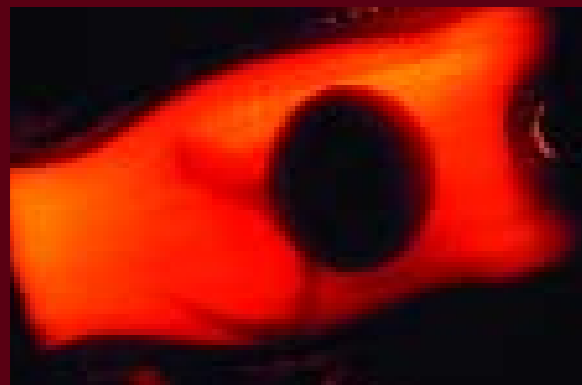


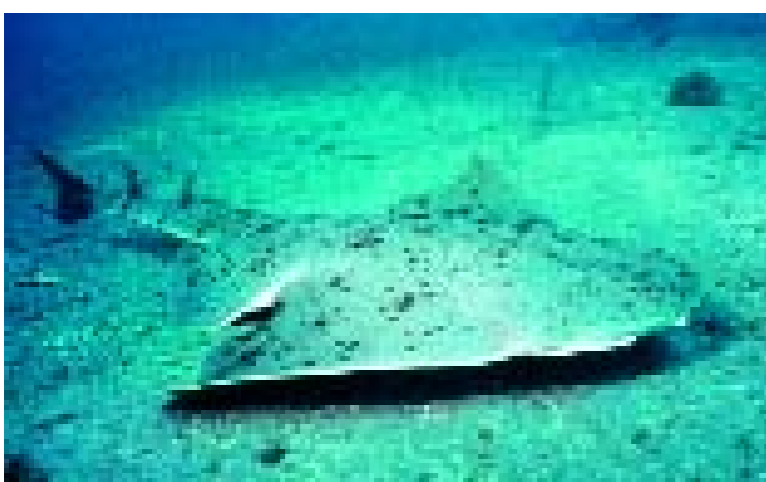
WHEN I TRAVEL OUTSIDE MY HOME STATE, I LOVE TO HEAR PEOPLE TALK ABOUT CALIFORNIANS. THEY USUALLY SAY THAT WE'RE A LITTLE ODD. YOU HEAR THINGS LIKE, "THEY ALL SEEM TO BE INTO THEIR OWN THING", AND "CALIFORNIANS SEEM SO... DIFFERENT". WELL, I GUESS OUR SHARKS ARE TRUE CALIFORNIANS. THEY HAVE PLENTY OF DIFFERENT UNDERWATER ENVIRONMENTS FROM WHICH TO CHOOSE. FROM THE GRANDEUR OF THE KELP FOREST TO THE VASTNESS OF THE OPEN OCEAN, OUR SHARKS HAVE IT ALL.

In San Diego's warm summer months, we have sharks, lots of sharks. Hundreds of leopard sharks *Triakis semifasciata* congregate in as little as two feet of water. You can count them just by standing on the beach. Leopard sharks are gregarious, often seen in large schools over the shallow sand. Scientists are unsure why they congregate in the warm water, but suspect it may be to mate or to give birth. Leopard sharks are in the Houndshark family and have beautiful markings of brown spots and saddles on a grey background. Leopards can grow to a length of six feet and are harmless to divers and snorkelers. They have rows of small pointed teeth they use to feed on fish, shrimp, crabs and clams. The female gives birth to between four and 29 pups per litter after a gestation period of one year. The pups are about eight inches long at birth. Leopard sharks are popular in large aquariums, since they can live to be over 20 years old in captivity.

