



Lionfish: The Perfect Invader

Module Summary

This module is an immersive scientific dive where students experience an underwater lionfish surgery first-hand. Invasive species are seen as one of the major threats to ecosystems and lionfish have numerous traits and behaviors that well suit them to cause severe impacts. Students are given an in-class activity to help them learn about how lionfish spread around the Caribbean, what makes them the perfect invader, and how they impact the food chain. The dive will include a demonstration of a live lionfish being acoustically tagged and released for scientific purpose.

Year 6

Learning Objectives

- Define an endemic versus invasive species.
- Explain how predation-prey relationships and reproduction influence the impact of lionfish.
- Theorize on lionfish movement around on Cayman reefs and why.
- State how a healthy ecosystem may be able to adapt and counteract threats from invasive species.
- Develop an adaptive management strategy for lionfish using scientific lessons learned.

Science National Curriculum Alignment

- Order living things in a simple food chain and understand the dependency of one on the other (Year 6).

Description of the live dive

The dive will follow the CCMI lionfish research team around a pristine coral reef on a mission to acoustically tag a lionfish. The underwater educator will communicate constantly with the live lesson host (who will be on the boat) and with the engaged remote class. The educator will take the students through a series of fun facts and learning objectives regarding lionfish and invasive species, all in alignment with the Science National Curriculum of the Cayman Islands. Students will have an in-class activity to complete during the live lesson, which they are welcome to ask questions about to our underwater educator at any time during the duration of the broadcast. Pre-recorded footage and images will be used to demonstrate portions of the underwater surgery or impacts of invasive species, should these processes not be observed naturally during the live broadcast. To demonstrate the methods that CCMI scientists are using to explore lionfish movements, students will watch the educator handle a pre-caught lionfish and surgically implant an acoustic tag. Students will also be shown one of the receivers in the water column deployed near the tagging site that picks up the signal from each acoustic tag.



Live broadcast outline (45 mins)

- 00:00 - 03:00 CCMI host welcomes students and outlines the lesson
- 03:00 - 05:00 CCMI host introduces the educator and the in-class activity
- 05:00 - 10:00 Educator explains the external anatomy of the lionfish
- 10:00 - 25:00 Educator performs surgery on a live lionfish
- 25:00 - 30:00 Questions
- 30:00 - 35:00 Educator releases the lionfish and explains results from data
- 35:00 - 40:00 Questions
- 40:00 - 45:00 CCMI host on the boat recaps the live dive and concludes the lesson

Materials

Internet connection, laptop, projector, speakers, paper, pencils/pens, CCMI activity sheet, and CCMI fun fact sheet.

Useful resources

- www.reefresearch.org/reefs-go-live
- www.reefresearch.org/what-we-do/conservation/lionfish-management/
- www.reef.org/lionfish
- www.projectaware.org
- www.doe.ky
- www.education.gov.ky/education/curriculum
- www.oceanservice.noaa.gov/kids/