

What If There Were No Bees? A Book About the Grassland Ecosystem

BY SUZANNE BUCKINGHAM SLADE



MATERIALS & RESOURCES:

- [Copies of the Title](#) for the students in the group.
- **What If There Were No Bees? A Book About the Grassland Ecosystem Student Guide:** printable.
- Students will need to access the internet for web articles and video links:
 - [WorldWildlife.org](#) - article link for students.
 - [Using Bees To Pollinate - Nature Fresh Farms](#) - video link for students.
 - [Ecosystems BrainPop Video Link](#) - Available through CLEVER
 - [WorldWildlife.org](#)
- Poster Board
- Colored Pencils
- **Ecosystem Energy Lab and Model Supplies** (instructions below)

SUMMARY AND DETAILS

What *if* there were no bees? How would it affect our grassland animals? How would it affect humans? This book offers insight into the problems that countless animals and plants face with the potential loss of the bees. Discover just how important this tiny species is to the food web of this ecosystem.

Grade Level: 3rd-5th

Lexile Level: 890L

Guided Reading Level: N

Genre: Nonfiction

HOW TO IMPLEMENT THE HIGH FLIERS BOOK CLUB

- Determine if this book is the correct reading level for the students by **Lexile Level** or **Guided Reading Level**.
- Create a schedule with the students for assignments. The schedule should include the number of to be completed along with the questions in the Student Guide for each book club meeting.
- Make a plan of how students will make up the work if they miss an assignment.
- All content can be assigned digitally through LMS.
- This book club is designed to address learning in several ways:
 - The students must read and answer questions from the text and research a few topics to prepare for the lab. This portion should be done before the lab.
 - The lab will be taught by the teacher in order to help the students create a model to explain how energy is shared within an ecosystem.
 - The objectives of the Student Guide and the Ecosystem Energy lab are to help the students understand the implications if there were fewer bees for plant pollination and how it would affect animals in that biosystem.

The High Fliers Book Club - The World of Bees

ELA COMMON CORE

WRITING STANDARDS FOR INFORMATIONAL TEXT

3rd Grade: [RI.3.1](#), [RI.3.3](#), [RI.3.5](#), [RI.3.6](#), [RI.3.7](#), [W.3.2](#), [W.3.7](#), [W.3.8](#)

4th Grade: [RI.4.2](#), [RI.4.3](#), [RI.4.7](#), [W.4.2](#), [W.4.7](#), [W.4.8](#), [W.4.9](#)

5th Grade: [RI.5.1](#), [RI.5.3](#), [RI.5.7](#), [RI.5.8](#), [W.5.2](#), [W.5.7](#), [W.5.8](#), [W.5.9](#)

NEXT GENERATION SCIENCE STANDARDS

3rd Grade: [3-LS2-1](#), [3-LS4-3](#), [3-LS4-4](#)

4th Grade: [4-PS3-2](#), [4-LS1-1](#), [4-LS1-2](#), [4-ESS3-1](#)

5th Grade: [5-LS2-1](#), [5-PS3-1](#), [5-LS2-1](#), [5-ESS3-1](#)

COMMON CORE MATH STANDARDS

3rd Grade: [3.OA.A.2](#), [3.OA.A.3](#), [3.NF.A.1](#)

4th Grade: [4.OA.A.2](#)

ECOSYSTEM ENERGY LAB AND MODEL

SUPPLIES NEEDED FOR ONE GROUP OF STUDENTS:

- 36 marbles or squares of yellow paper
- Large bowl
- 3 smaller bowls
- 12 cups
- Slips of paper for labels

THE PURPOSE OF THIS LAB TO HELP STUDENTS UNDERSTAND THE FOLLOWING STANDARDS BASED CONCEPTS:

