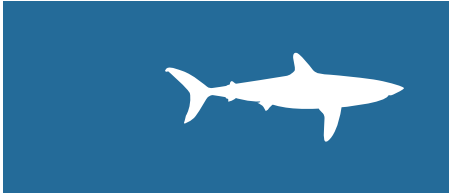


# KINDERGARTEN



## TEACHER RESOURCE GUIDE

### THEME:

Humans must help keep the earth clean so that animals can also thrive in their natural environments.

### CRITICAL ISSUE:

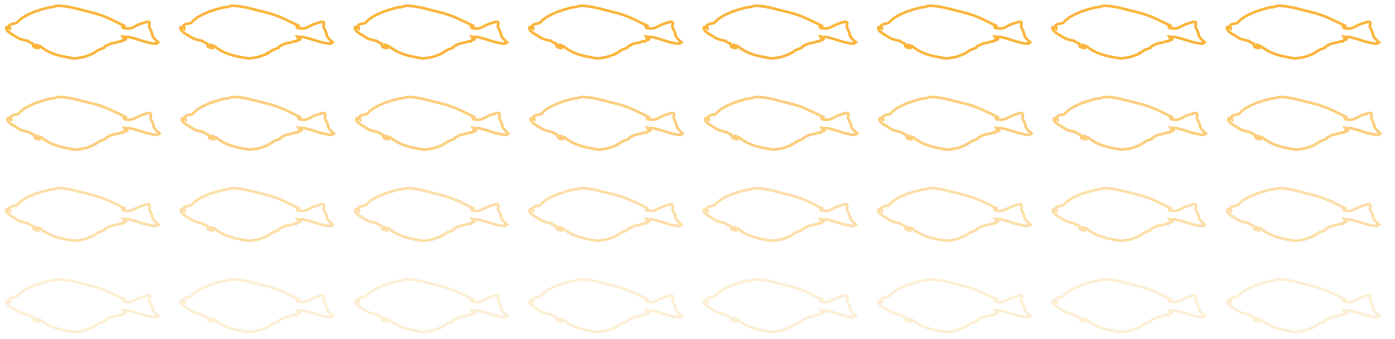
Marine Debris, Plastic Pollution

### CONTENTS:

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**MISSION STATEMENT:**

Aquarium of the Bay’s Education and Conservation Department’s mission is to promote literacy in ocean and watershed health, climate change issues, and science career development through the lens of critical issues such as sustainable seafood, marine protected areas, marine debris and plastics, climate change and fresh water flows.

**ACKNOWLEDGEMENTS:**

Aquarium of the Bay thanks the S.D. Bechtel, Jr. Foundation for their generous support for our K-12 programs and development of this Teacher Resource Guide.



# LESSON 1

## WHAT IS A HABITAT?

**Enduring Understanding:** Habitats are distinct natural environments with their own unique features, including landforms, plant life, and animals.

### Materials

- “My Favorite Habitat” drawing worksheet
- Chart paper or white board
- Drawing supplies (crayons, colored pencils, markers, etc.)
- Images of forest, desert, and ocean habitats
- Images of animals from forest, desert, and ocean habitats
- Images of landforms, plants, and earth materials from forest, desert, and ocean habitats

### SETUP:

1. Make copies of “My Favorite Habitat” drawing worksheet.
2. Provide drawing supplies for each student.
3. Prepare habitat and animal images for chart.

### PROGRAM OUTLINE:

#### Review the concept of a habitat.

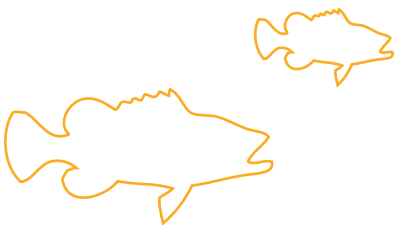
- A habitat is the natural home or environment of an animal, plant, or other organism.
- Habitats provide animals with all they need to survive, including food, water, and a space to live and move.
- Different types of animals live in different types of habitats.

#### Habitat overview

- Show students examples of different habitats (forest, desert, ocean) and ask them to describe what is different about the way each of these habitats looks.
  - In a forest you might see soil, grass, flowers, tall trees, rocks, and bodies of water (stream, creek, river).
  - In a desert you might see sand or sand dunes and desert plants (cacti). You probably won't see any bodies of water.
  - In an ocean, a huge body of water, you might see seaweed, sand, rocks, or coral.

#### Landform overview

- A landform is a natural feature of the earth's surface.
- Examples of landforms include valleys, hills, mountains, dunes, and volcanos.
  - For instance, a forest might be located on or near a mountain landform or you may see a dune in a desert.



## PROGRAM OUTLINE CONTINUED:

- Landforms are different from earth materials. Earth materials are resources that come from the earth, such as rocks.

### Animals in habitats overview

- Show students pictures of different animals. Tape them onto the chart under the correct habitat column (see sample chart below).
  - In a forest you might see spotted owls, blackbirds, mountain lions, black bears, porcupines, or elk.
  - In a desert you might find coyotes, rattlesnakes, bats, hawks, jackrabbits, or tortoises.
  - In an ocean you might see fish, turtles, sharks, dolphins, whales, sea stars, sea snails, oysters, crabs, sea otters, squid, or jellies.
- Certain animals live in certain habitats for many reasons
  - Animals live in a certain habitat because they need a specific type of environment and food to live.
  - The right habitat provides an animal with the food and environment it needs to live.
  - An animal (or plant) in the wrong habitat would not be able to live.
    - o For example, a fish needs water to live. It cannot live on land. The ocean is the best habitat for a fish. It would be difficult for a fish to live in the desert because there are usually no bodies of water there.

Sample Chart (Include images of animals, landforms, plants, and earth materials so students can refer back to the chart.)

