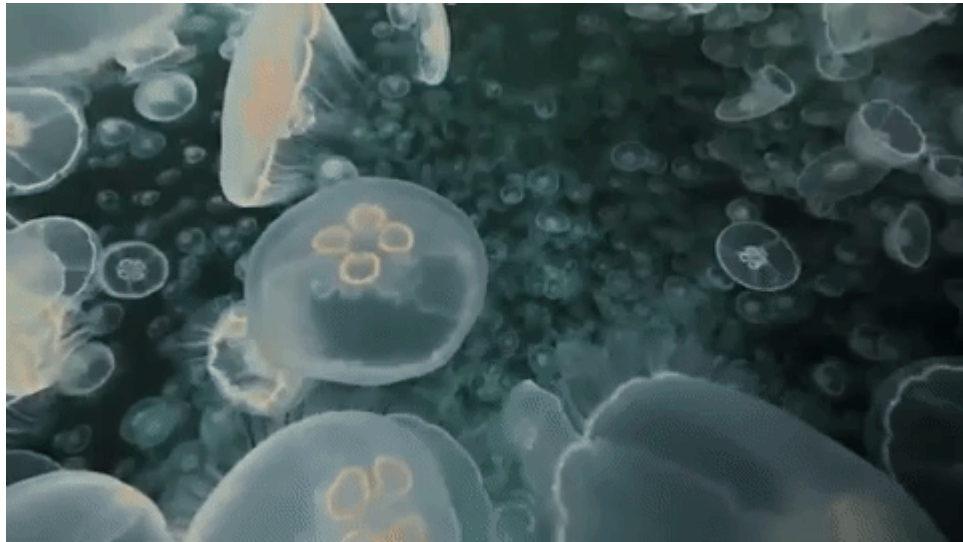


# Jellyfish, Rays and Sharks!

CTYI

Kevin Delahunty

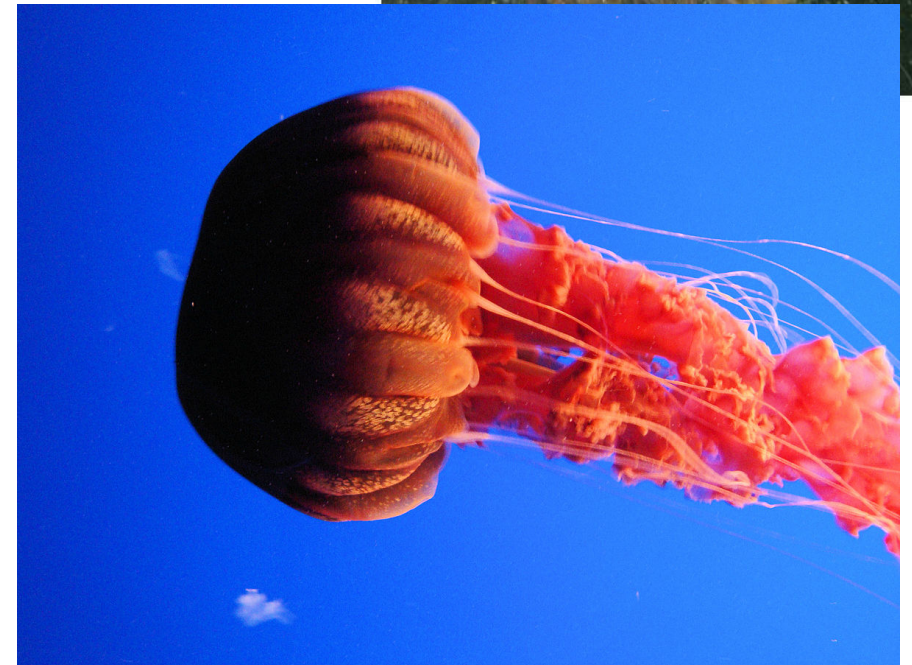


# Jellyfish

- Cnidarians
- 11,000 species
- Invertebrates – no Skeleton

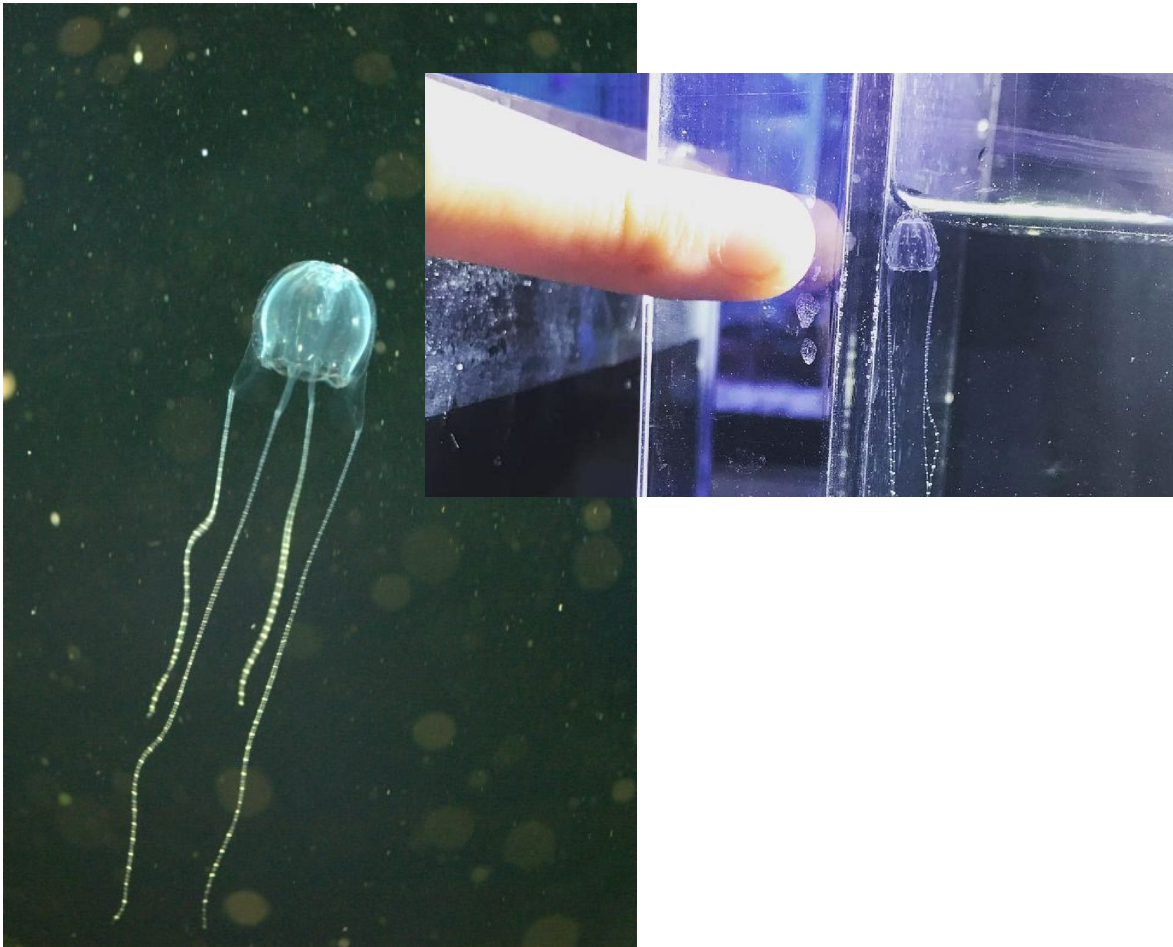
Live in Oceans around the world

- Use tentacles to sting  
be bioluminescent!
- Mouth is found at the centre of the body for eating and discarding waste



