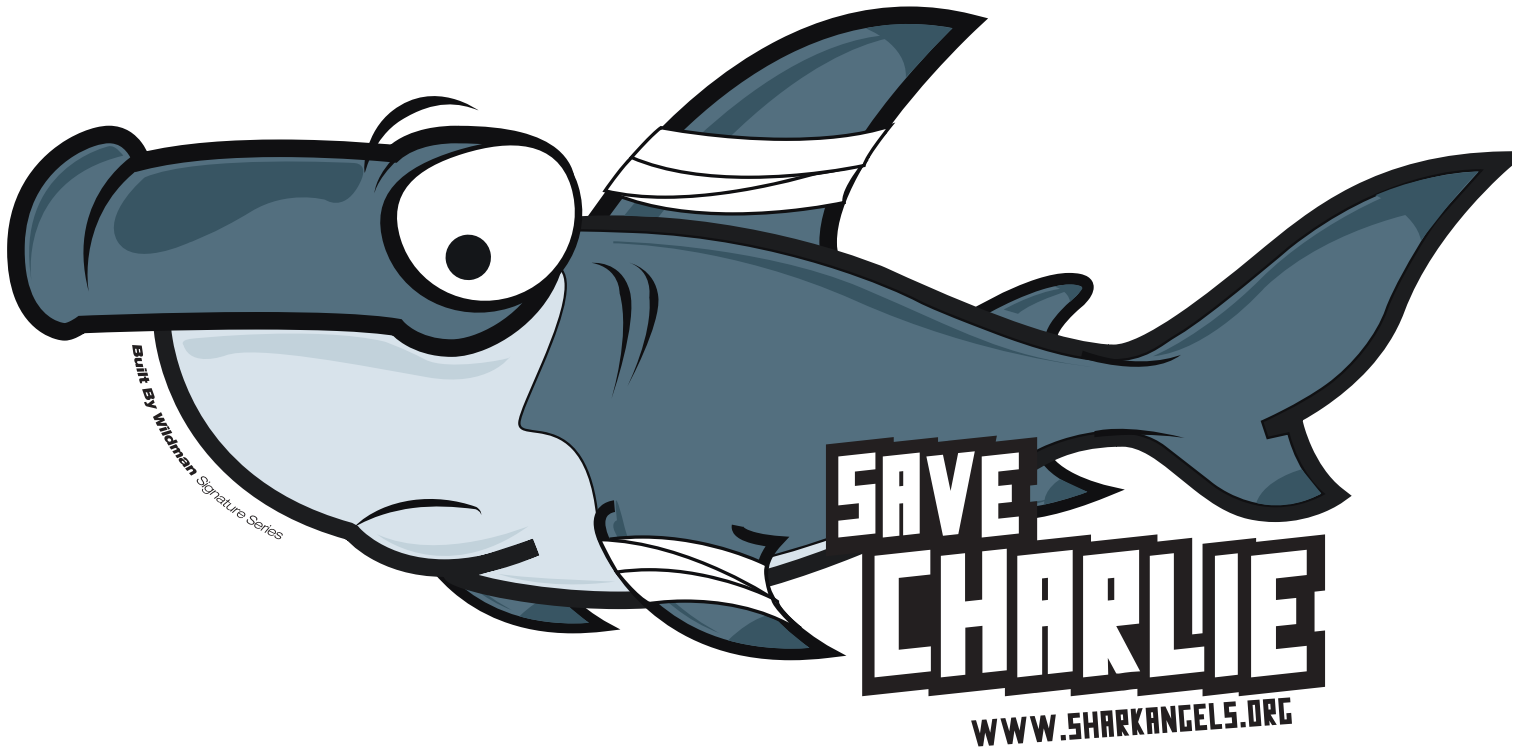
Through positive education, media and grassroots outreach, Shark Angels are changing the future for sharks.

Earn Your Wings

Globally connected, Shark Angels are taking action locally, fueled by empowering tools, a collaborative community, and a shared passion.

MEET CHARLIE

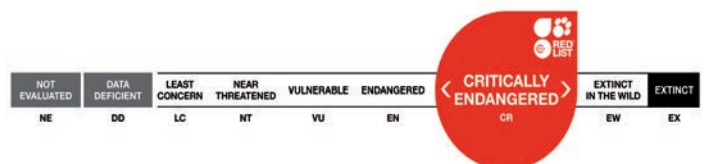
HI, I'M A HAMMERHEAD SHARK



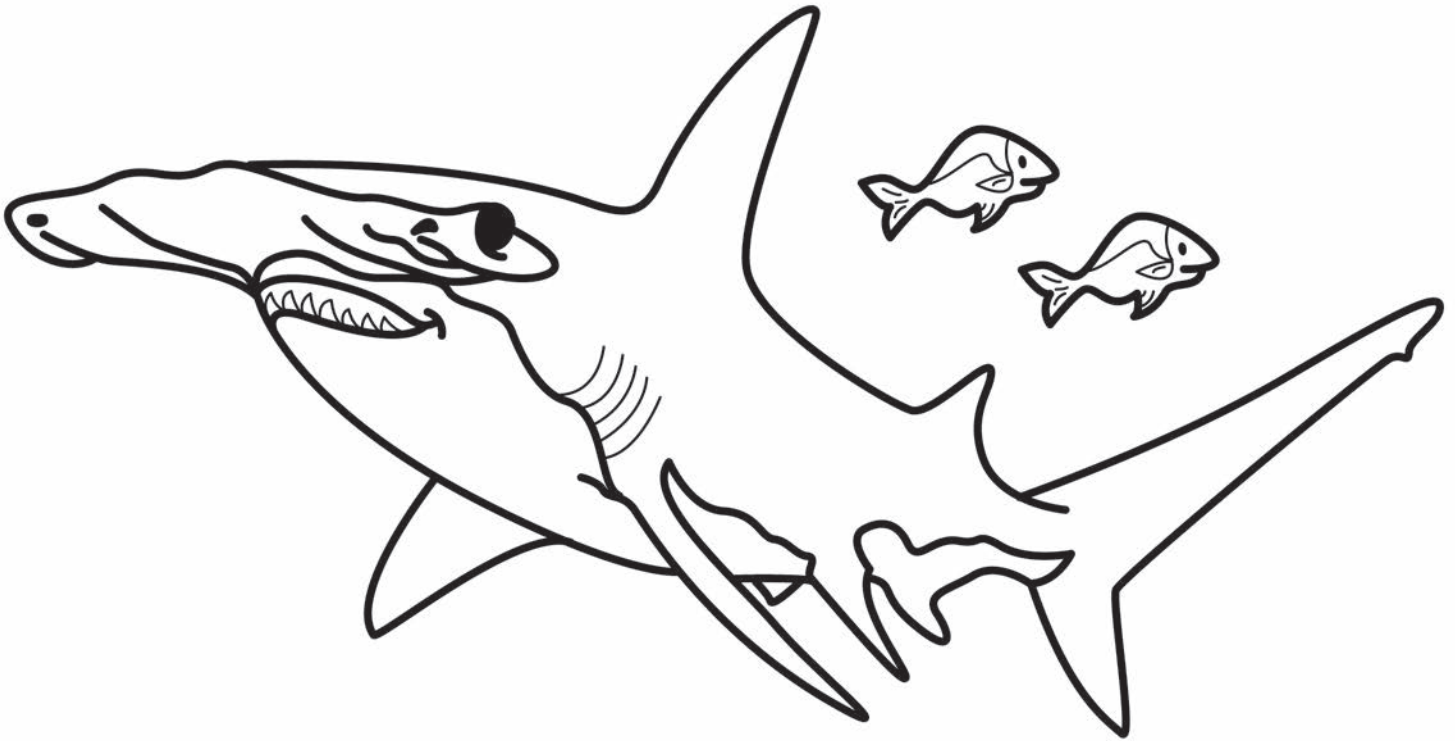
MESSAGE FROM CHARLIE:

"Hammerhead fins are some of the most desirable for shark fin soup due to the high needle count (cartilage) in my fin. We are the target of many fisheries around the world and also are often caught as bycatch. Once we are caught on a hook, it is hard for us to survive. Our populations are down by up to 99% regionally and we could go extinct in the next few decades. Please help us."

Scientific Name: *Sphyrna lewini*
 IUCN Status: Critically Endangered



HAMMERHEAD SHARK



- I feed on small fish and squid (my favorite food).
- I can see almost 360 degrees vertically (stereoscopic vision).
- I swim in schools of over 100 during the day but hunt alone at night in warm waters.
- Like other sharks, I am counter-shaded – typically grey / greenish on top of my body and white on the underside or bottom.
- I am 6 feet long and about 100 lbs.
- I get my name from the distinctive shape of my head. It may look funny, but it improves my maneuverability and senses.
- Though I look fierce, I am often shy and difficult to approach.

FUN FACT:

Sharks have unique receptors in their head known as the Ampullae of Lorenzini, which are filled with a jelly-like substance that allow the shark to sense minute changes in electric current within its environment. This is known as electroreception, and this sixth sense allows sharks to find prey in the dark or buried in the sand.

ACTIVITY 1: USING YOUR HEAD

There are actually 8 types of hammerhead sharks – ranging in size and shape. Here are 6 examples. Match letter of the drawing of the shark's head to the description below

1. ____ **Winghead** (Top view)

Wing or arrow shaped head. Very broad width across head.

2. ____ **Scalloped** (Bottom view)

Similar to Great Hammerhead more strongly curved notches.

3. ____ **Scoophead** (Top view)

Weak Middle line snout short, shovel shaped.

4. ____ **Great Hammerhead** (Top view)

Hammer shaped, shallow notches in center.

5. ____ **Small Eye** (Bottom view)

Shovel shaped, deep indentation on front of head. Eyes lower down.

6. ____ **Smooth** (Bottom view)

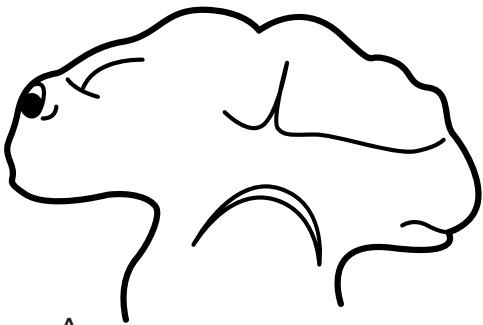
Broad flattened skull. Lacks notch in middle of head.

Sharky Senses: Sharks are highly evolved super heroes. In fact, they have 2 more senses than humans. They have unique electro-receptors (Ampullae of Lorenzini) that sense current to help locate prey in the dark or buried in the sand. They also have a lateral line to detect even the smallest movements and vibrations in the water. And, like Superman, their other 5 senses are much stronger than humans. What's more is they have a Y shaped brain with two bulbs, measuring about 2 feet. The brain mass to body mass is a good ratio even compared with some mammals.

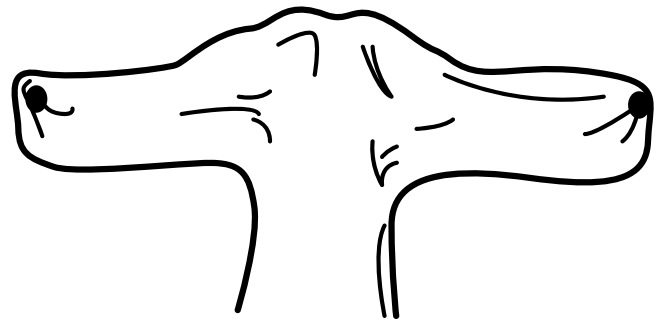
ACTIVITY 1: USING YOUR HEAD

Bottom View

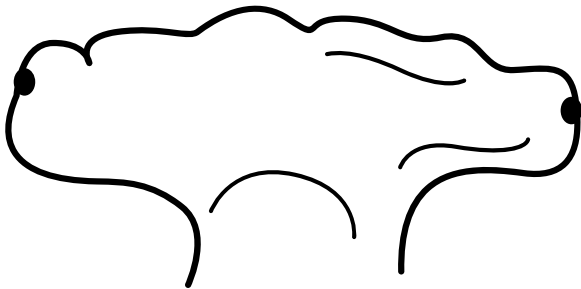
Top View



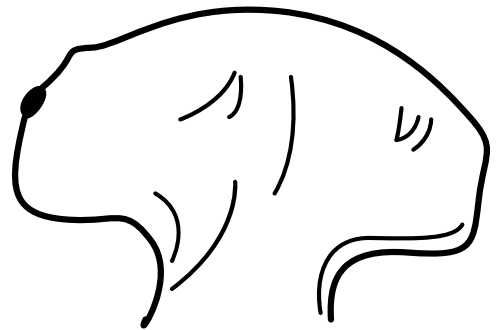
A.



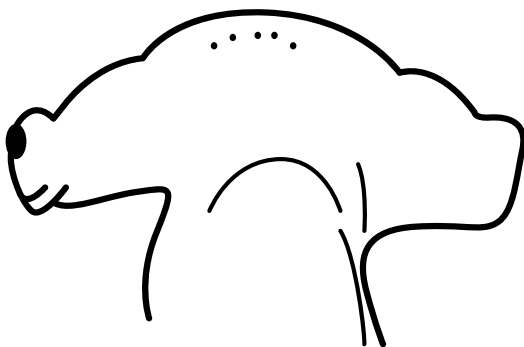
B.



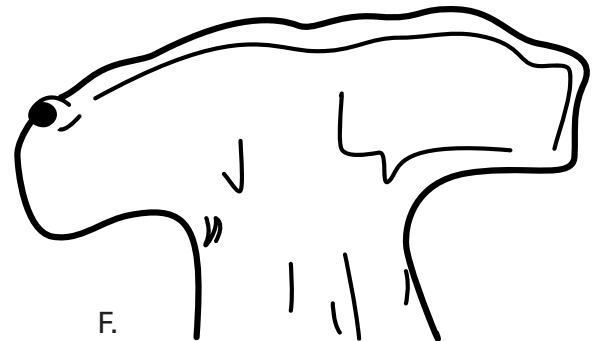
C.



D.



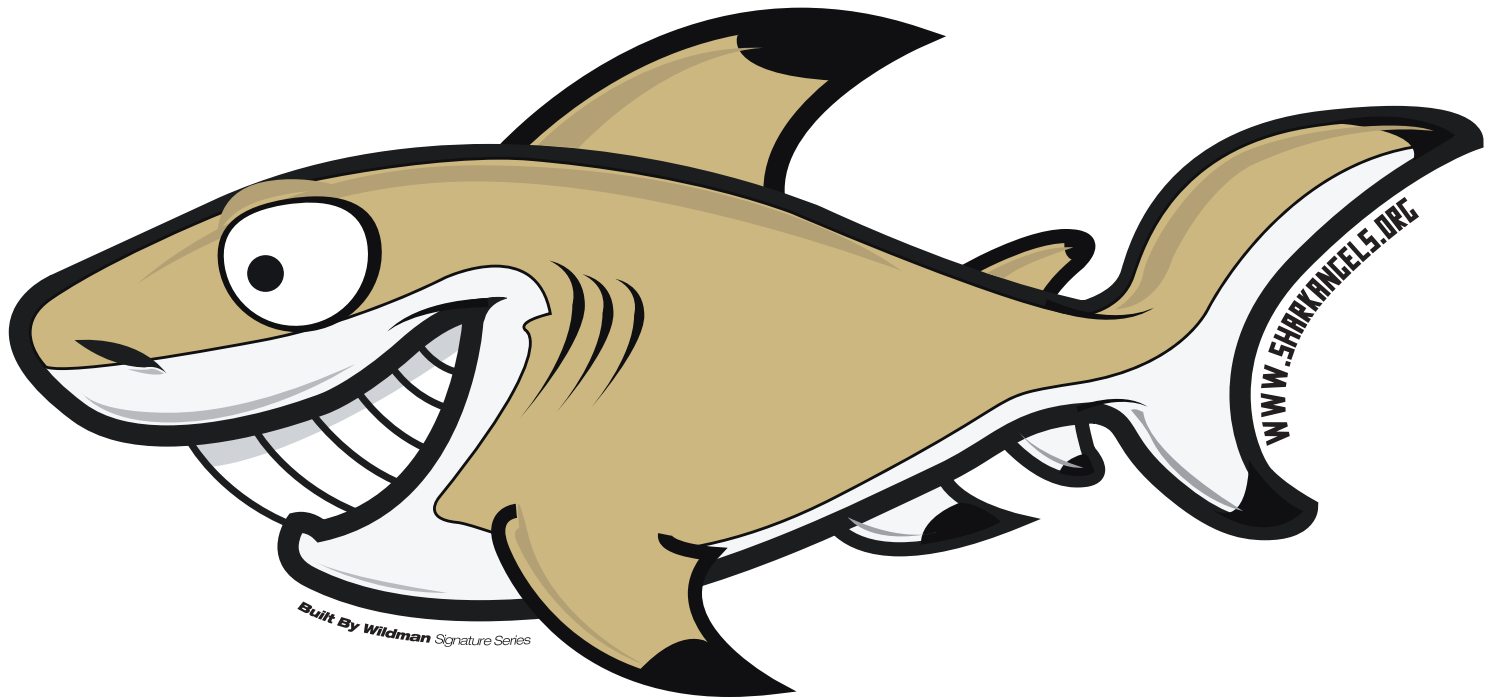
E.



F.