Forest	Desert	Ocean
What plants, landforms, or other things might you see? - soil - grass - ferns - flowers - tall trees (redwoods) - rocks - bodies of water (stream, creek, river) - mountains	What plants, landforms, or other things might you see? - sand - sand dunes - desert plants (cacti)	What plants, landforms, or other things might you see? - water - seaweed - sand - rocks - coral
What animals might live here? - spotted owl - blackbird - mountain lions - black bear - porcupines - elk	What animals might live here? - coyote - rattlesnake - bat - hawk - jackrabbit - tortoise	What animals might live here? - turtles - dolphins - sharks - fish - whales - sea stars - crabs - squid - sea otters - sea snails - octopuses

## PROGRAM OUTLINE CONTINUED:

### **Drawing your favorite habitat**

- Explain that students will draw their favorite habitat.
  - They must include at least five different things. For example, an ocean could have a fish, whale, seaweed, rocks, and coral.
  - The habitats (specifically, the colors of animals, plants, landforms) should look as realistic as possible.
  - Students can refer to the chart for help.

### **Sharing Results**

- Students share their drawings and explain why they chose that habitat.
- Students can share with a buddy, in groups, or as a class if time allows.



## TEACHER BACKGROUND:

### Habitats

Learning about habitats can help students develop a great understanding about the organisms that live in them. There are many types of habitats around the world. Each has unique vegetation, wildlife, landforms, and climate characteristics. Some examples of habitats include grasslands, tundra, oceans, ponds, deserts, and wetlands. Knowing about different habitats can help people understand how to avoid environmental damage and protect wildlife. It also builds a more well-rounded sense of place and a sense of how nature interconnects.

### Desert Habitat

Desert habitats are dry areas with little rainfall. While deserts are extremely hot during the day, they can become very cold at night, as they have few clouds and low humidity to keep in heat. Organisms that live in desert habitats have special adaptations that allow them to survive in this harsh climate. For example, desert plants, such as cacti, are able to absorb and store water for later use. Animals may also store water in their bodies. They may also come out at night to avoid the hot daytime temperatures. Some desert animals include armadillos, camels, coyotes, hawks, rattlesnakes, and jackrabbits. It is important to take care of desert habitats because, if harmed, their land and soil take a long time to return to normal. Damage to the land also negatively affects organisms living in desert habitats.

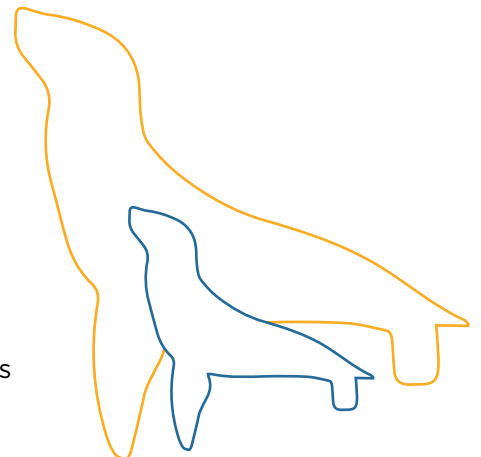
The Mojave Desert, located in Southern California, is ecologically and geographically diverse. It is home to sand dunes, the Joshua tree forest, mountain ranges, and volcanic cinder cones. In fact, the Joshua tree, which can live for about 150 years, has become a well-known symbol of the Mojave Desert. This desert also has a wide variety of amphibians, birds, insects, reptiles, and mammals. Many of the animals are nocturnal—they come out at night—to avoid hot daytime temperatures. Some animals that can be found here include red-spotted toads, Pacific tree frogs, ravens, roadrunners, hawks, black-tailed jackrabbits, coyotes, and bats. The Mohave tui chub can be found in the Mojave River basin. It is the only fish found in this area.

### Forest Habitat

Forest habitats are home to a variety of plants, animals, and other organisms all over the earth. Their trees provide the planet with great amounts of oxygen, which is necessary for many plants and animals to survive.

Forests have three layers: the forest floor, the understory, and the canopy. On the forest floor, one can find soil, dead animals and plants, grass, and small plants. The understory comprises small trees and bushes. The canopy contains the leaves and branches of various trees. Animals living in forests vary around the world.

The Sierra Nevada is a diverse forest habitat in California. It contains a variety of landforms, plants, and animals. The Sierra Nevada is so diverse that the west and east sections of the forest have their own unique species of plants and animals. While the plants and animals in the west are adapted to a wetter climate, those living in the east are prepared for drier conditions.



## TEACHER BACKGROUND CONTINUED:

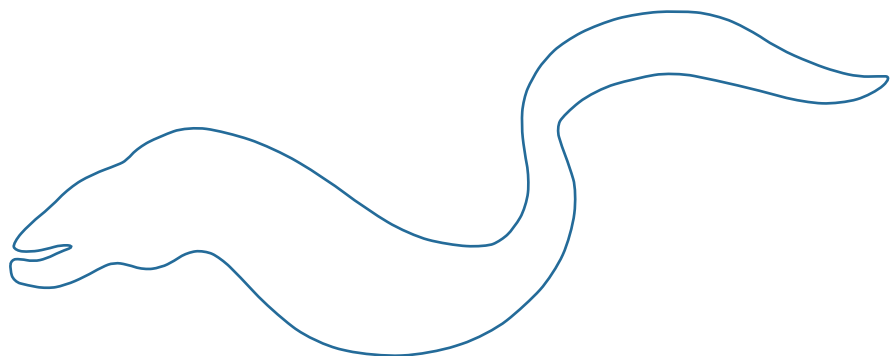
The redwood forest, found in Northern California, is another important local habitat. It is home to a variety of life, including the great redwood trees, which can live to be 2,000 years old. Some animals that can be found in the redwood forest include black bears, Douglas squirrels, porcupines, elk, and spotted owls. Plants that are native to the redwood forest include deer fern, sword fern, bigleaf maple trees, salal, and evergreen huckleberry shrubs.

Finally, the California oak woodland habitat, spread across coastal California, contains oak trees, a variety of grasses, herbs, and other coniferous trees. The oak woodlands of Northern and Southern California consist of many types of oak trees, such as live oak, valley oak, canyon live oak, and California black oak.

