

SHARK CONSERVATION

& Virtual Junior Research Expedition
with Shark Team One!



©ANGELA SMITH | WWW.SHARKTEAMONE.ORG

A large shark is swimming towards the viewer in clear blue water. The sun's rays filter down from the surface, creating a shimmering effect. The text 'SHARK TEAM ONE' is written in a bold, white, distressed font with a red outline. A small registered trademark symbol (®) is located to the right of the word 'ONE'.

SHARK TEAM ONE[®]

- GLOBAL SHARK CONSERVATION
- MARINE ECOSYSTEM PROTECTION
- CITIZEN SCIENCE EXPEDITIONS

Introduction: Angela Smith

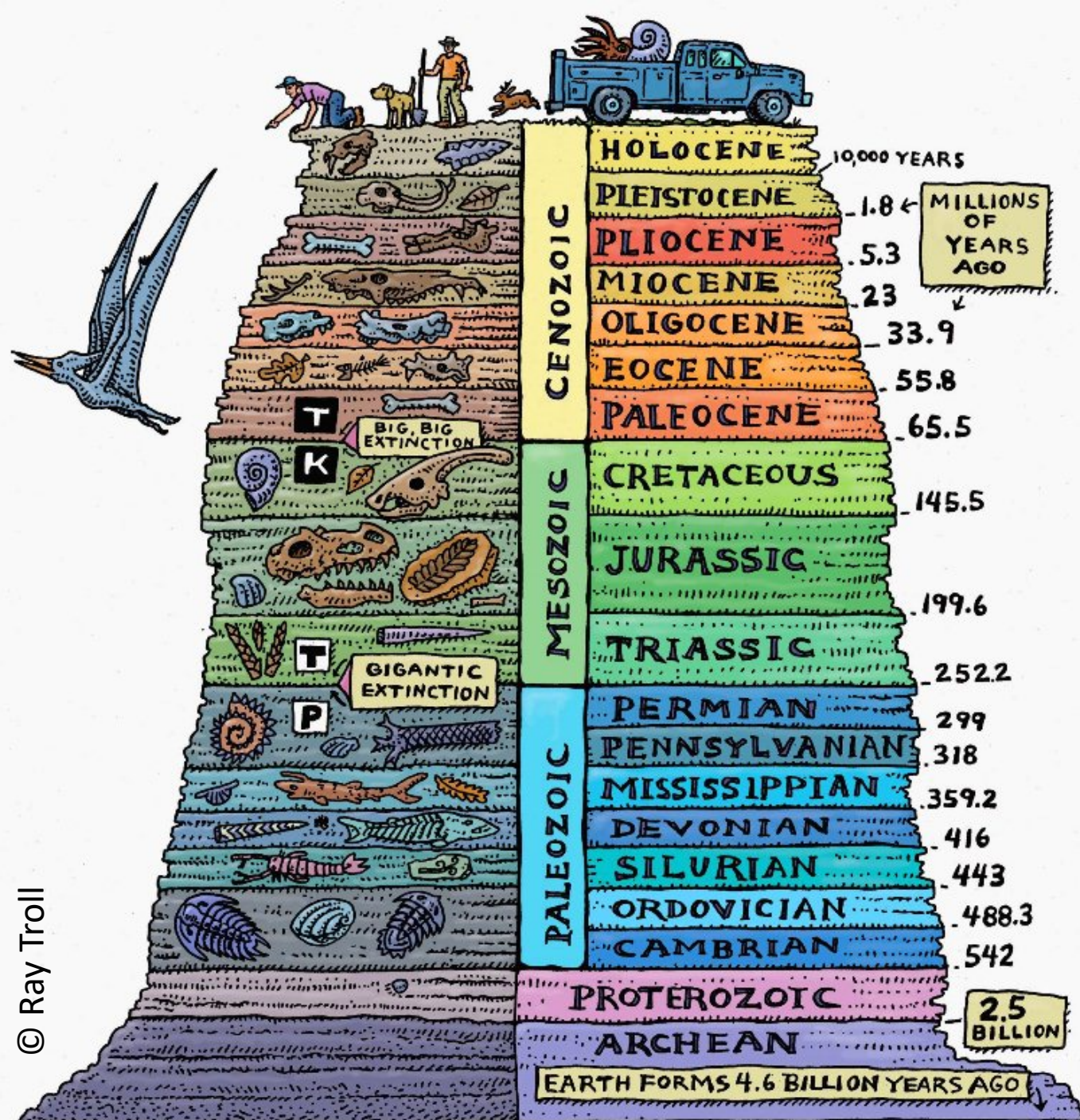
- Conservationist, photographer, writer, filmmaker, researcher and explorer specializing in endangered species and the founder of the nonprofit
Shark Team One
 - National Geographic writer, photographer and photojournalist
 - Grew up on the coast of Maine and started learning about the ocean with her family as a kid. First article written about environmental issues in 4th grade - so just follow your dreams!



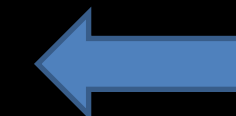
What we know...overview

- Sharks have been on the planet for 450 Million years (they have evolved as perfect predators)
- Sharks keep the oceans in balance
- They help to keep valuable fish populations healthy and abundant
- Killing sharks hurts fisheries
- Sharks are very valuable to dive tourism

Geologic Timescale



Paleozoic Era



Slides copyright Shark Team One

Why are sharks in trouble now?

- Tens of millions of sharks are being killed every year...mainly for their fins (70 – 100M)
- Sharks reproduce very slowly and cannot recover from fishing pressure like other fish
(Some species take 20 years to reach maturity)
- Shark populations are collapsing throughout the world
- Over one-third of all sharks, skates and rays are threatened with extinction



Healthy reefs need sharks.



