Grade Level: K-2
Time Estimate: 1-3 days

PREDATORS & PREY / INSTRUCTOR INFO

Summary

This lesson includes vocabulary, content, examples, and activities to help students learn and understand the concepts of predators and prey. Students will learn about different types of marine predators by introducing the function and importance of a food chain. The included activities will engage the students in deductive reasoning and apply their skills in comparing and contrasting with different ocean predators.

Part 1. Introduction to Food Chains
Part 2. Predators & Prey
Part 3. Predators and the Environment
Activity 1. Guess the Predator
Handout 1. Predator and Prey Matching

Goals & Objectives

The students will:

- Recognize the concepts of predator and prey;
- Understand why predators are important;
- Connect their knowledge of predators, prey, and food chains to real world applications;
- And participate in group activities and class discussions.

// STANDARDS

This lesson aligns with the following TEKS:
Kindergarten Science: 2A, 2D, 2E, 3A, 3B, 3C, 4A, 9B, 10A
Grade 1 Science: 2A, 2D, 2E, 3A, 3B, 3B, 3C, 4A, 9B, 9C, 10A
Grade 2 Science: 2A, 2D, 2E, 2F, 3A, 3B, 3C, 4A, 9A, 9C, 10A

STEM
Sharks are amazing apex predators. Different parts of their body are designed to have different functions, just like humans. From their gills to their caudal fin, each part has an important role to play that will ensure the survival of the species. When students study the anatomy of a shark, they are one step closer to understanding shark behavior, their habitat, and gaining understanding of the role sharks play in the health of the ocean.

This lesson aligns with the following Next Generation Science Standards:

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
[Clarification Statement: Emphasis is on the diversity of living things in a variety of habitats.]
[*Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats*.]

Disciplinary Core Ideas
LS4.D. Biodiversity and Humans
- There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

Science and Engineering Practices
Planning and Carrying out Investigations
- Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Make observations (firsthand or from media) to collect data that can be used to make comparisons. (2-LS4-1)

Connection to Nature of Science
- Scientific Knowledge is based on Empirical Evidence. Scientists look for patterns and order when making observations about the world. (2-LS4-1)

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
[Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]

Disciplinary Core Ideas
LS1.C. Organization for Matter and Energy Flow in Organisms
- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

Science and Engineering Practices
Analyzing and Interpreting Data
- Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing

observations. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1)

Helpful Tips

1. The content in this lesson is based on the conservation work of OCEARCH™ and the Global Shark Tracker™. Spend a few minutes getting familiar with the website and the tracker if you have not done so already. The Global Shark Tracker™ is also avail-able as an app for iPhone and android.

2. This lesson plan is designed to be adaptable to suit your specific needs. Use the en-tire lesson plan or just parts of it. This material can be expanded to be an entire unit or condensed for just one day in the classroom.

3. Vocabulary words will be underlined as they first appear in the lesson plan. A complete list of vocabulary words is included as well.

4. Answers to questions and prompts for discussions will appear in italics.

5. Optional activities and content (side notes) will appear in a box. Use these to enhance your lesson and adapt it to suit your needs!

6. Have questions for M/V OCEARCH Expedition Leader, Chris Fischer? Email in-fo@OCEARCH.org to schedule a Skype session and let your students/child talk directly to Chris and the M/V OCEARCH crew!

7. Email all questions about this lesson to info@OCEARCH.org

Vocabulary

Adaptation: A trait with a current and functional role in the life of an organism.

Apex Predator: An animal that is at the top of the food chain in a given ecosystem.

Food Chain: A chain of living things that is a part of an ecosystem where one organism eats another.

Predator: An animal that eats other animals in an environment.

Prey: An animal that is eaten by a predator.

Grade Level: K-2

PREDATORS & PREY / LESSON PLAN

PART 1. INTRODUCTION TO FOOD CHAINS **5-10 mins**

Just like humans, animals need food to survive! In the ocean, there are millions of different kinds of animals. Let's name some of our favorite ocean animals!

Ask the students to give some examples of their favorite ocean animals. Write several students' answers on the board. Make suggestions to include both predators and prey. Examples include: sharks, dolphins, fish, seals, sea stars, sea turtles, etc.

Each of these animals is part of what keeps the ocean in balance. Together, animals make up a **food chain** based on what they eat. Some animals eat plants, like a sea turtle, while animals like sharks eat other animals to survive. Ocean food chains start small with plants like algae, which are eaten by small fish. Larger fish then eat the small fish, and animals like seals eat the larger fish. Finally at the top of the food chain, the largest animals like sharks eat the seals.

Create a visual aid on the board using words or pictures:

Algae → Small Fish → Large Fish → Seals → Sharks

PART 2. PREDATORS AND PREY **5-15 mins**

A **predator** is an animal that must hunt and eat other animals to survive. They have special **adaptations** that allow them to be excellent hunters.

