City & Guilds Level 3 Certificate, Subsidiary Diploma, 90-Credit Diploma, Diploma, Extended Diploma in Countryside Management (0076-03)

www.cityandguilds.com
February 2022
Version 5.0

Qualification handbook for centres
500/8559/1
500/8560/8
600/6113/3
500/8561/X
500/8489/6

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August 2012
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Qualification title	Number	QAN
Level 3 Certificate in Countryside Management	0076-03	500/8559/1
Level 3 Subsidiary Diploma in Countryside Management	0076-03	500/8560/8
Level 3 90-Credit Diploma in Countryside Management	0076-03	600/6113/3
Level 3 Diploma in Countryside Management	0076-03	500/8561/X
Level 3 Extended Diploma in Countryside Management	0076-03	500/8489/6

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Qualification title and level	Credits	Guided Learning Hours (GLH)	Total Qualification Time (TQT)
Level 3 Certificate in Countryside Management	30	180	300
Level 3 Subsidiary Diploma in Countryside Management	60	360	600
Level 3 90-Credit Diploma in Countryside Management	90	540	900
Level 3 Diploma in Countryside Management	120	720	1200
Level 3 Extended Diploma in Countryside Management	180	1080	1800

Contents

1 Introduction to the qualifications

This document contains the information that centres need to offer the following qualifications:

Qualification title and level	City & Guilds qualification number	Qualification accreditation number
Level 3 Certificate in Countryside Management	0076-03	500/8559/1
Level 3 Subsidiary Diploma in Countryside Management	0076-03	500/8560/8
Level 3 90-Credit Diploma in Countryside Management	0076-03	600/6113/3
Level 3 Diploma in Countryside Management	0076-03	500/8561/X
Level 3 Extended Diploma in Countryside Management	0076-03	500/8489/6

Qualification Summary

Qualification title and level	Credits	Guided Learning Hours (GLH)	Total Qualification Time (TQT)
Level 3 Certificate in Countryside Management	30	180	300
Level 3 Subsidiary Diploma in Countryside Management	60	360	600
Level 3 90-Credit Diploma in Countryside Management	90	540	900
Level 3 Diploma in Countryside Management	120	720	1200
Level 3 Extended Diploma in Countryside Management	180	1080	1800

These qualifications meet the needs of learners in a centre-based environment who may wish to work within the countryside management industry or progress to further learning and/or training. These qualifications allow learners to develop underpinning knowledge whilst practising skills that could be used within employment in the countryside management industry. These qualifications replace the Level 3 Advanced National Certificate in Countryside Management (0342-03) which expired on 31 August 2010 (QAN 100/1557/7).

These qualifications were developed in association with Lantra SSC, Landex and the industry.

Specialist Learning (SL)

Specialist Learning (SL) offers young people the opportunity to study a particular topic in more depth or broaden their studies through complementary learning. The Level 3 Certificate and Subsidiary Diploma in Countryside Management have been approved as SL by the Environmental and Land-based Diploma DDP and Ofqual for the Advanced Diploma in Environmental and Land-based Studies. They have been designed to:

- complement principal learning within the Advanced Diploma in Environmental and Land-based Studies
- provide a broad background understanding of the Environmental and Land-based sector and an introduction to the practical skills and knowledge required
- provide an awareness of the range of jobs and work settings in the Environmental and Land-based sector
- enable learners to make an informed assessment of their own aptitude for work in this sector and to make informed decisions about careers
- encourage learners to reach a level of knowledge and skills that will facilitate progress into further vocational learning or to potential employment in the sector
- introduce learners to the discipline of the working environment and to encourage mature attitudes to the community in general
- encourage learners to value continued learning and remain in the learning process
- allow learners to learn, develop and practise selected skills required for progression in the sector

- provide opportunities for progression to the Advanced Diploma in Environmental and Land-based and other related qualifications in the sector.

1.1 Qualification structure

Level 3 Certificate

To achieve the **Level 3 Certificate in Countryside Management**, learners are required to achieve 30 credits from any of the units.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Excluded combination of units (if any)
Optional				
R6009444	Unit 302	Understand the Principles and Carry Out the Practice of Wildlife Population Surveys, Ecology and Conservation	10	
Y6009610	Unit 303	Undertake Estate Skills	10	
A6009437	Unit 305	Understanding Principles of Physical and Biological Environmental Processes	10	
K6009417	Unit 306	Understanding Ecology of Game Species	10	
K6009420	Unit 307	Undertaking Vertebrate Pest and Predator Control	10	
Y6009204	Unit 308	Undertaking Woodland Habitat Management	10	
F6009620	Unit 309	Undertaking Farm Habitat Management	10	
K6009630	Unit 312	Undertake Grassland Habitat Management	10	
H6009836	Unit 313	Understand and Carry Out Tree Planting, Aftercare and Protection	10	

K6009837	Unit 328	Understand the Principles of Tree Felling and Chainsaw Use	10	
L6010107	Unit 329	Understanding Woodland Management	10	
A6009194	Unit 330	Understanding Organism Identification	10	
J6009411	Unit 334	Understanding Heathland Habitat Management	10	
L6009409	Unit 337	Undertaking Upland Habitat Management	10	
K6009188	Unit 339	Understanding greenwood crafts	10	
A6009440	Unit 340	Undertake gamebird production	10	
Y6009638	Unit 341	Understand water quality	10	
A6012094	Unit 342	Understanding captive deer herd management	10	
D6009415	Unit 343	Undertaking commercial deer management	10	
F6009178	Unit 344	Understanding countryside tourism and management	10	
R6009623	Unit 345	Understanding fishery management	10	

Level 3 Subsidiary Diploma

To achieve the **Level 3 Subsidiary Diploma in Countryside Management**, learners must achieve 10 credits from the mandatory unit and 50 credits from the optional group. A total of 60 credits must be achieved.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Excluded combination of units (if any)
Mandatory				
M6010021	Unit 304	Undertake an Investigative Project in the Land-based Sector	10	
Optional				
R6009444	Unit 302	Understand the Principles and Carry Out the Practice of Wildlife Population Surveys, Ecology and Conservation	10	
Y6009610	Unit 303	Undertake Estate Skills	10	
A6009437	Unit 305	Understanding Principles of Physical and Biological Environmental Processes	10	
K6009417	Unit 306	Understanding Ecology of Game Species	10	
K6009420	Unit 307	Undertaking Vertebrate Pest and Predator Control	10	
Y6009204	Unit 308	Undertaking Woodland Habitat Management	10	
F6009620	Unit 309	Undertaking Farm Habitat Management	10	
M6009256	Unit 310	Understanding River Fishery Creation and Management	10	
F6010105	Unit 311	Understanding Stillwater Fishery Creation and Management	10	

K6009630	Unit 312	Undertake Grassland Habitat Management	10	
H6009836	Unit 313	Understand and Carry Out Tree Planting, Aftercare and Protection	10	
M6009175	Unit 314	Understanding Coastal Management	10	
R6009430	Unit 315	Understand Deer Management	10	
M6009824	Unit 316	Understand Deer Population Monitoring and Management Plans	10	
A6009180	Unit 317	Understand Ecological Concepts and Application	10	
F6009438	Unit 318	Understanding Land Use and Environmental Issues	10	
J6009179	Unit 319	Understanding Principles of Game Management	10	
A6009423	Unit 320	Undertaking Shoot Management	10	
L6009443	Unit 321	Stalking and Shooting Deer	10	
Y6009199	Unit 322	Use of Firearms in the Environmental and Land-based Sector	10	
D6009205	Unit 323	Understand Working Dogs	10	
M6009709	Unit 324	Business Management in the Land-based Sector	10	
H6009805	Unit 325	Undertaking Land-based Machinery Operations	10	

L6009149	Unit 326	Understand the Principles of Plant Science	5	
T6009579	Unit 327	Understand the Principles of Soil Science	5	
K6009837	Unit 328	Understand the Principles of Tree Felling and Chainsaw Use	10	
L6010107	Unit 329	Understanding Woodland Management	10	
A6009194	Unit 330	Understanding Organism Identification	10	
F6009827	Unit 331	Understanding Principles of Forest Recreation	10	
A6009826	Unit 332	Livestock Use in Conservation Management	10	
Y6009607	Unit 333	Undertaking Environmental Interpretation in Land-based	10	
J6009411	Unit 334	Understanding Heathland Habitat Management	10	
K6010079	Unit 335	Understanding Freshwater and Wetland Management	10	
J6009196	Unit 336	Undertaking Urban Habitat Conservation	10	
L6009409	Unit 337	Undertaking Upland Habitat Management	10	
D/600/9172	Unit 338	Understanding Archaeology and Landscape History	10	
K6009188	Unit 339	Understanding greenwood crafts	10	

A6009440	Unit 340	Undertake gamebird production	10	
Y6009638	Unit 341	Understand water quality	10	
A6012094	Unit 342	Understanding captive deer herd management	10	
D6009415	Unit 343	Undertaking commercial deer management	10	
F6009178	Unit 344	Understanding countryside tourism and management	10	
R6009623	Unit 345	Understanding fishery management	10	

Level 3 90-Credit Diploma

To achieve the **Level 3 90-Credit Diploma in Countryside Management**, learners must achieve 10 credits from the mandatory unit and 80 credits from the optional group. A total of 90 credits must be achieved.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Excluded combination of units (if any)
Mandatory				
M6010021	Unit 304	Undertake an Investigative Project in the Land-based Sector	10	
Optional				
R6009394	Unit 301	Undertake and Review Work Related Experience in the Land-based Industries	10	
R6009444	Unit 302	Understand the Principles and Carry Out the Practice of Wildlife Population Surveys, Ecology and Conservation	10	
Y6009610	Unit 303	Undertake Estate Skills	10	
A6009437	Unit 305	Understanding Principles of Physical and Biological Environmental Processes	10	
K6009417	Unit 306	Understanding Ecology of Game Species	10	
K6009420	Unit 307	Undertaking Vertebrate Pest and Predator Control	10	
Y6009204	Unit 308	Undertaking Woodland Habitat Management	10	
F6009620	Unit 309	Undertaking Farm Habitat Management	10	
M6009256	Unit 310	Understanding River Fishery Creation and Management	10	

F6010105	Unit 311	Understanding Stillwater Fishery Creation and Management	10	
K6009630	Unit 312	Undertake Grassland Habitat Management	10	
H6009836	Unit 313	Understand and Carry Out Tree Planting, Aftercare and Protection	10	
M6009175	Unit 314	Understanding Coastal Management	10	
R6009430	Unit 315	Understand Deer Management	10	
M6009824	Unit 316	Understand Deer Population Monitoring and Management Plans	10	
A6009180	Unit 317	Understand Ecological Concepts and Application	10	
F6009438	Unit 318	Understanding Land Use and Environmental Issues	10	
J6009179	Unit 319	Understanding Principles of Game Management	10	
A6009423	Unit 320	Undertaking Shoot Management	10	
L6009443	Unit 321	Stalking and Shooting Deer	10	
Y6009199	Unit 322	Use of Firearms in the Environmental and Land-based Sector	10	
D6009205	Unit 323	Understand Working Dogs	10	
M6009709	Unit 324	Business Management in the Land-based Sector	10	

H6009805	Unit 325	Undertaking Land-based Machinery Operations	10	
L6009149	Unit 326	Understand the Principles of Plant Science	5	
T6009579	Unit 327	Understand the Principles of Soil Science	5	
K6009837	Unit 328	Understand the Principles of Tree Felling and Chainsaw Use	10	
L6010107	Unit 329	Understanding Woodland Management	10	
A6009194	Unit 330	Understanding Organism Identification	10	
F6009827	Unit 331	Understanding Principles of Forest Recreation	10	
A6009826	Unit 332	Livestock Use in Conservation Management	10	
Y6009607	Unit 333	Undertaking Environmental Interpretation in Land-based	10	
J6009411	Unit 334	Understanding Heathland Habitat Management	10	
K6010079	Unit 335	Understanding Freshwater and Wetland Management	10	
J6009196	Unit 336	Undertaking Urban Habitat Conservation	10	
L6009409	Unit 337	Undertaking Upland Habitat Management	10	
D/600/9172	Unit 338	Understanding Archaeology and Landscape History	10	

K6009188	Unit 339	Understanding greenwood crafts	10	
A6009440	Unit 340	Undertake gamebird production	10	
Y6009638	Unit 341	Understand water quality	10	
A6012094	Unit 342	Understanding captive deer herd management	10	
D6009415	Unit 343	Undertaking commercial deer management	10	
F6009178	Unit 344	Understanding countryside tourism and management	10	
R6009623	Unit 345	Understanding fishery management	10	

Level 3 Diploma

To achieve the **Level 3 Diploma in Countryside Management**, learners must achieve 40 credits from the mandatory group and 80 credits from the optional group. A total of 120 credits must be achieved.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Excluded combination of units (if any)
Mandatory				
R6009394	Unit 301	Undertake and Review Work Related Experience in the Land-based Industries	10	
R6009444	Unit 302	Understand the Principles and Carry Out the Practice of Wildlife Population Surveys, Ecology and Conservation	10	
Y6009610	Unit 303	Undertake Estate Skills	10	
M6010021	Unit 304	Undertake an Investigative Project in the Land-based sector	10	
Optional				
A6009437	Unit 305	Understanding Principles of Physical and Biological Environmental Processes	10	
K6009417	Unit 306	Understanding Ecology of Game Species	10	
K6009420	Unit 307	Undertaking Vertebrate Pest and Predator Control	10	
Y6009204	Unit 308	Undertaking Woodland Habitat Management	10	
F6009620	Unit 309	Undertaking Farm Habitat Management	10	
M6009256	Unit 310	Understanding River Fishery Creation and Management	10	

F6010105	Unit 311	Understanding Stillwater Fishery Creation and Management	10	
K6009630	Unit 312	Undertake Grassland Habitat Management	10	
H6009836	Unit 313	Understand and Carry Out Tree Planting, Aftercare and Protection	10	
M6009175	Unit 314	Understanding Coastal Management	10	
R6009430	Unit 315	Understand Deer Management	10	
M6009824	Unit 316	Understand Deer Population Monitoring and Management Plans	10	
A6009180	Unit 317	Understand Ecological Concepts and Application	10	
F6009438	Unit 318	Understanding Land Use and Environmental Issues	10	
J6009179	Unit 319	Understanding Principles of Game Management	10	
A6009423	Unit 320	Undertaking Shoot Management	10	
L6009443	Unit 321	Stalking and Shooting Deer	10	
Y6009199	Unit 322	Use of Firearms in the Environmental and Land-based Sector	10	
D6009205	Unit 323	Understand Working Dogs	10	
M6009709	Unit 324	Business Management in the Land-based Sector	10	

H6009805	Unit 325	Undertaking Land-based Machinery Operations	10	
L6009149	Unit 326	Understand the Principles of Plant Science	5	
T6009579	Unit 327	Understand the Principles of Soil Science	5	
K6009837	Unit 328	Understand the Principles of Tree Felling and Chainsaw Use	10	
L6010107	Unit 329	Understanding Woodland Management	10	
A6009194	Unit 330	Understanding Organism Identification	10	
F6009827	Unit 331	Understanding Principles of Forest Recreation	10	
A6009826	Unit 332	Livestock Use in Conservation Management	10	
Y6009607	Unit 333	Undertaking Environmental Interpretation in Land-based	10	
J6009411	Unit 334	Understanding Heathland Habitat Management	10	
K6010079	Unit 335	Understanding Freshwater and Wetland Management	10	
J6009196	Unit 336	Undertaking Urban Habitat Conservation	10	
L6009409	Unit 337	Undertaking Upland Habitat Management	10	
D/600/9172	Unit 338	Understanding Archaeology and Landscape History	10	

K6009188	Unit 339	Understanding greenwood crafts	10	
A6009440	Unit 340	Undertake gamebird production	10	
Y6009638	Unit 341	Understand water quality	10	
A6012094	Unit 342	Understanding captive deer herd management	10	
D6009415	Unit 343	Undertaking commercial deer management	10	
F6009178	Unit 344	Understanding countryside tourism and management	10	
R6009623	Unit 345	Understanding fishery management	10	

Level 3 Extended Diploma

To achieve the **Level 3 Extended Diploma in Countryside Managemen**t, learners must achieve 40 credits from the mandatory group and 140 credits from the optional group. A total of 180 credits must be achieved.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Excluded combination of units (if any)
Mandatory				
R6009394	Unit 301	Undertake and Review Work Related Experience in the Land-based Industries	10	
R6009444	Unit 302	Understand the Principles and Carry Out the Practice of Wildlife Population Surveys, Ecology and Conservation	10	
Y6009610	Unit 303	Undertake Estate Skills	10	
M6010021	Unit 304	Undertake an Investigative Project in the Land-based sector	10	
Optional				
A6009437	Unit 305	Understanding Principles of Physical and Biological Environmental Processes	10	
K6009417	Unit 306	Understanding Ecology of Game Species	10	
K6009420	Unit 307	Undertaking Vertebrate Pest and Predator Control	10	
Y6009204	Unit 308	Undertaking Woodland Habitat Management	10	
F6009620	Unit 309	Undertaking Farm Habitat Management	10	
M6009256	Unit 310	Understanding River Fishery Creation and Management	10	
F6010105	Unit 311	Understanding Stillwater Fishery Creation and Management	10	

K6009630	Unit 312	Undertake Grassland Habitat Management	10	
H6009836	Unit 313	Understand and Carry Out Tree Planting, Aftercare and Protection	10	
M6009175	Unit 314	Understanding Coastal Management	10	
R6009430	Unit 315	Understand Deer Management	10	
M6009824	Unit 316	Understand Deer Population Monitoring and Management Plans	10	
A6009180	Unit 317	Understand Ecological Concepts and Application	10	
F6009438	Unit 318	Understanding Land Use and Environmental Issues	10	
J6009179	Unit 319	Understanding Principles of Game Management	10	
A6009423	Unit 320	Undertaking Shoot Management	10	
L6009443	Unit 321	Stalking and Shooting Deer	10	
Y6009199	Unit 322	Use of Firearms in the Environmental and Land-based Sector	10	
D6009205	Unit 323	Understand Working Dogs	10	
M6009709	Unit 324	Business Management in the Land-based Sector	10	
H6009805	Unit 325	Undertaking Land-based Machinery Operations	10	

L6009149	Unit 326	Understand the Principles of Plant Science	5	
T6009579	Unit 327	Understand the Principles of Soil Science	5	
K6009837	Unit 328	Understand the Principles of Tree Felling and Chainsaw Use	10	
L6010107	Unit 329	Understanding Woodland Management	10	
A6009194	Unit 330	Understanding Organism Identification	10	
F6009827	Unit 331	Understanding Principles of Forest Recreation	10	
A6009826	Unit 332	Livestock Use in Conservation Management	10	
Y6009607	Unit 333	Undertaking Environmental Interpretation in Land-based	10	
J6009411	Unit 334	Understanding Heathland Habitat Management	10	
K6010079	Unit 335	Understanding Freshwater and Wetland Management	10	
J6009196	Unit 336	Undertaking Urban Habitat Conservation	10	
L6009409	Unit 337	Undertaking Upland Habitat Management	10	
D/600/9172	Unit 338	Understanding Archaeology and Landscape History	10	
K6009188	Unit 339	Understanding greenwood crafts	10	

A6009440	Unit 340	Undertake gamebird production	10	
Y6009638	Unit 341	Understand water quality	10	
A6012094	Unit 342	Understanding captive deer herd management	10	
D6009415	Unit 343	Undertaking commercial deer management	10	
F6009178	Unit 344	Understanding countryside tourism and management	10	
R6009623	Unit 345	Understanding fishery management	10	

1.2 Opportunities for progression

On completion of these qualifications learners may progress into employment or to the following City & Guilds qualifications:

- Level 4 and above centre-based qualifications in Environmental and Countryside Management e.g. Foundation Degree, Higher National Diploma
- Level 3 or 4 work-based qualifications in Environmental and Countryside Management

1.3 Qualification support materials

City & Guilds also provides the following publications and resources specifically for these qualifications:

Description	How to access
Assignment guide	www.cityandguilds.com
Marking guide	information@cityandguilds.com
Information sheets	www.cityandguilds.com
Fast track approval forms/generic fast track approval form	www.cityandguilds.com
Developing centre devised assessments (for unit 338)	www.cityandguilds.com

2 Centre requirements

This section outlines the approval processes for Centres to offer these qualifications and any resources that Centres will need in place to offer the qualifications including qualification-specific requirements for Centre staff.

