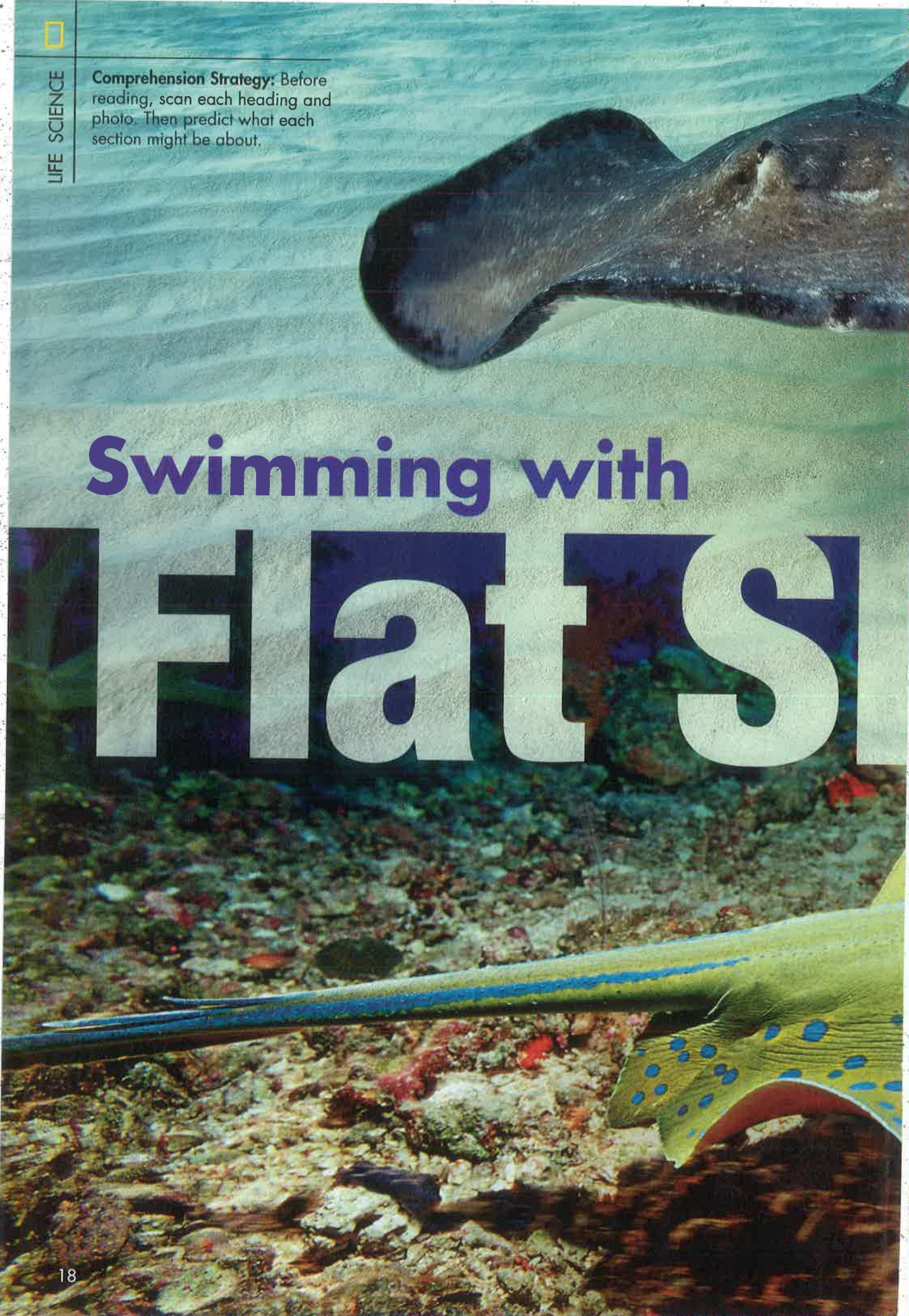




**Comprehension Strategy:** Before reading, scan each heading and photo. Then predict what each section might be about.

## Swimming with

# Flatfish



The image is a composite of two underwater photographs. The top half shows a sandy ocean floor with several dark, flat stingrays swimming. The bottom half shows a vibrant coral reef with a prominent yellow stingray with blue spots resting on the seabed. The text 'By Gary Miller' is centered in the top half, and 'marks' is overlaid in large letters across the reef section.

