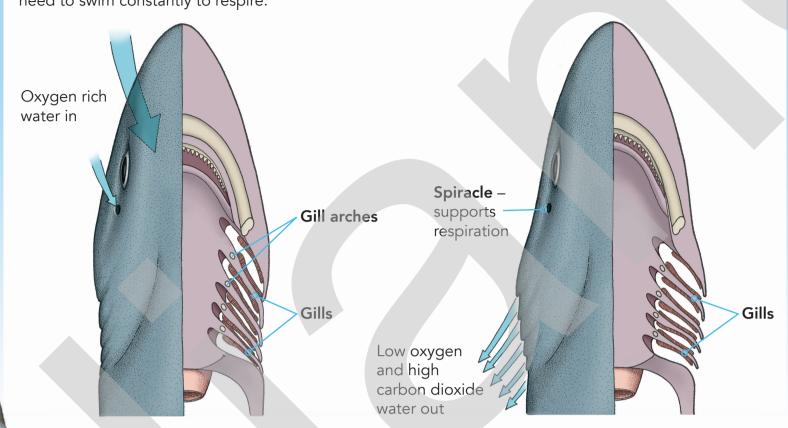
Shark Anatomy

At least 550 species of shark have evolved from the original sharks 400 million years ago. They differ broadly in form and function, which enables them to thrive in multiple habitats and seas ranging from cold Greenland water and deep waters to warm tropical seas.

Sharks take in oxygen from the water or "respire" by flowing water across their gills. Sharks like Zebra or Nurse Sharks can be stationary and "buccal ventilate", pumping water over their gills and even using a spiracle located behind the eye to increase water flow. Others like the white, hammerhead or silky sharks need to swim constantly to respire.



First dorsal fin Lateral line – sense changes in water pressure

Teeth - replaceable -

Silky Shark, Sedoso

Carcharhinus falciformis IUCN Red Data Listing: Least concern CITES: Appendix II CMS: Appendix II

Muscle – red and white muscle fibers

Bonnethead Sphyrna tiburo

Smooth Hammerhead Sphyrna zygaena

Scalloped Hammerhead Sphyrna lewini

Great Hammerhead Sphyrna mokarran

The size and shape of a shark's head help to identify where and how the animal travels. The large broad Whale Shark head indicates a slower moving animal, the sharper snout of the Silky Shark suggests a more hydrodynamic animal evolved for greater speed.

Silky Shark

Bull Shark

Carcharhinus leucas

Carcharhinus falciformis

Ceratotrachia/fin rays

Pharynx

Cephalofoil

Snout

 provides lift as the animal

Snout

Nare - intake of

Whale Shark

Rhincodon typus

Heads

Caribbean Reef Shark

Carcharhinus perezi

Tiger Shark

Galeocerdo cuvier

Tail shape and size helps to identify if the shark is fast and swimming in mid-water (stiff heterocercal), slow (flexible with a large upper lobe), or bottom dwelling (almost no lower lobe).

Thresher Shark

Caudal fin -

lower lobe

Alopias vulpinus

Nurse Shark Ginglymostoma cirratum

Dusky Smoothhound

Liver – large for

increased buoyancy

First dorsal fin

Vertebral column -

ossified cartilage

Second dorsal fin

IUCN Red Data Listing: Endangered

CITES: Appendix II CMS: Appendix II

Sphyrna mokarran

Great Hammerhead, Cornuda gigante

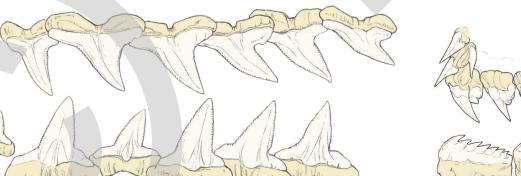
Stomach

Made of enamel and replaceable when used or broken, shark teeth reveal the feeding

behaviour and dietary preferences of their owners. Some are pointed to grab fish, others serrated to tear at larger prey, and others have bony plates to crush hard prey.

Dusky Smoothound Mustelus canis **Spotted Eagle Ray** etobatus narinari

Tiger Shark Galeocerdo cuvier Shortfin Mako Isurus oxyrinchus



Bigeye Sixgill Shark Hexanchus nakamurai



Ampullae of Lorenzini

Gill arches

Pectoral fin –

provides lift as

the animal swims

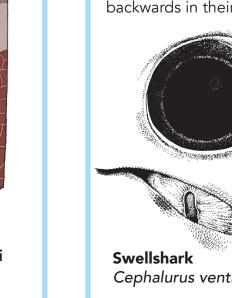
Skin – covered in dermal denticles "mini teeth"

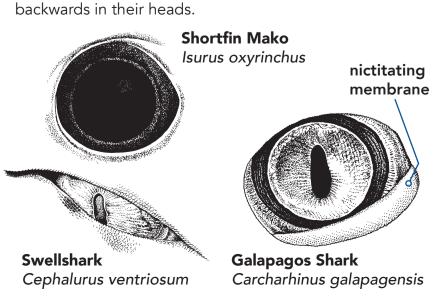
Named by the biologist Lorenzini, these super

sensory organs are gel-filled sacs located around the

head and snout that detect electrical impulses and

help sharks find nearby or hidden prey.





Most sharks have excellent vision and see in color. They

have a high number of "rods" and an extra membrane at

the back of the eye "tapetum lucidum" (like a cat) that

allows them to see in very low light conditions. Species such as Caribbean Reef and Galapagos Sharks have

eyelids known as "nictitating membranes". Others like the

whale shark are able to protect their eyes by rolling them



Caribbean Reef Shark

Carcharhinus perezi



Caudal fin – upper lobe –

Shortfin Mako

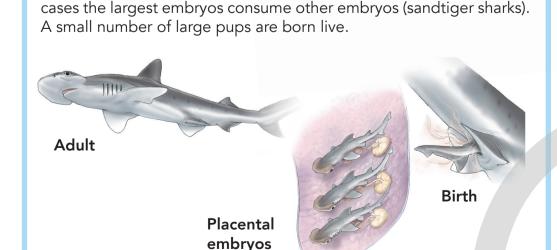
Isurus oxyrinchus



1. Oldest mode or "oviparity": fertilized eggs turn into embryos inside egg cases in one of the two female's uteri. The egg cases known as "mermaid's purses" are laid or wrapped around substrate and hatch a young shark several months later after the yolk sac is consumed. Ex:



in the uterus 2. "Aplacental viviparity": Several different modes, but unified by a lack of placental attachment to the mother and live birth. Yolk sac viviparity: embryos develop in utero and are primarily nourished via a large external yolk sac, which is absorbed as the pups approach birth. Eg angel sharks, nurse sharks, Spiny Dogfish. Oophagy: fertilized ova develop into embryos in utero and the female ovulates multiple unfertilized ova (eggs), which the embryos consume throughout gestation as their primary source of nutrients (all lamniform sharks, some deepwater sharks such as false catsharks). In some extreme



3. Most recently evolved mode or "placental viviparity": embryos develop a placental connection while they develop inside the uterus and are fed with a milk-like nutrient rich substance termed "histotroph". At term, the pups are born live. Ex: hammerheads, Bull and Lemon Sharks



liance explores, enables and inspires positive changes for threatened ma onservation, and policy support. Our work is based in several tropical countries where engage with fishers, guides, partners in the private and public sectors, academia and NGOs to help manage and bolster populations of threatened sharks and rays.



Great Hammerhead Sphyrna mokarran



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