**Animals and their environment**



1. Which statement is true about animals and the environment they live in?

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| --- | --- |
| **A** | Animals can cause changes to the environment they live in. |
| **B** | Animals do not change the environment they live in. |

1. How would you explain your answer to question 1?

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| --- | --- |
| **A** | Animals only remove things from their environment, such as food. |
| **B** | Animals remove substances from their environment and return the same substances to the environment. |
| **C** | Animals remove some substances from their environment and return substances but in a different form. |
| **D** | Animals live in a place but they don’t alter it by living there. |

*Biology > Big idea BOE: Organisms and their environments > Topic BOE2: Organisms in their environments > Key concept BOE2.1: Ecosystem components and dynamics*

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| **Diagnostic question** |
| **Animals and their environment** |

**Overview**

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| Learning focus: | The environmental conditions in different ecosystems, and in different parts of an ecosystem, affect and are affected by the organisms that live there. |
| Observable learning outcome: | Describe ways in which animals change the environment they live in. |
| Question type: | Two-tier multiple choice |
| Key words: | ecosystem |

**What does the research say?**

Sander et al. (2006) observed the misunderstanding that the dependence of organisms on climate and other abiotic factors was one-directional; they noted how students felt that organisms, except for humans, had no influence on the change of climate.

**Ways to use this question**

Students should complete the questions individually. This could be a pencil and paper exercise, or you could use the presentation with an electronic voting system or mini white boards.

*Differentiation*

You may choose to read the questions to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

**1A** – Animals can cause changes to the environment they live in.

**2C** - Animals remove some substances from their environment and return substances but in a different form.

Students who select **2A** may think that animals only have feeding relationships with other organisms in the ecosystem, and no interactions with the abiotic components of the ecosystem.

Students that select **2D** may not appreciate that all organisms in an ecosystem influence the environment and other organisms in that environment.

**How to respond - what next?**

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs. Responses often work best when the activities involve paired or small group discussions, which encourage social construction of new ideas (meaning making) through dialogue.

If students have misunderstandings about the idea that animals will remove substances from their environment and will return substances to that environment, and in doing so will have an effect on the environment, the following BEST ‘response activities’ could be used in follow-up to this diagnostic question:

* Response activity: Out and in
* Response activity: Flames
* Response activity: No more microorganisms

**Acknowledgments**

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Images: pixabay.com/Pixel-mixer (1703294)

**References**

Sander, E., Jelemenska, P. and Kattmann, U. (2006). Towards a Better Understanding of Ecology. *Journal of Biological Education,* 40(3)**,** 119-123.