Ask the students what ocean animals a shark might hunt. Write several students' answers on the board. ***Answers:*** *fish, sea lions, squid, sea turtles, other sharks, crabs, etc.*

Sharks are predators that play a very important role in the ocean. In fact, they are part of what keeps the ocean in balance. Sharks are a special kind of predator called an apex predator. An apex predator is an animal that is at the very top of a food chain. This means they have no natural predators.

An animal that is eaten by a predator is called prey. Predators depend on hunting prey to survive. We have already said that sharks are predators, but not all sharks eat the same types of prey. For example:

- Great white sharks eat seals and squid.
- Tiger sharks eat sea turtles.
- Bull sharks eat stingrays.
- Zebra sharks eat shrimp and crabs.

PART 3. PREDATORS IN THE ENVIRONMENT **15-25 mins**

Both predators and prey are important to the food chain and keeping the oceans in balance. Let's look at an example of a food chain with a great white shark as the apex predator.

The great white shark eats squid. Squid eat fish. Those fish eat smaller fish. The smallest fish eat tiny plankton or plants. Ask the students what could happen if there were no more white sharks in the food chain?

> *Without any white sharks to eat the squid, then there would be way too many squid eating the fish! This would mean that without white sharks keeping the squid in balance, the squid would eat too many of the larger fish. This same effect would keep going all the way down to the bottom of the food chain, and the ocean habitat would no longer be balanced or healthy. Eventually there wouldn't be too many squid and not enough food for them.*

When an animal is that important to a habitat, it is important for humans to make sure that they are protected and that the food chain stays in balance. OCEARCH is a non-profit organization that tags and tracks sharks to learn about these apex predators. By learning about these sharks, they can find ways to protect them and teach others about how important apex predators are to the oceans. Pull up the OCEARCH Global Shark Tracker™ and show the students that sharks are being tracked.

Some species of sharks are harder to track and are less understood by people. The great white shark is an excellent example of a shark species we still have much to learn about. By tagging and tracking these sharks, we can learn about where the sharks like to go and when! This kind of information can help us to protect the sharks and keep the oceans in balance.

How does OCEARCH tag these amazing animals? Play a video, like the one of Katherine being tagged, to show the students how sharks are tagged. Follow up by using the Global Shark Tracker™ to see where different sharks have traveled.

Students can use the OCEARCH Global Shark Tracker™ to track the sharks in real time at home or at school!

ACTIVITY 1. GUESS THE PREDATOR **20-30 mins**

Introduction

With the goal of identifying different ocean predators using deductive reasoning, students will ask multiple questions about a given predator until the predator is identified. Students can participate individually, as a class, or in groups.

Materials

- Cutout pictures (provided)
- Tape

Instructions

1. The pictures may be taped to the board for a visual reference before the start of the activity.

2. As a class, students should discuss the kinds predators provided in the cutouts for this activity. Discuss what kinds of prey each predator would eat (Example: zebra shark – crabs, red snapper – small fish, etc.)

3. Divide the class into groups of three or four students per group. Each group will be handed a picture of a predator. The object of the game is for the other groups to guess what the predator is.

4. The groups will take turns asking yes or no questions only! (Example: Does your predator have sharp teeth?)
    a. One group will stand at the front of the class and answer yes or no questions about their predator.
    b. The other groups will take turns asking yes or no questions until the predator in question has been identified.
        i. The teacher may award points to each group that guesses the predator correctly.

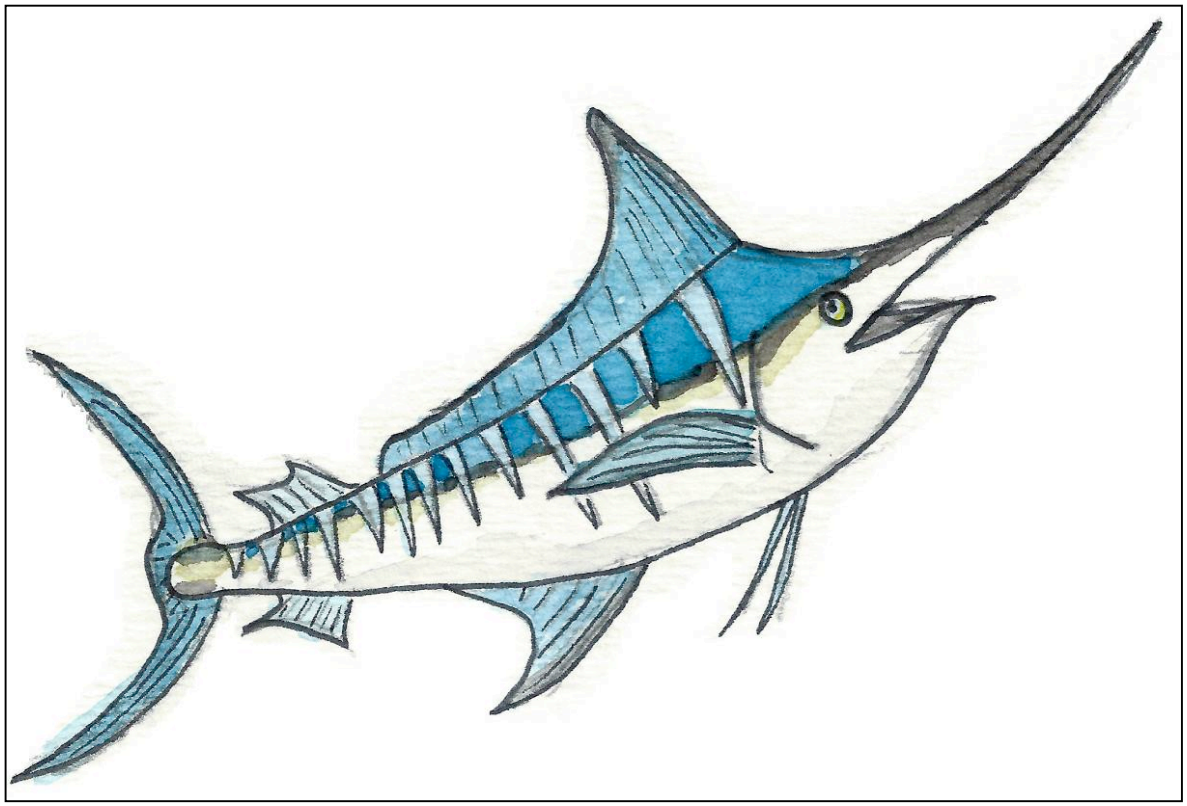
5. Continue rotating through groups until all predators are identified.

