Insects, Pollination and Food Security

KS3

National curriculum objectives

Working scientifically national curriculum objective:

- developing their scientific vocabulary and articulating scientific concepts clearly and precisely

Subject Knowledge national curriculum objective:

Interactions and interdependencies: Relationships in an ecosystem

- the importance of plant reproduction through insect pollination in human food security

Resources (you will need):

LOA 21 PDF (animal photographs) PDFs

National Geographic article: (https://www.nationalgeographic.co.uk/environment/2019/02/why-insect-populations-are-plummeting-and-why-it-matters)

Worldwide decline of the entomofauna: A review of its drivers:

(https://www.sciencedirect.com/science/article/pii/S0006320718313636)

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15 MINUTE STAND ALONE OR 30 MINUTE OPENING ACTIVITY

Activity content:

Starting with one of the animals on the LOA 21 PDF, and considering them as the 'top' of it's food chain, ask pupils to trace energy sources from the initial producer. They could extend upwards as well if the animal is not the apex predator. Repeat this two or three times, choosing different animals ensuring the arrows of energy transference move up through the chain. Pupils could extend this by building on the first one, creating a web as opposed to individual food chains.

Ask pupils to expand, support or deny the statement: 'Plants are critical to all life'.

Retrieval practice: What happens when a flower is fertilised? Where do seeds grow? Which part of a flower protects the seeds and provides a source of food? What are vegetables? What are the different ways in which seeds are dispersed?

Ask pupils to name the fruit or vegetable of common plants that humans can eat, e.g, wheat, potato or apple. In order for a flowering plant to produce fruit or vegetable, what needs to happen? [pollination].

Tell pupils: The National Geographic reports that insects - a class of animal accounting for approximately 80% of the Animal Kingdom - pollinate more than a third of our food crops (see resources). Therefore, humans are highly dependent on insects for food security, without them much of the world's staple foods, such as wheat, rice and barley, would not grow. The problem: 'over 40% of insect species are threatened with extinction' according to a recent worldwide study, in part because people do not know enough about them and their importance in food production. Habitats are being destroyed to make way for larger crops and pesticides used commercially and domestically.

Ask pupils to come up with ten practical ways to raise awareness of the importance of insects in relation to food security that would encourage people to preserve and protect the pollinating insect population, enabling them to thrive.

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Class reflection:
Where do insects come from? What do insects need in order to thrive? Where do they live and how can we reverse, or at least stop, the decline in insect populations? What could an individual do? A school? Pupils and families at home?

Homework idea:
Choose one of the awareness raising ideas generated in the session and action it.

Philosopher question:
If there is a risk of poisoning pollinating insects, and other animals that might eat the crop, such as Grouse or Hares, and by using pesticides on food crops, should we use them?