



## Teachers Mini-Module Lesson Plan

### How Do Scientists Grow Coral? - Measuring 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 our marine environment, what CCMI is doing to facilitate restoration efforts, and how students can get involved and help with restoration. Using this video, students observe the CCMI educator demonstrating how scientists measure the corals growing in our underwater nursery. Using mathematics skills, students will measure a "coral" and record its "total linear extension" 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 threats corals are facing in our oceans
- Summarize the scientific method (steps) scientists use to grow and measure coral
- Complete the total linear extension (TLE) 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, and activity sheet (one per student)

#### Useful resources

- [www.reefresearch.org/reefs-go-live](http://www.reefresearch.org/reefs-go-live)
- [www.projectaware.org](http://www.projectaware.org)
- [www.doe.ky](http://www.doe.ky)
- [www.education.gov.ky/education/curriculum](http://www.education.gov.ky/education/curriculum)
- [www.caymanecodivers.com/cayman-coral-nursery-program/](http://www.caymanecodivers.com/cayman-coral-nursery-program/)



## Teachers Mini-Module Glossary

### How Do Scientists Grow Coral? - Measuring Coral

**Climate change** - change in global weather patterns over time, much of which can be attributed to the effects of increased carbon dioxide in the atmosphere from human activities

**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

**Coral reef** - marine structure composed of a layer of living coral atop coral skeletons, minerals, and organic matter

**Endangered** - in great danger or at risk of becoming extinct

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

**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

**Total linear extension (TLE)** - measurement scientists use to determine how much corals grow



## Teachers Mini-Module Vocabulary Assessment

### How Do Scientists Grow Coral? - Measuring Coral

Below is a list of 10 vocabulary terms used in the Reefs Go Live Mini-Module “How Do Scientists Grow Coral? - Measuring 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. Climate change: _____               | a) 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     |
| 2. Coral nursery: _____                | b) marine structure composed of a layer of living coral atop coral skeletons, minerals, and organic matter   |
| 3. Coral reef: _____                   | c) measurement scientists use to determine how much corals grow  |
| 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. Total linear extension (TLE): _____ | i) process of corals appearing white due to the loss of the algae living inside of them  |
| 10. Reef health: _____                 | j) change in global weather patterns over time, much of which can be attributed to the effects of increased carbon dioxide in the atmosphere from human activities |

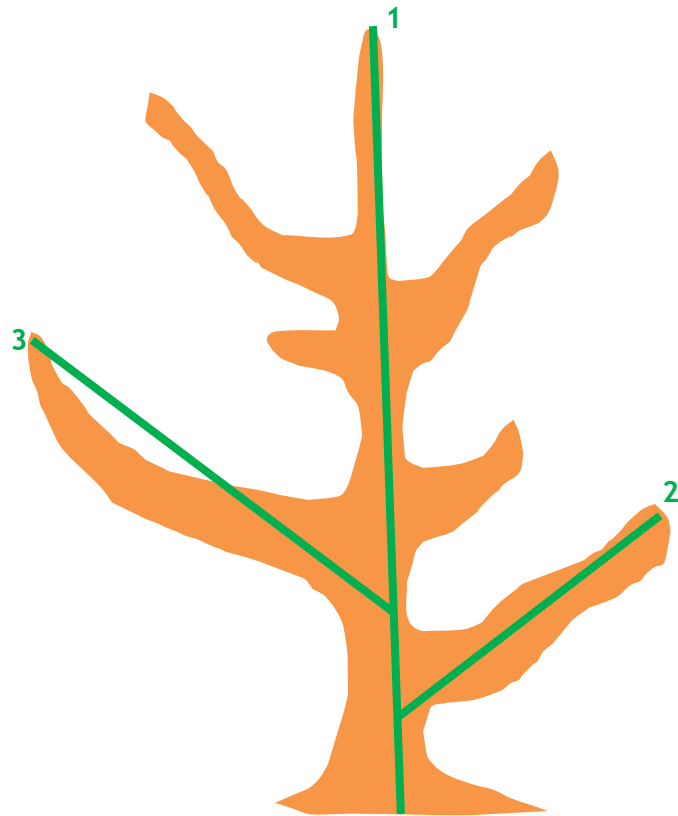


## Teachers Mini-Module Activity Sheet

### How Do Scientists Grow Coral? - Measuring Coral

Today, you're the scientist! Help the CCMI educator by measuring the coral below, as was demonstrated in the Reefs Go Live mini-module. To measure this coral's maximum height, maximum width, and the total linear extension (TLE), start by cutting out the ruler at the bottom of the page. Use the ruler to measure the coral below, as Katie demonstrated in Reefs Go Live (measurements should be taken in centimeters). Record your results in the appropriate box below for each of the green lines. Continue measuring each branch, writing down your results in the appropriate box. Then, using your mathematics skills, calculate the TLE by adding up the measurements of ALL the branches. Once you have calculated the TLE, measure the coral's maximum width (how wide it is) and maximum height (how tall it is), recording your measurements below.

Branch 1:	
Branch 2:	
Branch 3:	
Branch 4:	
Branch 5:	
Branch 6:	
Branch 7:	
TOTAL:	



How many branches are there? \_\_\_\_\_

What is the coral's TLE (cm)? \_\_\_\_\_

What is the max width of this coral (cm)? \_\_\_\_\_

What is the max height (cm)? \_\_\_\_\_

Cut here -----

