

PLANET SHARK™

· PREDATOR OR PREY ·



EDUCATIONAL WALKTHROUGH

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OVERVIEW

Welcome to *Planet Shark: Predator or Prey* at the WA Maritime Museum.

Our latest “out of water” shark exhibition will take your students on a journey through millions of years of evolution. Your students will immerse themselves into the world of sharks as they venture through multiple galleries, including a walkthrough projection display of stunning HD underwater shark footage.

The exhibition is designed to be interactive, entertaining and educational for wide student exposure and application. Importantly, the exhibition has been designed and created around the fascination most students have with sharks and is designed to appeal to all student levels.

Whether sharks fill you with fear or fascination, *Planet Shark: Predator or Prey* will have your students captivated from start to finish.

This guide is provided to give you an overview of the exhibition and some discussion points for subject areas within it. For a more in-depth exploration of some of these topics and a range of tasks and activities please see the *Educational Activities Guide*.

This walkthrough will cover:

- Diversity and Classification
- Top of the Food Chain
- Media Hype
- Observation and Protection

We encourage you to print copies of this guide for group leaders to use as a reference when navigating through the exhibition.

Don't forget to check out the Shark Encounter stations located through the main Museum where you can feel shark skin, learn why sharks have different types of fins and much more!



WELCOME

This guide is intended as an optional reference to support your visit.

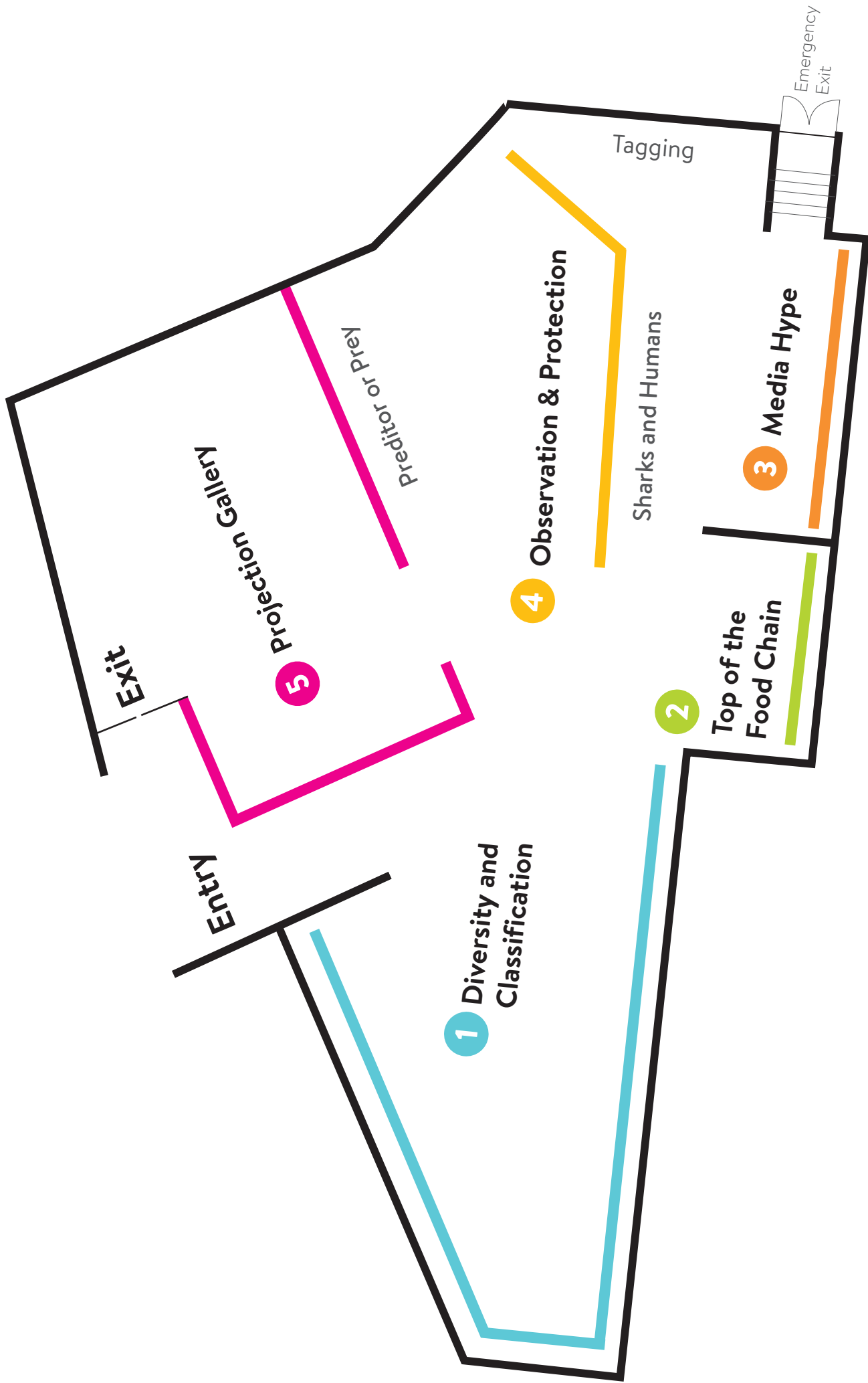
You will find some suggested questions to spark discussion within your group, as well as some background information to support these discussions.