By Gary Miller

marks

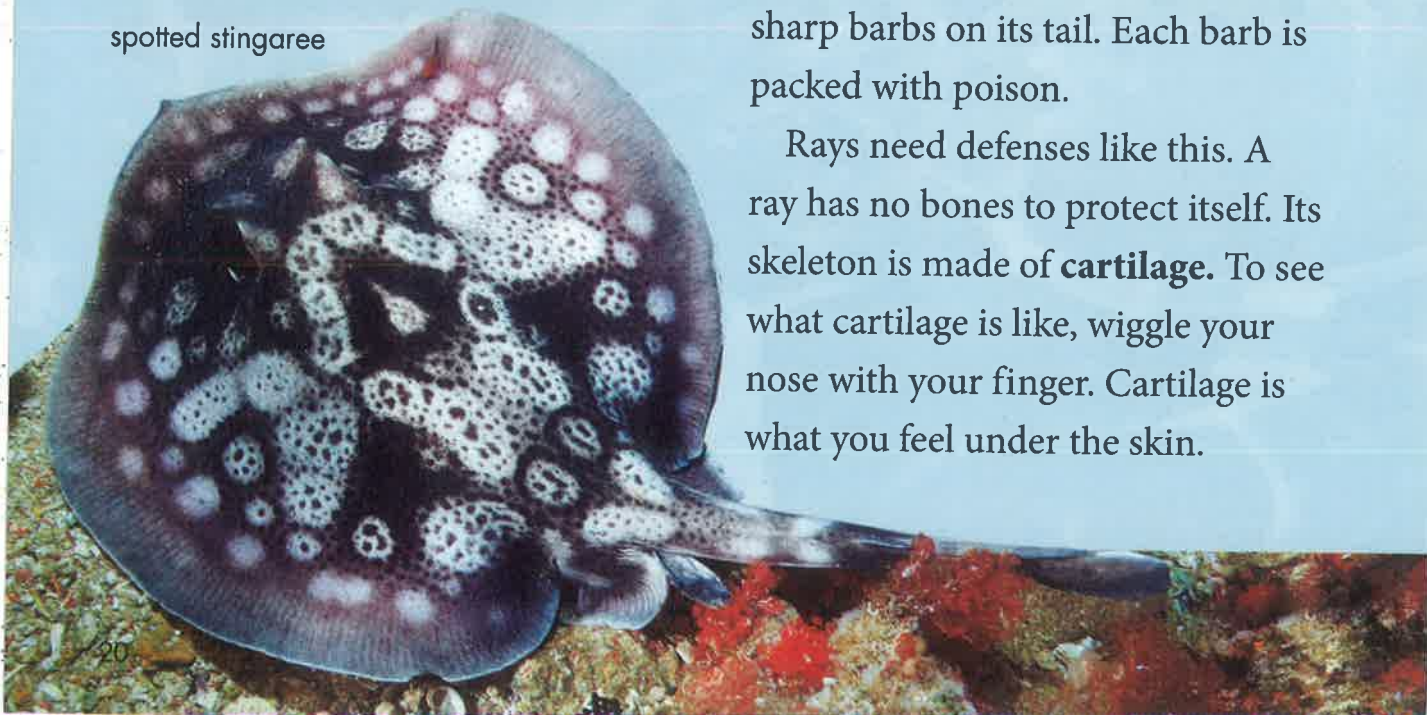
**A tiger shark** sinks its teeth into a giant manta ray. The ray struggles. The shark attacks again, but the ray twists away. It escapes, wounded and bleeding. It needs help.

The ray swims to a **coral reef** to get help. A group of “cleaner fish” spot it. They get to work.

Some of the cleaner fish eat the bacteria clinging to the ray’s belly. Some eat algae around the ray’s mouth. Another group cleans the open wound.

