

Unit 26: Undertaking Upland Habitat Management

Unit code:	L/600/9409
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

This unit aims to introduce learners to the skills and knowledge in urban habitat management and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education. Many of the UK upland habitats are a result of deflected succession and, without proper management, wilderness areas of the countryside could be lost. Learners will develop the knowledge and skills required to plan, carry out practical management for a variety of upland habitats.

● Unit introduction

Many UK upland habitats are the results of deflected succession and, without proper management, wilderness areas of countryside could be lost. The need to improve the management of upland habitats has become more important with declining farm incomes and increasing visitor pressure in the wilder open areas of the UK countryside.

Those employed in economic and recreational management in upland areas must have the knowledge and skills to carry out management tasks appropriate to these fragile ecosystems, which are threatened by grazing pressures, invasive species and increasing visitor numbers.

This unit will give learners the knowledge and skills required to plan and carry out practical management for a variety of upland habitats. Environmental protection and health and safety issues will be stressed throughout delivery of this unit.

Learners will investigate the range of upland habitats found in the UK and develop skills in identifying habitats and significant upland indicator species. The ecological principles relating to upland habitats will also be explored and learners will gain an understanding of the impact of different land uses on upland ecosystems. This will allow them to determine appropriate tools and techniques to address particular objectives through management planning.

Learners will explore the threats that upland habitats face and will investigate associated legislative controls and habitat protection. They will also have the opportunity to gain practical skills in surveying and upland habitat management.

● Learning outcomes

On completion of this unit a learner should:

- 1 Know upland habitats of the UK
- 2 Be able to survey a selection of upland habitat
- 3 Understand upland habitat threats and legislative controls
- 4 Be able to carry out practical upland habitat management.

Unit content

1 Know upland habitats of the UK

Definition of upland habitats: abiotic factors (micro-climate, topography, geology and soil types); contrasts with lowland habitats; identification of main UK upland zones; an overview of the origins of upland habitats

Upland habitats: moorlands, heather moor and bracken; rough grazing and other upland grasslands; woodlands; regional specialities eg upland grasslands, blanket mires, peat areas, arctic/alpine, upland wetlands; structural features eg limestone pavements, tors; distribution and location of UK upland habitats, National Park designation; land uses and their impact on upland habitats; characteristics and management of common land

Environmental needs of indicator species: climate (rainfall, temperature, wind, light, humidity); exposure, altitude, shade, shelter; soil (type, characteristics, pH, nutrients, water availability); biotic factors (presence or absence of other species, competition, grazing, parasitism)

Differences between habitats: features; characteristics; landscape; geological features; location; habitat stability/fragility; species present (plant species, tree and shrub species, mammal, bird, reptile, amphibian, and invertebrate species)

2 Be able to survey a selection of upland habitat

Risk assessment: assessment of likelihood of risk, severity of risk, methods to mitigate risk, assessment of risks to self and others, use of PPE

Surveys: plan survey (identify objectives, plan survey method and location, identify equipment and resources required, possible sources of error, methods to minimise errors); species surveying: use of quadrat and transect methods, use of appropriate equipment; environmental surveying: climate surveying eg light, wind, temperature, rainfall, soil sampling eg soil characteristics, mineral content, water content; record results, use of statistical analysis, presentation of results: quantitative (eg tables, charts, scatter graphs, histograms, pie charts), qualitative (eg annotated map, diagram, written report)

Upland habitat species identification: moorland eg heather and bilberry; limestone grassland eg blue moor grass; upland woodland eg sessile oak and downy birch oak; the life cycle of ling (*Calluna vulgaris*); higher and lower order plant species eg lichens, fungi, grasses; trees; higher and lower order animal species eg invertebrates, birds, amphibians, reptiles and mammals; use of keys

Distribution of species: factors that influence vegetation communities within habitats (abiotic factors eg soil moisture, pH, exposure, altitude, shade; biotic eg grazing, competition, parasitism, trampling)

3 Understand upland habitat threats and legislative controls

Threats: commercial exploitation (peat cutting, drainage, overgrazing and bracken invasion, afforestation); reasons for exploitation; impact of exploitation on selected habitats; lack of management (under-grazing, scrub invasion); sporting and recreational pressures eg ski piste developments, open air access, scrambling, fires; environmental threats eg acidification, air pollution, global warming