# The most dangerous!

**Irukandji Jellyfish**



**Box Jellyfish**



# Damage from the stings

**Irukandji Jellyfish**



**Box Jellyfish**



# Box Jellyfish

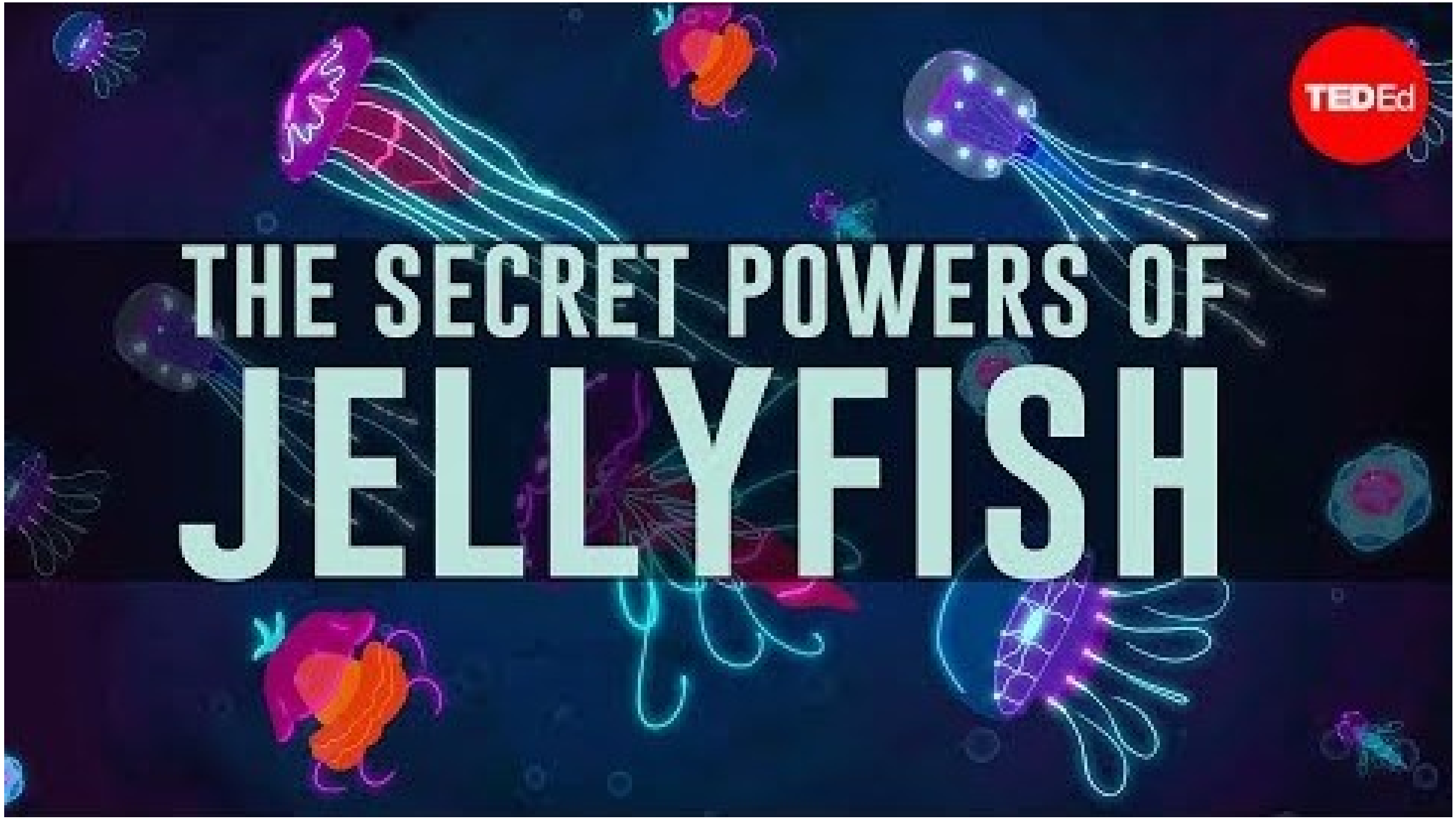
- Advanced form able to jet water to hunt prey
- Each tentacle has a billion stinging cells
- Venom can stop a human heart in 1 to 3 minutes
- ~100 deaths per year



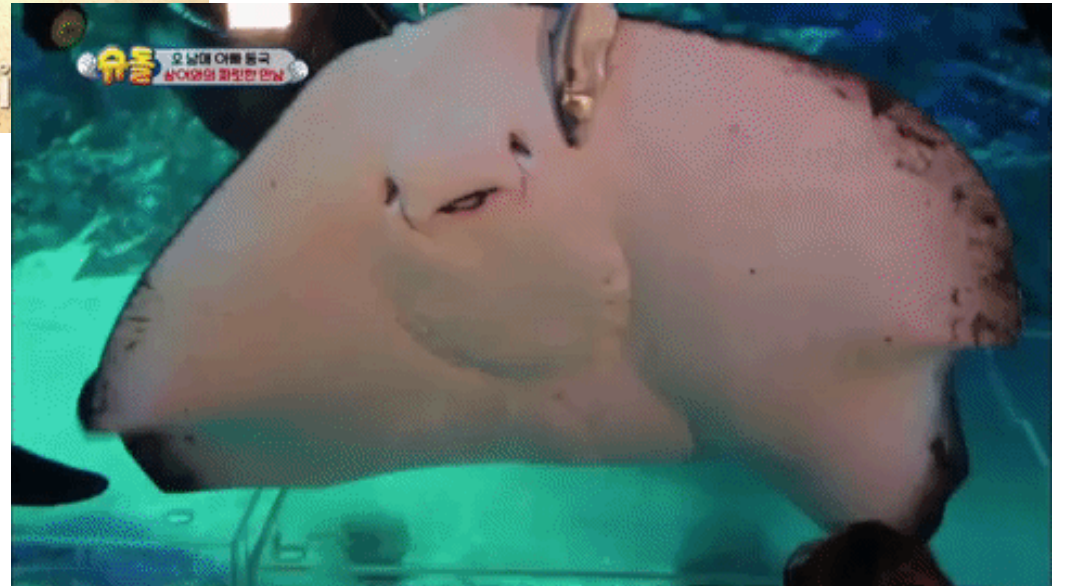
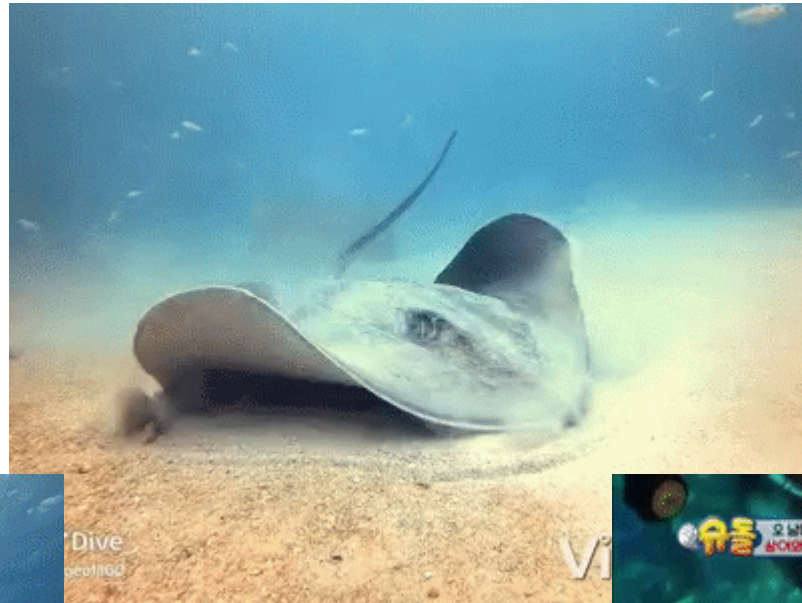




