KIDS CORNER

CORAL REEFS

This document aims to teach you about coral reefs, which are the building blocks for a healthy marine ecosystem.

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What is Coral?

Corals are invertebrate marine animals that belong to a taxonomic category called “Cnidaria”, which also includes jellyfish and sea anemones. Despite looking like plants, corals are classified as animals, as they do not make their own food. Corals are made up of tiny creatures called polyps and are generally classified as either "hard coral" or "soft coral".

Coral organisms can live on their own but are renowned for constructing spectacular communities, known as reefs. Reefs begin when a polyp attaches itself to a rock on the sea floor, then divides into thousands of clones. The polyp skeletons (or, calicles) connect to one another, creating a colony that acts as a single organism. As these colonies grow, they join with other colonies and become reefs. Some of the coral reefs on the planet today began growing over 500 million years ago.

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What is a Coral Reef?

Coral reefs are large underwater structures, which are made up of many coral colonies that are formed when polyps live together. Each polyp within a colony secretes a skeleton of calcium carbonate beneath it and, over long periods of time, the skeletons of these coral colonies slowly build the structure of a coral reef. The species that are tasked with building coral reefs are hard coral and are known as “hermatypic”. This is because they extract calcium carbonate from seawater creating a hard, durable exoskeleton that protects their soft, sac-like bodies.

Often called "rainforests of the sea”, coral reefs form some of the most diverse ecosystems on Earth and are found all over the world’s oceans, commonly inhabiting tropical waters. The largest coral reef in the world is the Great Barrier Reef in Australia, which comprises approximately 3000 individual reef systems and covers an area of more than 344,000 km2.

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Types of Coral Reefs

Scientists generally divide coral reefs into three major classes:

Fringing reef - Fringing reefs are the most common type of reef and grow seaward directly from the shore. They form borders along the shoreline and surrounding islands.

Barrier reef - Barrier reefs are similar to fringing reefs in that they also border a shoreline; however, instead of growing directly out from the shore, they are separated from land by an expanse of water. This creates a lagoon of open, often deep water between the reef and the shore.

Atoll - An atoll is a ring of coral surrounding a lagoon of water. It begins as a fringe reef around a volcanic island, however, as the reef continues to grow upward, the island erodes and sinks below sea level until an atoll is left.

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Importance of Coral Reefs

Approximately 25% of all marine species depend on coral reefs for food and shelter. Coral reefs protect coastlines from the damaging effects of wave action and tropical storms, provide habitats for many marine organisms and are the source of nitrogen and other essential nutrients for marine food chains.

In addition to this, many medicines are now being developed from coral reef animals and plants as possible cures for cancer, arthritis, human bacterial infections, viruses, and other diseases.

It is estimated that the total area of the world's coral reefs amounts to less than 1% of the entire marine environment, however, scientists estimate that there are between one and eight million undiscovered species living within coral reef systems.

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Threats to Coral Reefs

Coral reefs are severely threatened by a number of factors, including overfishing, human interference, chemical pollution, and, most significantly, climate change.

In recent years, scientists have revealed the devastating impact that climate change is having on coral reefs, most notably, Australia's famous Great Barrier Reef. As sea temperatures rise and oceans become more acidic, extensive coral bleaching occurs.

The Great Barrier Reef has experienced numerous mass bleaching events since 1979, triggered by unusually high sea surface temperatures. These bleaching events kill coral on an unprecedented scale.

These events will have horrific consequences for many reef species and habitats, as well as entire ecosystems and industries that depend on the Reef.

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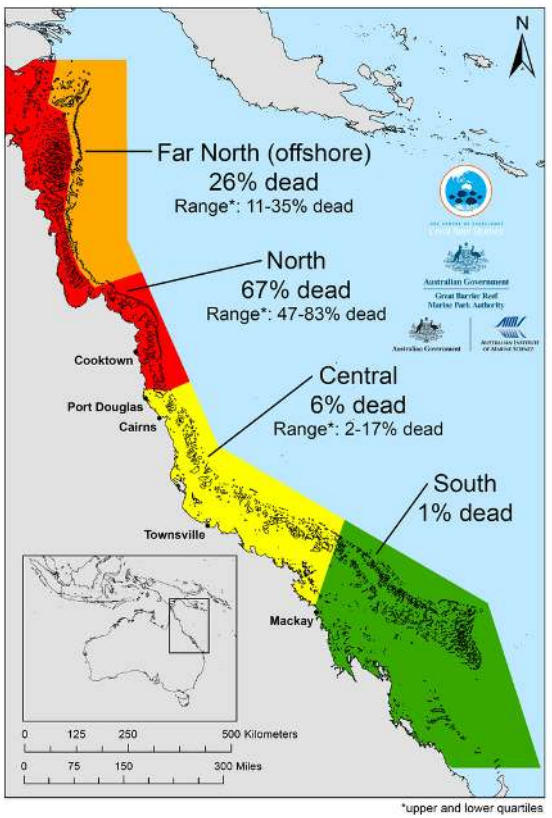
Coral Bleaching in the Great Barrier Reef

Australia's Great Barrier Reef is the world's largest and most complex reef system, and one of the most biologically diverse regions in the world. The Reef is home to 600 types of soft and hard corals, more than 100 species of jellyfish, 3000 varieties of molluscs, 500 species of worms, 1625 types of fish, 133 varieties of sharks and rays, and more than 30 species of whales and dolphins.

In 2016 and 2017 the Great Barrier Reef was affected by the worst coral bleaching events on record.

As of 2016, the Great Barrier Reef is estimated to have a total economic, social and icon asset value of over $56 billion, supporting over 64,000 jobs.



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Australian Curriculum Mapping

GRADE 5 SCIENCE (ACSSU043): Living things have structural features and adaptations that help them to survive in their environment.

GRADE 6 SCIENCE (ACSSU094): The growth and survival of living things are affected by the physical conditions of their environment.

YEAR 7 SCIENCE (ACSSU112): Interactions between organisms, including the effects of human activities can be represented by food chains and food webs.

YEAR 7 SCIENCE (ACSHE223): Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures.

YEAR 9 SCIENCE (ACSSU176): Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems.

YEAR 10: SCIENCE (ACHGK070): Human-induced environmental changes that challenge sustainability.

SUSTAINABILITY (01.2): All life forms, including human life, are connected through ecosystems on which they depend for their well being and survival.

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