Centres already offering the Level 3 Advanced National Certificate in Countryside Management (0342-03)

Centres approved to offer the qualification Level 3 Advanced National Certificate in Countryside Management may apply for approval for the new Level 3 Certificate, Subsidiary Diploma, Diploma and Extended Diploma in Countryside Management using the **fast track approval form,** available from the City & Guilds website.

Centres may apply to offer the new qualifications using the fast track form

- providing there have been no changes to the way the qualifications are delivered, and
- if they meet all of the approval criteria specified in the fast track form guidance notes.

Fast track approval is available for 12 months from the launch of the qualification. After this time, the qualification is subject to the **standard** Qualification Approval Process. It is the centre's responsibility to check that fast track approval is still current at the time of application.

New centres must apply for centre and qualification approval. Further information on this process is available on the City & guilds website.

Existing City & Guilds /City & Guilds centres that do not offer Level 3 Advanced National Certificate in Countryside Management (0342-03) will need to get specific qualification approval to run these qualifications (contact your City & Guilds Local Office).

2.1 Resource requirements

Human resources

Staff delivering these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be technically competent in the area for which they are delivering training and/or have experience of providing training. This knowledge must be at least to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- be occupationally knowledgeable in the areas of countryside management for which they are delivering training. This knowledge must be at least to the same level as the training being delivered
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and assessor or internal verifier, but must never internally verify their own assessments.

Assessors and internal verifiers

The centre must provide Assessor personnel who must be occupationally competent in the industry either qualified to at least level 3 and/or have current experience of working in the industry at this level.

The centre must provide Internal Quality Assurance personnel who must be occupationally competent in the land-based sector either qualified to at least level 3 and/or have current experience of working in the industry at this level.

Assessors/Internal Quality Assurance personnel may hold relevant qualifications such as D32/33/34 or A1/V1 or TAQA however they are not a mandatory requirement for this qualification. They should have had formal training in assessment/IQA, which may be the qualifications above, or other training that allows the assessor to demonstrate competence in the practice of assessment/IQA. This training may be carried out in-house or with an external agency.

TAQA qualifications are considered very appropriate as Continuing Professional Development (CPD) or as best practice standards for new centre staff to work towards.

Continuing professional development (CPD)

Centres are expected to support their staff in ensuring that their knowledge remains current of the occupational area and of best practice in delivery, mentoring, training, assessment and verification, and that it takes account of any national or legislative developments.

2.2 Learner entry requirements

There are no formal entry requirements for learners undertaking these qualifications. However, centres must ensure that learners have the potential and opportunity to gain the qualifications successfully.

As part of the assessment for the Level 3 Diploma qualifications that contain work experience as a mandatory unit, learners must have access to a work setting/placement.

Age restrictions

These qualifications have been approved/accredited for 16-18, 18+ and 19+ learners. However, there are no age limits attached to learners undertaking the qualification unless this is a legal requirement of the process or the environment.

3 Course design and delivery

3.1 Initial assessment and induction

Centres will need to make an initial assessment of each learner prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

The initial assessment should identify:

- any specific training needs the learner has, and the support and guidance they may require when working towards their qualifications. This is sometimes referred to as diagnostic testing.
- any units the learner has already completed, or credit they have accumulated which is relevant to the qualifications they are about to begin.

City & Guilds recommends that centres provide an induction programme to ensure the learner fully understands the requirements of the qualifications they will work towards, their responsibilities as a learner, and the responsibilities of the centre. It may be helpful to record the information on a learning contract.

3.2 Recommended delivery strategies

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

Centres may design course programmes of study in any way which:

- best meets the needs and capabilities of their learners
- satisfies the requirements of the qualifications.

When designing and delivering the course programme, centres might wish to incorporate other teaching and learning that is not assessed as part of the qualifications. This might include the following:

- Functional skills
- Personal learning and thinking (PLTS)

Where applicable, this could involve enabling the learner to access relevant qualifications covering these skills.

4 Assessment

4.1 Summary of assessment methods

For these qualifications, learners will be required to complete the following assessments:

- **one** assignment for **each** unit

City & Guilds provides the following assessments:

- Assignment guide containing assignments for each unit 301-337
- Guidelines for developing the centre devised assessment for unit 338

Time constraints

The following time constraints must be applied to the assessment of these qualifications:

- All assignments must be completed and assessed within the learner's period of registration. Centres should advise learners of any internal timescales for the completion and marking of individual assignments.

4.2 Assignments

The assignment guide for these qualifications and the guidelines for developing the centre devised assessment for unit 338 are available to download from www.cityandguilds.com**.**

4.3 Recognition of prior learning (RPL)

Recognition of Prior Learning (RPL) recognises the contribution a person's previous experience could contribute to a qualification. RPL is allowed and is also sector specific.

4.4 Resubmission of Assignments

Centres are advised to adopt the following policy on the re-submission of work:

Learners who fail an assignment on the formal (summative) submission, or who would like the opportunity to improve their grade, may re-submit once only and may then achieve either a Pass, Merit or Distinction as appropriate. An appropriate time period between formal submission and re-submission should be set by the centre. Multiple re-submissions are not permitted. Learners who fail to hand in work on the formal submission date, where there is no legitimate reason, should be capped to a maximum of a Pass grade only at the re-submission stage. It is at the discretion of the centre to set informal (formative) submission dates, if appropriate, and a formal submission date.

5 Units

Summary of units

City & Guilds unit number	Title	Unit number	Credits
Unit 301	Undertake and Review Work Related Experience in the Land-based Industries	R6009394	10
Unit 302	Understand the Principles and Carry out the Practice of Wildlife Populations, Ecology and Conservation	R6009444	10
Unit 303	Undertake Estate Skills	Y6009610	10
Unit 304	Undertake an Investigative Project in the Land-based Sector	M6010021	10
Unit 305	Understanding Principles of Physical and Biological Environmental Processes	A6009437	10
Unit 306	Understanding Ecology of Game Species	K6009417	10
Unit 307	Undertaking Vertebrate Pest and Predator Control	K6009420	10
Unit 308	Undertaking Woodland Habitat Management	Y6009204	10
Unit 309	Undertaking Farm Habitat Management	F6009620	10
Unit 310	Understanding River Fishery Creation and Management	M6009256	10
Unit 311	Understanding Stillwater Fishery Creation and Management	F6010105	10
Unit 312	Undertake Grassland Habitat Management	K6009630	10
Unit 313	Understand and Carry Out Tree Planting, Aftercare and Protection	H6009836	10
Unit 314	Understanding Coastal Management	M6009175	10
Unit 315	Understand Deer Management	R6009430	10
Unit 316	Understand Deer Population Monitoring and Management Plans	M6009824	10
Unit 317	Understand Ecological Concepts and Application	A6009180	10
Unit 318	Understanding Land Use and Environmental Issues	F6009438	10
Unit 319	Understanding Principles of Game Management	J6009179	10
Unit 320	Undertaking Shoot Management	A6009423	10
Unit 321	Stalking and Shooting Deer	L6009443	10
Unit 322	Use of Firearms in the Environmental and Land-based Sector	Y6009199	10
Unit 323	Understand Working Dogs	D6009205	10
Unit 324	Business Management in the Land-based Sector	M6009709	10
Unit 325	Undertaking Land-based Machinery Operations	H6009805	10
Unit 326	Understand the Principles of Plant Science	L6009149	5
Unit 327	Understand the Principles of Soil Science	T6009579	5
Unit 328	Understand the Principles of Tree Felling and Chainsaw Use	K6009837	10

Unit 329	Understanding Woodland Management	L6010107	10
Unit 330	Understanding Organism Identification	A6009194	10
Unit 331	Understanding Principles of Forest Recreation	F6009827	10
Unit 332	Livestock Use in Conservation Management	A6009826	10
Unit 333	Undertaking Environmental Interpretation in Land-based	Y6009607	10
Unit 334	Understanding Heathland Habitat Management	J6009411	10
Unit 335	Understanding Freshwater and Wetland Management	K6010079	10
Unit 336	Undertaking Urban Habitat Conservation	J6009196	10
Unit 337	Undertaking Upland Habitat Management	L6009409	10
Unit 338	Understanding Archaeology and Landscape History	D6009172	10
Unit 339	Understanding greenwood crafts	K6009188	10
Unit 340	Undertake gamebird production	A6009440	10
Unit 341	Understand water quality	Y6009638	10
Unit 342	Understanding captive deer herd management	A6012094	10
Unit 343	Undertaking commercial deer management	D6009415	10
Unit 344	Understanding countryside tourism and management	F6009178	10
Unit 345	Understanding fishery management	R6009623	10

Certification/grading modules

City & Guilds unit number	Title
910	Certification module for Level 3 Certificate in Countryside Management – pass grade
911	Certification module for Level 3 Certificate in Countryside Management - merit grade
912	Certification module for Level 3 Certificate in Countryside Management - distinction grade
913	Certification module for Level 3 Subsidiary Diploma in Countryside Management - pass grade
914	Certification module for Level 3 Subsidiary Diploma in Countryside Management - merit grade
915	Certification module for Level 3 Subsidiary Diploma in Countryside Management - distinction grade
916	Certification module for Level 3 Diploma in Countryside Management - pass grade
917	Certification module for Level 3 Diploma in Countryside Management - merit grade
918	Certification module for Level 3 Diploma in Countryside Management - distinction grade
919	Certification module for Level 3 Extended Diploma in Countryside Management - pass grade
920	Certification module for Level 3 Extended Diploma in Countryside Management - merit grade

921	Certification module for Level 3 Extended Diploma in Countryside Management - distinction grade
925	Certification module for Level 3 Certificate in Countryside Management – distinction* grade
926	Certification module for Level 3 Subsidiary Diploma in Countryside Management – distinction* grade
927	Certification module for Level 3 Diploma in Countryside Management – distinction* grade
928	Certification module for Level 3 Extended Diploma in Countryside Management – distinction* grade
957	Certification module for Level 3 90-Credit Diploma in Countryside Management – pass grade
958	Certification module for Level 3 90-Credit Diploma in Countryside Management – merit grade
959	Certification module for Level 3 90-Credit Diploma in Countryside Management – distinction grade
960	Certification module for Level 3 90-Credit Diploma in Countryside Management – distinction* grade

6 Registration and Certification

The Level 3 Certificate, Subsidiary Diploma, 90-Credit Diploma, Diploma and Extended Diploma in Countryside Management qualifications have been grouped into one programme for registration.

Tutors and Examination Officers should ensure that learners are registered onto 0076-03 and that all 0076-03 documentation for teaching and administration with City & Guilds is used.

When learners' results are submitted to City & Guilds, centres should also submit the relevant Certificate, Subsidiary Diploma, Diploma and Extended Diploma certification/grading component, according to which units the learner has achieved, so that the appropriate certificate is generated. The overall grade can be calculated using the formula in the assignment guide.

Please note: There are four certification/grading modules for each of the qualifications which differentiates the four grades – pass, merit, distinction and distinction*. Once the overall grade for the assignments has been calculated, the correct certification/grading module needs to be indicated on the results entry.

For example, if a learner achieves the Level 3 Certificate in Countryside Management at an overall merit grade, then the certification module 911 needs to be submitted. Please see the Rules of Combination below or the City & Guilds catalogue.

Level 3 Certificate in Countryside Management QAN 500/8559/1	
Rules for achievement of qualification	30 credits from (302 – 303), (305 – 309), (312 – 313), (328 – 330), 334, 337, (339-345) Plus 910 for certification at pass grade

Level 3 Certificate in Countryside Management QAN 500/8559/1	
Rules for achievement of qualification	30 credits from (302 – 303), (305 – 309), (312 – 313), (328 – 330), 334, 337, (339-345) Plus 911 for certification at merit grade

Level 3 Certificate in Countryside Management QAN 500/8559/1	
Rules for achievement of qualification	30 credits from (302 – 303), (305 – 309), (312 – 313), (328 – 330), 334, 337, (339-345) Plus 912 for certification at distinction grade

Level 3 Certificate in Countryside Management QAN 500/8559/1	
Rules for achievement of qualification	30 credits from (302 – 303), (305 – 309), (312 – 313), (328 – 330), 334, 337, (339-345) Plus 925 for certification at distinction* grade

Level 3 Subsidiary Diploma in Countryside Management QAN 500/8560/8	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345) Plus 913 for certification at pass grade

Level 3 Subsidiary Diploma in Countryside Management QAN 500/8560/8	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345) Plus 914 for certification at merit grade

Level 3 Subsidiary Diploma in Countryside Management QAN 500/8560/8	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345) Plus 915 for certification at distinction grade

Level 3 Subsidiary Diploma in Countryside Management QAN 500/8560/8	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 50 credits from (302 – 303), (305–345) Plus 926 for certification at distinction* grade

Level 3 90-Credit Diploma in Countryside Management QAN 600/6113/3	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345) Plus 957 for certification at pass grade

Level 3 90-Credit Diploma in Countryside Management QAN 600/6113/3	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345) Plus 958 for certification at merit grade

Level 3 90-Credit Diploma in Countryside Management QAN 600/6113/3	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345) Plus 959 for certification at distinction grade

Level 3 90-Credit Diploma in Countryside Management QAN 600/6113/3	
Rules for achievement of qualification	10 credits from 304, plus a minimum of 80 credits from (301 – 303), (305–345) Plus 960 for certification at distinction* grade

Level 3 Diploma in Countryside Management QAN 500/8561/X	
Rules for achievement of qualification	40 credits from (301 – 304), plus a minimum of 80 credits from (305–345) Plus 916 for certification at pass grade

Level 3 Diploma in Countryside Management QAN500/8561/X	
Rules for achievement of qualification	40 credits from (301 – 304), plus a minimum of 80 credits from (305–345) Plus 917 for certification at merit grade

Level 3 Diploma in Countryside Management QAN 500/8561/X	
Rules for achievement of qualification	40 credits from (301 – 304), plus a minimum of 80 credits from (305–345) Plus 918 for certification at distinction grade

Level 3 Diploma in Countryside Management QAN 500/8561/X	
Rules for achievement of qualification	40 credits from (301 – 304), plus a minimum of 80 credits from (305–345) Plus 927 for certification at distinction* grade

Level 3 Extended Diploma in Countryside Management QAN 500/8489/6	
Rules for achievement of qualification	40 credits from (301 – 304) plus a minimum of 140 credits from (305–345) Plus 919 for certification at pass grade

Level 3 Extended Diploma in Countryside Management QAN 500/8489/6	
Rules for achievement of qualification	40 credits from (301 – 304) plus a minimum of 140 credits from (305–345) Plus 920 for certification at merit grade

Level 3 Extended Diploma in Countryside Management QAN 500/8489/6	
Rules for achievement of qualification	40 credits from (301 – 304) plus a minimum of 140 credits from (305–345) Plus 921 for certification at distinction grade

Level 3 Extended Diploma in Countryside Management QAN 500/8489/6	
Rules for achievement of qualification	40 credits from (301 – 304) plus a minimum of 140 credits from (305–345) Plus 928 for certification at distinction* grade

- Learners must be registered at the beginning of their course. Centres should submit registrations using Walled Garden or Form S (Registration), under scheme/complex 0076-03.

- When assignments have been successfully completed results should be submitted on Walled Garden or Form S (Results submission). One of the certification/grading modules 910 to 921 or 925 to 928 or 957 to 960 need to be submitted to generate the appropriate certificate and grade. Centres should note that results will not be processed by City & Guilds until verification records are complete

- Learners achieving one or more assessment components will receive a Certificate of Unit Credit listing the assessment components achieved. Learners achieving the number and combination of assessment components required to meet a defined Rule of Combination will, in addition, be issued with a certificate. Centres must submit a certification/grading component to allow this to happen.

Full details on the procedures for all City & Guilds qualifications registered and certificated through City & Guilds can be found on the City & Guilds on-line catalogue.