6. Discuss with the class what these predators may have in common, and how they might be important in an ocean food chain.

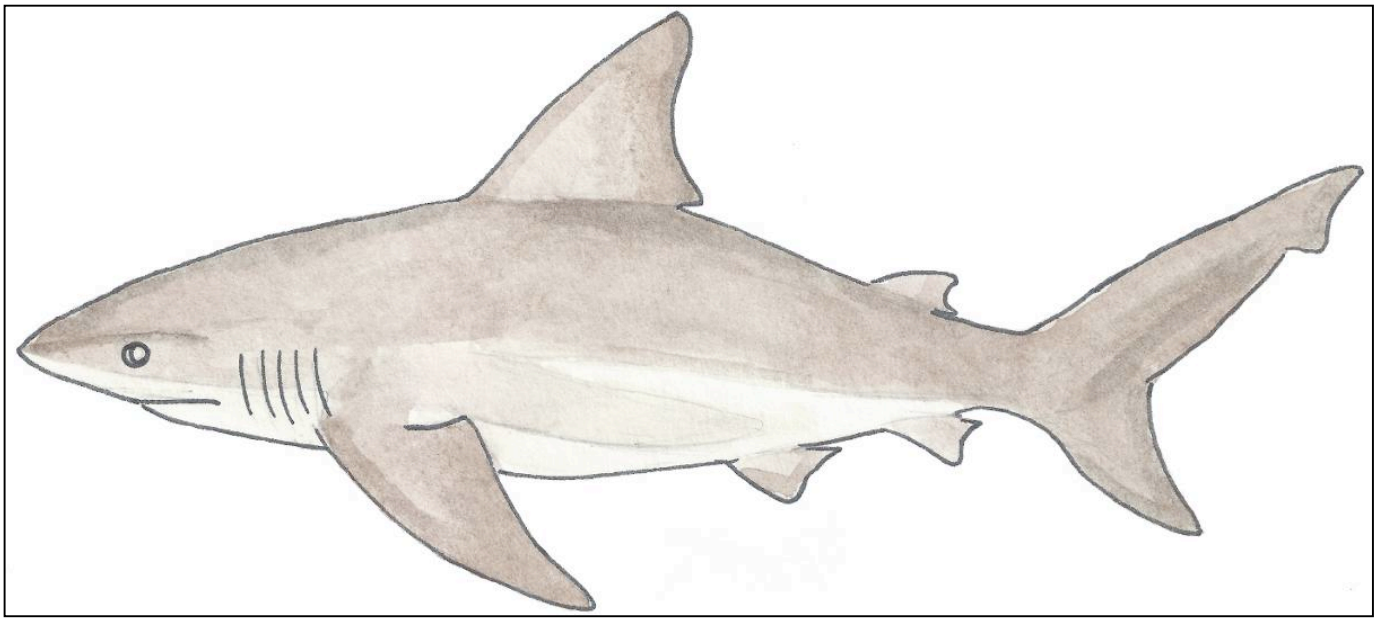
Conclusion

This activity is designed to assess the students' knowledge of predators and prey, and engage their skills in group cooperation and deductive reasoning. The students will understand the importance of protecting apex predators and the significance of a predators roll in the food chain.

