Unit 26: Animal Conservation

Delivery guidance

This unit covers some of the complexities of managing wildlife and animal conservation and the reasons for the increase in human–wildlife conflicts.

There are two areas of focus: the threats to animal biodiversity and the need to protect it, and a look at one specialised practical technique in animal conservation, the translocation of animals from one site to another.

Use a variety of delivery methods to engage and motivate learners, such as:

- small group and class discussions/debates – to enable peer learning and encourage the development of interpersonal skills
- use of images and TV documentaries – to show the plight of some animals and illustrate the strategies, particularly translocation, used to address them
- visiting speakers – to talk about particular ecosystems and conservation and/or translocation of animals within them (such lectures could take place virtually via Skype, FaceTime, JoinMe or similar platforms)
- a visit to a zoo, nature reserve, wildlife rescue centre or similar – to look at conservation work and ask questions of the staff
- independent and small group research work – leading to presentations to the class
- use of articles (from newspapers, journals etc.) – about the necessity for animal conservation and the associated regulations and issues
- use of case studies about endangered species and how they have been protected and conserved.

If possible, collaborate with a local or regional zoo, national park, wildlife rescue centre or conservation centre. This may allow some learners to volunteer or obtain a work placement.

You can also link some unit content and resources with *Unit 10: Climate Change* and *Unit 27: Ecosystems*.

Approaching the unit

There are no practically assessed criteria for this unit. Learners need to carry out extensive research and will benefit from access to:

- a library with relevant up-to-date textbooks
- journals such as *New Scientist* and *Biological Science Review*
- computers and the internet.

Encourage learners to research small animal species, invertebrates, insects, amphibians, reptiles, fish and birds; they should not concentrate only on large species like tigers, rhinos etc.

For learning aim A, learners can research essential requirements of animals and how they affect the distribution and behaviour of the animals. Biotic and abiotic factors must be understood. Threats to animal populations must be researched. Small groups of learners could be encouraged to research and present details of the organisations listed in the unit content, that provide legislation to help protect and conserve animals. Case studies could

be used to help learners understand the motivations of local people to engage with animal conservation initiatives. It may be possible to arrange a visit to a Conservation projects or a visit from a representative from a conservation organisation. These could be virtual visits using platforms like Skype, FaceTime, Zoom etc.

For learning aim B, learners can research the social, economic and ethical issues associated with animal conservation. Visits to or from conservation projects/representatives can help learners understand this and encourage a vocational aspect to the programme. Learner research about wildlife management strategies must cover North America, Southern Africa, Central Africa, Asia, South America. Human wildlife conflicts must be researched in terms or impact on both humans and wildlife. Learners must be able to research the views of different interest groups as listed in the unit content. Small groups of learners could each research a different perspective. Debates could be used with learners taking on the role of different interest groups. Wildlife documentaries can also be helpful in allowing learners to understand the issues around animal conservation.

For learning aim C, learners must understand why, in some instances, translocation of animals may be required. They will need to research the key stages in creating a plan for translocation. Local conservation groups can be a good source of information along with wildlife documentaries. The need for compliance with legislation must be understood. The importance of selection of release sites and long term health and adjustment monitoring and evaluation of the translocation must be understood

Assessment model

Learning aim	Key content areas	Recommended assessment approach
A Understand the necessity for animal conservation and its regulation	**A1** Essential requirements of animals and how they affect distribution and behaviour **A2** Reasons why animal populations are threatened **A3** The role of legislation and international agreements in animal conservation **A4** The motivations of local people to engage with animal conservation initiatives	A portfolio of evidence, such as analysis of case studies, maps, diagrams, basic biology of named focal species and causes for their situation, interpretation of regulations and role of regulatory organisations and the engagement of local people.
B Understand the social, economic and ethical issues associated with animal conservation	**B1** Wildlife management strategies around the globe **B2** Human–wildlife conflicts **B3** Views of different interest groups	
C Be able to plan for translocation of an animal	**C1** Initial assessment and suitability of animal(s) and proposed location **C2** Feasibility, design and risk assessment **C3** Release and implementation **C4** Importance of health monitoring, adjustment and evaluation	A plan for the translocation of a named species, from a named location to a named release location, considering the source animal, source and release locations, regulations, socio-economic aspects, public engagement, funding, risk assessment, ongoing monitoring and management.

