2.2 Relationships between organisms may be beneficial or detrimental

Student worksheet answers (pages 18–21)

Relationships between organisms in ecosystems

1 What are the 3 types of relationships between organisms in the same species? Give an example for each.

collaboration: ants leave a trail of scent for other to follow and find food

mating: a male and female butterfly mate and produce offspring (caterpillar)

competition: plant seeds complete for space, light, water and nutrients as they grow

2 What is symbiosis?

a close physical and long-term relationship between members of different species

3 Between what types of organisms is there symbiosis?

members of different species

4 What are the three types of symbiotic relationships?

mutualism, commensalism and parasitism

5 Define and provide an example of the following:

a commensalism

one organism benefits and the other organism is not affected; for example, birds stay close to cattle because cattle reveal insects while they graze, then birds eat the insects

b mutualism

both organisms benefit; for example, a clown fish hides in an anemone for camouflage and the anemone gets cleaned by the clown fish

c parasitism

one organism (the parasite) lives in or on the body of another (the host); the parasite benefits but the host is harmed; for example, ticks drink the blood of animals that they attach to

6 What are the two non-symbiotic relationships?

predator-prey and competition

7 Explain why these are non-symbiotic relationships.

They are not long term and only happen when the need arises or an organism has the opportunity.

8 What types of relationships are depicted in the following pictures? Explain why you think this.

|  |  |  |
| --- | --- | --- |
| **Picture** | **Relationship** | **Explanation** |
| **L:\1. Publishing and Editorial\1. Product\Amazing Science\Amazing Science 9\3. Extras\9. Student worksheets\Artwork\4. Final jpgs\SW0217_01439-r.jpg** | mutualism | Bees and flowers both benefit when the bee collects pollen for honey and the flower’s pollen is spread to other flowers when the bee moves on. |
| **L:\1. Publishing and Editorial\1. Product\Amazing Science\Amazing Science 9\3. Extras\9. Student worksheets\Artwork\4. Final jpgs\SW0218_01439-r.jpg** | commensalism | The small fish benefits from the protection and shelter of the shark. It is too small of the shark to eat it and predators won’t go near the shark to get it. |
| **L:\1. Publishing and Editorial\1. Product\Amazing Science\Amazing Science 9\3. Extras\9. Student worksheets\Artwork\4. Final jpgs\SW0219_01439-r.jpg** | parasitism | The mosquito benefits at the expense of the human as it removes the human’s blood and the human has to create more blood. |

EXTEND YOUR UNDERSTANDING

9 Explain the following terms and give 2 examples of real world situations where these may occur:

a Intraspecies competition

definition**:** members of the same species compete for resources

example 1**:** plants compete for soil, water, nutrients and sunlight

example 2**:** male giraffes will compete for food and territory

b Interspecies competition

definition**:** members of different species compete for resources

example 1**:** trees will race each other in growing to the top of a canopy; the tallest gets the most sun

example 2**:** hyenas and lions will compete for territory, water and food

c Competition exclusion principle

definition**:** two species competing for the same resource cannot co-exist at constant population numbers

example 1**:** two bird species compete for insects on a tree; one will be more successful and increase in number causing the other to decrease in number

example 2**:** dark and light peppered moths compete for habitat on trees; in a light forest, dark moths decrease in number while light moths will be camouflaged and increase in number