African Marine Mammal

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'Together to save our aquatic wildlife'

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Environmental Education and Conservation of Sea Turtles on the Northern Coast of Cameroon

The Rufford Foundation
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Lesson 1: Environment and the northern coast of Cameroon

Introduction

In this part we are going to talk about the environment generally including the various component of the environment, the various ecosystems. Then we will focus on marine ecosystem and specifically the case of Cameroon and the northern coast.

Some key concepts

Environment: It is the surroundings or conditions in which a person, animal, or plant lives or operates.

It is also the natural world, as a whole or in a particular geographical area. The natural environment encompasses all living and non-living things occurring naturally, meaning in this case not artificial. So environment can also be called ecosystem. For example: Forest, Ocean, Mountain…

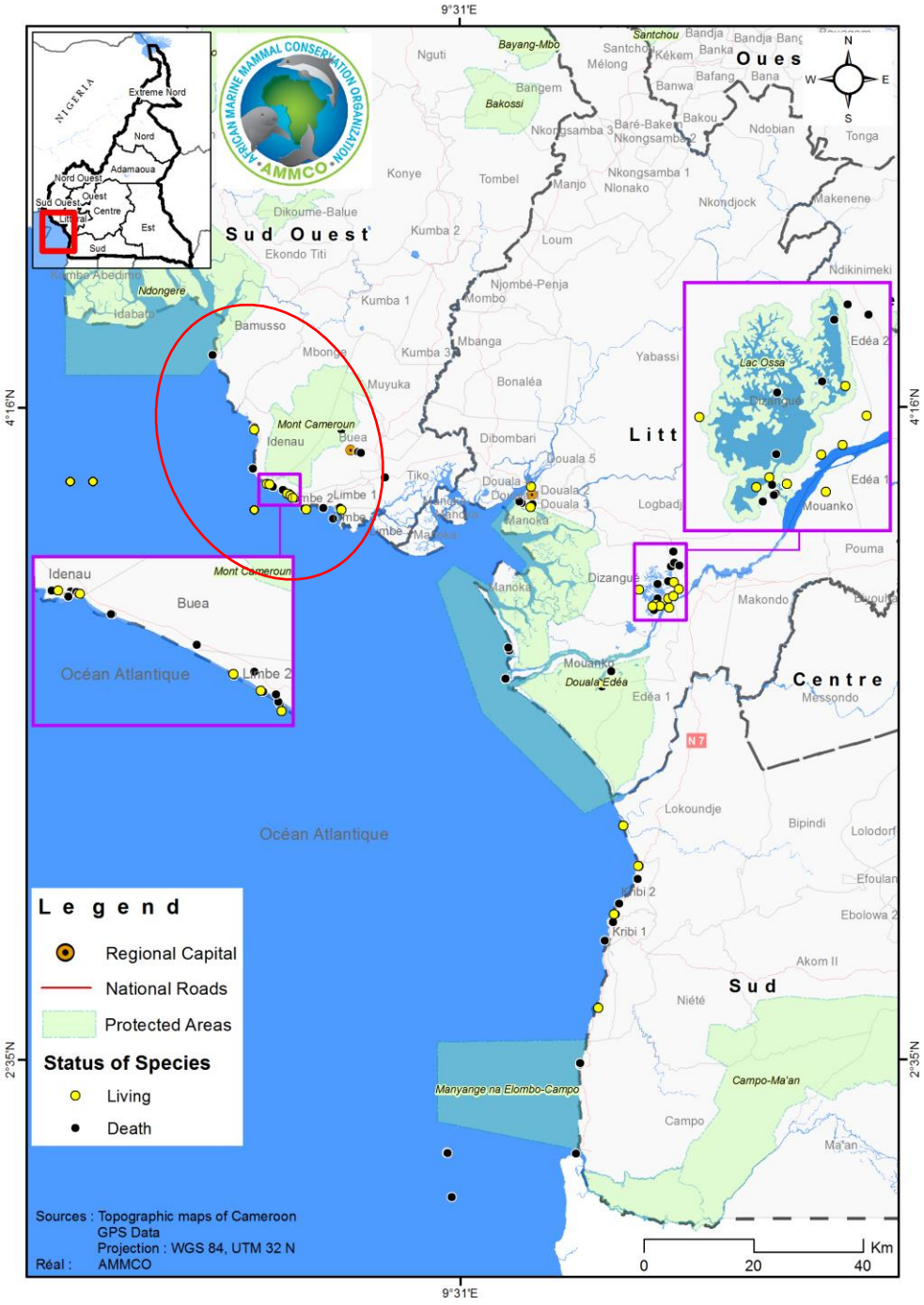
Ocean: is an expanse of salt water also called sea. They are 5 oceans in the world including the Arctic, Atlantic, Pacific, Indian, and Southern Oceans. The ocean that borders Limbe is the Atlantic Ocean.