# THE SECRET POWERS OF JELLYFISH



# Sharks, Rays and Skates!





# Elasmobranchs

- All sharks, ray and skates

- Cartilaginous skeleton



# Rays and Skates

## **Ray**

- Kite-shaped with whip like tails
- Posses one or two spines on tails.
- Plate like teeth for crushing prey.
- Generally, much larger than skates

## **Skate**

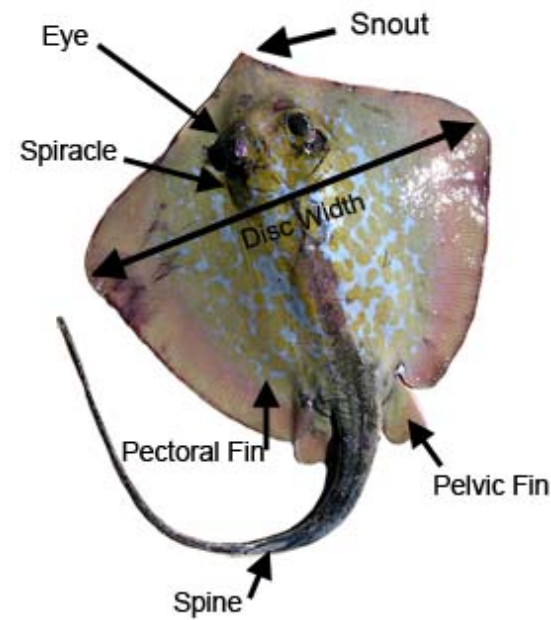
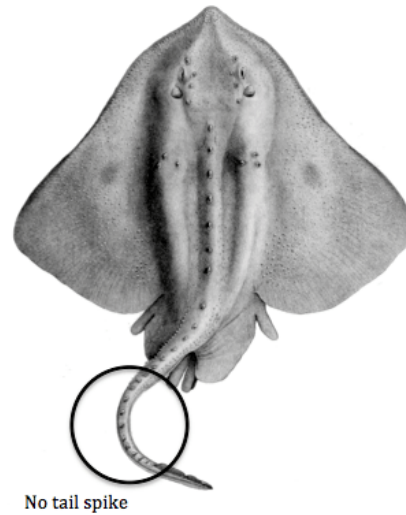
- Thicker tails
- No spines
- Small teeth
- Generally smaller than rays.

# Rays vs Skates

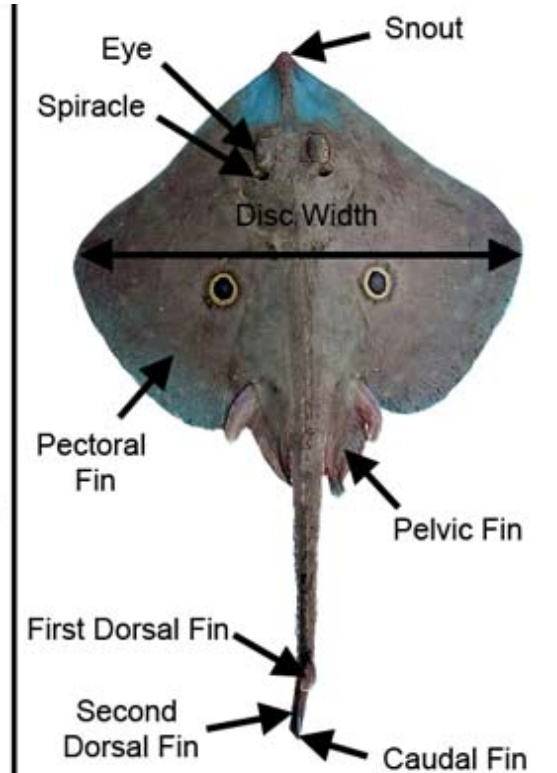
Ray



Skate



Stingray Anatomy



Skate Anatomy

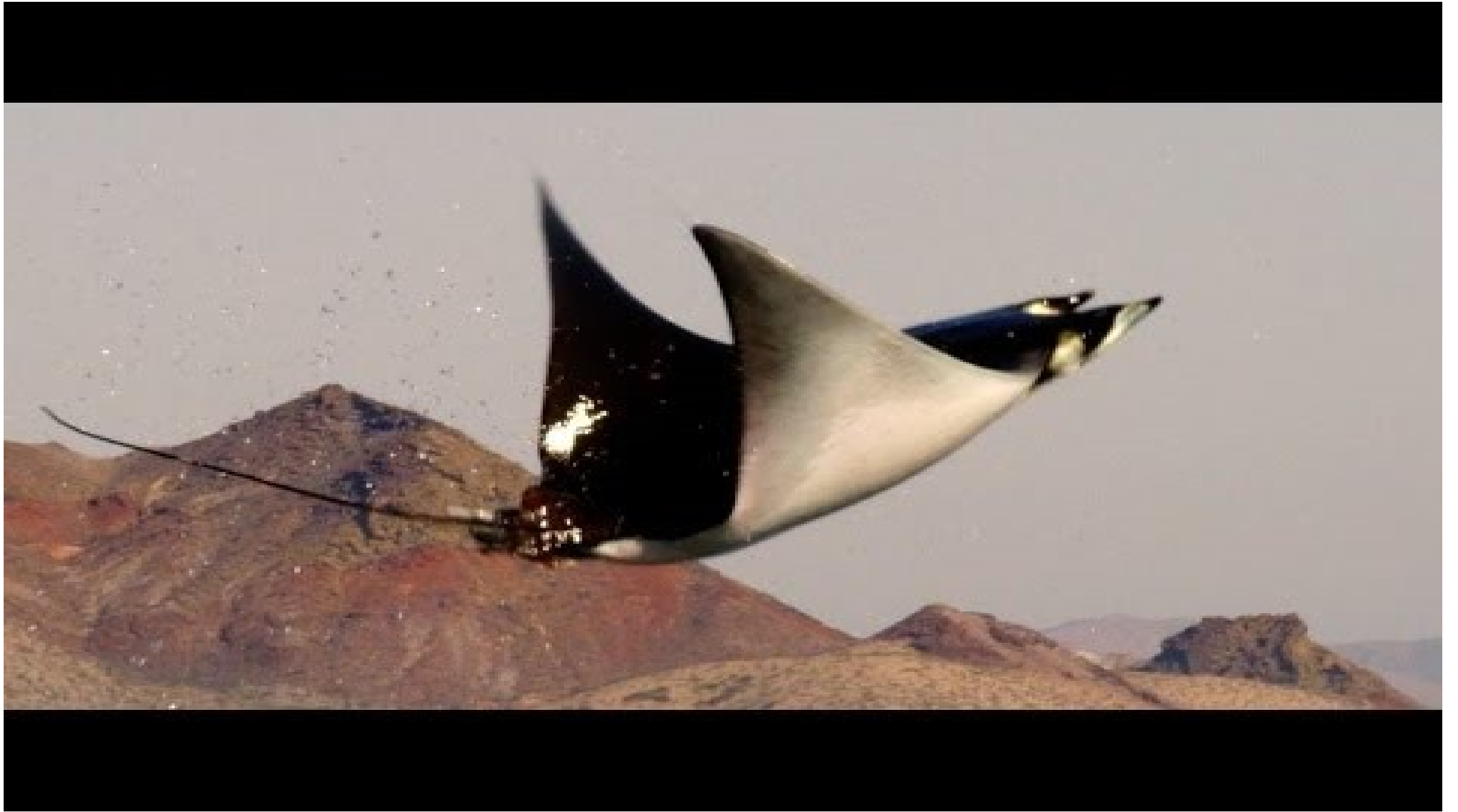
# Rays

- Approximately 480 species of ray.
- They have flattened bodies and enlarged pectoral fins.
- Include stingrays, manta rays, eagle rays.
- Irish species include the thornback ray, undulate ray, spotted ray, cuckoo ray and blonde ray



# Rays of the world





Bull  
Stingray in  
Western  
Australia



Skates – 150 species in the world.

