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Teacher's Notes: Tutor Group Assembly for 11- to 16- year-olds

Endangered species

Extinction is a broad issue, one that involves the habitats and environments where species live and interact with one another. Although some measures are being taken to help specific cases of endangerment, the universal problem cannot be solved until humans protect the natural environments where endangered species live. The following notes have been designed to support a tutorial discussion by introducing some of the key factors affecting endangered species in the world today and exploring ways in which we can help.

Part 1 is an introduction to the reasons why some species are endangered. In each of the three sections there are discussion point questions that prompt topic related student discussion and/or wider research. The use of separate sections for each factor means there are areas for **individual groups** to discuss and then share for a single session or they can be used as the basis for a **series of tutorial sessions**.

Part 2 introduces ways in which students can help, promoting wider debate and local action, for example global impact-type projects for Citizenship study.

Part 1: Introduction

There are many reasons why a particular species may become endangered. Although these factors can be analysed and grouped, there are many causes that appear repeatedly.

Discussion point 1: What do you understand by the term 'endangered'?

Below are several factors that contribute to a species' decline:

Habitat destruction

Our planet is continually changing, causing habitats to be altered and modified. Natural changes tend to occur at a gradual pace, usually causing only a slight impact on individual species. However, when changes occur at a fast pace there is little or no time for individual species to react and adjust to new circumstances, leading to disastrous results. Rapid habitat loss is the primary reason species become endangered.

Discussion point 2: Why are the natural habitats of endangered species in decline?

The strongest forces in rapid habitat loss are human beings. Nearly every region of the planet has been affected by human activity, particularly during the 20th Century. It can be difficult for an individual to recognise the effects that humans have had on specific species. It is hard to identify or predict human effects on individual species and habitats, especially during a human lifetime. But it is quite apparent that human activity has greatly contributed to species becoming endangered.

Discussion point 3: What examples of human activity do you think have led to animal and plant life becoming endangered or even extinct?

The loss of microbes in soils that formerly supported tropical forests, the extinction of fish and various aquatic species in polluted habitats, and changes in global climate brought about by the release of greenhouse gases are all results of human activity.

For example, although tropical forests may look as though they are lush, they are actually highly susceptible to destruction. This is because the soils in which they grow are lacking in nutrients. It may take centuries to re-grow a forest that was cut down by humans or destroyed by fire, and many of the world's most severely threatened animals and plants live in these forests. If the current rate of forest loss continues, huge numbers of plant and animal species will disappear.

Burning fossil fuels to heat homes, drive cars and power factories causes the release of greenhouse gases into the Earth's atmosphere and lead to global warming and climate change. Our everyday living is beginning to affect all life on earth as the ice-caps melt, the sea levels rise and the land bakes, changing the seasons and climate upon which many species of animal and plant depend.

Discussion point 4: What could you do to help minimise your contribution to global warming and climate change?

Disease, pollution, and limited distribution around the world are more factors that threaten various plant and animal species. If a species does not have the natural genetic protection against particular pathogens, an introduced disease can have severe effects on that species. For example, rabies and canine distemper viruses are presently destroying carnivore populations in East Africa.

Domestic animals often transmit diseases that affect wild populations, demonstrating again how human activities can cause species to become endangered. In domesticating animals to improve human standards of living we have altered the natural balance and biodiversity of that animal's native environment. Over time man has also modified species to suit a manmade environment. New species may also threaten the survival of the original species through competition for survival or introduction of disease.

Introduction of exotic species

Native species are plants and animals that are part of a specific geographic area and have ordinarily been a part of that particular biological landscape for a lengthy period of time. They are well adapted to their local environment and are accustomed to the presence of other native species within the same general habitat.

Discussion point 1: Why do you think the introduction of exotic/non-native species to an area might have a negative impact on native populations?

Exotic species are interlopers. These species are introduced into new environments by way of human activities, either intentionally or accidentally. These interlopers are viewed by the native species as foreign elements. They may cause no obvious problems and may even eventually be considered as natural as any native species in the habitat. However, exotic species may also seriously disrupt delicate ecological balances and may produce many unintended yet harmful consequences.

The worst of these unintended yet harmful consequences arise when introduced exotic species put native species in jeopardy by preying on them or by over eating a native species' key food source. This can alter the natural habitat and can cause a greater competition for food. Species have been biologically introduced to environments all over the world, and the most destructive effects have occurred on islands - introduced insects, rats, pigs, cats, squirrels and other foreign species have actually placed hundreds of species in danger of extinction during the past five centuries. Exotic species are certainly a factor that can lead to animals becoming endangered.

Discussion point 2: How and why do non-native species become introduced?

The red squirrel is native to the UK, while the grey squirrel is native to the oak and hickory forests of north east America. As with many non-native plants and animals the grey squirrel is now found in abundance in Britain following its introduction in 1876, when the first pair of grey squirrels were released in Henbury Park, Cheshire by a Mr Brocklehurst. The appeal of these 'new' squirrels spread with further releases during the following 50 years. It was initially thought that aggression from the larger grey squirrel was to blame for the replacement of red squirrels by greys, but research has shown that this is not the case. The grey squirrel's efficiency in digesting large seeds from broadleaved trees (such as acorns and hazelnuts) gives them a competitive advantage over red squirrels in broadleaved and mixed woodland. They are able to feed on these seeds before they are fully ripe, and gain more nutritional benefit from them than red squirrels.