Unit 301 Undertake and Review Work Related Experience in the Land-based Industries

Level: 3

Credit value: 10

Unit aim:

The aim of this unit is to give learners the skills needed to identify, participate in and review work experience in the environmental and land-based sector. The unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the opportunities in the environmental and land-based industries
2. Be able to prepare for a work-based experience in the environmental and land-based industry
3. Be able to undertake a work-based experience in the environmental and land-based industry
4. Be able to review a work-based experience in the environmental and land-based sector

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 301 Undertake and Review Work Related Experience in the Land-based Industries

Outcome 1 Understand the opportunities in the environmental and land-based industries

Assessment Criteria

The learner can:

1. Evaluate **career and progression opportunities** within an environmental and land-based industry

Unit content

Career and progression opportunities

Job roles relevant to the sector: managerial, supervisory, team worker, trainee, volunteer, common job titles within the relevant sector, main duties and responsibilities

Skills needed to fulfil duties and responsibilities of appropriate jobs: job specific, vocational and personal

Progression pathways from trainee or team worker positions to supervisory and management posts. Skills, qualifications and experience required to achieve career progression

Evaluate career and progression opportunities: advantages and disadvantages of identified pathways, suitability to personal interests, skills and qualifications, role of work experience in preparing for a selected career

Unit 301 Undertake and Review Work Related Experience in the Land-based Industries

Outcome 2 Be able to prepare for a work-based experience in the environmental and land-based industry

Assessment Criteria

The learner can:

1. **Select** an appropriate work-based experience and complete the **application process**
2. Demonstrate **interview skills** as an interviewee
3. Prepare for a work-based experience, identifying **targets, aims and objectives**

Unit content

Select

Suitable work experience position based on existing skills, experience, qualifications, development of skills and experience to achieve future employment goals

Application process

Finding suitable job opportunities from e.g. trade magazines, websites, employer approaches to the centre, completion of an application form, curriculum vitae and letter of application

Interview skills

Interview preparation: Research the business and job role, suitable dress and personal presentation, information to find out and suitable questions to ask. Interview performance: attend punctually and dressed appropriately, answering questions, completion of other tests (e.g. practical, aptitude), and reflection on interview performance

Targets, aims and objectives

Aims: overall impact of work experience on skills, experience, future employability, targets / objectives, specific development of workplace skills and knowledge (e.g. technical, vocational, business, team working, communication and employability)

Unit 301 Undertake and Review Work Related Experience in the Land-based Industries

Outcome 3 Be able to undertake a work-based experience in the environmental and land-based industry

Assessment Criteria

The learner can:

1. **Undertake** a selected appropriate work-based experience
2. Maintain a **record of activities and achievements** during a work-based experience

Unit content

Undertake

Completion of 300 hours of appropriate work experience, attend punctually and reliably, work competently and in line with job role requirements, health and safety, security, confidentiality, effective working relationships with colleagues, supervisors and customers.

Record of activities and achievements

Job description for work role, main duties and responsibilities, regular daily working routine, diary of additional tasks, duties, learning experiences portfolio of work experience (e.g. photographs, witness statements, work experience provider's or assessor's reports, progress reviews)

Unit 301 Undertake and Review Work Related Experience in the Land-based Industries

Outcome 4 Be able to review a work- based experience in the environmental and land-based sector

Assessment Criteria

The learner can:

1. **Present evidence** of activities and achievements during a work-based experience
2. **Review** a work-based experience, identifying strengths and areas for improvement

Unit content

Present evidence

Name of work experience provider, nature of the organisation (type of business, products or services, customers), organisation structure chart, job description for work role, main duties and responsibilities, regular daily working routine, health, safety and welfare of employees, customers, animals, diary of additional tasks, duties, learning experiences, portfolio of work experience (e.g. photographs, witness statements, work experience provider's or assessor's reports and progress reviews)

Review

Business effectiveness: products and services, physical resources (e.g. buildings, machinery, equipment), business procedures, staff management and supervision, employees' skills and development, marketing and customer relations, personal workplace effectiveness: work speed, work quality, punctuality, attendance, reliability, dress and personal presentation, working relationships with peers, working relationships with supervisor, work experience aims, objectives and targets, impact of work experience on future career ambitions

Unit 301 Undertake and Review Work Related Experience in the Land-based Industries

Notes for guidance

Learners on vocational courses should have experience of the type of work that they hope to do, and of the expectations of potential future employers. Many Level 3 learners are likely to have already had experience of working in the land-based and environmental industries, so this unit seeks to provide new experience opportunities for these learners.

Ideally this unit should be undertaken in a real business environment relevant to the subject interest of the learner, but actual work experience may be gained by a number of routes, e.g. as part of an industrial placement whilst within the programme, whilst working on a planned daily or weekly basis on the centre's commercial and/or educational facilities, whilst undertaking voluntary work within the industry, as previous relevant and current work experience in the industry or as a member of a group of learners invited to carry out practical work on a suitable business.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Learners should complete the equivalent of 8 weeks (or 300 hours) work experience to achieve this unit. If work experience is in the industry, centres should be mindful of their responsibilities for ensuring that work placements have appropriate supervision, insurance and health and safety policies in place.

In Outcome 1, learners will explore the different job roles and responsibilities, and the job titles commonly associated with them in their specialist sector. This background understanding is likely to require some formal classroom teaching, and may be closely linked to material in the unit "Business Management". Learners should be encouraged to explore the range of employment opportunities and career paths within their specialist sector. It would be appropriate for employers to be invited to outline to learners their expectations in the workplace. Learners will then consider the skills and qualifications that are required for appropriate jobs for themselves and should be encouraged to think about skills and qualifications that they may need to acquire to achieve their employment and careers ambitions. Evaluation of career and progression opportunities should include advantages and disadvantages of at least 3 possible career pathways within their specialist sector. This should help them to identify suitable work experience.

Outcome 2 involves learners going through the process of applying for work experience. They will need to locate suitable job adverts or work experience opportunities, but can be supported by centres suggesting suitable placements. When applying for work experience learners should produce, as a minimum, a detailed curriculum vitae and letter of application using a computer. Learners may need to be given supported workshop time on computers to develop these documents. Before attending for a work experience interview it would be appropriate for learners to role play an interview and be given feedback on their interview technique. After attending for an interview they should reflect on their performance and how they could improve their effectiveness. Before commencing work experience they should set overall aims to be achieved during the period and SMART (specific, measurable, achievable, realistic, timescaled) targets or objectives for learning and improvement in relation to future career aims.

Outcome 3 requires that learners effectively complete their period of work experience, meeting the requirements of the workplace appropriate for their position. It would be advisable for their progress to be reviewed at least once during the period and they should have access to tutor support in case of difficulties arising. During their work placement learners must produce the details of their job role and working routine, maintain a diary at least weekly and collate other relevant information on their work placement, performance

and achievements. It would be appropriate for tutors to complete a report in consultation with the work experience provider mid-way and at the end of the placement.

In Outcome 4, learners will use evidence from outcome 3 to present a report, oral and/or written, on their work experience business, job role, learning and achievements. They will then review the effectiveness of the workplace, making realistic and justified suggestions for improvement. Review of their own workplace performance and achievements should include all of the content identified, with reference to relevant evidence, e.g. reports, progress reviews, and the extent to which their aims, objectives/targets have been achieved. Learners should consider further training and experience that will help them to achieve their career ambitions.

Unit 302 Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of wildlife populations, ecology and conservation and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The unit aims to enable the learner to be able to identify and conduct surveys of wildlife habitats and ecosystems. It will consider fluctuations in ecosystems and the reasons for these fluctuations, both natural and human influenced. Learners will also understand the wildlife populations within ecosystems, the interactions between these and the conservation strategies used to preserve ecosystems.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand changes in global ecosystems
2. Understand national and international conservation strategies for wildlife and their habitats
3. Understand population dynamics
4. Be able to conduct a field study of habitats and wildlife populations

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC2 Survey and report on the condition of the environment
EC6 Communicate environmental information
EC23 Prepare, conduct and report on field surveys

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 302 Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 1 Understand changes in global ecosystems

Assessment Criteria

The learner can:

1. Explain **global changes** in ecosystems
2. Illustrate **wildlife population changes** in ecosystems
3. Assess **reasons for global wildlife population fluctuations**

Unit content

Global changes

Population shifts, trends, speciation, scales, individuals, species, communities, ecological niches, demes, climate change, drought, famine

Wildlife population changes

Metapopulations, seasonality, growth, dissolution, dispersal, genetic variability, continuity in time, fecundity, natality, mortality

Reasons for global wildlife population fluctuation

Seasonality, migration, emerging diseases, climate change, habitat destruction, influence of man

Unit 302 Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 2 Understand national and international conservation strategies for wildlife and their habitats

Assessment Criteria

The learner can:

1. Review **national conservation strategies** for wildlife and their habitats
2. Discuss **international conservation strategies** for wildlife and their habitats

Range

Conservation strategies: in situ and ex situ conservation

Unit content

National conservation strategies

Current applicable conservation strategies: biodiversity action plans, Wildlife Trust, National Wildlife Federation, Royal Society for the Protection of Birds (RSPB), application of relevant legislation (Environment Act (1995), Wildlife and Countryside Act 1981 (as amended 1991))

International conservation strategies

Current applicable conservation strategies: charity strategies, International Union Conservation of Nature (IUCN), endangered species international, Worldwide Fund for Nature (WWF), International Wildlife Conservation Society, application of the Convention on International Trade in Endangered Species (CITES), UN Convention on Biodiversity, Conservation (Natural Habitats etc) Regulations 1994

Unit 302 Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 3 Understand population dynamics

Assessment Criteria

The learner can:

1. Explain **predator prey interactions** within wildlife populations
2. Discuss **types of evolution** within animal populations

Unit content

Principles of population dynamics

Growth, dispersion, genetic variability, continuity in time, factors that influence population, size, form, resources, demes, fluctuations, fecundity, natality, mortality, immigration, emigration, breeding strategies (r and K)

Predator prey interactions

Positive and negative interactions, primary consumers, secondary consumers, parasite: host, natural selection, hunting strategies, predation theories, predator density and prey density, prey defences

Types of evolution

Divergent, convergent, parallel

Unit 302 Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Outcome 4 Be able to conduct a field study of habitats and wildlife populations

Assessment Criteria

The learner can:

1. **Plan an ecological survey** of habitats
2. Carry out an **ecological survey** of habitats
3. Carry out a **wildlife population survey**

Unit content

Plan an ecological survey

Objective setting and planning, risk assessment, health and safety, legislation, codes of practice

Ecological survey

Sampling (quadrat, kick, transect), data analysis methods

Wildlife population survey

Phase 1 surveys, habitat surveys, species surveys

Unit 302 Understand the Principles and Carry out the Practice of Wildlife Population Surveys, Ecology and Conservation

Notes for guidance

This unit is designed to provide an overview of the principles of ecology and conservation that influence wildlife populations at a National and International level.

The unit should consider a range of wildlife populations in a variety of habitats (mammals, reptiles, amphibians, invertebrates, birds) within the British Isles and on the International stage. It should aim to incorporate historic, current and emerging issues in wildlife population dynamics and conservation to enable the learner to fully develop a worldwide perspective on conservation issues and strategies developed to counteract them.

Throughout the unit the emphasis should be on the contextualisation of the principles of population dynamics discussed into real world examples to enable the learner to fully engage with the concepts discussed and current issues. Safe working practices and compliance with relevant legislation, codes of practice and health and safety should be emphasised before and during practical surveying.

Outcome 1 encourages the identification and exploration of global and national ecosystems and to identify how these have and are currently evolving. Specific emphasis should be given to changes in wildlife population changes and the potential abiotic and biotic factors that produce these fluctuations. Delivery is expected to be formal but should be complimented by the inclusion of interactive resources including videos and case studies to encourage the learner to contextualise.

In Outcome 2, the learner will develop an understanding of both National and International conservation strategies. Delivery should provide an overview of historic and current strategies and how these interlink. Learners should be encouraged to apply conservation strategies to biodiversity action plans and conservation objectives, and should be able to discuss their potential impact. Delivery is envisaged to be a combination of formal and interactive sessions, and the inclusion of guest speakers or case studies which can contextualise conservation strategies is to be encouraged.

Outcome 3 encourages the exploration of the principles of population dynamics and should be discussed with reference to a range of examples, and should include consideration of the interrelationship of plant and animal (mammals, birds, invertebrate, amphibian and reptile) species. The learner will explore evolutionary strategies to propose how current population dynamics have formed. Delivery is expected to be formal but should be complimented by practical activities, videos and case studies to encourage the learner to contextualise the factors covered. Current and topical issues in population dynamics and conservation should be highlighted.

Outcome 4 continues with the development of practical ecological surveying skills. Practical field study opportunities to develop core skills are necessary to compliment formal delivery. A range of habitats that incorporate access to numerous wildlife species should be available for study and a variety of sampling methods practically undertaken. Learners should be encouraged to plan, undertake and reflect on sampling in reference to method, sources of error, results, conclusions drawn, legislation and health and safety.

Learners working towards Level 3 are expected to have underpinning knowledge in British wildlife and plant identification and should be able to relate this to ecological surveying: Personal interest in current and emerging issues in conservation is envisaged. The unit aims to build upon foundation knowledge to discover the complex relationships that exist within global ecosystems in the natural world and how these influence population dynamics. Learners are required to be able to review ecosystems and to formulate possible

explanations for current population dynamics and trends within these. The learner will develop knowledge of the application of conservation strategies for wildlife and habitat preservation at both a national and International level. It is expected that delivery will be formal but emphasis should be placed on the development of practical surveying skills and ability to interpret the results of surveys and contextualise these into short and long term impacts on populations and ecosystems. It is important that the learner understands the influence of legislation, codes of practice and health and safety in respect of ecological surveying.

Centres are encouraged to introduce case studies from real environments and guest speakers from relevant industries e.g. Wildlife Trust to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of habitats to add depth to the learner experience. It is accepted that formal lectures will be necessary at Level 3 but for this unit it is necessary to compliment this with practical opportunities and recommended to introduce interactive sessions in a real environment and integrate the appraisal of population case studies with respect to conservation at both national and international levels.

References

Books

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Danchin, E., Giraldeua, L.A., Cezilly, F.,2008. *Behavioural Ecology, An Evolutionary Perspective on Behaviour*. OUP Oxford: Oxford ISBN: 0199206295
Krebs, JR Davies, B 1997. *Behavioural Ecology: An evolutionary approach.* Wiley Blackwell: UK ISBN: 0632035463

Journals

Journal of Ecology
Ecology
Behavioural Ecology
Ecologist
BBC Wildlife
Birds
Forest Life
Shooting and conservation

Websites

www.ecology.com
www.nhm.ac.uk/research-curation/projects/worldmap
www.globalissues.org.uk
www.ukbap.org.uk

Unit 303 Undertake Estate Skills

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the estate skills and knowledge and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or into further/higher education.

The learner will look at constructing, repairing and maintaining boundaries, structures and surfaces. They will build their experience and confidence in using practical skills in a range of situations. The learner will be able to contextualise practical management work to a particular habitat that lies within their primary area of learning.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Be able to construct, repair or maintain boundaries
2. Be able to construct, repair or maintain structures
3. Be able to construct, repair or maintain surfaces
4. Be able to carry out practical habitat management work

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU22.1 Construct maintain and repair boundaries

CU20.1 Maintain structures and surfaces

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SCC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 303 Undertake Estate Skills

Outcome 1 Be able to construct, repair or maintain boundaries

Assessment Criteria

The learner can:

1. **Prepare the site** appropriately
2. Select appropriate **equipment and materials**
3. Carry out the **construction, repair or maintenance** of selected **boundaries** to meet given specifications

Range

Boundaries

Living boundaries (hedge, bank, ditch), constructed boundaries: fence (post and rail, post and wire, electric, netting), wall (stone, brick)

Unit content

Prepare the site

Plan activity, clear debris, ensure livestock safety, location (power supply, waste disposal, equipment and materials storage)

Equipment and materials

Materials selected relevant to task, health and safety, sustainable practice, cost implications

Construction, repair or maintenance

Undertaken safely (use of risk assessment, appropriate Personal Protective Equipment (PPE)) and to the required standards

Unit 303 Undertake Estate Skills

Outcome 2 Be able to construct, repair or maintain structures

Assessment Criteria

The learner can:

1. **Prepare the structure** appropriately
2. Prepare and ready appropriate **equipment and materials**
3. Carry out the **construction, repair or maintenance** of selected **structures** to meet given specifications

Range

Structures

Wooden structures (gate, stile, horse jump, bird box, table, bench, door), other structures requiring repair or maintenance (animal house or pen, machinery or feed store)

Unit content

Prepare the structure

Cut required sizes, wood preparation (sanding, planing, filling), check design specification, plan activity

Equipment and materials

Equipment and materials prepared based on manufacturer instructions, health and safety, sustainable practice, cost implications

Construction, repair or maintenance

Undertaken safely (use of risk assessment, appropriate Personal Protective Equipment (PPE)) and to the required standards

Unit 303 Undertake Estate Skills

Outcome 3 Be able to construct, repair or maintain surfaces

Assessment Criteria

The learner can:

1. **Prepare the surface** appropriately
2. Prepare and ready appropriate **equipment and materials**
3. Carry out the **construction, repair or maintenance** of a selected **surface** to meet given specifications.

