



Teachers Mini-Module Lesson Plan

How Do Scientists Grow Coral? - Outplanting Coral

Mini-Module Summary

This five-minute lesson introduces students to CCMI's coral restoration programme and allows them to "dive" into one of the Little Cayman coral nurseries. In this mini-module, the CCMI educator, Katie, will give a brief history as to why reef restoration is so important to the marine environment, what CCMI is doing to facilitate restoration efforts, and how the students can get involved and help with restoration. Using this video, students observe the CCMI educator demonstrating how scientists outplant the corals growing in an underwater nursery onto the coral reef. Using their matching skills, students will be asked to outplant some corals and map their location on their activity sheet, using the same method as our scientists! Students should be encouraged to contact their local coral nursery or a local plant nursery and volunteer their time as a follow up to this lesson.

Curriculum Aim - Years 4 and 5

Learning objectives

- Define a coral and a coral nursery
- Explain some of the threat's corals are facing in our oceans
- Summarize the scientific method (steps) scientists use to grow and measure coral
- Complete the Total Linear Extension of the "coral" using mathematics skills (Activity Sheet)
- Organize a volunteer effort to assist a local coral nursery or a local plant nursery

The Cayman Islands - Science National Curriculum Alignment

- Observe similarities and differences among animals and among plants (Year 4).
- Find out about other animals, including how they grow, feed, move and use their senses (Year 4).
- Investigate a local habitat, including the relationship between the animals and plants found there, and develop skills in classifying animals and plants by observing external features, *for example, classify minibeasts by observing the number of legs and note the conditions in which they were found* (Year 4).
- Investigate the conditions necessary for the growth of familiar plants including light, heat and water, *for example, place plants in different environments, varying the light, water and temperature and observe the results* (year 5).

Necessary materials

Internet connection, YouTube.com classroom account, computer, projector, speakers, note paper, pencils or pens, glue stick, scissors, and activity sheet (one per student)

Useful resources

- www.reefresearch.org/reefs-go-live
- www.projectaware.org
- www.doe.ky
- www.education.gov.ky/education/curriculum
- www.caymanecodivers.com/cayman-coral-nursery-program/



Teachers Mini-Module Glossary

How Do Scientists Grow Coral? - Outplanting Coral

Coral bleaching - process of corals appearing white, due to the loss of the algae living inside of them

Coral nursery - place where scientists grow corals underwater on specialized structures with the goal of replenishing depleted coral reefs from what is grown in these places

Endangered - in great danger or at risk of becoming extinct

Fragmenting - method of coral reproduction where pieces of coral are broken off from the parent coral, with each piece growing into a new, individual coral

Genotype - the specific DNA sequence within the genetic makeup of a cell that determines an individual organism or a group of organisms

Hermatypic coral - stony coral; a coral that helps build the reef and becomes limestone over time

Macroalgae - large algae with thick blades, that often live attached to a substrate in dense beds

Outplanting - transplanting of corals from a nursery onto a reef or other structure in the ocean

Photosynthesis - process by which green plants convert carbon dioxide and water into organic chemicals using light energy from the sun with oxygen released as a by-product

Reef health - a simple observation of the status of coral reefs using key indicators, scientific measurements, and the presence or absence of certain organisms



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REEFS GO LIVE

Teachers Mini-Module Vocabulary Assessment

How Do Scientists Grow Coral? - Outplanting Coral

Below is a list of 10 vocabulary terms used in the Reefs Go Live Mini-Module “How Do Scientists Grow Coral? - Outplanting Coral”. Show the CCMI Educator that you understand the concepts demonstrated in this mini-module by matching the definition on the right with the correct term on the left. Thanks for your help and good luck!