### **Ocean Habitat**

Ocean habitats are diverse. They include various plants, animals, and organisms. Ocean life is separated into the benthic environment (the sea floor) and the pelagic environment (the ocean waters). Because the ocean is so vast, it has a number of smaller habitats, such as coral reefs, kelp forests, and sea-grass beds, with many different types of plants and animals living there. Marine animals found in ocean habitats include fish, dolphins, seals, sea lions, whales, sharks, turtles, manatees, octopuses, crabs, sea snails, sea stars, corals, oysters, and jellyfish. Ocean habitats are currently suffering from many types of pollution, including oil spills, plastic debris, and carbon dioxide level imbalances, which affect wildlife and can even lead to species endangerment or extinction.

California contains some of the most diverse ocean habitats on Earth. Monterey Bay is one local habitat that contains distinct landforms, marine animals, and plants. One special landform found here is the undersea canyon, which is deeper than the Grand Canyon and one of the largest in the world. Marine animals that thrive here include whales, krill, Humboldt squid, mola mola (the world's largest bony fish), otters, and jellyfish. Sea urchins and kelp also thrive here. Overfishing has affected the ecosystems living in this habitat, but conservation laws have been enacted to help protect this area.



## GLOSSARY:

**Desert:** Dry region with little rainfall, water, or vegetation and extreme temperatures

**Forest:** Large area covered with trees, plants, and underbrush

**Habitat:** Type of natural home or environment in which an organism or group of organisms typically lives

**Ocean:** Large expanse of saltwater that covers nearly three-fourths of Earth's surface

**Sand Dune:** Mound or ridge of sand or other loose sediment formed by the wind

## KINDERGARTEN STANDARDS:

### California Science Content Standards

- 3.a. Students know characteristics of mountains, rivers, valleys, deserts, and local landforms.

### California Next Generation Science Standards

- K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- ESS3.A: Living things need water, air, and resources from the land, and they live in places that have the things they need.

### California Visual and Performing Arts Standards

#### Artistic Perception: Develop Perceptual Skills and Visual Arts Vocabulary

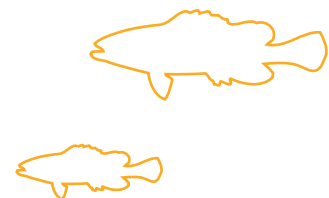
- 1.2. Name art materials (e.g., clay, paint, crayons) introduced in lessons.

#### Creative Expression: Skills, Processes, Materials, and Tools

- 2.1. Use lines, shapes/forms, and colors to make patterns.

## PROGRAM MATERIALS:

- “My Favorite Habitat” drawing worksheet





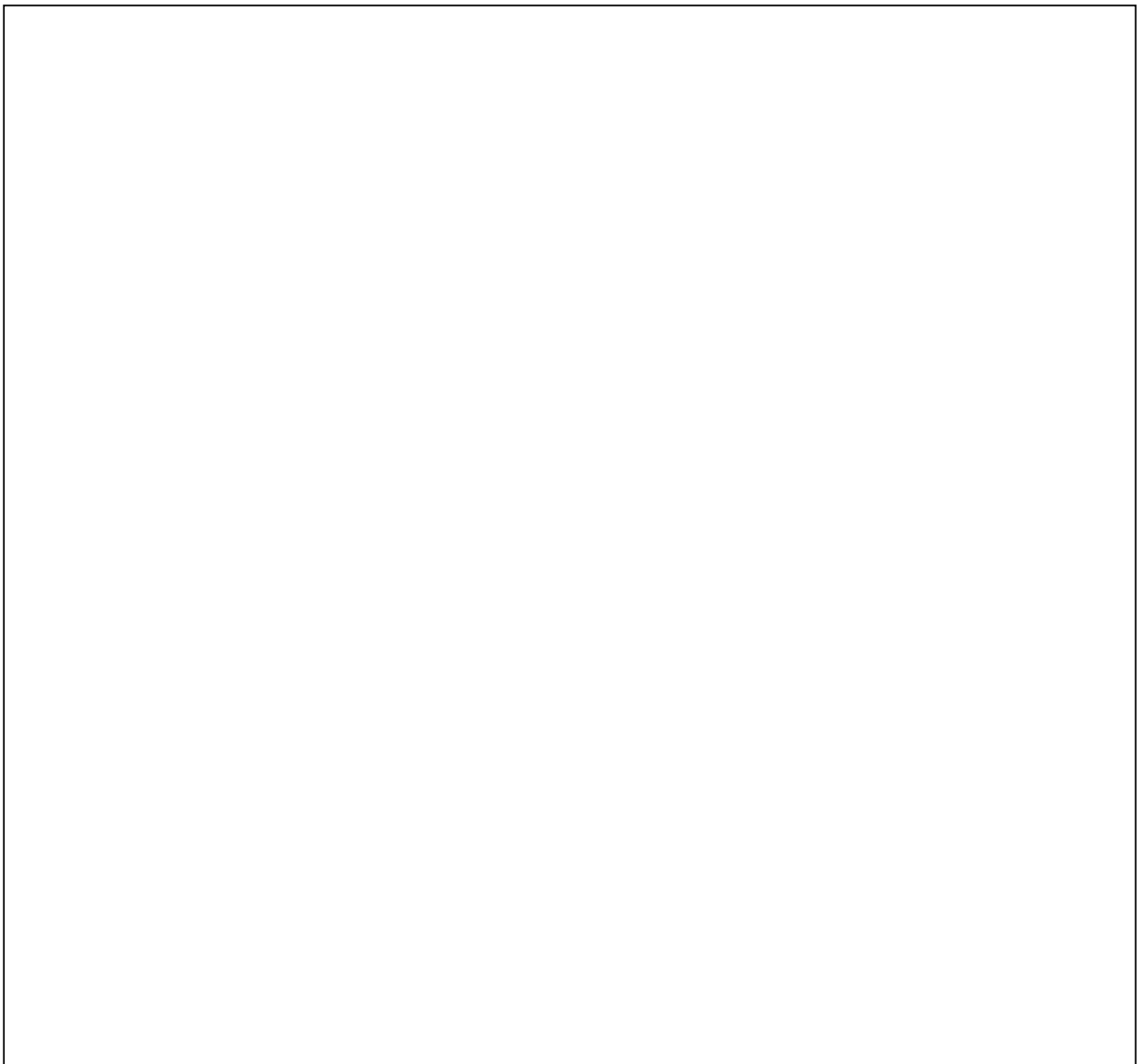
Name: \_\_\_\_\_

## MY FAVORITE HABITAT



My favorite habitat is \_\_\_\_\_.