As you move out over the shallow sand, you reach the edge of the kelp forest. One of the ocean's most beautiful habitats, it's home to the horn shark and the swell shark. Horn sharks *Heterodontus francisi* are named for the white spines at the front of both dorsal fins and are members of the family Heterodontidae or bullhead sharks. Adult horn shark eyes are very sensitive to light, so during the day they're often found sleeping in caves or crevices, or under large blades of kelp. The horn shark is a bottom dweller, camouflaged with dark brown spots. Hiding among the rocks and kelp is an adaptation to life in the forest that

# THE CALIFORNIANS





helps them to avoid predators and to capture prey. They're active at night, roaming the reef for prey. Horn sharks have two types of teeth – the front teeth have sharp cusps for grasping, while the rear teeth have rounded cusps for crushing. Horn sharks eat fish, sea urchins and crabs. A big part of their diet are fish like the blacksmith; as they're active during the day, these fish make easy targets while they rest at night in crevices on the reef. When their diet is mainly sea urchins their spines turn purple.

Both the horn and the swell shark lay an egg. The idea of a shark laying an egg is odd, but, hey, it's California! Most sharks give birth to live young, which are miniature versions of the adult. This reproductive strategy, called viviparity, is the norm for most shark species. The swell and horn sharks are, well, . . . . .different.

This egg laying is known as oviparity. The female lays at least two eggs, sometimes more. The egg case is about five inches long and shaped like a spiral corkscrew. Some believe the action of the water 'screws' the egg into a crevice. The egg case is the colour of kelp so it is hidden from predators, just another way animals have adapted to life in the kelp forest. The egg cases are wedged among the rocks and hatch six to nine months later. Baby horn sharks measure six to seven inches in length and their spines are sharp at birth, protecting them from being a meal for an angel shark or sea bass. Horn sharks are known to live up to 25 years, and may live to be 50 years old. They can grow to be four feet long. Adults live in the same underwater neighbourhoods all their lives – one tagged horn shark was found in almost the exact same spot more than 11 years later.

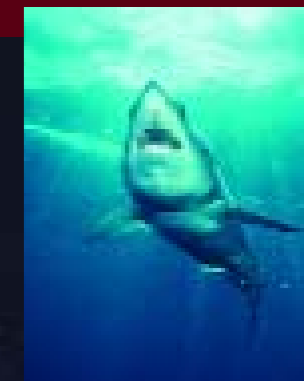
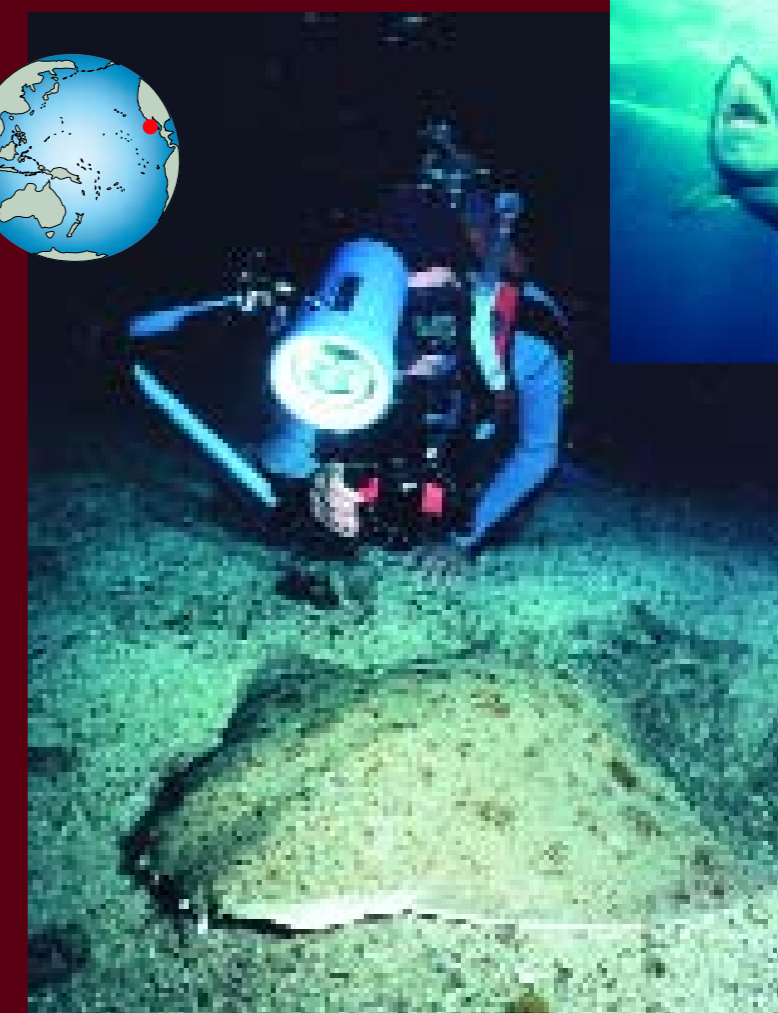
Another cave and crevice dweller is the swell shark, *Cephaloscyllium ventriosum*. The swell shark's species name, ventriosum, means 'large belly' – this shark can take in water and swell up like a basketball, so a predator would be hard pressed to pull one from its protective crevice. The swell shark is a bottom dweller, camouflaged with dark brown patches like the horn shark. Both species have adapted similar colouration for a similar environment. They are active at night, feeding on small reef fishes. Adults can grow to be three feet long. Swell sharks are remarkable for producing what is called a 'mermaid's purse', an egg case with a baby shark inside. It's shaped like a piece of kelp that rests on the bottom for eight to 10 months. The baby shark is on its own, left to pry it's way free of the egg case with two rows of small spines on its back and is about five inches long at birth.