Grey squirrels are also thought to steal nuts and seeds from red squirrel winter stores. This resulted in weight loss in red squirrels and reduced breeding success, as red squirrels need good body fat reserves in order to produce and successfully rear young in spring. With numbers already low, the spread of grey squirrels across Britain spelled disaster for many red squirrel populations, leading to their disappearance throughout most of England, Wales and the Scottish central belt. It is estimated that there could be in the region of 3 million grey squirrels living in Britain today, compared with only 160,000 red squirrels.

Overexploitation

A species that faces overexploitation is one that may become severely endangered or even extinct due to the rate in which the species is being used. Unrestricted whaling during the 20th century is an example of overexploitation - the whaling industry reduced the populations of many whale species. When several whale species were nearly extinct a number of nations agreed to abide by an international moratorium on whaling. Due to this moratorium, some whale species, such as the grey whale, have made remarkable comebacks, while others remain threatened or endangered.

Discussion point 1: What other species can you think of that might be threatened by overexploitation?

Due to the trade in animal parts, many species continue to suffer high rates of exploitation. Even today there are demands for items such as rhino horns and tiger bones in several areas of Asia because a strong market for traditional medicines made from these animal parts exists.

Discussion point 2: Should we create laws or apply restrictions on all exploitation of animals to prevent endangerment in the future?

In Africa animal skins, ivory and preserved body parts are still popular tourist souvenirs. A black market still thrives despite long-standing laws against poaching and/or importing these items.

Discussion point 3: What factors make human beings natural survivors?

Man has developed so many things to help the human race survive. We have homes that are heated to keep us warm even when it is cold. We do not rely on a specific habitat - humans live all over the world where they adapt to differences in climate and eat whatever is locally available. We have developed medicines to help us when we are sick and established charities to support those in need. The Muscular Dystrophy Campaign is a national charity set up to provide free care and support for babies, children and adults with muscle disease. This year its Young Pavement Artists Competition challenges you to 'Make it a jungle out there' by turning the pavement or playground into your canvas and expressing your thoughts on endangered species.'

Part 2: What can you do to help?

Animals become endangered and even extinct all over the world, including in the UK. Here are just a few ways in which you can help locally:

Conserve habitats

- One of the most important ways to help threatened plants and animals survive is to protect their habitats permanently in national parks, nature reserves or wilderness areas. There they can live without too much interference from humans. It is also important to protect habitats outside reserves such as on farms and along roadsides.
- You can visit a nearby national park or nature reserve. Some national parks have special guided tours and walks. Find out if you and your friends might be able to help with local conservation work.
- When you are out and about in the countryside make sure you obey the Countryside Code (please see below).
- Some areas have groups which look after local lands and nature reserves. They do this by removing weeds and planting local native species in their place. You could join one of these groups, or even start a new one with your parents and friends. Ask your local parks authority or council for information.
- By removing rubbish and weeds and replanting with native plants you will encourage native animals to return.

As a tutorial discussion, students could find out about the Countryside Code and debate how they could encourage others including local farmers to make a difference:

England - www.countrysideaccess.gov.uk/things_to_know/countryside_code

Wales - www.countrysidecodewales.org.uk/

Scotland - www.outdooraccess-scotland.com/default.asp

Northern Ireland - www.countrysiderecreation.com/

Make space for wildlife

- Build a birdfeeder and birdhouse, and establish a birdbath for the neighbourhood flocks.
- Plant a tree in your garden.
- Start composting in your garden or on your balcony. It eliminates the need for chemical fertilisers which are harmful to animals and humans, and it benefits your plants!
- Ask your parents not to use harmful chemicals in your garden or home.

Recycle, reduce, And reuse

- Encourage your family to use public transport. Walk or ride bicycles rather than using the car.
- Save energy by turning off lights, radios and the TV when you are not using them.
- Don't leave things on 'standby' over night.
- Turn off the tap while you brush your teeth and use water-saving devices on your toilet, taps and showerhead.
- Ask your parents to buy products and food without packaging whenever possible.
- Take your own bag to the supermarket as this will help reduce the amount of

waste your family produces.

- Recycle your toys, books and games by donating them to charity.
- Encourage your family to shop for organic fruits and vegetables.

Plant native plants

- If you can, plant native plants instead of non-native or introduced ones in your garden. You don't want seeds from introduced plants escaping into the countryside. Native grasses, flowers, shrubs and trees are more likely to attract native birds, butterflies and other insects, and maybe even some threatened species.
- Non-native plants and animals are ones that come from outside your local area.
- Many environmental weeds come from people's gardens.
- Controlling these foreign species is an important step in protecting wildlife.

Make your voice heard

- There are a number of charities which have been set up to support endangered species including many zoos, which undertake special breeding programs to increase numbers for reintroduction into the wild.
- Tell your family and friends about threatened species and how they can help them.
- Write articles or letters about threatened species to raise awareness in your local community.
- Take part in the Young Pavement Artists Competition 2009 to raise awareness of endangered species and raise funds for babies, children and adults with muscle disease. Make it a jungle out there by turning the pavement or playground into your canvas and expressing your thoughts on endangered species!