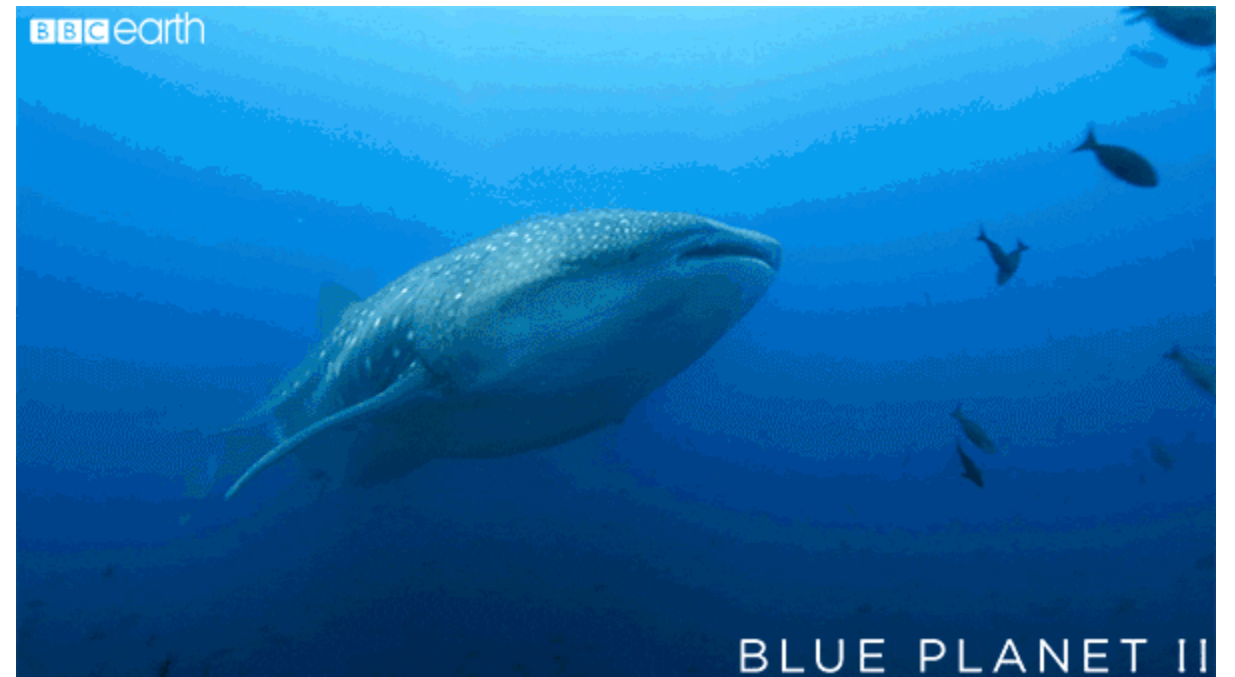


Common Skate: This species is no longer common due to overfishing.



# Sharks

- 440 known species
- Found in the Atlantic, Pacific, Indian, Arctic and Southern oceans as well as some freshwater lakes and rivers.
- They range hugely in size and shape from the smallest dwarf lanternshark to the largest fish in the ocean, the whale shark.
- They have been around for 450 million years! And have survived through five mass extinctions.

