

Teaching material - Threats to sharks

Author: Katharina Wilharm

Grade: 9-10

Quality management: Prof. Dr. Carsten Hobohm, Institute for Biology and Didactics, University of Flensburg

Material: Information and exercises (Sharks – fascinating hunters / human threats to sharks, PDF-document (Introduction))

Aim: To get to know sharks as fascinating creatures; focusing on the white shark; to name reasons why the shark is endangered; protection measures taken by environmental organizations

Procedure:

Lesson 1:

- Introduction: picture + provocative question: Who is the victim? Humans or sharks?
- Discussion with the pupils / activation of previous knowledge
- Students read “Sharks – fascinating hunters” and complete the relevant exercises.
- Compare the results

Lesson 2:

- Students read “Human threats to sharks” and complete the relevant exercises.
- Compare the results

Introduction

Every year...

... about 100 shark attacks are registered.

... at least 73 million sharks are killed by humans

Who is the victim ?

What is your opinion?



(Goss, T. (2006). White shark. Isla Guadalupe, Mexico, modified)

Sharks – fascinating hunters

Sharks are ranked among the oldest extant vertebrates. They have been swimming in the oceans for around 450 million years. That was long before there were dinosaurs. This is probably due to their perfect physique. They are as fast as motor boats, they can smell blood from miles away and they have a skin that is covered by many tiny teeth.

We distinguish between 500 different species of shark. They can be between only 20 centimetres long, like the dwarf lanternshark and 14 metres long, like the whale shark. The species differ in terms of their food, behaviour and habitat.

The White Shark

The white shark is the biggest predatory fish in the world and belongs to the family of the mackerel sharks. It is between three and six meters long and weighs about 4,440 pounds. The species is found in almost all seas, especially in temperate regions, such as South Africa, New Zealand, California and Australia. Because they prefer seals, harbour seals and sea lions for food, they reside mostly along the coasts. But even on the high seas, at a depth of up to 1,000 metres, they feel at ease. Other sea creatures such as squids, tunas, shellfish, swordfish, rays are food for the white shark. The sharks' torpedo-shaped body makes them perfect swimmers and hunters.

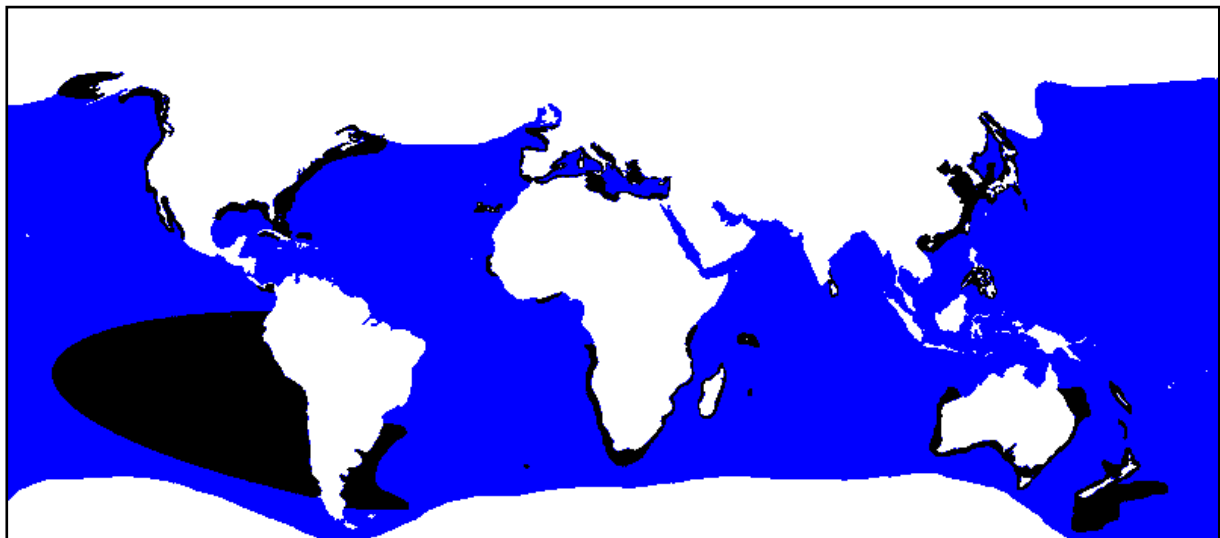
Typical of the white shark is the whitish coloured belly, the crescent-shaped tail fin, the triangular dorsal fin and long pectoral fins. The shark's back is blue to grey-brown. Their large eyes and large gill slits are particularly striking (Picture 2).