Soon the manta ray is clean and the fish are done eating. The fish and the ray have a special relationship. It happens when two kinds of living things need one another. Once the cleaning is done, the ray swims back to deeper waters.

spotted stingaree



## Flat Sharks

Mantas are only one kind of ray. More than 500 ray species swim in the ocean. They are closely related to sharks. Think of a ray as a flat shark.

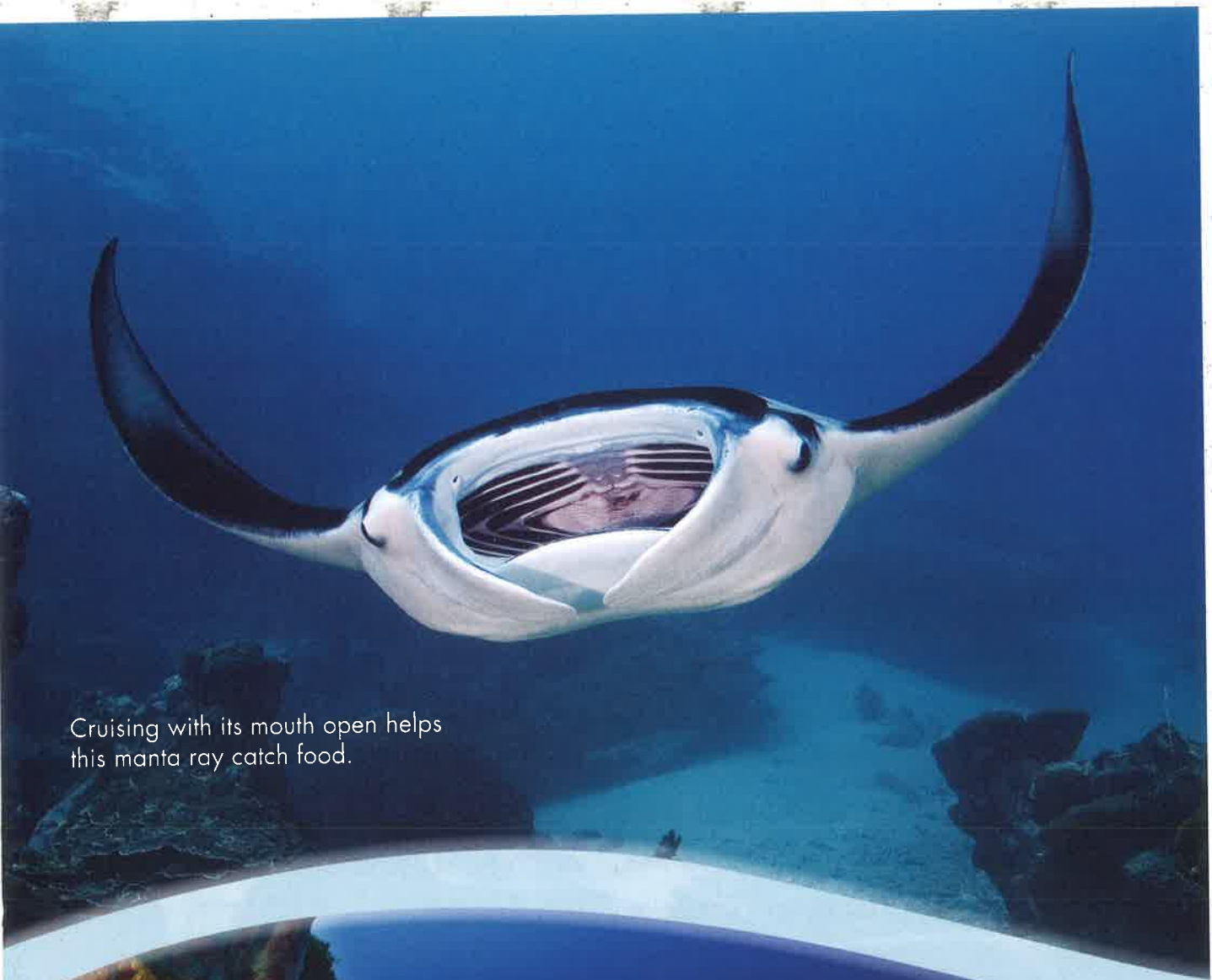
Rays come in all shapes and sizes. Some of them could fit in your hand. The short-nose electric ray is the size of a pancake. The largest ray, the manta, weighs as much as an elephant.