Beach: pebbly/rocky or sandy shore, especially by the sea between high- and low-water marks.

Coast: the part of the land adjoining or near the sea.

Where are we?

The northern coast of Cameroon is the part of the coast stretching on approximately 173km from the Rio Del Rey estuary at the Nigeria border to the Mungo estuary. This last zone is known to include the major fishing zones of the country. Four fish landing port have been identified: Limbe (4°00'262"N, 9°21'128"E), Batoke (4°03'1871"N, 9°09'191"E), Bakingili (4°06'907"N, 9°02'641"E) and Idenau (4°21'000" N, 8°98'728"E). The zone also includes an oils processing company, 3 oils exploitation companies and a part of Korup wildlife reserve.



Some threatened marine species or group of species

In the sea of the northern coast of Cameroon, the marine megafauna include cetaceans such as whales and dolphins, Reptiles such as sea turtles, elasmobranches including sharks and rays. Let look at each group

Lesson 2: Sea turtles

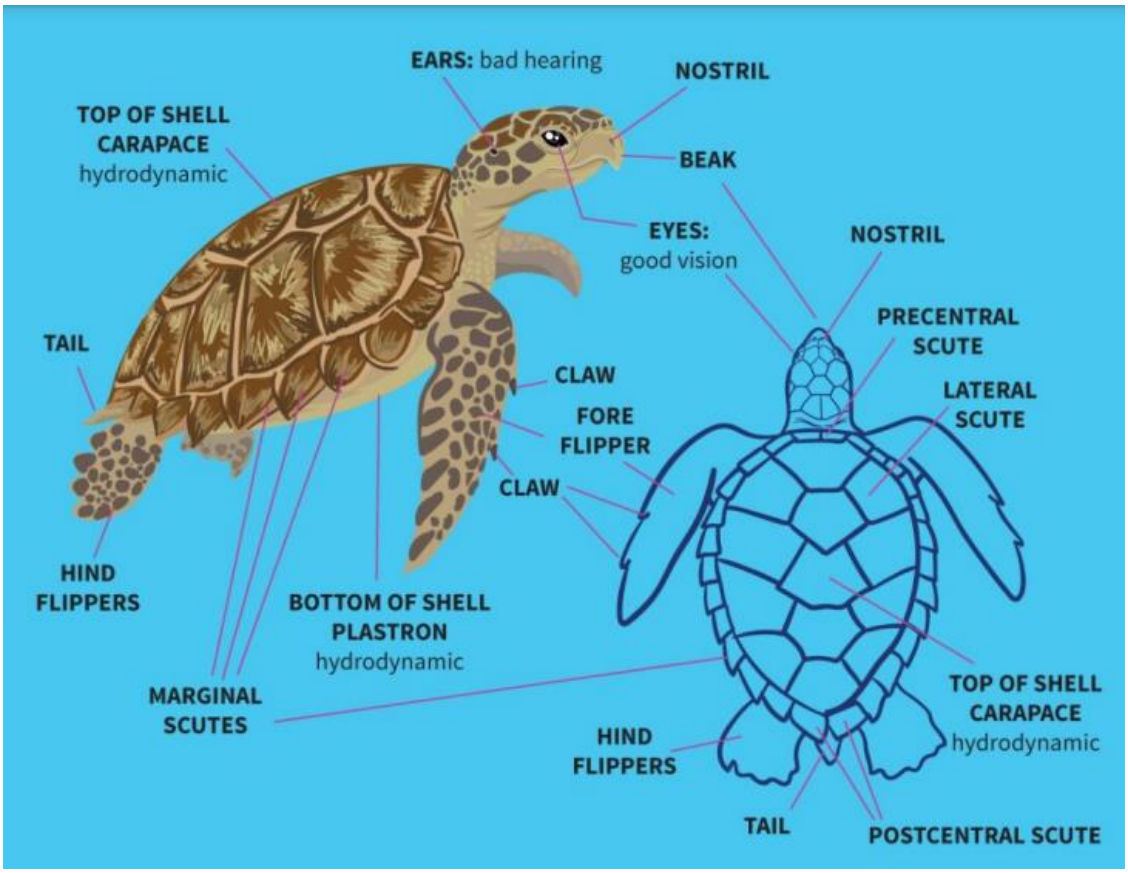
What are sea turtles?

