



**CCMI**  
REEFS GO LIVE

## Lesson Plan - Why is Everything So Colourful?

### Module Summary

This module takes students on a journey beneath the surface of Little Cayman's coral reefs to explore one of their most striking features: colour. Students will discover that reef colour is not just for beauty; colour plays an essential role in communication, camouflage, species identification, reproduction, and survival.

Participants will investigate how light behaves differently underwater and how this shapes the colours we see on coral reefs. Through live demonstrations and underwater exploration, students will learn how marine organisms adapt their colours to fit different ecological niches and changing light conditions, from shallow reefs to the deep sea.

Using CCMI's 2025 Healthy Reefs data, students will explore how biodiversity supports reef recovery and climate resilience across different reef sites around Little Cayman. Participants engage through the interactive platform by asking questions, taking part in live polls, chatting with the CCMI team, and completing an in-class worksheet (provided). All educational material aligns with Cayman Islands and United Kingdom Science National Curriculums and Ocean Literacy Principles.



**Thursday 20th March 2026; 10 am EST (UTC -5)**



**Duration:** 40-minute broadcast, 1 hour lesson



**Years:** 3, 4, 5 & 6

### Learning Objectives

- Understand how colour helps marine organisms communicate, camouflage, and identify one another
- Understand how light behaves underwater and how depth affects colour
- Identify how animals are adapted to suit different ecological niches
- Understand why biodiversity supports healthier, more resilient reefs
- Interpret how CCMI's Healthy Reefs data reveals differences in reef recovery

## The Cayman Islands and United Kingdom National Science Curriculum

- Recognise that they need light in order to see things and that dark is the absence of light (Year 3)
- Notice that light is reflected from surfaces (Year 3)
- Recognise that living things can be grouped in a variety of ways (Year 4)
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution (Years 5 & 6)
- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences (Year 6)
- Give reasons for classifying plants and animals based on specific characteristics (Year 6)
- Identify scientific evidence that has been used to support or refute ideas or arguments (Years 5 & 6)
- Recognise that environments can change and that this can sometimes pose dangers to living things (Year 4)

### Ocean Literacy Principles

- Ocean Literacy Principle #1: Earth has one big ocean with many features
- Ocean Literacy Principle #3: The ocean is a major influence on weather and climate
- Ocean Literacy Principle #5: The ocean supports a great diversity of life and ecosystems
- Ocean Literacy Principle #6: The ocean and humans are inextricably interconnected
- Ocean Literacy Principle #7: The ocean is largely unexplored

### Description of Live Lesson

This module will take place on a coral reef ecosystem along the coast of Little Cayman in the Cayman Islands, where the CCMI team will guide students through a series of learning objectives. A topside host will communicate in real time with the students who join in as our remote audience/virtual dive buddies and the underwater educator.

Through the broadcast, participants will develop an understanding of how light behaves beneath the ocean's surface and why reefs appear blue from above. Students will explore how different wavelengths of light are absorbed at different depths and how this affects the appearance of marine life.

Participants will be guided through examples of colour adaptations in reef organisms, including camouflage, warning colours, communication, and life-stage colour changes. The hosts will explain how colour helps species occupy different ecological niches

within the reef ecosystem. Students will also learn how coral colour comes from symbiotic algae and what happens during coral bleaching events.

The lesson will extend into deeper waters, where students will explore how colour functions in the deep sea, including bioluminescence and transparency as survival strategies.

Additionally, students will gain insight into CCMI's Healthy Reefs monitoring programme and how 2025 data revealed differences in coral recovery across reef sites around Little Cayman. The hosts will explain how biodiversity and functional redundancy contribute to reef resilience following disturbance events such as coral bleaching.

By the end of the broadcast, students will better understand how biodiversity supports reef health and how scientific monitoring helps us understand environmental change. They will also understand actions they can take to help protect ocean biodiversity.

This lesson is in alignment with the Science National Curriculum of the Cayman Islands and the United Kingdom and the Ocean Literacy Principles. Students can complete the worksheet during the live lesson, and they are encouraged to ask questions about the materials to the host or educator at any time during the broadcast. Pre-recorded footage may be used to show key concepts, should these observations not be seen naturally during the live lesson.

### **Live broadcast outline (40 mins)**

00:00 - 03:00 Welcome back to Reefs Go Live, CCMI team introductions  
03:00 - 07:00 Introduction to biodiversity and Caribbean reef hotspot  
07:00 - 12:00 Why is the ocean blue? Light absorption demonstration  
12:00 - 18:00 Colour on the reef: communication, camouflage, and warning  
18:00 - 23:00 Ecological niches and guilds on the reef  
23:00 - 27:00 Coral colour and bleaching  
27:00 - 32:00 Deep sea colour and bioluminescence  
32:00 - 35:00 Healthy Reefs data and reef recovery differences  
35:00 - 37:00 Questions  
37:00 - 40:00 Summary and goodbye

### **Necessary Materials**

- Internet connection
- Computer/phone
- Projector (optional)
- Speakers/headphones
- Printed colour sheet (for light demonstration)
- Torch
- Notebook paper
- Pencils/pens
- CCMI worksheets and/or booklet (one copy per student)

## Useful additional resources

- [www.reefresearch.org](http://www.reefresearch.org)
- [www.reefresearch.org/what-we-do/education/teacher-resources/](http://www.reefresearch.org/what-we-do/education/teacher-resources/)
- [www.reefresearch.org/what-we-do/education/reefs-go-live/](http://www.reefresearch.org/what-we-do/education/reefs-go-live/)
- <https://reefresearch.org/wp-content/uploads/2025/05/Healthy-Reefs-Report-Card-2024-FINAL.pdf>
- [Coral reef facts for kids! - National Geographic Kids \(natgeokids.com\)](http://natgeokids.com)

## “Why Is Everything So Colourful?” Key Terms

The CCMI educators may refer to the following key terms throughout the live lesson. Listen carefully to the broadcast to learn some new vocabulary about light, colour, and ecological processes in the ocean!

**Aphotic zone** - part of the ocean where no sunlight penetrates

**Biodiversity** - all the different living organisms within a given area

**Biofluorescence** - natural absorption and reemission of light from living organisms

**Bioluminescence** - chemical reaction that produces light from within an organism's body

**Camouflage** - colour and/or pattern that allows an organism to blend into its surroundings

**Chromatophore** - skin cells that can expand or contract, creating the appearance of colour or patterns through pigment and light manipulation

**Ecological niche** - the role an organism plays within an ecosystem

**Photic zone** - surface layer of the ocean where sunlight penetrates; top 500ft or so

**Resilience** - ability of an ecosystem or species to bounce back from negative environmental influence

**Symbiotic relationship** - interaction between two organisms where at least one of the organisms benefit; however, the other may suffer, be unaffected, or benefit as well

**Zooxanthellae** - symbiotic algae that live in the tissues of coral polyps that provides the coral with energy and nutrients