We hope that you enjoy your visit.

Before entering the exhibition take note of your students' preconceptions around sharks.

What comes to mind when you think about sharks?

Follow this up at the end of your exhibition visit by asking your students if they have learnt anything new or if they think differently about sharks after seeing the exhibition.



1 DIVERSITY AND CLASSIFICATION

As you enter the exhibition you will see a representation of a Whale Shark. This is the biggest species of shark alive today, often growing over 12.5 metres (that's nearly as big as a bus). In contrast, the smallest shark is the Dwarf Lantern Shark at just 20 centimetres, not even as long as a ruler!

How many times bigger is a Whale Shark than a Dwarf Lantern Shark?

A: 62.5 times longer

Taxonomy is the science of naming, defining and classifying groups of biological organisms on the basis of shared characteristics. Sharks are divided into nine orders divided into around 40 families.

How many different species of sharks do you think there are?

Worldwide, there are more than 500 species of shark! Of these, more than 180 species occur in Australian waters and about 40% of these are considered endemic (only exist here).

Sharks have been around for a long time, over 450 million years, that's before dinosaurs. They live all over the world and in all sorts of places, from the ocean, to rivers and have evolved to have a wide variety of body shapes and sizes (morphology). They also have different reproductive strategies, for instance, some sharks lay eggs, while others give birth to live young.

You might have seen a shark tooth fossil before, but have you ever seen a shark skeleton?

Why are teeth the only fossil record of many sharks?



Fossilised teeth

Sharks are classed as fish although they differ from 'teleost' fish (fish with bones) as they have cartilage where bones would normally be – even their vertebrae are cartilage. That means that they don't have a bony skeleton like other fish. Cartilage doesn't preserve well as fossils.

As you walk through the exhibition compare and contrast all of the different types of sharks.

2 TOP OF THE FOOD CHAIN

We often hear that sharks are at the top of the food chain, but is this true for all sharks and what does this role mean? Not all sharks are purely predatory; some are filter feeders or scavengers, making them omnivores.

Look at the food chain represented on the wall

How do you think the food chain will be impacted if a predator like a shark no longer existed?

Sharks are vital to marine ecosystems because they keep food webs in balance. They are what is called a keystone species—this means that they have a major influence on the ecosystem that they live in.

Most sharks will scavenge rather than hunt as it uses less energy. As a result, sharks could be considered the ‘cleaners’ of our oceans, feeding on the dead and dying as well as the weak. They also keep other marine populations in check.

Without sharks, disease in fish species will increase. Some marine populations will explode, leading to crashes among others and this could lead to the eventual breakdown of the entire marine ecosystem.

What do you think the threats are to a shark?

Direct and indirect threats include:

- Shark fishing
- Shark finning
- Shark culling
- Competition for food
- Indirect threats such as habitat loss or climate change

3 MEDIA HYPE

With a history of representation in films such as Jaws and countless news stories focusing on the threat of sharks, it is no wonder that many people have developed a fear of sharks—but is this fear based in reality?

There is no question that some sharks can be dangerous, but shark interactions are incredibly rare.

What other representations of sharks can you think of?

There are some cases, such as Bruce from Finding Nemo that represent sharks in a positive light.

What responsibility do you think we have in representing sharks in movies and news?

4 OBSERVATION AND PROTECTION

This section looks at the importance of conserving these amazing animals.

Take a look at some of the new technologies that can assist us in protecting sharks and protecting us when we enter their environment.

Environmentalists and scientists suggest that more than half of the world's shark species are endangered. Estimates of numbers of sharks killed by humans each year are believed to be around 100 million, which is four times the population of Australia!

How can new technologies help us to protect sharks?

Gathering more information about sharks can help us to better understand them and how to protect them. There is a vast amount of scientific research undertaken to help us understand shark biology, ecology and taxonomy and to appreciate the pressures that humans put on them. Scientists are able to track sharks using satellites and can now tell where certain sharks are in the ocean on any given day.

The better we understand sharks, the better we can also protect ourselves when we enter their environment.

Can you think of any inventions that can help us to protect ourselves from sharks?

Shark cages and chainmail are both ways that we can create a physical barrier between us and a shark but these have very limited utility. There are also other ways to deter sharks.

All sharks have two more senses than humans – electroreception and lateral line vibration detection. The sensory organs are an array of small gel filled sacs on their snouts known as 'Ampullae of Lorenzini'. They use these short-range electrical sensors to detect their prey.

Using our knowledge of sharks we have developed protective devices such as the Shark POD (Protective Oceanic Device) that uses a three-dimensional electronic waveform to overstimulate the shark's 'Ampullae of Lorenzini'. Today the latest versions are marketed as Shark Shield.

Can you think of anything that you can do help protect sharks?

5 CONCLUSIONS

Take a moment to reflect on the exhibition as you walk through the stunning HD projection gallery and see some of these amazing creatures in action.

Thinking back to our discussion at the start, did you learn anything new, do you think differently about sharks after seeing the exhibition?

What surprised you most during your visit to the Planet Shark exhibition?

Do you think sharks are predators, or prey (or both)? Or scavengers?



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