## Flapping Fins

All rays have fins and a tail. The fins are called **pectoral fins**. They look like wings. The cownose ray flaps its fins like a bird. The spotted stingaree ripples its fins from front to back. The rippling motion pushes it forward.

A ray’s tail is useful, too. It helps a ray swim. Some rays fight with their tails. The blue-spotted stingray has sharp barbs on its tail. Each barb is packed with poison.

Rays need defenses like this. A ray has no bones to protect itself. Its skeleton is made of **cartilage**. To see what cartilage is like, wiggle your nose with your finger. Cartilage is what you feel under the skin.



Cruising with its mouth open helps this manta ray catch food.



This ray skims just above the rocky seafloor.

## Finding Food

Rays are **carnivores**. They eat meat. They have rows of teeth the size of pinheads. These tiny teeth crush prey.

Rays use their senses of touch and smell to find food. They also use another sense. A ray can sense electric signals from other animals. These signals can lead it to prey.

Some rays are bottom feeders. They find their prey on the seafloor. The Australian butterfly ray stirs the sandy seafloor as it swims. It scoops up small creatures hiding in the sand.

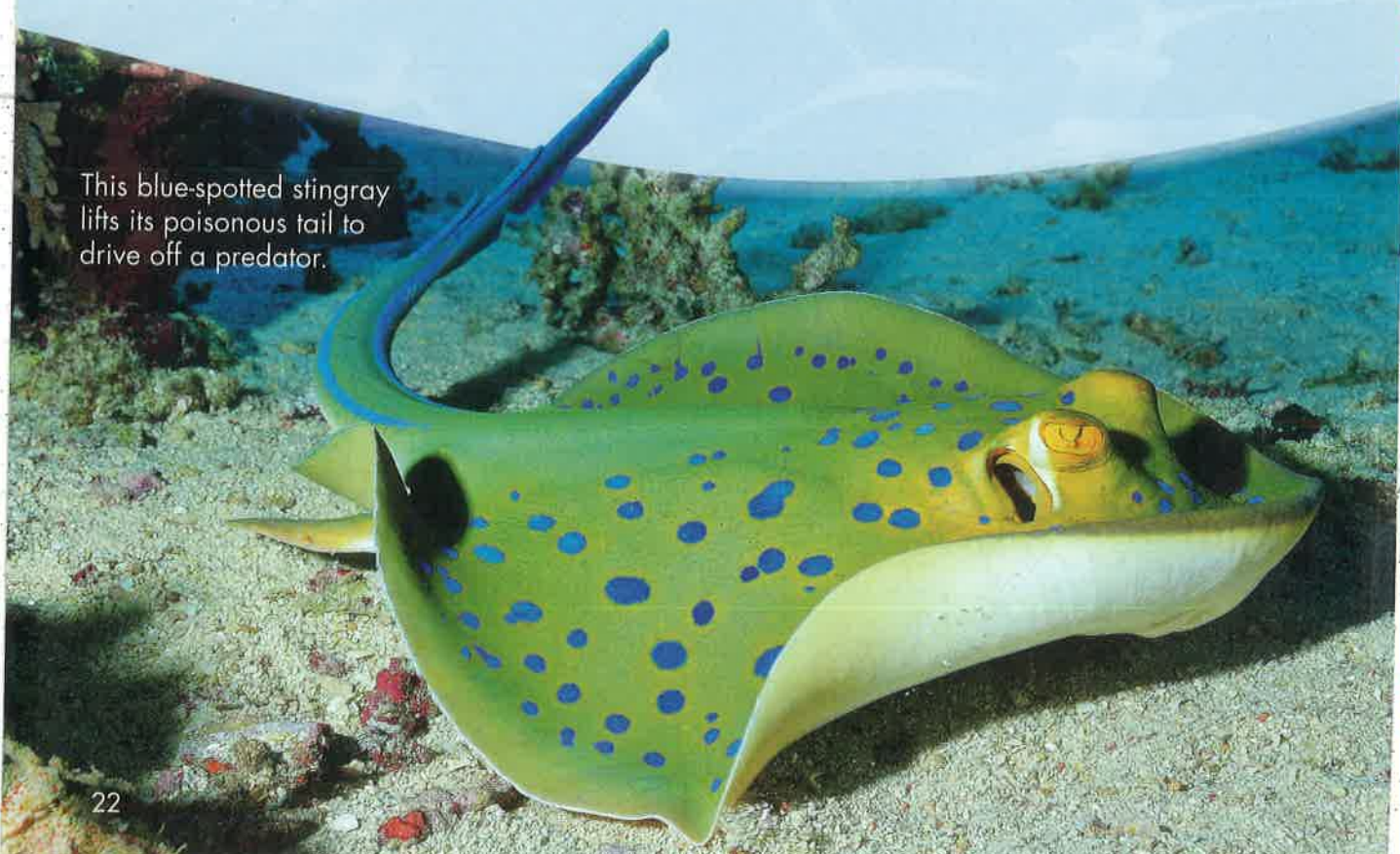
The spotted eagle ray hunts with its nose. It pushes its snout into the sand. It digs up oysters, clams, and snails.