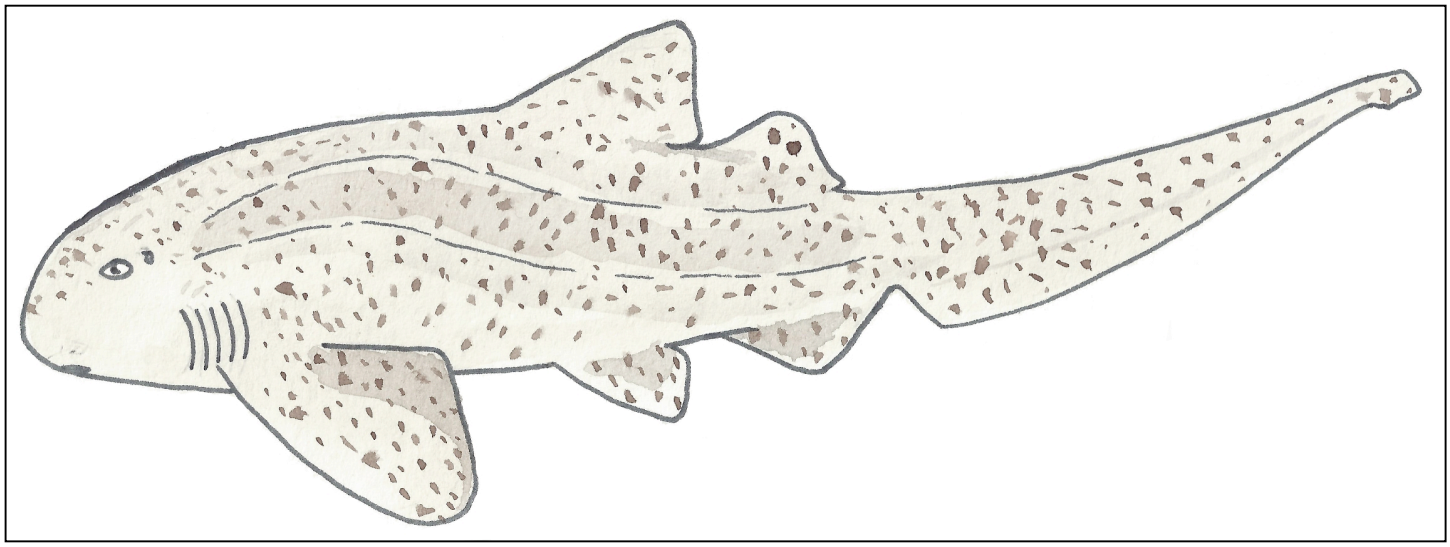
ACTIVITY 1. Guess the Predator: Cut-Out Pictures