MEET BRUNO

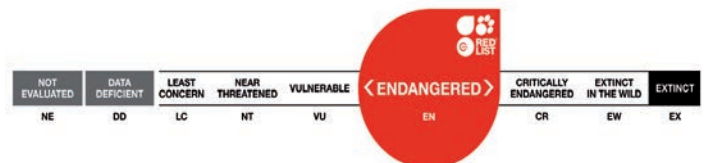
HI, I'M A BLACKTIP SHARK



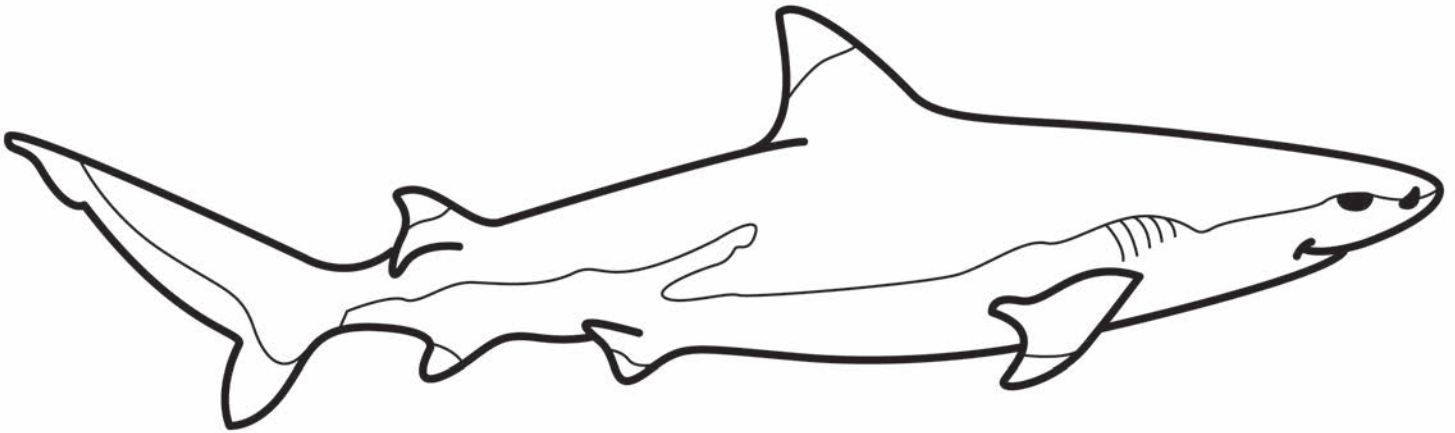
MESSAGE FROM BRUNO:

"Thanks to pollution and bio-magnification, my meat and fins are contaminated with high doses of methyl-mercury a poison that can poison you. In fact, I can be contaminated with up to 40 times the allowable limit of mercury. The World Health Organization recommends women and children do not eat shark at all. Stay healthy and keep me off your plate – for the health of you, me, and the oceans."

Scientific Name: *Carcharhinus limbatus*
IUCN Status: Endangered



BLACKTIP SHARK



- I am an extremely fast, energetic swimmer; often seen making spinning leaps out off the water when I am feeding.
- I like to hang with groups of other blacktips that are the same age and sex as me.
- We only give birth every two years to a small litter of pups – and we go back to give birth where we were born.
- I clearly get my name from the distinctive black markings on my fins. But don't confuse me with the blacktip REEF shark – we are different species.
- Many fishermen target me – both sport and commercial – for my meat and fins.

FUN FACT:

Blacktip sharks are extremely fast, energetic swimmers, often seen making spinning leaps out off the water. This usually occurs when the shark is feeding by corkscrewing itself vertically through schools of small fish resulting in it being launched into the air.

ACTIVITY 2: TAKE A BITE

Sharks teeth differ by species, based upon what the shark eats. Guess what kind of shark each tooth is from (Bonus point for their favorite food). Match the letter with the choices of sharks below.

1. ___ **Great White Shark**

My tooth is very similar to the shark that ate whales, but a little smaller, since I eat S ___ _ _ _ _

2. ___ **Sand Tiger Shark**

I am also known as the ragged tooth shark. My teeth are curved at the top and jagged on the bottom, and my ends are long. I eat C ___ _ _ _ _

3. ___ **Bull Shark**

I have triangular teeth a bit smaller than Great White. I have many sources of prey, but eat like to eat a large fish called a T ___ _ _ _ _ .

4. ___ **Tiger Shark**

I have piercing teeth and serrated edges for cutting. My teeth can even cut into the shell of a Sea T ___ _ _ _ _

5. ___ **Goblin Shark**

I have long narrow teeth with a smooth edge. I eat crustaceans and S ___ _ _ _ _

6. ___ **Cow (Six Gill) Shark**

I have flattened teeth used to eat crustaceans, squid, and S ___ _ _ _ _

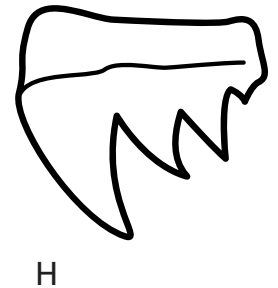
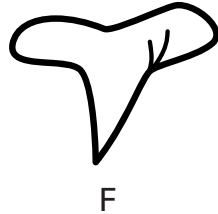
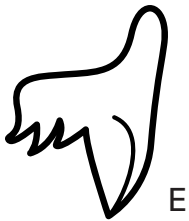
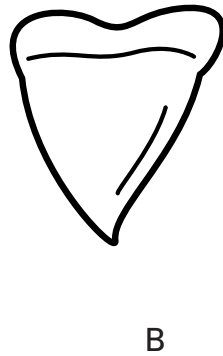
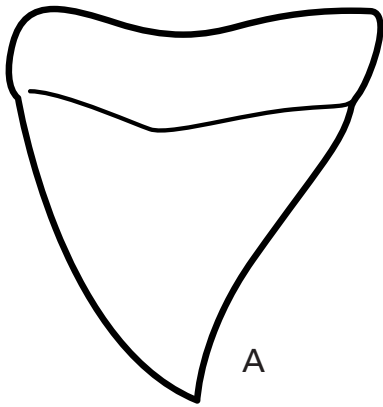
7. ___ **Megalodon**

I have the largest tooth here because I used to hunt W ___ _ _ _ _ in prehistoric times.

8. ___ **Lemon Shark**

I have triangular slightly curved teeth that can catch slippery fish on Coral R ___ _ _ _ _

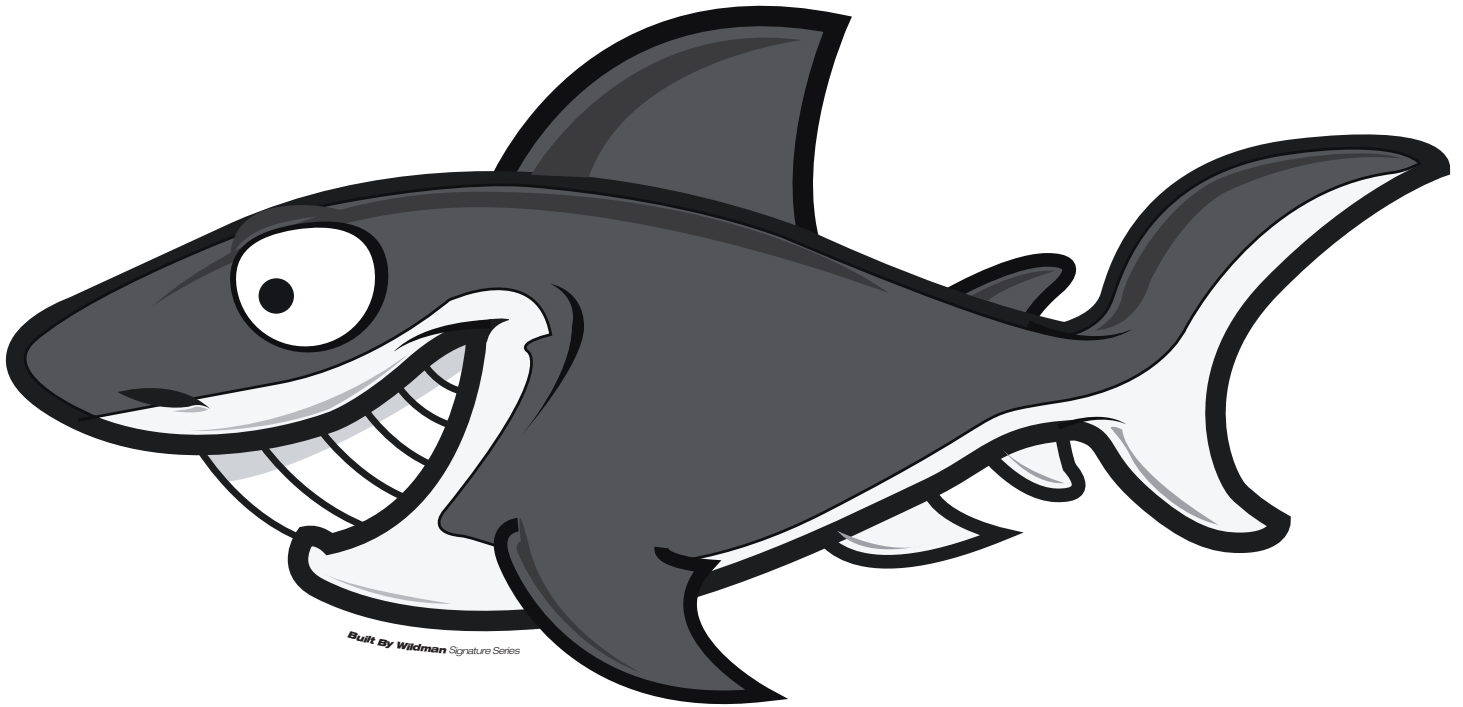
ACTIVITY 2: TAKE A BITE



Let Me See Your Teeth: The teeth of sharks don't have roots, so they usually fall out after about a week. However, they have replacements behind them in rows - a new one can rotate in just one day. Sharks have 5 to 15 rows of teeth in each jaw, with most having 5 rows. A sand tiger may lose as many as 30,000 teeth in a lifetime! And if that wasn't enough, sharks have tough skin that is covered by millions of dermal denticles, which are small "teeth" covered with enamel just like our teeth. Their skin feels kind of like sandpaper.

MEET WYATT

HI, I'M A GREAT WHITE SHARK



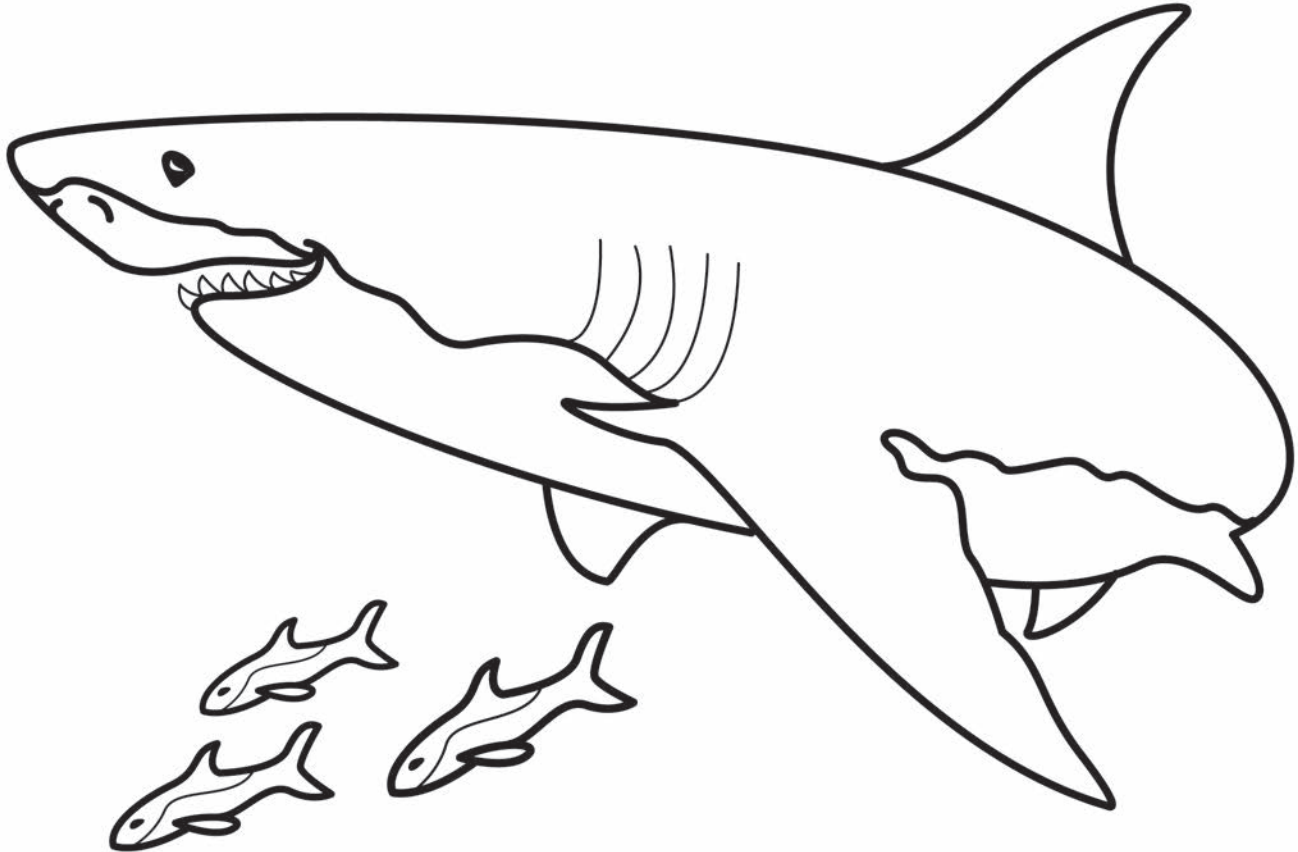
MESSAGE FROM WYATT:

“Sometimes if a shark does attack a person, the solution for many humans is to cull or kill all sharks in the area. It is an unwise attempt to feel safe and to get revenge for the attack. Removing sharks from our ocean would be very devastating. You actually have more of a chance getting killed by bees than a shark, but no one would ever think of ridding the world of bees. The media constantly misinterprets me as a vengeful, serial killer of humans. I am not a bad guy.”

Scientific Name: *Carcharodon carcharias*
IUCN Status: Vulnerable



GREAT WHITE SHARK



- I don't know how long I live, and scientists are unsure, but I can grow up to 20 ft in length and weigh 5,000 pounds. Once I get to a certain age, I grow in width more than length!
- I am not really white but get my name from my white underbelly. Most of my body is a dark grey. That acts as a form of camouflage making it difficult for my prey to see me.
- I am a streamlined, torpedo-shaped swimmer with a powerful tail that propels me to reach speeds of 15-20 mph!
- I often breach the surface when catching prey, sometimes leaping entirely out of the water!
- At one time it was thought that I was a loner, but new scientific evidence suggests that I am rather social.

FUN FACT:

Great White sharks are streamlined, torpedo-shaped swimmers with powerful tails that propel them to reach speeds of 15-20mph! As an element of surprise when hunting, they often breach the surface when catching prey, sometimes leaping entirely out of the water!

ACTIVITY 3: LOOK AT THE BABY

Some shark species are oviparous, meaning they lay eggs. The developing embryo receives nutrients from a yolk formed prior to fertilization. Others are viviparous; and give birth to live young. The babies are fed by a placenta which transfers nourishment from the mother to the babies. Other sharks are ovoviviparous – which means the mother retains the egg, and the embryo soon sheds the membrane and develops in the mother’s uterus. Embryos continue to obtain nutrients after their yolk is absorbed by swallowing eggs and smaller embryos in the uterus. But regardless, life for a young shark is hard – as they start competing at a very early age and pups are left to fend for themselves. Considering they have survived five major extinctions, they must be doing something right!

PART A: Break down the latin words

LATIN	ENGLISH
Ovum	egg
Vivo	live
Partus	birth

PART B: Match the number of pups or eggs with the shark

Examples

Whale Shark:

- a. Ovoviviparous Egg: Live: Birth
- b. 300 pups

Swell Shark:

- a. Oviparous Egg: Birth
- b. 2 eggs

Hammerhead:

- a. Viviparous Live: Birth
- b. 20-40 pups

PART C: Exercises

1. ___ Horn Shark:

- a. Oviparous _____:_____
- b. ___ spiral shaped eggs

2. ___ Bull Shark:

- a. Viviparous _____:_____
- b. ___ - ___ pups

3. ___ Pelagic Thresher Shark:

- a. Viviparous _____:_____
- b. ___ pups (I have a long tail)

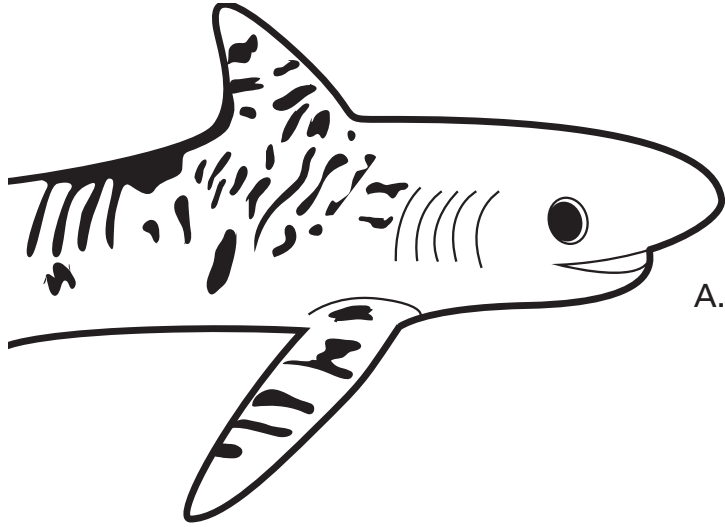
4. ___ Spiny Dogfish:

- a. Oviparous _____:_____
- b. ___ eggs called mermaid purses

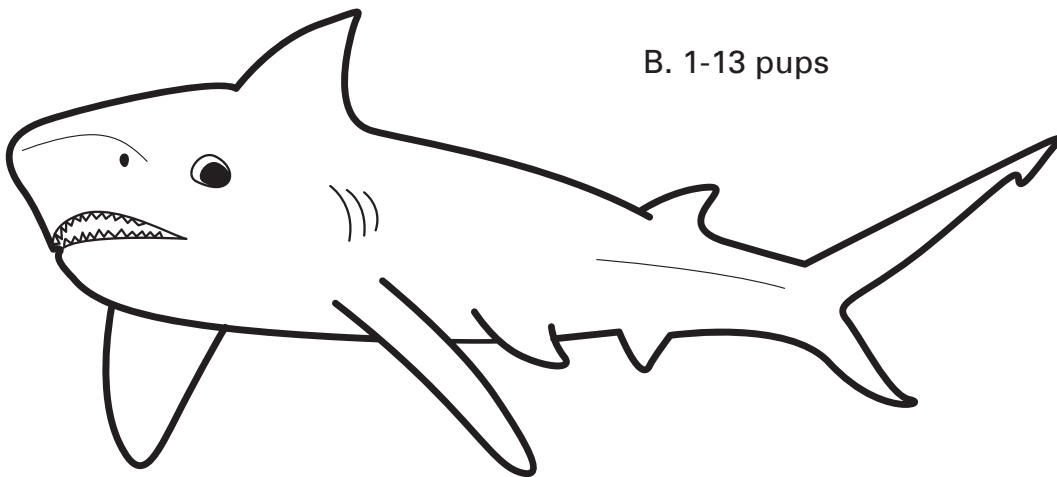
5. ___ Tiger Shark:

- a. Oviparous-_____:_____:_____
- b. ___ - ___ pups (looks like a mini version of the adults)

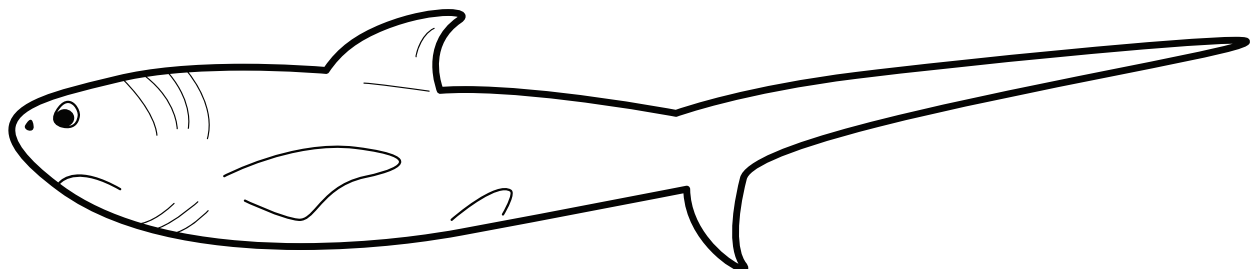
ACTIVITY 3: LOOK AT THE BABY



A. 10-60 pups

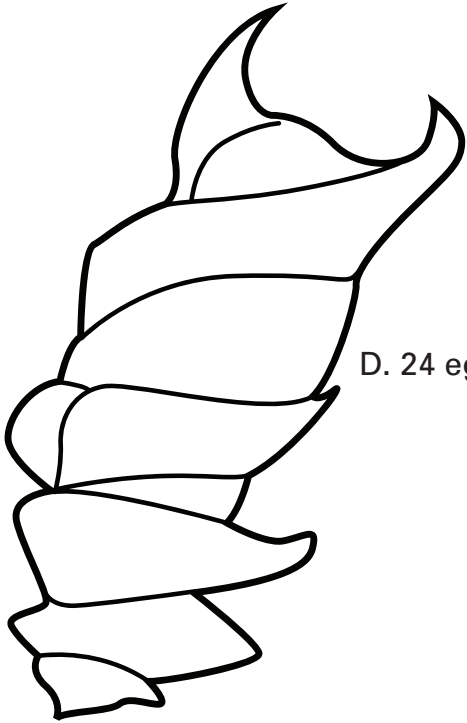


B. 1-13 pups

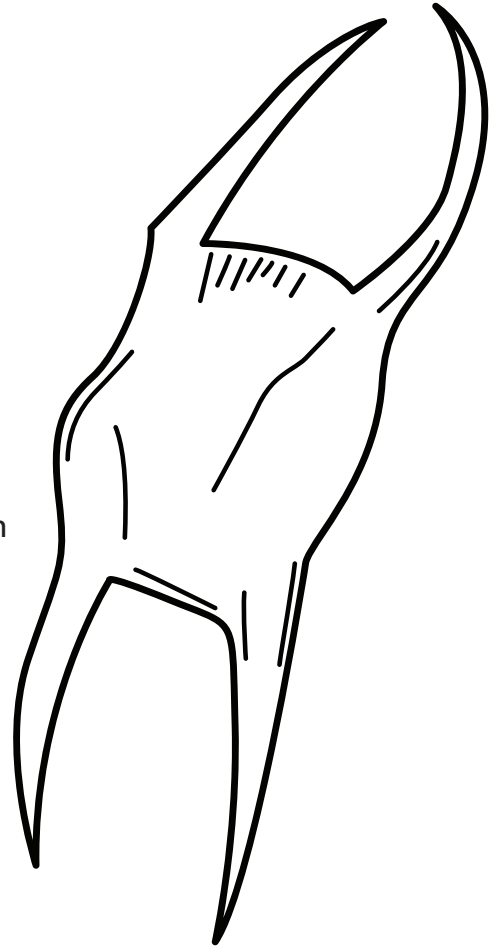


C. 2 pups

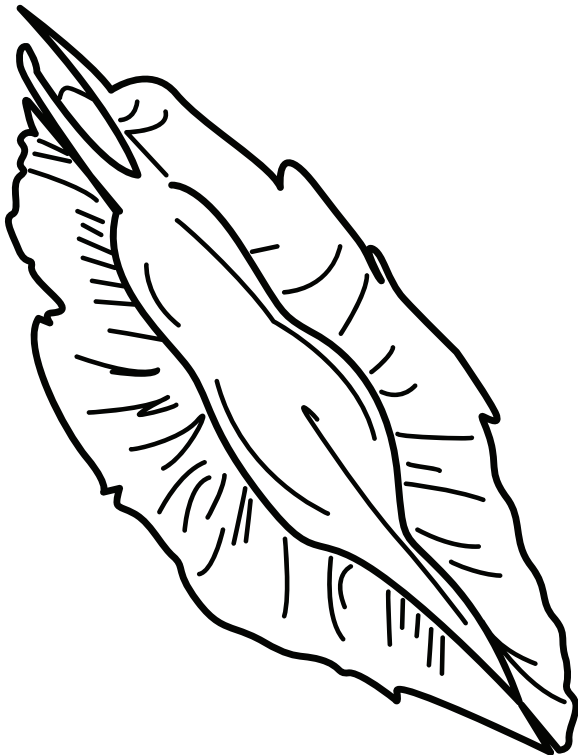
ACTIVITY 3: LOOK AT THE BABY



D. 24 eggs

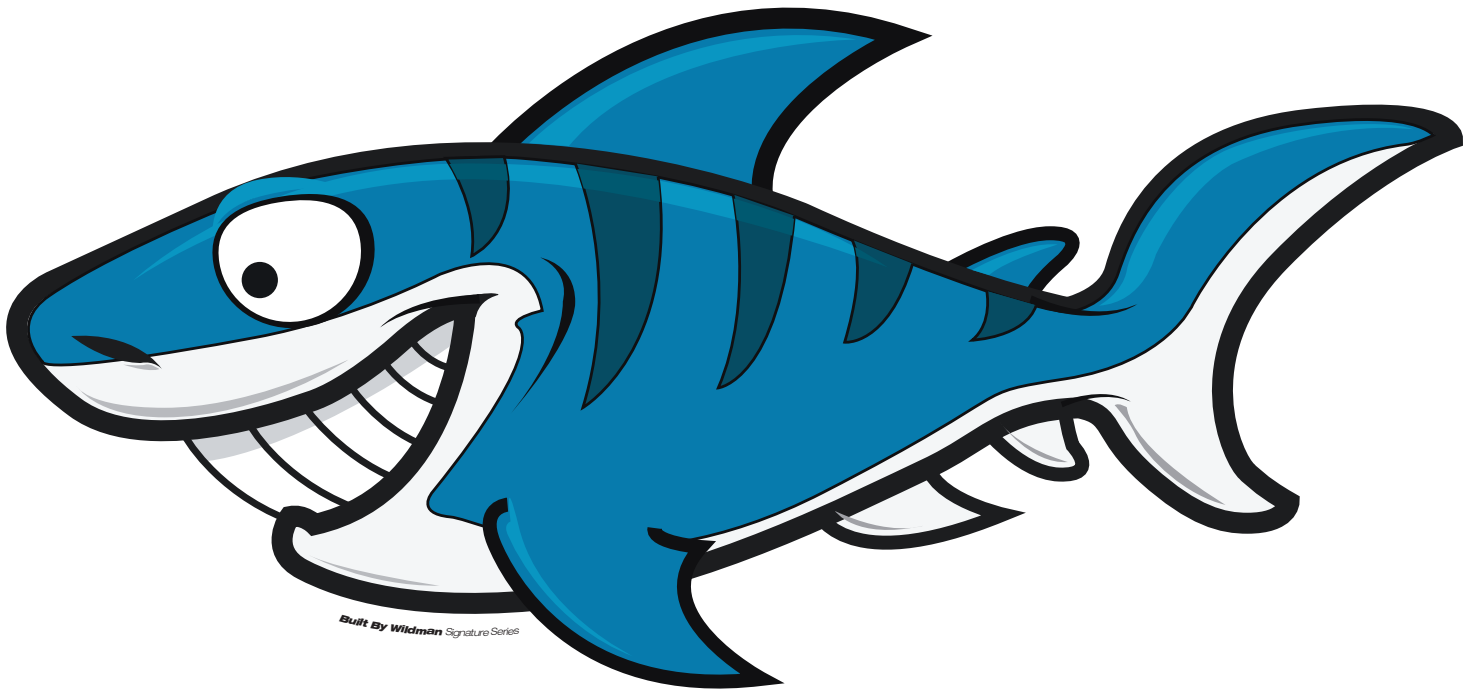


E. 10 per month



F. 24 eggs

MEET T HI, I'M A TIGER SHARK



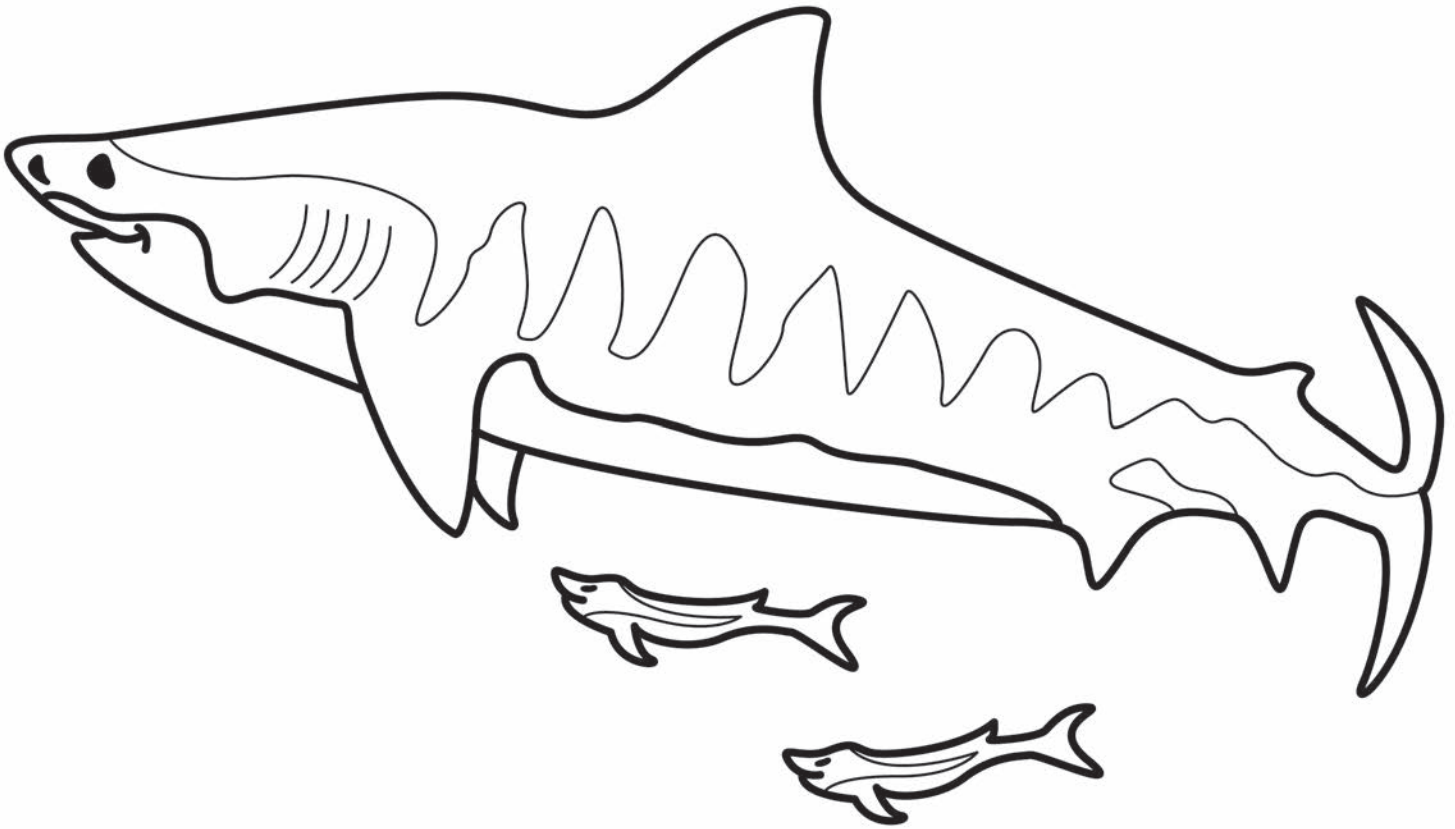
MESSAGE FROM T:

"I spend a lot of my life in mangroves, lagoons, coral reefs and inshore areas. This means, I am greatly impacted by humans who not only fish me – but destroy my home with pollution, garbage and bulldozing mangroves and swamps. Please keep trash out of the oceans and protect the places my children grow up."

Scientific Name: *Galeocerdo cuvier*
IUCN Status: Near threatened



TIGER SHARK



- I can grow to 20–25 ft in length, and weigh more than 1,900 lbs!
- I get my name from the dark vertical stripes on my body – though as I get older, my stripes lighten and almost disappear.
- I prefer warm shallow waters and usually like to taste test my food.
- I am scavenger by nature and the best time for me to hunt is at dawn or at dusk when the tide washes up dead prey items
- My jaw pressure is so strong, that I can bite through a turtle’s shell!
- I am sacred in many cultures and thought to be the souls of ancient ancestors.
- I have excellent eyesight and can spot prey from a mile away

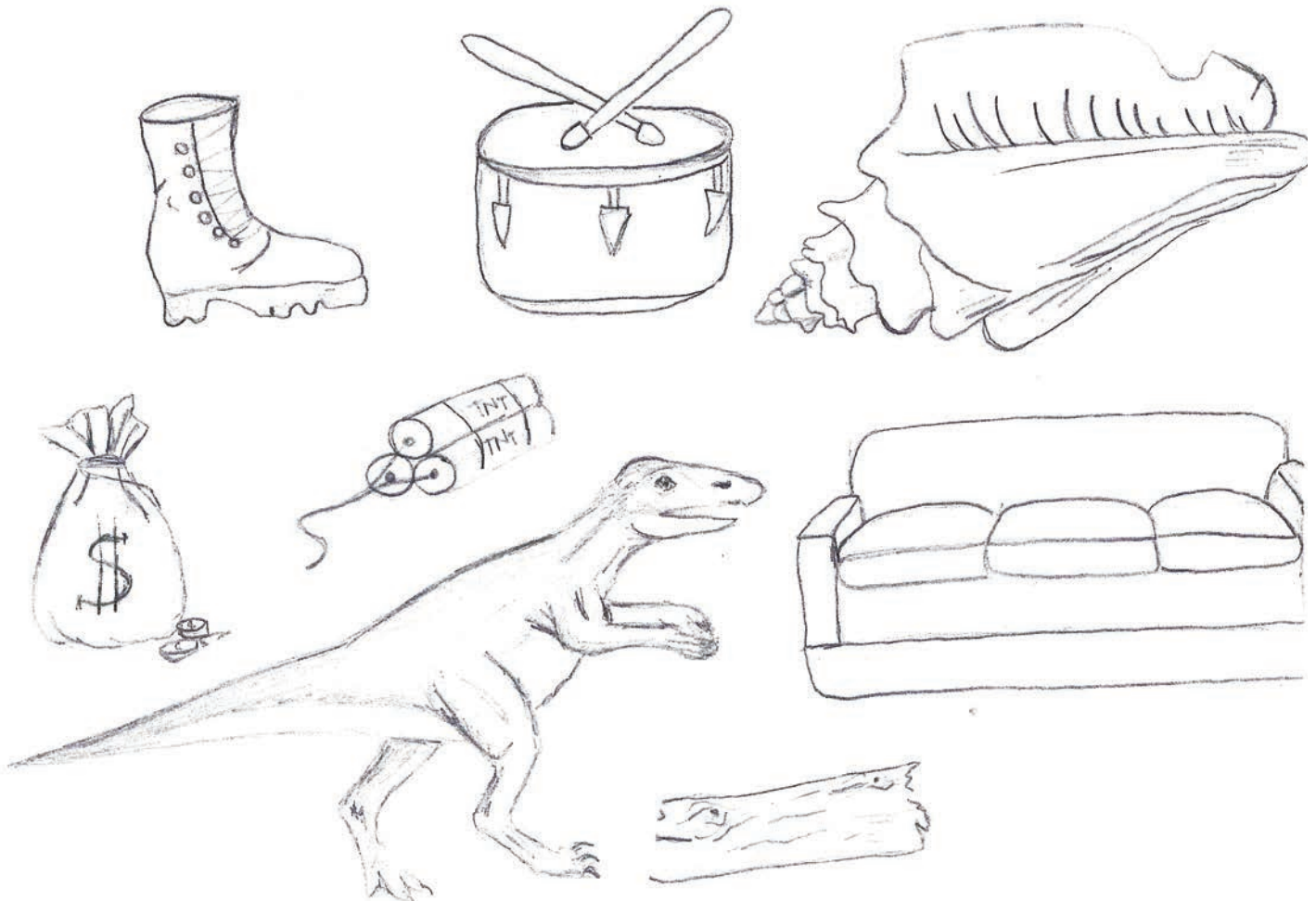
FUN FACT:

Sharks have an abundance of teeth. They have a polyphyodont dentition, in which old teeth are shed continually, as often as every eight days. Teeth are formed in consecutive rows, so as one falls out, another is rotated forward to take its place. A tiger shark may lose as many as 30,000 teeth in a lifetime!

