

# Project Oceanography

## Coral Reefs VI:

### Reef Critters

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#### WHO LIVES ON THE CORAL REEF?

The coral reef is home to thousands of different kinds of plants and animals. One way that **biologists** classify plants and animals is by name and how they are related to other plants or animals. Biologists also classify plants and animals by how they make their living. Are they **autotrophs**, meaning that they feed themselves by photosynthesis, as phytoplankton, seaweeds, and seagrass do? Are they **heterotrophs**, meaning that they feed on other life, as many bacteria and animals do? If they are heterotrophs, what sort of other life do they eat? Are they **herbivores** that eat plants, **carnivores** that eat other animals, **omnivores** (*omni* - means all) that eat whatever is the right size for them to catch, or **detritivores** that eat decaying material? Corals, seafans, and larger foraminifera are a very special group called **mixotrophs**, because they not only capture and eat plankton and in that way are omnivores, but their **zooxanthellae** photosynthesize. This relationship allows mixotrophs to thrive in clear waters where there is very little food. Because food is scarce and competition for that food is great, many of the plants and animals that live on the reef are highly specialized for making a living and protecting themselves from being eaten. As a result, many plants and animals can only live on coral reefs.

**Geologists** have another way to classify plants and animals on the reef, which is by the **role** that they play in the construction or destruction of the reef. A coral reef is only partly built by coral skeletons, which provide the **reef framework**. Therefore, geologists call the reef building corals, such as star corals, brain corals and branching corals, the **framework builders**.

Many plants and animals on the reef protect themselves by making limestone shells or skeletons. Some examples are segmented-plate algae, shaving-brush algae, foraminifera, snails, and sea urchins. When these plants and animals die, their dead shells and skeletons become part of the **sediment** that fills in the spaces in the reef framework. Geologists call these organisms **sediment producers**. For example, on some islands in the Pacific Ocean, most of the sand grains are the shells of dead foraminifera.

Very special algae called **coralline algae** cement the reef structure and make it strong and able to survive even the fiercest hurricanes. Geologists call

these **encrusters**. Other organisms, including barrel sponges, sea fans and seagrasses, help to hold sediment in place on the reef and are called **binders**.

Some animals, which geologists call **destroyers**, break up the reef framework into sand grains and mud. Sea urchins and parrot fish scrape away at the reef structure as they graze on algae. Destroyers also include special types of sponges and clams that bore into the reef framework, making their homes in the protection of dead coral skeletons. On a healthy reef, the destroyers help the reef system by making holes and caves in the reef where other plants and animals can live. On an unhealthy reef, the destroyers can eventually destroy the reef structure.

Finally, there are many types of plants and animals that don't participate directly in the geology of the reef, but interact with corals in other ways. These **dwellers** and **visitors** include literally thousands of kinds of creatures that are found everywhere on the reef, making their livings in every possible way. Phytoplankton and zooplankton live in the water above the reef. Soft corals and tube worms feed by filtering out plankton from the water. There are stringy plants called filamentous algae and leathery plants called fleshy algae. **Crustaceans** or "jointed-legged" animals include lobsters, shrimp, crabs and their relatives; many are scavengers (detritivores). Fish make their living in every imaginable way. From its mouth shape and teeth, you can guess what a fish eats. For example, butterfly fish have long snouts that are adapted to feed only on certain kinds of coral. And, of course, many sharks and eels are specially adapted to eat other fish.