Picture 2 (Goss, T. (2006). White shark. Isla Guadalupe, Mexico)

Reproduction is very slow in sharks. The animals only become sexually mature at the age of 10 to 12 years and only have offspring every 2 to 3 years. The gestation period is also long, lasting between 3 months and 1 year. The great white shark gives birth to her young alive and she deserts them immediately after birth. From that moment on, they are on their own and are exposed to many dangers. The life expectancy of sharks is estimated at about 30 years.

Distribution area of the white shark:



(o.A. (o.J.). *Cacharodon carcharias* distmap 2. Licensed under: Creative Commons Attribution-Share Alike 3.0 Unported, modified)

Exercises:

1. Create a profile in which you include all the important facts about the white shark. Use this template.
2. With the help of an atlas, research and note down the areas in which the white shark is often to be found. Use the map above. The most common distribution areas are shaded dark. Include these in your profile too.

Profile White Shark

Family: _____

Size: _____

Habitat and geographical distribution:

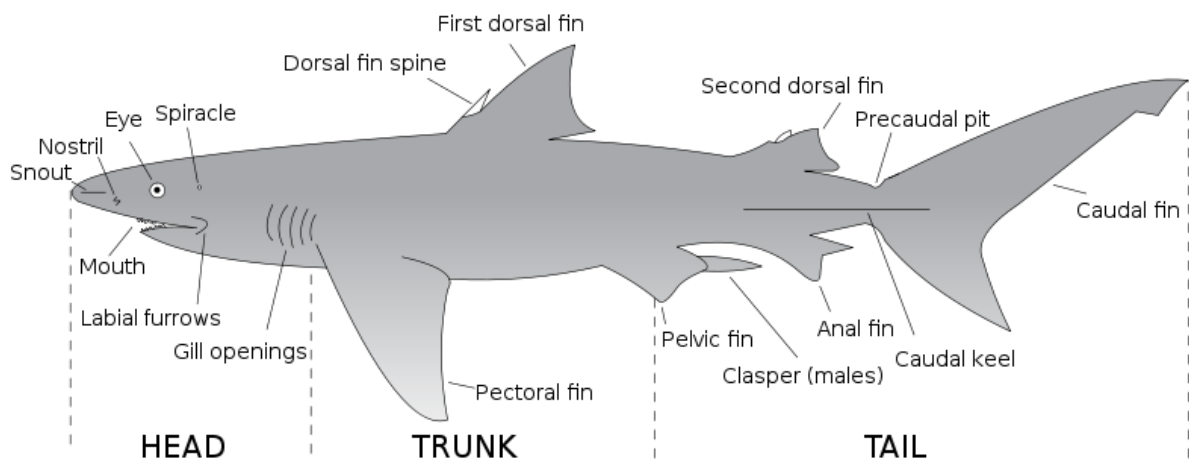


Kiefner, R. (1999). Grosser Weisser Hai (*Carcharodon carcharias*). Greenpeace

Reproduction: _____

Diet: _____

Special characteristics: _____



Human threats to sharks

Although the white shark is the most protected fish species in the world, it is still at high risk. This is due to its rarity, the time it takes for it to reach maturity, and the small number of offspring. Its name appears in the “Red List of Threatened Species”, with more than 70 other species of sharks. Among others these include the dogfish, the whale shark, several species of hammerhead sharks, the porbeagle and the basking shark.