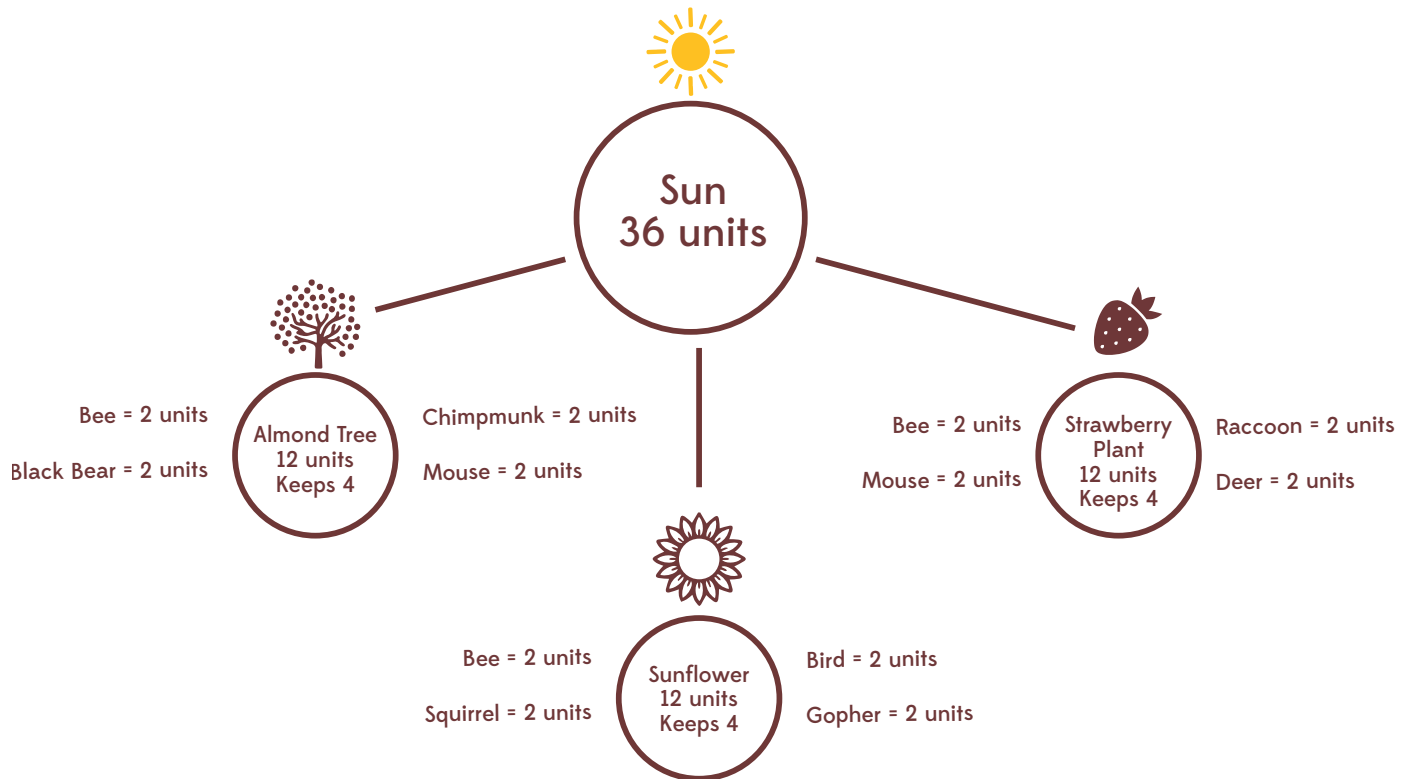
In a particular habitat, some organisms can survive well, some less well, and some not at all depending on variables

- Energy moves from one place to another throughout food webs
- Energy is derived from natural resources (elaborate?)
- Energy in animals' food was once energy from the sun
- Matter is moved among plants, animals, and decomposers

STEPS:

1. Students should read the article Organism Energy Transfers.
2. Prepare the lab by putting 36 marbles into a large bowl. This will represent the sun which provides energy to plants who transform it through photosynthesis, driving the food chain. The marbles will be units of energy. Label this bowl as the sun.
3. The three smaller bowls will represent an almond tree, a sunflower, and a strawberry plant and should be labeled as such.
4. Ask:
 - Are these producers or consumers? What is your evidence?
 - What does the sun provide for these producers?
 - How do the producers use energy from the sun?
 - How should we divide the 36 units of energy evenly among these three plants?
5. The students should know some of the animals that live in the grasslands from the food web activity. This information will help the students as consumers are introduced.