ACTIVITY 4: GET IN MY BELLY

Tiger sharks are not exactly picky eaters – we’ve even earned the name “garbage can of the sea”. While my preferred diet consists of fish, seabirds, and mammals, I’ve been known to eat a lot of other things! Don’t worry – kids aren’t on that list!

Circle what has been found in a tiger shark’s stomach:



Time for Some ZZZs: How do you think sharks sleep? You may have heard of “sleep walking”, but how about “sleep-swimming?” Only a small number of sharks can actually rest – most have to swim while they sleep. Some sharks have spiracles, a small opening behind their eyes, that force water across the shark’s gills so the shark can be still when it rests. This is known as ram ventilation.

Most sharks need to move constantly to stay alive - keeping water moving over their gills and their bodies. They don’t ever go into a deep sleep like we do. Instead, they “sleep swim” – part of their brains are less active but they are still moving! They can even watch divers while in this half sleep state.

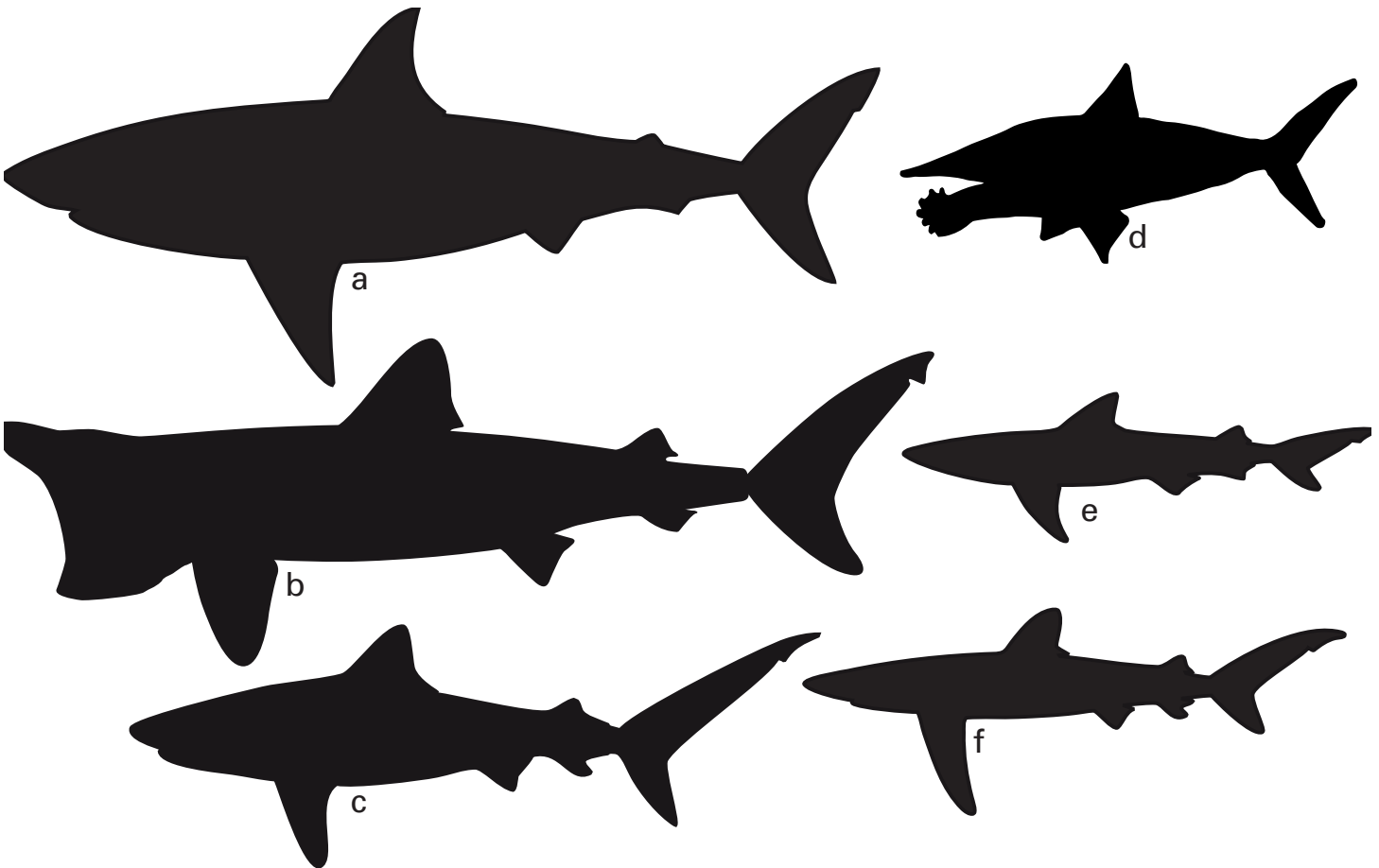
ACTIVITY 5: SHARK SHAPES

ID that shark (OUTLINE OF COOL SHARKS –Write name of shark under silhouette)

Thresher
Goblin
Oceanic Whitetip
Blacktip

Great White
Basking
Great Hammerhead
Lemon

Whirl (extinct)
Whale
Blue
Tiger



Dinosaurs Got Nothing on Me: Sharks are a living fossil. They have been around for about 450 million years. Probably the most famous of all prehistoric sharks is the Megalodon. Adults ranged from 40-70 feet and weighed around 50 tons. They were true apex predators, eating anything from large whales, giant squid, and huge fish. Scientists have a difficult time distinguishing what ancient sharks looked like due to the fact that sharks entire skeletons are not made of bone—they are made of cartilage. Cartilage is the same flexible substance your nose and ears are made of. Researchers' only clues about ancient sharks were from their teeth. They looked teeth on modern day sharks and compared them to those of prehistoric shark teeth.

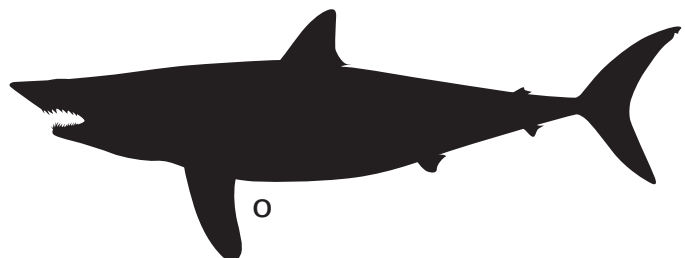
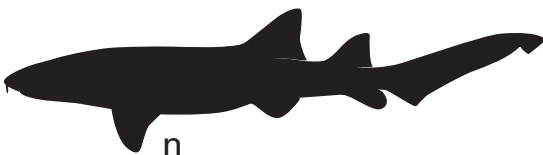
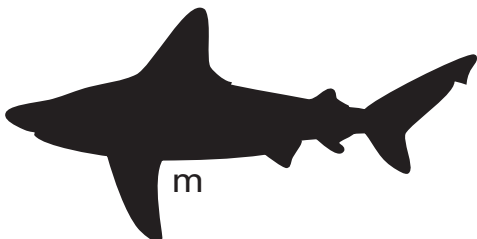
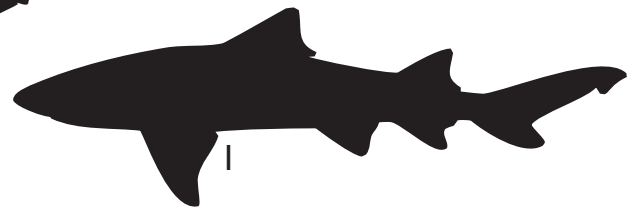
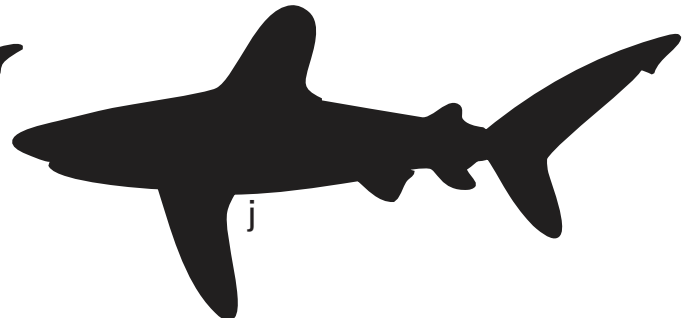
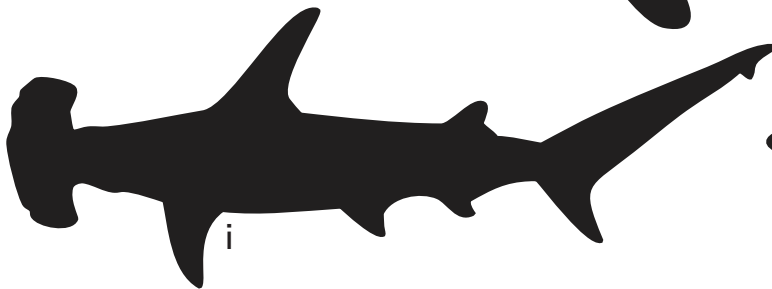
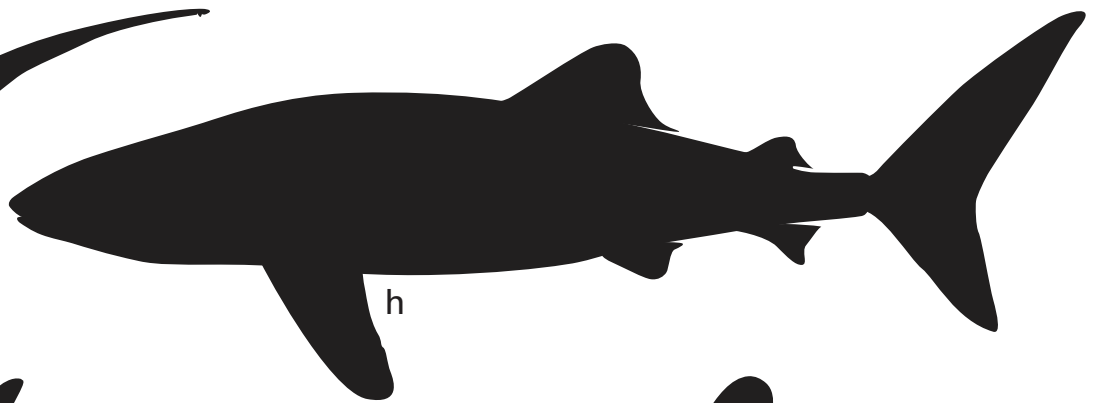
ACTIVITY 5: SHARK SHAPES

ID that shark (OUTLINE OF COOL SHARKS –Write name of shark under silhouette)

Goblin Shark
Oceanic White tip Shark
Blacktip Reef Shark
Great White Shark

Basking Shark
Hammerhead Shark
Sandbar Shark
Lemon Shark

Whale Shark
Nurse Shark
Sand Tiger Shark
Thresher Shark



ACTIVITY 6: SHARK HALL OF FAME

Guess which shark belongs in each category

Fanciest:

Coollest Tail:

Worst Reputation:

Slowest:

Largest:

Oddest:

Oldest Living Fossil:

Hungriest (will eat anything):

Smallest:

Fastest and Highest Jumper:

Most Acrobatic:

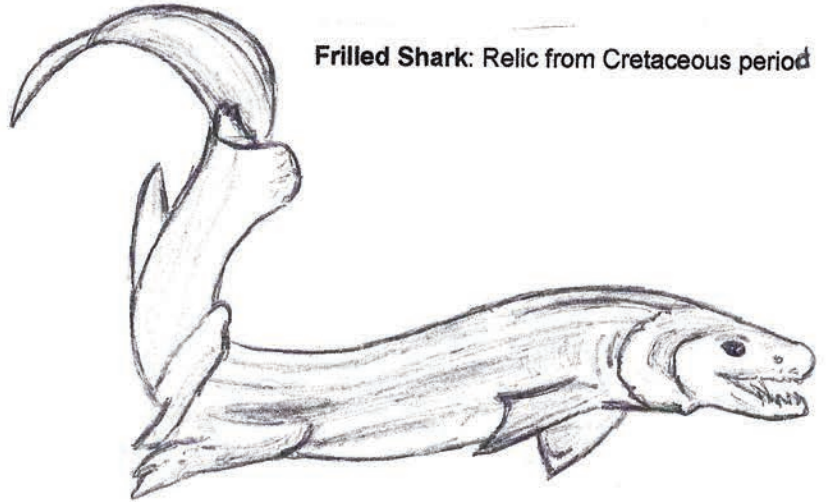
The Ancient Bite: Fossilized shark teeth, like from the extinct megalodon (the great grandfather to the white shark), have been helpful in allowing scientists to study pre-historic sharks. Since shark skeletons are made of cartilage, not bone, teeth are often the only parts of the shark to become a fossil. The cartilage breaks down much quicker. Ancient sharks have left behind few clues to enable experts to figure out what they were like. That does not mean there is little shark fossil material. We have thousands of fossil shark scales.

From studies of modern sharks, researchers can determine a lot from the teeth and scales of a given species. The scientists look at factors like position in the jaw, size of teeth, and individual deformities. It is very likely that ancient sharks also showed the same characteristics as modern sharks.

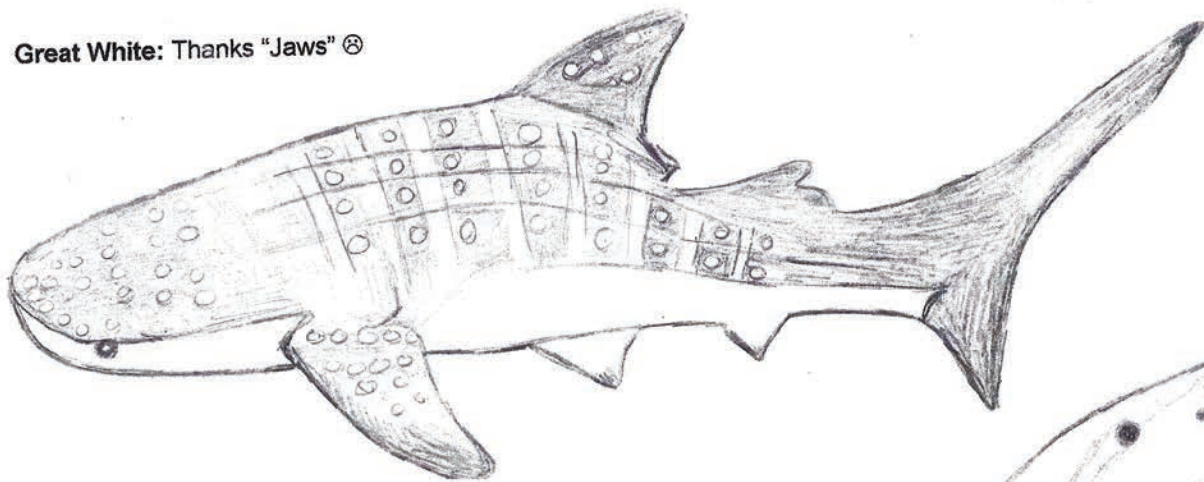
ACTIVITY 6: SHARK HALL OF FAME



Great White: Thanks "Jaws" ☹



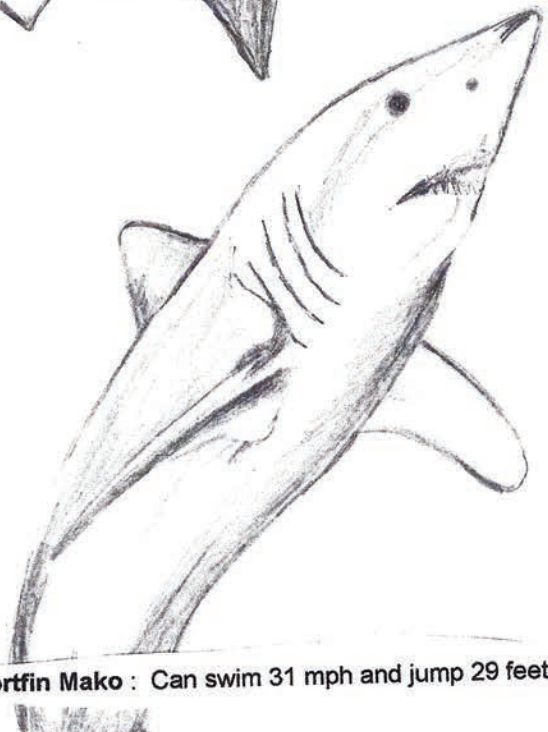
Filled Shark: Relic from Cretaceous period