What does endangered species mean?

(Any type of plant or animal that is in danger of disappearing forever.)



KEY to Endangered Classifications:

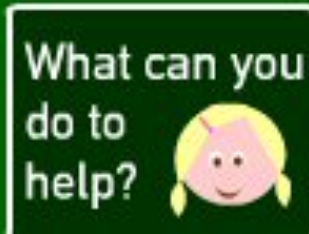
Near Threatened = Likely to become endangered in the near future

Vulnerable = High risk of becoming endangered in the wild

Endangered = High risk of extinction in the wild = whale sharks

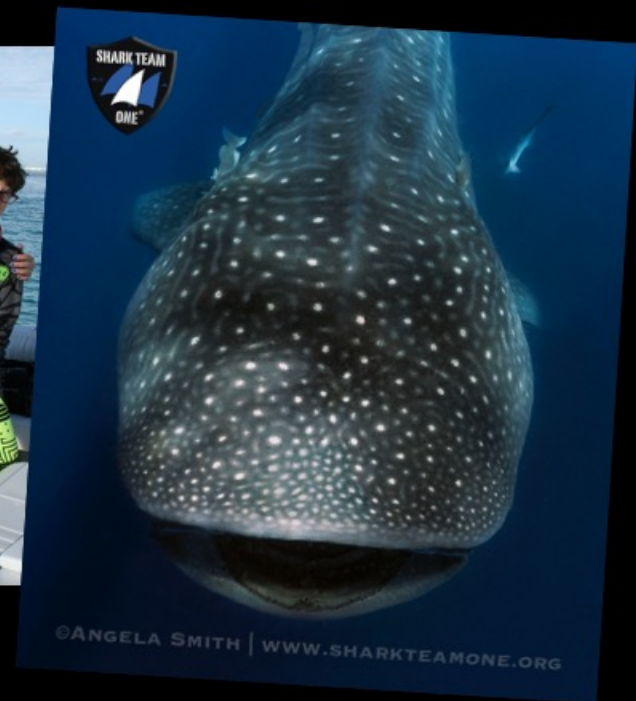
Critically Endangered = Extremely high risk of extinction in the wild

Conservation evaluation global standards by – The IUCN Red List of Threatened Species™

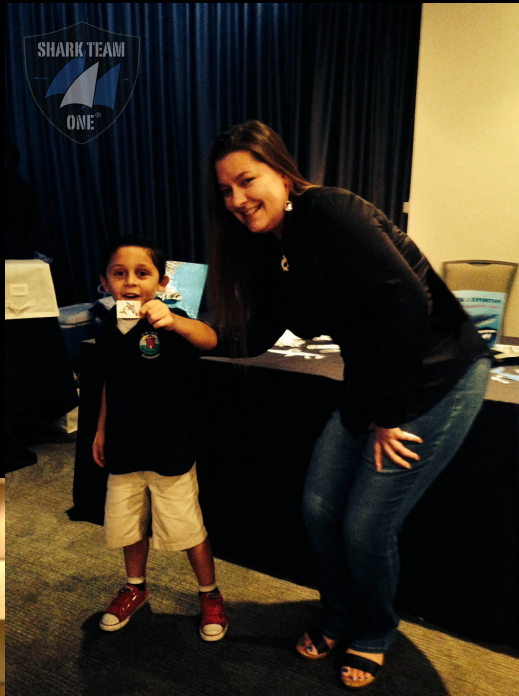




Shark Team One's Endangered Whale Shark Conservation Program



Student mentorship, school seminars, undergraduate & graduate career projects





In field training - we learn ecology, about local ecosystems, how to help save sharks.

