

FINDING THEIR WAY

In **Sand-Eating Sharks**, we follow a young lemon shark named Manoela as she hunts and explores with her keen senses. Along the way, we meet dozens of wildlife species that share her ocean habitat. Predators, competitors, helpers and prey, they all have unique ways of surviving. Adaptations help animals survive. Some adaptations are physical, like the shape of a bird's beak or the color of a mammal's fur. Some are behavioral, like hunting alone or in a group.



PART 1 Look at the adaptations described for the animals listed on this chart. Complete the chart by writing a **P** for physical adaptations or a **B** for behavioral adaptations. Choose one adaptation. How do you think it helps that animal survive? How does it help the rest of the ecosystem? Use the back of this sheet to write your answer.

| Animal | Adaptation | Physical or Behavioral? |
|-----------------------|---|-------------------------|
| Lemon shark | Manoela's nostrils, or nares, are positioned on the <i>sides</i> of its snout to help it locate the source of a smell. | |
| Lemon shark | Manoela copies the hunting technique of an adult lemon shark. | |
| Sharks and other fish | Lateral lines allow fish to detect changes in water pressure and even in the direction of the tide. | |
| Brazilian sardines | These tiny fish travel in a massive school, forming a "super organism" that can reshape to avoid predators. | |
| Brown boobies | This large seabird can see sardines from 300 feet above the water, and divebomb them at 55 mph. | |
| Parrotfish | Specialized teeth allow parrotfish to eat algae and other tiny organisms on coral while hiding from predators there. In the process, they break off pieces of rock and turn them into sand. | |
| Horse-eye jack | Hunting in groups, these fast-swimming fish create high-pressure waves that damage sardines' ears and cause confusion. | |

PART 2 Sharks have a special set of sensory receptors called *ampullae of Lorenzini* that can detect tiny electrical charges given off by other animals. Electroreception may also help them navigate using the earth's magnetic fields. Check out <https://dlnr.hawaii.gov/sharks/about-sharks/senses/> for more information.

Using magnets and directions provided by your teacher, you and your classmates will investigate to see how electroreception would help you find prey hiding in the sand or between rocks if you were a shark. Begin by making a prediction: Which object do you think will be easiest to find? Most difficult? A shark's sense is estimated to work within a few feet. How close to the object will you need to get before you feel its pull on your magnet? With your group, fill in your findings below:

Prediction: The easiest object to find will be: _____

| Type of Object | Type of Magnet | Strength of Pull (1 is weakest, 3 is strongest) | Distance Pull Is Felt |
|----------------|----------------|--|-----------------------|
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