

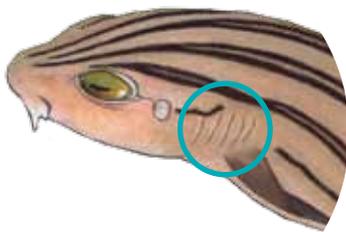
# For Creative Minds

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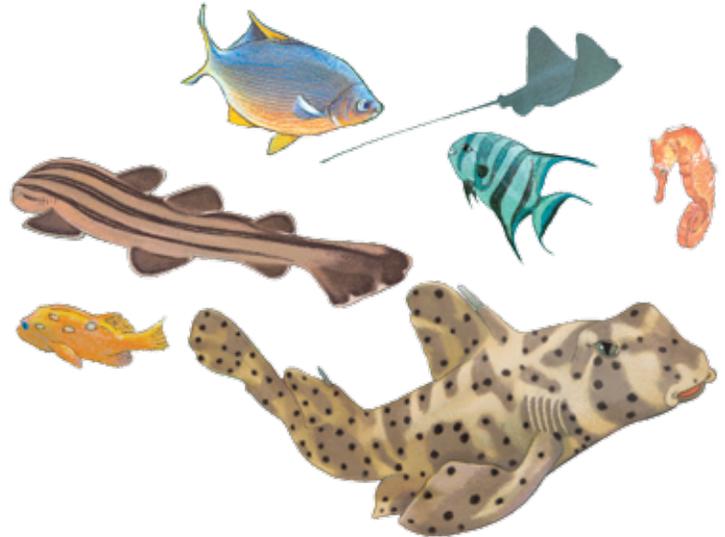
## Sharks

Fish come in all different shapes, colors, and sizes. Some fishes have hard bones as we do.

Other fishes, like sharks and rays, don't have any hard bones at all! Their skeletons are made up of cartilage—the same stuff that forms our noses and ears.



Sharks get their oxygen from the water through gills.



Sharks usually live in saltwater (marine) habitats. While some sharks swim up rivers, they do not normally live in lakes.

Many sharks are crepuscular, meaning they hunt at dawn and dusk. If swimming in the ocean, it is best to stay out of the water at that time.

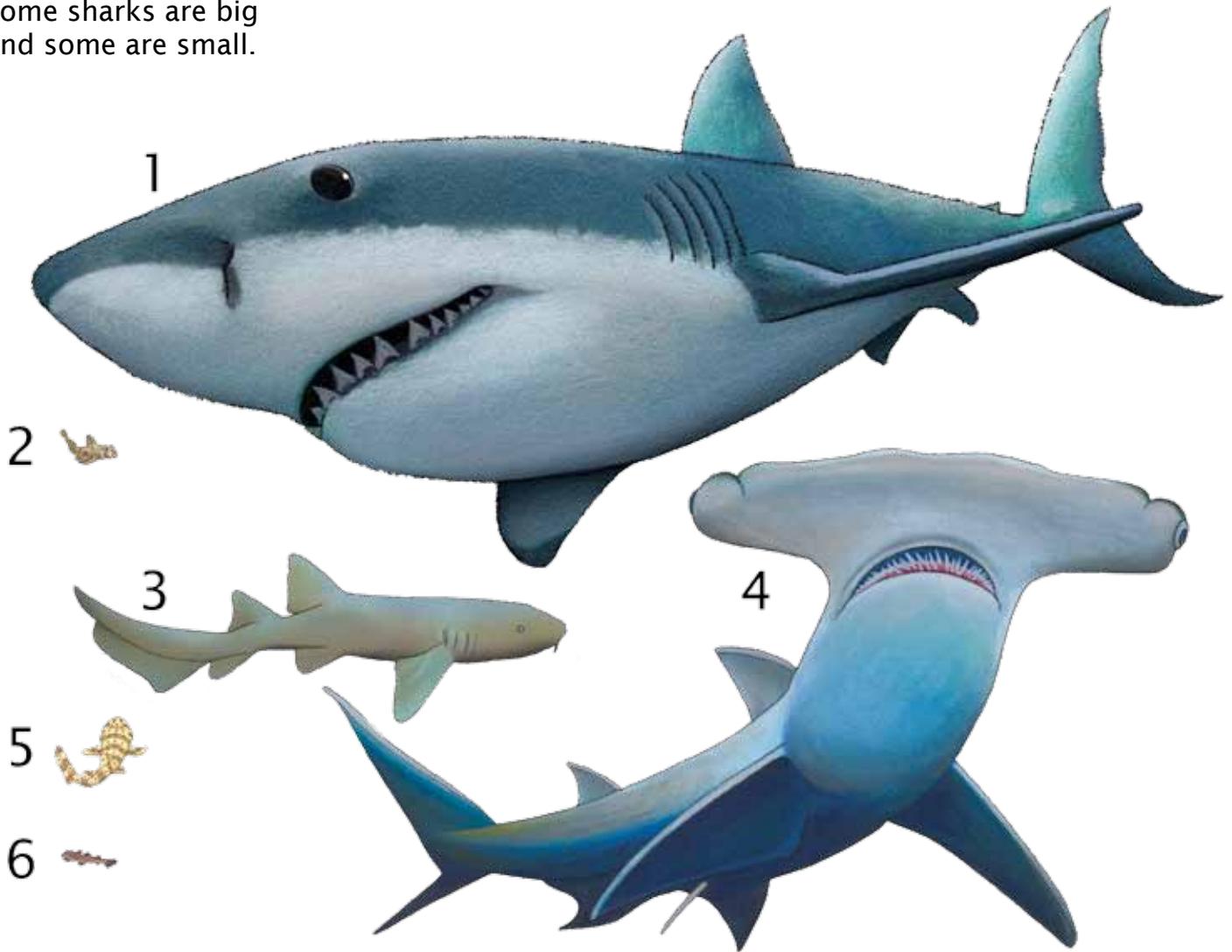
Some sharks eat fish, seals, sea lions, and even whales. Some sharks eat plankton! Others, like the swell sharks, eat clams and crabs.

