

CORAL REEFS - An Introduction

A PROJECT OCEANOGRAPHY PRODUCTION

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Coral reefs are highly complex and diverse biological communities. "Nowhere else in the seas is there such a bewildering range of living things."* Tropical coral reefs are found principally between the tropics of Cancer and Capricorn. The estimated global area of tropical coral reefs is 68 million square miles. The enclosed map shows the global distribution of coral reefs. Corals have existed in their present form for approximately 180 million years (The Triassic - Jurassic Period). They have added billions of tons of limestone to the sea floor.

What is a coral reef? A coral reef is many things to many different people. To a fisherman, it is an ideal place to catch a big fish, to a tourist, it may be a delightful place to spend a day snorkeling and diving looking at the beautiful seascapes and unusual plants and animals. To a scientist, a coral reef is a treasure trove of information and a stimulating location to observe ocean action: biological, chemical, geological, and physical processes. To a ship captain a coral reef is a hazard to navigation, a place to avoid. To a marine archeologist, coral reefs are places to collect information on civilization and history from old ship wrecks. To a native on an island, a coral reef provides building materials (limestone) and variety of foods. To a medical researcher, coral reefs offer new breakthroughs in developing drugs for cancer, AIDS, and heart disease. To the parrot fish, the reef is a place to find food and sleep at night. To a lobster and a damselfish, the reef is a place to find refuge. So coral reefs can be many things.

A working definition we offer is that a coral reef is a ridge limestone structure situated on the sea floor. The major reef builders are corals and algae. The skeletons of living and dead corals are interlocked and cemented together by coralline algae. Overtime, rubble and sand containing the shells of many other plants and animals become trapped between the skeletons adding to the reef mass. The three dimensional structure provides a variety of refuge areas that attracts fish, lobster, crabs, snails, and a multitude of mobile and attached plants and animals. Coral reefs are frequently compared to tropical rain forests because of the complexity of the structure and the bio-

diversity of life found on them. For example, a researcher once examined a single coral colony and counted 2000 individual invertebrates and fish belonging to 220 species (an example of the high species diversity found on coral reefs).

So what is a coral? **Is it an animal? A plant? A mineral?** In the 16th and 17th centuries, corals were a mystery, they were called plants animals (Phlantzentier), animal plants (zoophytes), and rock plants (Lithophytes). Corals are a complex of animal tissues with microscopic algae living within the animal tissues. Upwards of a million microscopic algae termed zooxanthellae are found in a square centimeter of coral tissue. The algae photosynthesize providing food for the coral animals. The color seen in coral tissues is generated by the microscopic algae. The animal tissues process calcium and carbon dioxide to construct the limestone skeletons. So, we have animal, plant, and mineral mixed together in a complex.

Corals are very simple organisms, one step above the sponges, and a step below the worms. They are organized as colonies and colonies are composed of individual polyps. A polyp consists of a body sack with a set of tentacles which surround the mouth. The tentacles contain stinging cells for defense and preying on animals we call plankton that float by in the water. The enclosed photograph shows coral polyps in a star coral colony.

*A statement made in 1956 by a famous coral reef scientist, John Wells.

In the Fall, it is our goal to offer a series of presentations on coral reefs that will educate and stimulate the students interest in coral reefs and the marine environment. This will coincide with the, "Year of the Reef", international awareness program. The proposed series will include presentations on the following:

- Coral biology - ecology.

- Coral Reef Research: who, how, what, where, why.

- Why are coral reefs important? Why are they at risk? How are we protecting them?

- Who lives on a coral reef and how do they make a living?

- Coral Reef Geology - how corals build reefs.

- Repairing coral reefs - reef doctors and carpenters.

To assist you in learning more about the coral reefs the following resources are suggested.

Books, articles, videos, and CD ROMs:

The Greenpeace Book of Coral Reefs, 1992.

Camaron Books and Greenpeace Publications

London, 160 pp.

Reef Coral Identification, 1992.
New World Publications, Inc.
Jacksonville, 239 pp.

Coral Reefs pages 574 to 616 in Florida Ecosystems.
University of Central Florida Press.
Orlando, 765 pp.

The Monroe County Environmental Story, 1991.
Gemini Printing Co.
Marathon, FL, 370 pp.

Coral Reefs of the World, 1988.
International Union for the Conservation of Nature and the U.N. Environmental
Program, Cambridge, UK.
 Vol I. Atlantic, 373 pp.
 Vol. II. Indian Ocean, Red Sea, and Gulf, 389 pp.
 Vol. III. Central and Western Pacific, 329 pp.

Reefs at Risk: coral reefs, human use and global climate change, 199?
United Nations Environmental Program and International Union for the Conservation
of Nature. Paris and Gland Switzerland, 24 pp.

Coral Kingdom CD-ROM: WWW.cyberlearn.com

Belize Barrier Reef Video: EarthFound@alo.com

Organizations that can provide information

Florida Institute of Oceanography
830 First Street South
St. Petersburg, FL 33701

Florida Marine Research Institute
100 Eight Avenue Southeast
St. Petersburg, FL 33701

US Geological Survey
600 Fourth Avenue South
St. Petersburg, FL 33701

University of South Florida

Department of Marine Science
140 Seventh Avenue South
St. Petersburg, FL 33701
WWW.MARINE.USF.EDU

Florida Keys National Marine Sanctuary
PO Box 500368
Marathon, FL 33050
WWW.FKNMS.NOS.NOAA.GOV

Project Reef Keeper
16345 West Dixie Highway
Miami, FL 33160

The International Coral Reef Initiative
ICRI Director
OES/ETC Room 4325
Department of State
Washington, DC 20520
IUCN.ORG./THEMES/COAST_AND_MARINE.HTML

International Year of the Reef
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