

NATURE'S MYSTERIES

Lesson Plan

Benefits of Bioluminescence

Lesson Plan for *Maldives' Sea of Stars*

Grade 3

Objective

To help students understand the meaning of the word *bioluminescence* by exploring examples of bioluminescent organisms and how bioluminescence helps these creatures live and survive.

Things Needed

- *Maldives' Sea of Stars* book
- Access to the “Maldives’ Sea of Stars” web page on the Pop! website:
<https://popbooksonline.com/natures-mysteries/sea-of-stars>

Before the Activity

Read the *Maldives' Sea of Stars* book out loud to students, or have students read it on their own. Open the “Maldives’ Sea of Stars” web page in your internet browser and pull up the “Learn More” tab.

Activity

Review the main points of the book by using the following questions:

- What causes the glowing lights in the Sea of Stars? (Answer: fire plants, also called dinoflagellates [p. 10], which are a type of phytoplankton [p. 11])
- When do fire plants light up? (Answer: when something moves, hits, or disturbs them [pp. 12–13])
- Why do the fire plants glow? (Answer: They contain a chemical called luciferin [pp. 18–19].)
- How might lighting up be beneficial to fire plants? (Answer: The light might scare predators away, which helps the fire plants not get eaten [pp. 20–21].)

Next, read the caption on the “Learn More” tab aloud. Then ask the following questions:

- What organism does this text describe? (Answer: ghost fungi)
- Where do ghost fungi live? (Answer: dark forests)



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- How might lighting up be beneficial to ghost fungi? (Answer: The light may attract insects, which then spread the fungi's spores to new places.)

Explain that fire plants and ghost fungi are just two of many living things that can make their own light. Scientists use the word *bioluminescence* to describe these creatures. Open the book to the glossary on page 31 and read this word and its definition aloud: “bioluminescence — the ability of a living thing to make its own light.”

Often, making light helps organisms survive. Scientists study bioluminescent plants and animals to learn how and why they glow. They also look for ways this process might be helpful to humans. Ask students to list two examples the book gives of how bioluminescence could be helpful to humans. These examples are found on pages 22 and 23:

- “Bioluminescent trees could light city streets” (p. 22).
- “Bioluminescent crops could glow to show they need water” (pp. 22–23).

Have students brainstorm other ways that bioluminescence could be helpful to humans. Students should raise their hands when they have an answer. Call on a few students to share their answers with the class.

Evaluation

Were students able to answer the discussion questions about the texts? Could they think of additional examples of how bioluminescence might help humans?

Standards

This lesson plan may be used to address the Common Core State Standards' reading standards for informational texts, grade 3 (RI 3.1, 3.2, 3.3, 3.4).

