Wolf reintroduction debate *SDGs*

This resource is a thought-provoking way for students to understand the impact of restoring biodiversity and considering this in a local context.

Understand the concepts of biodiversity, trophic cascades and ecosystem engineers.

Consider the possible impacts of reintroducing wolves to Scotland

Be able to create an argument for or against wolf reintroduction in Scotland.

Experiences & Outcomes supported by this activity:

HWB 4-10a, LIT 4-02a, ENG 4-03a, LIT 4-04a, LIT 4-05a, LIT 4-06a, LIT 4-07a, LIT 4-08a, LIT 4-09a, LIT 4-10a, SCN 4-01a, SCN 4-12b, SCN 4-20b, SOC 4-01a, SOC 4-08a, SOC 4-10,a SOC 4-15a, SOC 4-16b

Key concepts for the activity:

Species: Basic unit of classification of an organism in biology. Generally defined as a group of organisms that can breed together to produce fertile offspring. This definition is not always clear cut, particularly for species like bacteria that exchange genetic material without breeding.

Population: A group of individuals of the same species living and interbreeding in a certain area at a certain time.

Habitat: The environment in which an animal or plant lives. This includes other animals and plants and the physical (non-living) environment.

Ecosystem: A community of plants, animals and their physical (non-living) environment.

Biodiversity: describes the variety of plant and animal life on Earth. Variety can be measured at various levels: genetic, species and ecosystem.

Trophic Cascades: Organisms occupy different positions in food chains. The position that an organism occupies in a food chain is its trophic level. Trophic cascades happen when there are indirect interactions between organisms at different trophic levels that have significant effects on ecosystems. The cascade originates with predators and spreads down through the food web. For example, in North America sea otters were killed for the fur trade. This caused an increase in sea urchins that otters would normally eat. Sea urchins eat kelp, so their increased numbers meant a decline in kelp forests, affecting all the species who rely on the kelp forests for survival. The effect of removing sea otters on kelp forests was an indirect effect as the otters were not directly damaging the kelp.

Ecosystem engineers: These are species which have significant effects on the habitat they live in. These effects can include creating, modifying, maintaining or destroying habitats. An example of an ecosystem engineer is the beaver. By building dams, they change the movement of rivers and streams, leading to large ponds forming that are high in sediment and nutrient levels. This improves the diversity of plant species that live in the water, supports fish, amphibian and invertebrates.

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Reintroduction programmes: This is where a species is deliberately released back into its natural habitat. These programmes aim to establish new populations in areas where a species has been made extinct, or to expand existing populations to help ensure their survival.

Description of the activity:

Watch the video How Wolves Change Rivers and discuss in class the concepts described in the video with the help of guiding questions.

Explanation of video

Questions to introduce and sample of potential answers:

- What is a trophic cascade and how does this apply to wolf reintroduction into Yellowstone National Park?
- What are the steps that lead from wolves being reintroduced into Yellowstone National Park to rivers having straighter courses?
- What effects did wolves have on deer other than reducing their numbers through feeding on them?
- Do you think any species may have reduced in numbers due to wolf reintroduction and why?
- Who may have opposed the reintroduction of wolves into Yellowstone National Park and why?

Organise and have your debate:

- The debate motion will be 'Wolves should be reintroduced to Scotland.'
- Ask students to identify different groups who may have an interest in whether wolves are reintroduced to Scotland (stakeholders). You will need groups on opposing sides, for example, farmers and conservationists.
- Allocate one student to be speaker to chair the debate.
- Allocate all remaining students to be either for or against the reintroduction of wolves into Scotland.
- Ask students to research the issues relevant to your identified stakeholder groups on their side of the debate and write arguments based on those view points either for or against wolf reintroduction.
- Ask each group of students to choose two speakers to present their arguments (one to present at the start and one to sum up at the end for each group).
- Start your debate:
    - The speaker presents the motion.
    - The first for speaker (proposer) gives their arguments in favour of the motion.
    - The first against speaker (opposer) gives their arguments against the motion.
    - Allow students to then take it in turns to give further arguments and counterarguments on their side of the debate.
    - Once everyone has had their say, one student will sum up the for arguments then another student will sum up the against arguments.
    - The speaker re-reads the motion and all students (except the speaker) vote for whether they are for or against the motion. You can do this by asking them to stand on either side of the room, or write on slips of paper for an anonymous vote.

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- The speaker counts the votes and declares the debate result.

Extensions to the activity:

Extension 1

Discuss the reintroduction of beavers to Scotland as they have already been introduced. NatureScot's webpage on Beavers is a good place to start for information on this.

Extension 2

Turn your debate findings into an assembly or online presentation to share with the rest of your school and / or local community.

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