Here is a picture of a \_\_\_\_\_ habitat.



# LESSON 2

## WHAT IS A SHARK?

**Enduring Understanding:** Sharks are fish that have special attributes and unique physical characteristics that make them different from other fish and help them to survive.

### Materials

- Chart paper or white board
- Paint
- Paper
- Paintbrushes
- Images of different types of sharks

### SETUP:

1. Prepare paintbrushes and paint for students.
2. Gather images of different types of sharks.

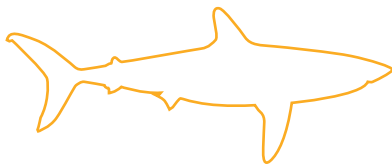
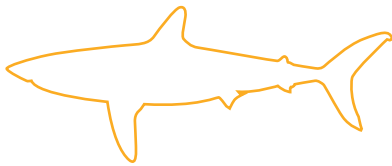
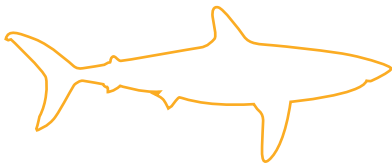
### PROGRAM OUTLINE:

#### What is a shark?

- A shark is a type of fish that lives in water.
- There are many types of sharks of different sizes and colors.
- Show students images of different types of sharks and discuss similarities and differences.

#### Different kinds of sharks

- Show students pictures of different kinds of sharks. Discuss special features about the shark's body that they see.
- What is special about a shark's body?
  - Sharks have special skeletons. While other fish have bones, a shark's skeleton is made of cartilage, which is softer and helps them move better.
    - o Feel the cartilage in your ear. You can bend and move your ear easily without hurting it. You can't bend and move the hard bone in your forearm the same way.
  - Sharks have sharp teeth for eating.
  - Sharks have many gill openings on either side of their head to help them breathe underwater. Other fish only have one opening on each side.
  - Sharks have eyes to help them look for food.
  - Sharks have a snout to help them smell food.
  - Sharks have fins and a tail to help them swim fast. The dorsal fin (on top of the body) helps them stop and turn.



## PROGRAM OUTLINE CONTINUED:

- Create a graphic organizer on white board or chart paper.

### Sample Chart

---

Shark Body Parts

Sharp Teeth for Eating

Gills to Breathe Underwater

Eyes to Look for Food

Nose to Smell Food

Fins to Swim Fast, Change Direction, and Steer or Balance

Tail to Swim Fast

---

- Why is it important for a shark to have all of these body parts?
  - Sharks use these body parts to help them live.
  - All animals need food to live and grow just like we do. Sharks eat food they find in the water, including other animals. Sharks use their body parts to help them find food and eat it.
- Identify the important body parts of a shark.
  - Display an image of a shark.
  - Cover the chart paper.
  - Have students come up and circle each important body part and tell what it is used for. (Example: Sharks use their teeth for eating.)
- Paint your own shark.
  - Provide students with paper and paint.
  - Provide a model showing that a shark's important body parts (teeth, gills, eyes, nose, fins, tail).
  - Students must include all the important parts in their pictures.

### Sharing Results

- Students display and observe peer art.
- If time allows, students can present and describe artwork. Students can discuss colors and shapes they see in peer work.
- Review the important parts of a shark's body and how these parts help sharks to live.



## TEACHER BACKGROUND:

### Shark Bodies

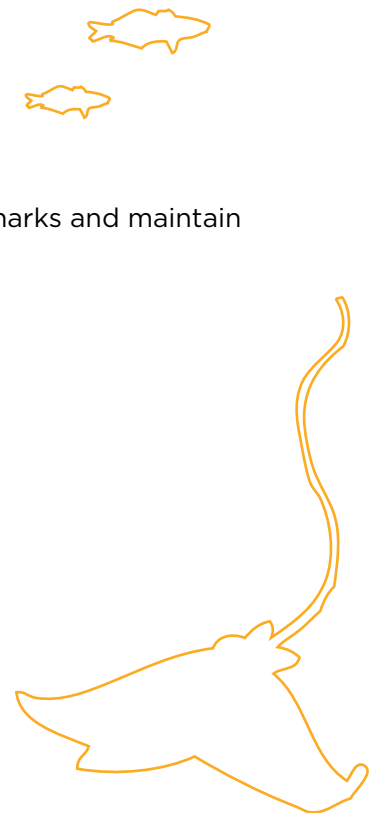
Sharks are fish with skeletons made of cartilage, a tissue that is lighter and more flexible than bone. This physical characteristic allows sharks to swim easily and bend more than fish with skeletons made of bone. To breathe underwater, sharks have a row of gill slits on either side of their bodies that extract oxygen from the water. Sharks also have many rows of sharp, jagged teeth. They regularly lose teeth, but the teeth are quickly replaced as soon as they are lost. Some sharks may grow and replace as many as 20,000 teeth in a lifetime. While sharks share these physical characteristics, there are in fact more than 400 species of sharks with other unique traits.

### Sharks in Ecosystems

Sharks play a major role in maintaining equilibrium in the ecosystems in which they live. They are typically the top predators in their food chain. Unfortunately, sharks continue to be overfished. They are often caught for their fins. Once the fins are removed, the sharks are thrown back into the water, unable to survive. Furthermore, sharks take a decade or more to reach maturity. Many shark species have fewer than a dozen offspring each year. In other words, so many sharks are being killed each year that they can't recover quickly enough from the overfishing. As a result, their populations are at historically low levels.

When top predators in an ecosystem (such as sharks) begin to die out, the ecosystem can become tremendously unbalanced. Ecosystems around the world have been or are being affected by this type of imbalance. For instance, scallop fisheries in the Chesapeake Bay have had to shut down because rays are consuming the scallop population. There are fewer sharks eating the rays, which means that the ray population is out of balance.