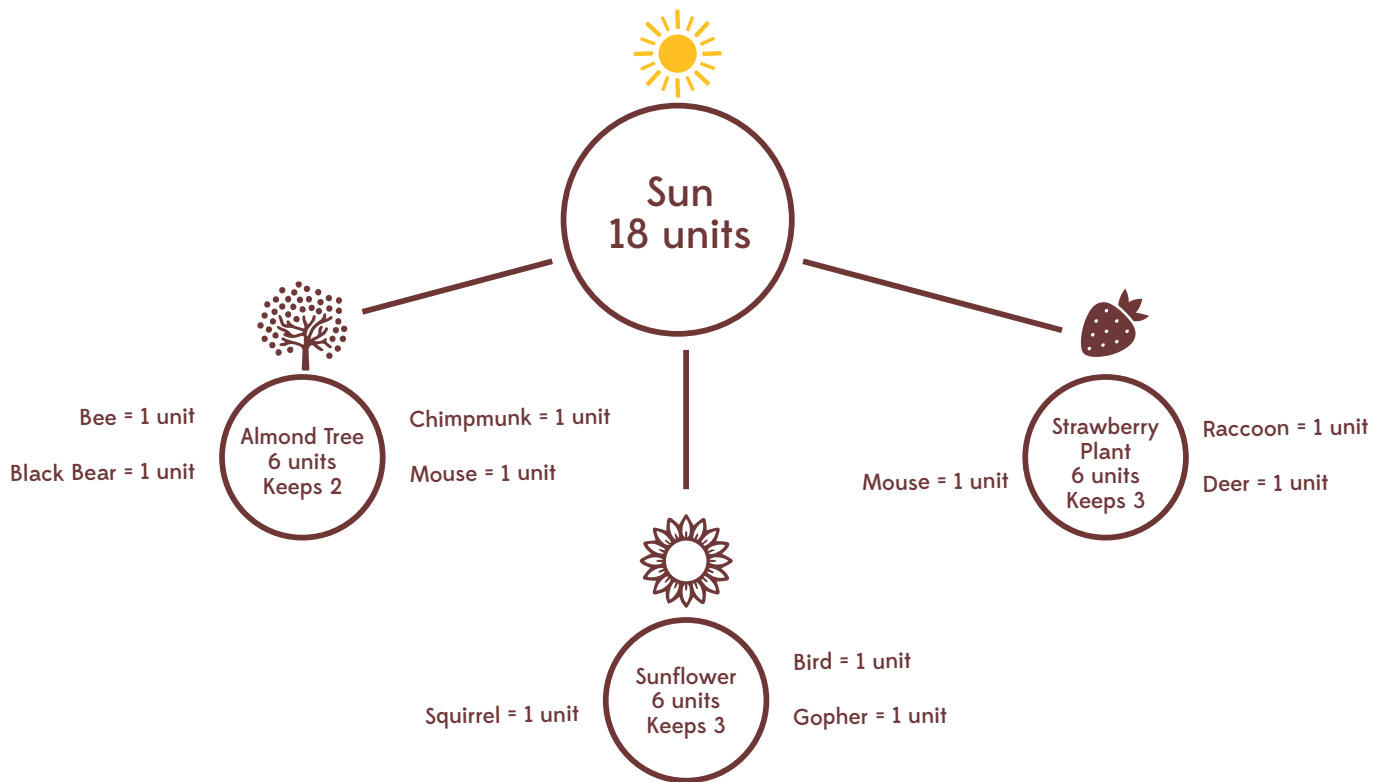
6. Label four of the cups as a bee, a black bear, a chipmunk, and a mouse. These are animals that use the almond tree for food. The students will be dividing the energy units among these animals as well as keep some for the plant to stay alive.
7. Ask:
 - Are these animals producers or consumers? What is your evidence?
 - Are these animals primary or secondary consumers?
 - How does the bee use the energy from the almond tree flower?
 - How do the other consumers use energy from the almond tree ?
 - What form of energy do plants have?
 - What form of energy does the animal receive when it eats the parts of the plant?
8. Move to the sunflower and continue in the same way. Label four more cups as a bee, a squirrel, a bird, and a gopher. The students will again divide the energy units.
9. Finish with the strawberry dividing the energy units equally for the last four labeled cups as a bee, a mouse, a raccoon, and a deer.



10. Questions to ask:

- How do these consumers and producers survive in this habitat?
- What might affect this habitat that would make the producers less productive?
- What could happen to this habitat that would cause the consumers to have less to eat?
- How is the energy transferred from the sun distributed through this food web?
- How do humans get energy from the sun?
- Do decomposers get energy from the sun as well? How?
- What if there were only half of the original bee population in the grassland ecosystem?
- How would that affect the plants and animals?
- Let's start the flow of energy again with only half of the energy and reduce the number of bees to only one within the ecosystem.

11. Keep the same labels but start with only 18 units of energy in the sun.



12. Questions to ask:

- How did the loss of bees change this ecosystem?
- Would the same animals be able to survive with half of the plant's population? Why or why not?
- What are some solutions to the problem of the loss of bees?
- How can we help the bees in our own communities?
- Explain how this model helps us understand why bees are important to the ecosystem.



JOURNAL PROMPT REFLECTIONS FOR LAB:

- Use any and all evidence from this lab to explain why bees are a small but extremely important part of ecosystems.
- Choose another type of ecosystem to explore and explain how bees are important within that specific habitat.
- Create a poster to help Save the Bees. Research things that other students can do in their own back yard or schoolyard to help bees survive.



Name: _____

High Fliers Book Club Student Guide

What If There Were No Bees? A Book About the Grassland Ecosystem

by Suzanne Buckingham Slade

The text says that flowers are a bee’s best friend. Is this a true statement and why? Use evidence from the text to support your answer.

What kinds of danger do bees face? Cite your evidence from the text.

“Honey bees pollinate about 90 different kinds of crops in North America. They help create about one-third of the food that we eat.” Research and record at least 10 foods that we rely on honey bees to pollinate in North America or anywhere in the world.

Watch this video about [Using Bees To Pollinate - Nature Fresh Farms](#). Explain in your own words why it is more efficient to have bumble bees pollinate the tomato crops in this greenhouse than humans.

In your own words, explain how larger animals like foxes, owls, and bears would be affected if there were no bees.

Watch this [BrainPop - Ecosystems](#) video and answer the following questions.

What is an ecosystem? _____

Why do animals need a certain habitat? _____

What is a producer? _____

What is a consumer? _____

How does a consumer get its energy? Where does the original energy come from? _____

How do “bunnies and foxes” help the decomposers? _____

How do living things on earth use carbon? _____

Use the website WorldWildlife.org to research species that live in the grasslands biome. Choose at least five animals and construct a food web like the example on pages four and five. You may either draw the animals or write their names as you construct this food web. Research at least two decomposers that live in your biome. Use poster boards and colored pencils to create your food web.