Range

Surface

Solid (decking, concrete, paving), Loose (gravel, wood chippings, sand)

Unit content

Prepare the surface

Plan activity, clear debris, ensure livestock safety, location (power supply, waste disposal, equipment and materials storage)

Equipment and materials

Equipment and materials prepared based on manufacturer guidelines, health and safety, sustainable practice, cost implications, timeliness for example preparing concrete at the right time for construction

Construction, repair or maintenance

Undertaken safely (use of risk assessment, appropriate Personal Protective Equipment (PPE)) and to the required standards

Unit 303 Undertake Estate Skills

Outcome 4 Be able to carry out practical habitat management work

Assessment Criteria

The learner can:

1. Carry out appropriate **risk assessments**
2. Safely carry out appropriate **practical habitat management** to given specifications
3. Recommend **improvements** for future work

Unit content

Risk assessments

Risk assessments completed and used, use of Personal Protective Equipment (PPE) appropriate to the tasks (safety boots, overalls, gloves, and eye protection), and safe methods of working
Relevant legislation and codes of practice: Health and Safety at Work etc Act 1974, Control of Substances Hazardous to Health (COSHH) 2002, Waste Management (England and Wales) Regulations 2006, Construction (Design and Management) Regulations 2007

Practical habitat management

Mowing, renovation, planting and staking as applicable, clearing (path, fence line), coppicing, uprooting, hedge maintenance, pruning, thinning, cutting or mowing and mulching, pond, stream and ditch clearance
Good practice: composting, materials that can be composted, re-used and/or recycled, finding alternative uses, methods of recycling, avoid wastage
Reduce environmental damage - Pollution (water courses, through litter or debris, noise), damage to habitats, and wastage of resources
Disposal of waste: organic waste (recycling, composting, chipping, burning), inorganic waste (recycling, landfill, discarding safely)

Improvements

Setting habitat management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

Notes for guidance

This unit has a very practical focus, and aims to enable learners to develop estate skills which can be applied to a range of situations and circumstances. The unit has been written such that naturally occurring and locally relevant opportunities can be used in selecting sites, structures and surfaces to construct, repair or maintain.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate personal protective equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Learners should also be made aware of the impact on the environment, and sustainability concepts should also be demonstrated where possible.

Learners should have the opportunity to undertake estate skills activity in a land-based setting wherever possible to maximise the vocational relevance. It will be most beneficial if the structures, boundaries and surface selected are for a clear purpose above and beyond delivery of this unit. It is recognised that there will not be opportunities to carry out construction, repair *and* maintenance in each of the categories, but it would be appropriate for the skills of construction, repair and maintenance to each be developed in one aspect of the unit.

In Outcome 1, learners will develop the practical skills needed to construct, repair or maintain at least two different boundaries, including a living boundary and a constructed one.

In Outcome 2, learners will construct, repair or maintain at least two different structures. It is anticipated that learners will develop an understanding of how to construct a wooden structure, but are not expected to be able to construct larger structures such as animal or machinery housing. It is anticipated that delivery will include repair and maintenance of such larger structures as would be found in an estate setting.

In Outcome 3, learners are required to construct, repair or maintain one surface from the range shown. Delivery may include visits to see a range of surfaces and their properties and maintenance requirements.

In Outcome 4 it is anticipated that delivery of this outcome will be embedded in the practical skills development within the other three outcomes. These outcomes could also be developed in conjunction with learners' work experience at an appropriate placement.

It is anticipated that most delivery of this unit will take place in a practical setting, with supervised practice of skills. Delivery will also include some classroom based activity in ensuring learners have a good understanding of planning, materials selection and preparation, and underpinning knowledge.

References

Books

Agate E. 2001. *Fencing: A Practical Handbook*. BTCV. ISBN 094675229X

Agate E. 2001. *Footpaths: A Practical Handbook*. BTCV. ISBN 0946752311

Agate E. 2000. *Toolcare: A Maintenance and Workshop Manual*. BTCV. ISBN 0946752249

Agate E. 2001. *Tree Planting and Aftercare: A Practical Handbook*. BTCV. ISBN 0946752257

Agate E. 2002. *Woodlands: A Practical Handbook*. BTCV. ISBN 0946752338

Brooks A and Agate E. 1998. *Hedging: A Practical Handbook*. BTCV. ISBN 0946752176

Brooks A and Agate E. 2001. *Waterways and Wetlands: A Practical Handbook*. BTCV. ISBN 0946752303
Brooks A, Adcock S and Agate E. 1999. *Dry Stone Walling: A Practical Handbook*. BTCV. ISBN 0946752192
MacLean M. 1992. *New Hedges for the Countryside. Farming Press Books and Videos*. ISBN 0852362420
Scottish Executive Rural Affairs Department. 2002. *Prevention of Environmental Pollution from Agricultural Activity: Code of Good Practice Dos and Don'ts Guide*. Scottish Executive. ISBN 0755905180
Stokes A. 1999. *Health and Safety Overview for Practical Conservation Project: A Guide to Good Practice for Conservation Groups and Land Managers*. BTCV.

Journals

Ecology
Environmental Management
Farmers Guardian
Farmers Weekly
Landwards
Organic Farming

Websites

www.btcv.org.uk	British Trust for Conservation Volunteers
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.fwag.org.uk	Farm Wildlife and Advisory Group
www.hse.gov.uk	Health and Safety Executive
www.lantra.co.uk	Lantra Sector Skills Council

Unit 304 Undertake an Investigative Project in the Land-based Sector

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of undertaking an investigative project and how this can be put into practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or to further education and training.

The learner will develop project knowledge and skills by investigating a chosen topic area through a project. They will explore topic areas that interest them and select one topic for their investigative project. They will plan and carry out their investigative project working to meet deadlines and monitoring performance. The learner will prepare an evaluative report looking at how the project performed, if the schedule plan met the project aims and objectives and how improvements could be made in the future.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Be able to identify and research a suitable topic for an investigative project in the environmental and land-based sector
2. Be able to plan for an investigative project in the environmental and land-based sector
3. Be able to carry out an investigative project in the environmental and land-based sector
4. Be able to report on an investigative project in the environmental and land-based sector

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 304 Undertake an Investigative Project in the Land-based Sector

Outcome 1 Be able to identify and research a suitable topic for an investigative project in the environmental and land-based sector

Assessment Criteria

The learner can:

1. List **information sources** relevant to the topic to be researched
2. Carry out **research** into potential topics
3. **Select and describe** a relevant investigative project topic in the environmental and land-based sector
4. **Prepare a proposal** for an investigative project

Range

The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

Information sources

For example textbooks, journals, magazines, internet, trade literature, television and radio, subject experts, validity and reliability

Research

Methods appropriate to the project, e.g. literature review, trials, experiments, practical activities, questionnaires, interviews, surveys

Select and describe

Suitable project topic (e.g. trial or experiment, investigation of an issue important to the sector, preparation of a plan, production of a structure or artefact, training programme, preparation for and participation in a competition, improving a process, investigation of a new product or service). Justify the selection of the project topic in relation to e.g. programme of study, interests and experience, future employment ambitions, comparison with alternative topics

Prepare a proposal

Title, aims/ objectives, methodology, information sources, resources (e.g. people, computers, materials, etc. required for completion of the project), justification of proposed project

Unit 304 Undertake an Investigative Project in the Land-based Sector

Outcome 2 Be able to plan for an investigative project in the environmental and land-based sector

Assessment Criteria

The learner can:

1. **Plan operations and resources** required to carry out a selected investigative project in the environmental and land-based sector
2. Explain the **reasons** for resources selected

Range

The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

Plan operations

Project planning techniques (e.g. critical path analysis, Gantt charts), sequencing of activities, working to deadlines, allowing for other commitments, project action plan: aims, objectives, specific operations / tasks, start and completion dates, time required, resources required, possible disruptions to plan (e.g. illness, other commitments, resource problems, IT problems, research problems, lack of cooperation, cost), contingencies and remedial actions

Resources

People, time, buildings, equipment, animals, materials, literature and media (internet, trade magazine), IT applications and budget

Reasons

Suitability, availability and cost

Unit 304 Undertake an Investigative Project in the Land-based Sector

Outcome 3 Be able to carry out an investigative project in the environmental and land-based sector

Assessment Criteria

The learner can:

1. **Carry out a selected investigative project** in the environmental and land-based sector
2. **Monitor progress**, working to **deadlines**
3. Discuss the **health and safety implications** of the investigative project

Range

The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

Carry out a selected investigative project

Suitable project as proposed in outcome 1(trial or experiment, investigation of an issue important to the sector, preparation of a plan, production of a structure or artefact, training programme, preparation for and participation in a competition, improving a process, investigation of a new product or service). Implementation (set up, start), operations (tasks, duties), evidence of actions e.g. literature review, artefacts, plans, presentations, witness statements, photographs or videos

Monitor progress

Diary or log of actions, monitoring of performance against schedule plan e.g. daily, weekly, monthly progress, budget, other appropriate measures for each resource or task, reasons and remedial actions if falling behind schedule

Deadlines

Interim, key mileposts, final, all to be reviewed at regular intervals by tutor

Health and safety implications

Health and safety, risk assessment, Personal Protective Equipment (PPE), relevant regulations and legislation, animal welfare, codes of practice

Unit 304 Undertake an Investigative Project in the Land-based Sector

Outcome 4 Be able to report on an investigative project in the environmental and land-based sector

Assessment Criteria

The learner can:

1. **Report** on a selected investigative project in the environmental and land-based sector
2. **Evaluate achievements and areas for improvement** of a selected investigative project

Range

The topics for the investigative project should reflect both learner interest and the qualification undertaken.

Unit content

Report

Report on the project selected and completed in outcomes 1-3. Written report format, oral report presentation, title, aims/objectives, review of existing literature/information, methodology, results/findings (with appropriate evidence, e.g. charts and graphs, diagrams, photographs), conclusions, Harvard referencing

Evaluate achievements

Conduct and management of the project, action plan, keeping to deadlines, problems and remedial actions, project results/findings, strengths and weaknesses

Areas for improvement

Planning, implementation, methodology, results/findings, report, topics for further investigation

Unit 304 Undertake an Investigative Project in the Land-based Sector

Notes for guidance

This unit is designed to encourage and develop independent research skills in learners provides valuable skills development for all level 3 learners and especially those looking to progress onto Higher Education. The concept of the project is applicable across all of the vocational areas in the environmental and land-based sector, and learners should be guided and encouraged to select a project topic that is particularly relevant to their interests. This could integrate with other units in their programme of study. The emphasis of the unit should be on project management and working to deadlines, as well as producing a meaningful investigative project. Much of the work will be carried out independently by learners but they must have access to appropriate tutor guidance and support.

In Outcome 1, learners will need to identify a suitable topic for their investigative project. This should be relevant to their programme of study and have a particular interest for them, for example in relation to a special area of interest, experience or future employment of study ambitions. Ideal project topics could have a practical or theoretical focus, but all projects should include potential for research into existing literature and information sources as well as a practical investigation or application, so should be chosen in agreement with the tutor. Learners are likely to need guidance on suitable project topics and tutor support to ensure that selected topics are achievable in the timescale and with the resources available. The proposal should outline the aims and objectives, information sources, resource requirements, and the methodology by which the learner intends to complete the project, as well as their justification for topic selection. If appropriate to the investigation, a hypothesis should be included as part of the methodology.

In Outcome 2, learners will need to complete a detailed action plan for completion of the investigative project within the set timescale. This should include, as a minimum:

- a detailed breakdown of all actions from starting the project up to submission of the completed project report
- resources required at each stage (and reasons for their selection)
- time expected for completion and interim target completion dates.

They should also consider possible setbacks to their planned schedule and contingency plans to ensure timely completion of the project. Learners are likely to require guidance on project planning techniques and how to compile an appropriately detailed action plan. They could be provided with a suitable template.

In Outcome 3, learners will conduct and complete their investigative project, collecting supporting evidence as appropriate, for example literature review, artefacts, witness statements, photographs or videos, etc. Whilst doing this, they should maintain a log or diary of all actions, and regularly monitor their progress against their action plan. It would be appropriate for tutors to conduct progress reviews at key stages of the project. As part of conducting the project, learners should discuss any health and safety implications of their work to humans and, if appropriate, animals, and identify any relevant legislation or codes of practice. Risk assessments may contribute to evidence of this.

In Outcome 4, learners will produce a summary report of their project and the process of its completion. This should cover, as a minimum:

- title
- aims / objectives
- review of existing literature / information
- methodology
- results / findings
- conclusions
- references

All referencing should comply with academic conventions, and learners should be given appropriate guidance on this.

The project evaluation should consider the strengths and weaknesses of the finished project and the process of its completion, the usefulness and importance of project planning, and ways in which the project could have been improved.

Some parts of the project report could be presented orally rather than in written report format.

References

Books

Applegarth, M. 1998. *The Project Management Pocketbook*. Alresford: Management Pocketbooks.

Nokes, S., Kelly, S. 2007. *The Definitive Guide to Project Management: The Fast Track to Getting the Job Done on Time and on Budget.* 2nd ed. Harlow: Financial Times Prentice Hall.

Portney, S.E. 2001. *Project Management for Dummies*. Sussex: Wiley Publishing.

Unit 305 Understanding Principles of Physical and Biological Environmental Processes

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of physical and biological environmental processes. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Those involved in managing and conserving the countryside must have a knowledge and understanding of environmental processes and the environmental impacts of human activities. The learner will study physical and biological processes that maintain life on earth and how humans affect them. They will study environmental systems of the earth's atmosphere, lithosphere, biosphere and hydrosphere.

Learning outcomes

There are **four** learning outcomes to this unit. The learner:

1. Understand the scientific principles and processes that influence energy transfer and the atmosphere as part of the earth atmosphere system
2. Understand the physical and biological processes within the lithosphere
3. Understand the physical and biological processes within the biosphere
4. Know how water is used and managed within the hydrosphere

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Outcome 1 Understand the scientific principles and processes that influence energy transfer and the atmosphere as part of the earth atmosphere system

Assessment Criteria

The learner can:

1. Explain the scientific principles and processes that influence the **climate** in the earth- atmosphere system
2. Explain the scientific principles and processes that influence the **transfer of energy** in the earth-atmosphere system

Unit content

Climate

Statistics of temperature, humidity, atmospheric pressure, wind, rainfall, atmospheric particle count and numerous other meteorological elements in a given region over long periods of time
The Köppen climate classification scheme, The Holdridge life zones system

Transfer of energy

Conduction, convection, radiation and condensation: ocean currents, wind, solar activity, volcanic, magnetic

Outcome 2 Understand the physical and biological processes within the lithosphere

Assessment Criteria

The learner can:

1. Examine the **origins** and characteristics of rocks
2. Explain factors affecting soil **composition** and **formation**
3. Outline the **distribution** of selected soil types found in the British Isles

Unit content

Origins

Sedimentary (gradual accumulation of sediment for example sand on a beach, mud on a river beds, lithification), metamorphic (previously igneous or sedimentary, subject to pressure and heat for example mountains), igneous (from magma for example mid-ocean ridges, volcanoes)

Composition

Soil particles: clay, sand, silt, organic matter

Formation

Soil profile diagrams: profile diagram showing soil horizons (topsoil, subsoil, parent, bedrock)

Processes: leaching, eluviation, illuviation, podsolisation, gleying

Distribution

Rocks, soil, geographical locations in the British Isles

Outcome 3 Understand the physical and biological processes within the biosphere

Assessment Criteria

The learner can:

1. Explain the **processes** involved in photosynthesis, respiration, energy transfer and the carbon and nitrogen cycles

Unit content

Processes

Photosynthesis: process (equation) for photosynthesis, function of chlorophyll, functionality of guard cells and stomata, factors needed for photosynthesis to occur (light, chlorophyll, carbon dioxide, water)

Respiration: definition of aerobic and anaerobic respiration, equation for aerobic respiration, structure and function of mitochondria, diffusion, compensation point, factors influencing the rate of respiration (temperature, water availability, seasonal growth)

Energy transfer, carbon, and nitrogen cycle

Outcome 4 Know how water is used and managed within the hydrosphere

Assessment Criteria

The learner can:

1. Describe the physical and chemical **properties** of water
2. Outline the **processes** involved in the hydrological cycle

Unit content

Properties

Solid, liquid and gas states, universal solvent, pH, neutral, surface tension, transparency, polar molecule, capillary action, electrical conductivity, boiling point (effects of altitude), specific heat capacity, heat of vaporisation, density, properties of ice

Processes

Precipitation, evaporation, transpiration, condensation

Notes for guidance

This unit will provide the learner with an introduction to the natural environment and how the planet works. This is fundamental to understanding the limited nature of natural resources by looking at how they are formed over millions of years. Where life exists depends on the geology, climate and water availability. By looking at the physical processes of rock formation and erosion, moving toward soil formation, the unit will cover how weather and climate effect soil development with interaction from the biosphere. Learners will learn though formal lectures, museum visits as well as field trips with expert guidance, and learners should be able to carry out some field work within this unit.

In Outcome 1 learners will be taught about the energy sources which power the physical processes within the atmosphere, how volcanic activity solar radiation and magnetism help create high and low pressure zones which control the trade winds and weather systems found though out the globe. These changing weather systems linked in with the hydrosphere and solar radiation and the tilt of the earth set geographical limits to climatic areas.

In Outcome 2 learners will investigate the distribution of Britain's underlying geology explaining how rocks were formed. By carrying out a local soil survey the learner can explored how the soil has been formed and what parent rocks may have been involved.

In Outcome 3 knowing how the biosphere transmits energy via photosynthesis and respiration and interacts with the hydrosphere are essential so that learners can investigate the movements of the elements nitrogen and carbon with in the biosphere and so bring together the building blocks of life.

In Outcome 4 learners will be able to show the movement of water round the planet, being stored within the lithosphere, hydrosphere and biosphere and to a limited extent the atmosphere.

By the end of the unit the learner will have knowledge and understanding of environmental processes and the environmental impacts of human activities on the planet.