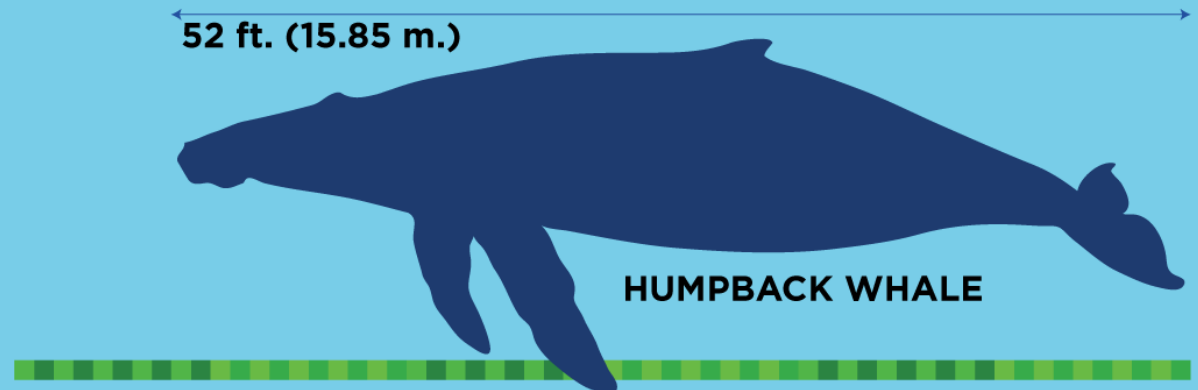
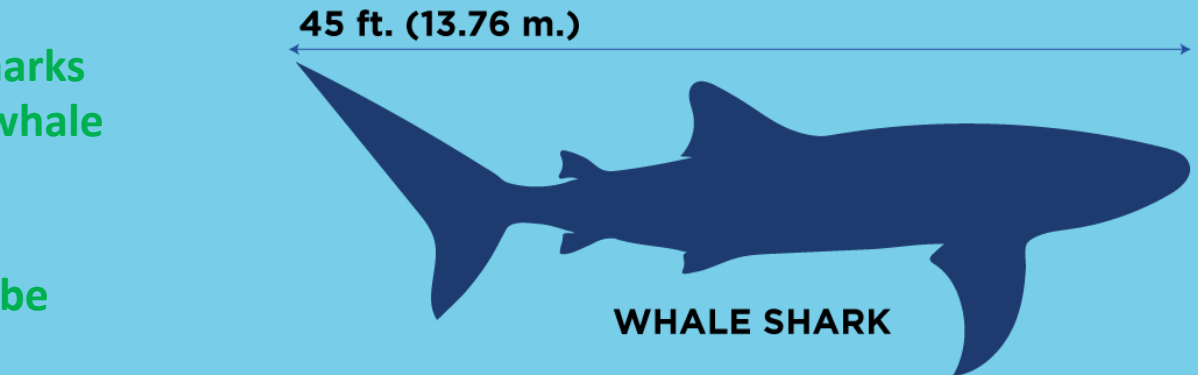
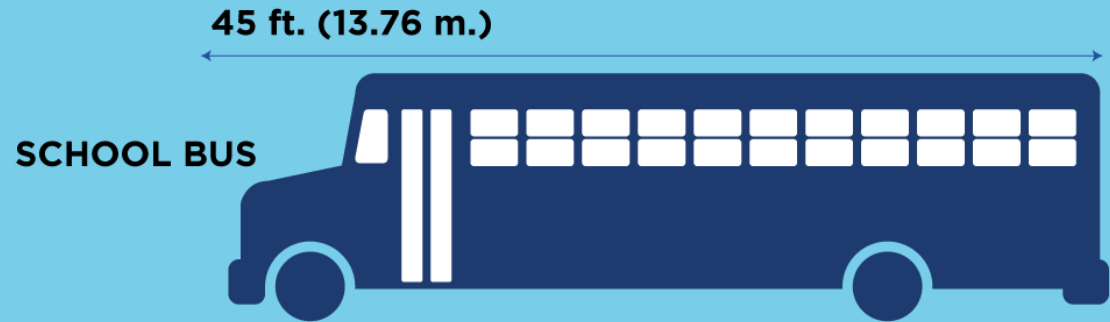




STEM and STEAM training for multinational students. Students from CUAM Cancun school and local families participate in citizen science, beach cleanups, art and recycling projects.



COMPARING SIZES



KEY ■ = 1 ft. (0.3 m.)

- We see 10' – 55' whale sharks
- Our average is 25' to 35' whale sharks in our study groups
- Whale sharks may live to be around 70 to 100 years old!

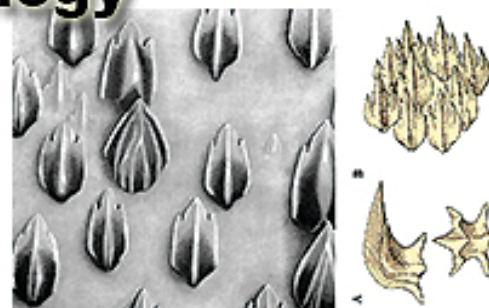
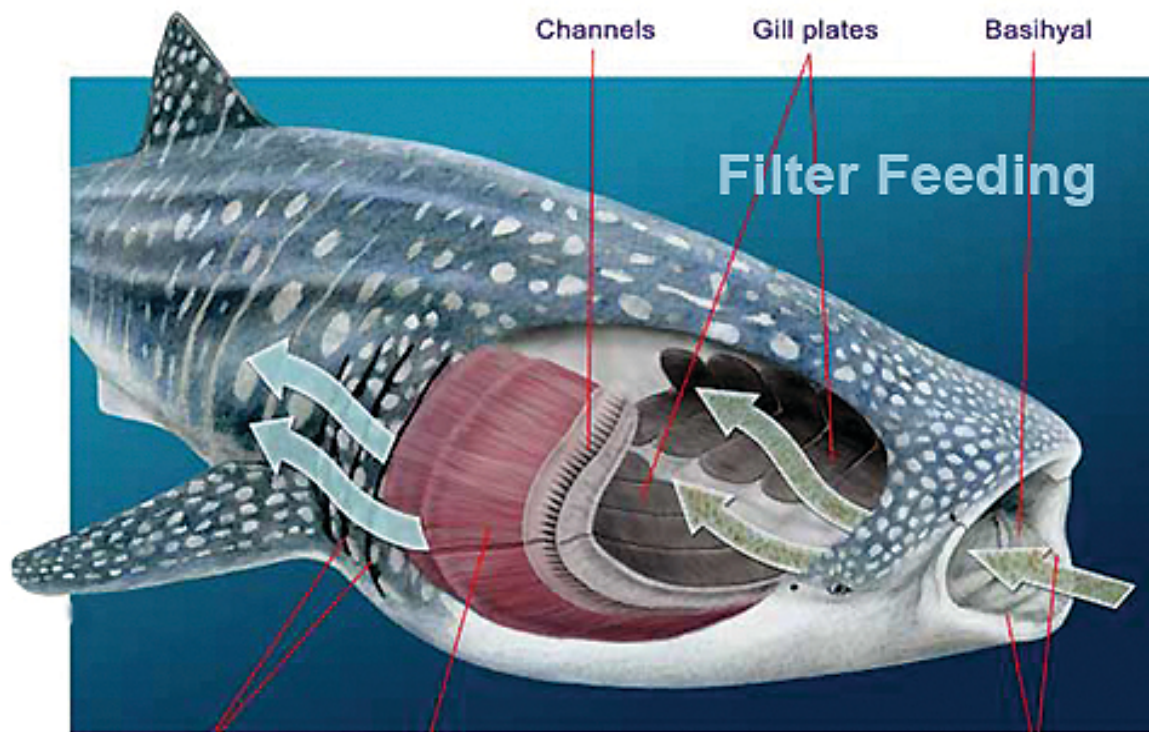




