CoralWatch in the classroom

Learning objectives

At the end of this session, students will be able to:

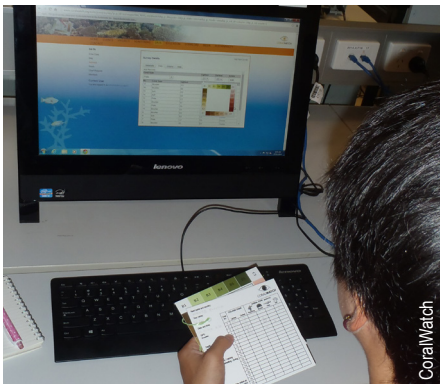
- Describe simple biology of corals.
- Identify different growth forms of corals.
- Understand how to use the Coral Health Chart.
- Describe the different coral types.
- Enter virtual data in Excel and analyse the results.

Key learning points

- Corals are animals, related to jellyfish.
- Corals build calcium carbonate skeletons that create reef structures.
- Corals need energy to build reefs. Corals obtain most of their energy via small symbiotic algae that live inside the coral tissue. These algae generate energy via photosynthesis.
- Because corals require sunlight for energy, they are mainly found in shallow tropical and subtropical waters.
- Most corals live within a narrow temperature range. Some corals have adapted to different temperatures. Corals in the Kimberley (northwestern Australia) have adapted to higher temperatures, whereas corals in Moreton Bay (Queensland) have adapted to lower temperatures.
- The Coral Health Chart is a simple, non-invasive tool that can be used for 'reef walking', snorkelling or diving.
- The colour chart standardises changes in coral colour, providing a simple way to quantify bleaching and monitor coral health.
- The colour charts are based on the actual colours of bleached and healthy corals. Each colour square corresponds to a concentration of symbionts contained in the coral tissue. This is directly linked to the health of the coral.
- The Coral Health Chart can be used in different survey methods, including random and transect surveys, and monitoring easy to identify corals.

Soft coral.

Practice monitoring using the virtual reef.



Entering CoralWatch data in the global database.

Background

Corals – From polyp to reef

Corals are living animals and are part of the same invertebrate phylum as jellyfish, known as Cnidaria. Reef-building corals are part of the class Anthozoa, and order Scleractinia.

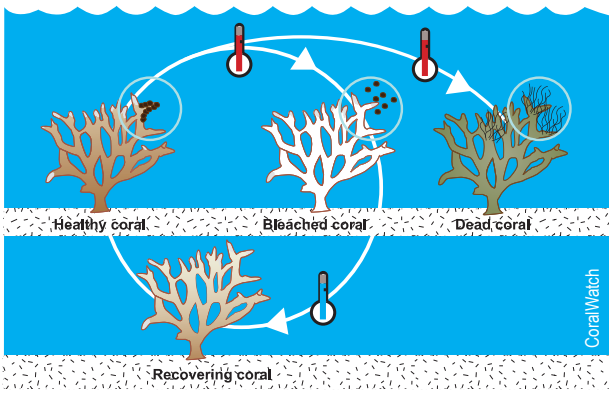
A single animal is called a coral polyp. Polyps can range in size from less than 1mm to more than 15cm. Most corals form colonies, where thousands of polyps share the same physical skeleton. Some corals are solitary and live as a single polyp. Corals absorb calcium and carbonate molecules from the seawater to construct a skeleton. Tiny algae, called zooxanthellae (or symbiotic algae), live within the coral tissue. Zooxanthellae provide the coral with colour and the energy they need to grow and receive a safe home in return.

Using the sun for energy

Zooxanthellae are located within the inner cells of the coral tissue. Zooxanthellae use energy from sunlight to convert the coral's waste products into energy that the coral needs to grow. This process is called photosynthesis. This is why healthy corals need sunlight and clean water. Most reef-building corals grow most effectively when the ocean temperature is between 18°C and 29°C.

Coral bleaching

In a symbiotic relationship, the organisms live together with one another to the benefit of both. This relationship has happened over such a long period that many corals now cannot survive for very long without their algal partners. When coral becomes stressed from high sediment loads or high water temperatures, it can kick out the algae living inside. This process is known as coral bleaching. Bleaching is the term used because the algae are often what give the coral their brown or green appearance and when gone the white skeleton is visible underneath. If the corals cannot recover and get the algae back into their cells in time, they can die.



Coral growth forms

There are more than 800 known species of hard corals. The skeleton of each species is unique. Corals come in many different shapes and sizes - these are called coral growth forms. Branching corals are fast-growing and provide a home for many different types of reef fish. Large boulder corals grow more slowly and some may be more than 100 years old.

What is CoralWatch?

CoralWatch is a not-for-profit organisation, based at The University of Queensland in Brisbane, Australia. CoralWatch integrates global monitoring of coral bleaching with education about coral reef conservation. In 2002, CoralWatch developed and validated the Coral Health Chart (Siebeck et al. 2006, Monitoring coral bleaching using a colour reference card. Coral Reefs 25:453-460). The chart standardises changes in coral colour, providing a simple way to quantify bleaching and monitor coral health. The Coral Health Chart is used by dive centres, scientists, school and conservation groups, management and tourists. Anyone can contribute to our global database! Collecting data is easy - you just compare colours of corals with colours on the chart and record matching codes. You don't need to wait until coral bleaching occurs - monitoring healthy reefs is also important. You can monitor any reef, any time, while diving, snorkelling or reef walking. Get involved in CoralWatch to monitor and protect reefs around the world.

CoralWatch promotes healthy reefs by

- Raising public awareness about importance of reefs, conservation, sustainability, and climate change.
- Developing and distributing education materials for diverse audiences.
- Engaging the global community in monitoring coral health and coral bleaching.

Why we need your help?

Very little is known about coral bleaching trends on a global scale. Monitoring is most effective when conducted regularly. But, there are not enough scientists to monitor all the world's reefs. This is where you can help! If many people around the world, like you, contribute to our global database, we will be able to answer questions about patterns of coral bleaching, severity of coral bleaching, and patterns of recovery. All data is publicly available and forms a great resource for student projects.

Find out more visit **WWW.CORALWATCH.ORG.**