References

Books

Allaby M., 2000. *Basic Environmental Science*, Routledge; 2 edition ISBN 041521176**5**

Thomashow M., 2003. *Bringing the Biosphere Home, Learning to Perceive Global Environmental Change,* ISBN 0262700993

Collin P.H., 2004. *Dictionary of Environment and Ecology* ISBN 0747572011

Woodcock N., 1994. *Geology and Environment in Britain and Ireland*. ISBN 1857280548

Duck et al.1999. *Practical Skills in Environmental Science* ISBN 0582328730

Park C., 2001. *The Environment: Principles and Applications* ISBN 0415217712

Websites

www.geolsoc.org.uk	The Geological Society
www.soils.org.uk	British Society of Soil Science
www.metoffice.gov.uk	Met Office

Unit 306 Understanding Ecology of Game Species

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of the ecology of game species and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

This unit provides knowledge and skills in the identification, ecology and population assessment of wild game and in the management of their habitats.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Be able to identify game species found in the UK
2. Understand the ecology and associated behaviour of game species
3. Be able to manage habitats to encourage wild game populations
4. Know techniques used to determine game population size.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga2 Monitor game populations and habitat

Ga11 Maintain and improve game and wildlife habitat

Ga13 Manage wild game populations

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 306 Understanding Ecology of Game Species

Outcome 1 Be able to identify game species found in the UK

Assessment Criteria

The learner can:

1. Identify **game species** found in the UK
2. Describe **features** of game birds used to identify the **sex**
3. Describe features of game birds used to identify **age**

Unit content

Game species

Gamebirds: pheasant, partridges (grey, red-legged), grouse (red, black), ptarmigan (Scotland only), Duck: mallard, teal, wigeon, pintail, shoveler, gadwall, tufted duck, pochard, goldeneye, scaup (NI only)

Geese: pink footed, greylag, white fronted (England and Wales only), Canada

Waders: golden plover, common snipe, jack snipe (NI only), curlew, woodcock

Rail: Coot (England, Wales and Scotland only), moorhen (England, Wales and Scotland only)

Features

Appearance, plumage, size, spurs, wattles, behaviour

Sex

Male and female

Age

Chicks, poults, first year, adult, old

Unit 306 Understanding Ecology of Game Species

Outcome 2 Understand the ecology and associated behaviour of game species

Assessment Criteria

The learner can:

1. Explain the **annual life cycle** of game birds
2. Discuss the **breeding ecology** of game birds
3. Compare the **habitat requirements** of different game species
4. Assess the **changes** in habitat requirements **throughout the year**

Unit content

Annual life cycle

Pairing-up, breeding, nesting, hatching, fledging, brood dispersal, migration

Breeding ecology

Monogamous/polygamous strategies

Habitat requirements

Features: topography, structure, water habitats, size and layout, cover, presence of other species, food availability and source, predator presence or absence

Requirements for: nesting cover, brood rearing, escape cover, over-wintering and feeding

Changes throughout the year

Breeding season, laying, growing, released

Unit 306 Understanding Ecology of Game Species

Outcome 3 Be able to manage habitats to encourage wild game populations

Assessment Criteria

The learner can:

1. Select **equipment** required to carry out game habitat management
2. Carry out practical game **habitat management** to improve or create habitats for game birds
3. Explain how **habitat** is managed to optimise sporting and nature conservation value.

Unit content

Equipment

Hand tools: spades, forks, shovels, secateurs, handsaws, clippers, hammers, pickaxes, hand fencing equipment, safe and correct use, maintenance and storage, sharpening of tools where appropriate, suitable clothing and Personal Protective Equipment (PPE)

Habitat

Woodland, hedges, cover crops, field margins, heather moorland

Habitat management (carry out)

Coppicing, planting and laying, woodland coppicing, thinning and planting, heather burning and cutting, grass margins, cover crops, beetle banks, conservation headlands, development and use of habitat management schemes

Unit 306 Understanding Ecology of Game Species

Outcome 4 Know techniques used to determine game population size

Assessment Criteria

The learner can:

1. Describe the **methods** commonly used to survey wild game populations
2. List **equipment** required to carry out a wild game survey
3. Specify the **information** and calculations required to estimate a game population.

Unit content

Methods

Pair counts, brood counts

Equipment

Binoculars, vehicle, recording equipment, map of area

Information

Pairs present in Spring, average young per pair in Summer

Unit 306 Understanding Ecology of Game Species

Notes for guidance

Tutors delivering and assessing this unit should use as wide a range of techniques as possible. Lectures, discussions, presentations, site visits, supervised game management practical's, exercises, research using the internet and/or library resources and the use of personal and/or industrial experience could all be included.

Health and safety issues relating to safe working must be stressed and regularly reinforced, and risk assessments must be undertaken prior to practical activities. Adequate PPE must be provided and used following the production of suitable risk assessments.

Outcome 1 requires the learner to be familiar with all legal quarry species so that they can accurately identify them in the field. For the commoner game species the learners should also be able to differentiate between the sexes and age of birds when handling them either dead or alive. Ideally identification techniques should be taught using live animals. However, if these are not available then tutors should use high quality audio visual materials or preserved specimens. It would be beneficial for learners to visit habitats. Visits could be made to, for example, wildfowl collections such as a Wildfowl and Wetlands Trust reserve.

Outcome 2 covers the ecology of game species and learners should understand the breeding behaviour of the commoner game species, what their habitat requirements are and how these vary at different times of year. From this understanding the learner should be able to develop a management plan for a specific area to meet the needs of the game species found there.

Outcome 3 requires the learners to undertake some practical habitat management that will benefit locally occurring game species. This is likely to be delivered by site visits and supervised habitat practicals supported by formal lectures, discussion and independent learner research. The learner should be familiar with a range of habitat management techniques used to encourage wild game species.

Outcome 4 addresses how the number of wild game birds is ascertained so that a sustainable harvest can be achieved. It is likely to be delivered by formal lectures, discussion, site visits, practicals and independent learner research. Ideally tutors will use real life situations to illustrate the techniques. If this is not possible then the use of case study materials is acceptable. Visiting expert speakers could add to the relevance of the subject for the learners. For example, a game conservancy advisor or game manager could talk about the use of estimation techniques that they use within their research or management work.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

References

Books:

Cooper J. and Cooper M. 2004 *Captive Birds in Health and Disease: Gamebirds, Raptors, Gamebird* ISBN 0888395382
Hudson P. 1988. *Ecology and Management of Game Birds* ISBN 0632018345
Hudson P 1992. *Grouse in Space and Time: The Population Biology of a Managed Gamebird* ISBN 0950013015
Hudson P. and Newborn D. 1995 *A Manual of Red Grouse and Moorland Management* ISBN 1901369083
Johnsgard P. 1999. *Pheasants of the World: Biology and Natural History*, 2nd Edition ISBN 1840371291
Martin Brian P. 1984. *Sporting Birds of the British Isles* ISBN 0715384473
McKelvie C 1996. *Snipe and Woodcock: Sport and Conservation* ISBN 1853107139
Potts G.R. 1987. *The Partridge: Pesticides, Predation and Conservation* ISBN 0003832988
Robertson, P. 1997. *A Natural History of the Pheasant* Swan Hill Press
Tapper S. 1992 *Game Heritage: An Ecological Review from Shooting and Gamekeeping Records* ISBN 0950013021

Websites:

www.gwct.org.uk The Game and Wildlife Conservation Trust

Unit 307 Undertaking Vertebrate Pest and Predator Control

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to pest and predator control skills and understanding 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.

Control of pests and predators is an integral part of good countryside management. The ability to eliminate and deter unwanted animals can benefit natural ecological preservation as well as the man-made environment. The ability to efficiently control pests and predators in accordance with relevant legal obligations is a sought after skill.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Be able to identify the principal UK pest and predator species
2. Understand the ecology of common UK pest and predator species
3. Be able to control pests and predators using lethal methods
4. Understand pests and predators deterrent using non-lethal methods

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU46 Control vertebrate pests and predators using traps
CU80.1 Plan and manage the control of pests, diseases and disorders

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 307 Undertaking Vertebrate Pest and Predator Control

Outcome 1 Be able to identify the principal UK pest and predator species

Assessment Criteria

The learner can:

1. Identify principal **UK pest and predator species**
2. Describe the **tracks and signs** of locally occurring pests and predators
3. **Survey** a given area to **identify** locally occurring pests and predators

Unit content

UK pest and predator species

Fox, badger, stoat, weasel, mink, polecat, pine marten, otter, rat, rabbit, house mouse, grey squirrel, cat (wild and feral), crow (carrion and hooded), rook, magpie, jackdaw, jay, raven, buzzard, sparrow hawk, tawny owl, hen harrier, goshawk, peregrine falcon, woodpigeon, canada goose

Tracks and signs

To include as appropriate to the species: faeces, footprints, homes/nests, fur/feathers, evidence of kills, smell

Survey

Direct methods

Open range counting, vantage point counts

Indirect methods

Faeces, tracks, browsing, fraying, bark stripping, ground flora degradation, loss of habitat structure, road traffic collisions, crop damage

Equipment: radios/walkie talkies, binoculars, telescopes, Global Positioning System (GPS), digital cameras, notebooks, pencils, maps, markers, health and safety equipment

Identify

From physical presence of species at time of survey and/or tracks and signs as listed above

Unit 307 Undertaking Vertebrate Pest and Predator Control

Outcome 2 Understand the ecology of common UK pest and predator species

Assessment Criteria

The learner can:

1. Explain the **ecology** of a selected **avian** pest or predator species
2. Explain the **ecology** of a selected **mammalian** pest or predator species

Unit content

Ecology

Life-cycle especially breeding behaviour, distribution and preferred habitats, population status, diet, impact and damage done as a pest/predator

Avian

Crow, magpie, buzzard, sparrow hawk, wood pigeon

Mammalian

Fox, stoat, mink, rat, rabbit, grey squirrel

Unit 307 Undertaking Vertebrate Pest and Predator Control

Outcome 3 Be able to control pests and predators using lethal methods

Assessment Criteria

The learner can:

1. Demonstrate the **correct methods** of controlling pests and predators using **spring traps**
2. Demonstrate the **correct methods** of controlling pests and predators using **snares**
3. Demonstrate the **correct methods** of controlling pests and predators using **live catch traps**

Unit content

Correct methods

As stated in the relevant codes of practice for each control method

Spring traps

Fenn, magnum, Kania, and DOC

Snares

Fox and rabbit

Live catch traps

Larsen, ladder/crow cage, and mink rafts

Unit 307 Undertaking Vertebrate Pest and Predator Control

Outcome 4 Understand pests and predators deterrent using non-lethal methods

Assessment Criteria

The learner can:

1. Discuss the effectiveness of selected **non-lethal deterrents** on pests and predators
2. Recommend appropriate **non-lethal methods** for a given pest situation
3. Recommend appropriate **non-lethal methods** for a given predator situation

Unit content

Non-lethal deterrents

Exclusion, audible, visual, olfactory, electrical, diversionary feeding and habitat manipulation

Non-lethal methods of control

Trapping, live catch

Unit 307 Undertaking Vertebrate Pest and Predator Control

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required to control the effects of vertebrate pests and predators. Throughout the unit, the emphasis should be on safe working and the humanitarian application of effective control techniques. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Outcomes 1 and 2 cover the identification and ecology of the common vertebrate pests and predators likely to be encountered in the UK. These will include agricultural pests as well as those pests and predators related to game and wildlife management.The legal status of species is considered, together with the relevant legislation. The basic process of identification using size, colour, signs, and tracks is also covered as well as species ecology, breeding, habitat and populations. Populations of pests and predators on given sites will be determined by surveys. These fundamental elements can then be transposed across all the other related species studied. Deer are not studied in this unit, as this topic is covered in 'Understand Deer Management'.

In Outcome 1, learners must be able to identify the main UK pest and predator species either in pictorial form or as physical specimens. They must also be familiar with the tracks and signs of locally common pest and predator species. This knowledge should be used to survey a local area to identify the presence of common pests and predators.

Outcome 2 requires learners to explain the ecology of a selected avian and a selected mammalian pest or predator species. Tutors should identify the species or agree them through discussion with the learners.

Outcome 3 looks in more detail at lethal control techniques, the variety of traps and methods available, their specific uses, and related legislative obligations and codes of practice. The setting and positioning of lethal control methods is covered, and this unit should be delivered in a practical setting.For Outcome 3 learners are required to demonstrate an understanding of the correct methods of controlling pests and predators using selected lethal methods. All activities should be completed with regard to the appropriate health and safety risk assessments and practices, and should be consistent with relevant legislation and codes of practice.

Outcome 4 covers the use of non-lethal deterrents to prevent damage from pests and predators, and determines their effectiveness. It covers their use and related codes of practice and legislation. This is a vital measure when considering the number of protected species that can have an impact on game and wildlife populations, and the use of deterrents in situations where lethal control is difficult or unnecessary. In Outcome 4 learners should be encouraged to review the effectiveness of a range of deterrents in common usage and should demonstrate an understanding of what affects their effectiveness.

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Unit 308 Undertaking Woodland Habitat Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of woodland habitat management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to provide learners with the ability to recognise the features of woodland habitats and the skills required for their management.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the historical development of woodland
2. Be able to survey the structures and features within a woodland ecosystem
3. Understand the management of woodland habitats
4. Be able to manage woodland habitats.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU88 Manage habitats
EC23 Prepare, conduct and report on environmental change

Endorsement of the unit by a sector

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 308 Undertaking Woodland Habitat Management

Outcome 1 Understand the historical development of woodland

Assessment Criteria

The learner can:

1. Discuss the **historical influences** that have created the current level of woodland cover in the UK
2. Explain the development of **woodland types** and **management systems.**
3. Compare **historic features** within a woodland

Unit content

Historical influences

Ice age, wildwood, Mesolithic, Neolithic, Bronze Age, Iron Age, Roman, Domesday Book, Middle Ages, Industrial Revolution, First World War, Forestry Commission, Second World War, post-war destruction, !950s and 60s greening. Forestry expansion, community forest initiative

Woodland types

Succession, National Vegetation Classification (wet woodlands, lowland, upland, scrub communities), ancient woodlands, ancient semi-natural, primary, secondary

Management systems

Coppicing, coppice with standards, wood pastures, pannage, wooded common

Historic features

Name, boundary shape, wood banks, out-grown hedges, ditches, pits, charcoal hearths, saw pits, tracks, woodlands indicator species

Unit 308 Undertaking Woodland Habitat Management

Outcome 2 Be able to survey the structures and features within a woodland ecosystem

Assessment Criteria

The learner can:

1. Report on the **structures and features** of a woodland **ecosystem**
2. Carry out a **survey** of a woodland

Unit content

Structure

Ground, field, shrub, canopy

Features

Name, boundary shape, wood banks, out-grown hedges, ditches, pits, charcoal hearths, saw pits, tracks, woodlands indicator species

Ecosystems

Broadleaved woodland, mixed woodland, coniferous woodland, coniferous plantations, coppice, coppice with standards

Survey

Species identification (flora and fauna)
Quantitative (for example quadrats and simple line transects) and qualitative (quality of habitat, species distribution), correlation of species and effects of abiotic factors
Recording, mapping, present information from surveys in various forms (written, data and pictoral) graphs, pie chart, basic statistics
Risk assessment: identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk

Unit 308 Undertaking Woodland Habitat Management

Outcome 3 Understand the management of woodland habitats

Assessment Criteria

The learner can:

1. Evaluate different types of **woodland habitats** and relevant **management techniques**
2. Prepare **equipment and resources** for practical management of woodland habitats

Unit content

Woodland habitats

Glades, rides, woodland edges, veteran trees, deadwood, ponds, streams, bog, thicket, dense shade

Woodland management techniques

Management plan, health and safety, planting/sowing (trees, shrubs and ground flora), natural regeneration, thinning, clearance, coppice, agroforestry, silvicultural systems

Equipment and resources

Personal Protective Equipment (PPE) (e.g. boots, safety helmet, waterproof clothing, gloves), first aid kit, planting equipment, fencing equipment, pruning equipment, saw, tools for vegetation clearance, coppicing tools, maintenance (e.g. cleaning, oiling, sharpening)

Unit 308 Undertaking Woodland Habitat Management

Outcome 4 Be able to manage woodland habitats

Assessment Criteria

The learner can:

1. Safely carry out **practical management** of woodland habitats
2. Recommend **improvements** to the management of woodland habitats

Unit content

Practical management

Aims, objectives, management plan, health and safety, planting/sowing (trees, shrubs and ground flora), natural regeneration, thinning, clearance, coppice, ride creation, glade creation, pond creation, deadwood introduction, bird boxes, bat boxes

Improvements

Increased diversity, invasive species control, sustainable management, habitat creation, waste management

Unit 308 Undertaking Woodland Habitat Management

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required to recognise features of woodland habitats and prepare, plan and undertake practical management of woodland habitats. Learners will develop an understanding of the historical influences that have affected woodland cover and understand the range of woodland habitats present today. An understanding of the management techniques available for woodland habitats will be developed along with the opportunity to put some techniques into practice. The unit should cover a wide range of possible activities and potential sites.

Throughout the unit the emphasis should be on safe working and sustainability. It is expected that learners will be aware of safe working practices and be familiar with accepted practices and behaviours within the context in which they are working. The importance of sustainable practices should be woven into the delivery throughout.

In Outcome 1, the leaner will be required to understand how woodland cover has been influenced historically and has led to the development of different woodland types and management systems. Learners should develop an appreciation of the potential historical features within woodland. It is anticipated that the delivery of this outcome will be through formal lectures and discussion but should also be delivered through independent learner research and site visits (e.g. to ancient woodland).

Outcome 2 covers woodland surveying. It is anticipated that the delivery of this outcome will contain some formal lectures and discussion, but it requires site visits to woodland and supervised classroom activities. It may be beneficial to have visiting expert speakers to add relevance to the subject particularly those that have been involved woodland habitat surveys. Learners will develop their identification skills and an appreciation of the structures that make up woodlands.

In Outcome 3, the learner will develop an understanding of the management techniques relevant to different woodland habitats. Emphasis should be placed on correct planning and health and safety. It is anticipated that the delivery of this outcome will be mainly through formal lectures and discussion but the addition of guided visits to habitats under successful management would add context.

In Outcome 4, the learner will be able to put into practice knowledge gained from the other learning outcomes. This outcome will require some formal delivery but it is expected that most will be delivered through practical activities. Learners will prepare for and undertake practical woodland habitat management. The emphasis should be heavily placed on health and safety throughout the delivery of this outcome. Learners will also have the opportunity to discuss improvements to the management of woodland habitats.

This unit aims to extend the learners knowledge and skills involved with woodland habitat management. Emphasis should be placed upon the importance of planning and health and safety. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of woodlands to add depth to the learner experience and put practices into context.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity to deal with a range of activities in different situations that reflect current industry trends

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Unit 309 Undertaking Farm Habitat Management

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to farm habitat management skills and knowledge 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.