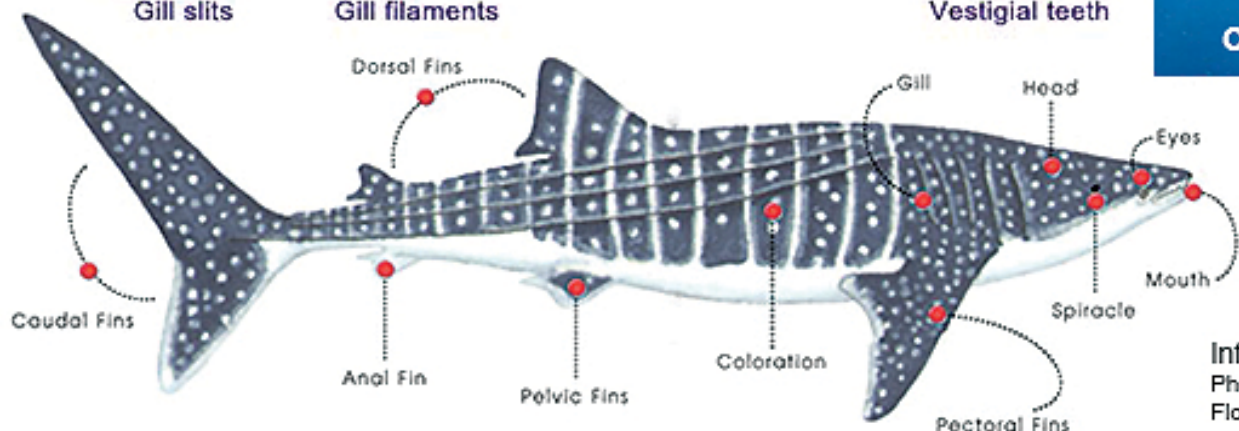
Whale sharks are filter feeders. They can process more than 1500 gallons of water an hour through their gills. Although its mouth can stretch to five feet wide, a whale shark's teeth are so tiny that they can only eat plankton, fish eggs, small fish and crustaceans by using their gill rakers as a suction filter.



Whale Shark Anatomy & Biology



Dermal denticles - whale shark skin & gill plates



Length up to 20 metres
Weight up to 20 tons
Age ~60 years



Information by Shark Team One
Photo Credits: Scubafish News, Emily Damstra,
Florida Museum of Natural History

Whale Shark Conservation Issues:

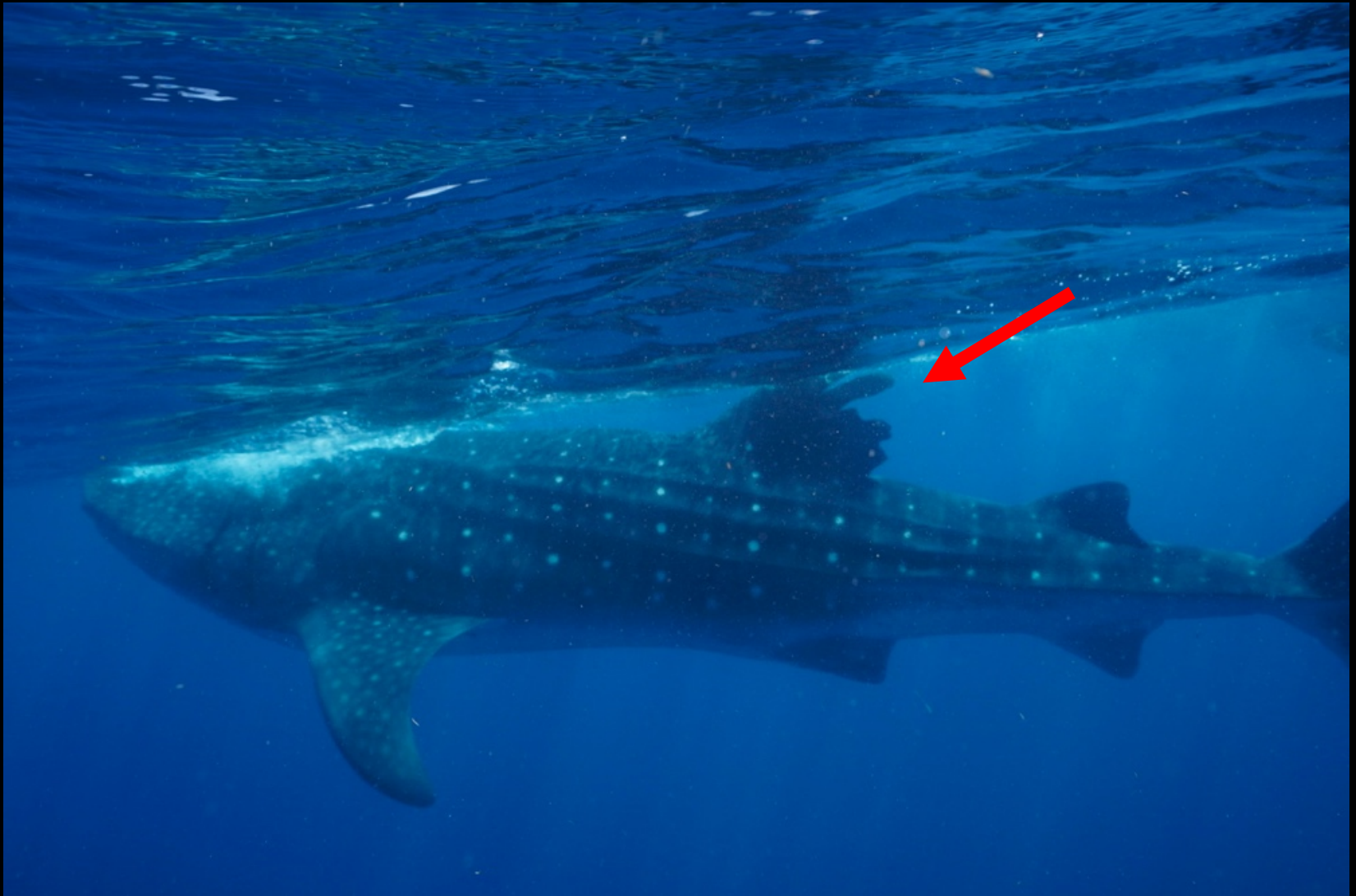
Here are a few:

- Ship strikes
- Loss of food resources due to climate change (weather events and warming waters)
- Shark finning
- Inadequate marine protected areas – (we need more)
- Marine debris & plastic pollution as cause of death

Whale sharks are in decline worldwide with newly calculated losses of greater than 50% species decline over the last 75 years!



Whale Shark Issues – fin damage



Sharks fins being virtually tagged for AI impact study.

AI for Earth

Access | Education | Innovation

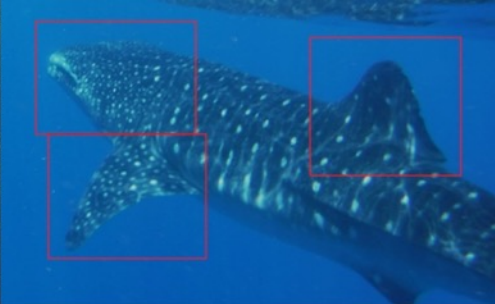
AI for Earth is a Microsoft program aimed at empowering people and organizations to solve global environmental challenges by increasing access to AI tools and educational opportunities, while accelerating innovation.

AGRICULTURE

WATER

BIODIVERSITY

CLIMATE CHANGE

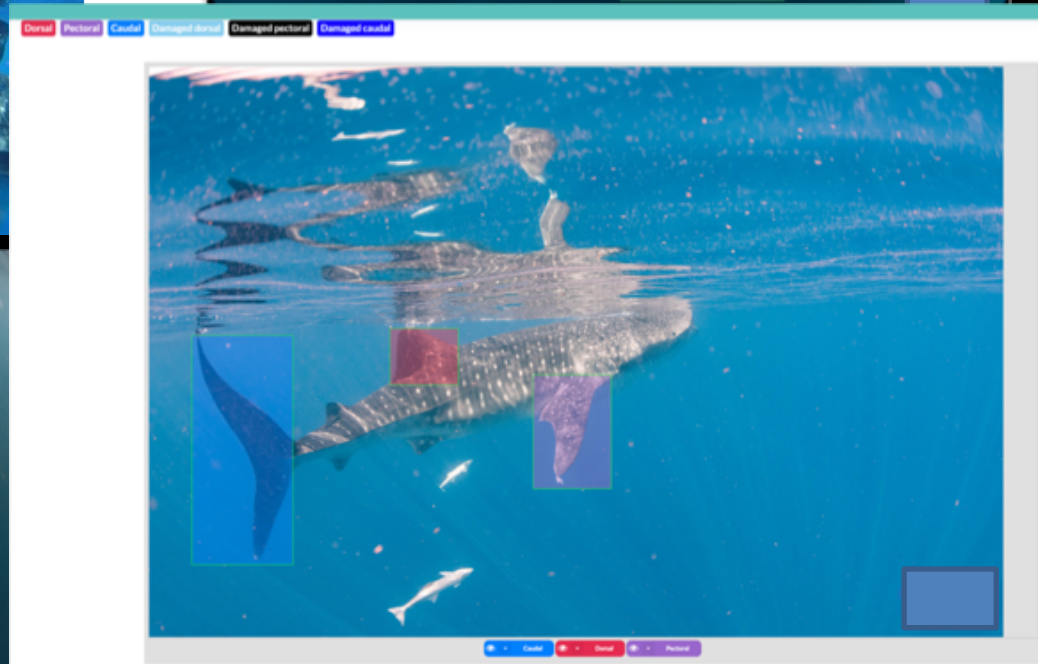
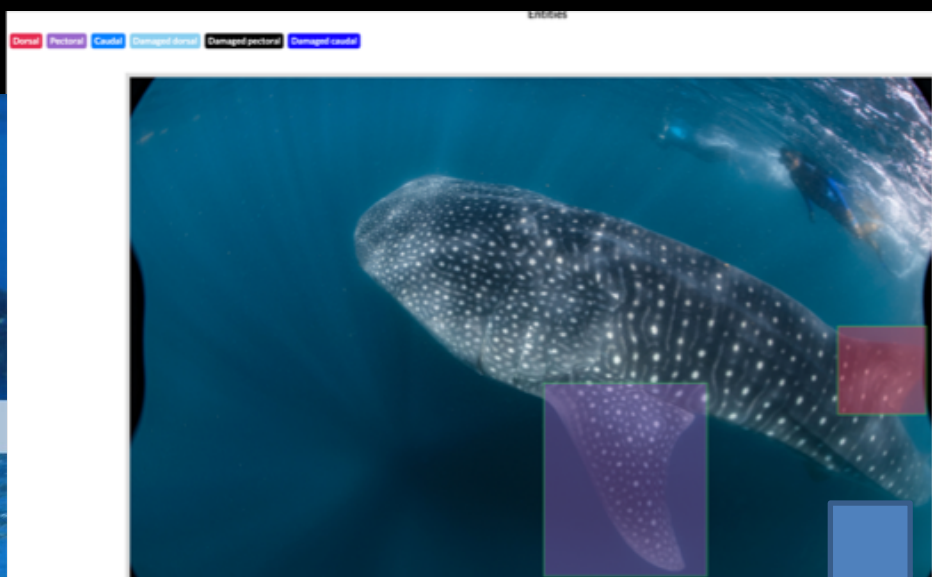
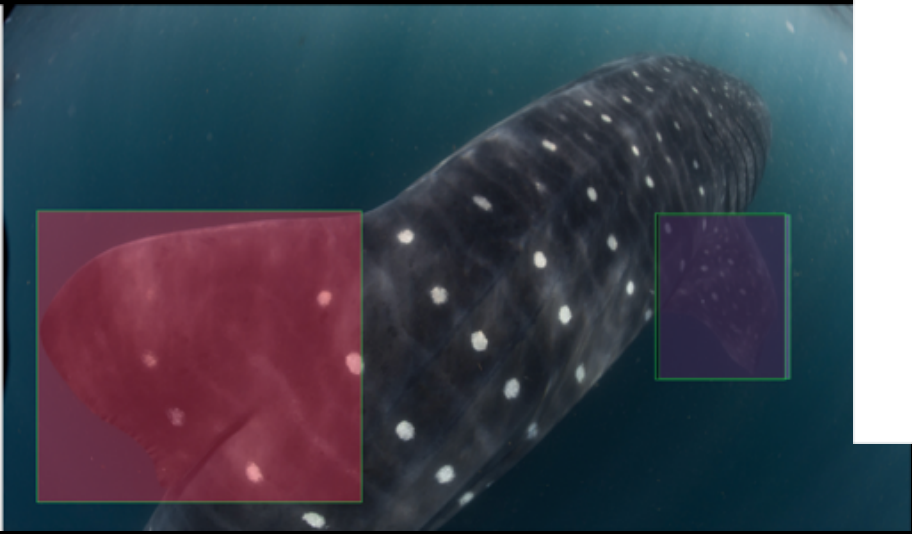