In response to the loss of shark populations, the government has established Marine Protected Areas in order for sharks to have a safe place to live. The National Oceanic and Atmospheric Administration (NOAA) oversees National Marine Sanctuaries. Four of these safe areas are located in California. They are important because they help protect sharks and maintain the equilibrium of ecosystems.



## GLOSSARY:

**Cartilage:** Firm, flexible connective tissue; replaces bone in shark skeletons

**Dorsal Fin:** Appendage located on the back of a marine vertebrate that helps the animal stop, balance, and change direction; most shark species have two dorsal fins.

**Gill:** Paired respiratory organ of fish and other aquatic animals; used to extract oxygen from water

**Shark:** Marine fish of the class Chondrichthyes, whose skeletons are made of cartilage

## KINDERGARTEN STANDARDS:

### California Next Generation Science Standards

- K-LS1-1. All animals need food in order to live and grow. They obtain their food from plants or from other animals.

### California Science Content Standards

- 2.c. Students know how to identify major structures of common plants and animals.

### California Visual and Performing Arts Standards

#### Artistic Perception: Develop Perceptual Skills and Visual Arts Vocabulary

- 1.2. Name art materials (e.g., clay, paint, crayons) introduced in lessons.

#### Aesthetic Valuing: Derive Meaning

- 4.1. Discuss their own works of art using appropriate art vocabulary (e.g., color, shape/form, texture).



# LESSON 3

## SIX SENSES OF A SHARK

**Enduring Understanding:** Sharks use their six senses to understand their surroundings.

### Materials

- Five senses worksheet
- Chart paper or white board
- Apples and pears (enough for each student to eat a sample of each) (NOTE: You can choose another healthy snack if some students have allergies.)
- Paper plates (different colors)
- Small containers filled with various scents (two of each kind)
- Small containers filled with different items (two of each kind)
- Paper towel rolls
- Rubber bands
- Colored plastic wrap
- Variety of household objects with different textures (soft, hard, sticky, smooth, rough)
- Large magnets
- Small magnets
- Magazines or books
- Paper or plastic cups
- Internet (optional)

### SETUP:

1. Prepare needed research and writing materials.

### PROGRAM OUTLINE:

#### What are senses?

- Humans have five senses: hearing, smell, sight, taste, and touch. Our five senses help us explore the world and know what things sound, smell, look, taste, and feel like.
- Without our senses it would be difficult to understand and explore the world around us.
- If the Internet is available, visit this website to review the five senses: <http://pbskids.org/sid/isense.html>.

#### **Animals have senses, too. The shark is one animal that uses its senses every day.**

- Sharks have six senses.
  - Like us, sharks can hear, smell, look, taste, and touch. Their sixth sense is electroreception—sharks can tell when an animal or fish is near them even if they can't see it. (Please refer to Center 6 for a hands-on, visual way to explain electroreception.)
  - They use their senses to find food, explore the world, and avoid danger.

**Create a chart that compares human senses and shark senses to use as a reference. Include visuals for each of the senses.**

## PROGRAM OUTLINE CONTINUED:

### Sample Chart

PEOPLE HAVE FIVE SENSES	SHARKS HAVE SIX SENSES
<ol style="list-style-type: none"><li>1. Sight</li><li>2. Hearing</li><li>3. Smell</li><li>4. Taste</li><li>5. Touch</li></ol>	<ol style="list-style-type: none"><li>1. Sight</li><li>2. Hearing</li><li>3. Smell</li><li>4. Taste</li><li>5. Touch</li><li>6. Electroreception</li></ol>

- Explore sharks' six senses through six center activities.

### Center 1 Sight

- Place colored plastic wrap over toilet paper rolls held together with a rubber band.
- Put out a few different colors and different colored objects.
- Let students explore what happens to the objects when they look at different colored objects through different colored eye gear.

### Center 2 Hearing

- Put small objects (beads, thumbtacks, rice, pasta, buttons, etc.) into small containers.
- Mix up the containers. Have students work in groups to find the containers that have matching sounds.

### Center 3 Smell (If students have food allergies, choose non-food items.)

- Place pairs of different scented materials (mint, onion, cinnamon, etc.) in containers or small bags. (Each scent must have a match.)
- Mix up containers. Students work in groups to find the correct match.

### Center 4 Taste

- Put out pieces of two peeled fruits that look the same (pear and apple).
- Put pear pieces on red plate and apple pieces on green plate.
- Students taste each fruit and guess which is apple and which is pear.

### Center 5 Touch

- Fill paper bags with objects (such as fabric, sandpaper, cotton balls, shaving cream, modeling clay) with different textures (rough, smooth, hard, soft).
- Students describe objects and guess what is inside each bag without looking.  
OR
- Give students a tray of objects and two buckets (one for soft things, one for hard).
- Students sort objects and place them in the correct bucket based on how each object feels.

## PROGRAM OUTLINE CONTINUED:

### Center 6 Electroreception

- Give each student a large magnet. These magnets are “sharks.”
- Hide smaller magnets inside various objects (bag, magazine, cup, etc.) These magnets are other “ocean animals.”
- Students use the large magnet to detect hidden smaller magnets.
- This is similar to the way sharks use electroreception. Even though they can’t see other ocean animals, they can use their sixth sense (electroreception) to sense when they are near.

### Sharing Results

- Review each center activity and the six senses of a shark on the chart.
- Students talk and share their favorite center activity with a buddy or share something that they experienced. (“My favorite activity was \_\_\_\_\_ because \_\_\_\_\_,” or “I saw...I felt...I heard,” etc.)
- If time allows, students can draw a picture of their favorite center activity using the worksheet below.