Contrary to what many people believe, sharks do not hunt humans. Shark attacks are usually sharks “checking out” what food might be available. Or, like many other animals, they may attack people if they feel threatened.

Sharks may be at the top of the ocean food web, but humans are their biggest predators.

Because millions of sharks are killed by human fishing, fewer survive to adulthood to have babies of their own.

Some sharks are big  
and some are small.



1. Great white sharks often “test-bite” unfamiliar objects, such as buoys, flotsam, surfboards, or strange prey, in order to identify them.
2. Horn sharks sometimes stand on their heads to pry prey loose from underwater rocks.
3. During the day, nurse sharks can be found resting in groups, tucking themselves into crevices or under overhangs in the reef. They leave the group to hunt alone at night.
4. Hammerhead sharks have a special sensory organ under their “hammer” that can detect electric fields. This helps the shark find prey hiding behind rocks or under sand.
5. To escape danger, swell sharks puff themselves up with water so they are twice their size. This makes it harder for predators to bite or pull swell sharks from rocky holes.
6. Pajama sharks (also called striped catsharks) are dressed for bed. They spend their days sleeping in rock crevices or among kelp and hunt at night.

## Compare and Contrast Egg Cases

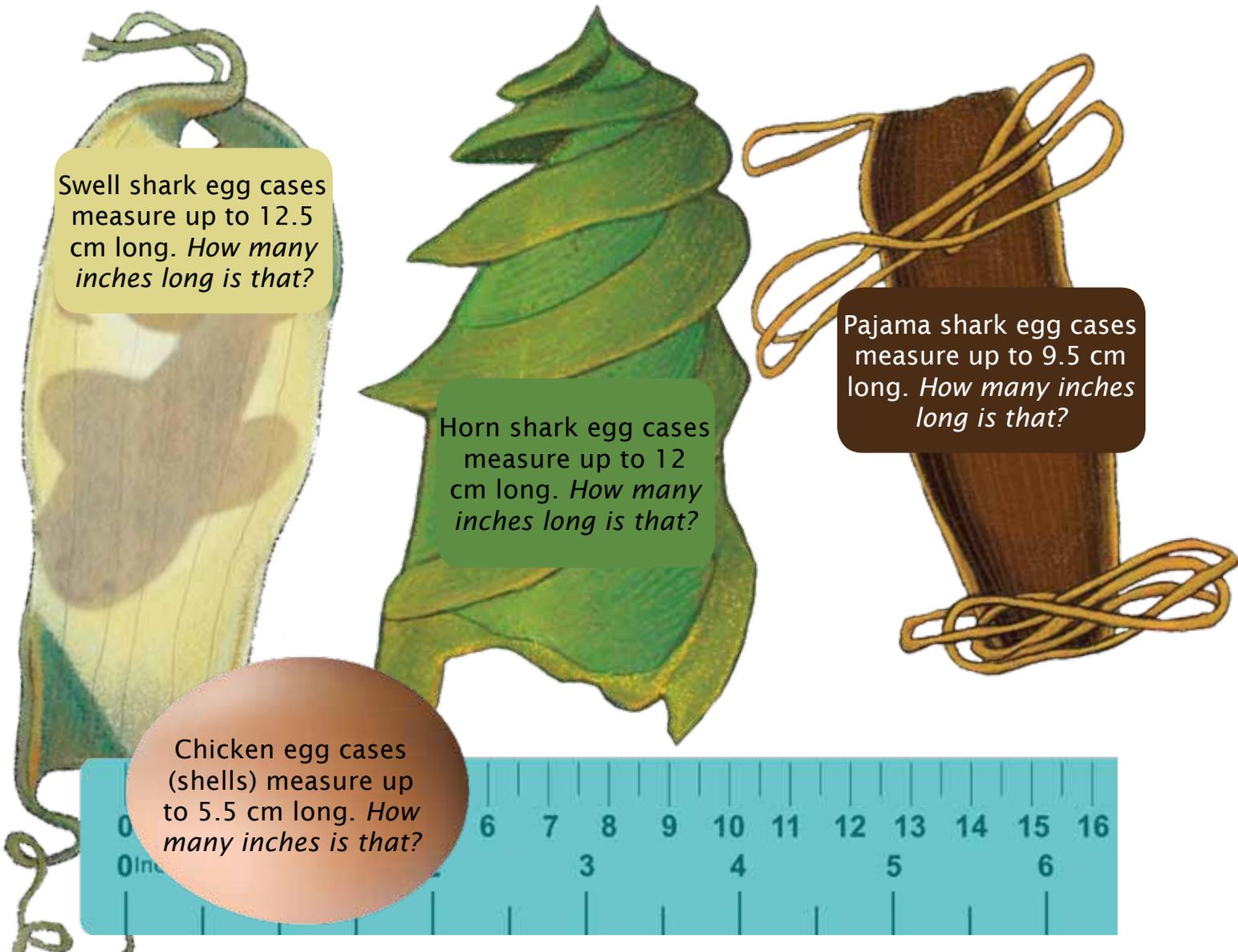
Birds, most reptiles, many insects, and even sharks and other fish hatch from eggs! Bird mothers build nests and care for their eggs and young. Many other animals lay eggs and leave. The young will hatch and then survive on instinct.