Upon completion of this unit the learner will have looked at changes in the farmed landscape since the Enclosures Acts, the various influences on and effects of these changes. They will consider ecological aspects of farm habitat management. They will develop skills in farm habitat surveying and practical habitat management.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the development of the agricultural landscape
2. Understand the ecology of farm habitats and wildlife species
3. Be able to carry out farm habitat and species surveys
4. Be able to carry out practical farm habitat management

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC23 Prepare and conduct field surveys

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 309 Undertaking Farm Habitat Management

Outcome 1 Understand the development of the agricultural landscape

Assessment Criteria

The learner can:

1. Explain the development of the **agricultural landscape** in the UK
2. Explain effects of **legislation or policy** on the development of the farmed landscape

Unit content

Agricultural landscape

Primeval, medieval, pre-enclosure, enclosure, industrial revolution, post 1940's, modern day agriculture

Legislation or policy

The General Enclosures Act 1845, Corn Laws, Agricultural Act 1947, Common Agricultural Policy (CAP), Wildlife and Countryside Act 1981 (as amended), Environmental Protection Act 1990, Cross Compliance Nitrates Directive 1991, Hedgerows Regulations 1997, Environmental Impact Assessment (Agriculture) (England) Regulations 2006

Ecological effect: change to species diversity, range and distribution, change to habitat types and characteristics, impact of intensive agricultural management

Unit 309 Undertaking Farm Habitat Management

Outcome 2 Understand the ecology of farm habitats and wildlife species

Assessment Criteria

The learner can:

1. Explain the **ecological importance** of **habitat** diversity in a selected farmed landscape
2. Evaluate the effectiveness of a given **biodiversity action plan**

Range

Habitat: hedges, stone walls, ponds and lakes, rivers and streams, woods, trees, field margins, conservation headlands and grasslands

Unit content

Ecological importance

Provision of habitat for a diverse range of species (flora and fauna), rare and uncommon species, species with specific habitat requirements, availability and access to food preferences

Biodiversity action plans

Habitat Action Plans (HAPs), for example ancient and or species rich hedgerows action plan, cereal field margin action plans, grassland action plans, species action plans, ecological importance of habitat diversity in the farmed landscape, process of species and habitat action planning

Unit 309 Undertaking Farm Habitat Management

Outcome 3 Be able to carry out farm habitat and species surveys

Assessment Criteria

The learner can:

1. Carry out ecological **surveying** of a given **farm habitat**
2. **Report results** of **farm habitat** and **species** surveying

Unit content

Surveying

Whole farm assessments, Linking Environment and Farming (LEAF) audit, Farm Environmental Record, Farm Environmental Plans (Environmental Stewardship Scheme), National Vegetation Classification, hedgerow survey, farmland bird surveys, arable plants survey, farmland species, ecological features, nature conservation value, habitat condition assessment, potential biodiversity improvements

Farm habitats

Hedges, stone walls, ponds and lakes, rivers and streams, woods, trees, field margins, conservation headlands, and grassland

Report results

Qualitative and quantitative, suitable presentation methods (for example tables, pie charts, annotated maps, histograms, scattergraphs), statistical analysis to include mean, mode, distribution and correlation, establishing conclusion in relation to survey aims, identify potential sources of error within survey data

Species

Birds, mammals, invertebrates, grasses, shrubs, trees, wildflowers

Unit 309 Undertaking Farm Habitat Management

Outcome 4 Be able to carry out practical farm habitat management

Assessment Criteria

The learner can:

1. Prepare **equipment** and resources for practical management of **farm habitats**
2. Carry out **practical management** techniques safely
3. Recommend **improvements** to the management of farm habitats

Unit content

Farm habitats

Hedges, stone walls, ponds and lakes, rivers and streams, woods, trees, field margins, conservation headlands and grasslands

Equipment

Hand tools: spades, forks, shovels, secateurs, handsaws, clippers, hammers, pickaxes, hand fencing equipment, safe and correct use, maintenance and storage, sharpening of tools where appropriate, suitable clothing and Personal Protective Equipment (PPE)

Practical management

Mowing, renovation, planting and staking as applicable, clearing (path, fence line), coppicing, uprooting, hedge maintenance, pruning, thinning, cutting or mowing and mulching, pond, stream and ditch clearance
Good practice: composting, materials that can be composted, re-used and/or recycled, finding alternative uses, methods of recycling, avoid wastage

Improvements

Setting habitat management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

Unit 309 Undertaking Farm Habitat Management

Notes for guidance

Upon completion of this unit, the learner will have looked at changes in the farmed landscape from Primeval Time and the various influences on it, and effects of these changes. They will consider ecological aspects of farm habitat management. They will develop skills in farm habitat surveying and practical habitat management.

Delivery is likely to be a mixture of classroom learning and practical farm habitat surveying and management. Any sites to be used needs to comply with local legislation and have prior full permission from the landowner.

Where practical activities are used health and safety issues relating to working in an outdoor environment and handling animal material must be stressed and regularly reinforced, and risk assessments must be undertaken and recorded prior to practical activities. Adequate Personal Protective Equipment (PPE) must be provided. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely.

Outcome 1 requires the learner to understand the development of the agricultural landscape and how this has altered from Primeval Time to the present day. They will be required to consider the influence of UK legislation and policies, effects of global and national events, and the changes to farming practices. This would include learners identifying biotic and abiotic effects e.g. how the removal of hedges, ditches, ponds, woodland, farm buildings, dry stone walls, grading of the watercourse, the use of pesticides and inorganic fertilisers, silting of water courses via soil erosion have affected the landscape. As well as classroom activity learners would benefit from practical sessions and visits to enhance learning and understanding. Tutors should be encouraged to use local sites wherever possible. Theory delivery can be through a series of formal lectures, directed study, internet and library associated research.

Outcome 2 requires the learner to understand farm habitats and wildlife species. Tutors should be encouraged to use local sites wherever possible. The outcome takes into consideration the influence of farm biodiversity, e.g. local and national Biodiversity Action Plans (BAP) as well as the biodiversity action planning process. The emphasis of the unit is for learners to explore the elements of the landscape occupied by semi natural habitats. Theory delivery can be through a series of formal lectures, directed study, internet and library associated research.

Outcome 3 requires the learner to practically plan, carry out and report findings of farm habitat and species surveys. Learners are required to identify plant and animal species present as well as making assessments on the condition of the farm habitats and making suggestions as to ways these could be improved. It is anticipated that there will be some group activities during surveying but learners are encouraged to present their findings individually.

Outcome 4 requires the learner to plan and use equipment and resources to recommend and carry out practical farm habitat management and to devise a management scheme taking into account the needs of the sites they access. It links well into the previous outcomes where the learners have gained practical skills and knowledge to complete the task. The site to be used needs to comply with local legislation and have prior full permission from the landowner prior to implementing change.

Work experience would be beneficial for learners wishing to pursue a career in this field. Visits from visiting speakers could add relevance to the subject including their work the situations they face and the methods they use.

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Unit 310 Understanding River Fishery Creation and Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of river fishery creation and management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to allow learners to study river habitats and relate this to how they can be managed sustainably for anglers, taking into account the important needs of the environment and other users.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the ecology of different rivers
2. Understand the causes of river degradation and the methods used to improve riverine habitats
3. Know the types of river fisheries available in the UK and the factors that allow them to succeed
4. Be able to plan the creation and management of a riverine fishery

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering the skills and underpinning knowledge

Unit 310 Understanding River Fishery Creation and Management

Outcome 1 Understand the ecology of different rivers

Assessment Criteria

The learner can:

1. Explain the characteristics of the **typical habitats** found in selected river fisheries
2. Explain the habitat requirements of a range of **river fish species**

Unit content

Typical habitats

Pool, riffle, glide, gravels, over hanging vegetation, woody debris, aquatic weed, under cut banks, bars, berms, runs

River fish species

Coarse fish for example Roach, Bream, Chub, Pike, Barbel, Dace, Bleak, Zander

Game fish for example Salmon, Brown Trout, Rainbow Trout, Grayling, Sea Trout

Unit 310 Understanding River Fishery Creation and Management

Outcome 2 Understand the causes of river degradation and the methods used to improve riverine habitats

Assessment Criteria

The learner can:

1. Explain the major **causes of river degradation** at a selected site
2. Assess different **methods to improve** one situation of river degradation at a selected site

Unit content

Causes of river degradation

Pollution (agricultural, industrial), eutrophication, afforestation, abstraction, over shading, impoundments, for example wiers and dams, siltation, channelisation, dredging, recreation, undershading, non-native plant species, for example Himalayan Balsam, non-native animal species eg. signal crayfish, American mink

Methods to improve

Bank top methods, for example post and wire fencing, buffer strips, tree planting, coppicing, pollarding, bankside work, for example faggots, revetment, gabions, in channel features for example deflectors, islands, woody debris, boulder placement

Unit 310 Understanding River Fishery Creation and Management

Outcome 3 Know the types of river fisheries available in the UK and the factors that allow them to succeed

Assessment Criteria

The learner can:

1. Identify the **coarse and game fisheries** available in the UK

Unit content

Coarse Fisheries

Named venues, e.g. Severn, Itchen, Great Ouse.

Species e.g. Barbel, Chub, river zonation, geographical differences, costs to fish, methods of angling undertaken e.g. stick float, feeder, trends in fishing, rod licences, closed seasons, local byelaws and national legislation, fishing rights e.g. club waters, syndicates, day tickets

Game Fisheries

Named venues, for examples Spey, Tweed, Test Itchen, Teifi, Wye, native species, for example Salmon, Sea Trout, Brown Trout, Grayling.

Stocked species for example Rainbow Trout, Brown Trout, triploid, diploid, value to local rural economy, angling tourism, geographical differences, river zonation, threats to such fisheries, costs to fish, methods of angling undertaken for example fly worm, lure, rod licences, closed seasons, local byelaws and national legislation, fishing rights syndicates, day ticket, club waters

Unit 310 Understanding River Fishery Creation and Management

Outcome 4 Be able to plan the creation and management of a riverine fishery

Assessment Criteria

The learner can:

1. Create a **plan** for the **management of a selected river fishery** over a given period

Unit content

Plan

Setting river fishery management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

Management of a selected river fishery

Legal predator control, fish stock management, stocking, bankside vegetation control, aquatic vegetation control, poacher checks, angler liaison, fish population management/surveys, maintaining access points for example bridges, stiles, gates, steps, maintaining boundaries for example fences, biological and chemical water quality checks, maintaining in-stream structures for example deflectors, islands, faggots, habitat improvement works

Unit 310 Understanding River Fishery Creation and Management

Notes for guidance

This unit is designed to provide the learner with the sound knowledge and skills required to understand how rivers across the United Kingdom are managed for angling. The context of teaching will differ for each outcome delivered and should include formal lectures, site visits, study tours, learner practicals and small group research.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours when working in around water courses. Risk assessment should be undertaken and all learners must wear the appropriate Personal Protective Equipment (PPE) e.g. chest waders and a buoyancy aid.

In Outcome 1, the leaner will be required to understand the ecology of a river system and the habitats required for a range of fish species. It is accepted that this outcome will require some formal delivery, but it should also be delivered in practical situations and site visits where learners can visually see the different river habitats. Learners should be encouraged to research different fish species found in rivers and understand their habitat requirements throughout the year.

Outcome 2 covers river degradation and river rehabilitation. It is anticipated that the delivery of this outcome will be through formal lectures, but it would be beneficial to include a site visit or study tour to an area which has encountered river degradation and river rehabilitation, such as the river Teifi in Mid Wales. Learners should also focus on local and national case studies across the UK and look at the work undertaken by river trusts and the Environment Agency.

In Outcome 3, the learner will be required to understand the different river systems for angling across the UK. Emphasis should be placed on the main types of angling, for example Salmon Fishing on the Scottish rivers, Sea Trout Fishing in Wales, the Chalkstreams and the coarse rivers of the Midlands, for example the Severn and Trent. Guided learner research and formal lectures should form the main part of the teaching for this outcome, with study tours and site visits where necessary.

In Outcome 4 the learner will be able to understand the typical duties associated with management of river fisheries. Learners should be familiar with the daily, weekly and yearly duties undertaken by those employed in river fishery management e.g. river keepers. Where possible, learners should have the opportunity to undertake a range practical task on a variety of river fisheries. Alternatively a river keeper could talk about his/her role and duties.

Learners working towards level 3 are likely to have some experience of river management. This unit aims to extend the learners knowledge and skills involved with the management of the variety of rivers found across the UK. Emphasis should be placed not only on formal lectures but also on site visits and study tours to see real life examples.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of rivers to add depth to the learner experience.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity to study the range of river fisheries found across the UK.

References

Books

Holmes N (1994) Rivers and wildlife handbook (A and C Publishers)
Templeton R (1995) Freshwater Fisheries Management, 2nd Edition (Blackwell Science) ISBN 085238209X

Journals

The Wild Trout Survival Guide - The Wild Trout Trust
Rivers and Wetlands Best Practice Guidelines- The Environment Agency
Trout and Salmon Magazine
Salmo Trutta Wild Trout Trust magazine
Game Fisher The Salmon and Trout Association magazine
Annual assessment of salmon stocks and fisheries in England and Wales (CEFAS & the EA)
National Trout and Grayling strategy. The EA
The state of Englands Chalk Rivers. The EA

Websites

www.associationofriverstrusts.org	The Association of River Trusts
www.atlanticsalmontrust	Atlantic Salmon Trust
www.defra.gov.uk	The Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk	The Environment Agency
www.gct.org.uk	The Game Conservancy Trust
www.graylingsociety.org	The Grayling Society
www.lantra.co.uk	Lantra Sector Skills Council
www.salmon-trout.org	The Salmon and Trout Association
www.thebarbelsociety.co.uk	The Barbel Society
www.therrc.co.uk	The River Restoration Centre
www.wildtrout.org	The Wild Trout Trust

Unit 311 Understanding Stillwater Fishery Creation and Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of Stillwater fishery creation and management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to allow learners to study the various characteristics of stillwaters, enabling learners to understand how to plan, create and manage fisheries to meet the requirements of the anglers and the fish.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the characteristics of stillwaters and the requirements of the different sport fisheries
2. Understand the creation of a sports fishery
3. Be able to manage the fish stocks in a stillwater sport fishery
4. Be able to undertake a range of stillwater fisheries management tasks

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 311 Understanding Stillwater Fishery Creation and Management

Outcome 1 Understand the characteristics of stillwaters and the requirements of the different sports fisheries

Assessment Criteria

The learner can:

1. Explain the **characteristics of different stillwater sport fishery types**
2. Explain the **habitat requirements of a range of stillwater fish species**

Unit content

Characteristics of different stillwater sport fishery types

Fishery types: coarse, game, match, specimen

Characteristics: size, shape and design, facilities for the angler, costs to fish, species of fish, sizes of fish, stocking densities

Habitat requirements of a range of stillwater fish species

Water quality (biological and chemical), depth, temperature, aquatic vegetation, bankside vegetation, cover, spawning and nursery habitat, native and non native species, pollution, disease

Unit 311 Understanding Stillwater Fishery Creation and Management

Outcome 2 Understand the creation of a sports fishery

Assessment Criteria

The learner can:

1. Explain the **creation of a stillwater fishery** from a greenfield site
2. Explain the **creation of a specified fishery** from an existing stillwater

Unit content

Creation of a stillwater fishery

Initial planning (site surveys, test holes, local plans), other local fisheries, water sources (spring fed, on line, off line), the planning process, planning requirements, location and siting, design, construction methods, machinery used, costs, timescale, excavation, features (islands, bars, berms, landscaping, planting schemes), facilities for the anglers (car park, access, angling pegs, lodge), Town and Country Planning Act, health and safety, environmental impact

Creation of a specified fishery

Coarse, trout, mixed, pleasure, match, specimen
Lakes, pools, gravel pits, ponds, other water users, costs, water quality checks, fish population surveys, environmental impact, facilities for the angler, financial viability and return

Unit 311 Understanding Stillwater Fishery Creation and Management

Outcome 3 Be able to manage the fish stocks in a stillwater sport fishery

Assessment Criteria

The learner can:

1. Plan the **management** of the **fish stocks** in contrasting sports fisheries

Unit content

Management

Trout fishery rules (catch and kill, catch and release), coarse fishery rules (net dips, unhooking mats, barbless hooks), predation, poaching, disease, habitat requirements, habitat creation (fish refuges, spawning areas), population management (seine netting and electro fishing), support measures (aeration and feeding), maintaining water quality, Wildlife and Countryside Act 1981

Fish stocks

Native and non-native species, Environment Agency Consent, health checks, Centre for Environment, Fisheries and Aquaculture Centre registration scheme, coarse and game species, timing of stocking, stocking densities, costs, sizes, numbers, over stocking, competition, poor recruitment Salmon and Freshwater Fisheries Act 1975, Codes of Practice

Unit 311 Understanding Stillwater Fishery Creation and Management

Outcome 4 Be able to undertake a range of stillwater fisheries management tasks

Assessment Criteria

The learner can:

1. Plan and carry out a range of **aquatic plant management tasks**
2. Plan and carry out a range of **maintenance tasks for the angler**

Unit content

Aquatic plant management tasks

Bankside vegetation, marginal plants, submerged plants, floating leaved plants, free floating. Coppicing, pollarding, pruning, cutting slashing, raking, use of boom, health and safety, environmental impact, animal welfare issues

Maintenance tasks for the angler

Maintenance of banks, access points, angling pegs, paths, steps, boundaries, surfaces, seats/benches, car parks, health and safety, risk assessment, environmental impacts, costs

Unit 311 Understanding Stillwater Fishery Creation and Management

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required to create and manage new sport fisheries. The context of teaching will differ depending on the outcome being delivered, however it is expected that a mixture of theory and practical session should be used. The unit should cover a range of coarse and game stillwater sport fisheries.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and be familiar with current legislation and the environmental implications of the content of this unit.

In Outcome 1, the learner will be required to recognise the different types of stillwater sport fisheries found in the United Kingdom and how these have developed over the last twenty years. In addition learners will know about the different fish species found in such fisheries and habitat requirements of each. It is accepted that this outcome will require some formal delivery and guided learner research. However visits to local fisheries should also be encouraged. Learners should gain an understanding of both coarse and game fisheries.

Outcome 2 covers the planning and construction of new stillwater sport fisheries. It is anticipated that the delivery of this outcome will be through formal lectures, but it would be beneficial for learners to visit newly created fisheries and talk to fishery managers to see real life examples. Learners need to be aware of current legislation with regard to local and national planning policies and the costs involved in constructing new sport fisheries.

