

Grassland Food Webs: Teacher Notes



Alan Henderson ©

Activity 1

Food chains in a grassland ecosystem

Objectives

After completing this activity students will be able to:

- Create a food chain and identify producers, consumers, herbivores and carnivores.
- Understand how organisms depend on each other and the environment to survive.

Target audience

Year 4

Duration

Two 50-minute sessions

Materials

- Whiteboard and whiteboard markers
- Eight food chain role play cards, printed and laminated with a hole in the top middle, with a piece of string attached (to form a necklace)
- Printed copy of the food web role play answers
- Ball of string
- Class set of computers with BWVP Grassland Food Webs learning object
- Student workbook
- Pencil

Activity

All living things require energy for survival including growth, reproduction and repair. Some organisms produce their own food while others need to consume other organisms to obtain nutrients and energy. The interaction between organisms and the flow of nutrients and energy through ecosystems will be explored in this activity.

Introduction

Begin this lesson by engaging students in a brainstorming session about grassland food chains. Students should list the animals and plants that live in grasslands. Discuss how plants create energy and introduce the term photosynthesis. Discuss the diets of grassland animals and introduce the terms habitat, herbivore, carnivore, omnivore and predator. Record student responses on the board and consider these prompts to keep the discussion lively (answers have been provided).

What is a habitat?

A habitat is the place where an animal or plant makes its home.

What plants and animals live in grasslands habitats?

Students may talk about tussock grasses, wildflowers, shrubs, trees, birds of prey, insects, wallabies,

kangaroos, lizards, etc.

How do plants and animals make food?

Plants make food using a process called photosynthesis. Photosynthesis uses the sun, carbon dioxide from the air and water containing dissolved materials from the soil to make energy. Animals rely on plants or other animals for their food.

What is a herbivore?

A herbivore is an animal that only eats plants, such as leaves, grass, berries, bark, etc., e.g. a cicada.

What is a carnivore?

A carnivore is an animal that only eats other animals e.g. an Eastern Brown Snake.

What is an omnivore?

An omnivore is an animal that eats plants and animals e.g. a Southern Brown Bandicoot.

What is a predator?

A predator is an animal that hunts for food e.g. a Brown Falcon.

Food chains

Students will explore food chains in grasslands. Pose the following questions to explore food chains.

What is a food chain?

A food chain shows who eats who.

Write the following food chain on the board.

Tussock Grass → Cricket → Lizard → Wedge-tailed Eagle

Ask students to explain the food chain. If needed explain that the Tussock Grass is eaten by the Cricket... which is eaten by the Lizard... which is eaten by the Wedge-tailed Eagle. The arrows point in the direction in which the energy flows. The Tussock Grass gets its energy from the sun. The first organism is the producer, which is always a plant. All the other organisms in the food chain are consumers. Ask students to identify the producer and consumers in the food chain. Also, ask students to identify the herbivore

(Cricket) and the carnivores (Lizard and Wedge-tailed Eagle), and the top predator (the Wedge-tailed Eagle).

Food chain role play

Students will further develop their understanding of these concepts by undertaking the following group exercise on food chains. You will need the eight organism cards and a ball of string. The idea of this exercise is for students to visualise who eats who in the grassland. First, hand out all the cards, one per student (there may not be enough cards for all students however those that missed out can assist with the links). Then choose a plant, and ask the student to read out what eats it. Students with these cards stand next to the plant and then ask a student (without a card) to link the organisms with the string. Ensure the links are going in the correct direction. Continue until the food chain is complete. Continue with the other food chain. Make sure you have used and linked all the cards. You will notice that the food chains are linked. Explain that a food web is forming. The food chain answers are provided in the Teacher Resource section. Write the food chains on the board.