Legislation: current relevant legislation, International Conventions and EU regulations and codes of practice appropriate to upland habitat management eg Countryside Rights of Way Directive 2000, Wildlife and Countryside Act 1981, Heather and Grass Burning Regulations 2008, Environmental Protection Act 1990, Natural Environment and Rural Communities Act 2006; designation and protection eg National Parks, Sites of Special Scientific Interest; effectiveness of legislation and protection

4 Be able to carry out practical upland habitat management

Practical upland management: maintenance of surfaces peculiar to upland areas eg stone pitched paths, boardwalks, flag and aggregate paths; tasks appropriate to regional requirements eg stone wall building or restoration, cutting and clearing trees and scrub, weeding, seeding, re-wetting and restoring mires, the handling of livestock, bracken control, brush cutters, strimmers, pesticide application principles, deer fencing; PPE; health and safety; risk assessment

Management methods and techniques: creation or restoration; maintenance; livestock grazing (types of livestock, stocking rates, application of the Grazing Index); burning (timing, methods used, compliance with legislation); cutting (manually, use of mechanisation, timing); herbicide use (timing, legislation)

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<p>P1 identify and describe upland habitats in the UK [IE, SM]</p>	<p>M1 explain the variety of upland habitats in the UK in relation to abiotic and biotic factors</p>	<p>D1 discuss factors which affect species biodiversity in specified upland habitats</p>
<p>P2 describe environmental needs and distribution of indicator species [IE, SM]</p>		
<p>P3 state the major differences between a variety of upland habitats:</p> <ul style="list-style-type: none"> ◇ moor lands ◇ blanket mires ◇ peat areas ◇ upland wetlands ◇ arctic/alpine ◇ tors ◇ limestone pavements <p>[IE, SM]</p>		
<p>P4 outline the PPE required and site specific risk assessment for practical activity on upland areas [IE, SM]</p>	<p>M2 plan and carry out upland habitat surveys using appropriate techniques, presenting detailed and accurate data and information</p>	
<p>P5 carry out surveys of selected upland habitats [IE, TW, SM]</p>		
<p>P6 identify a range of upland species of flora and fauna [IE, TW]</p>		

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P7 explain threats to selected upland habitats [CT]	M3 evaluate the effectiveness of legislative protection for selected upland habitats	D2 evaluate and justify upland management activities, recommending improvements.
P8 discuss legislation relevant to upland habitats [IE]		
P9 evaluate the commercial exploitation of upland habitats: <ul style="list-style-type: none"> ◇ afforestation ◇ peat cutting ◇ drainage ◇ over grazing [CT]		
P10 select methods used to restore, improve or create an upland habitat [TW, SM]	M4 explain the methods used to restore, improve or create an upland habitat to meet given objectives.	
P11 carry out practical upland management activities [TW, SM]		
P12 evaluate methods of managing an upland habitat, including livestock grazing, burning and cutting. [CT, RL, EP]		

PLTS: This summary references where applicable in the pass criteria, in the square brackets, the elements of the personal, learning and thinking skills. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
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Essential guidance for tutors

Delivery

Delivery of this unit will involve practical assessments, written assessment, visits to suitable collections and can be linked to work experience placements.

Where used to support delivery, work placements should be monitored regularly in order to ensure the quality of the learning experience. Work experience placement supervisors and learners should be made aware of the requirements of the unit before any work-related activities are undertaken, so that learners can have the opportunity to gather naturally occurring evidence. For example, learners may have the opportunity to undertake footpath construction or practical habitat management and they should ask for observation records and/or witness statements to be provided as evidence of this.

Visiting expert speakers could add to the relevance of the subject. For example, a national park warden could talk about their work and the methods they use to support and control upland habitat management. An advisory officer from DEFRA, a shepherd or a forester could talk about their work, the situations they face and the methods they use.

Whichever delivery methods are used, it is essential that tutors stress the importance of animal welfare, sound environmental management and the need to manage the resource using legal methods. Sustainability concepts should also be demonstrated where possible and practical activities should be planned to minimise disruption to habitats and their species.

Health and safety issues relating to site visits must be stressed and reinforced regularly, and risk assessments must be undertaken before any practical activities. Adequate PPE must be provided and used following the production of suitable risk assessments.