Whale Shark: 59 feet-20.6 tons

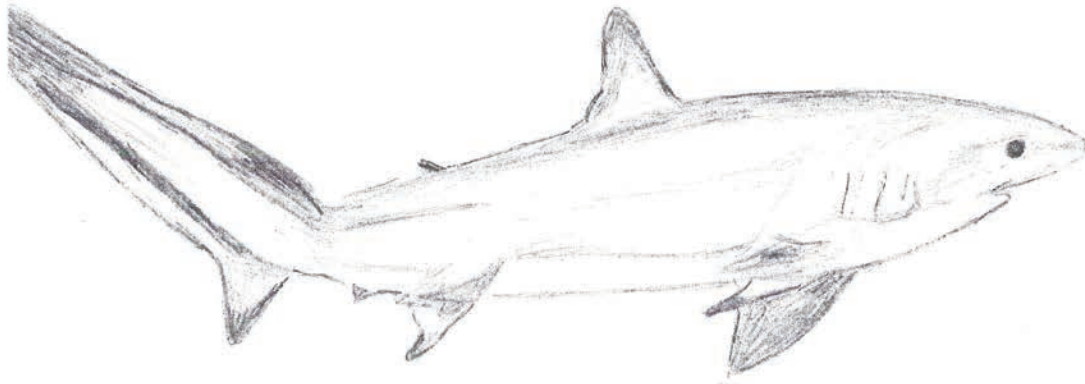


Dwarf Lanternshark : 6 – 8 inches



Shortfin Mako : Can swim 31 mph and jump 29 feet

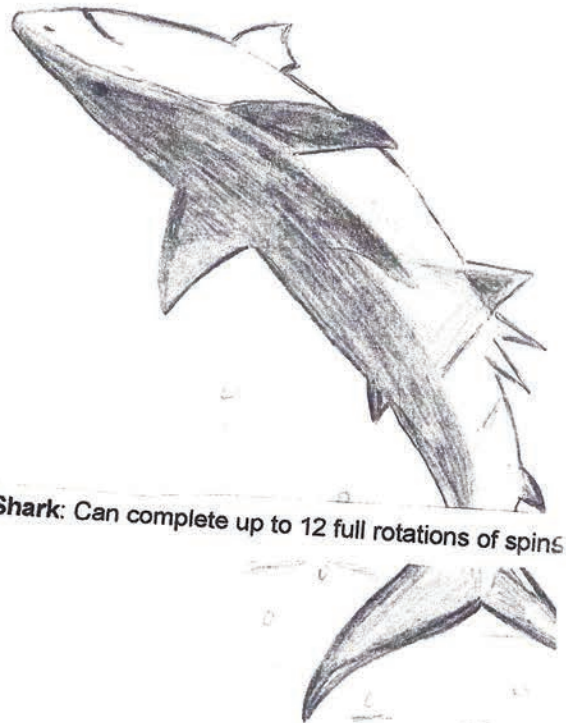
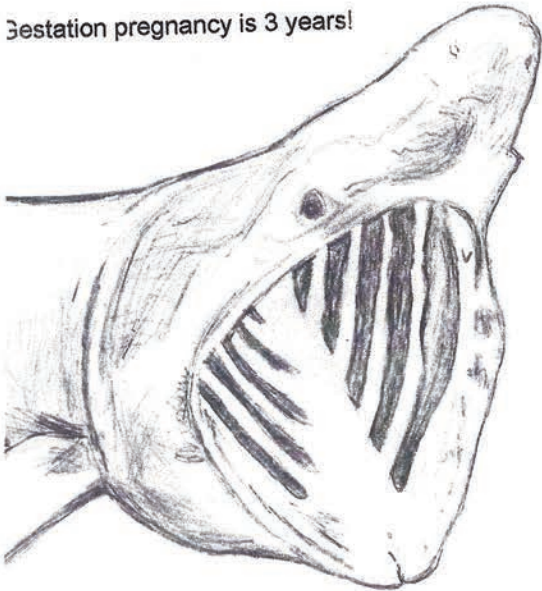
ACTIVITY 6: SHARK HALL OF FAME



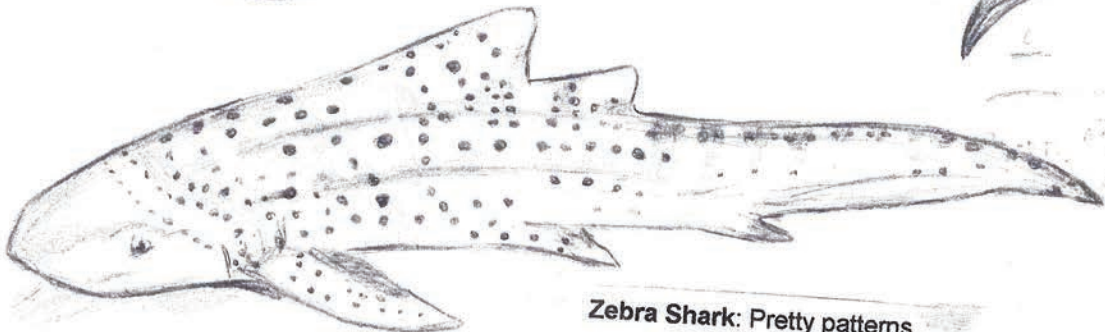
Thresher: 1/2 of the body is its tail

Basking Shark: They do everything sluggish.

Gestation pregnancy is 3 years!



Spinner Shark: Can complete up to 12 full rotations of spins

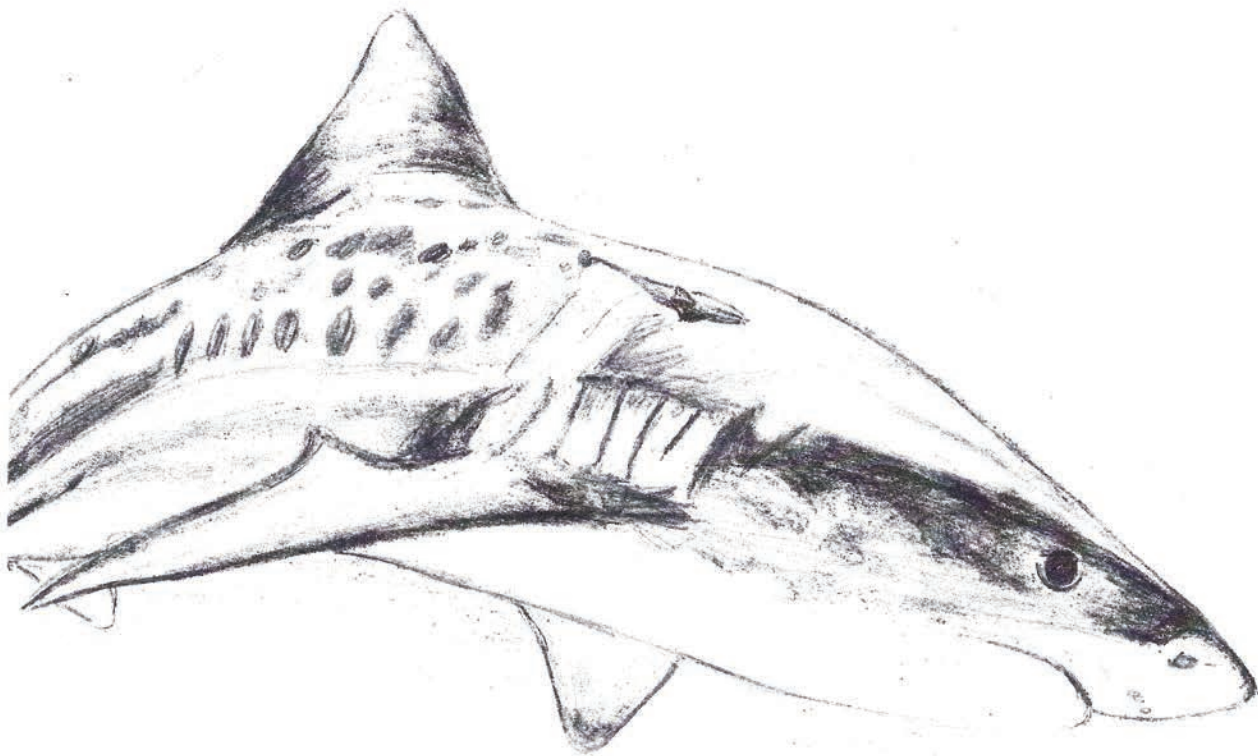


Zebra Shark: Pretty patterns

ACTIVITY 6: SHARK HALL OF FAME



Goblin Shark: Projects his jaws out for a bite



Tiger Shark: Garbage cans of the Sea

ACTIVITY 7: CRAZY NAMES

With over 500 species of sharks, their names have been inspired by some pretty crazy things. Circle the objects and animals that sharks have been named after.

Angel

Chief

Pajama

Saw

Horn

Carpet

Bottle

Frog

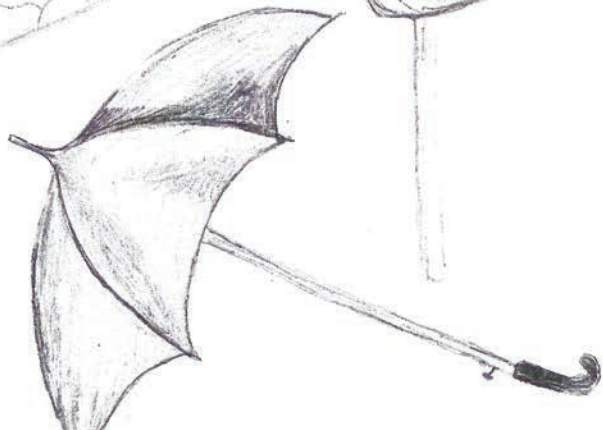
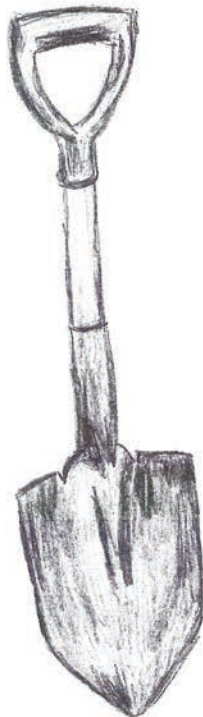
Lantern

Shovel

Milk

Lollipop

Umbrella



ACTIVITY 7: CRAZY NAMES

With over 500 species of sharks, their names have been inspired by some pretty crazy thing. Circle the objects and animals that sharks have been named after.

Angel

Chief

Pajama

Saw

Horn

Carpet

Bottle

Frog

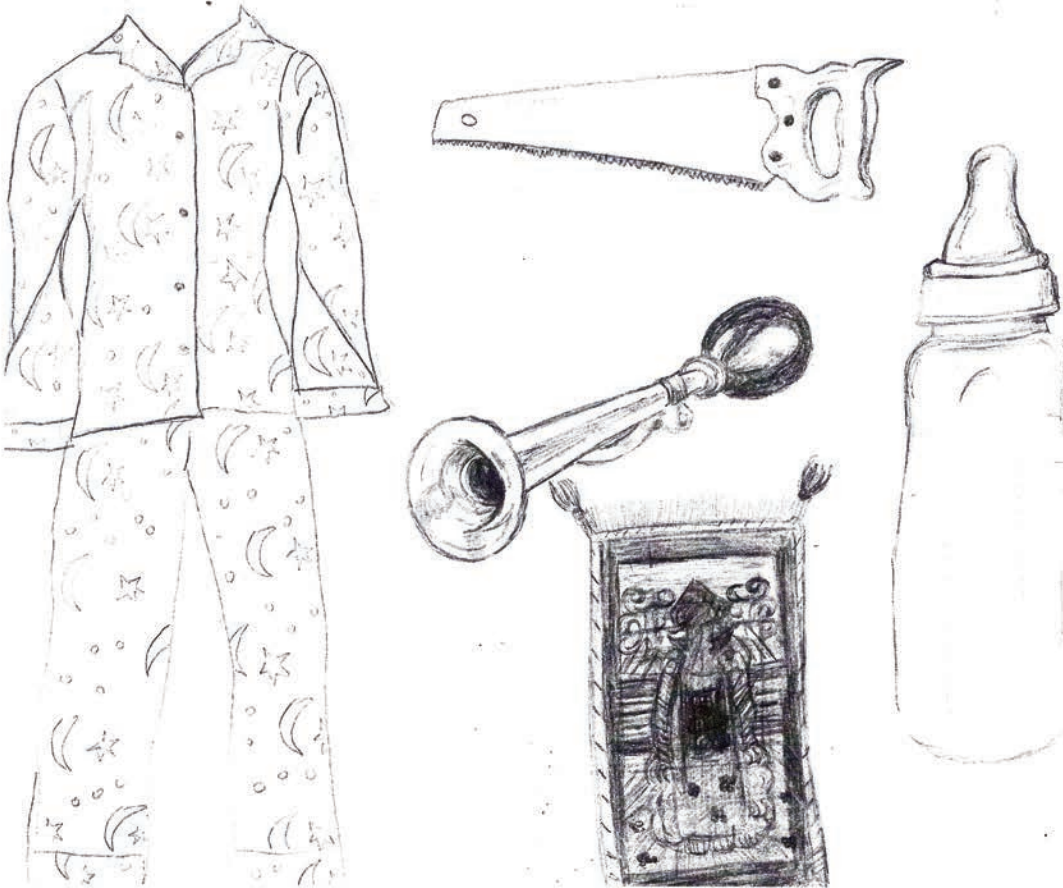
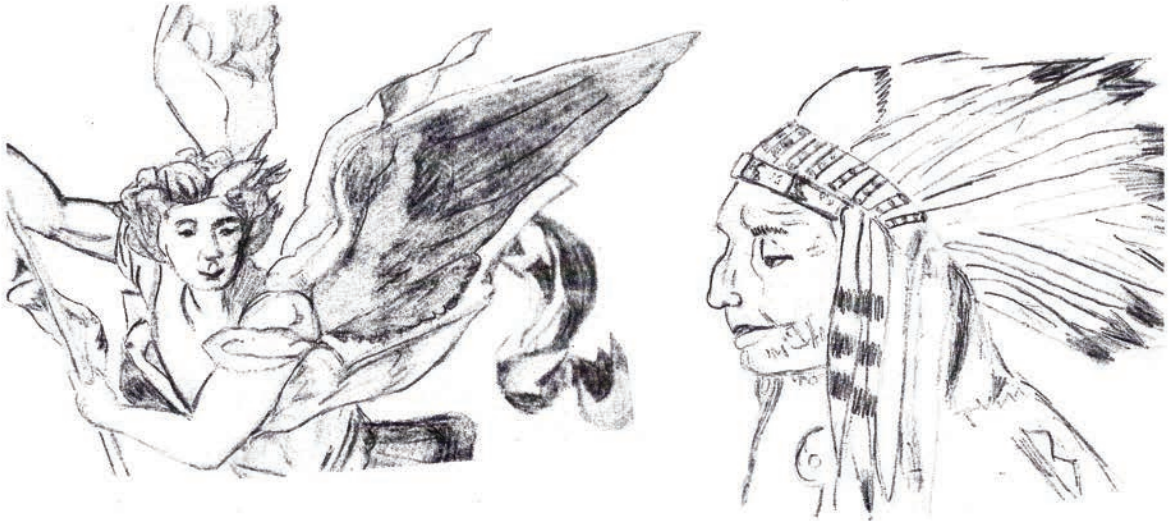
Lantern

Shovel

Milk

Lollipop

Umbrella



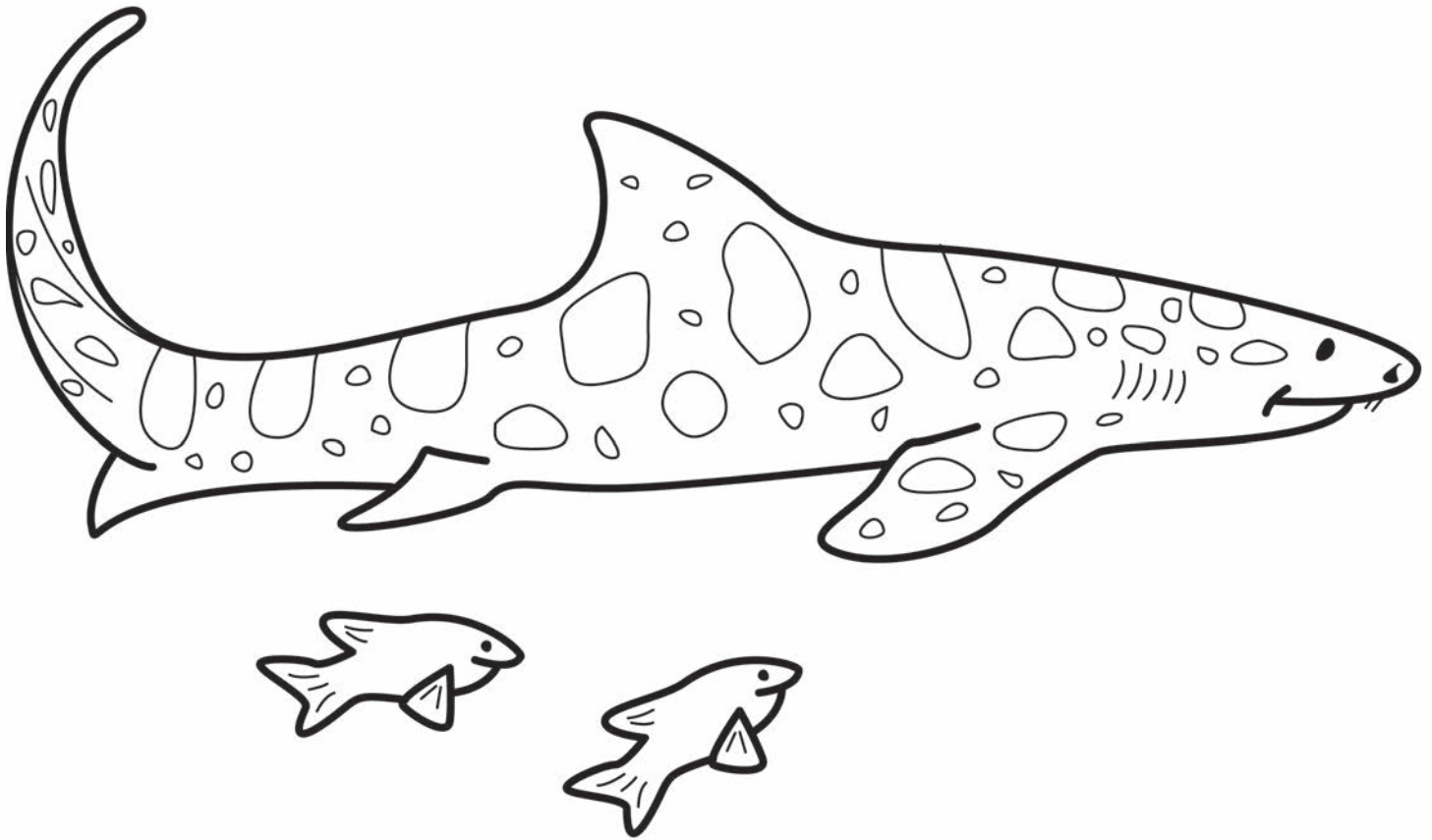
ACTIVITY 8: SHARKS BY THE NUMBERS

Match the number to the correct shark fact

Number Bank		
5-7	10	500
5-15	75	63-273
7	37	2
8	450	

1. Number of shark species: there are approximately ____ species of sharks
2. Number of years sharks have been on Earth: over ____ million years
3. Number of teeth on average a shark has: Depends on species, but anywhere from ____ to ____ rows of teeth in each jaw.
4. Number of annual shark bites on average around the world: around ____ bites are reported
5. Number of shark fatalities on average around the world: ____ fatalities
6. Number of shark sensory systems: ____ senses! ____ extra from humans
7. Number of sharks killed by humans per year: ____ - ____ million sharks killed per year by humans
8. Number of miles traveled by a mako shark one day: ____ miles
9. Number of gills: depending on species ____ - ____
10. Number of fins: Usually ____

LEOPARD SHARK



- Primarily feeds on bottom-dwelling prey, such as worms, clams, crabs, shrimp, octopuses and small fish.
- Has a slender body and can grow up to 6 ft in length, weighing about 40 lbs.
- Is grey/brown or silver in color with a bold pattern of dark brown or black spots.
- Gets its name from its unusual leopard-like markings. Prefers to feed in shallow sand flats and enclosed muddy bays during tidal changes. Often seen resting amongst the rocky ocean floor.