A photograph of a whale shark swimming in clear blue water. Three red rectangular bounding boxes are overlaid on the image: one on the head, one on the dorsal fin, and one on the pectoral fin.

Project: "Building Marine Wildlife Corridors for Sharks Using Artificial Intelligence"



© Shark Team One's Endangered Whale Shark Conservation Program and Microsoft's AI for Earth Program



Tracking Sharks...

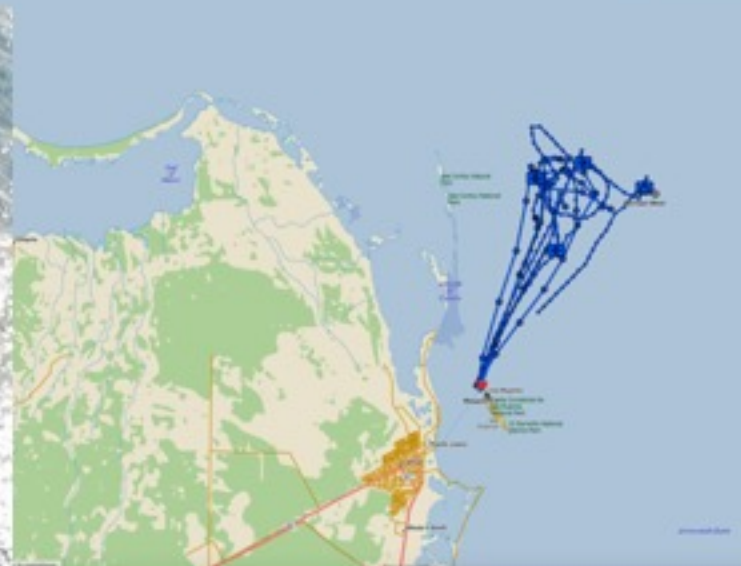


Shark movement data gathering to inform science and policy.

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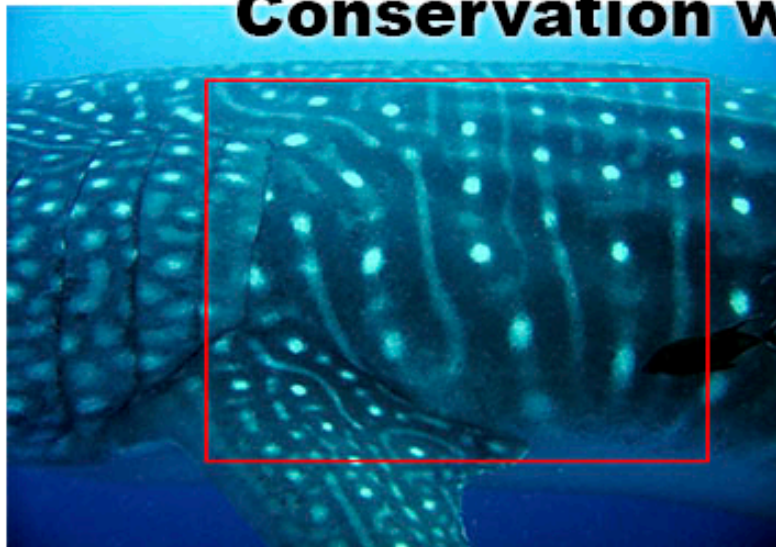
Aerial surveys