• Turtles are in the class Reptilia, which includes snakes, crocodiles, and lizards.

• Marine turtles are thought to have come from land turtles and freshwater turtles that lived about 230 million years ago in the Cretaceous period.

• The two families left today are the Cheloniidae and the Dermochelyidae.

Anatomy



Physiology

Thermoregulation

• All marine turtles are ectotherms, meaning their body temperate varies with the temperature of its surroundings. Leatherbacks can have higher internal temperatures than the environment (endotherms).

• Green Turtles have been observed sunbathing on beaches and Leatherback are thought to spend midday near the surface to warm up in colder waters

Diving Physiology

• Turtles may spend over 90% of their lifetime submerged in apnea. - Foraging - 5-40 mins underwater - Sleeping - 4-7 hours underwater

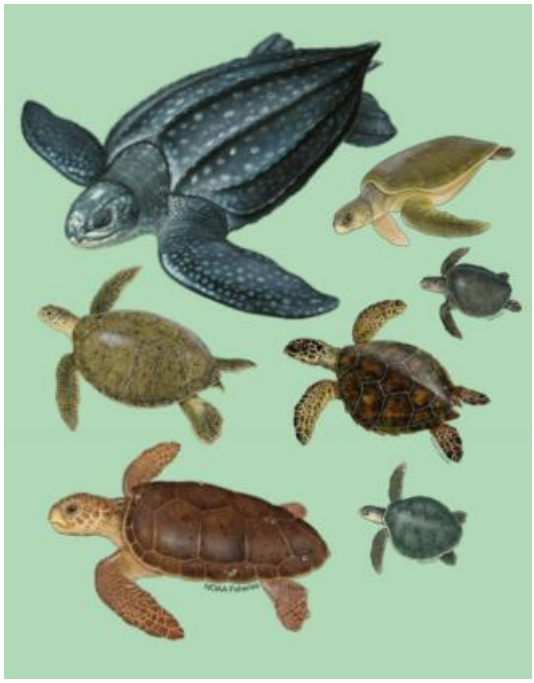
• When stressed they diving endurance severely reduced making them susceptible to drowning

• New research has shown turtles can suffer from Decompression Sickness.

Reproduction

A **sea turtle** lays eggs into a nest dug in the sand. Every year, from about September to February, nesting female **sea turtles** emerge from the ocean to use the beaches of Batoke and Bakingili to lay their eggs. During this period, tracks of sea turtles will be found on the beach. The temperature of the sand where hatchlings nest determines the sex of a hatchling.

How many species of sea turtle?



There are seven species of sea turtle roaming the world's oceans...

- Leatherback (Dermochelys coriacea)
- Loggerhead (Caretta caretta)
- Green/Black (Chelonia mydias)
- Flatback (Natator depressus)
- Hawksbill (Eretmochelys imbricata)
- Kemp's Ridley (Lepidochelys kempii)
- Olive Ridley (Lepidochelys olivacea)

Species of sea turtles found in the northern coast of Cameroon

Leatherback

Hawksbill

Olive ridley

Green turtle

Let look at the individual species

SPECIES - LEATHERBACK

Leatherback Turtle (*Dermochelys coriacea*)

- Size: 1.2m - 2.4m
- Weight: up to 700kg
- Life Expectancy: Approx 30 years
- Reproduction: Sexual maturity at around 16 years. 3-10 clutches of 60-90 eggs in a season, interval of 2+ years
- Food: Jellyfish, Salps, Siphonophores
- Depth Range: up to 1,200m (85 minutes)
- Migration: up to 12,000 miles (Indonesia to Oregon) - one of the longest recorded migrations of a vertebrate animal!