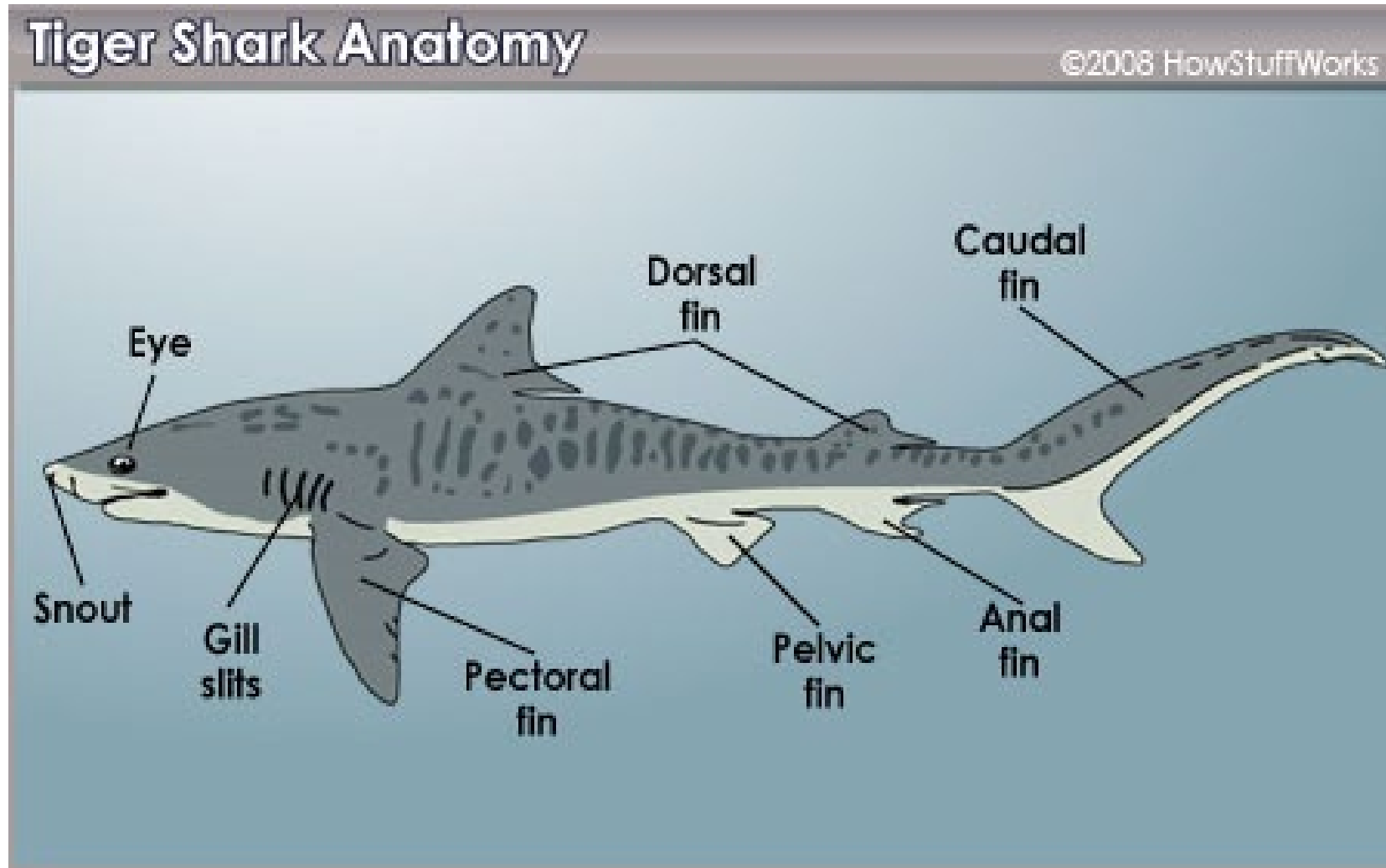






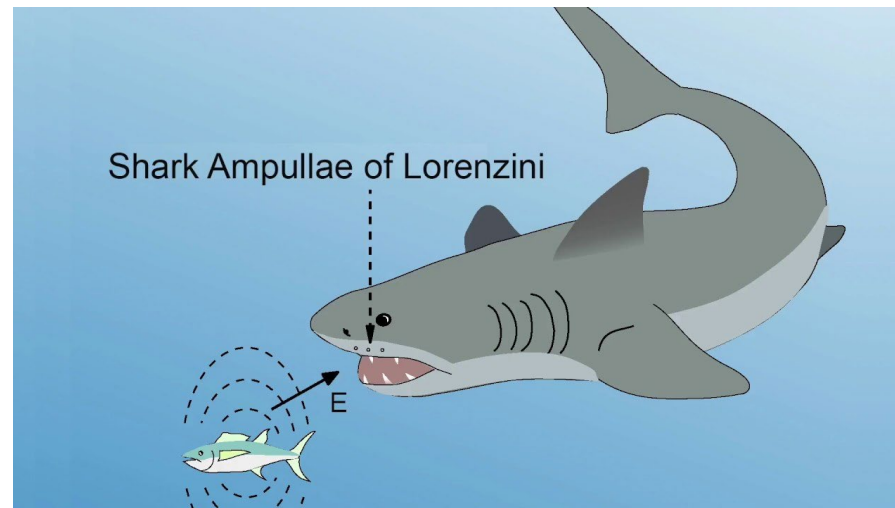
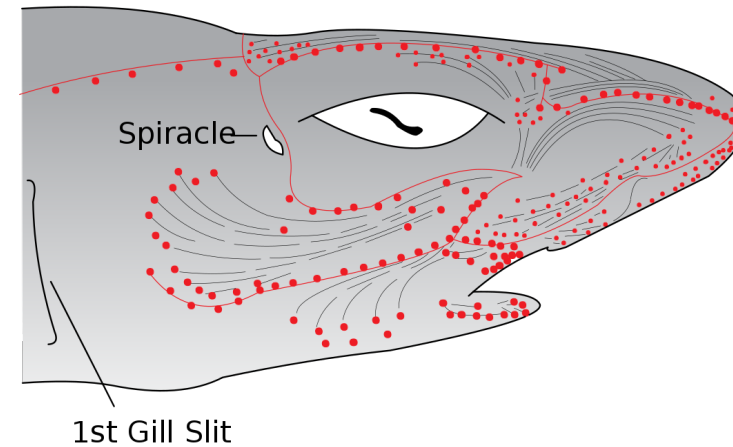
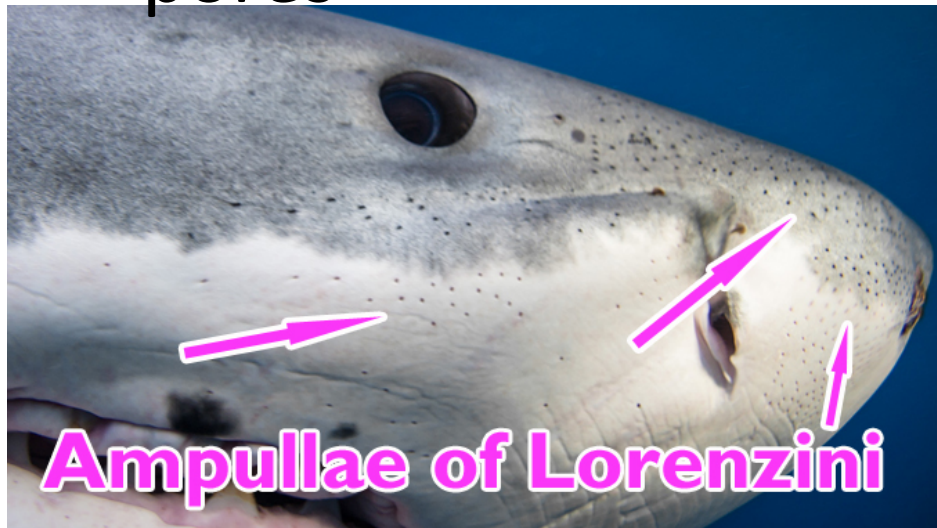


# Shark anatomy



# Ampullae of Lorenzini

- Specialised sensing organs called electroreceptors.
- Network of jelly-filled pores