© Shark Team One Data 2021

Whale shark: *Rhincodon typus*

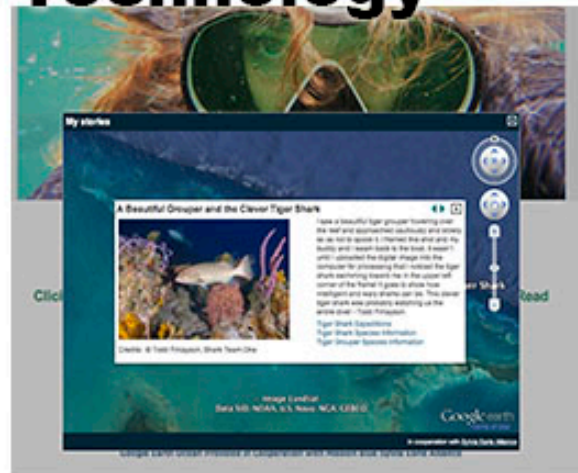
Conservation with Technology



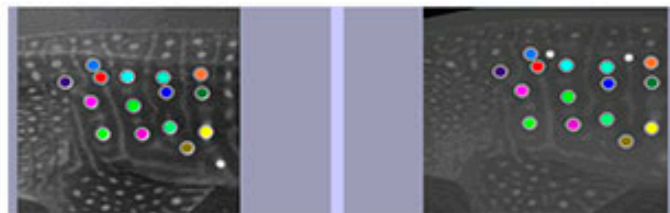
- Photographer is perpendicular to the spot patterning area
- Target area is above **LEFT** pectoral fin
- Must stay 10' away from shark