Leatherback Geographic Range
Convention of Migratory Species

Species Protection

- IUCN Conservation Status - Vulnerable
- CITES - Appendix 1
- CMS - Appendices I and II

Leatherback Eggs

Juvenile Leatherback

Adult Leatherback

SPECIES - HAWKSBILL

Hawksbill Turtle (*Eretmochelys imbricata*)

- Size: 60 - 115cm
- Weight: up to 130kg
- Life Expectancy: up to 50 years
- Reproduction: Sexual maturity around 3 years. Mate every 2/3 years. Nest up to 3 times a season, average of 50 eggs per nesting.
- Food: Omnivorous - Sponges, Anemones, Jellyfish, Mollusks, Fish, Algae.
- Depth Range: up to 30m
- Migration: Oceanic - up to 2000km

Hawksbill Geographic Range
Convention of Migratory Species

Species Protection

- IUCN Conservation Status - Critically Endangered
- CITES - Appendix 1
- CMS - Appendices I and II

Hawksbill Turtle Eggs

Juvenile Hawksbill Turtle

Adult Hawksbill Turtle

SPECIES - OLIVE RIDLEY

Olive Ridley Turtle (*Lepidochelys olivacea*)

- Size: 50-75cm
- Weight: up to 50kg
- Life Expectancy: up to 50 years
- Reproduction: Annual mating. Arribada congregation. Nest up to 3 times a season, average of 100/110 eggs per clutch.
- Food: Carnivorous - Jellyfish, Shrimp, Crabs
- Depth Range: up to 200m
- Migration: Oceanic - up to 2000km