# Shark teeth

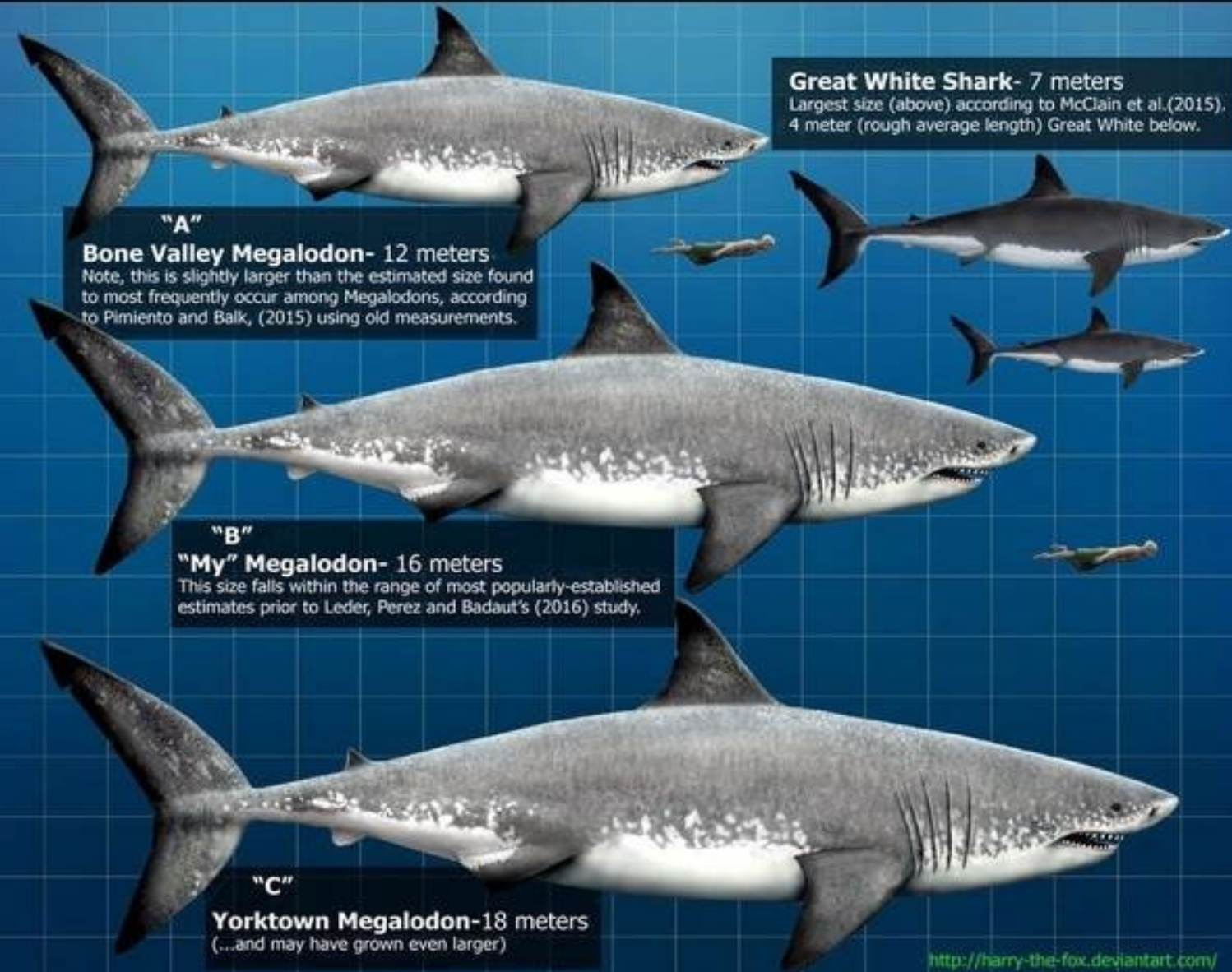


# No Really, How big was Megalodon?

Images A & C are scaled to Leder, Perez and Badaut's (2016) estimates from the "summed crown width" of the set of teeth in the upper jaw. Image "B" is scaled to my original 16m reconstruction.

Please note I didn't attempt to artificially "re-scale" the teeth for A and C. For more information, check out the Description and Comments section.

M



**Great White Shark- 7 meters**  
Largest size (above) according to McClain et al.(2015).  
4 meter (rough average length) Great White below.

**"A"**  
**Bone Valley Megalodon- 12 meters**  
Note, this is slightly larger than the estimated size found to most frequently occur among Megalodonis, according to Pimiento and Balk, (2015) using old measurements.

**"B"**  
**"My" Megalodon- 16 meters**  
This size falls within the range of most popularly-established estimates prior to Leder, Perez and Badaut's (2016) study.

**"C"**  
**Yorktown Megalodon-18 meters**  
(...and may have grown even larger)



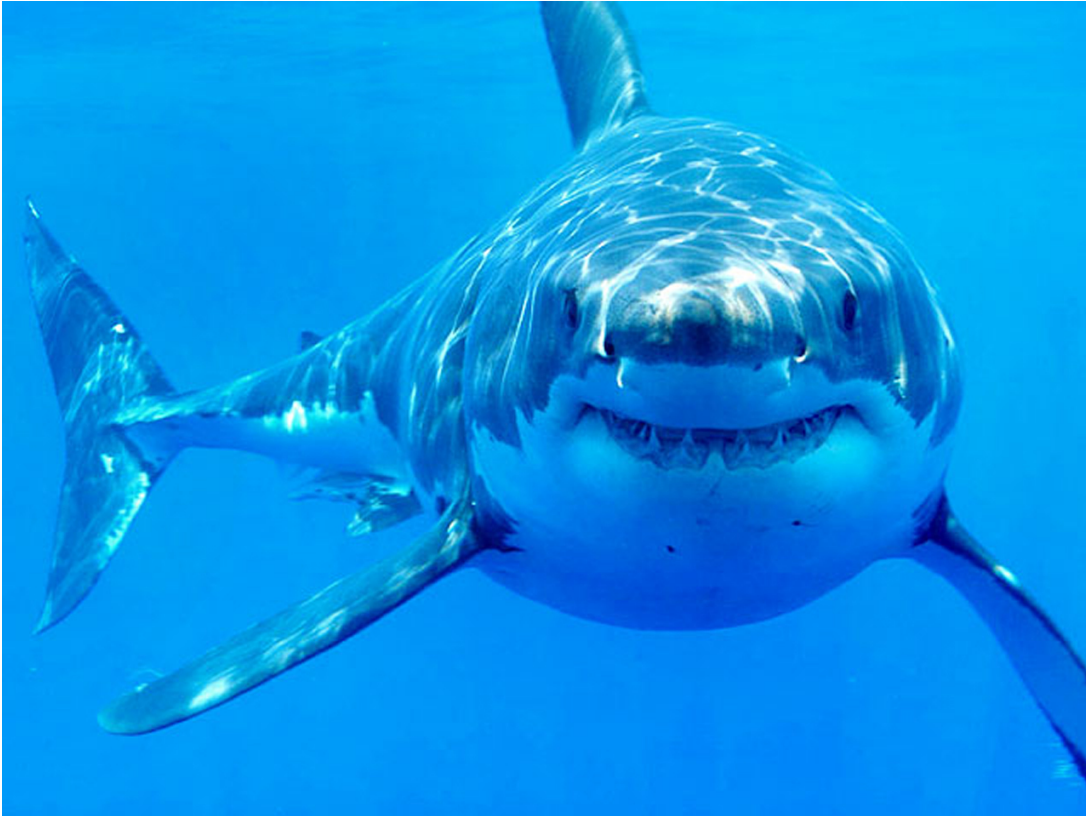




# JAWS



# Great White Shark



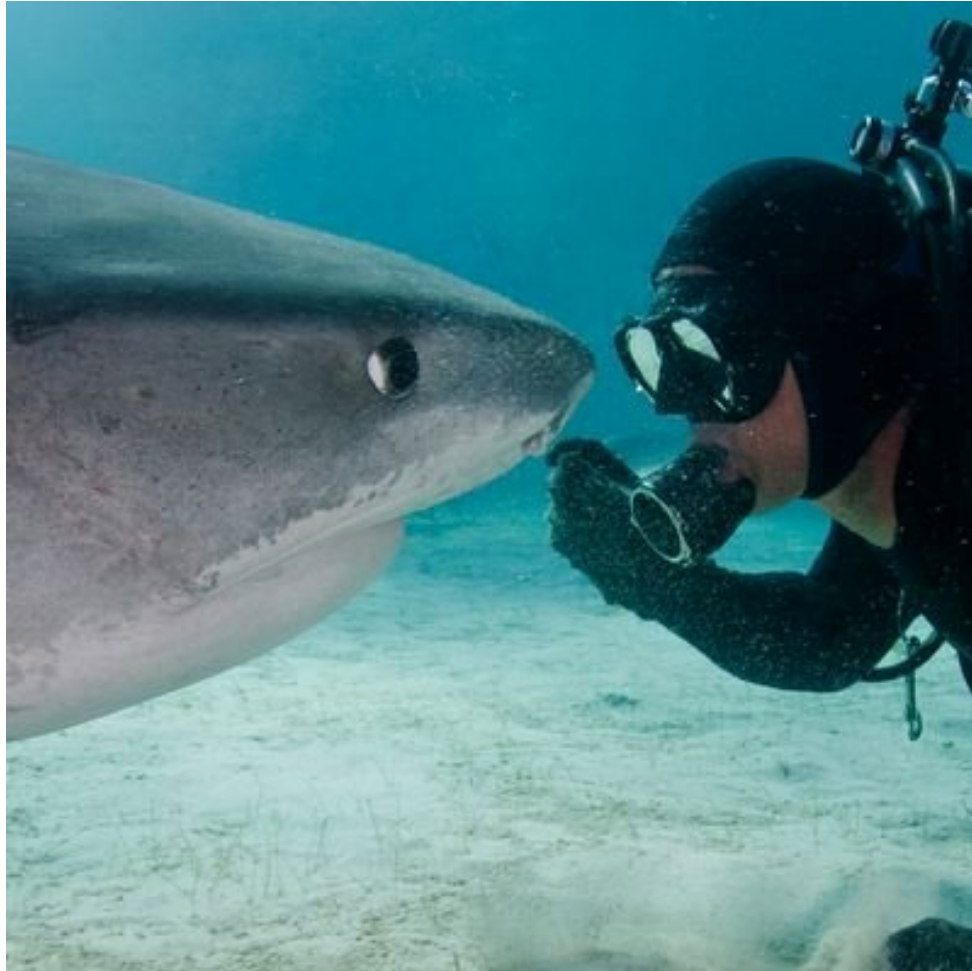
- Can live up to 70 years.
- Slow to reproduce, females can be 33 before they are ready, males can be 26
- Can grow up to 6 m in length
- Found in USA, Japan, South Africa, Chile, around Australia and in the Mediterranean Sea.





