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Zones of Coral Reef

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Coral reef ecosystems contain distinct zones that host different kinds of territories. Generally, three major zones are honored the fore reef, reef crest, and the reverse reef (constantly appertained to as the reef lagoon). The three zones are physically and ecologically connected. Reef life and oceanic processes produce openings for the exchange of seawater, sediments, nutrients and marine life. Utmost coral reefs live in waters lower than 50 m deep. Some inhabit tropical international shelves where cool, nutrient-rich upwelling doesn't do, similar as the Great Hedge Reef. Others are plant in the deep ocean girding islets or as cays, similar as in the Maldives. The reefs girding islets form when islets subside into the ocean and cays form when an islet subsides below the face of the ocean.

Alternately, Moyle and Cech distinguish six zones, though utmost reefs retain only some of the zones. Water in the reef face zone is frequently agitated. This illustration represents a reef on a international shelf. The water swells at the left trip over the off-reef bottom until they encounter the reef pitch or fore reef. Also the swells pass over the shallow reef crest. When a surge enters shallow water it shallows, that is, it slows down and the surge height increases [1].

Sometimes called rainforests of the sea, shallow coral reefs form some of Earth's most diverse ecosystems. They occupy less than 0.1% of the world's ocean area, about half the area of France, yet they provide a home for at least 25% of all marine species, including fish, mollusks, worms, crustaceans, echinoderms, sponges, tunicates and other cnidarians. Coral reefs flourish in ocean waters that provide few nutrients. They are most commonly found at shallow depths in tropical waters, but deep water and cold water coral reefs exist on smaller scales in other areas [2].

Coral reefs have declined by 50% since 1950, partly because they are sensitive to water conditions. They are under threat from excess nutrients (nitrogen and phosphorus), rising ocean heat content and acidification, overfishing (e.g., from blast fishing, cyanide fishing, spearfishing on scuba), sunscreen use, and harmful land-use practices, including runoff and seeps (e.g., from injection wells and cesspools) [3].

Coral reefs deliver ecosystem services for tourism, fisheries and shoreline protection. The annual global economic value of coral reefs has been estimated at anywhere from US $ 30-375 billion (1997 and 2003 estimates) to US $ 2.7 trillion (a 2020 estimate) to US $ 9.9 trillion (a 2014 estimate) [4].

The reef face is the shallowest part of the reef. It's subject to swell and runs. When swells pass over shallow areas, they shoal, as shown in the conterminous illustration. This means the water is frequently agitated. These are the precise condition under which corals flourish. The light is sufficient for photosynthesis by the symbiotic *zooxanthellae*, and agitated water brings plankton to feed the coral [5].

The off-reef bottom is the shallow ocean bottom girding a reef. This zone occurs next to reefs on international shelves. Reefs around tropical islets and cays drop suddenly to great depths and don't have such a bottom. Generally flaxen, the bottom frequently supports sea grass meadows which are important rustling areas for reef fish. The reef drop-off is, for its first 50 m, niche for reef fish who find sanctum on the precipice face and plankton in the water hard. The drop-off zone applies substantially to the reefs girding oceanic islets and cays.

The reef face is the zone above the reef bottom or the reef drop-off. This zone is frequently the reef's most different area. Coral and calcareous algae give complex territories and areas that offer protection, similar as cracks and crannies. Pets and epiphytic algae give important of the food for other organisms. A common point on this forereef zone is spur and groove conformations that serve to transport deposition downslope [6].

The reef flat is the flaxen-bottomed flat, which can be behind the main reef, containing gobbets of coral. This zone may rim a lagoon and serve as a defensive area, or it may lie between the reef and the reinforcement, and in this case is a flat, rocky area. Fish tend to prefer it when it's present. The reef lagoon is an entirely enclosed region, which creates an area less affected by surge action and frequently contains small reef patches [7, 8].

Still, the geomorphology of coral reefs is constantly changing. Each reef is made up of irregular patches of algae, sessile pets, and bare gemstone and beach. The size, shape and relative cornucopia of these patches change from time to time in response to the colorful factors that favor one type of patch over another. Growing coral, for illustration, produces constant change in the fine structure of reefs. On a larger scale, tropical storms may knock out large sections of reef and beget boulders on flaxen areas to move [9, 10].

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