## TEACHER BACKGROUND:

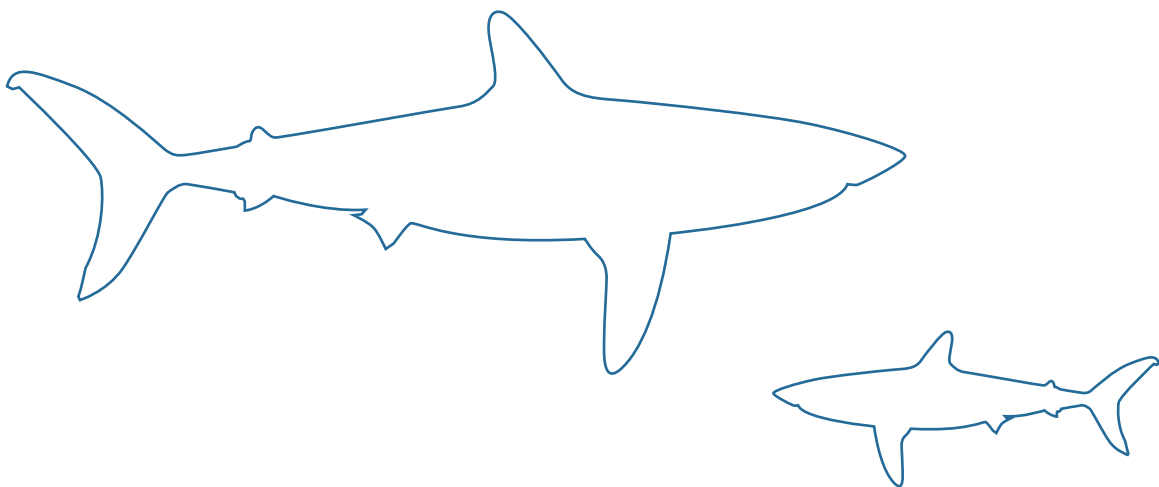
### Six Senses of a Shark

Sharks have six senses that include sight, hearing, taste, smell, touch, and electroreception. These six senses help sharks understand their environment. Their sense of smell and sharp sense of sight allow them to hunt and navigate through dark waters. In fact, sharks can dilate their pupils in order to see in dark conditions. Sharks use their sense of touch to feel vibrations, which helps them to detect food, predators, and other nearby dangers. Their sense of hearing helps them to identify nearby movement. This ability is also important to help regulate balance. A shark's sense of taste is also significant. Its mouth is lined with special taste sensors that help the shark's brain distinguish between food it likes and food it doesn't like. Finally, the shark's sixth sense, electroreception, is used when prey give off electric currents. Sharks can detect or sense these electric currents (without hearing or vision), which become stronger as they move closer. While electroreception is found in many aquatic animals, other animals like cockroaches, bees, and platypuses have been observed to have this sixth sense as well.

### Additional Information

Sharks use their senses to help them hunt and find food. There are many different types of sharks, so their diets depend on the type of habitat that they live in. Sharks are top predators in their ecosystem, and they are highly adaptable. Although sharks may prefer a certain type of food, they can adjust what they eat in order to survive.

While sharks are feared for their attacks on human beings, no shark species hunts people. The energy gained from consuming a human would most likely not make up for the energy lost hunting and attacking a person. Sharks kill fewer than ten people each year. In fact, most people who die from shark attacks die from lack of proper medical care.



## GLOSSARY:

**Electroreception:** Detection by an animal of electric fields or currents

**Sense:** Faculty by which the body perceives a external stimulus

## KINDERGARTEN STANDARDS:

### California Next Generation Science Standards

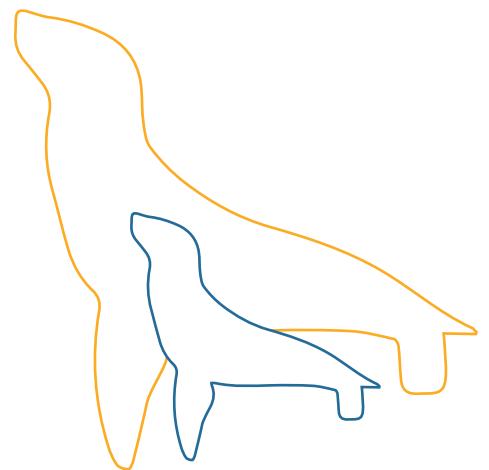
- K-2-ETS1-1. Asking questions, making observations, and gathering information are helpful in thinking about problems.

### California Science Content Standards

- 4.a. Students will observe common objects by using the five senses.

## PROGRAM MATERIALS:

- Extra five senses worksheet (see below)