explore.org

# Tiger Shark – solitary, nocturnal hunter



# Tiger Shark

- Found in tropical waters in particular around the pacific islands and Australia.
- Feeds on crustaceans, fish, seals, birds, squid, turtles, sea snakes, dolphins, and even other smaller sharks.









# Hammerhead shark



- Found world wide.
- Irelands newest shark species as of 2019.
- The hammer shaped head helps them to find food!

# Bull shark

- The most feared of sharks and the cause of the most attacks in rivers.
- One swam 700 miles up the Mississippi River!



# Pelagic Shark Species in the Waters of Éire

**Did you know?** As of June 2019, there have been 72 species of sharks recorded in Irish waters, with a smooth hammerhead shark, recorded for the first time on-board the R.V. Celtic Voyager during Marine Institute survey WESPAS'19 in the Celtic Sea.

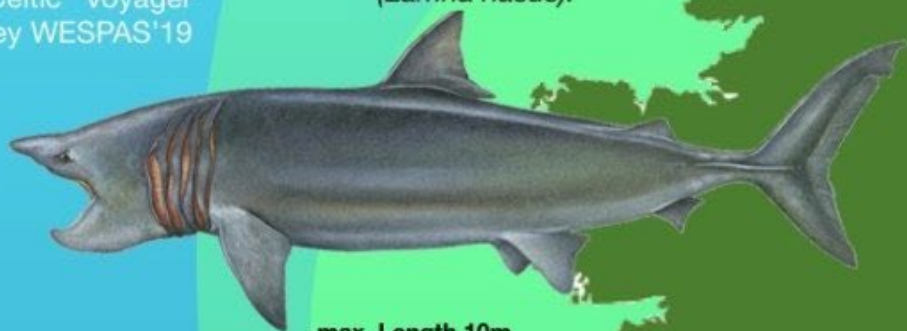
## IUCN Red List Status:

DD- Data Deficient  
LC- Least Concern  
NT- Near threatened  
VU- Vulnerable  
EN- Endangered  
CE- Critically Endangered  
EW- Extinct in the Wild  
RE- Regionally Extinct  
EX- Extinct



max. Length 3.5m

**3. Porbeagle shark - CE**  
(*Lamna nasus*).



max. Length 10m

**2. Basking shark- EN**  
(*Cetorhinus maximus*)



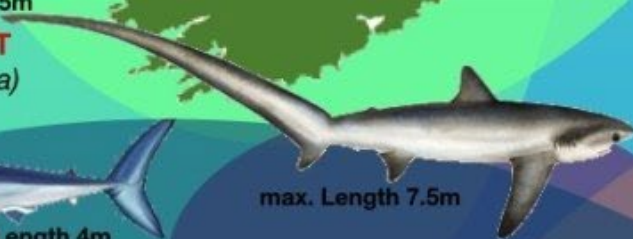
max. Length 2.5m

**1. Blue shark- NT**  
(*Prionace glauca*)



max. Length 4m

**4. Shortfin mako shark- VU**  
(*Isurus oxyrinchus*)



max. Length 7.5m

**5.\*Common thresher shark- EN**  
(*Alopias vulpinus*)



max. Length 5m

**6. Smooth hammerhead shark- VU**  
(*Sphyrna zygaena*)



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Google Play today!



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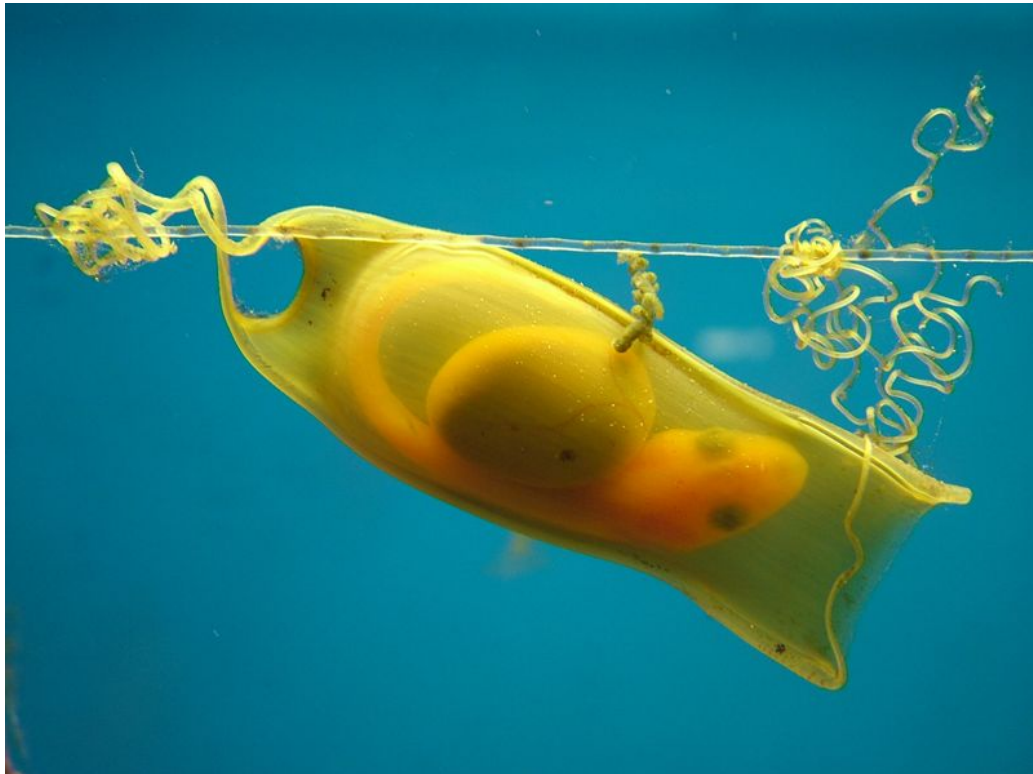
Image: Shutterstock/Shane Gross