Olive Ridley Geographic Range
Convention of Migratory Species

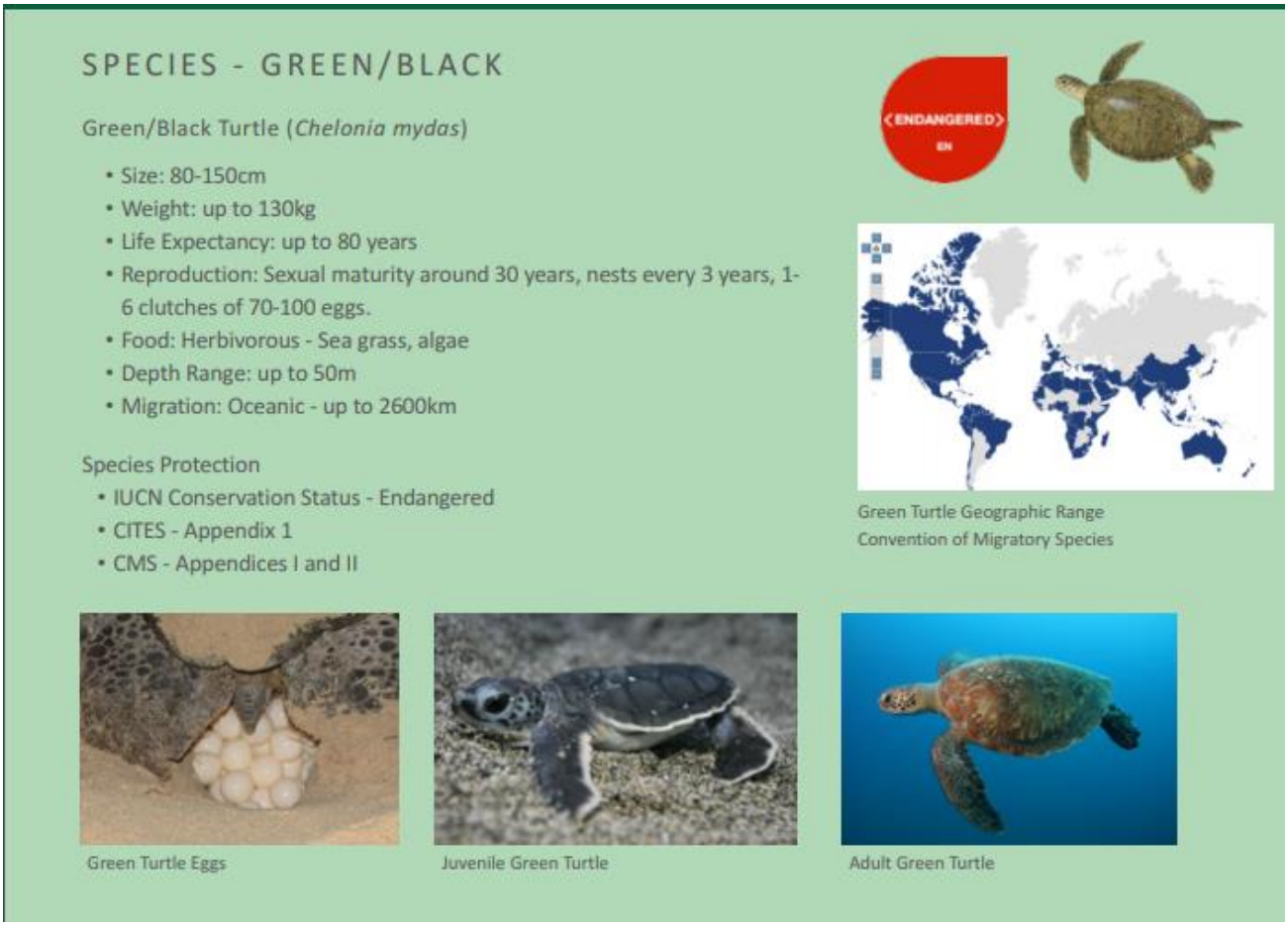
Species Protection

- IUCN Conservation Status - Vulnerable
- CITES - Appendix 1
- CMS - Appendices I and II

Olive Ridley Turtle Eggs

Juvenile Olive Ridley Turtle

Adult Olive Ridley Turtle



Summary: what does the sea turtle eat? Where does its live, how does it reproduce?...

Threats and values of sea turtles

Threats

Eggs / Juvenile Turtles (the most vulnerable time for a marine turtle):

• Flooding of the nest • Beach erosion/Crushing

• Wild dogs, raccoons, foxes

• Fire ants, lizards, crabs, wild pigs

• Sea birds, dolphins, sharks

• Carnivorous fish - snapper, grouper, barracudas

Fisheries

Incidental catch, or bycatch, in commercial fisheries is one of the largest sources of mortality for sea turtles. The level of sea turtle bycatch varies by gear type, season and location of fishing activity. Vessels operating within foraging habitats, migration routes or in coastal waters have higher impacts.

Coastal development and pollution by plastic wastes

Optimal nesting habitats are dark, quiet beaches with little human presence. With the development of piers, hotels, residential zones turtles are forced to use inferior nesting sites (Fuentes et al., 2016).

Artificial light pollution can interfere with the nesting behaviour of females as well as confusing hatchlings as the find their way from nest to sea by moving towards the brightest area - the natural light of the night sky reflecting off the ocean (Witherington and Bjorndal, 1991). All the following fishing types have turtle bycatch: Trawls, Dredges, Longlines, Gillnets, Purse Seines, Pound Nets and Discarded Fishing Gear. Identification of "hot spots" where turtles and fisheries overlap, such as in the productive areas where ocean currents converge, is critically important for long-term turtle conservation.

Nesting beach are polluted in such of way that turtles are not able to lay their eggs.

Ghost net

• Vessel Strikes - Commercial and personal watercraft are major hazards, especially in shipping lanes and during peak tourism months. Injuries from boat propellers include amputated flippers, brain injuries and broken bones (Foley et al., 2019).

• Intentional Killing - The killing of sea turtles, hatchlings and eggs for ritual, food, crafting of decorative objects, or use of skin for leather still exists.

• Climate Change - Likely to cause severe storms, increase beach erosion and raise sea levels, all of which will affect sea turtle nesting. Warming temperatures effect the sex of hatchlings. Acidification can also cause problems with turtle prey, crustaceans and mollusks.

Values of sea turtles

Economic

- Tourism: they give money from tourism to many communities around the world
- Increase fisheries incomes: where there are more sea turtles there is fish

Ecologic

• Nutrient Cycle - moving nutrients from the ocean to coastal habitats near nesting sites

• A Hawksbill Turtles consume sponges and help keep reefs healthy and diverse.

• Green Turtles increase the productivity and nutrient content of sea grass beds

• Leatherback Turtles help to keep jellyfish under control, preventing overabundance or jellyfish "blooms" that can cause competition for small fish and have consequences up the food chain.

