

# Sharks

## TEACHER'S NOTES

### What this topic is about

Every year over 100 million sharks are killed. Most are accidental victims of commercial fishing operations targeting other species, but others are butchered for their fins. Several species, including black tipped reef sharks and blue sharks, are hunted purely for their fins to satisfy the shark fin soup market in the Far East. All Sea Life Centres participate in a captive breeding campaign with several species of native shark successfully reared and released. Significant breakthroughs include the first ever wobbegong shark births in captivity at Blackpool Sea Life Centre. A key focus is the deconstructing of the myth that sharks are savage man eaters.

### What will pupils learn?

- About the many different species of this fascinating animal
- That sharks are very different from bony fishes
- That different kinds of sharks thrive in very different environments
- That people can have a positive effect on the conservation of species

### Essential information

There are around 350 species of shark, ranging in size from the 250mm long pygmy or dwarf shark to the 18m whale shark - the largest of all fish. Sharks are found almost exclusively in salt water, although some occasionally venture into rivers and lakes. Sharks are part of the cartilaginous group, which means they have skeletons made of cartilage, not bone.

The popular image of the shark is of a sinister hunter, endlessly cruising the world's oceans in search of human prey. The truth is more prosaic. The vast majority of sharks do not eat humans, and even those that do, have probably made a mistake, thinking they have caught a seal instead.

Sharks are at the top of most of the ocean's food chains - few creatures prey on them, except humans. At the other end are phytoplankton - tiny, free floating algae that are the staple diet for giant whale sharks.

In many ways, sharks are more evolved than the more numerous species of bony fishes. Sharks, for example, can renew their teeth throughout their lives: as one breaks off or is worn out, another rotates forward from the inside of the jaw to replace it.

### Other major differences:

- Most of a shark's skeleton is made from cartilage - a tough, flexible tissue that turns into bone in most other vertebrates
- The skin of most sharks is covered with rough, placoid scales which are quite unlike those on bony fishes
- Sharks do not have air bladders like most other fish, but do have large livers that are rich in oil. This oil provides them with buoyancy, and helps to prevent them from sinking when they are stationary
- Sharks have an asymmetric tail – the upper lobe is bigger than the lower one. This helps to give them lift while swimming, compensating for the fact that they are heavier than water.

Some shark mothers lay eggs that then develop outside their body. Others have eggs which develop and hatch inside their body, and the embryos feed off the yolk sacs. Some young sharks retain the yolk sacs for a while after birth. Yet other sharks nourish their young directly from their own blood supply, and give birth to fully formed young.

# Sharks (continued 1)

## TEACHER'S NOTES

Things your pupils can do:

- **Before their visit**

Use books, magazines, CD-ROMs and the Internet to find out all they can about sharks, especially their:

- habitats
- food webs
- prey

### Key Stage 1

The sharks at Sea Life can be divided into two simple groups: tropical and native. Ask pupils to find information about the sharks listed below in order to put them into correct groups.

Native: Smooth hound, Starry Smooth Hound, Bull Huss, Dog Fish, Tope.

Tropical: Black Tip Reef Shark, Nurse Shark, Wobbegong, Brown Shark, Leopard Shark, White Tip Reef Shark.

### Key Stage 2

Scientists divide sharks into eight orders. Each group has certain common characteristics. The eight orders are ground sharks, carpet sharks, sawsharks, dogfish sharks, mackerel sharks, angel sharks, bullhead sharks and frilled or cow sharks. Provide your pupils with the example below, then ask them to investigate the common characteristics of other groups.

Carpet sharks (orectolobiformes)

Seven families, 31 species

- found in warm to tropical waters
- mostly live at the bottom of the ocean
- flattened shape
- normally eat small fishes and other invertebrates
- some species bear live young, others lay eggs

- **During their visit**

### Key Stage 1

Ask pupils to spot as many sharks as they can from the native and tropical groups listed in the pre-visit activity.

### Key Stage 2

Remind your pupils that scientists divide sharks into eight orders. Their task will be to look closely at the sharks on display at the Sea Life centre they visit and decide which of the eight groups these sharks belong to.

# Sharks (continued 2)

## TEACHER'S NOTES

### ● After their visit

Sharks can be divided into two main habitat groups:

- shallow water species that spend most of their lives on the continental shelves in water less than 200 m (650 ft) deep
- deep water species that live in the deepest parts of the ocean

Organise a class activity around the following question: How does where a shark live affect its eating habits?

\*Sea Life staff will be happy to give advice about how to support shark research and conservation. Children can take part in wider conservation programmes through junior branches of organisations like the World Wide Fund for Nature, local Wildlife Trusts and animal welfare organisations.

### Pupils Worksheet