For learning outcome 1 delivery is likely to be a mix of classroom activity and independent learner research, together with visits to upland habitats, either locally or through a field trip. As it is unlikely that learners will be able to visit all types of upland habitat due to their dispersed nature, it is important that visits are supplemented with audio-visual material to enable learners to observe as wide a range of habitats as possible. Delivery of learning outcome 2 will need to include the underpinning theory of surveying in an upland environment, together with the opportunity for learners to survey a range of different sites.

Delivery needs to include how to plan a survey and analyse results as well as conducting the survey itself. Learners will also need the opportunity to practise species identification using keys and guides.

Learning outcome 3 covers the threats to upland habitats and identifies the associated legislative controls. Delivery techniques should be varied and can be linked to the delivery of learning outcomes 2 and 4. It will be helpful for learners to visit upland habitats to gain a perspective of the types of threats faced and strategies in place to mitigate them.

Learning outcome 4 looks at the tasks commonly used to improve upland habitats. Learners will need supervised access to an upland habitat to carry out practical management tasks. Given the careful management planning of most UK upland areas, it is important to plan this well in advance to fit with the timing planned by the land owner or managing body. The importance of health and safety should be stressed, as should the importance of minimising environmental impact through the habitat management activities. Learners will also need the opportunity to evaluate upland management activities, particularly the use of livestock grazing, or burning or cutting as a means of vegetation control. Delivery could include the use of guest speakers and case studies to explore and explain management decisions and how they impact on the habitats.

Outline learning Plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction to the unit, structure and programme of assignments.
Assignment 1: Upland Habitat Surveys (P4, P5, P6, M2)
Tutor introduces the assignment brief.
Formal input – survey planning, survey objectives, factors to consider in upland surveys, types of survey.
Carry out site-specific risk assessment.
Class-based activity – species identification, use of keys, guide books, common upland species.
Carry out a range of surveys.
Prepare results and survey write up.
Assignment 2: Upland Habitats (P1, P2, P3, M1, D1)
Tutor introduces the assignment brief.
Formal input – upland habitats – definitions and types of, features, characteristics and distribution of habitats within the UK.
Class activity – distribution of species, importance and definition of indicator species.
Visiting speakers (eg national park warden).
Visits to upland habitats.
Class discussion – differences between upland habitats, reasons for differences.
Learner assessment completion.
Assignment 3: Threats and Legislative Controls (P7, P8, P9, M3)
Tutor introduces the assignment brief.
Formal input – threats to upland habitats.
Learner research and presentation to class – current relevant legislation and protection, effectiveness of legislation.
Case study activity – commercial exploitation of upland habitats.
Prepare and present materials for assignment.
Assignment 4: Upland Habitat Management (P10, P11, P12, M4, D2)
Tutor introduces the assignment brief.
Formal input – practical upland management – maintenance, creation or restoration of upland habitats.
Formal input – legislation, health and safety, use of tools and equipment, risk assessments, PPE, planning of practical activities.
Practical habitat management activities.
Class activity – evaluating management methods, how to complete evaluations, use of criteria and objectives.
Prepare and present evidence for practical portfolio.
Unit review.

Assessment

For P1, learners need to identify and describe upland habitats in the UK. Learners are expected to cover the range of habitats listed in the unit content, including relevant regional specialities. Evidence may be an annotated map, illustrated report or verbal presentation.

For P2, learners are required to describe the environmental needs and distribution of indicator species. Learners should include a minimum of four indicator species. Evidence may be in the same format as for P1.

For P3, learners are required to state the major differences between a variety of upland habitats. Evidence should include at least four different upland habitats and their differences, and may be in the same format as for P1.

Assessment of P4, P5 and P6 is likely to be linked. For P4, learners are required to carry out a site-specific risk assessment for practical activity on upland areas. For P5 learners are required to survey upland habitats. This should include a survey of the species, climate and soil for at least two upland sites. For P6 learners need to identify a range of upland species of flora and fauna. This should include a minimum of 15 species, of which at least 5 should be plants and 5 animals. Evidence may be a practical log, observation worksheets and survey results presented in an appropriate format.

P7 requires learners to explain the threats to selected upland habitats. At least three habitats should be included, which may be selected by the tutor or through discussion with learners. Evidence may be a written report or article, verbal presentation or leaflet.

For P8 learners are required to discuss legislation relevant to upland habitats. As a minimum, learners should provide evidence covering four pieces of legislation. Evidence may be in the same format as for P7.