In Outcome 3, the learner will be required to know the stocking levels and policies for both coarse and game fisheries. Learners should know the species, sizes, densities and costs for stocking coarse and game stillwater sport fisheries. They should also be aware of how these fish should be managed once stocked. Current legislation, Codes of Practice and fish welfare issues should also be covered. It is expected that this outcome will be delivered by formal lectures, group work and discussion.

In Outcome 4 the learner will be able to carry out a range of practical fishery management tasks. Tasks must include vegetation control and fishery maintenance tasks at both coarse and game fisheries to gain a broad understanding of the works required. Delivery should be through short formal lectures followed by hands on practical sessions. Learners should be fully involved in undertaking risk assessments and safe working practices. They should also be aware of the environmental implications of the work and how fisheries should be managed sustainably. Emphasis should be placed on legislation and Codes of Practice.

Learners working towards level 3 are likely to have some experience of fishery management. This unit aims to extend the learners knowledge of fishery creation and management. Emphasis should be placed on current practices, legislation, and prices.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. This could include a local planning officer, a fishery manager, a fish farmer or an Environment Agency Fisheries Officer. Teaching would also benefit from visits to a local coarse and trout fisheries and fish farms.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity work on both coarse and game fisheries.

References

Books

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Barnes R S K and Mann K H. 1991. Fundamentals of Aquatic Ecology (Blackwell) ISBN 0632029838
Brooks A and Agate E. 1997. BTCV Waterways and Wetlands a practical handbook (BTCV) ISBN 0950164380
Environment Agency Guides - Environments for fish, Water plants their function and management, Coarse fish biology and management, Fisheries habitat improvement, The construction and renovation of Stillwater coarse fisheries
Maitland P S. 2004. Keys to the Freshwater Fish of Britain and Ireland (Freshwater Biological Association)
Seagrave C. 1988. Aquatic Weed Control (Fishing News Books) ISBN 0852381522
Templeton R G. 1995. Freshwater Fisheries Management (Fishing News Books) ISBN 085238209X

Websites

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www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk	The Environment Agency
www.ifm.org.uk	Institute of Fisheries Management
www.anglingtrust.net	The Angling Trust

Unit 312 Undertake Grassland Habitat Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of grassland habitat management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will examine the history and ecology of grasslands and develop skills necessary to survey and identify species of the grassland community. They will investigate the range of tools and operations available for the management of grasslands and plan, carry out and evaluate management for a particular site.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the history and ecology of grassland habitats
2. Be able to survey grassland species and habitats
3. Understand management techniques for grassland sites
4. Be able to carry out practical grassland habitat management

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards CU88.1 Identify the need for and plan habitat management work

EC23 Prepare and conduct field surveys

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 312 Undertake Grassland Habitat Management

Outcome 1 Understand the history and ecology of grassland habitats

Assessment Criteria

The learner can:

1. Explain the **historical development of grassland** in the UK
2. Explain the **ecology of grassland** in the UK

Unit content

Historical development of grassland

The development of grasslands over time, open rangelands (following the last Ice Age), development of woodland subsequently cleared during the Neolithic period.
Historical development: enclosures, field systems, agricultural improvements and the introduction of the Common Agricultural Policy (CAP) and reforms
The definition of grasslands as a semi-natural habitat

Ecology of grassland

Ecosystem succession and seral stages, Franz Vera's model (1999), the continuous woodland model
National Vegetation Classification (NVC) grassland types including (but not limited to): wet and dry grasslands, calcareous, acid, mesotrophic, calminarian
Importance of grasslands for specialist species including insects, fungi, mammals and birds

Unit 312 Undertake Grassland Habitat Management

Outcome 2 Be able to survey grassland species and habitats

Assessment Criteria

The learner can:

1. Plan **surveying** including appropriate **techniques, equipment** and permissions
2. Survey grassland habitats and species
3. **Report** on the structures, features and ecosystem surveyed

Unit content

Surveying techniques

Plant and fungi species surveys using quadrats, random sampling, NVC data and the DAFOR (Dominant, Abundant, Frequent, Occasional or Rare) scale, Phase 1 and 2 habitat surveys, use of identification keys, time of year surveying is undertaken

Invertebrate and mammal species surveys use of tracks and trails, pit-fall traps, sweep-netting and simple observation techniques

Equipment: sweep nets, quadrats, identification books and guides, recording and reporting materials, pit-fall traps, sample jars, hand-lenses, camera and measuring devices.

Permissions: land ownership, rights of access, reasons for carrying out survey

Surveying equipment

Sweep nets, quadrats, identification books and guides, recording and reporting materials, pit-fall traps, sample jars, hand-lenses, camera and measuring devices

Report

Record information from surveys using record forms, data collection and mapping

Unit 312 Undertake Grassland Habitat Management

Outcome 3 Understand management techniques for grassland sites

Assessment Criteria

The learner can:

1. Evaluate different **grassland management techniques**
2. Explain **grassland management objectives** for a given site

Unit content

Grassland management techniques

Grassland use and purpose of management: agriculture, e.g. pasture, hay meadow, improved and un-improved grasslands; sports/recreation and amenity facilities, habitat and species conservation
Types of management: grazing e.g. with cattle, sheep, horses, deer; cutting/mowing, rolling, chain-harrowing, harvesting cut material; burning, reference to burning code of conduct; creation and restoration methods

Grassland management objectives

Cultural objectives: aesthetics, recreational use (walking, horse-riding, dog-walking, bird watching, sports and other amenity use), agricultural value; crop (animal feed: grass, hay, silage.)
Ecological objectives: conservation value, rare or endangered habitats and species, preserving biological diversity, scientific value and use, buffer strips

Unit 312 Undertake Grassland Habitat Management

Outcome 4 Be able to carry out practical grassland habitat management

Assessment Criteria

The learner can:

1. Prepare **equipment and resources** for practical management of grassland habitats
2. Safely carry out **practical management** of grassland habitats in a given site
3. Recommend **improvements to the management** of grassland habitats

Unit content

Equipment and resources

Tractors, mowers, trailers and other mechanical equipment, livestock (cattle, sheep, horses, deer etc), hand tools, fencing equipment

Practical management

Mowing/cutting, weed control and invasive plant (tree and shrub) removal, harvesting (hay and silage), livestock handling, fencing, grassland creation and restoration, maintenance of established grasslands, soil preparation and drainage, pest control

Improvements to the management

Management planning, health and safety, risk assessment, human resources/volunteer work parties, public consultation including environmental interpretation

Unit 312 Undertake Grassland Habitat Management

Notes for guidance

A range of techniques should be used in the delivery of this unit. Learners will benefit from lectures, guest speakers (for example from land managers and other practitioners of grassland habitat management), presentations, site visits, practical grassland management tasks including those undertaken during work experience placement, and research using library and internet sources.

Work experience placements should be monitored regularly in order to ensure the quality of the learning experience. Learners and their supervisors should be made aware of the requirements of this unit prior to any work-related activities so that naturally occurring evidence can be gathered at the time. For example, learners may have the opportunity to survey or carry out practical grassland management and they should be encouraged to request that observation records and/or witness statements are provided for evidence of this.

Whichever delivery methods are used, it is essential that tutors stress the importance of sound environmental management. Learners should know that some grassland species are protected by law and that licences from Natural England are required to handle them.

Health and safety issues relating to the integration of safe working practices and environmental good practice into all practical activities must be stressed and regularly reinforced, and risk assessments must be undertaken prior to practical activities.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments which learners are taking as part of their programme of study.

In Outcome 1, learners will gain an insight into the ecological and historical background of grasslands in the context of their development and current status. It is likely that this learning outcome will be delivered by formal lectures and group discussion. Ecosystem succession models should be explored in order to develop an understanding of dynamic systems in the natural environment. In particular, Vera's (1999) grazed forest model and the continuous woodland model should be explored in some detail.

An understanding of the ecology of grasslands is best delivered through specific site visits and, where possible, backed up by guided walks and talks from grassland habitat management practitioners. Where this is not possible, tutors should ensure that appropriate alternatives (for example, by using high-quality audio-visual resources) are used. The use of field identification keys is essential and there is an important link here to Outcome 2.

Outcome 2 provides learners with the skills and knowledge required to carry out surveys. It is expected that learners have access to at least one grassland site in order to accomplish this. The time of year is an important consideration when undertaking these surveys and therefore spring and summer are the recommended periods to do this.

Outcome 3 looks at the main methods employed in the management of grasslands. High quality audio-visual equipment can illustrate a variety of management tools, including both mechanical and the various forms of livestock which can be utilised. Access to local grassland sites is important to give learners first-hand experience of management methods. Most of this outcome can be delivered by lecture, informal discussion and group activity.

Outcome 4 is concerned with practical grassland management. Learners are now required to use the knowledge gained from the previous learning outcomes and apply it to a grassland site or sites.

References

Books

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Frame, J. 2002. Improved Grassland Management. Ipswich: Farming Press. ISBN: 0 85236 543 8

Parry, J., Butterworth, B. 1981. Grassland Management. Hampshire: Northwood Publications.

Pearson, C.J., Ison, R.L. 1997. Agronomy of Grassland Systems. 2nd ed. Cambridge: Cambridge University Press. ISBN: 0 521 56010 1

Schroder, H. 2008. Grasslands: Ecology, Management and Restoration. New York: Nova Science Publishers.

Websites

www.naturalengland.org.uk	Natural England
www.wwt.org.uk	Wildfowl and Wetlands Trust
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.grassright.co.uk	The Grassright Group

Unit 313 Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of tree and shrub establishment and protection and how these can be put into practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or to further education and training.

The learner will understand the importance to society and the environment of tree establishment. The objectives of tree establishment, possible financial support and legal considerations will also be examined. The learner will also develop their understanding of the limitations of common establishment and protection methods and be able to develop their practical skills to establish and protect either amenity or forest trees.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the environmental and legal considerations relevant to tree establishment and protection
2. Be able to plan and prepare for successful amenity or forestry establishment
3. Be able to plant trees and shrubs
4. Know the aftercare requirements of trees and shrubs

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

TW4 Clear sites for tree planting
TW5 Cultivate sites for tree planting
TW6 Plant and establish trees
TW7 Carry out post-planting protection and maintenance
TW8 Control unwanted vegetation around trees

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 313 Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Outcome 1 Understand the environmental and legal considerations relevant to tree establishment and protection

Assessment Criteria

The learner can:

1. Explain the **benefits to society** of tree establishment
2. Compare sources of **financial support** available for tree establishment and protection
3. Evaluate the **environmental considerations** associated with tree establishment and protection
4. Summarise the **legal considerations** associated with tree establishment and protection

Unit content

Benefits to society

Reduced pollution, improved air quality, increased employment prospects, increased visitors, increased property values, increased access to the countryside, healthier lifestyles, reduced energy consumption, financial benefits, regeneration of derelict and industrial land, improved landscapes, increased wildlife habitat and diversity

Financial support

Commercial loans, sponsorship, grants (e.g. Forestry Commission administered schemes)

Environmental considerations

Awareness of requirements under control of pollution legislation, oil and fuel spillage and storage, soil stability and erosion, soil compaction, nesting and breeding seasons, protected species, waste disposal, watercourses, archaeology, brash matting

Legal considerations

Health and Safety at Work etc Act 1974, Management of Health and Safety at Work Regulations 1992 (as amended 1999), Control of Substances Hazardous to Health (2002) (COSHH), Environmental Protection Act 1990 (as amended 1995), Food and Environmental Protection Act 1990 (as amended 1995), Wildlife and Countryside Act 1981 (as amended 1991), Plant Health Act 1967, Forestry Act 1967 (as amended 1991) Arboriculture and Forestry Advisory Group (AFAG) Safety Guides
Warning symbols, risk assessment, operator training, Personal Protective Equipment (PPE), safety devices, pre-start checks, phytosanitary certification and import requirements

Unit 313 Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Outcome 2 Be able to plan and prepare for successful amenity or forestry establishment

Assessment Criteria

The learner can:

1. Select **planting stock and materials**
2. Evaluate **methods of site preparation**
3. Produce **planting specifications**
4. Carry out **site clearance and preparation works**

Unit content

Planting stock and materials

Stock types: bare-root, transplants, undercut, container grown, cuttings, whips, feathered trees, half-standards, standards

Methods of site preparation

Surface preparation: mowing, herbicide application, use of rotavators (pedestrian and tractor mounted)
Mechanical and soil preparation: ploughing and cultivation including subsoiling, use of borers (handheld and tractor mounted), use of tree spades, slitters, rotavators, spading machines
Hand preparation of soil: digging with spades, slitting

Planting specifications

Planting stock: species, quantity, quality and type
Planting method: mound planting, notch, pit planting, tree spades
Planting protection: tree shelters, fencing, guards, mulching
Equipment, storage and transport, planting density, fertilisers, irrigation

Site clearance and preparation works

Correct operation of appropriate manual, motor-manual or mechanised methods (dig, plough, rotavate, scarify, chip)
Maintain equipment appropriately: inspect and adjust, service, clean and store
Correct working techniques, correct operation of equipment, safe working practices, appropriate disposal of waste, prevention of pollution, minimise environmental impact

Unit 313 Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Outcome 3 Be able to plant trees and shrubs

Assessment Criteria

The learner can:

1. **Plant bare-root and containerised stock safely**
2. Provide **appropriate support and immediate aftercare** to trees safely

Unit content

Plant bare-root and containerised stock safely

Undertake site clearance and preparation works: correct operation of appropriate manual, motor-manual or mechanised methods (dig, plough, rotavate, scarify, chip)
Maintain planting equipment: inspect and adjust, service, clean and store
Appropriate planting method: mound planting, notch, pit planting, tree spades
Plant trees: work to planting specifications, check stock against order, correct transport and storage, distribution to ensure efficient planting, appropriate planting density and depth (too deep cultivation leads to a plant slumping in a planting hole), correct working techniques, safe working practices, appropriate disposal of waste, leave worksite in a tidy condition, prevention of pollution, minimise environmental impact

Appropriate support and immediate aftercare

Support: stakes, frames, guys, ground anchors, treeshelters
Aftercare: fertilisers, irrigation, pruning, pesticides, mulch

Unit 313 Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Outcome 4 Know the aftercare requirements of trees and shrubs

Assessment Criteria

The learner can:

1. Describe **methods of protecting trees**
2. Review the **use of tree supports**
3. Describe the **aftercare requirements of trees**

Unit content

Methods of protecting trees

Protection methods: treeshelters, fencing, guards, mulching, tree cages

Use of tree supports

Supports: guys, anchors, stakes, guards

Aftercare requirements of trees

Aftercare: inspection, beating-up, nutrition, formative pruning requirements, irrigation, mulching, adjustment/removal of support, weeding/competition management, use of pesticides

Unit 313 Understand and Carry Out Tree and Shrub Planting, Aftercare and Protection

Notes for guidance

This unit is designed to provide the learner with the sound knowledge and skills required to successfully establish and protect trees appropriate to the area of study. The unit should cover as wide a range of establishment and protection techniques as possible, appropriate to the area of study as well as those locally or regionally significant to the learner.

Throughout the unit, the emphasis should be on safe working and sound environmental practices. It is expected that the learner will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working. It is a requirement for learners to operate machinery to clear and prepare sites for planting therefore health and safety issues relevant to the machinery used must be stressed and regularly reinforced. The learner should be actively involved in comprehensive risk assessment. Adequate Personal Protective Equipment (PPE) appropriate to the learner, the machinery and the task must be provided and worn in accordance with the associated risk assessment, industry guidance and operator's manual. It is not necessary for the learner to use fertilisers, pesticides or other methods of tree protection which require legal approval. Simulation and demonstration could be used to illustrate appropriate methods and equipment which are commonly used, but which are unavailable to the learner.

In Outcome 1, the learner will be required to understand the environmental and legal considerations appropriate to tree establishment and protection. It is accepted that this outcome will require formal delivery but it should be primarily delivered in practical situations and linked to the delivery of the other learning outcomes in this unit.

In Outcome 2, the learner will be required to successfully plant and establish either amenity or forest trees. The range of planting stock may vary according to the planting sites and associated specifications, but learners should plant at least two types of planting stock, using two planting methods and two types of tree protection, which are appropriate to their area of study. This work should be undertaken on a minimum of two different sites.

In Outcome 3, the learner will be required to successfully plant trees and shrubs. The range of planting stock may vary according to the planting site and associated specification, but this work should be undertaken on a minimum of two different sites. The learner should have access to sufficient planting stock and equipment in a realistic industrial situation.

In Outcome 4, the learner will be required to know the aftercare requirements of trees and shrubs. It is anticipated that the delivery of this outcome will require some formal delivery, but it should be primarily delivered in practical situations. The learner should be given the opportunity to visit established planting schemes and review the range of aftercare, support and protection methods and techniques available.

A learner working towards level 3 is likely to have experience of practical forestry or arboricultural activities. This unit aims to extend the learner's knowledge and skills involved with ensuring the successful establishment and protection of healthy trees and forests. Emphasis should be placed not only on 'doing', but also upon the importance of planning and strategies to ensure safe, efficient and effective operations. It is important that the learner understands the importance of maintain an awareness of current legislation and Codes of Practice in relation to establishment and protection work.

Centres are encouraged to introduce employers and specific professionals from the forestry and arboriculture industries to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of working sites and trade shows to add depth to the learner's experience. In addition,

current and topical issues regarding tree establishment and protection should be highlighted as and when they arise.

It is anticipated that the delivery of this unit will be delivered through supervised practical training and the learner be able to consolidate operational skills within realistic working environments. The unit should be delivered throughout the year, with consideration given to appropriate seasonal aspects of tree planting and the impact of weather extremes on operations.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are linked directly with interactive practical lessons in a real environment. The learner must be given the opportunity to work with a range of equipment and machinery in different establishment situations which reflects current industry practice.

References

Books

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Arboriculture and Forestry Advisory Group (AFAG) Safety Guides.