Assessment guidance

This is an internally assessed unit and there is a maximum of two summative assignments. Assignment 1 must cover learning aims A and B, while assignment 2 will cover learning aim C.

Authorised assignment briefs, while not compulsory, are available. They adopt the required holistic approach and will help learners to provide evidence to meet all the assessment criteria.

Once learners have started working on assignments that will be submitted for assessment, they must work independently to produce their evidence.

For learning aim A, learners must show that they understand the necessity for animal conservation and its regulation. They must explain how natural disasters and human activities can cause a species to become threatened, endangered or extirpated and how legislation, regulations and international agreements attempt to protect animals. They must analyse why a chosen named species has become threatened, showing consideration of the various relevant factors: exploitation, pollution, and invasive species/disease.

For learning aim B, learners must explain the impact of human–wildlife conflicts on human communities and analyse the impact of management strategies on animal conservation. Finally, they should evaluate the role of local people in an animal conservation project, showing an undersanding of the motivational factors that impact on the engagement of local people.

For learning aim C, learners must create a plan and analyse the risks associated with the relocation of a named animal species. They may choose to investigate the translocation of the species studied for learning aims A and B. If this is not practicable, they may choose another species. Learners must evaluate the necessity for long-term management and funding for wildlife relocations. If possible, provide access to (documentaries about) conservationists who have experience of translocation of a species; this will help learners to understand the challenges, risks and benefits of the strategy.

Getting started

This gives you a starting place for one way of delivering the unit, based around the recommended assessment approach in the specification.

Unit 26: Animal Conservation

Introduction

Some learners will be familiar with wildlife conservation, either from previous educational studies or as a result of their own interests. Assess prior knowledge and understanding using a discussion or quiz or by giving learners an abridged version of the unit content and asking them to indicate their level of knowledge using colour-coding, smiley faces, or thumbs up/thumbs down. This may be a useful way to begin each learning aim.

Develop learners' critical thinking skills by asking them to consider and discuss, for example, what might happen if [a named local species] went extinct, in terms of:

- consequences for other species in the ecosystems in which they currently live
- advantages to local people
- disadvantages to local people
- effects on the individual learner.

Learning aim A: Understand the necessity for animal conservation and its regulation

Learning aim B: Understand the social, economic and ethical issues associated with animal conservation

A1

- Introduce this learning aim by showing images of species (local, regional, national and global) that are threatened, endangered or extirpated.
- Ask learners to search the internet using the question, 'Why is biodiversity important?' and to produce a spider diagram of issues (e.g. energy cycling, gene pool/breeding stock, food, agriculture, biotechnology, recreation/tourism, etc.). These diagrams could then be used as the basis for a class discussion.
- Ask small groups of learners to discuss the essential requirements of animals (biotic/abiotic factors, food, water, territory, mates, climate, distribution, behaviour). Each groups should use a piece of flip chart paper to share their results with the rest of the class.
- Learners can then work in small groups to discuss these factors in more detail and explain how distribution and behaviour are affected by biotic and abiotic requirements. Each group should present their finding to the class.

A2

- Using photographs of local wildlife species as prompts, learners could ask older generation family members about wildlife species they can remember seeing from childhood. Collation of results may reveal a decline in animal biodiversity throughout human lifespans. It may also reveal that some species have increased in the district.
- Encourage learners to research the major human developments in their district in the last 100 years (e.g. buildings, roads, airports, etc.). If possible, correlate this information with learners' findings about changes in wildlife sightings over a similar time period.
- Ask learners to research any natural disasters in recent memory (floods, drought, earthquakes, volcanic activity, hurricanes, etc.) and consider how this may have affected species diversity.

