

Autumnal Wonders with Nova the Owl

Learning objective: To understand the seasonal changes in plants and animals during autumn and explain the scientific reasons behind leaf senescence and animal preparation.

Read each question carefully and use your scientific knowledge to provide detailed explanations. Nova the Owl is looking for evidence-based answers, so be sure to justify your reasoning.

Word bank: chlorophyll · photosynthesis · deciduous · hibernation · migration · senescence · dormancy · carotenoids

1. Explain why the leaves of deciduous trees change colour from green to shades of yellow, orange, and red during the autumn months. Consider the process of photosynthesis. (3 marks)

2. Compare and contrast how two different British animals prepare for the onset of winter. Use the terms 'hibernation' and 'migration' in your response. (3 marks)

3. Justify why it is an evolutionary advantage for deciduous trees to shed their leaves before the coldest winter temperatures arrive. (2 marks)

4. What might happen to the local ecosystem if autumn temperatures remained as high as summer temperatures for an extended period? Explain your prediction. (3 marks)

5. Define 'dormancy' in the context of plant life. How does this state allow a plant to survive harsh winter conditions? (2 marks)

Draw: Draw a cross-section of a deciduous tree during autumn, labelling the roots, the trunk, and the shed leaves on the ground. Add an annotation explaining where the tree stores its energy during the winter months.



Extension challenge: Nova the Owl has noticed that some trees keep their leaves all year round while others do not. Research the difference between 'deciduous' and 'evergreen' trees. Write a short report justifying why an evergreen tree does not need to enter a state of dormancy in the same way a deciduous tree does.