- Each shark has a distinctive spot ID pattern



- Photos & data used to map movement patterns



- Used for databases to track individual sharks



**Conservation Status =
Endangered
(High Extinction Risk)**

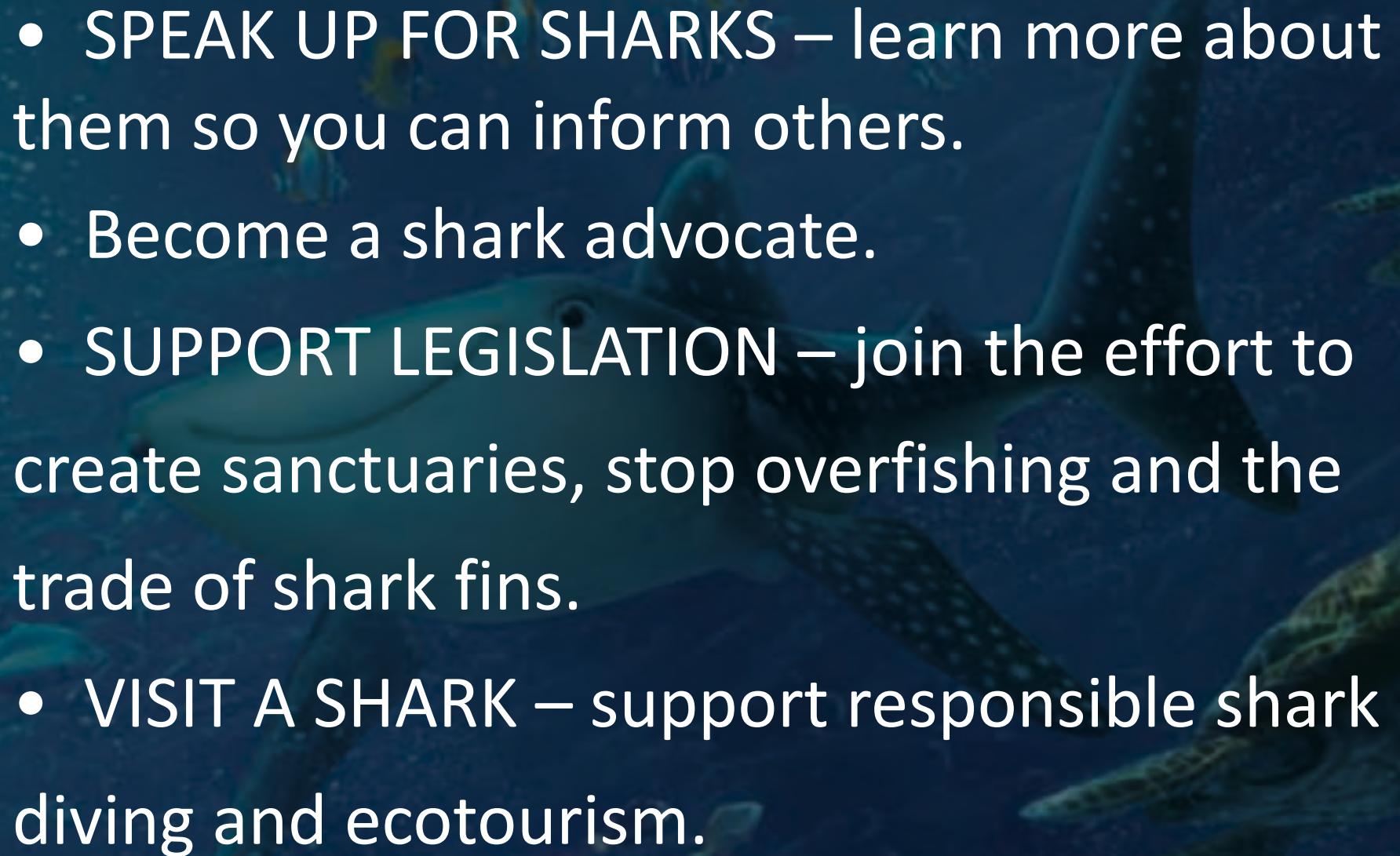
Information by Shark Team One

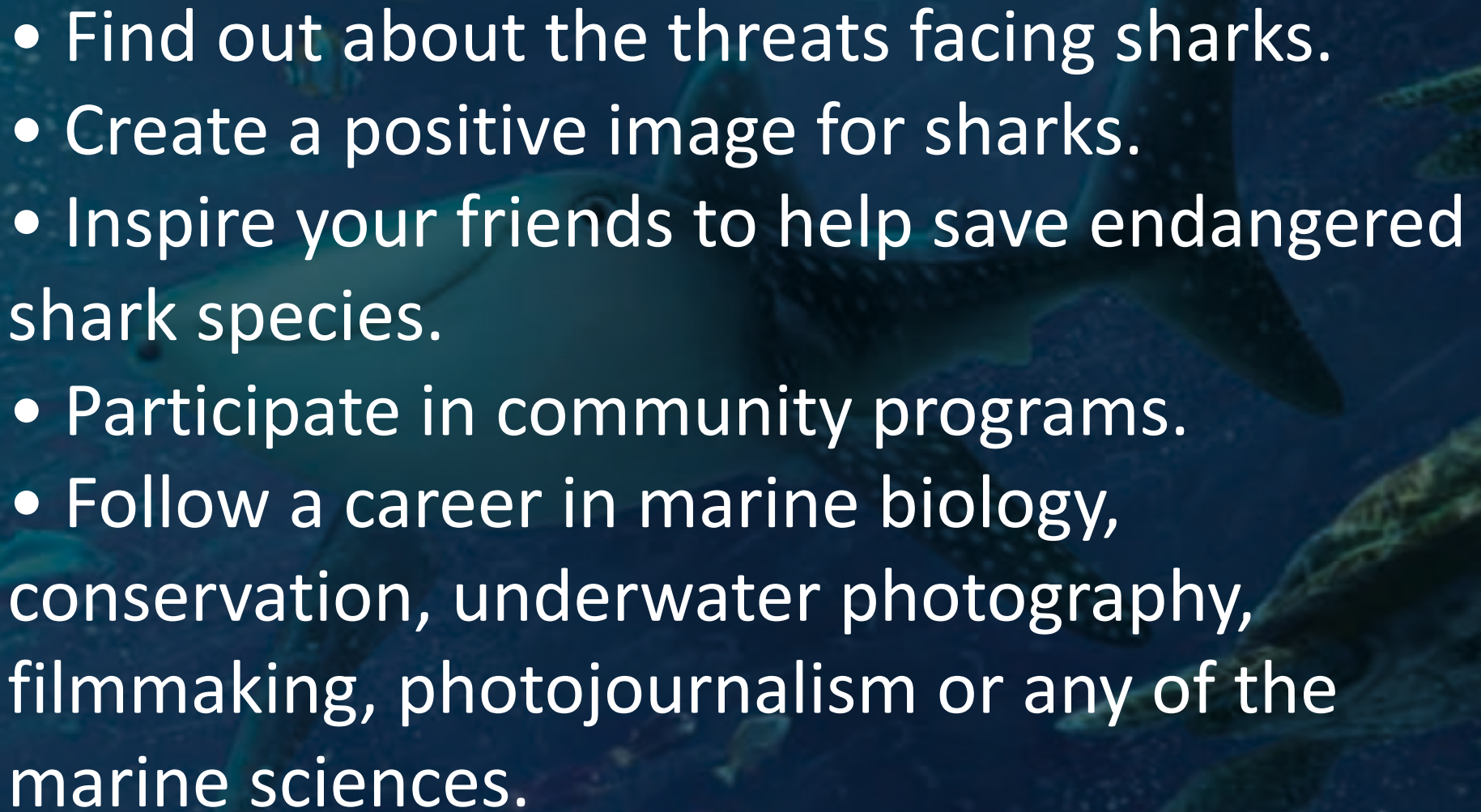
Photo Credits: Shark Team One, Wildbook/Wildme, Google Earth, Mission Blue, Qatar Shark Research

What can you do to help Destiny?

© Pixar | Disney

Slides copyright Shark Team One

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- A large shark, possibly a tiger shark, is swimming in the ocean. The background is filled with many smaller fish, creating a vibrant underwater scene. The text is overlaid on this image.
- **SPEAK UP FOR SHARKS** – learn more about them so you can inform others.
 - Become a shark advocate.
 - **SUPPORT LEGISLATION** – join the effort to create sanctuaries, stop overfishing and the trade of shark fins.
 - **VISIT A SHARK** – support responsible shark diving and ecotourism.

- 
- Find out about the threats facing sharks.
 - Create a positive image for sharks.
 - Inspire your friends to help save endangered shark species.
 - Participate in community programs.
 - Follow a career in marine biology, conservation, underwater photography, filmmaking, photojournalism or any of the marine sciences.



Careers in the Marine Sciences:







To work in this field you'll need to be
interested in:

Science • Math

Engineering • Technology

Chemistry • Data analysis
and/or





Writing • Marine Policy • Law

Scuba Diving • Snorkeling

Photography • Filmmaking • Languages

Burning desire to explore, save species and
change the world around you!

Sample USA colleges with marine biology programs:

-  Nova Southeastern University – Florida
-  Stony Brook University
-  University of Miami
-  Duke University
- College of the Atlantic - Maine
- California State University Monterey Bay
- California State University Long Beach
- University of California Los Angeles
-  University of New England at Biddeford
-  University of North Carolina at Chapel Hill
- University of Hawaii at Hilo
- University of Oregon

Specific areas of study may be: biology, oceanography, ecology, physiology, biochemistry, genetics, zoology, environmental science, natural resource management, etc.



Whale Shark Virtual Research Expedition with Shark Team One!

Study Questions, Field Drawing, Photos of Student & Video Instructions: Sections 1, 2 and 3.

Let's go on a virtual expedition with Shark Team One to study and learn about the biggest and one of the most endangered fish in the sea, whale sharks!

Please complete all three sections, upload the 3 photos, 1 drawing and video by April 12th.



Think



Act



Protect

MADE WITH
beautiful.ai

Founder, Angela Smith with 10-year-old Jonathan, our youngest citizen scientist so far!

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Thank You!

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