Lesson Plan: Grasshopper

Summary

In this episode, Blade discussed the bright green grasshopper drawn during the livestream. He reflected on seeing fewer grasshoppers since moving from Oklahoma to Houston and described how the insects have existed for about 250 million years. He noted their jumping ability, color changes, and role in the ecosystem as both herbivores and prey. The stream included observations about adaptation, sound detection through body plates, and appreciation for the ordinary details of nature.
https://www.youtube.com/live/d9-0JOvC6f4?si=5oiNtu-NOceI-5tW

Objective

Students will learn about grasshoppers' physical adaptations, ancient lineage, and ecological role while exploring how observation of simple subjects can lead to understanding biodiversity and survival traits.

Standards

- NGSS 3-LS4-1: Analyze and interpret data from fossils to provide evidence of organisms and the environments in which they lived long ago.
- NGSS MS-LS1-4: Use argument based on empirical evidence and scientific reasoning to support explanations for how characteristic animal behaviors affect survival and reproduction.
- CCSS.ELA-LITERACY.W.7.2: Write informative texts to examine a topic and convey ideas, concepts, and information clearly.
- C3 D2.Geo.5.6-8: Explain how human and environmental characteristics interact.

Materials

- 9 Fun Facts list
- Worksheet
- Paper or digital notebook for notes (optional)
- Colored pencils or markers (optional)

Introduction

Begin with a discussion about insects that students commonly see in their area. Ask what comes to mind when they think of grasshoppers and what makes them unique. Introduce the concept of animal adaptation by mentioning how grasshoppers can blend into their surroundings and have existed for millions of years.

Activity

Students will read the 9 Fun Facts about grasshoppers and discuss which facts surprise them most. In small groups, they will identify the survival traits that help grasshoppers thrive in changing environments. Students can sketch a grasshopper or label its major features based on descriptions from the facts.

Assessment

Students will complete the worksheet and participate in a group discussion explaining one adaptation that helps grasshoppers survive. Evaluate comprehension through accuracy of responses and engagement during discussion.

Rubric

Criteria	Excellent (4)	Good (3)	Fair (2)	Poor (1)
Content Understanding	Demonstrates clear understanding of all facts and connections	Shows general understanding with few errors	Understands basic ideas but misses key connections	Little or no understanding shown
Discussion Participation	Shares thoughtful ideas and supports others	Participates but limited depth	Minimal participation	No participation
Worksheet Completion	All responses accurate and complete	Most responses accurate	Some incomplete or incorrect answers	Few or no answers
Technology Connections	Uses provided resources effectively	Uses some resources effectively	Limited use of resources	No use of resources

9 Fun Facts:

1. Bright green grasshoppers are part of a very ancient insect lineage. Grasshoppers have existed for more than 250 million years, long before most modern animals appeared. Fossil records show their ancestors hopping around during the age of early dinosaurs. Their survival through massive environmental changes proves how well they adapted over time. These insects represent one of the oldest living families still thriving today.
source: https://www.gardenia.net/guide/grasshopper-surprising-facts-you-didnt-know

2. Even though green grasshoppers look simple, they are part of a globally diverse family with thousands of species. The family they belong to, Acrididae, includes over 6,700 known species found on nearly every continent. These species vary in color, size, and behavior but share the same jumping leg structure and chewing mouthparts. Their diversity shows how flexible the group has become in almost every ecosystem on Earth. This variety helps them survive in climates ranging from dry plains to tropical forests.
source: https://academic.oup.com/isd/article/2/4/3/5052737

3. Bright green grasshoppers often blend in with grass and leaves to hide from predators. Their vivid green coloring acts as natural camouflage against birds and small mammals that might eat them. The shade of green often matches the specific plants in their habitat, creating an impressive illusion of invisibility. This adaptation helps them survive in open meadows and tall grasses. Their color is not only protection but also a sign of how well they evolved for their environment.
source: https://a-z-animals.com/animals/grasshopper/10-incredible-grasshopper-facts/

4. Some green grasshopper species can switch between green and brown color phases depending on their environment. When weather or seasons change, certain species adjust their pigment levels to match new surroundings. This shift helps them stay hidden from predators even when grass turns dry or brown. The ability to alter color provides an evolutionary advantage in unstable climates. These changes are triggered by temperature, humidity, or diet, showing how flexible their biology can be.
source: https://grasshoppernews.com/can-grasshoppers-change-color/

5. Many grasshoppers hear using "ears" on their abdomens instead of their heads. These hearing organs, called tympanal organs, are flat membranes that detect vibrations from sound waves. The location near the abdomen helps them sense low-frequency noises, such as the wing beats or calls of other insects. This unusual placement shows how insect anatomy can evolve in unexpected but effective ways. Their hearing allows them to find mates and sense approaching danger even in tall grass.
source: https://www.thoughtco.com/how-do-insects-hear-1968479

6. Grasshoppers have strong hind legs that act like biological catapults to launch leaps. Each jump begins with stored energy in the muscles and joints of their back legs, releasing with lightning speed when they push off. Some can jump up to 20 times their body length, a remarkable feat for such small creatures. This quick burst of power often saves them from becoming a snack. Their leaps also make them important subjects for studying biomechanics and muscle efficiency.
source: https://reconnectwithnature.org/news-events/the-buzz/grasshoppers-five-facts-to-know/

7. Some green grasshopper species can also fly, not just hop. Their wings unfold from under protective covers, letting them glide short distances between plants. Flight expands their territory for feeding, mating, and escaping danger. This dual ability to leap and fly makes grasshoppers versatile travelers in their environments. Their combination of jumping and flying helps explain why they are found almost everywhere in the world.
source: https://a-z-animals.com/animals/grasshopper/10-incredible-grasshopper-facts/

8. Grasshoppers typically go through several molts before becoming adults. As they grow, they shed their hard exoskeleton up to six times, each stage bringing them closer to full winged maturity. These stages are called instars, and the changes allow them to expand their bodies and develop new features. Molting is one of the most dramatic and necessary transformations in an insect's life cycle. This process helps scientists study growth and development across many insect species.
source: https://softschools.com/facts/animals/grasshopper_facts/584/

9. Green grasshoppers play meaningful roles in ecosystems as both herbivores and prey. By feeding on leaves and grasses, they help control plant growth and recycle nutrients into the soil. At the same time, they provide a vital food source for birds, amphibians, and reptiles. Their presence keeps food chains balanced and healthy across grassland ecosystems. Without them, many larger species would lose a critical link in the web of life.
source: https://www.gbbg.org/grasshoppers-hop-to-the-rescue/

Worksheet

Name: _____ Date: _____

Review

1. How long have grasshoppers existed according to fossil evidence?

2. What family do grasshoppers belong to and how many species are included?

3. How does the green coloring help grasshoppers survive?

Discussion

4. Why might a grasshopper change from green to brown during the year?

5. How do grasshoppers hear and what makes their hearing unique?

Data Analysis

6. A grasshopper can jump up to 20 times its body length. If one measures 2 inches, how far can it jump?

7. Why is the ability to both jump and fly an advantage in nature?

Reflection

8. Why is molting important in a grasshopper's life cycle?

9. How do grasshoppers support balance in ecosystems?