For P9 learners must evaluate the commercial exploitation of a variety of upland habitats, including afforestation, peat cutting, drainage, over grazing and lack of management. This could be completed through use of actual or simulated case study material and evidence may be a written or verbal report.

It is anticipated that assessment of P10 and P11 will be linked. For P10 learners must select the methods that are used to restore, improve or create an upland habitat, while for P11 they must carry out a minimum of three practical upland management tasks. Learners could present their evidence in the format of a practical portfolio which would include a work diary and witness statements, observer records, photographic and/or video evidence.

For P12, learners must evaluate methods of managing an upland habitat, which should include livestock grazing, burning and cutting. Learners should consider the effectiveness of the methods in achieving the objectives, as well as other factors such as cost, practicality, skill required, legislation and health and safety. Evidence may be a verbal or written report or presentation.

For M1, learners need to explain the variety of upland habitats in the UK in relation to abiotic and biotic factors. This could be an extension of work completed for P1, P2 and P3 and assessed in the same format.

For M2, learners are required to show a greater level of skill and independence in the survey completion carried out for P5. This includes planning the survey, including the survey objectives and methods, and carrying out the survey diligently in order to present data and information to a high degree of detail and accuracy. Evidence is likely to be an extension of that produced for P5.

M3 requires learners to evaluate the effectiveness of legislative protection for a minimum of two selected upland habitats. This could be an extension of work completed for P7, P8 and P9 and presented in the same format.

For M4, learners need to explain the methods used to restore, improve or create an upland habitat. This should include how the methods used enable the habitat management objectives to be met and factors to consider when using the methods. Evidence may be an extension of the practical portfolio produced for P10 and P11.

For D1, learners are required to discuss factors which affect species biodiversity in at least three upland habitats. This could be an extension of work completed for M1 and M2. Evidence may be a verbal or written report or illustrated leaflet.

For D2, learners must evaluate and justify upland management activities that have been carried out and recommend improvements. Evidence could take the form of a verbal or written report, or may be an extension of the practical portfolio.

Programme of suggested assignments

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment Title	Scenario	Assessment Method
P4, P5, P6, M2	Upland Habitat Surveys	You are working as an upland conservation officer, and have been asked to carry out surveys to assess the current status of a range of upland habitats. Plan and carry out the surveys, including a risk assessment, and report your findings. As part of your survey preparation, identify at least 15 species you may find during upland surveying.	Survey observation records and report. Species identification records.
P1, P2, P3, M1, D1	Upland Habitats	You are working for one of the National Parks, helping to produce some material for visitors. Produce an annotated map in which you identify and describe different upland habitats in the UK, and the differences between them. Explain the variety of upland habitats in relation to abiotic and biotic factors. In your map you need to include a description of the environmental needs and distribution of indicator species in upland habitats. Include an information panel for the visitors which discusses the factors affecting species biodiversity in upland habitats.	Annotated map. Information panel.
P7, P8, P9, M3	Threats and Legislative Controls	You are working for a conservation charity, and have been asked to write an article for its monthly newsletter about threats to upland habitats. Write an article in which you explain the threats to selected upland habitats and discuss the legislation in place to protect upland habitats. Evaluate the effectiveness of this legislation. You also need to evaluate the commercial exploitation of upland habitats.	Newsletter article.

Criteria covered	Assignment Title	Scenario	Assessment Method
PI0, P11, P12, M4, D2	Upland Habitat Management	<p>You are now working with a team of volunteers on practical habitat management.</p> <p>Select appropriate methods to restore, improve or create an upland habitat and carry out three practical upland management activities.</p> <p>Create some guidance notes for the volunteers which explains the methods used, and evaluates methods of managing an upland habitat. Include an evaluation and justification of upland management carried out and recommend improvements.</p>	<p>Practical portfolio.</p> <p>Practical assessment.</p> <p>Observation sheets.</p> <p>Work log.</p> <p>Written guidance notes.</p>

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC land-based sector suite. This unit has particular links with:

Level 2	Level 3
Participate in Providing Estate Maintenance	<p>Element CU88.1 Plan habitat management work</p> <p>Element CU88.2 Co-ordinate and oversee habitat management work</p> <p>Element EC23.1 Prepare for field surveys</p> <p>Element EC23.2 Collect and record data through field surveys</p> <p>Element EC23.3 Interpret survey data and report on findings</p>
Understanding Ecology of Trees, Woods and Forests	Undertake Estate Skills
	Understand Ecological Concepts and Application

Essential resources

Learners will need access to a range of upland habitats, for example bracken, heather moorland and upland grasslands. Sites visited may also reflect regional variations such as limestone pavement and tors. Learners will also need access to survey materials such as botanical field keys (for example Field Studies Council (FSC) – Field Identification Key to Grasses, 196, FSC- Field Identification Key to Upland Moorlands, 1996) and survey equipment such as tape measures, 2 m x 2 m quadrats, compasses, Ordnance Survey maps (at least 1:25000 scale) of known sites, and soil testing equipment (augers, spades, trowels, pH kits, munsell colour charts).