At the outer edge of the kelp forest, a sand plain begins that slopes down into the deep. This is the home to the Pacific angelshark *Squatina californica*. If you're not paying attention, you'll swim right over one. And, that is exactly what the angel shark is hoping for. This is an ambush predator. It lies in wait buried in the sand, with only its head and eyes exposed. Since the shark's body is flattened and the colour of sand, it's camouflage is perfect. Completely hidden, the angelshark is ready to burst forth at any moment. Its sharp teeth and jaws can distend to trap an unsuspecting croaker, blacksmith or squid that has let its guard down for a second.

The Pacific angelshark's method of reproduction is rare among sharks – ovoviviparity. The female produces eggs internally but they are never laid. The young are born fully formed after about 10 months in a litter of between eight and 13 pups. The angelshark can grow to be five feet in length.

When you see 'monkfish' on the menu at your favourite seafood restaurant have you ever wondered, "what is a monkfish, anyway?" Well, you're eating angelshark. Some fisherman decided the angelshark's strange head looks like the hood on a monk's cloak. As I said, our sharks in California are different.

As the sand plain heads for deep water, the open ocean begins. And no one seems more at home in the blue than the mako shark *Isurus paucus*. Its streamlined shape is perfect for a life of swimming in the open sea. It has a pointed snout, short fins and a large, crescent-shaped caudal fin. The mako is a true long-distance swimmer; one was recaptured over 1000 miles away in a little over a month. It's the fastest moving of all sharks, clocked at over 40 miles per hour. In addition to being a powerful swimmer, the mako is a top-level open ocean



predator whose home range, over the continental shelf, is from the surface to depths of 500 feet.

Another adaptation of open ocean predators is called 'countershading'. The mako shark is dark blue above and white below. If the shark is seen from below, it blends in with the lighter surface water above. If the shark is seen from above it disappears into the dark ocean beneath. Prey beware, this is predatory stealth in its highest form!

The mako's impressive mouth can't seem to hold all its teeth. They spill out in all directions, long and pointed, perfect for catching mackerel, tuna, anchovy and squid. Adult females can grow to be over 12 feet long and weigh over 1200 pounds.

A female's litter can contain up to 16 pups but it's best to be among the first pups, since makos are oophagous – the first pups eat the others before they hatch. Sibling rivalry at its extreme. Unfortunately for the mako, it's a much sought-after sportfish. Not only does it taste good, but it puts up a hell of a fight – and they've been known to jump 20 feet in the air when hooked!

California is a great destination if you love sharks. And here, if you're a little different and odd, it's considered a good thing!