- Use videos/documentaries to show how human exploitation (e.g. overhunting, pet trade, medicines, growth of human populations, globalisation, free trade, tourism etc.) has affected the distribution of species locally, regionally, nationally and globally.
- Ask learners to produce a spider diagram/concept map showing reasons why animal populations are threatened.
- Learners should produce a poster to show how crop barriers, electric fences and infrared heat sensors are helping to prevent animals from being killed in retaliation for loss of human lives and/or crops.

A3 and B3

- Introduce the general principles of local laws and regulations relating to animal health, welfare and international movement of endangered species.
- Ask learners to identify different interest groups (local, regional, national and international) that have views on animal conservation.
- Ask learners to work in small groups to research the organisations from the unit content (one organisation per group) and find out how they are responsible for legislation, monitoring and enforcement of animal conservation. Each group should present their findings to the rest of the class.
- Give each learner a role: farmers, landowners, hunters, indigenous persons, tourism companies, tourists, trophy hunters, photographers, commercial businesses, wildlife management staff, government agencies, charities, donors etc. They should research 'their' views on conservation of animals, then 'meet' with other learners to discuss their ideas.
- Learners could then represent their roles in a debate about how to address human–wildlife conflicts and animal conservation. Highlight the role of local people in conservation projects.
- Organise a debate on the motion, 'CITES is fit for purpose and is protecting wildlife adequately'. Allocate learners to represent each side of the debate and research key arguments, before holding the live debate.

A4 and B1

- Ask learners to identify social, economic and ethical issues associated with animal conservation. Record their ideas on flip chart paper and display them around the room.
- Invite a local conservationist to give a presentation and discuss with learners how to motivate and engage local people with conservation initiatives.
- Ask learners, in small groups to choose a regions and produce a leaflet showing how a species is being conserved in the following regions: North America, Europe, Southern Africa, Central Africa, Asia, South America.
- Encourage learners to share their leaflet with the class and discuss how people can become involved – and the benefits of being involved – in conservation.

Learning aim C: Be able to plan for translocation of an animal

C1

- Split learners into pairs or groups to consider the reasons for animal movement, the aims of animal movement and the associated benefits:
    - within their indigenous range (reintroduction, re-enforcements)
    - outside their indigenous range (high-risk, colonisation, ecological replacement).

C2

- Show a documentary about the intercontinental translocation of an animal species. (Searching online for 'translocation of animals' will provide some useful videos/documentaries.) Remember, during teaching and learning activities, learners **must not** use a species or location they will use for assessment. Before showing the documentary, give learners a list of questions to consider, to be discussed afterwards. For example:
    - What the the reasons for the translocation? What were the goals and objectives?
    - How and why were the source population and country selected?
    - How and why was the release country chosen? (Learners might consider legal requirements, public engagement, habitat management and interventions that may be required.)
    - How was animal welfare considered – e.g. stress, suffering, the possibility of disease or parasites?
    - What regulatory compliance was required?
    - What people were required?
    - How were the risks to human handlers considered?
    - How were the risks to the species considered, monitored and assessed during the translocation?
    - Did anything go wrong? How were the errors addressed?
    - How was social feasibility considered (e.g. engagement with local and national infrastructure and human communities)?
    - How was funding arranged?
    - How were costs vs risks calculated?
    - How was the species released? What consideration was given to the animals' life stage and season? Are multiple releases likely to be required?
- Ask learners to produce a timeline and an outline plan/concept map for an imaginary animal to be translocated to an imaginary location. Remember, during teaching and learning activities, learners **must not** use a species or location they will use for assessment.
- Encourage learners to debate the practice of translocating animals and to consider alternatives – for example, creation of wildlife migration corridors (including highway overpasses or underpasses) to link segregated nature reserves, allowing animals to choose to migrate.

