

Sea Sounds

SNAP! A pistol shrimp pops open its claw, creating a sound wave that stuns a small fish. *Eeeeyoooo, eeeeyoooo.* A humpback whale sings a long, lonesome song to attract a mate from far away. *Croak, bup, croak, bup.* A toadfish defends its nest from intruders. *Bark, bark.* A bright orange garibaldi fish protects its nest. Other fish rasp, grunt, thump, growl, and chirp to defend their territories, attract mates and locate one another. With all this communication going on, the ocean can be a very noisy place.

Under water, it can be hard to see. During the day, the water is sometimes murky and at night, it's dark. In the deepest depths, it's completely dark all the time. So making sounds makes sense, especially since sound travels four times faster in water than in air.

Dolphin Dialogue

Dolphins use sound to "see" without using their eyes. They project a series of rapid clicks toward an object. From the echo that comes back, they can

tell where a fish might be hiding under the sand or the number and size of fish in a nearby school; or they can find their main pod, or group, of dolphins.

Dolphins also use a variety of whistling sounds to communicate with one another. Using whistle communication, they can plan a fish round-up, get together to play in the bow wave of a nearby boat or come to the aid of a dolphin in distress.

No one knows how dolphins make their sounds. Sounds are generated, somehow, from within the dolphin's head and projected

out the melon, the dolphin's forehead. Scientists are working hard to find out more about dolphin communication.

Whale Songs

In the vast ocean, it's sometimes difficult for even the biggest creatures to find one another. Sounds can help. Many types of whales produce long, low tones that can travel for miles when sea conditions are just right.

Some of the most famous whale sounds are the songs of humpback whales. During the

How do these pistol shrimp catch food? They snap open their huge left claws, making a loud noise that stuns prey.





Incredible Crustaceans



A crab scurries sideways across a sandy beach. A lobster takes cover in a rocky crevice, claws pointing out defensively. A shrimp hops onto the back of a moray eel to pick off pests and parasites. What do these animals have in common? They're all members of a group of animals called crustaceans.

Crustaceans are animals that lack bones and are protected and supported by a hard outer shell. A crustacean's shell is flexible at joints in its legs and body, enabling it to move easily over an ocean, lake or river bottom. The shell supports the animal's body so well that many crustaceans, especially the crabs, can walk on land. The shell is made of very hard chitin, the same material that

covers insects, the crustacean's land-dwelling relatives.

There are many kinds of crustaceans, but lobsters, crabs, shrimps, and crayfish are the best known. Because they all have ten legs (in five pairs), they are called "decapod" crustaceans, which means "ten-footed."

To grow, all crustaceans must periodically shed their old shells. This process is called molting. At the beginning of a molt, the joint on the animal's back splits open. The animal then crawls backward out of its shell. It can take 15 minutes to crawl out. A new, soft shell has already started to form beneath the old one. To obtain more growing room, the animal's body swells with water during the time it takes the new shell to harden. When

molting, the animal is in great danger because it lacks its protective shell.

The new shell slowly hardens when it comes into contact with water. The shell contains lime, a form of calcium that is dissolved in lake and ocean water. Some crustaceans, especially freshwater crustaceans, recycle the lime by eating their old shells.

Crustaceans are a favorite food of fishes, octopuses, seals, otters, and other crustaceans. While claws help to protect some, others depend on camouflage to hide from predators. Decorator crabs adorn their shells with sponges, kelp and even stinging anemones for added protection; sargassum crabs are mottled brown, which blends with their weedy background.

Most crustaceans hatch from





When the decorator crab (left) molts, or sheds its shell, it must replace the sponge garden that camouflages it. The lobster (right) is molting.

eggs. In general, crustacean larvae don't look anything like their parents. Juveniles go through several molts, changing shape many times before they grow into their adult form.


Lobsters and many shrimps carry their eggs on the undersides of their tails. Crabs may look like they don't have a tail, but they do. It's folded underneath their bodies, and can be seen only when the crab is upside-down. Female crabs use their tails to carry their eggs until the eggs hatch.

Lobsters, crayfishes and crabs are predators and scavengers in the aquatic community. They feed on both plants and animals, dead or alive. Many shrimps are

cleaners. Their bright colors attract fish to "cleaning stations," where several shrimp may hop onto a fish and begin eating parasites and other pests that could infect the fish's skin. Both partners benefit because the fish gets cleaned and the shrimp get food. Scientists call this kind of relationship mutualism.

Crayfishes, also called crawdads, are freshwater crustaceans that live in mud burrows on the banks or bottoms of lakes, rivers and streams. They are a

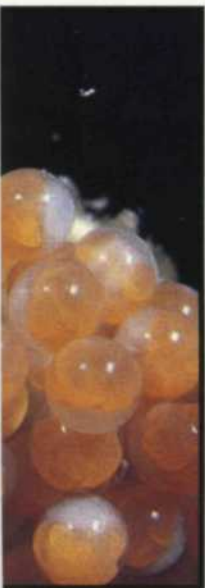
favorite food of raccoons, birds, snakes, and river otters. During the cold winter months, crayfishes hibernate under the muddy lake bottom.

Shrimps, lobsters and crabs come in a variety of shapes, colors and sizes. To see just a few, turn the page. 

By Beth Kneeland



These crayfish develop in eggs and look like tiny replicas of their parents when they hatch. Most other baby crustaceans change shape many times before they look like adults.





Open Wide!



Slowly, slowly, an almost invisible dome descends over a tiny shrimp that's feeding on a kelp frond. The dome closes, enfolding the shrimp and moving it toward a waiting mouth. Whose mouth?

The mouth belongs to a sea slug called *Melibe leonina*. *Melibe* can smell food with the help of two sensors called "rhinophores," which poke out of its head like antennae. Once it detects prey, *Melibe* uses its flexible, dome-shaped hood to capture shrimps

and other animals that crawl on the kelp.

With its prey securely inside its hood, *Melibe* swallows. Its tiny mouth is deep inside its hood, near its body. The swallowed food travels down a roller-coaster digestive tract, which can be seen through *Melibe's* transparent body.

Although *Melibe* may look like an empty raincoat, alert animals will see it for what it really is—a sea slug stalking supper. 🐌



LIONS

The lions I found were really *lion sea slugs*. These snail cousins looked like two fierce lions roaring at each other as they swam along. Pretty scary, right? But the slugs are really only three inches (7.6 cm) long. And that huge “mouth” isn’t a mouth at all. It’s a hood the lions use to trap their food.

When a tasty little creature floats into a lion’s trap, the trap snaps shut. The two halves lock together so the creature can’t get out. Then the lion sucks the prey into its mouth at the bottom of the trap.

I noticed some other very strange things about the lions. For one thing, each has little

“wings” on its back! The lion uses these to help it swim. It *breathes* through them too!

These wings could also save the lion’s life. If a crab or other enemy attacks it, the lion breaks off a few wings. This may confuse the predator while the lion swims away.

And if that doesn’t work, the lion has another trick. It gives off a “perfume” that some enemies don’t like. One whiff and they take off—if the lion’s lucky.

But me, I *never* wanted to take off! I spent hours watching these graceful creatures. I can’t wait until my next visit with the lions and butterflies of the sea. —KATHY WALSH