FUN FACT:

Most sharks have to swim continuously with their mouths open to move water across their gills for breathing. However, several species of sharks, like nurse, angel, and leopard sharks have developed special muscles that pump water over their gills allowing them to rest on the ocean floor.

ACTIVITY 9: MYSTERY SHARKS

Here is a list of some very unusual sharks. Match the facts to the mystery sharks.

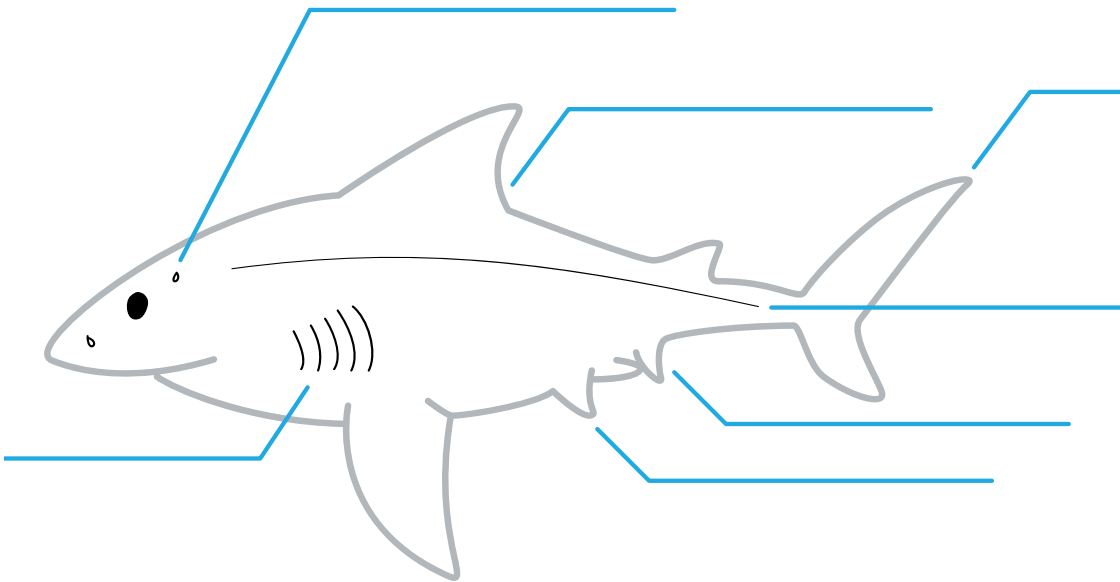
- | | |
|---------------------|----------------------|
| 1. ___Goblin | 6. ___Thresher |
| 2. ___Greenland | 7. ___Basking Sharks |
| 3. ___Megamouth | 8. ___Sixgill Shark |
| 4. ___Frisled Shark | 9. ___Whirl Sharks |
| 5. ___Sawfish | 10. ___Megalodon |

FACTS

- An extinct species of shark, whose teeth overhung from the lower jaw like the circular saw, possibly using this buzz-saw adaptation to snag squid-like creatures.
- Stated as the biggest prehistoric shark that ever lived; it may have been the biggest predatory marine creature in the history of the planet. This extinct shark was over 50 feet, and had the most powerful bite of any creature that ever lived. Disappearing around 2 million years ago, and its main food source was ancient whales.
- Originally thought to be extinct, there have only been 41 confirmed sightings. Large, but has small teeth and is a filter feeder.
- Has an unusually long snout, but it has jaws that can protrude out of its face to compensate for this strange adaptation.
- Looks like a sea serpent ranging about 6 feet in length. They are rarely seen and prefer to hunt in deep ocean depths
- Prefers cold waters, very sluggish, its diet is mostly fish, although some of these shark stomachs have contained pieces of horses, reindeer, marine mammals and polar bears. 90% of these sharks are blind from a parasite
- Species is a very fast swimmer, prefers cold waters. Scientists can actually consider them warm blooded for their ability to maintain body temperature by means of a heat exchange system between veins and arteries in their bodies. (Hint: its main food source is salmon)
- Can grow up to 20 feet, but most of the length is their tail, which is used to smack and stun prey.
- Mouths can be up to three feet wide, which they hold open while swimming. They are a large filter feeder that scoop up plankton, crustaceans, and small fish as they swim.
- Swims along the floor of the ocean and uses their long serrated snouts to smack their prey sideways.
- A primitive shark, also known as the cow shark, it feeds nocturnally on small fishes, snails, crabs, shrimp, and squid. It also scavenges on the carrion of seals, sea lions, and whales. (Hint: most sharks have 5 gill slits; this one has an extra slit)

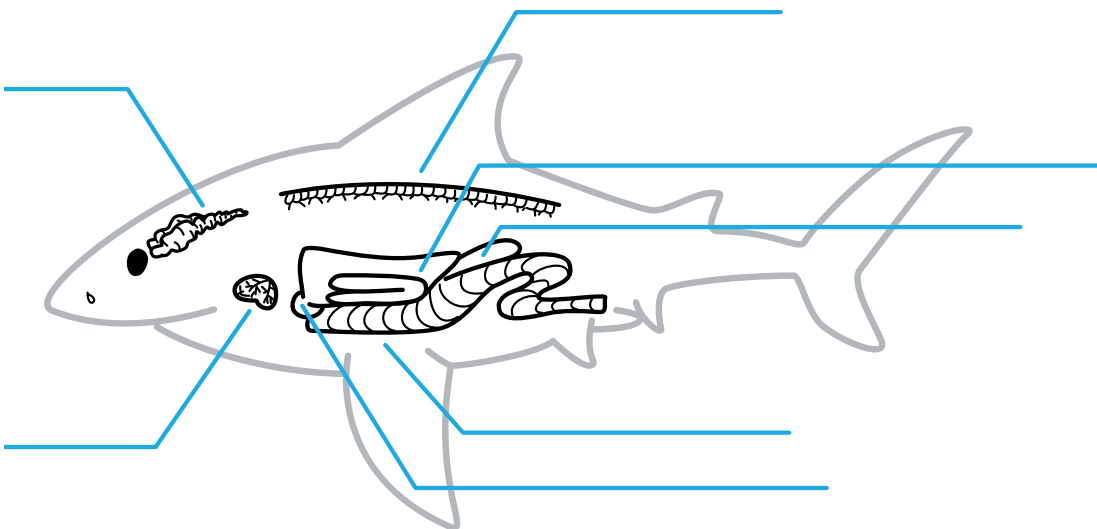
ACTIVITY 10: SHARK PARTS

Label the external and internal anatomy of a shark



External Parts

- Caudal Fin
- Pectoral Fin
- Gills
- Spiracle
- Dorsal Fin
- Pelvic Fin
- Lateral Line
- Claspers

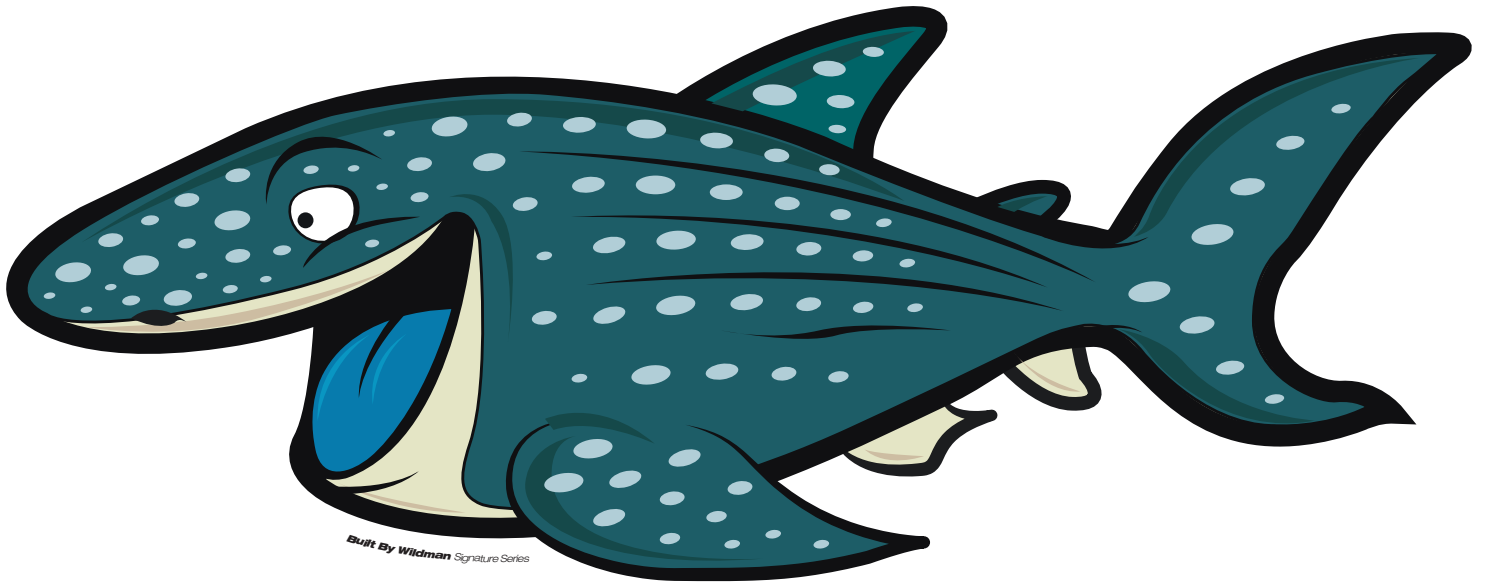


Internal Parts

- Brain
- Liver
- Heart
- Stomach
- Spinal Column
- Gills
- Pancreas
- Intestines

Boy or Girl? Telling if a shark is a male or female is a relatively simple task. Male sharks have 2 lengthened edges to their pelvic fins called claspers. Female don't have claspers, only the opening into which the clasper fits and the waste products exit. Females usually grow to larger sizes than males of the same species, and some species only hang out with other sharks of the same sex most of the year.

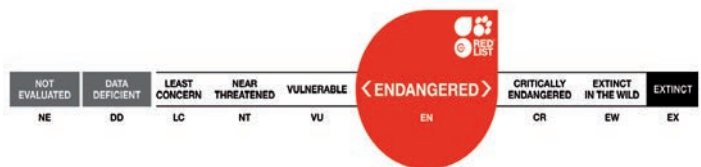
MEET WINSTON HI, I'M A WHALE SHARK



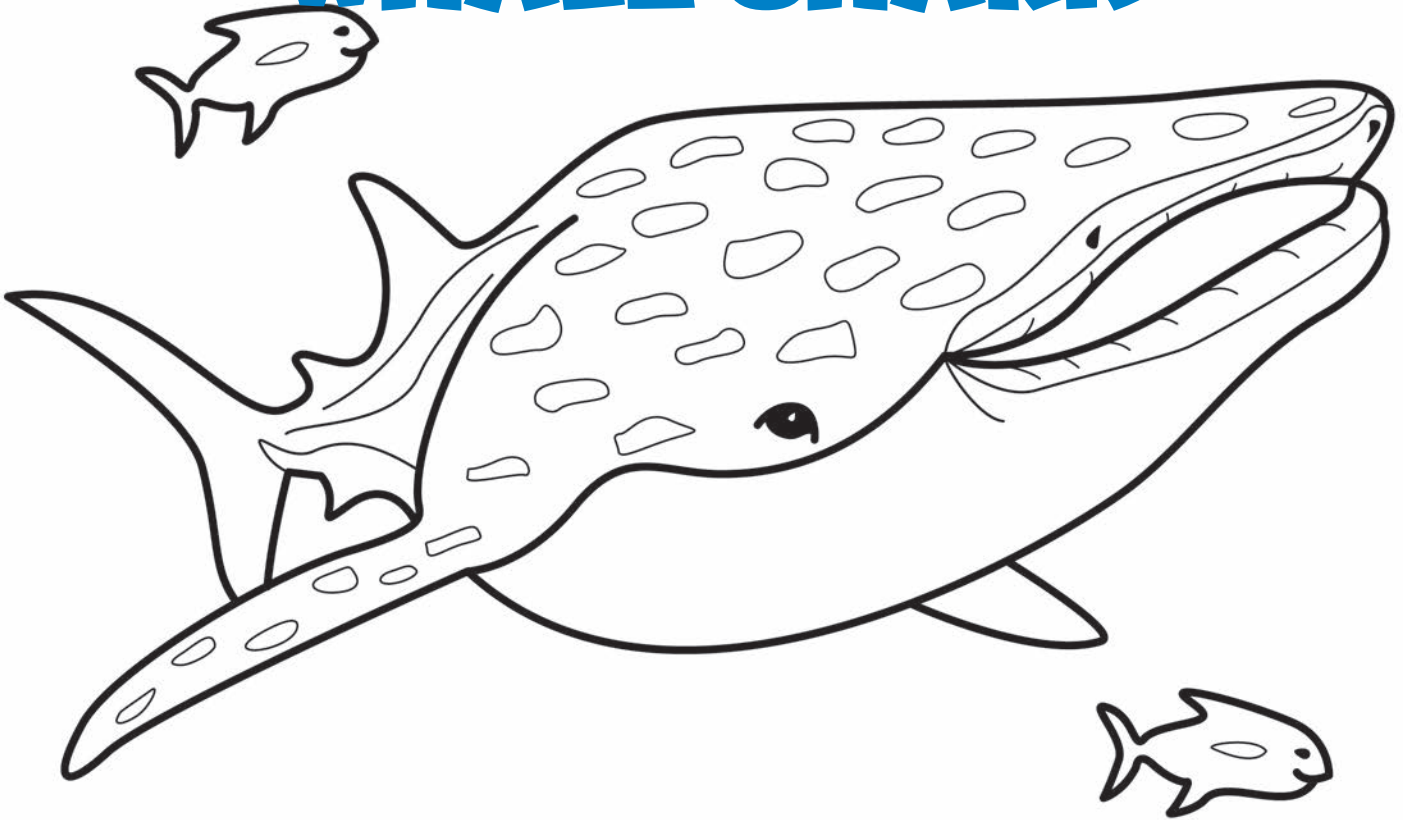
MESSAGE FROM WINSTON:

"I am not just the largest but also one of the oldest sharks. I can live up to 100-150 years, and many of the smaller shark species sharks can live at least 20-30 years – but some longer than 70. That's a long time, particularly when you think about how fast sharks are being fished. We simply don't have time to recover. We are quickly disappearing because we grow up slowly. Please protect us and give us time replenish our family line."

Scientific Name: *Rhincodon typus*
IUCN Status: Endangered



WHALE SHARK

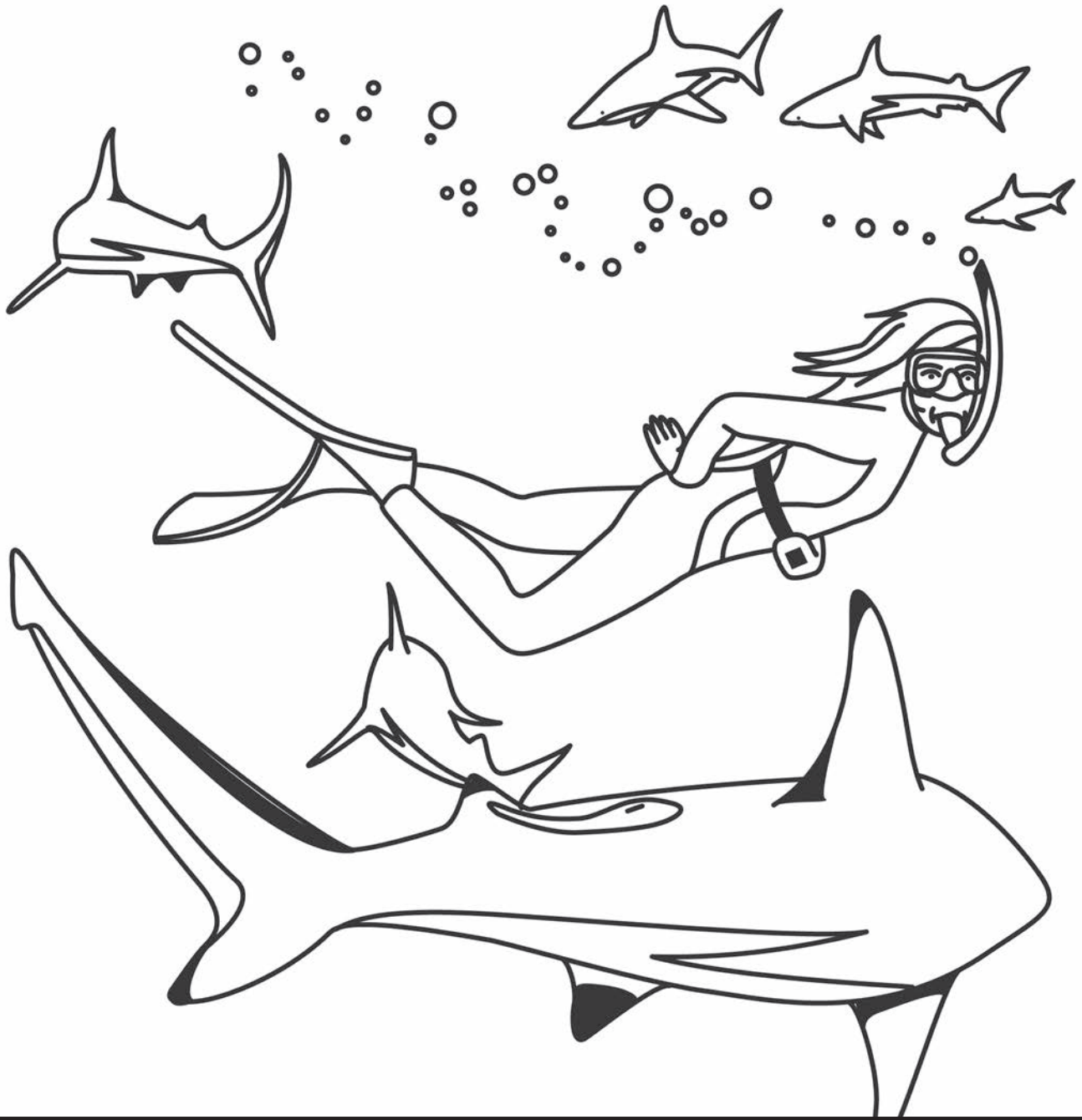


- While I am the largest fish in the sea, I eat the smallest food!
- I am a filter-feeder, sucking tiny nutrients and plankton into my huge mouth as I swim just below the ocean's surface.
- I can grow longer than two school buses (40ft) and weigh over 20 tons!
- My white spots on my back and sides are actually like "shark fingerprints". Each of us has a different pattern.
- I am hunted all over the world for my huge fins – they can sell for over \$20,000 USD.
- I am gentle and often allow divers to swim next to me – just don't touch me or I will swim away!

