

The Value of Wildlife

Background, National Curriculum links and suggested aims

This lesson is intended for use when teaching about ecosystems or biological communities to Years 7-9. It has been written for use in a Biology lesson.

Teacher background knowledge

No special background knowledge required for a Biology teacher. In fact, little ecology is usually taught in school science lessons so the amount of Biology knowledge assumed below is modest.

Cross-curricular links

There are links to Economics and, to a lesser extent, to Philosophy.

Student background knowledge

None required though it is assumed that students have already had some teaching about ecology (food webs, the cycling of nutrients within ecosystems and the passage of energy up a food chain/web).

Resources and timing

One lesson of 50 minutes should suffice.

Activities

1. Introduce students to the term 'ecosystem services'. Ecosystem services are the various benefits that humans get from the natural environment. You might start by getting students to think, without undertaking any research, of the benefits humans get from forests. Possible answers include:
 - a. Wood from trees (for use in building homes, furniture, the construction industry, fuel, paper production, etc.);
 - b. Food and medicines – forests are home to some 80% of terrestrial biodiversity;
 - c. Protecting us from floods and so reducing erosion of soil and threats to humans and non-human animals;
 - d. Soil production;
 - e. Water and air purification;
 - f. Amelioration of the climate;

- g. Acting as a carbon store and producer of oxygen;
 - h. Homes for people (300 million of whom live in the world's forests, including 60 million indigenous people);
 - i. Tourism and relaxation (e.g. people going for a walk in a wood);
 - j. Physical and mental health benefits of walking in a wood.
2. One approach to determining the value of wildlife is to monetarise it, i.e. to determine its financial worth. This is controversial, though increasingly undertaken, and difficult for economists, let alone students, to do. Get students to think of how one might monetarise the value of walking along a beach. Introduce them to the following two approaches:
 - a. Asking people what they would be prepared to pay for walking along a beach. This is known as the 'contingent valuation method' (not a term that students need to know). It is widely used but there is evidence that it overestimates how much, in reality, people are prepared to pay for such benefits.
 - b. Looking at people who actually do go to a beach to go for a walk on it and monetarising (a) their travel costs; (b) their time – for example, if the average person earns £15 an hour if working in paid employment, then one might say that if it takes 40 minutes to travel to a beach, go for a walk on it and return home, that is equivalent to a financial worth of £10.
3. Get students to critique attempts to monetarise wildlife. Relevant arguments include:
 - a. The actual difficulties of attaching financial figures to such things as human appreciation of wildlife and the natural environment.
 - b. The problem of 'discounting'. For a number of reasons (inflation but also risk), an amount of money today (e.g. £1) is worth more than the same amount in the future (one of the reasons we normally have to pay interest to take out a loan). However, many ecosystem services are expected to provide human benefits for millions of years (unless humanity ceases to exist before then). In effect, this means that such services are much more financially valuable today than is generally supposed.
 - c. It was Oscar Wilde who said that a cynic is "a man who knows the price of everything and the value of nothing". Do we really value a majestic tree, a tiger or a kingfisher because of some financial calculations?

Extension activity

- Help students to determine the economic benefits of the oceans. You could, for example, refer capable students to the resource on this listed below and ask students to reduce the information in that resource to a single bar chart with the various types of benefit (food, tourism, coastal defence) along the horizontal axis and the associated financial values on the vertical axis.

- Get students to read the first verse (or, if you are feeling particularly ambitious, both verses) of Gerard Manley Hopkins' poem *As Kingfishers Catch Fire* and consider what Hopkins feels about the worth of kingfishers.

Resource links

- Ecosystem services: https://en.wikipedia.org/wiki/Ecosystem_services, <https://biodiversity.europa.eu/ecosystems-and-habitats>, https://ec.europa.eu/environment/pubs/pdf/factsheets/Eco-systems%20goods%20and%20Services/Ecosystem_EN.pdf.
- Benefits to humans of forests: https://wwf.panda.org/our_work/forests/importance_forests/, <https://www.mnn.com/earth-matters/wilderness-resources/blogs/21-reasons-why-forests-are-important>.
- Economic benefits of the oceans: https://www.wwf.no/assets/attachments/47-wwf_studie_healthy_oceans.pdf.
- Kingfishers: Hopkins' *As Kingfishers Catch Fire* is at: <https://www.poetryfoundation.org/poems/44389/as-kingfishers-catch-fire>. For a reading of the poem, go to <https://www.youtube.com/watch?v=P7im2AZBwzY>. Many students won't know what a kingfisher looks like. There are plenty of photographs on the web but make sure you get the UK species – *Alcedo atthis*, e.g. https://commons.wikimedia.org/wiki/File:Alcedo_atthis_-England-8.jpg, shown below (Tony Wood); worldwide, there are lots of other kingfisher species.

