

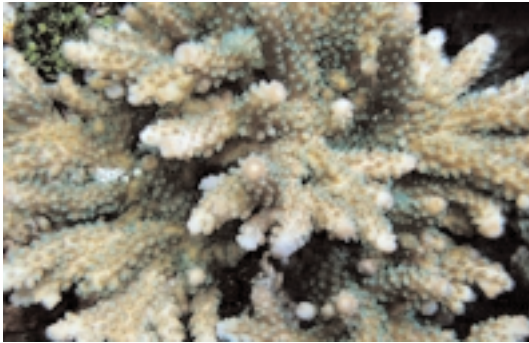
06. Coral reefs

Raphaëla Le Gouvello Education packet - Windsurfing solo across the Indian Ocean

<http://www.respectocean.com>



Wildlife / biodiversity



Acropora.

Did you know?

An atoll is a low coral island resembling a ring with an expanse of salty water, or lagoon, at its center. This lagoon is typically part of the sea, which slips in and out of it through depressions of varying depths in the coral ring.



Acropora.



Soft coral.

With few exceptions, all coral reefs develop in tropical zones where the water temperatures do not dip below 18 °C (64 °F) for any length of time. The Great Barrier Reef is the largest coral reef on Earth. It is located off the northeastern coast of Australia. Extending across more than 2,000 kilometers (1,243 miles), it is home to more than 350 coral species. In the Indian Ocean, coral reefs are found all along the tropical coasts (in the Red Sea, east of Africa, in Australia, and around the islands of Mauritius, Reunion, the Comoros, the Maldives, the Seychelles, the Cocos, the Mascarenes...). Sailors must be vigilant because the reefs are often just below the surface of the water.

Coral and its reefs

Most "reef-building" coral lives in colonies of animals called polyps. These colonies are sometimes centuries old. Polyps secrete a calcium carbonate skeleton, into which they can retract.

Polyps are small round animals with a mouth in the middle and a ring of tentacles around the mouth. The tentacles possess stinging (urticant) cells for capturing prey (zooplankton). But they do not catch all of the food they need. Coral live in a symbiotic relationship with single-celled algae called zooxanthellae. These microscopic algae live in coral tissues and use energy from sunlight to transform water, carbon dioxide, and mineral salts into simple sugars that feed the host polyp. Coral reproduce by spawning, releasing gametes, or reproductive cells (male and female), into the water, where they unite to form fertilized eggs that develop into larvae, which hatch in the water.

Abundant life

Coral reefs need heat and light to survive. They constantly regenerate: while one part is dying, another is beginning life. The sea, waves, and other marine animals participate in this cycle. Filled with millions of marine organisms, coral reefs provide a safe escape from predators for many fish.

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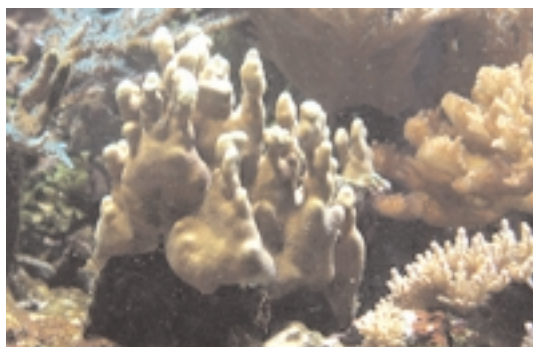
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Hard coral.



Fungia.



Heliopora coerulea.

The inhabitants of coral reefs

Many species of animals, of varying shapes and sizes, inhabit the coral reefs: fish, mollusks, echinoderms, crustaceans, worms, sponges... they all live together. Here is brief tour.

Clown fish take shelter at the first sign of danger among the tentacles of the sea anemone, whose spikes, although poisonous to some species, don't harm it.

Parrot fish grind their food and bits of coral using powerful "beaks" (fused teeth).

Long-nosed butterfly fish use their elongated "beaks" to flush out and eat small animals from the reef cavities.

Tridacna clams are bivalve (shell with two hinged halves) mollusks that can vary in size from a few centimeters to more than a meter across.

Sea slugs, another mollusk species, sometimes feed on coral. They have a flattened "foot sole" for getting around.

Fragile! Handle with care...

Zooxanthellae, which live in coral tissue, have a brownish-gold pigmentation. The bright colors seen in some living coral (pink, green, blue...) come from other pigments developed by the zooxanthellae or polyps. The coral skeleton is usually white. Under stress (abnormally high ocean temperatures, pollution, etc.), some coral expel their zooxanthellae, even though they are indispensable to their survival. This leads to bleaching of the coral. If it goes on long enough, the transformation can be irreversible, resulting in the death of the coral or the partial or total death of the reef. In these cases, other algae species or urchins take its place, contributing to an imbalance in the reef ecosystem.

Endangered coral reefs

The creatures that inhabit coral reefs are vulnerable. All of them are now endangered due to pollution and the sometimes destructive actions of humans. In some places, local populations have no material other than coral with which to build their houses. Tourism (building of hotels, selling of coral as souvenirs, etc.) is also threatening the coral reefs.

Activity

Draw an Indian Ocean orange gorgonian coral.

Write captions explaining the functions of its different parts.