Chapter 6: Interactions between organisms

Challenge 6.1: Studying food webs

Experiment worksheet answers (pages 102–103 and 198)

Questions

1 Which organisms are producers?

Student answers will include all the plants in the area they examined.

2 Which organisms are consumers?

Student answers will include all organisms in the area they examined that are not producers.

3 How do the numbers of (individuals and species) of producers and consumers compare?

There may be more species of consumers than producers, however, there should be many more numbers of individual producers than consumers.

Challenge 6.2: Exploring leaf litter

Experiment worksheet answers (pages 104–105 and 199)

Questions

1 Why is it important to know about the animals you are likely to find before looking for them?

Some animals are dangerous. This will reflect how careful you need to be when looking for them.

2 Why should you return animals to the place where you found them?

All animals are interdependent with other parts of the ecosystem. Removing some animals will affect the balance in the food web.

3 A leaf litter community doesn’t contain any producer organisms, such as healthy green plants. What is the energy source for this community?

The dead leaves and matter provide the energy for the consumers in the leaf litter community.

4 How does this leaf litter community help the soil?

The organisms in the leaf litter community break down the matter in the leaf litter so that it can be recycled by producers in the ecosystem.

Experiment 6.2: What if water were filtered through a pot with native grasses?

Experiment worksheet answers (pages 104–105 and 199)

Discussion

1 Did the solution flow out of each pot at a different rate? Suggest a reason for any differences observed.

The solution should flow out of the pot with native grasses more slowly than the pot without grasses. This is due to the roots of the grasses holding the soil particles together more tightly than the pot with just soil.

2 Compare the cloudiness of the final solutions. Suggest a reason for the differences observed.

Because the water flows more slowly through the pot with grasses, there is time for the oil, salt and remaining rubbish to be recycled by any bacteria in the soil.

3 Compare the odour of the filtered solution with that of the original mixture.

The odour of the solution filtered through the pot with grasses should be weaker than the solution filtered through the pot with no grasses.

Conclusion

How effective are natural systems at filtering water?

Student answers will vary.

Experiment 6.3: What if the effectiveness of pollinators was reduced?

Experiment worksheet answers (pages 106–107 and 200)

Discussion

1 What effect did changing bee populations have on the amount of fruit produced?

Increasing the number of bees will increase the amount of pollination and therefore the number of apples that are produced. Decreasing the number of bees will decrease the amount pollination and therefore the number of apples produced.

2 Suggest one way your pollination model was not an accurate depiction of real-world pollination.

Bees are not the only organisms that pollinate flowers. Birds, wind and other insects also play a role in pollination.

3 Suggest one way to improve the model you used.

Student answers will vary.

4 Name one situation that scientists may use computer modelling to research.

Student answers will vary. They may suggest enhanced global warming.

Conclusion

How important are pollinators to the supply of fruit?

Many fruits would not be able to grow without pollinators.

Challenge 6.4: Calculating your ecological footprint

Experiment worksheet answers (pages 108–109 and 201)

Questions

1 What things can you do at home to live more sustainably?

Student answers will vary.

2 What changes would you have to make to your home to live more sustainably?

Student answers will vary.

3 What changes would you and your family have to make to your lifestyles to live more sustainably?

Student answers will vary.

4 Will these changes eventually save you and your family money?

Student answers will vary.

Challenge 6.6: Making a biosphere

Experiment worksheet answers (pages 112–113 and 201)

Processing, analysing and evaluating

Student responses for this challenge will vary based on their own planning and evaluation of their experiment design.

Communicating

Present the various features of your design in a detailed poster.

Student responses will vary.

Challenge 6.7: Looking at eucalypt adaptions

Experiment worksheet answers (pages 114–115 and 202)

Discussion

1 Why is the seed of the gumnut protected with such a thick external capsule?

It protects the seed from being eaten or damaged when falling from a high tree.

2 What might trigger the release of the seed from the gumnut?

a bushfire

3 What is the function of the oil glands in a eucalypt leaf?

The oil acts like an insect repellent for the eucalypt.

4 What are some of the functions of bark?

It protects the tree from pests that might cause damage to the internal parts of the tree.