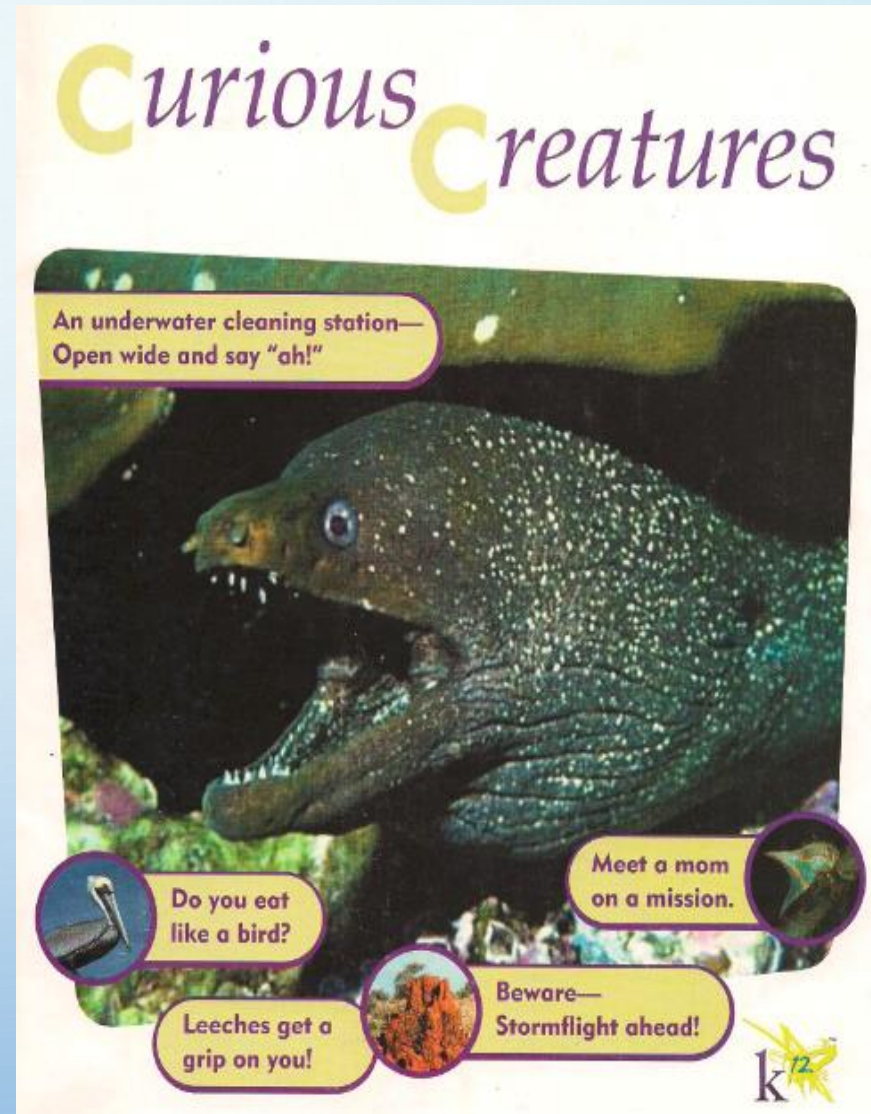
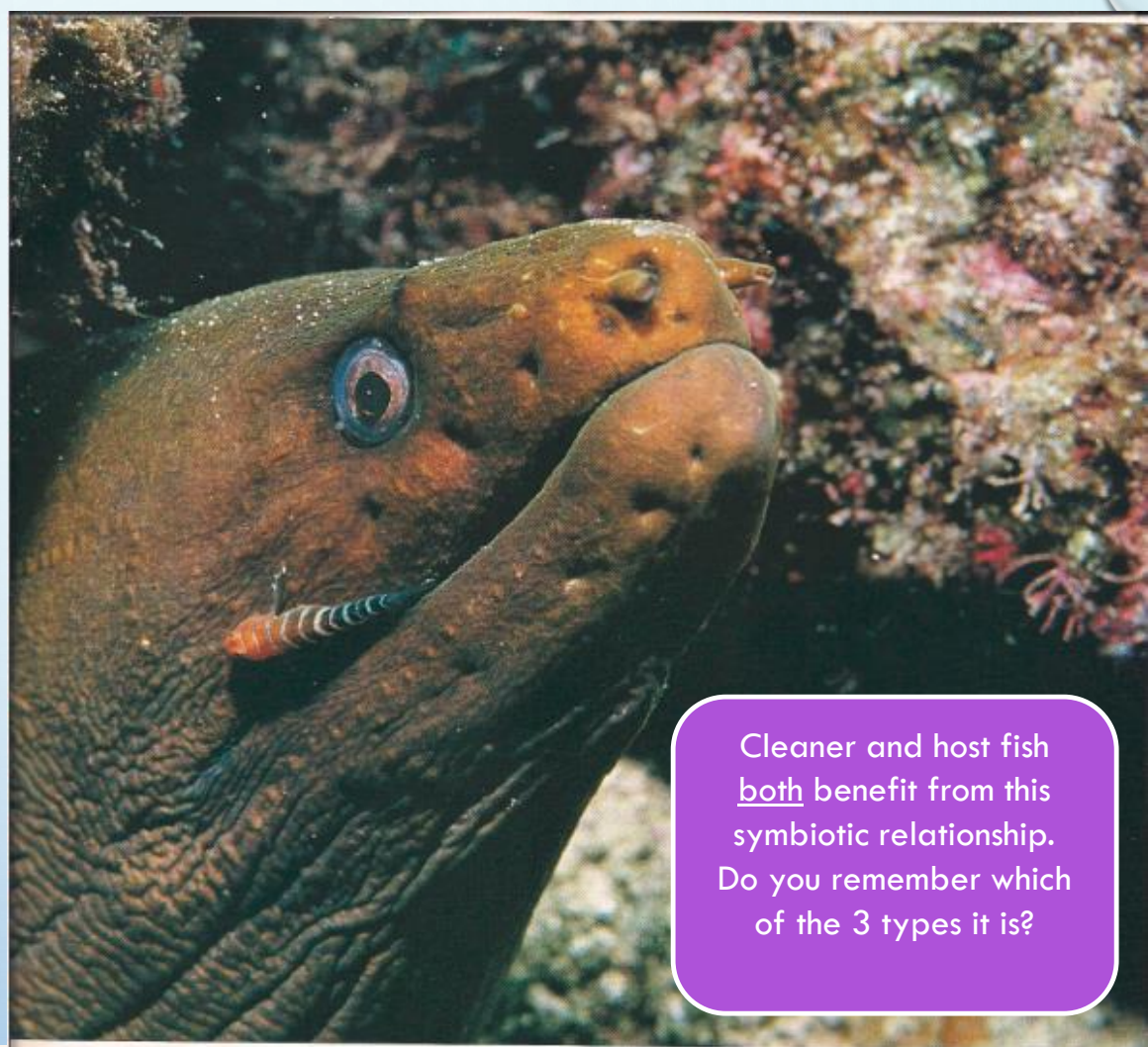