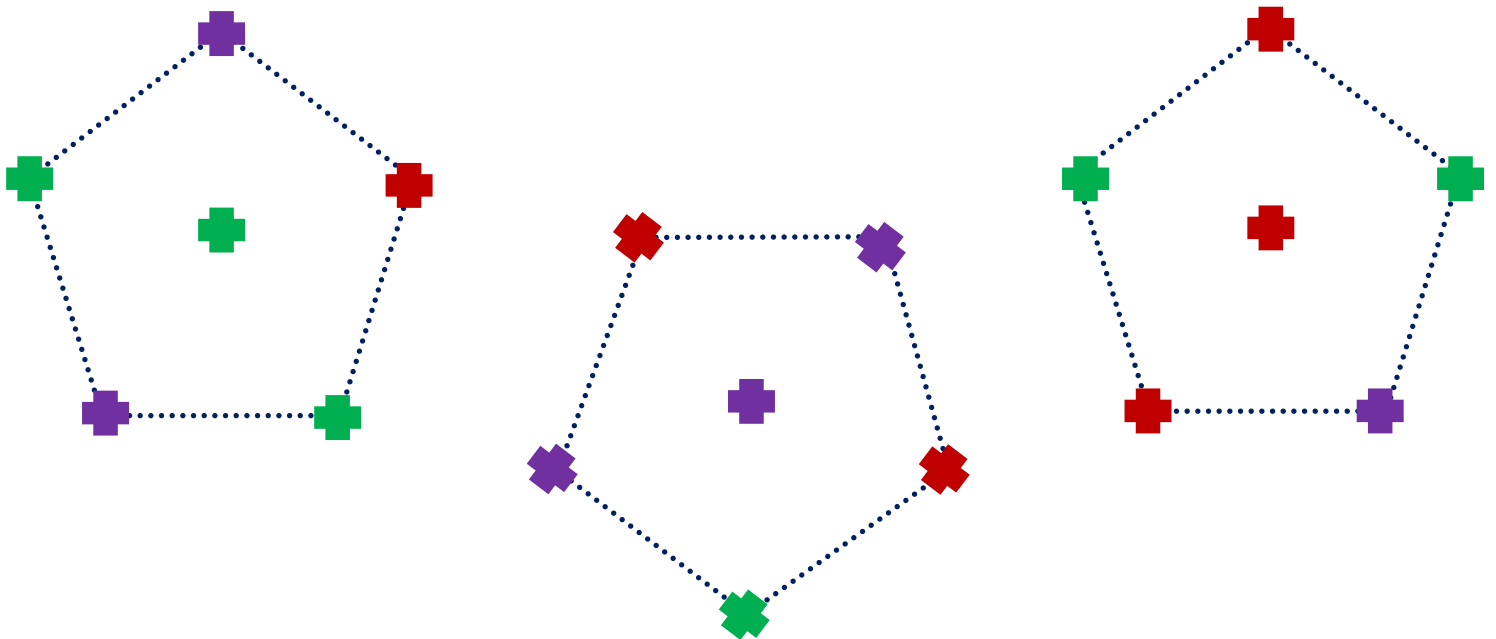
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|----------------------------|--|
| 1. Fragmenting: _____ | a) process by which green plants convert carbon dioxide and water into organic chemicals using the light energy from the sun, with oxygen released as a by-product |
| 2. Coral nursery: _____ | b) large algae with thick blades, that often live attached to a substrate in dense beds |
| 3. Macroalgae: _____ | c) the specific DNA sequence within the genetic makeup of a cell that determines an individual organism or a group of organisms |
| 4. Endangered: _____ | d) a simple observation of the status of coral reefs using key indicators, scientific measurements, and the presence or absence of certain organisms |
| 5. Hermatypic coral: _____ | e) stony coral; a coral that helps build the reef and becomes limestone over time |
| 6. Coral bleaching: _____ | f) place where scientists grow corals underwater on specialized structures with the goal of replenishing depleted coral reefs from what is grown in these places |
| 7. Outplanting: _____ | g) transplanting of corals from a nursery onto a reef or other structure in the ocean |
| 8. Photosynthesis: _____ | h) in great danger or at risk of becoming extinct |
| 9. Genotype: _____ | i) process of corals appearing white due to the loss of the algae living inside of them |
| 10. Reef health: _____ | j) method of coral reproduction where pieces of coral are broken off from the parent coral, with each piece growing into a new, individual coral |



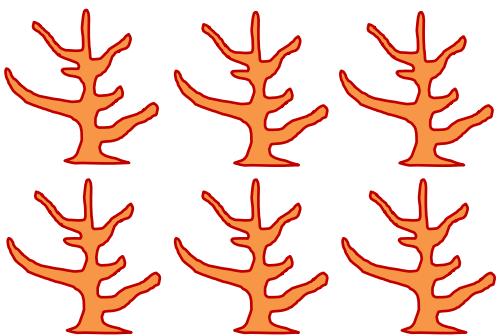
Teachers Mini-Module Activity Sheet

How Do Scientists Grow Coral? - Outplanting Coral

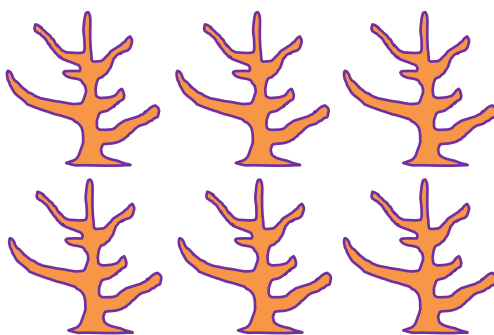
Today, you're the scientist! Help the CCMI educator by outplanting the corals below, as was demonstrated in the Reefs Go Live mini-module. To begin outplanting, first imagine you are a SCUBA diver underwater. Then, cut out the 18 corals at the bottom of the page (all three "genotypes"; Red, Purple, and Green). This simulates fragmenting the coral from the nursery. Using your matching skills, you now need to "outplant" the corals by gluing the genotypes to one of the pentagon "reefs" below in a spot that matches each genotype. For example, the red genotype coral should be placed on a red cross. Once all 18 corals have been successfully "outplanted" into the pentagon "reefs", you have completed this activity. Thanks for your help in making this beautiful healthy reef!



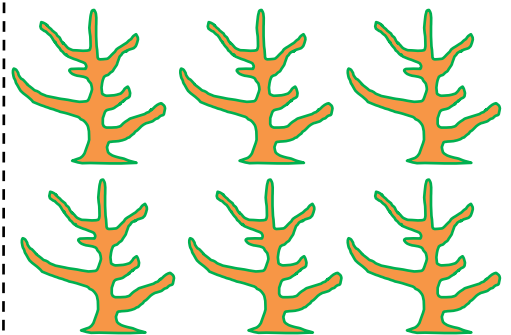
Cut here



Red Genotype



Purple Genotype



Green Genotype