

Unit 5

Coral Reefs

- Coral reefs are built by and made up of thousands of tiny animals—**coral “polyps”**—that are related to **anemones and jellyfish**.
- Polyps are **shallow water organisms** which have a soft body covered by a **calcareous skeleton**. The polyps extract calcium salts from sea water to form these hard skeletons.
- The polyps live in colonies fastened to the rocky sea floor.
- The tubular skeletons grow upwards and outwards as a cemented calcareous rocky mass, collectively called **corals**.
- When the coral polyps die, they shed their skeleton [coral] on which new polyps grow.
- The cycle is repeated for over millions of years leading to accumulation of layers of corals [shallow rock created by these depositions is called **reef**].
- These layers at different stages give rise to various marine landforms. One such important landform is called **coral reef**.
- Coral reefs over a period of time transform or evolve into **coral islands (Lakshadweep)**.
- The corals occur in different forms and colours, depending upon the **nature of salts** or constituents they are made of.
- Small marine plants (**algae**) also deposit calcium carbonate contributing to coral growth.

Coral reef features

Fringing reef, barrier reef and atoll (coral islands are formed on atolls) are the most important relief features.

Fringing reefs

- Fringing reefs are reefs that **grow directly from a shore**. They are located very **close** to land, and often form a **shallow lagoon** between the beach and the main body of the reef.
- A fringing reef runs as a narrow belt [1-2 km wide]. This type of reef grows from the deep sea bottom with the seaward side sloping steeply into the deep sea. Coral polyps do not extend outwards because of **sudden and large increase in depth**.

- The fringing reef is by far the **most common** of the three major types of coral reefs, with numerous examples in all major regions of coral reef development.
- Fringing reefs can be seen at the New Hebrides Society islands off Australia and off the southern coast of Florida.

Barrier reefs

- Barrier reefs are **extensive linear reef** complexes that **parallel a shore**, and are separated from it by **lagoon**.
- This is the **largest (in size, not distribution)** of the three reefs, runs for hundreds of kilometres and is several kilometres wide. It extends as a broken, irregular ring around the coast or an island, running almost parallel to it.
- Barrier reefs are **far less common** than fringing reefs or atolls, although examples can be found in the tropical Atlantic as well as the Pacific.
- The **1200-mile long Great Barrier Reef** off the NE coast of Australia is the world's largest example of this reef type.
- The GBR is not actually a single reef as the name implies, but rather a very large complex consisting of **many reefs**.

Atoll

- An atoll is a roughly circular (annular) oceanic reef system surrounding a large (and **often deep**) **central lagoon**.
- The lagoon has a depth 80-150 metres and may be joined with sea water through a number of channels cutting across the reef.
- Atolls are located at **great distances** from deep sea platforms, where the submarine features may help in formation of atolls, such as a **submerged island or a volcanic cone** which may reach a level suitable for coral growth.

National Institute of Ocean Technology

The National Institute of Ocean Technology (NIOT) was established in November 1993 as an autonomous society under the Ministry of Earth Sciences, Government of India. NIOT is

managed by a Governing Council and the Director is the head of the Institute. The institute is based in Chennai.

Major aim of starting NIOT under the Ministry of Earth Sciences, is to develop reliable indigenous technologies to solve the various engineering problems associated with harvesting of non-living and living resources in the Indian **Exclusive Economic Zone** (EEZ), which is about two-thirds of the land area of India.

Mission Statement

- To develop world class technologies and their applications for sustainable utilization of ocean resources.
- To provide competitive, value added technical services and solutions to organizations working in the oceans.
- To develop a knowledge base and institutional capabilities in India for management of ocean resources and environment.