Nonfiction Text
Analysis:
Let's preview the
text. We'll look at the
photos and read the
captions.



THE OCEAN'S CLEANING STATIONS

The green moray eel slithers from its hole in the coral and swims to a certain rock. There it lies, unmoving, with its tooth-filled mouth wide open. Most fish flee from this fierce predator. But a bright-striped goby fish swims boldly into the moray's mouth. The eel stays motionless until the fish swims back out. What happened? Why didn't the fierce moray eat the little goby?



Cleaner and host fish both benefit from this symbiotic relationship. Do you remember which of the 3 types it is?

THE MORAY CAME TO an underwater cleaning station. Here certain species of small fish and shrimp clean the parasites off larger host fish. All fish have parasites, tiny animals that feed on their blood or skin. If parasites aren't removed, fish can sicken and die.

Several times, scientists have removed all the cleaners in an area and discovered that, after a few days, the fish population diminishes. And after two weeks, most of the fish left alive are covered with sores and fungus—and in bad need of a cleaning.

Cleaners and host fish have a relationship called *symbiosis*, where each animal both gives and receives help from the other.

What does the host fish get out of this relationship?

The cleaner fish?



To signal that it would like a cleaning, a parrotfish swims with its head pointing downward. Then a cleaner wrasse (the smaller fish in this photo) may move in.

a species move the same way. Bonnet-mouths and parrotfish, for example, approach a cleaner and then stop swimming. They hang in the water with either their heads or their tails straight up. The mouths open and gills spread. Goatfish (they have a "beard" like a goat's) approach a cleaner and hang motionless. Some even change color to make their parasites show up better.

A host fish gets its parasites removed, while a cleaner gets its food delivered.

But, normally, small fish and shrimp are food for big fish. How does the goby know when it will be eaten and when it can eat?

Host fish signal their need for cleaning with a set of elaborate movements. Although each species moves differently, all fish within

How do fish signal for cleaning?

Which fish signals: host or cleaner?

What are some examples of host fish?

By hanging upside down, a fish makes itself more vulnerable to predators. Some scientists think that this signals to cleaners that they have nothing to fear. It's like laying down your weapon.



The banded coral shrimp sets up its cleaning stations on coral heads.

Several kinds of shrimp, small gobies, and wrasses are cleaners. Some angelfish and hogfish are cleaners in the juvenile stage of their lives. Most of these have bold stripes on their bodies. The stripes of the juvenile cleaners disappear as the fish mature and stop cleaning.

Cleaning shrimp skitter across a host fish's body, feasting on the crustaceans clinging to its sides. Shrimp and cleaner fish will even swim into the host's mouth, cleaning teeth and gullet like a tidy housekeeper.

Cleanings can take from several seconds to two or three minutes. During this time both cleaner and fish are in danger from other animals. If either fish fears for its life, it immediately ends the cleaning ritual.

What are some examples of cleaner fish?

If the host fish senses danger, it gives a little shudder. Then the cleaner has a chance to escape before the host fish swims away. Wrasses and other small cleaners move away more slowly, somehow knowing that they're under a truce until they reach shelter.

Small hosts are jumpy, leaving the cleaning station at the first sign of danger. Larger morays or groupers stay longer, even allowing divers to come quite close before backing away.

Many ocean animals mimic or act like other animals. *Aspidontus rhinorhynchus*, the false cleaner fish, looks very much like a wrasse—stripes and all. But the false cleaner doesn't clean other fish, it eats them. It hangs around the cleaning station, acting like a cleaner, even swimming in the jerky motion of a true wrasse. The host fish arrives and takes its position. Then the false cleaner boldly swims up and bites a piece off the host's tongue or scales.



These batfish are lined up, waiting for the services of a cleaning station.

What do "false" cleaners do?

By the time the surprised host fish responds, the false cleaner has fled with its meal. The only obvious difference between real and false cleaners is that the impostors' mouths are on the lower part of their heads. Some host fish spot this difference and swim away from the cleaning station. Wise old ones open their mouths wide—and swallow the fake.

But in undersea cleaning stations, most large and small fish cooperate. They call a truce, and their symbiosis improves the health and prolongs the lives of both host fish and cleaners. ■

How can a host fish spot a false cleaner?