Discuss the results of the food web as a class. Ask students to identify the following in the food web:

- Producers
- Consumers
- Herbivores
- Carnivores
- Omnivores
- Predators

Food chains unbalanced

Explore what happens in an ecosystem if one organism is removed (from causes such as extinction). Focus on one of the food chains used in the food chain role play activity and pose the following scenario; explain that the herbivore has become extinct. Ask the student with this card to sit down. Ask students how this affects the other organisms in the food chain. **The other organisms cannot survive without their food source.** Choose another food chain; explain that this producer has been killed by a herbicide. Ask the student with this card to sit down. Ask the students how this affects the other animals. **The other organisms cannot survive without their food source.** Conclude this discussion by explaining that life in any ecosystem is in a delicate balance and changing one organism in a food chain can alter that balance. Ensure students understand that all plants and animals are linked and depend on each other and their environment. Ask students to complete questions 1-3 in their workbook.

BWVP Grassland Food Webs Learning Object

Students can now put their knowledge to the test by completing the Very Easy Food Chain online activity. It is recommended that students at Level 4 complete the Very Easy Food Chain. The Easy Food Web activity links two food chains into a food web, which could be used as an extension activity. If you use this, explain that in any ecosystem there will be several food chains and when these are combined they form a food web. When students finish their food chain ask them to draw it in their workbook and complete questions 4-7.

Extension activity

If students finish early, they could explore other food chains using the BWVP Flora and Fauna Field Guide. Students could research organisms and their diets and design additional food chains. These could be shared with the class.

Conclusion

Conclude the session by engaging students in a brainstorming session about food chains. Here are some examples to keep the discussion lively.

Can you give me an example of a producer?

Can you give me an example of a consumer?

What does a herbivore eat?

What does a carnivore eat?

What does an omnivore eat?

Give an example of a food chain?

What is a food web?

Students will complete the conclusion questions in their workbook.

Food chains in the grassland ecosystem

1. What is a food chain?

A food chain shows who eats who.

2. Link the following terms to their meanings:

Term	Meaning
Producer	These organisms produce their own energy using the sun, carbon dioxide and nutrients in the soil. These organisms are always at the start of a food chain.
Consumer	These organisms eat plants.
Herbivore	These organisms eat animals.
Carnivore	These organisms eat plants and animals.
Omnivore	These organisms consume other organisms to gain energy.

3. Draw two food chains in the space below.

Kangaroo Grass → Southern Brown Bandicoot → Spot-tailed Quoll → Wedge-tailed Eagle

Grey Box → Gumleaf Grasshopper → Grassland Earless Dragon → Nankeen Kestrel

BWVP Grassland Food Webs Learning Object

Complete the Very Easy Food Chain using the BWVP Grassland Food Webs learning object.

4. Draw the food chain in the space below.

Common Australian Spotted Growling Tiger
 Everlasting → Painted → Marsh → Grass → Snake
 Daisy Lady Frog Frog

5. Complete the following table. Tick whether the organism is a producer or consumer, herbivore or carnivore.

Organism	Producer	Consumer	Herbivore	Carnivore
Common Everlasting Daisy	✓			
Australian Painted Lady		✓	✓	
Spotted Marsh Frog		✓		✓
Growling Grass Frog		✓		✓
Tiger Snake		✓		✓

6. Which organism is the top predator?

The Tiger Snake is the top predator.

7. If an insecticide (chemical used to kill insects) is sprayed on a grassland what might happen to the plants and animals?

The insects may die, which means the animals that rely on these animals as a food source, may not be able to survive. This also means that the plants will not be eaten. This would affect the balance within the ecosystem.

Conclusion

8. Are plants always at the base of the food chain?

Yes, plants are always at the base of a food chain.

9. Why are green plants called producers?

Green plants make their own food through a process called photosynthesis.

10. Why are animals considered consumers?

Animals get their energy by consuming plants and other animals.

11. The arrows in a food chain point in which direction?

The arrows in a food chain point in the direction the energy flows.

12. If you take one organism out of a food chain, how does this affect all the other plants and animals in the food chain?

Taking one organism out of the food chain can affect the balance and the ability for other organisms to survive.