FUN FACT:

Fossilized shark teeth have been instrumental in allowing scientists to study prehistoric sharks. As shark skeletons are composed of cartilage, teeth are often the only parts of the shark to survive as fossils. If it were not for teeth, we may not know as much as we do about the first 450 million years of shark legacy.

SHARK ANGELS



FUN FACT:

We are the next generation of shark conservationists, working independently and as a network of angels to bring about change. Because sharks need all the guardian angels they can get.

ACTIVITY 11: SHARK CROSSWORD

How well do you know your shark facts?

	1									2					3			
4																		
													5					
6																		
7																		
9				10														
14																		

ACROSS

- An extinct relative of the great white shark
- When sharks travel from one place to another
- A fish that suctions onto sharks
- Manta rays are targeted by fisherman for these structures
- Movie that created an unnecessary fear of sharks
- Hypnotized state of sharks
- A baby shark
- System found in most fish to detect motions or vibrations in the water
- An oil in the liver of a shark that helps it float
- These protect a sharks skin from damage

DOWN

- Sharks that give birth to live sharks
- The ability to control the absorption of dissolved substances in cells and the body
- A parasite that lives on a shark's body (Greenland shark's eye)

SHARKS ARE MISUNDERSTOOD

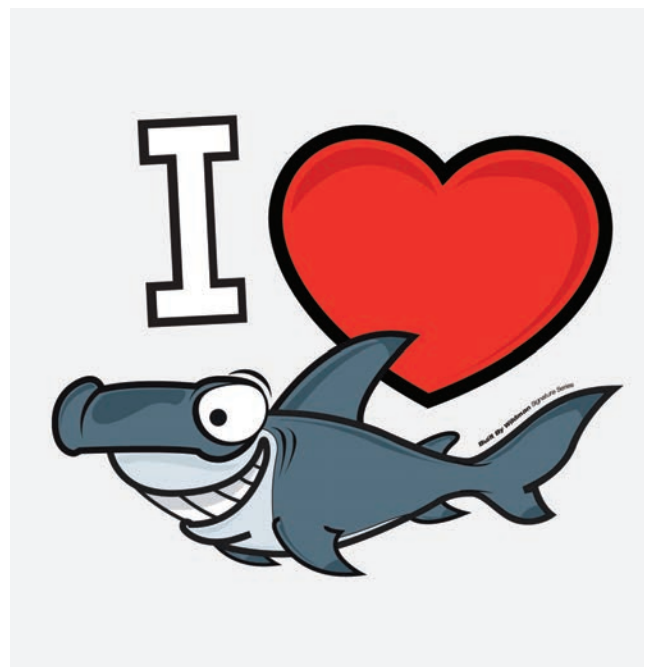
Sharks are greatly misunderstood creatures. They are feared by most, but nearly all of the prejudices are untrue. Most of the myths and folktales about sharks come from an evil image portrayed in the movies and in the media. Many tales give the idea that sharks are extremely dangerous man-eating machines. The fact is that sharks are animals. They do not go through the same thought processes as humans. Animals are not good or bad; they just do what nature designed them to do. One thing is certain though, sharks do deserve respect.

Sharks do and have attacked people, but a lot of the attacks are cases of mistaken identity. Sometimes the glint of jewelry, excessive splashing, or murky waters can mislabel a swimmer as shark prey. The sharks may inaccurately recognize an individual as their natural source of food.

Not all sharks are dangerous, and they certainly do not go looking for innocent humans to eat. The top 10 sharks that deserve the most respect and can potentially, but rarely hurt humans are; Great Whites, Tiger sharks, Bull sharks, Oceanic Whitetips, Reef sharks, Blue sharks, Blacktip sharks, Shortfin Makos, Lemon sharks, and Hammerheads. The chance of being attacked by one of these sharks is very low. More people are killed by coconuts, vending machines, mosquitoes and cows every year than are killed by sharks.

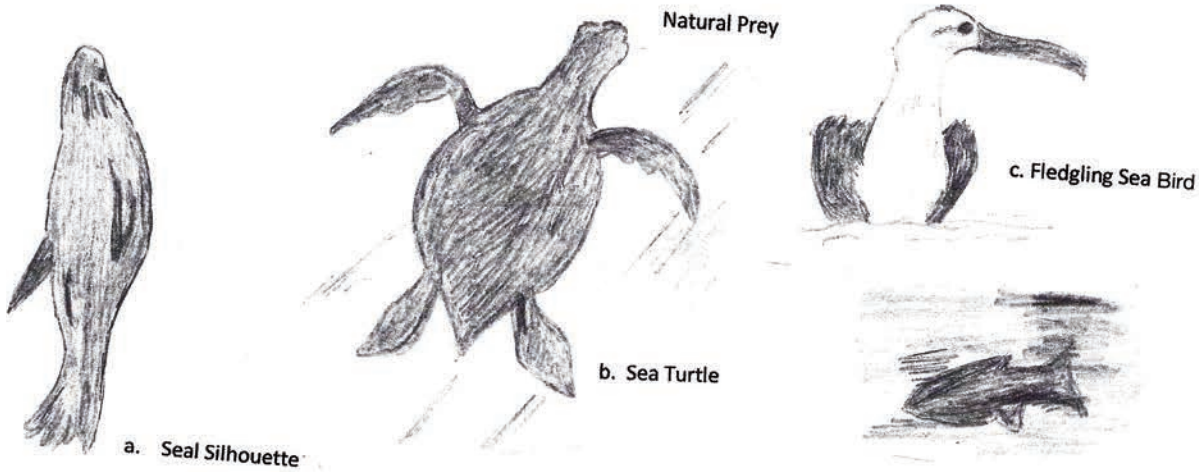
On average, there are only about 100 shark attacks each year and only around 10 of result in a human death. On the other hand, nearly 63 MILLION-273 MILLION sharks are killed every year in the name of sport, food delicacies like fin soup, medicine or just because man fears them.

That is 11,417 sharks are killed per hour!

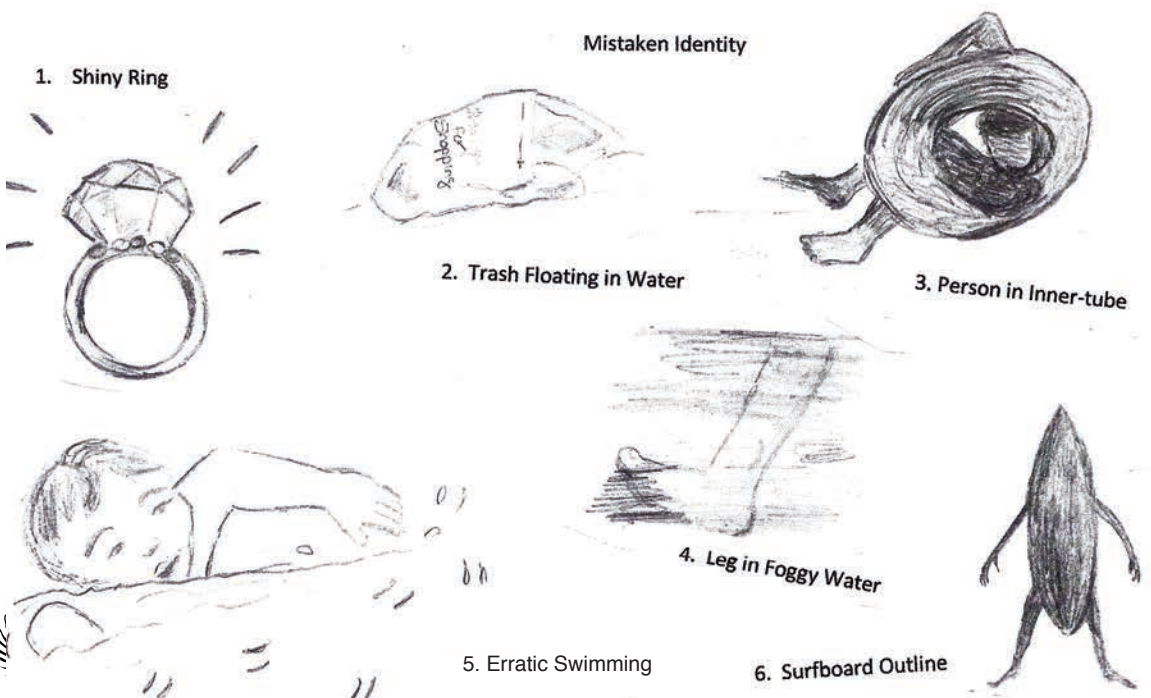


ACTIVITY 12: MISTAKEN IDENTITY

Sharks sometimes mistake an unnatural source of prey vs their normal diet. Match the letter of the natural prey to the number of the mistaken identity object.



- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____



I've Got a Tummy Ache: When a shark eats food that it can't digest (like a turtle shell or tin can), it can vomit by thrusting its stomach out its mouth then pulling it back in. This is called stomach eversion. Sharks can do this to release debris from their stomachs, or when they are stressed.

ACTIVITY 13: OCEAN FOOD WEB

Create a food chain connect organisms with arrows that eat other organisms. More than one arrow can come from organisms. Start from bottom and work your way up to top apex predators.

Sharks

Dolphin

Seal

Whales

Mackerel

Tuna

Stingrays

Sea Otter

Small fish

Shellfish

Scallops

Flounder

Phytoplankton

Zooplankton

Algae

Kelp

QUESTIONS

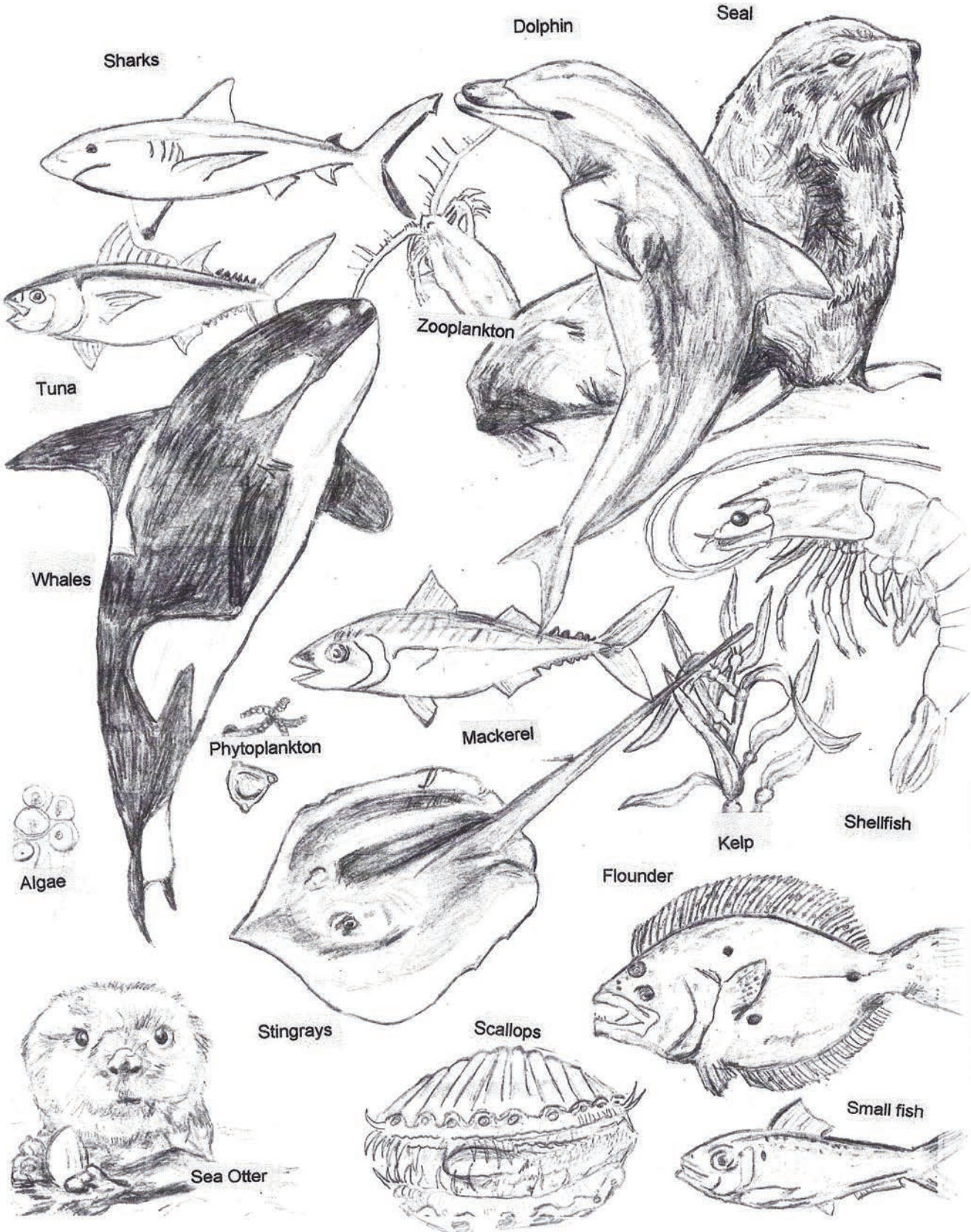
What would happen to stingrays if sharks disappeared?

What would happen to all the things the stingrays eat?

List all the organisms that could be affected?

Can't See Me Camouflage: Counter shading is a common color pattern in certain shark species in which the upper side of the animal is darker than the lower side. Such a color pattern provides camouflage for the shark. When viewed from above, below, and even from the side the shark blends into the ocean surroundings. Sun shines down from the sky and lights the top of an animal's body, casting its belly in shadow. If looked at from below the shark is concealed by the light colors above. If viewed from above the shark blends in with the depths below. The counter shading pattern balances the light from overhead and the shadow beneath the animal so as to blend the animal's side profile with its surroundings.

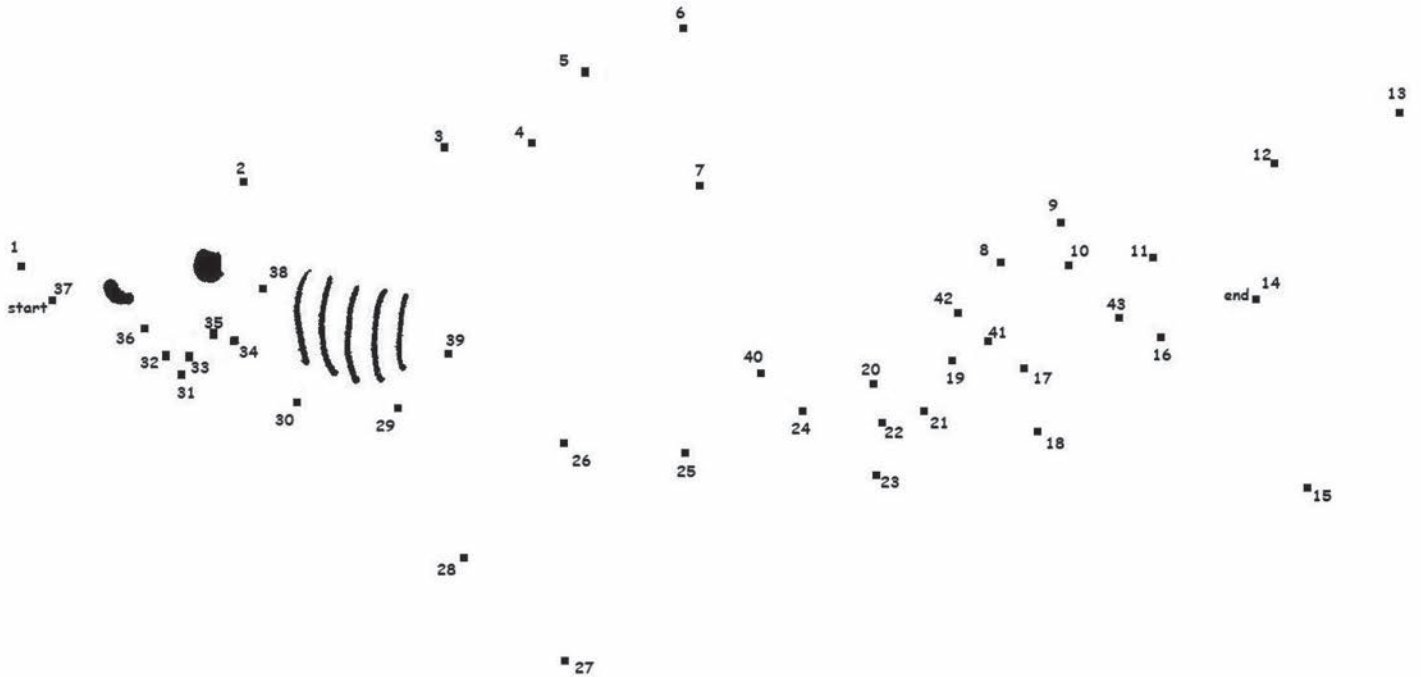
ACTIVITY 13: OCEAN FOOD CHAIN



ACTIVITY 14

CONNECT-THE-DOTS

Connect the dots to draw a shark, beginning at "start" and counting up until you reach the 'end". Then fill in the blanks to identify the species of shark.