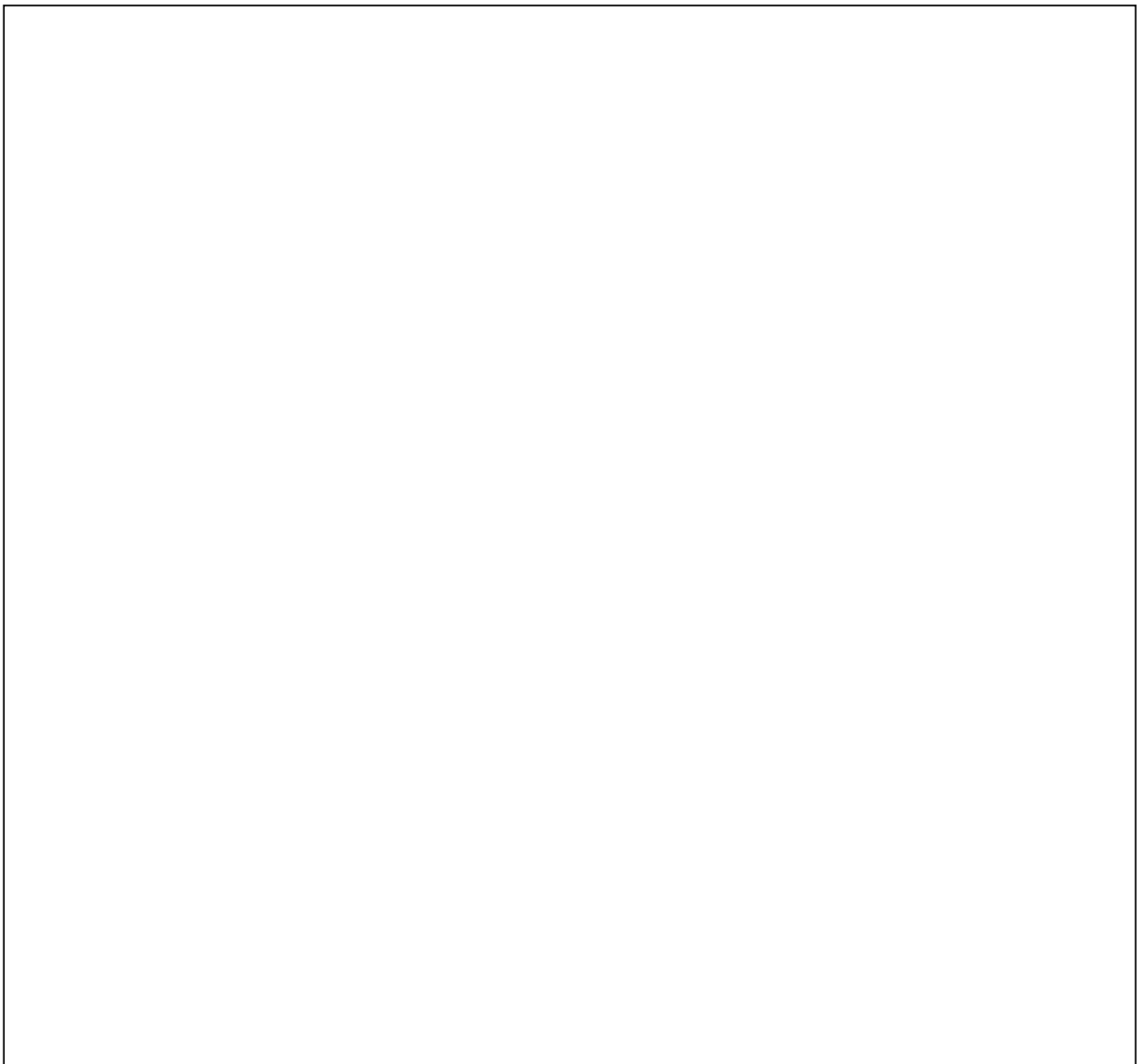
Name: \_\_\_\_\_

## FIVE SENSES



Here is a picture of me at my favorite center activity.

I am \_\_\_\_\_.



# LESSON 4

## WHERE DOES TRASH GO?

**Enduring Understanding:** Although various types of litter damage the earth, we can help to lessen this damage by disposing of trash correctly.

### Materials

- “Where Does Our Trash Belong?” worksheet
- Images of litter on land and in water
- Blue recycling bin
- Green composting bin (if you have compost in your area or classroom; if not available, use a cardboard box or shoebox)
- Black trash bin
- Blue, green, and black construction paper squares (one set for each student)
- Household items that can be thrown away or recycled
- Images of or actual recyclable items and trash for chart

### SETUP:

1. Make copies of “Where Does Our Trash Belong?” worksheet.
2. Cut paper squares.
3. Prepare household items and bins.

### PROGRAM OUTLINE:

#### Review where litter comes from and how it hurts the earth.

- Show students images of litter on land and in different bodies of water. Discuss different types of litter that they see (cans, plastic bags, food).
- People create litter when they leave something, such as paper, cans, or bottles, in an open or public place without putting it in a trash can. For example, when someone finishes a drink from a bottle and leaves it out in the schoolyard, that bottle is litter.
- Litter can also be old food, a paper coffee cup, or a used candy wrapper.
- It is okay to use cans and bottles, but sometimes people don't throw them away. That leaves a mess.
- When there is a lot of litter, it makes Earth's land and water very dirty.
- Litter can even get into the homes of animals that live on land or in water.

#### How can we take care of Earth every day?

- We can make sure to properly throw away our trash.
- We can help our families and friends do the same at school and at home.
  - If we set a good example, others will do the same.

## PROGRAM OUTLINE CONTINUED:

### How do we properly throw away trash?

- We can throw away trash into three different bins.
- We put clean materials that can be used again in the blue recycling bin.
  - For example, we can recycle a glass jar because someone can use it again, maybe to hold or store something or to make a new bottle.
- We can put food scraps and plants in the green composting bin.
  - These scraps can be used to make dirt and soil. Putting food scraps here also keeps them out of the recycling bin, which could make those items dirty.
- We put trash that can't be used again to make something new in the black trash bin.
  - For example, a dirty diaper must be put in the black trash bin.
- Create a chart to show students which bin each item belongs in. For each item on the chart, attach a picture to provide a visual. You could also attach real materials to the chart. For example, for paper you could glue or tape a newspaper page.

### Sample Chart

<b>Blue Recycling Bin (No liquids or food in here!)</b>	<b>Green Composting Bin (or labeled cardboard box)</b>	<b>Black Trash Bin (These items can't be used again!)</b>
metal (aluminum cans, lids from jars)	food scraps (teabags, eggshells, leftover food, and old, spoiled food)	pens pencils rubber bands sponges diapers toothbrushes floss plastic wrap
paper (newspaper, sticky notes, cereal boxes, magazines, computer or construction paper)	dirty paper (greasy pizza boxes, used paper plates and cups, dirty tissues)	
plastic (soda bottles, laundry detergent bottles, containers)	plants (leaves, weeds, flowers, yard waste)	
glass (bottles, jars)		

## PROGRAM OUTLINE CONTINUED:

### Where do the following items belong?

- Give each student a blue square, green square, and black square.
- Hold up an item (jar, plant, light bulb, etc.) that's ready to be recycled or thrown away.
  - Students hold up the blue square if they think this item belongs in the recycling bin.
  - Students hold up the green square if they think this item belongs in the composting bin.
  - Students hold up the black square if they think this item belongs in the trash bin.
- Students can use the chart to help them.
- Choose a student to put the item in the correct trash bin.

### How many items are in each bin? How many are there all together?

- Create a bar graph.
  - Count with students to determine how many items went into the recycling bin, the composting bin, and the trash bin. Fill in the bar graph.
  - Count with students to find out how many total items were thrown away.
- Discuss which bin had the most items and which had the fewest.

### Conclusion

- Take items out of the bins and mix them up.
- Choose at least five items to review and sort.
- Discuss the importance of disposing of trash properly as a way students can make a difference in their own communities. Students can help friends and families at home and at school by teaching or reminding them how they can properly dispose of used materials.