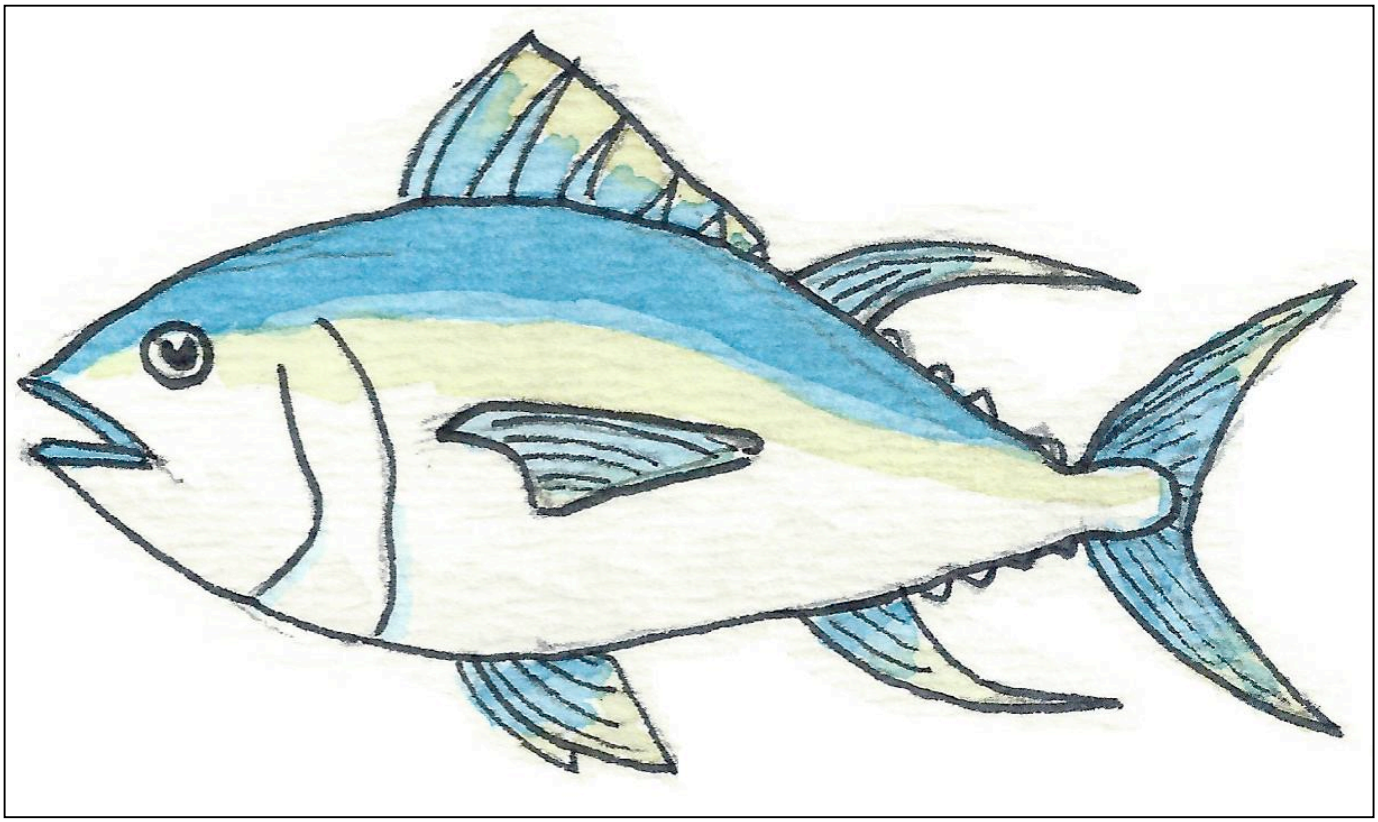
Marlin



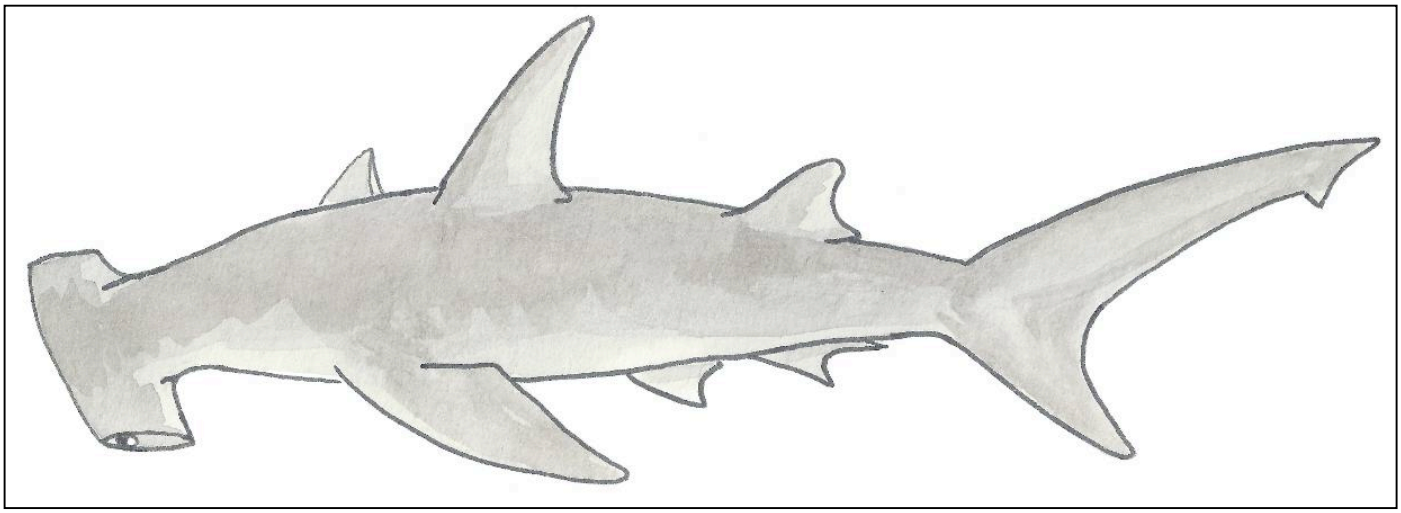
Bull Shark



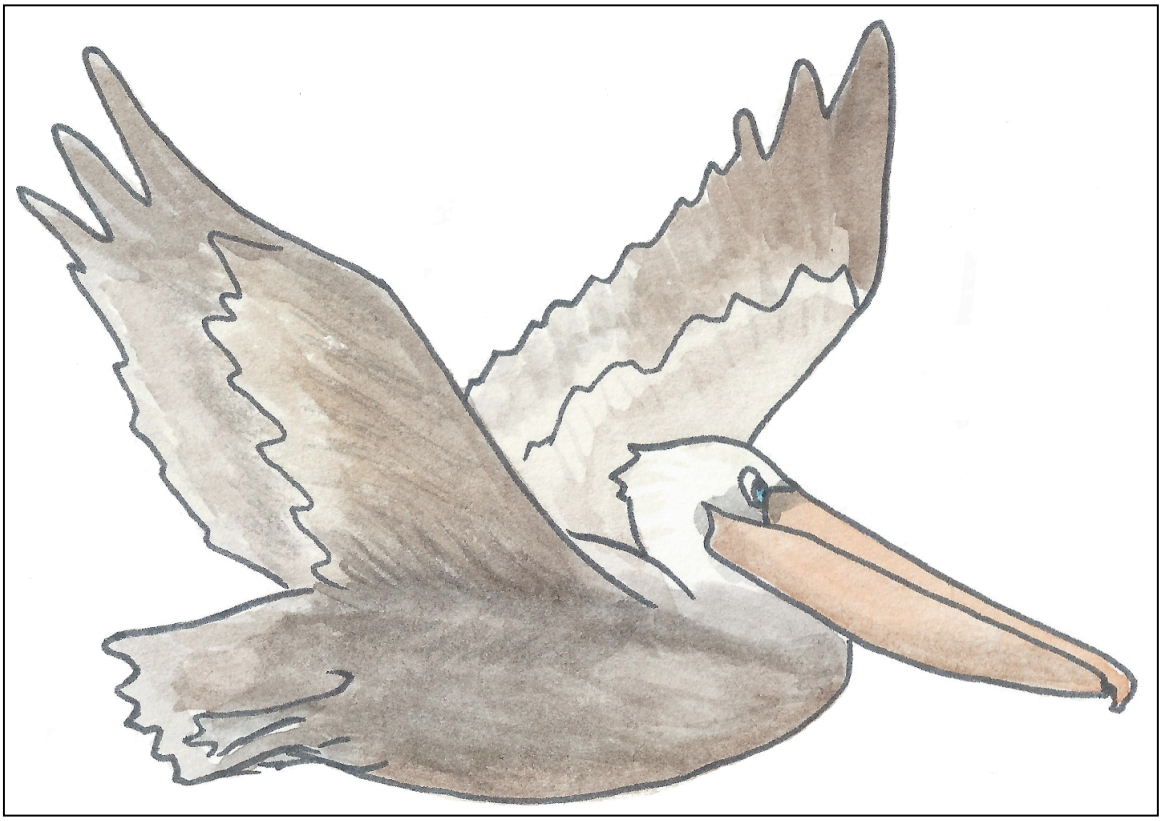
Zebra Shark



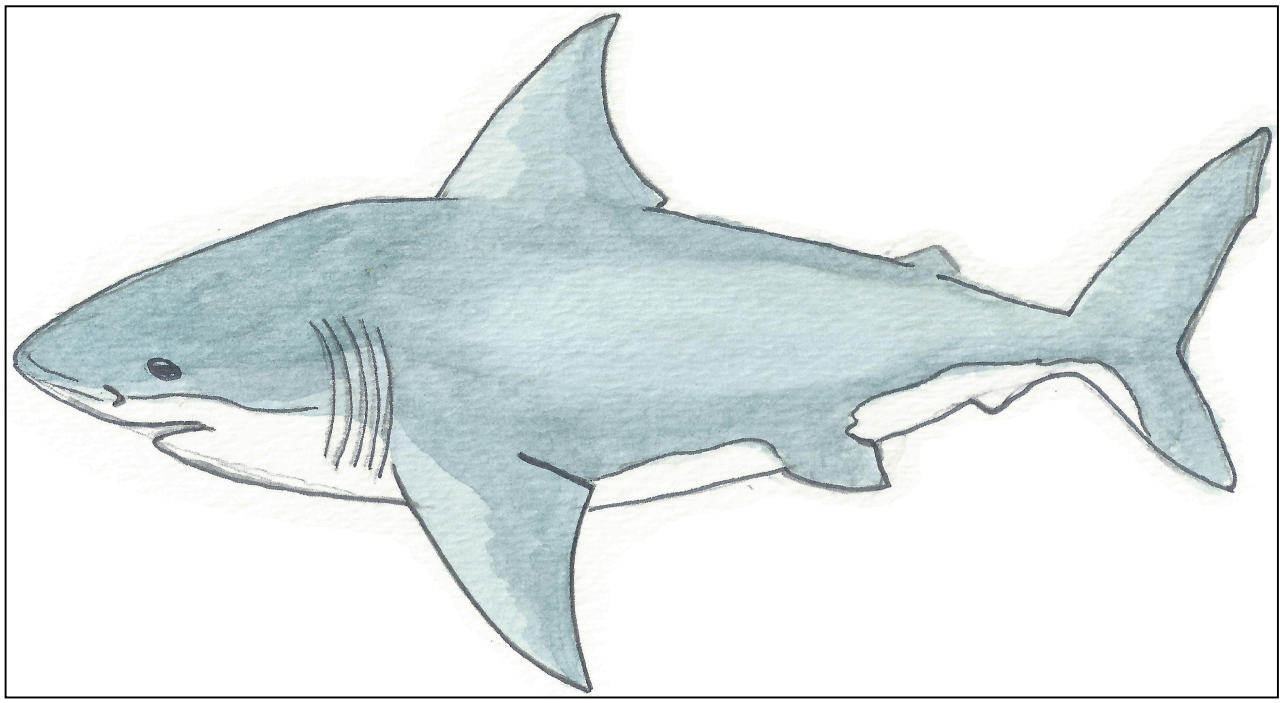
Tuna



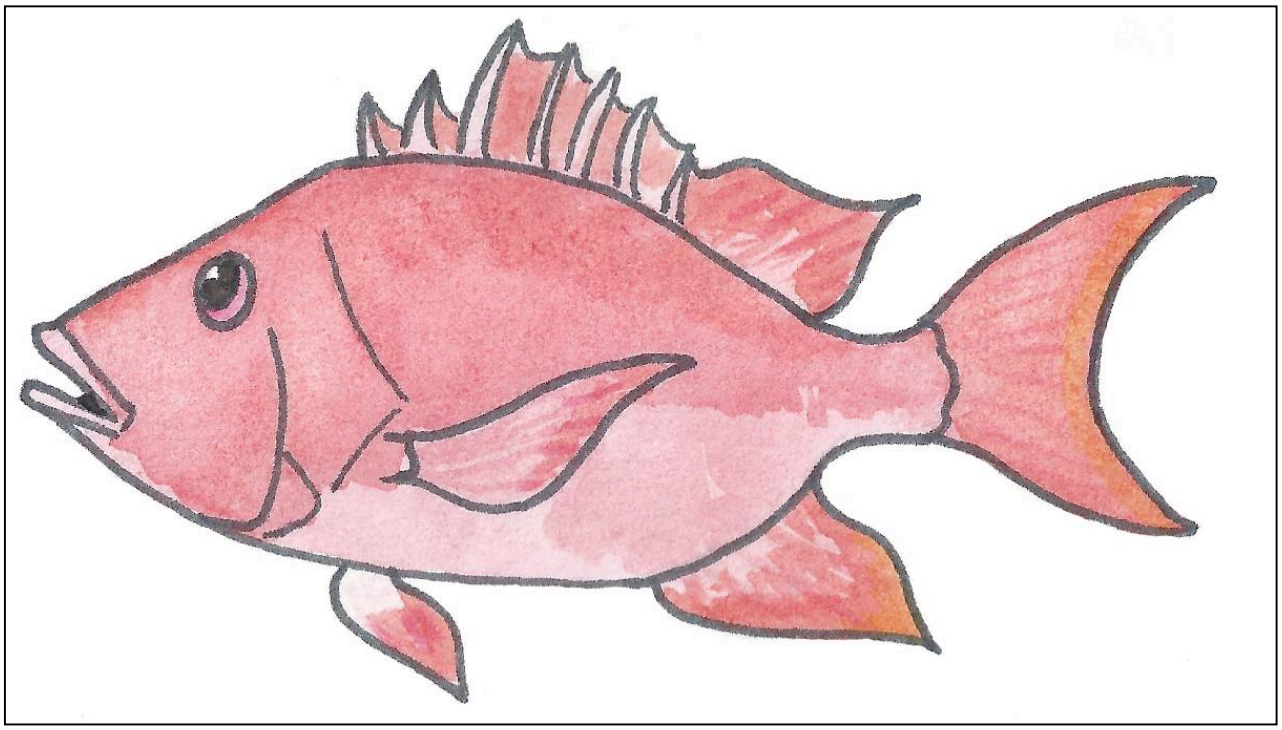
Hammerhead Shark



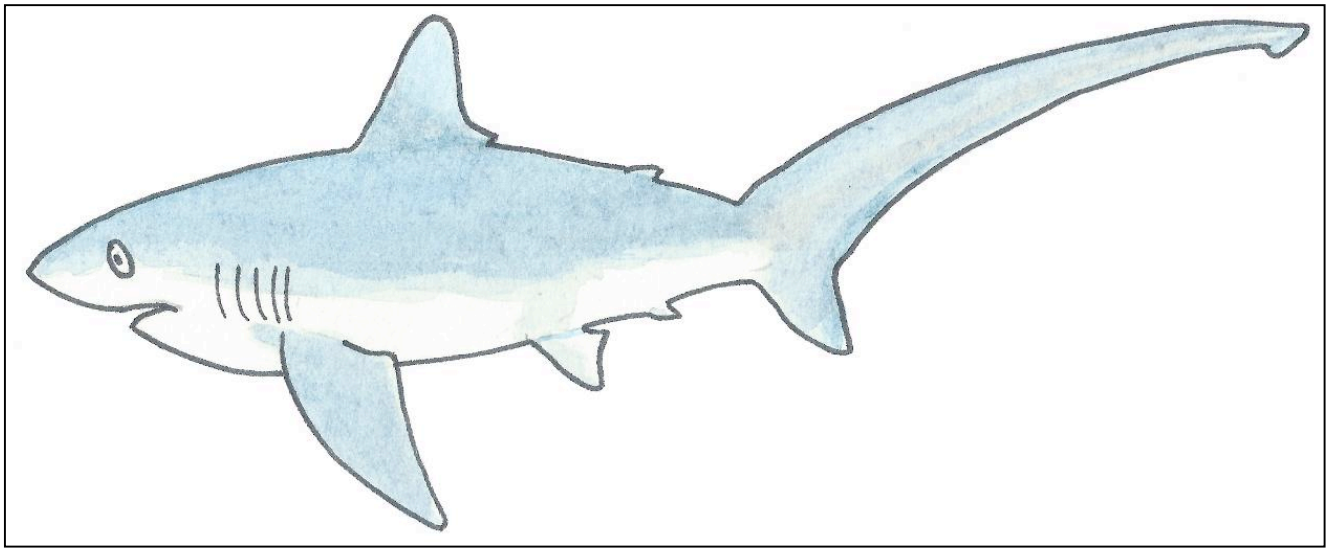
Pelican