Cultural/traditional

Many communities and traditional leaders around the world, such as Batoke use the sea turtle as Tottem for the protection of the village and the citizens.

Cameroon's law about sea turtles

In Cameroon, sea turtles are listed in category A of protected animals. That means, any individual caught with a sea turtle or its part, either alive or dead can go to prison for up to 5 years and pay of up to 5 million XAF

How to participate in Conservation of sea turtles

-Use less plastic in the first place reduces the impact on marine environments

-Educating others increases awareness.

-Keep the beaches clean

-Protect eggs,

-Stop poaching

-Report bycaht, signting and stranding

-Do not throw nets in the sea

-Release/rescue bycaught animals

Lesson 3: Other species

Whales

Whales are a widely distributed and diverse group of fully aquatic placental marine mammals. They are an informal grouping within the infraorder Cetacea, usually excluding dolphins and porpoises.

What does whale eat: All of them feed on **krill ('Crefish')**, but sometimes include other sea creatures in their diets, such as copepod **crustaceans** and small fish. Humpback and Bryde's whales also actively hunt for small schooling fish such as herring and anchovies.

In Cameroon, two species of whales have been documented: The Atlantic Humpback whale and the sperm whale or cachalot

Whales are threatened by plastic pollution, oil spill and noises which often lead to strandings

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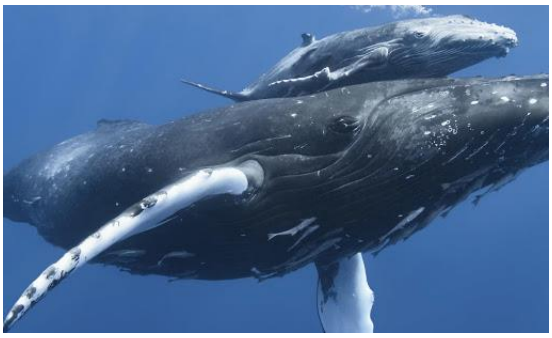

To protect them,

-Use less plastic -Educating others increases awareness.

-Keep the beaches clean

-Report signting and stranding

-Release/rescue bycaught animals

-Do not throw nets in the sea

Dolphins

Dolphin is a common name of aquatic mammals known as small cetacean

Dolphins are threatened by plastic pollution, oil spill and noises which often lead to strandings

To protect them,

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-Keep the beaches clean

-Report signting and stranding

-Release/rescue bycaught animals

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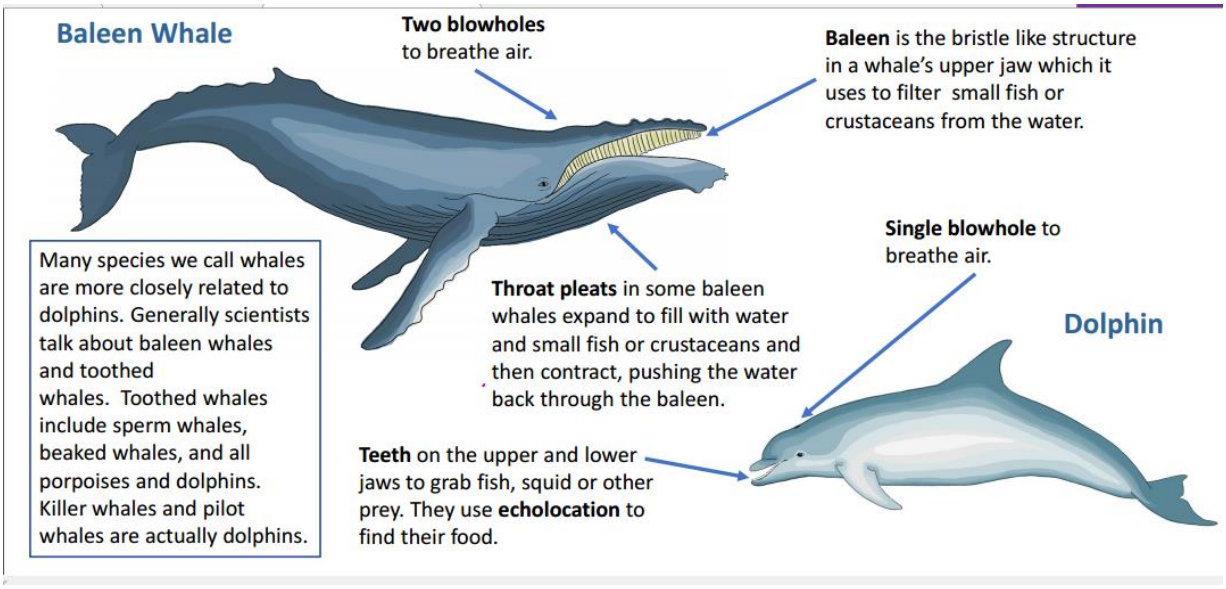
Difference between whale and dolphin