## TEACHER BACKGROUND:

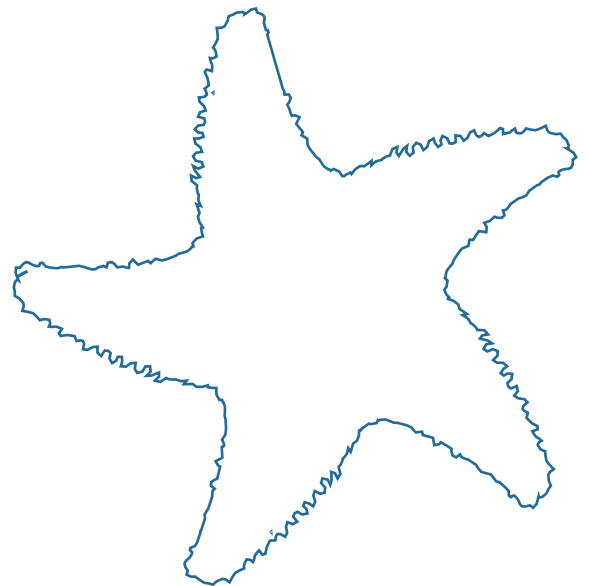
### The Importance of Disposing Trash Properly

It is important to dispose of waste properly. Proper waste disposal provides economic, environmental, health, and community benefits. Using recycled materials helps to reduce the amount of raw materials needed to make new products, while composting food scraps improves the soil and health structure, approximating the patterns of nature. It also reduces the need for fertilizers and pesticides. In addition, recycling and composting keep these items out of landfills. When these materials end up in the wrong place, such as a landfill, they rot or take a very long time to break down. Some of these materials can also release toxins into the land, which can leak into groundwater and travel to other larger bodies of water. In large amounts, these toxins can damage land and water ecosystems and water that people use on a daily basis for drinking and cleaning.

### Safer Practices

People can be exposed to chemicals at home and work without even realizing it. Some ways to keep from being exposed to dangerous chemicals include the following.

1. Clean with homemade cleaners, like vinegar.
2. Wash with regular soap rather than antibacterial soap.
3. Store items (especially food) in glass containers rather than plastic.
4. Purchase products that do not contain fragrances or perfumes.
5. Cook in stainless steel pans.
6. Purchase organic cosmetic products (go to <http://www.goodguide.com/> to check product ratings).
7. Wash fruits and vegetables thoroughly.
8. Wear necessary protective gear in your job, if appropriate.



## GLOSSARY:

**Compost:** Decayed organic material used as plant fertilizer

**Landfill:** Place to dispose of refuse and other waste material by burying it and covering it with soil

**Litter:** Trash that is left out in an open or public place and not put in a proper receptacle

**Recycle:** To convert waste into reusable material

**Trash:** Discarded matter; refuse

## KINDERGARTEN STANDARDS:

### California Next Generation Science Standards

- K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

### California Science Content Standards

- 3.c. Students know how to identify resources from Earth that are used in everyday life and understand that many resources can be conserved.

### California Common Core Standards

#### Mathematics

- K.MD.3. Classify objects into given categories; count the number of objects in each category and sort the categories by count.

## PROGRAM MATERIALS:

- “Where Does Our Trash Belong?” worksheet



Name: \_\_\_\_\_

## WHERE DOES OUR TRASH BELONG?



Directions: Color in a box for each item. Find out how many items are in each bin.

10			
9			
8			
7			
6			
5			
4			
3			
2			
1			

**Blue Recycling Bin**



**Green Recycling Bin**

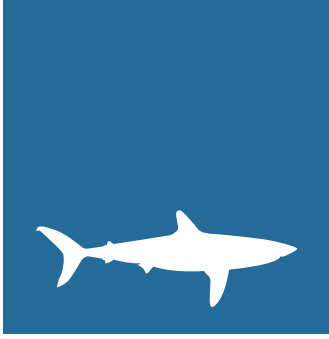


**Black Trash Bin**



Count all the boxes that you colored in. How many in all?

There are \_\_\_\_\_ in all.



# KINDERGARTEN

## RESOURCES



- BrainPopJr, “Reduce, Reuse, Recycle” <http://www.brainpopjr.com/science/conservation/reducereuserecycle/preview.weml>

- Defenders of Wildlife, “Basic Facts about Sharks”  
<http://www.defenders.org/sharks/basic-facts>

- Good Guide  
<http://www.goodguide.com/>

- Humboldt County: California’s Redwood Coast  
<http://www.redwoods.info/showrecord.asp?id=475&source=Favorites>

- Inside Science, “Threats to Sharks Threaten Entire Ecosystems”  
<http://www.insidescience.org/content/threats-sharks-threaten-entire-ecosystems/1351>

- National Geographic Kids, “Great White Shark”  
<http://kids.nationalgeographic.com/animals/great-white-shark.html>

- National Park Service  
<http://www.nps.gov/moja/naturescience/mojave-tui-chub.htm>

- Oceana, “Predators as Prey”  
[http://oceana.org/sites/default/files/o/fileadmin/oceana/uploads/Sharks/Predators\\_as\\_Prey\\_FINAL\\_FINAL.pdf](http://oceana.org/sites/default/files/o/fileadmin/oceana/uploads/Sharks/Predators_as_Prey_FINAL_FINAL.pdf)

- PBSKids, Sid the Science Kid  
<http://pbskids.org/sid/isense.html>.

- Recology  
<http://www.recologysf.com/>

- Shark Foundation  
<http://shark.ch/Information/Senses/index.html>

- Skyanimals  
[http://www.skyanimals.com/browse\\_habitat.cgi](http://www.skyanimals.com/browse_habitat.cgi)

- Support Our Sharks  
[http://www.supportoursharks.com/en/Conservation/Why\\_protect\\_sharks.htm](http://www.supportoursharks.com/en/Conservation/Why_protect_sharks.htm)

- World Wildlife Fund, “Habitats: Simplified Explanations”  
[http://wwf.panda.org/about\\_our\\_earth/ecoregions/about/habitat\\_types/habitats/](http://wwf.panda.org/about_our_earth/ecoregions/about/habitat_types/habitats/)