Finning - shark fin soup

In many Asian countries the fish meat and especially the fins of sharks are regarded as a delicacy. The sharks are hunted to produce fin soup from their dorsal fins. The animals have their fins cut off and then they are thrown back into the sea where they die. The process is called finning. Although the soup has almost no taste and contains no important substances for the body, it is bought and eaten en masse. It is considered a status symbol and is often offered at festivals such as weddings, because the shark fin soup is very expensive.

Other products can also be produced from the shark meat. Strips of smoked rock salmon (Picture 3), which are made from the belly meat of small shark species, are a well-known dish, for example.



Picture 3 (Weckenmann, E. (1999). Hai Produkte. Greenpeace).

Longline fishing

Most sharks are killed by longline fishing, where long fishing lines with bait fish are sunk into the seas. The lines can be more than 62 miles long and can contain up to 200,000 baits. Every year 26-73 million sharks are killed as bycatch or by selective fishing. Bycatch means that the animals are caught accidentally during fishing. Picture 4 shows shark fins, which are drying on the deck of a pirate longline fishing boat.



Picture 4 (Sutton-Hibbert (2000). Haiflossen trocknen an Deck des Langleinen-Piratenfischers "Chien Chun No.8" im Sued-Atlantik. Greenpeace.)

The white shark is also often bycatch in fishing nets. An even greater threat to this species is sport fishing. Especially in the south of Australia many white sharks are killed for trophies like individual teeth or whole sets of teeth. These are often sold for large sums of money.

In the Mediterranean Sea, white sharks are suffering from changes to their habitat. Their living conditions are deteriorating as a result of water pollution and fishing, which is depleting the stocks of their food, such as tuna.

Protection measures introduced by environmental organizations

There are various environmental organizations which work for the protection of sharks. The two best known ones are Greenpeace and the WWF.

Greenpeace

Greenpeace was able to enforce a regulation on finning in Europe in the year of 2003. This specifies that all fish products have to be clearly labeled with the species, type of fishing, country of origin and catch area. Also, fishing for endangered species is no longer allowed.



To support this regulation customers should ask for the source of the shark products. Products made from endangered species should not be bought. These include, for example, dogfish and shark steak. But pharmaceuticals and cosmetics also often contain shark products from endangered species.

WWF

The WWF tries to improve the protection of sharks in many regions of the world, by prohibiting brutal fishing techniques. It has enforced the foundation of the first shark sanctuary in the world, near the island of Palau, in the Pacific Ocean. The area is 600,000 square kilometers large, about the size of France. About 130 endangered species of shark live in these waters.



In addition, the WWF is trying to achieve a reduction of fisheries by-catch to protect endangered shark species.

Exercises:

1. On the next page a few of the sharks on the Red List are shown. Why are many species like these shark species critically endangered?

2. What is meant by longline fishing?

3. Why is the existence of the white shark endangered?

4. What is meant by finning?

5. Which organizations are committed to helping the sharks and what measures are being taken? What can you do to protect sharks?

Additional exercises:

6. Look for the island of Palau and France in your atlas and compare the size of France with the protected area of the sharks near Palau.

Great Hammerhead Shark



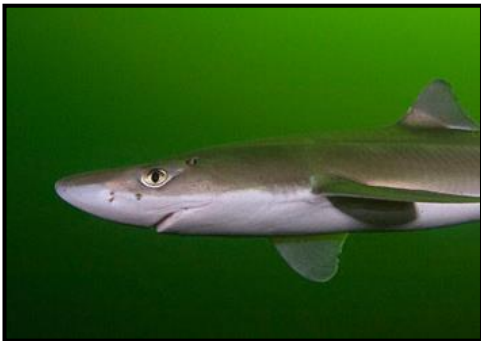
(Hallett, J. (2007). Great Hammerhead.)

Basking Shark



(Gotschalk, C. (2006). Basking shark.)

Spiny Dogfish



(Doug, P. (o.J.) Dornhai. WWF-Canon)

Porbeagle



(Doug, P. (o.J.) Heringshai. WWF-Canon)