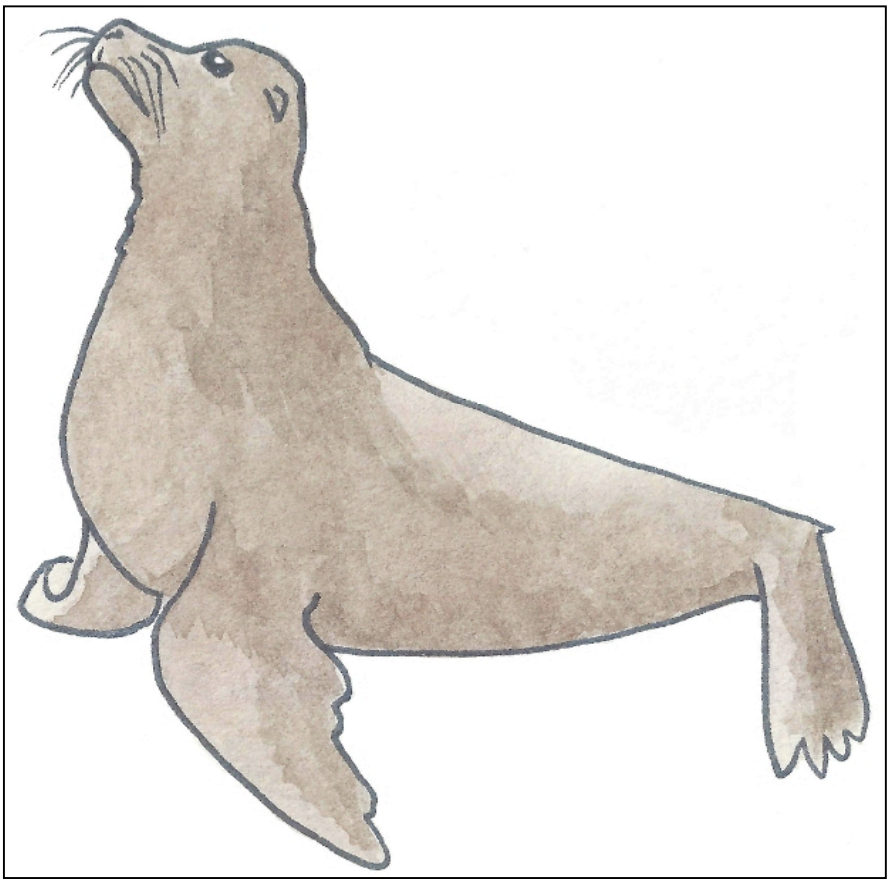
Great White Shark



Red Snapper



Thresher Shark



Sea Lion

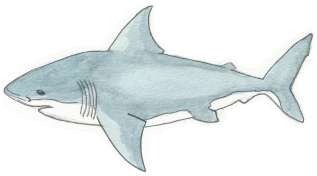
Handout 1. Predator & Prey Matching

Name: _____

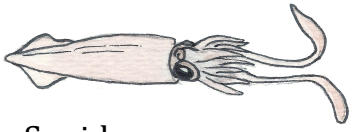
Date: _____

Draw a line to match the predators to their prey.
Some predators may have many kinds of prey!