Sharks

Sharks are a group of elasmobranch fish characterized by a cartilaginous skeleton, five to seven gill slits on the sides of the head, and pectoral fins that are not fused to the head.

There are over 500 species of sharks in the world, from fresh water to deep water. The northern coast of Cameroon water shave a great biodiversity of species of Elasmobranches. It is estimated that there are about 27 species of Elasmobranch in the Cameroonian coast such as 43% of them are shark species and 56% are rays.

Sharks' diet: Sharks are opportunistic feeders, but most sharks primarily feed on smaller fish and invertebrates. Some of the larger shark species prey on seals, sea lions, and other marine mammals

They are threatened by the pollution and overfishing

-Use less plastic

-Educating others increases awareness.

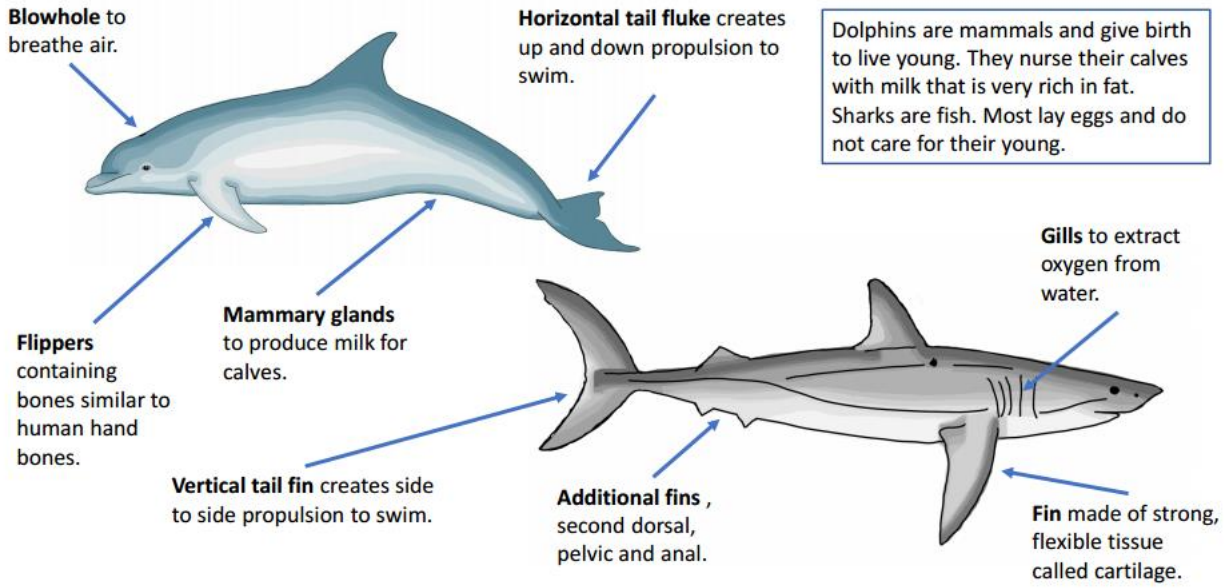
-Keep the beaches clean

-Report signting and stranding

-Release/rescue bycaught animals

-Do not throw nets in the sea

Difference detween dolphins and sharks



Rays

Rays are unique cartilaginous fish with flat bodies and long, barbed tails

Rays' diet: Rays vary in their diets, but they are all carnivores. They eat **fish**, crustaceans, mollusks, and worms. Rays mostly hunt on or near the bottom of the ocean.

They are threatened by the pollution and overfishing

-Use less plastic

-Educating others increases awareness.

-Keep the beaches clean

-Report signting and stranding

-Release/rescue bycaught animals

-Do not throw nets in the sea

Food web in the ocean