

Shark Adaptations and Diet



Learning objectives:

Students will learn why animals have specific adaptations that aid them in survival and prey capture. They will be able to identify the difficulties that different shark species have when attempting to catch specific prey and why the sharks have adapted specific traits to catch them.

Appropriate grade levels: 4-5

Approximate length: 40 minutes
(Can be done in person or remote)

 COLLEGE OF ARTS AND SCIENCES
Environment, Ecology and Energy Program

Standards directly addressed:

- **4.L.1** Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.
- **5.L.2** Understand the interdependence of plants and animals with their ecosystem.

Lesson plan overview:

1. In exercise 1, students will participate in a matching game. They will learn about the habitat and adaptations for each of the animals on the cards. Keeping the habitat and adaptation in mind they will match the shark to the prey.
2. In exercise 2, students will apply their knowledge from exercise 1 and create their own imaginary shark. They will identify a prey species and what adaptations their shark would need to have to capture this prey. They will then draw their shark.

Exercise 1: Matching the shark to its prey

Students will observe different species of sharks and their prey. They will identify the specific adaptations these sharks have that help them to capture their prey. At the end of this exercise students should understand why certain species choose to eat specific prey. For example, a whale shark cannot eat a sea turtle because their teeth are so small they wouldn't be able to chew it and break open its shell.

This can be an independent or group activity.

1. The teacher will print out the animal cards below, cut them out, and randomly assort them.
2. Start off the activity by having the students preview the vocabulary below. The teacher will explain that different animals have adapted certain traits so that they have a better chance of survival and capturing prey.
3. Give each group of students the 12 animal cards. After reading each card they should be able to identify the habitat and specific traits that each animal possesses.

Answers:

- Thresher shark & Anchovies
- Bonnethead Shark & Blue crabs
- Mako shark & Tuna
- Whale shark & Plankton
- Nurse shark & Sea urchins
- Tiger shark & Sea turtles

Vocabulary:

- **Prey:** an animal that is hunted and killed by another animal for food
- **Microscopic:** something so small that it can only be seen with a microscope
- **Filter feeding:** eating by sucking in water and sorting through it for tiny animals
- **Camouflage:** animals use camouflage to hide themselves by blending into their surroundings
- **Migrate:** moving from one place to another



Mako Shark

These sharks live in the open ocean. They are the fastest swimming shark and can swim up to 45 miles per hour. They have adapted to have a very powerful tail that resembles their prey which is what allows them to swim so fast.



Tuna

These fish live in the open ocean. They are very fast swimmers and can swim up to 43 miles per hour. They are also large fish and can grow up to 6.5 feet.



Nurse Shark

The nurse shark lives on the bottom of the seafloor. They have two whiskers by their mouth that have taste buds. When searching for prey they drag the whiskers on the seafloor. They have small teeth but very powerful jaws that can break through thick shells.



Sea Urchin

These animals live on the sea floor. They have hard shells covered in spines. They are usually between 1 and 4 inches wide.



Whale Shark

These sharks live in the open ocean. They are the largest fish in the ocean and can have up to 3,000 teeth. Although, these teeth are so tiny you can hardly see them. Instead of using their teeth to catch their prey, they open their mouth to filter feed and catch their tiny prey.



Plankton

Microscopic animals found floating towards the surface of the ocean.



Bonnethead Shark

These sharks live in shallow, sandy or muddy water. Their head is flat, and their mouth is on the underside of their head. Its head can act like a metal detector sensing prey that is buried in the sand.



Blue Crab

These crabs are found in grassy, muddy shallow water. They use camouflage to blend in and avoid being eaten.



Thresher Shark

These sharks live in the open ocean. The top part of their tail is very long. They use their tail like a weapon by whipping it so fast that it stuns its prey so that it can't move.



Anchovies

These are small fish that live in the open ocean. They swim around in a large ball to avoid being eaten.



Tiger Shark

These sharks are found in tropical waters and can live in both shallow and deep water. They can be over 16 feet long. They have unique teeth that point sideways and are very sharp allowing them to saw through hard surfaces.



Sea Turtle

Sea turtles can be found in shallow and deep water. They migrate all over the world and can live up to 70 years. They are protected by a hard shell.

Exercise 2: Create your own shark

Now that students understand why certain species of sharks have specific traits to help them capture specific prey, they will apply this knowledge by designing their own shark species. This exercise can be done during class or assigned as homework.

1. Have the students choose an animal that they want their shark to eat. Then have them brainstorm what difficulties their shark might face when trying to hunt and capture the prey animal that they have chosen.
2. Once they have identified the difficulties their shark may face have them brainstorm specific attributes their shark will have to counter those difficulties.
3. Then have each student draw a picture of their shark with its specific adaptations. They should also write a paragraph that explains the shark's prey and habitat, and how the shark's adaptations help them capture that prey.
4. **OPTIONAL:** Once students have completed their sharks display the drawings around the room. Students can walk around and observe their peers work and ask each other questions about their sharks.

Feedback Survey:

Below is a link to a survey for educators to fill out to provide feedback for SciREN Coast.

Survey link: <https://forms.gle/RrdQnB1CwSnTX5by6>

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