Sharks, skates, and rays are all “cousins.” Some sharks hatch from eggs inside their mothers’ bodies. Rays and some sharks give birth to live young. Other sharks and skates lay egg cases that are often found on beaches. The cases, nicknamed “mermaid purses,” remain tough and rubbery long after the pups hatch.

Some shark egg cases have long, thin structures (tendrils) that attach to an object.

Egg cases can be tough and rubbery, like a shark egg case, or rigid and hard, like a bird’s egg shell. Both protect the unhatched animals growing inside.

How are these egg cases alike and how are they different?



Swell shark egg cases measure up to 12.5 cm long. *How many inches long is that?*

Horn shark egg cases measure up to 12 cm long. *How many inches long is that?*

Pajama shark egg cases measure up to 9.5 cm long. *How many inches long is that?*

Chicken egg cases (shells) measure up to 5.5 cm long. *How many inches is that?*

# Sharks True or False?

Do you think these shark statements are true or false? Answers are upside-down, below.

1. Sharks are bloodthirsty, man-eating killers.
2. All sharks are powerful hunters with big, sharp teeth.
3. Sharks are mindless eating machines.
4. Sharks have to keep swimming to breathe.
5. When you see a fin sticking out of the water, it's a shark.
6. Sharks have teeth on their skin.
7. Sharks are a serious danger to people.
8. Sharks have superpowers.
9. Sharks live in every ocean of the world.
10. Sharks need your help.



1) False! Humans are not sharks' natural prey and most accidents are cases of mistaken identity.  
2) False! It's true that many sharks are top predators (animals that prey on animals). But there are many different kinds of sharks, not all of them have big, sharp teeth. The whale shark is a gentle giant that filters tiny plants and animals (plankton) from the ocean. The Port Jackson shark has bony plates in its mouth to crush clams and crabs.  
3) False! While it's hard to study sharks in the lab, we know they have large brains. Many aquariums have trained their sharks to feed from specific targets. They may need those large brains to cope with life in the ocean and their dealings with other sharks. Scientists are working to learn more about what goes on in shark brains.  
4) True and false! Sharks breathe when oxygen in seawater passes over their gills. Most sharks need to swim to keep water flowing through their gills. But some sharks have special structures that pump water over their gills while resting on the ocean floor.  
5) False! Fins above the surface could belong to dolphins, whales, or even sailfish.

6) True! Sharks are covered in tiny tooth-like scales called denticles. Denticles give their sharkskin its rough, sandpapery feel.  
7) False. Humans kill tens of millions of sharks every year just for their fins to make shark-fin soup. Millions more sharks die when they are caught in fishing nets or when we grind them up into useless pills to "cure" cancer. In 2011, only 75 people around the world were bitten by sharks and 12 died. Sharks have more to fear from us than we have to fear from them!  
8) True! Sharks have senses that we humans don't share, kind of like shark superpowers. Just as the superhero Spider-Man™ has spider sense, sharks have a special shark sense that helps them detect the faint electrical signals given off by their prey. They have good hearing and a great sense of smell, too.  
9) True! Sharks are found from tropical reefs to cold, polar oceans. But they tend to be found in special places within each ocean where they find what they need to eat and have baby sharks.  
10) True! Sharks have been swimming Earth's oceans for millions of years, but some species are in danger of going extinct like the dinosaurs.