Royal Botanic Gardens Kew

Post-visit teacher notes

We hope that the teaching session at Kew assisted in developing the skills and knowledge of your pupil's and provided them with an insight into the amazing plants and world-leading plant science at Kew.

Following your visit, you can use the post-visit activity to further support your pupils' learning.

Pupils could have a go at the exam-style question on the following page, and then use the mark scheme to check their answers.

Royal Botanic Gardens Kew

Post-visit
Pupil activity

The diagram below shows a food chain from a pond ecosystem, including the amount of energy available at each trophic level.

Waterweed (34000 kJ m^{-2} $year^{-1}$)
↓
Freshwater Shrimp (7800 kJ m^{-2} $year^{-1}$)
↓
Trout (1080 kJ m^{-2} $year^{-1}$)
↓
Kingfisher (135 kJ m^{-2} $year^{-1}$)

1. Tick <u>two</u> terms that could be used to describe the freshwater shrimp.

[1 mark]

- ☐ Producer
- ☐ At the first trophic level
- ☐ Primary consumer
- ☐ Secondary consumer
- ☐ At the second trophic level

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Post-visit pupil activity

2. The percentage efficiency of energy transfer between the waterweed and the freshwater shrimp is 22.9%. Showing your working, use the food chain to calculate the percentage energy efficiency of energy transfer between the secondary and tertiary consumers.

[2 marks]

3. Explain why food chains don't usually have more than 4 trophic levels.

[2 marks]

4. Tropical coral reefs usually have longer food chains than polar ecosystems. Suggest why.

[3 marks]

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Post-visit pupil activity

Question	Marking Guidance	Mark	AO	Comments
1.	Primary Consumer ☑ At the second trophic level ☑	1	AO1	Must have both correct for 1 mark. Reject if more than two boxes with tick. Ignore crossed-out ticks. Accept tick to right or left of correct box
2.	12.5% Correct answer, award 2 marks. 1 mark for the correct equation: 135/1080 x 100	2	AO2	Accept 13%
1.	1. Percentage energy efficiency decreases with each trophic level. 2. There wouldn't be enough energy to sustain another trophic level.	2	AO1	
2.	1. Tropical coral reefs receive more light than polar regions, 2. As they are closer to the equator. 3. This means there is a greater input of energy into food chains.	3	AO3	