

## BOG BODIES

This guide offers suggestions on how to implement the “Bog bodies” activity. This activity was developed by the [GoFlag](#) project. A key goal of the project is to improve public awareness about plants in general and provide specific information about a special group of plants called flagellate plants.

Flagellate plants have existed on our planet for a long time and they offer some important clues on how plants evolve and adapt. There are several ways to classify flagellate plants based on their genetic and morphological traits but one of their most unique features is the absence of flowers.

“[Bog Bodies](#)” is a 45-minute web-based activity that focuses on mosses – a group of flagellate plants – that are highly adaptable and are found even in the most extreme environments. The activity is designed to be self-contained – it includes relevant content, resources, and assessments, but it can be further customized based on the needs of your learners and learning context.

### GRADE LEVEL

- Middle school,
- High school, and
- Introductory Biology courses in undergraduate programs

\*You can find additional activities for this and other age groups on [GoFlag Voyager](#).

### LEARNING OBJECTIVES

- Describe what peatlands (bogs) are and how they are distributed around the globe
- Identify the connections between peatlands and the levels of carbon dioxide in earth’s atmosphere
- Appreciate the importance of mosses, their diversity, and uses
- Explain how bog bodies are related to mosses and the storage of carbon dioxide

### CURRICULAR CONNECTIONS

- Decomposition
- Energy
- Ecosystem preservation
- Human history (mummies)

### MATERIALS AND RESOURCES

- Link to online activity: [Bog Bodies](#)
- Devices for students to view the activity (laptops, Chromebooks, tablets, smartphones)
- Internet connection

- Headphones (or speakers if used as a whole class activity)

## IMPLEMENTATION SUGGESTIONS

- One face-to-face class, 45-minute activity, done individually or in small groups
- Two or more face-to-face classes, splitting the activity into 2-3 components, and stopping for small group or whole class discussions around concepts of interest
- Homework activity that students complete on their own and produce an artifact or take a test
- Online activity in an online or blended course
- Optional or required enrichment activity following a class on related topics (e.g., energy)

## PRE-ACTIVITY IDEAS (ANCHORING)

- Invite a botanist to introduce the concept of flagellate plants and discuss their importance
- Take the students to a botanical garden and identify flagellate plants
- Show the students a slideshow of plant photos and ask them to describe the differences (e.g., do all plants have flowers?) as a way to introduce the notion of flagellate plants
- Bring a moss plant to school and ask students to describe where they have spotted mosses before

## PROCEDURE

As a class activity, the material can be used to prompt discussions and reflections about bog bodies, peatland ecosystems, and the carbon bank. Here is a possible procedure:

### Instructor

- Ask the students to write down what a bog body may be
- Divide the class into groups of 3 and show the [activity](#) using the teacher computer and projector
- Stop the activity when you get to an assessment or interactive activity. Depending on time constraints, you can pre-select only a few of these questions and activities to be completed by the groups

### Students

- Discuss and complete each question and activity as a group
- Share the group's answer with the class and explain how they came to that conclusion

### Instructor-Class

- Discuss groups' responses as a class and follow up
- Explore all the hyperlinks in the activity. These resources are meant to elucidate concepts about bog bodies, peatland ecosystems, mosses, and carbon bank.

#### **Example**

- Sphagnum slide [correct answer: Moss]

- Group Responses: Student may have selected this option (or not) for a number of reasons including elimination strategies based on plants they are more familiar with or prior knowledge about mosses.
- Expand discussion: “Can you think of one feature that these plants have in common?” [possible answer: no flowers]

## PREREQUISITE KNOWLEDGE AND VOCABULARY

- **Bog body** is a naturally mummified human cadaver found in peat bogs. Also known as bog people, these bodies were discovered in different regions of the globe between 8000 BCE and the Second World War. [The Tollund Man](#) is arguably the most well-known bog body.
- **Carbon dioxide (CO<sub>2</sub>)** is a colorless gas that consists of three atoms: one carbon and two oxygen. Its density is 60% higher than that of dry air. Carbon dioxide is the most significant long-lived greenhouse gas in Earth's atmosphere. Since the Industrial Revolution emissions from use of fossil fuels and deforestation have rapidly increased its concentration in the atmosphere, leading to global warming.
- **Peat** is a soil-like material found in boggy, acid ground that can be used for gardening and as fuel. It is formed by partly decomposed vegetable matter. Peat is home to specific kinds of plants including Sphagnum moss.
- **Peat bog or peatland** refers to an area with a naturally accumulated peat layer at the surface.
- **Moss:** Mosses are small flowerless plants that typically grow in dense green clumps or mats. They are usually found in moist or shaded locations.

## EXTENSION IDEAS

- Show what peatland looks like and discuss its benefits: [What are peatlands?](#)
- Discuss the relationship between peatland ecosystems and climate change: [Bogs](#)
- Illustrate differences between non-flowering and flowering plants: [Plants species](#)
- Provide additional teaching and learning resources (e.g., high quality images): [In defense of plants](#)

## ALIGNMENT WITH NEXT GENERATION SCIENCE STANDARDS

Middle School: [MS-LS2-2](#): Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

High School: [HS-LS2-3](#): Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

## ALIGNMENT WITH COMMON CORE STATE STANDARDS

RST.6-8.8: Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. (MS-LS2-5)

<http://www.corestandards.org/ELA-Literacy/RST/6-8/8/>