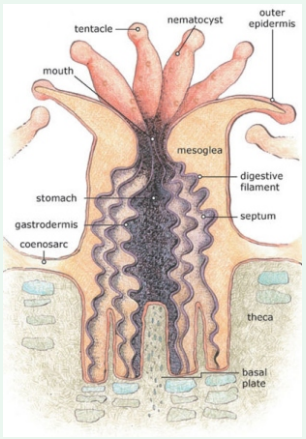
Hands On Learning
with Reading Museum Service

CORAL Z16



Coral is the common name for a number of tiny marine animals closely related to sea anemones and jellyfish. What appears at first sight to be a single organism is, in fact, a colony formed of thousands of individuals, each of which is only a few millimeters in diameter. A diagram of a typical, but much magnified, individual can be seen on the right. The individual coral animals which make up the colony are usually referred to as a polyps. Each polyp looks like a tiny sea anemone. The colony functions as a single organism, gradually getting bigger as each generation grows on the skeletal remains of previous generations, forming a structure that has a shape characteristic of the species.



Sea anemones can catch fish and other prey items. Corals, being much smaller, catch plankton and algae. Algae are tiny plants, depending on sunlight so corals which need algae are found in shallow sun-lit seas, along with their food-source. These are the corals that most people think of when they imagine a coral reef - colourful colonies in blue water. Marine biologists, however, are becoming increasingly aware of the richness and variety of cold-water corals, which tend to rely on animal plankton. The map on the right shows where such corals can be found, including in the dark freezing waters north of Norway. In the UK the commonest species of coral is *Lophelia pertusa,* which has been found in small colonies from north of the Shetlands, to the far west of Rockall.



The samples in this box are from tropical waters and consist of the calcium carbonate core or skeleton which is built up by generation after generation of coral polyps. The polyps would have formed a skin on these hard cores. In themselves corals should be white, but the algae which they contain are filled with various pigments to absorb sunlight and they give the host species its colour. The photograph to the right illustrates some of the vibrant colours of living corals.

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Pocillopora species



There are many species of *Pocillopora*. They are among the most widely distributed corals in the Pacific. They are found in the Eastern Pacific, throughout the central and Indo-Pacific, Australia, Japan, the Indian Ocean, the east African coast, and the Red Sea. It has been estimated that *Pocillopora* are the largest contributor to reef structure in the world simply by virtue of their incredible geographic and habitat range. This example may be *Pocillopora damicornis* which, along with *Pocillopora verrucosa*, is widely grown in aquarium tanks. It has a branching form characteristic of *Pocillopora damicornis*. This species has a greater variety of form than any other coral. Differences in latitude, light, and water movement can affect this species' colour and growth patterns. A photograph of *Pocillopora damicornis* can be seen on the right. *Pocillopora* species are sometimes referred to as bird's nest, branch, brush, cluster, finger or lace corals - most of these names reflecting their branching shape.



Diploria species



These species are often called brain corals as they are usually spherical and have grooves and channels on their surfaces that look like the folds of the human brain. While staghorn corals (which are also included in this box) grow rapidly to gain new territory, slow-growing brain corals rely on brawn! They hold their ground by being solid and strong enough to withstand the storms that pound more delicate corals to rubble. Brain corals feed mainly at night, by extending tentacles armed with stinging darts called nematocysts. During the day their tentacles are retracted. They are among the toughest of all corals and can tolerate several hours of exposure to the tropical sun at low tide.



Right: A species of brain coral, Diploria labyrinthiformis.

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Fungiidae species



Fungiidae species are often referred to as mushroom corals, because they look like an upturned mushroom with its gills exposed. Another species in this group is also included in this box. The exact identification of this example is not known, but it may be *Fungia scutaria* or *Herpolitha limax*. Photographs of both these species can be seen on the right.

The most obvious characteristic of the *Fungiidae* group is that they are solitary corals that can grow on sandy bottoms or rubble, thereby avoiding the need to compete with other corals and algae for growing space. They all form slightly dome-shaped saucers and most are found living in fairly shallow water. They have polyps that normally remain retracted during the day, emerging to feed at night. The polyps are usually so retracted during the day that the coral may appear to be a dead skeleton on the sea bed.



Fungia scutaria (below)
Herpolitha limax (above)



Among the many unique attributes of this group is their remarkable ability for limited movement. Through the inflation and deflation of their tissues they can move across the sea floor, sometimes as far as 30 cm a day! They move in order to reach the light.

Fungiidae species

Another mushroom coral. The photograph below shows a similar coral with the polyps extended to feed.





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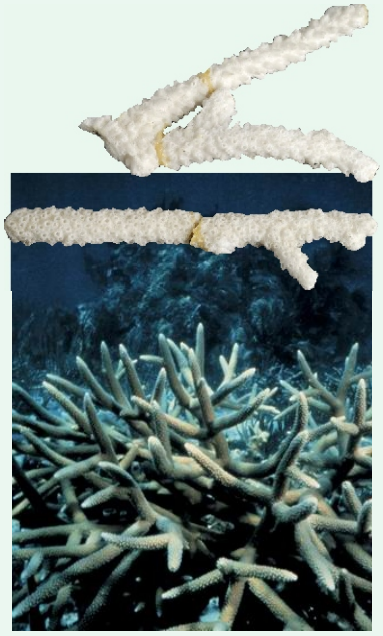
Blue coral, *Heliopora coerulea*



Blue coral colonies can be tree-like, plate-like or column-like. The skeleton is dense and blue in colour which is caused by the deposition of iron salts in the calcium carbonate. Living colonies are brown, or greenish-grey with minute transparent polyps. This species is found in the Indo-Pacific region and can be dominant in the shallower parts of tropical reefs. It is often collected for the live aquarium trade and is also made into jewellery and ornaments. This has led to concern about the survival of the species in many areas.

Staghorn coral, *Acropora cervicornis*



Staghorn coral is a branching coral with cylindrical stems ranging from a few centimetres to over two metres in length and height. This coral has the fastest growth rate of all known western Atlantic corals, with branches increasing in length by 10-20 cm a year. It is one of the three most important Caribbean corals in terms of its contribution to reef growth and as a fish habitat.

Staghorn coral is designed to be broken. New colonies form when branches break off and reattach themselves to the sea floor. This habit allows population recovery after storms. Since 1980, populations have collapsed as a result of disease, with losses compounded locally by hurricanes, increased predation, bleaching (caused by rising water temperatures) and other factors. The population has declined by up to 98% throughout the range, and localised extinctions have occurred.

Above: Staghorn coral off Florida.

Unknown species



This specimen has not been identified.