This is a

G _ e _ _ _ h _ _ e S _ _ r _

FUN FACT:

Sharks are usually colored the way they are as a form of camouflage, so that they can sneak up on their prey! The upper body of a Great White shark is a dark grey so that prey on the surface looking down cannot see them in the dark depths of the ocean, while the underbelly is white so when looking up, the shark blends in with the light coming from the surface!

ACTIVITY 15

CONNECT-THE-DOTS

Connect the dots to draw a shark, beginning at "start" and counting up until you reach the 'end". Then fill in the blanks to identify the species of shark.



A _ g _ _ S _ a _ _

FUN FACT:

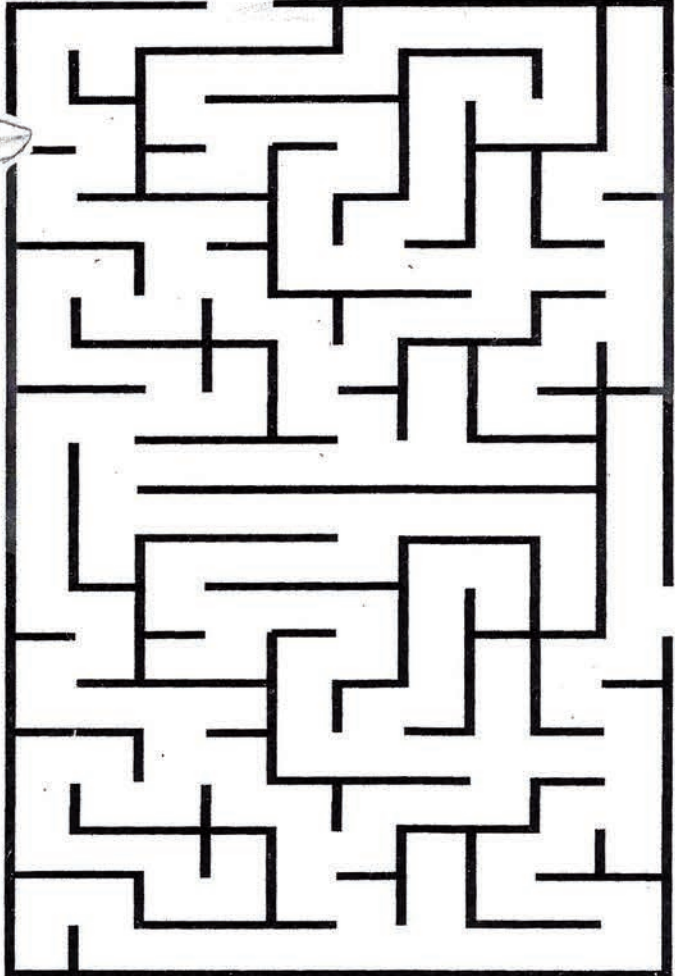
Angel sharks are reminiscent of skates, with flattened bodies. Their eyes are on the top of their heads, and their gills are on the ventral, or bottom parts of their body. Their pectoral and pelvic fins are splayed out like flat wings. Angel sharks spend much of their time partially buried on the sandy bottom of the ocean hiding in wait for prey.

ACTIVITY 16

OCEAN MAZE

A lot of sharks are born in mangroves and then make their way out to the great oceans when they mature. Help LuLu the Lemon Shark find her way to the big ocean.

START



FINISH

The maze is a square grid with a complex path. The start is at the top left, and the finish is at the bottom right. The path leads from the shark, through a mangrove area, past a fisherman, through an open ocean area, and finally past a piece of trash to reach the finish.

Shark

Mangroves

Fisherman

Open Ocean

Trash

FUN FACT:

Sharks use their electroreceptors to help navigate the oceans. They are able to induce an electric current by their own movement across the Earth's electromagnetic fields, and this helps them to determine and stay on course.

ACTIVITY 17

WORD SEARCH



APEXPREDATOR
 CARNIVORE
 CARTILAGE
 CHONDRICHTHYES
 DENTICLES

ECOTOURISM
 ELASMOBRANCHI
 FILTERFEEDER
 FINFREE
 FOODWEB

GILLS
 GREATWHITE
 HAMMERHEAD
 JAWS
 LATERALLINE

MANTARAY
 SHARKANGELS
 SYMBIOSIS
 TEETH

FUN FACT:

Sharks and their relatives have been around for a very long time, over 400 million years! Dinosaurs lived 230 million years ago and died out 65 million years ago. Sharks continued to adapt and evolve, surviving 5 mass extinctions.

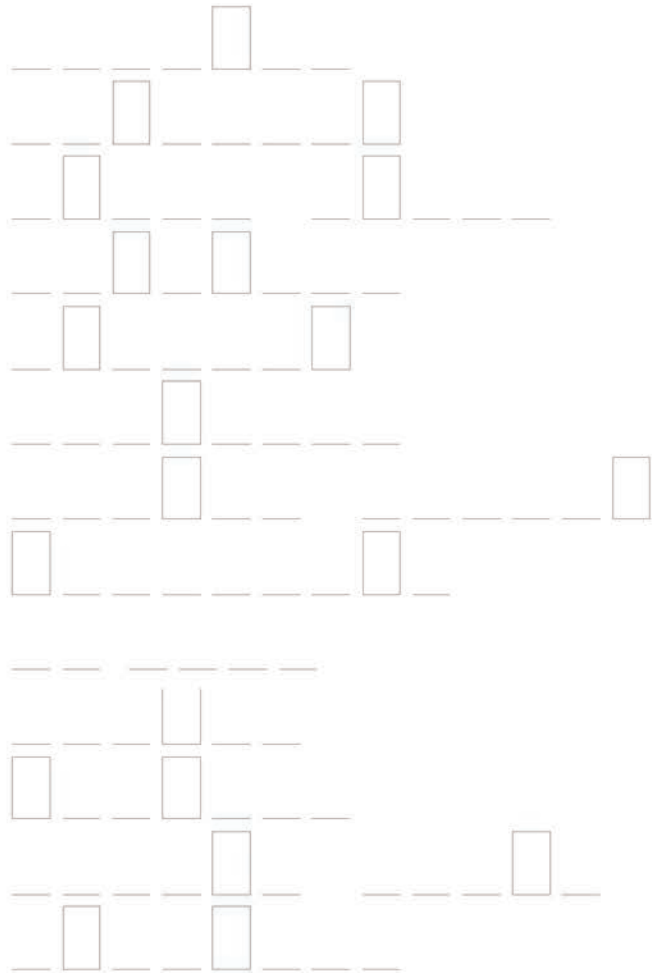


ACTIVITY 19

SHARK SCRAMBLE

Unscramble the letters to form the names of different species of sharks. Once you've solved them all, then unscramble the letters within the boxes to form a phrase below stating what sharks are!

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



□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ !

FUN FACT:

As apex predators, sharks keep the ocean eco-system in healthy balance. They control the populations of other fish species, and they cull weak ocean creatures, ensuring that only the fittest and strongest survive to reproduce.



ACTIVITY 20

SHARK QUIZ

Do you think you know sharks? Take this quiz and see if you are a shark expert.

- 1.) How many people do sharks kill every year?
 - a. 100,000
 - b. 100
 - c. 10
 - d. 1,000,000
- 2.) What is the oldest shark alive today
 - a. Megalodon
 - b. Frilled
 - c. Great White
 - d. Bull shark
- 3.) What shark has the unique ability to survive in fresh water?
 - a. Great White
 - b. Cookie cutter shark
 - c. Lemon shark
 - d. Bull shark
- 4.) Which one of these sharks is NOT a filter feeder
 - a. Whale Shark
 - b. Megamouth
 - c. Angel Shark
 - d. Basking Shark
- 5.) What are baby sharks called
 - a. Fry
 - b. Calves
 - c. Pups
 - d. Sharklings
- 6.) Approximately how many of species of sharks are there?
 - a. 100
 - b. 350
 - c. 400
 - d. 500
- 7.) How long have sharks been on Earth?
 - a. 100,000 years
 - b. 450 million years
 - c. 4000 years
 - d. 1 billion years
- 8.) Sharks have 5-7 _____, used for breathing
 - a. Fins
 - b. Gill slits
 - c. Teeth
 - d. Nostrils
- 9.) Sharks have unique electroreceptors called _____, that sense current to help locate prey in the dark or buried in the sand.
 - a. Tonic Immobility
 - b. Stomach Eversion
 - c. Ampullae of Lorenzini
 - d. Lateral Line
- 10.) Shark skeletons are made of _____.
 - a. Cartilage
 - b. Bone
 - c. Ligaments
 - d. Tendons

You Put a Spell on Me: Sharks can enter a natural state of paralysis when inverted. This state is called “tonic.” This unnatural posture is thought to rework the animal’s sensi-motor cells causing a hypnotized response. Sharks usually enter tonic immobility in less than a minute and, if left alone, they can remain in this state for up to 15 minutes!



SPREADING THE WORD ABOUT SHARKS

SHARKS ARE QUICKLY DISAPPEARING FROM THE PLANET.

The health of the world's ocean depends on sharks, and every creature on earth depends on healthy oceans for survival.



Sharks need you to be a their voice. Without sharks, our oceans could be in big trouble. They are one of the most misunderstood creatures on the planet and have been demonized in our culture. Feared by most, these creatures lack the much needed laws to stop their slaughter. It is human nature to protect what is loved, and not what is feared. The illogical fear of sharks needs to be eliminated. We need to debunk the myths and lies and set the record straight.

What would the world be like without sharks? It is said if we do nothing sharks could potentially disappear in the next 10 years. Speak for the sharks because they cannot speak for themselves. The future of our planet needs sharks. We are their only hope.

Deadly Soup: The shark fin is used as a main ingredient in a shark fin soup, which is a Chinese delicacy. Shark fin soup is a reason sharks are declining. It is not the sole reason, but it has greatly impacted the populations of sharks around the globe. The shark fin is tasteless, which is why the fin is boiled in a chicken broth to absorb taste. It also has little nutritional value. Shark fin soup used to be only consumed by the rich, however the Chinese economy is growing stronger and with more people coming into wealth, the demand for shark fins has increased.

KEYS

ACTIVITY 1: USING YOUR HEAD

1. B Winghead
2. C Scalloped
3. D Scoophead
4. F Great Hammerhead
5. A Small Eye
6. E Smooth

ACTIVITY 2: TAKE A BITE

1. B. Great White-Seals
2. C. Sand Tiger-Crabs
3. D. Bull Shark –Tarpon
4. E. Tiger Shark-Turtles
5. G. Goblin Shark- Squid
6. H. Cow (6 gill) Shark-Shrimp
7. A. Megalodon-Whales
8. F. Lemon Shark-Reef

ACTIVITY 3: LOOK AT THE BABY

1. D Horn Shark:
 - a. Oviparous-Egg Birth
 - b. 24 spiral shaped eggs
2. B Bull Shark:
 - a. Viviparous-Live:Birth
 - b. 1-13 pups
3. C Pelagic Thresher Shark:
 - a. Viviparous Live: Birth
 - b. 2 pups (I have a long tail)
4. E Spiny Dogfish:
 - a. Oviparous-Egg: Birth
 - b. 10 eggs called mermaid purses
5. A Tiger Shark:
 - a. Oviparous- Egg: Live: Birth
 - b. 10-60 pups (looks like a mini version of the adults)

ACTIVITY 4: GET IN MY BELLY

If you circled all of the items, except couch and dinosaur, you were correct

ACTIVITY 5: SHARK SHAPES

- | | |
|----------------------|---------------------------|
| a. Great White Shark | h. Whale Shark |
| b. Basking Shark | i. Hammerhead Shark |
| c. Tiger Shark | j. Oceanic Whitetip Shark |
| d. Whirl Shark | k. Goblin Shark |
| e. Blacktip Shark | l. Lemon Shark |
| f. Blue Shark | m. Sandbar Shark |
| g. Thresher Shark | n. Nurse Shark |
| | o. Sand Tiger Shark |

ACTIVITY 6: SHARK HALL OF FAME

Fanciest: Zebra Shark-pretty pattern
Worst Reputation: Great White-Thanks “Jaws”
Largest: Whale Shark – 59 feet-20.6 tons
Oldest Living Fossil-Frilled Shark- relic from Cretaceous period
Smallest: Dwarf lanternshark – 6 – 8 inches
Most Acrobatic: Spinner Shark-can complete up to 12 full rotations
Coolest Tail: Thresher-1/2 of the body is its tail
Slowest: Basking Shark-They do everything slow.
Gestation pregnancy is 3 years!
Oddest: Goblin Shark-shoots his mouth out for a bite
Hungriest (will eat anything)-Tiger Shark-garbage cans of the sea
Fastest and Highest Jumper- Shortfin Mako – 31 mph-9 meter jumps (29 feet)

ACTIVITY 7: CRAZY NAMES

No Circle- Chief, Bottle, Umbrella

ACTIVITY 8: SHARKS BY THE NUMBERS

1. Number of shark species: there are approximately 500 species of sharks
2. Number of years sharks have been on Earth: over 450 million years
3. Number of teeth on average a shark has: Depends on species, but anywhere from 5 -15 rows of teeth in each jaw.
4. Number of shark bites on average around the world: around 75 bites are reported
5. Number of shark fatalities on average around the world: 10 fatalities
6. Number of shark sensory systems: 7 senses! 2 extra from humans
7. Number of sharks killed by humans per year: 63-273 million sharks killed per year by humans
8. Number of miles traveled by a mako shark one day: 37 miles
9. Number of gills: depending on species 5-7
10. Number of fins: Usually 8



ACTIVITY 9: MYSTERY SHARKS

1. D Goblin
2. F Greenland
3. C Megamouth
4. E Frilled Shark
5. J Sawfish
6. G Salmon Shark
7. H Thresher
8. I Basking Sharks
9. K Sixgill Shark
10. A Whirl Sharks
11. B Megalodon

ACTIVITY 10 SHARK PARTS

External Parts

Top of Shark: Spiracle, Dorsal Fin, Caudal Fin

Middle of Shark: Lateral Line

Bottom of Shark: Gills, Pectoral Fin, Pelvic Fin, Claspers

Internal Parts

Top of Shark: Brain, Gills, Stomach, Spinal Column

Middle of Shark: Intestines

Bottom of Shark: Heart, Liver, Pancreas

ACTIVITY 11: SHARK CROSSWORD

- | | |
|-------------------|------------------|
| 1. Viviparous | |
| 2. Megalodon | 9. Tonic |
| 3. Osmoregulation | 10. Copepods |
| 4. Migration | 11. Pup |
| 5. Remora | 12. Lateral line |
| 6. Gillrakers | 13. Squalene |
| 7. Jaws | 14. Denticals |

ACTIVITY 12: MISTAKEN IDENTITY

- | | |
|------------------------|----------------------------|
| a. Seal Silhouette | 6. Surfboard Outline |
| b. Sea Turtle | 3. Person in inner tube |
| c. Fledging Sea Bird | 2. Trash floating in water |
| d. Fish in murky water | 4. Leg in foggy water |
| e. Fish Scale Shine | 1. Shiny Ring |
| f. Injured Fish | 5. Erratic Swimming |

ACTIVITY 13: OCEAN FOOD WEB

What would happen to stingrays if sharks disappeared? Stingray populations would increase.

What would happen to all the things the stingrays eat? The small fish and scallop populations would decrease.

List all the organisms that could be affected?

Sea otters, flounder, kelp, phytoplankton, algae, and everything underneath the shark would be effected.

ACTIVITY 14: CONNECT-THE-DOTS

Great White Shark

ACTIVITY 15: CONNECT-THE-DOTS

Angel Shark

ACTIVITY 18: SHARK SCRAMBLE

1. Angel
2. Blue
3. Zebra
4. Mako
5. Tiger
6. Reef
7. Nurse
8. Horn
9. Lemon
10. Bull
11. Whale
12. Dusky
13. Carpet

Phrase: Sharks are cool

ACTIVITY 19: SHARK SCRAMBLE

1. Lantern
2. Blacktip
3. Great White
4. Thresher
5. Frilled
6. Atlantic
7. Cookie Cutter
8. Sharpnose
9. Six Gill
10. Gulper
11. Oceanic
12. Dagger Tooth
13. Mackerel

Phrase: Sharks are apex predators

ACTIVITY 20: SHARK QUIZ

1. c.
2. b.
3. d.
4. c.
5. c.
6. d.
7. b.
8. b.
9. c.
10. a.



WANT TO EARN YOUR WINGS? TAKE THE SHARK ANGEL'S PLEDGE

I want to turn the tides for sharks! As a Shark Angel, I pledge to:

1. Give sharks a chance! Never consume shark products or support stores and restaurants that sell shark – including fins, jaws, teeth, cartilage, and squalene oil. Be sure to educate them on the issue and help them understand your choice.
2. Get shark smart. Learn more about the issues and stay informed. If possible, meet a shark or two!
3. Be a positive voice for sharks. Correct the myths and misconceptions surrounding sharks. Promote media that is responsible. Educate friends and family
4. Stand up for sharks. Support laws to protect sharks.
5. Never turn a blind eye. Keep an eye out for shark issues and report any issues you witness.
6. Eat shark friendly. Limit (or eliminate) my consumption of seafood, and educate myself on how to eat sustainably.
7. Build an army of angels! Encourage my friends and family to join me.
8. Take action for sharks. Use my skills and passion to do something locally in my community.



**CHARLIE
NEEDS ANGELS!**



Together, we can take flight. We have the power to make a difference for sharks, the oceans – the world's largest and most important ecosystem, and ultimately, mankind.

www.sharkangels.org



To learn more about sharks and how you can be a Shark Angel
visit www.sharkangels.org