NAT GEO  
WILD

# Shark and Ray Reproduction

**Shark**



**Ray**





# Shark and Ray Reproduction

**Shark**



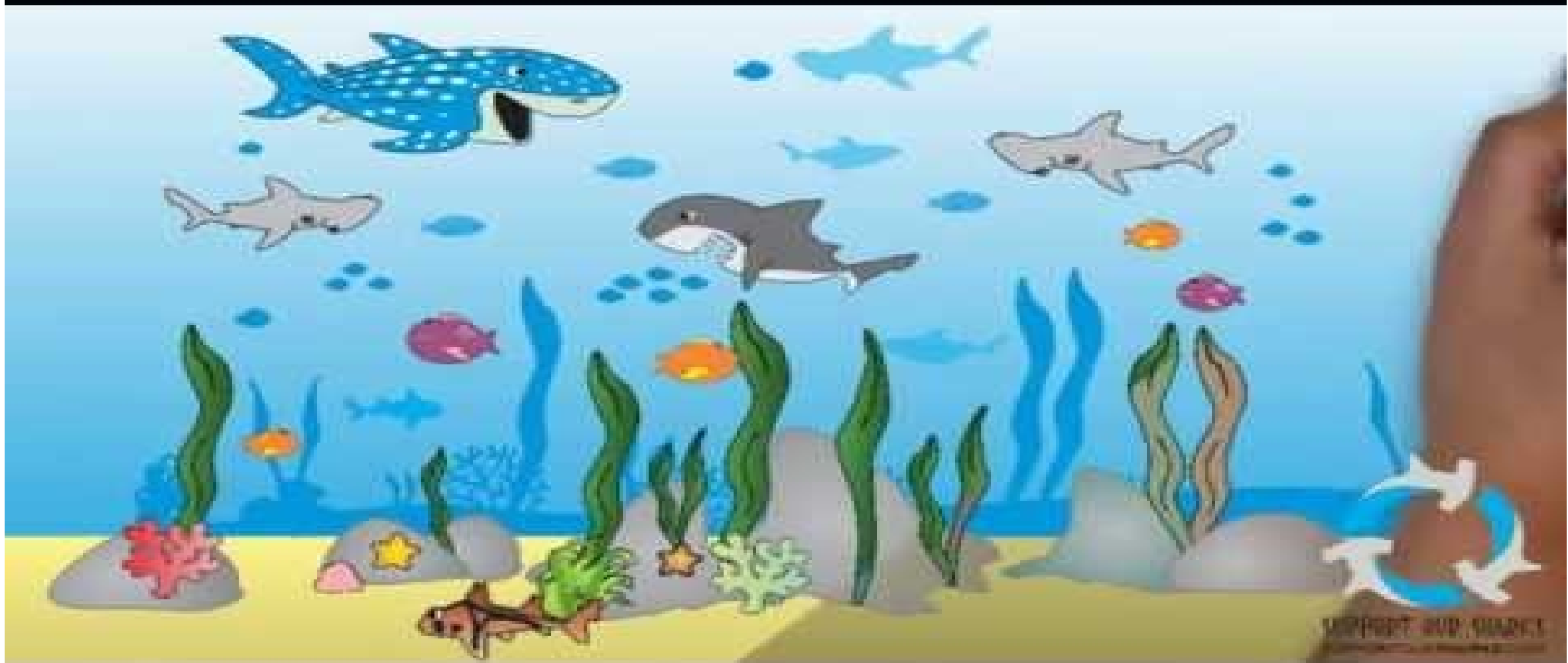
**Ray**



# Shark Conservation

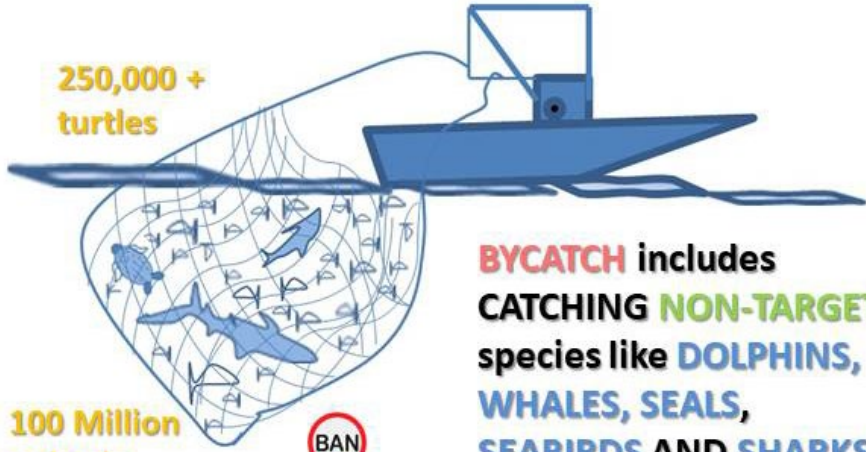
- Approximately 100 sharks are killed each year.
- Shark finning and by-catch.
- Conservations catch and tag programmes.
- Wildlife awareness and education programmes.





One animal every 2 minutes!

250,000 + turtles



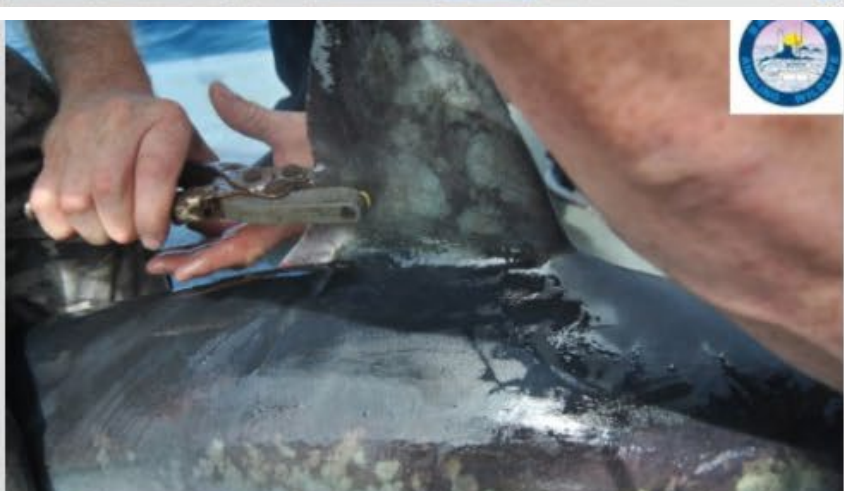
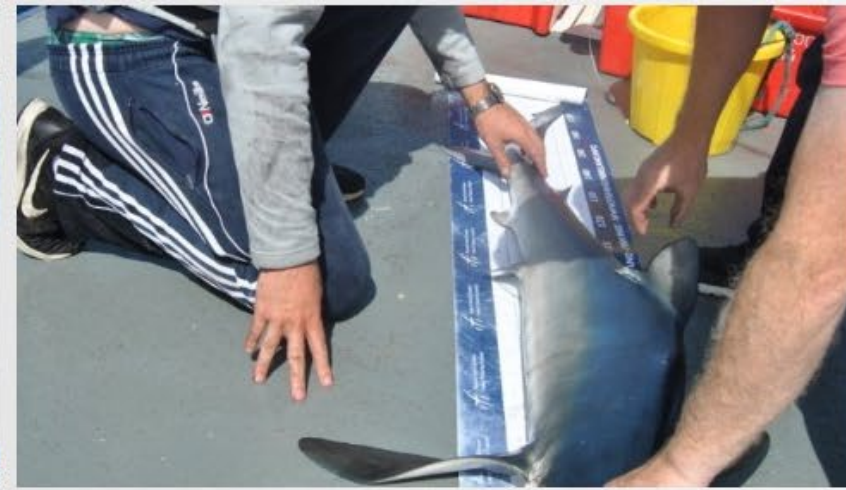
100 Million + sharks /year



Retention of by-caught sharks in Irish waters, long-line fishing and illegal finning.

**BYCATCH** includes **CATCHING NON-TARGET** species like **DOLPHINS, WHALES, SEALS, SEABIRDS AND SHARKS!**







TEDEd

# WHY ARE SHARKS SO AWESOME?