C4

- Give learners, or ask learners to source, examples of scientific reports or documentaries on translocation of species. Learners should use these resources to identify and explain the cycle of implementation → monitoring → analysis → adjustment (biological and non-biological) until goals are met or declared unsuccessful.
- Ask learners to work in small groups to research the factors that may lead to success or failure of the translocation of a species
    - release factors – disorientation, competitive disadvantages, stress, exposure to predation, exposure to diseases, lack of experience of finding food/hunting/knowing what is safe/good to eat
    - demographic factors (such as population growth and spread) that need to be monitored (consider possible use of GPS tracking)

- behaviour monitoring to find out whether the animals are integrating, causing an issue for locals, mating, etc.
- ecological impact monitoring, to assess the animals' impact on the environment (e.g. overgrazing, damage to crops)
- genetic monitoring, to assess effects on the gene pool, variation within the species etc.
- health and mortality monitoring, including veterinary costs
- social, cultural and economic monitoring, to assess the translocated animals' impact on the community
- long-term management, including the need for funding to monitor the population and disseminate information and results.

- Then ask learnesr to work in the same groups to research how planning can be used to mitigate potential negative factors and enhance positive factors. Each group should prepare a PowerPoint presentations, flip chart summary or poster, to be shared and discussed with the rest of the class. Ensure all factors have been covered and understood.

Details of links to other BTEC units and qualifications, and to other relevant units/qualifications

This unit links to:

- Unit 1: Principles and Applications of Biology I
- Unit 5: Principles and Applications of Biology II
- Unit 8: Contemporary Issues in Science
- Unit 10: Climate Change
- Unit 14: Genetics and Genetic Engineering
- Unit 15: Diseases and Infections
- Unit 24: Pollution and Waste Management
- Unit 27: Ecosystems.

Resources

In addition to the resources listed below, publishers are likely to produce Pearson-endorsed textbooks that support this unit of the BTEC Nationals in Applied Science. Check the Pearson website (http://qualifications.pearson.com/endorsed-resources) for more information as titles achieve endorsement.

Textbooks

- Dowie, M., *Conservation Refugees: The Hundred-Year Conflict between Global Conservation and Native Peoples,* Massachusetts Institute of Technology, 2011, ISBN 978-0-262-51600-6 – This textbook is useful for the engagement of local people (as a legitimate interest group) with animal conservation initiatives.
- Fullick, A., *Pearson Edexcel International A Level Biology Student Book 2*, Pearson Education Limited, 2019, ISBN 978-1-292-24470-9
- Damon, A., McGonegal, R., Tosto, P. and Ward, W., *Pearson Baccalaureate Standard Level Biology, 2nd edition*, Pearson Education Limited, 2014, ISBN 978-1-447-95904-5

Journals

- *Oryx: The International Journal of Conservation* – A bi-monthly peer-reviewed journal of biodiversity conservation, conservation policy and sustainable use, and the interaction of these subjects with social, economic and political issues. Every issue includes comprehensive reporting of international conservation news.
- *BBC Wildlife Magazine* – This is an accessible magazine aimed at the general public. It is UK-based, but over half its content is about international issues.
- *Biological Sciences Review* – This journal is aimed specifically at 16–19-year-old learners studying biological sciences. Each issue usually includes at least one article about the conservation of a particular animal species.
- *New Scientist* – This journal discusses the latest scientific discoveries, including animal conservation, in a manner accessible to 16–19-year-old learners.

Videos

There are numerous scientific documentaries on wildlife and animal conservation. Videos featuring the English host, David Attenborough, are a useful starting point.

You may wish to search online for the following videos:

- 'WWF is saving rhinos by moving them' (on the WWF website)
- 'From Cincinnati to Sumatra: Taking a rhino across the world in a cargo plane' (on the WCPO website).

Websites

The following websites give lots of scientific information on ecology, population, range, threats and conservation success stories.

- Rainforest Trust
- Tiger Trust
- Wildlife Conservation Network
- Wildlife Conservation Society
- Wildlife Conservation Trust
- World Wildlife Fund for Nature
- Chartered Institute of Ecology and Environmental Management (CIEEM)

Pearson is not responsible for the content of any external internet sites. It is essential for tutors to preview each website before using it in class so as to ensure that the URL is still accurate, relevant and appropriate. We suggest that tutors bookmark useful websites and consider enabling students to access them through the school/college intranet.