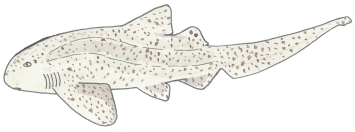
Predators



White Shark



Squid



Zebra Shark

Pelican

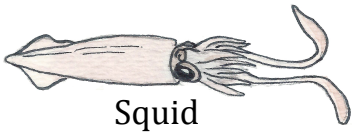
Sea Lion

Prey

Shrimp

Fish

Sea Lion



Squid

Small Shark

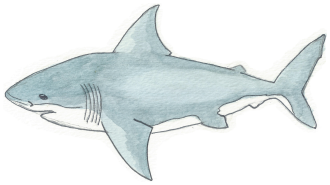
Handout 1. Predator & Prey Matching - Key

Name: _____

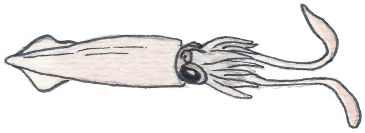
Date: _____

Draw a line to match the predators to their prey. Some predators may have many kinds of prey!

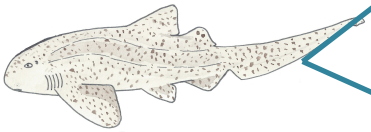
Predators



White Shark



Squid



Zebra Shark

Pelican

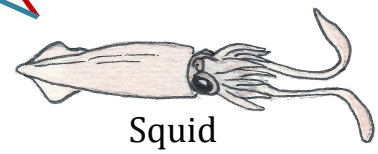
Sea Lion

Prey

Shrimp

Fish

Sea Lion



Squid

Small Shark