## Manta Mealtime

Not all rays are bottom feeders. The manta is a filter feeder. It eats tiny sea creatures called plankton. When a manta sees plankton, it rolls.

Flaps on the side of its head scoop food and water into its mouth. The water gushes out through its gills. The plankton stay in.

Some rays have unique ways to hunt. A torpedo ray uses an electric shock. The ray stuns its prey and then eats it. A sawfish has a flat blade with teeth along the edges. This ray swims into a school of fish and slashes left and right. Then it eats the pieces of fish that fall.



This blue-spotted stingray lifts its poisonous tail to drive off a predator.

## Ray Riddles

Rays live in many ocean habitats. They swim from the deep ocean to shallow coral reefs. Yet scientists still don't know much about them.

For example, they don't know how long rays live, or if they sleep. They don't know why mantas breach, or jump out of the water.

They do know that a manta makes sound waves when it dives into the water. Other mantas might sense those waves. So a manta could be "speaking" when it breaches.

Someday scientists may know more about these fish. Progress is slow, though. It comes one ray at a time.

A school of spotted eagle rays glides through the water.

## Wordwise

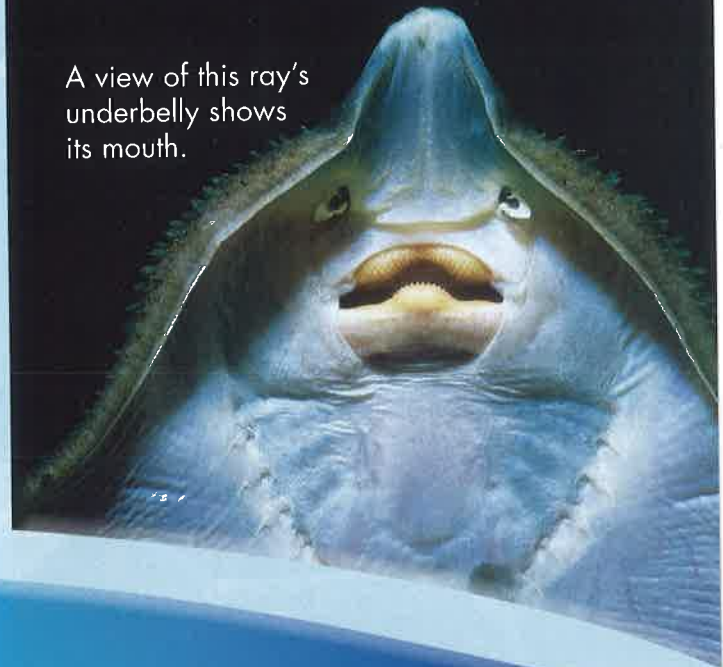
**carnivore:** meat-eater

**cartilage:** firm but flexible kind of tissue

**coral reef:** rock-like structure built by tiny sea animals

**pectoral fin:** fin on the side of a ray's body

A view of this ray's underbelly shows its mouth.



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Cover: puss moth caterpillar

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