For practical activities they will need access to upland sites and appropriate tools and equipment. PPE is also essential for any practical work carried out. Tutors delivering this unit should be competent and experienced in upland management.

Employer engagement and vocational contexts

Visits to upland estates and talks from local experts, for example a national park warden or an advisory officer from DEFRA, and relevant work experience placements will enhance delivery of this unit.

Indicative reading for learners

Textbooks

Averis A, Averis B, Birks J, Horsfield D, Thompson D and Yeo M – *An Illustrated Guide to British Upland Vegetation* (Joint Nature Conservation Committee, 2004) ISBN: 978 – 1861075536

Backshall J, Manley J and Rebane M – *The Upland Management Handbook* (English Nature, 2001) ISBN: 978 – 1857164022

Davies P, Loxham J – *Repairing Upland Path Erosion: A Best Practice Guide* (Lake District National Park Authority, 1996) ISBN: 978 – 0906421420

Fielding A, Haworth P – *Upland Habitats* (Routledge, 1999) ISBN: 978 – 0415180863

Sutherland W, Hill D – *Managing Habitats for Conservation* (Cambridge University Press, 1995) ISBN: 978 – 0521447768

Journals

Enact

British Wildlife

Websites

www.defra.gov.uk

Department for Environment, Food and Rural Affairs

www.field-studies-council.org

Field Studies Council

www.forestry.gov.uk

Forestry Commission

www.moorlandassociation.org

The Moorland Association

www.nationalparks.gov.uk

National Parks in England, Wales and Scotland

www.naturalengland.org.uk

Natural England

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Independent enquirers	reporting on the different upland habitats of the UK describing environmental needs and distribution of indicator species carrying out surveys carrying out risk assessments
Creative thinkers	assessing threats to upland habitats evaluating the commercial exploitation of upland habitats evaluating methods of managing upland habitats
Reflective learners	evaluating methods of managing upland habitats
Team workers	undertaking surveys carrying out practical activities safely
Self-managers	reporting on the different types of upland habitats selecting appropriate tools and equipment for practical activities carrying out practical tasks safely
Effective participators	evaluating methods of managing an upland habitat.

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	investigating key points of current legislation relating to the protection of upland habitats
Creative thinkers	applying techniques to maintenance tasks
Reflective learners	evaluating own performance action planning and target setting for future activities
Team workers	receiving and giving peer help and support during tasks
Self-managers	completing risk assessments
Effective participators	recommending improvements to upland management investigating problems that occur when carrying out practical activities.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	using ICT systems in order to research information for assignments
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	action planning and monitoring work that needs to be completed
Manage information storage to enable efficient retrieval	saving information into files and folders
Follow and understand the need for safety and security practices	safely using ICT systems – sitting correctly at the computer, keeping food and drink away from computer equipment
Troubleshoot	
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	carrying out research for assignments
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records 	producing a PowerPoint presentation designing an illustrated poster producing a site-specific risk assessment for practical tasks carrying out surveys
Bring together information to suit content and purpose	creating documents from their research for assessment activities
Present information in ways that are fit for purpose and audience	creating documents from their research for assessment activities
Evaluate the selection and use of ICT tools and facilities used to present information	
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	

Skill	When learners are ...
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	
Identify the situation or problem and the mathematical methods needed to tackle it	
Select and apply a range of skills to find solutions	producing a site-specific risk assessment for practical tasks carrying out surveys and recording data
Use appropriate checking procedures and evaluate their effectiveness at each stage	
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	
Draw conclusions and provide mathematical justifications	
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	presenting information on upland habitats and management techniques
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	researching information on upland habitats and management techniques
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	reporting on upland habitats and management techniques reporting on the threats to upland habitats reporting on the legislation in place to protect upland habitats producing a site-specific risk assessment for practical tasks.