education session

Ecosystems – Everything's Connected

How is everything on our planet connected together

Year 10-11

Learning Outcomes:
At the end of the session:

- ✓ **All pupils** will understand that producers (plants), consumers (animals) and decomposers are linked together – these links can be shown in a variety of ways including food webs and pyramids
- ✓ **Most pupils** will understand that ecosystems links are complex and changes to one component can have unexpected consequences to other components
- ✓ **Some pupils** will start to recognise how seemingly simple problems – like ocean plastic – are very complex at an ecosystem level, but even so, humans can help solve these problems

Session Outline:

The session starts by explaining what an ecosystem is and different levels of environmental organisation (biosphere, organism, etc.). We'll then look at the roles of consumers and producers. Working together the students will get to create their own example food webs (including producers, herbivores, carnivores, omnivores, etc.). We'll then discuss other ways to show connections between organisms: food pyramids, energy pyramids, and biomass pyramids. The students then play 'ecosystem tag' to highlight how energy and nutrients cycle. In a few different versions of this game we'll illustrate the importance of decomposers, and how toxins can affect animals at higher levels. Next, bioaccumulation and biomagnification are defined in more detail and highlighted through examples – historical DDT use and ospreys, and the current problem of POPs, microplastics, and ocean rubbish. The session ends with examples of positive actions to help solve these problems, including what the students can personally do to help.

Curriculum Links

Biology AQA:
4.6.3.6; 4.7.1 1, 3; 4.7.2.1-2; 4.7.3.1-2, 6; 4.7.4.1-3

Biology OCR:
Topic B4.1: b, e, f, h, I; Topic B6: b, c.

Biology Edexcel:
Topic 6: 6.1; Topic 9: 9.1, 9.2, 9.3, 9.7B, 9.9, 9.10

COLCHESTER ZOO

Please note, no live animals are used in this session.