Journals

Arboricultural Association newsletter

Forestry and British Timber

Quarterly Journal of Forestry

Unit 314 Understanding Coastal Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of coastal management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The aim of this unit is to provide learners with an understanding of the processes affecting the coastal zone and the management of coastal habitats.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the physical processes affecting coastal habitats
2. Be able to carry out ecological surveys of coastal habitats
3. Know the threats to coastal habitats
4. Understand suitable coastal management techniques

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 314 Understanding Coastal Management

Outcome 1 Understand the physical processes affecting coastal habitats

Assessment Criteria

The learner can:

1. Discuss the **structural features** of coastal habitats
2. Explain the **influences** of relevant **physical processes** on coastal habitats

Unit content

Structural features

Cliffs, cliff top land, beaches, spits, sand dunes, mudflats, sandflats, salt marshes, estuaries, caves, blow holes, sea stacks

Influences

Effects of erosion (altering physical structures, creating new structures, for example sea stacks, loss of habitat, upstream pollution, changes to water course)

Effects of sediment redistribution (creation of new habitats, loss and changes to habitats)

Physical processes

Influence of tide (erosion, sediment redistribution) and wind (erosion)

Unit 314 Understanding Coastal Management

Outcome 2 Be able to carry out ecological surveys of coastal habitats

Assessment Criteria

The learner can:

1. Identify **indicator species** of selected coastal habitats
2. Complete **ecological surveys** of selected **coastal habitats** using appropriate methods

Unit content

Indicator species

As appropriate to habitat for example seaweeds, crustaceans, fish, molluscs, shellfish, invertebrates

Ecological surveys

Quantitative (for example quadrats and simple line transects) and qualitative (quality of habitat, species distribution), correlation of species and effects of abiotic factors

Risk assessment: Identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk

Present information from surveys in various forms (written, data and pictoral) graphs, pie chart, basic statistics

Costal habitats

Inter-tidal, fore shore, cliff and cliff top, sand dunes, mud flats, sand flats, estuary

Unit 314 Understanding Coastal Management

Outcome 3 Know the threats to coastal habitats

Assessment Criteria

The learner can:

1. Evaluate the **threats** to coastal habitats
2. Explain the **effects** of threats on coastal habitats

Unit content

Threats

Natural threats

Erosion (tide based, wind based), sediment movement and deposits

Human threats

Pollution, tourism, access requirements, sea defences affecting sediment movement, changes affecting rivers (e.g. building on flood plains, flood defences, redirecting rivers), and land use adjacent to rivers (e.g. for agriculture, for recreation and sport)

Effects

Loss of habitat, habitat creation, consequential effects on other parts of the coast, loss of landscape, property loss, cost, loss of tourism

Unit 314 Understanding Coastal Management

Outcome 4 Understand suitable coastal management techniques

Assessment Criteria

The learner can:

1. Explain the importance of **legislation** and **planning** for managing the coastal zone
2. Discuss the uses of **practical management** techniques for protecting coastal habitats

Unit content

Legislation

Environmental Protection Act 1990, Cross Compliance Nitrates Directive 1991, Water Framework Directive 2003, Waste Management (England and Wales) Regulations 2006. National authorities with responsibility for waste and recycling issues: Environmental Agency in England and Wales, the Scottish Environmental Protection Agency in Scotland and the Department of the Environment in Northern Ireland.

Planning

Setting coastal management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

Practical management

Use of permanent engineered structures, for example breakwaters, groynes, revetments, seawalls

Consequential effects to other coastal areas

Use of natural processes and materials, for example beach recycling, beach re-nourishment, dune grass planting and marsh regeneration, footpaths

Unit 314 Understanding Coastal Management

Notes for guidance

This unit will provide the learner with the knowledge of how our coasts are constantly changing and how man and nature try to control the erosion and formation of the terrestrial landmass. By studying the coastal features which are so important for many migratory species learners will be able to see how fragile the habitats are to changes in land use human recreation and the weather. Global warming predicts a rise in sea level and it is likely that this will have a dramatic effect on existing coastal zones and in the creation of new coastal habitats. It is therefore vital to understand the natural processes to try to manage the change.

Learners will gain knowledge and understanding though formal lectures and case studies where man has ignored the coastal movement of material. For example, Dungeness, slitting up of ports and so on and how natural habitat features are being recreated to act as flood prevention (Essex coasts). Field trips to see similar examples are encouraged. The costal habitats will be studied and surveyed both qualitatively and quantitatively.

In Outcome 1 the learner will cover the typical features of the coastal zone around Britain and how they change due to the weather and man's activities.

Outcome 2 builds upon the previous outcome and looks at a specific coastal habitat, identifying the indicator species of that habitat as part of a qualitative survey. Research and survey of the main abiotic factors that control the habitats growth or decline is required, which can be carried out from a desk top survey from maps and photographs.

Having identified potential threats to coastal habitats in Outcome 3 the learner needs to understand how legislation plays a part in managing the coastal zone via planning and environmental protection acts, including species protection. In Outcome 4, with the real threat of the sea level rising, the learner needs to review current coastal management practices and suggest new practical methods to sustain habitats wild life and mans land use requirements.

In Outcome 4, learners will gain an understanding of coastal management techniques. The delivery of this outcome will predominantly be theory-based, but real examples could be used to illustrate practical management techniques. The delivery of this outcome would benefit from visits to coastal sites to add depth to the learner experience.

The unit is has a small practical element for which a risk assessment and safe working practices must be observed, but is mostly theory and will allow the learner to make informed decisions on coastal land use and management if and when the sea level raises

References

Books

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www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.naturalengland.org.uk	Natural England
www.rspb.org.uk	The Royal Society for the Protection of Birds

Unit 315 Understand Deer Management

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills and knowledge used in deer 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.

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Be able to identify wild UK deer
2. Understand the ecology and associated behaviour of UK deer
3. Understand the management of wild deer.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga23 Contribute to deer management planning

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 315 Understand Deer Management

Outcome 1 Be able to identify wild UK deer

Assessment Criteria

The learner can:

1. Identify the **six deer species** found in the UK
2. Describe **features** of deer used to **identify the sex**
3. Describe **features** of deer used to **identify age**

Unit content

Six deer species

Red, sika, fallow, roe, muntjac, Chinese water deer

Features used to identify sex

Antlers, pizzle, tush, tusks, udder

Features used to identify age

Teeth, build, stance, antlers, size, pelage

Unit 315 Understand Deer Management

Outcome 2 Understand the ecology and associated behaviour of UK deer

Assessment Criteria

The learner can:

1. Review the **annual life cycle** of the **six deer species** found in the UK
2. Explain the **breeding ecology** of the six deer species found in the UK
3. Compare the **habitat preferences** of the six deer species
4. Evaluate **signs** of deer presence in an area

Range

Six deer species

Red, sika, fallow, roe, muntjac, Chinese water deer

Unit content

Annual life cycle

Rut, birth, antler casting and growth, movement, territories

Breeding ecology

Monogamy, polygamy, rutting behaviour

Habitat preferences

Broadleaved woodland, coniferous forest, open hill, farmland

Signs

Tracks, faeces, scrapes, fraying, fur, browsing

Unit 315 Understand Deer Management

Outcome 3 Understand the management of wild deer

Assessment Criteria

The learner can:

1. Outline the **legal requirements** that control the management of deer
2. Describe how given **common and statutory laws** apply to the management of UK wild deer
3. Specify the **legal requirements** that control the management of deer
4. Outline current deer management **codes of practice**
5. Summarise the requirements of a **deer management plan**

Unit content

Legal requirements

Seasons, legal firearms, Health and Safety, food hygiene

Common and statutory laws

Deer Acts, Firearms Acts, Health and Safety, Food Hygiene, Landowners Liability

Codes of practice

Deer initiative best practice guides

Deer management plan

Setting deer management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

Unit 315 Understand Deer Management

Notes for guidance

This unit is designed to provide the learner with sound knowledge and skills required in deer management.

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

For Outcome 1 learners must identify wild UK deer by species, sex, and age. They must also describe the condition of selected deer using correct terminology. Learners are expected to identify all six UK wild deer species. Since all species are not usually available at any one site, the use of good quality audio-visual materials might be necessary to cover the full range. Tutors should identify the specific sites and learners should be encouraged to develop their identification skills at every opportunity when out on practicals or visits.

In Outcome 2 learners will explain wild UK deer ecology and behaviour. They should describe those aspects of deer ecology and behaviour that identify deer as a group, differentiating them from other mammals that the learners might be familiar with. This outcome would lend itself to a practical survey of habitats on an estate with an assessment of how valuable each one is for the deer species found there. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

Outcome 3 requires learners to outline the common and statutory frameworks that affect wild UK deer and their habitats. As a minimum, learners should cover major legal influences on game/wildlife management in the UK. Learners should be encouraged to undertake some research in this area, along with formal teaching. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner.

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www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.thedeerinitiative.co.uk	The Deer Initiative

Unit 316 Understand Deer Population Monitoring and Management Plans

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to deer monitoring and management skills and knowledge 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

The learner will have the knowledge and skills required to generate baseline data for deer populations, to observe, analyse and predict change and to formulate action plans.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand appropriate census methods for deer
2. Be able to carry out deer census techniques
3. Understand how deer impact on habitats
4. Understand the requirements of a deer management plan

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga23 Contribute to deer management planning

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 316 Understand Deer Population Monitoring and Management Plans

Outcome 1 Understand appropriate census methods for deer

Assessment Criteria

The learner can:

1. Describe the **direct methods** commonly used to survey deer populations
2. Describe the **indirect methods** commonly used to survey deer populations
3. List **equipment** required to carry out a deer survey
4. Specify the **information** and **calculations** required to estimate a deer population
5. Identify the **types of records** required and the **importance of accurate record keeping**

Range

Red, sika, fallow, roe, muntjac

Unit content

Direct methods

Open range counting, vantage point counts, dung counts, reproductive success rates

Indirect methods

Faeces, tracks, browsing, fraying, bark stripping, ground flora degradation, loss of woodland structure, deer road traffic collisions, crop damage

Equipment

Radios/walkie talkies, binoculars, telescopes, Global Positioning System (GPS), digital cameras, notebooks, pencils, maps, markers, Health and Safety equipment

Information

Area covered, time of year, method used, deer species, sexes, age

Calculations

Deer density indicators using tracks, browsing of vegetation, dung including counting

Types of records

Location, time of year, description of area including boundary factors and management, species present, cull figures, deer road traffic collisions, previous survey results, computer, manual, photographic

Importance of accurate record keeping

Setting culling targets, population trends, sex/age classification of the population

Unit 316 Understand Deer Population Monitoring and Management Plans

Outcome 2 Be able to carry out deer census techniques

Assessment Criteria

The learner can:

1. Carry out **direct methods** commonly used to survey deer populations
2. Carry out **indirect methods** commonly used to survey deer populations
3. Analyse the information and **calculate** deer population for a **given area**
4. Present the survey records required for a **deer management plan**

Range

Red, sika, fallow, roe, muntjac

Unit content

Direct methods

Open range counting, vantage point counts, dung counts

Indirect methods

Faeces, tracks, browsing, fraying, bark stripping, ground flora degradation, loss of woodland structure, deer road traffic collisions, crop damage

Calculate

Deer density indicators using tracks, browsing of vegetation, dung including counting

Given area

Lowland, upland, woodland

Deer management plan

Populations, culls, welfare, damage, habitat information and impacts

Unit 316 Understand Deer Population Monitoring and Management Plans

Outcome 3 Understand how deer impact on habitats

Assessment Criteria

The learner can:

1. Describe how deer **impact** on differing **habitats**
2. Explain the **techniques** used to assess the **impact** of deer on different habitats
3. Carry out a deer habitat impact assessment on a **given area**
4. Identify the types of **records** required and the importance of accurate record keeping
5. Identify **methods of protecting habitats** from the impact of deer

Range

Red, sika, fallow, roe, muntjac

Unit content

Habitats

Woodland, unimproved grassland, rides and open ground, dwarf shrub heath, blanket bog, flushes and springs, willow scrub, tall herbs

Techniques

Define habitat, quadrats, damage and condition

Impact

Key species, damage, fraying, bark stripping, ground flora degradation, loss of woodland structure, crop damage; unpalatable plants

Given area

Lowland, upland, woodland

Records

Manual, computerised, photographic; browsing, fraying, bark stripping, ground flora degradation, loss of wood and structure, deer road traffic collisions, crop damage

Methods of protecting habitats

Culling, fencing, supplementary feeding, establishment of deer glades, chemical protection, individual guards, ride management

Unit 316 Understand Deer Population Monitoring and Management Plans

Outcome 4 Understand the requirements of a deer management plan

Assessment Criteria

The learner can:

1. Explain the **principles** of deer management
2. Identify the **types of records** required and the **importance of accurate record keeping**
3. Explain deer population modelling as required for a **management plan**
4. Explain the **management plan** requirements of objectives for:
   - the **short term**
   - the **long term**
   - population management
   - habitat management
5. Specify the **sources of advice and information** that are available to support the management of deer populations

Range

Red, sika, fallow, roe, muntjac

Unit content

Principles

Protect valued wild plant communities, contain damage to commercial crops (farming and forestry) and to ornamental produce, reduce incidence of road traffic collisions involving deer, biodiversity

Types of records

Location, time of year, description of area including boundary factors and management, species present, cull figures, deer road traffic collisions, previous survey results; computer, manual, photographic

Importance of accurate record keeping

Setting culling targets, population trends, sex/age/classification of the population

Management plan

Populations, culls, welfare, damage, habitat information and impacts

Short term

1-2 months

Long term

5 years+

Sources of advice and information

Forestry Commission, Department for Environment, Food and Rural Affairs (Defra), English Nature, Deer Countryside Agency, The Deer Initiative, Natural Scotland

Unit 316 Understand Deer Population Monitoring and Management Plans

Notes for guidance

Upon completion of this unit, the learner will have the knowledge and skills required to generate baseline data for deer populations, to observe, analyse and predict change and to formulate management plans.

Tutors delivering and assessing this unit should use as wide a range of techniques as possible. Lectures, discussions, seminar presentations, site visits, supervised deer related practicals, research using the internet and/or library resources and the use of personal/ ndustrial experience could all be used. It is expected that wherever possible practical methods will be used both to train and to assess.

Visiting speakers could add to the relevance of the subject for the learners' e.g. a deer manager or deer initiative/deer commission officer 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 environment management and the need to manage the resource using legal methods. Health and safety issues relating to working in an outdoor environment and handling animal material must be stressed and regularly reinforced and risk assessments must be undertaken prior to practical activities. Adequate Personal Protective Equipment (PPE) must be provided and used following the production of suitable risk assessments.

Outcome 1 is mainly a theory based unit where learners are required to research into the commonly used methods to survey deer populations. Learners are required to describe how to carry out deer surveys, the types of equipment used and the records that are kept. The outcome should be delivered through a series of formal lectures, directed study, internet and library associated research.

Outcome 2 requires the learner to survey deer populations, record, analyse and present the information. The outcome requires practical surveying and centres must ensure that an appropriate risk assessment has been carried out and recorded. All learners must be provided with suitable PPE. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely. Practical activity to collect data could be over a period of time. The time of year will depend on the reason for the count. Usually it is desirable to count the calves that have survived winter and to count stags before they cast. For most counts the best conditions will be white ground (snow – lie) where contrast between deer and their background will be maximised enabling deer to be more easily spotted. The best months are therefore likely to be February, March or April. It is usually desirable to count at least annually at the same time of year. More frequent counts may be required particularly if looking at deer movements.

Outcome 3 requires the learner to understand how deer impact on a range of differing habitats. Learners must carry out a practical impact assessment on one defined habitat during the recommended months for the particular habitat e.g. May-July for willow scrub. Learners must identify the key plant species and impacts but be aware of ground nesting birds avoiding any disturbance. Delivery will include a mix of formal lectures and practical sessions. Theory delivery can be through a series of formal lectures, directed study, internet and library associated research. Where practical activities are used health and safety issues relating to working in an outdoor environment and handling animal material must be stressed and regularly reinforced and risk assessments must be undertaken and recorded prior to practical activities. Adequate PPE must be provided. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely.

The aim of the unit is to develop knowledge, understanding and practical experience in the management of deer. Emphasis should be, at all times, on the health, safety and wellbeing of the animals, plants and the learner. Learners should work individually to analyse data but could work in groups to obtain the data required for the practical activities. Centres are encouraged to use a range of methods for delivery and assessment to ensure full coverage of the requirements of the unit. Work experience would be beneficial for those wishing to pursue a career in this field.

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www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)

Unit 317 Understand Ecological Concepts and Application

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills and knowledge needed for ecological concepts and application, 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.

The learner will investigate the theoretical concepts of ecology, and consider the practical applications of these concepts in the field. They will plan and carry out ecological surveys of plants and animals and develop their understanding of the behaviour and relationships these reveal.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the principles of behavioural ecology for life history strategies
2. Understand the principles of population dynamics at the levels of island biogeography and metapopulations
3. Be able to plan and carry out ecological surveys for plants
4. Be able to plan and carry out ecological surveys for animals

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC23 Prepare, conduct and report on field surveys

EC23.3 Interpret survey data and report on findings

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 317 Understand Ecological Concepts and Application

Outcome 1 Understand the principles of behavioural ecology for life history strategies

Assessment Criteria

The learner can:

1. Explain **aspects of behaviour** that influence reproductive success
2. Evaluate relationships between **parental investment** and **breeding systems**.

Unit content

Aspects of behaviour

Prey/predator relationships, competition, social systems, behaviour: reproductive (maternal, paternal), social, territorial, communication
Influences on behaviour (scales, individuals, species, communities, ecosystems, habitats, nutrient cycles, tropic levels, niches, natural selection mating systems)

Parental investment

Paternal, maternal, social groups, time, energy

Breeding systems

Random or chance matings, selective (social/hierarchy related), matings, monogamy, polygamy, K and breeding strategies

Unit 317 Understand Ecological Concepts and Application

Outcome 2 Understand the principles of population dynamics at the levels of island biogeography and metapopulations

Assessment Criteria

The learner can:

1. Explain the **metapopulation cycle** with reference to selected examples
2. Assess how **habitat fragmentation** might lead to local extinction

Unit content

Metapopulation cycle

Increases and decreases, dissolution, emergence, physical and abiotic factors that influence metapopulations: growth, dispersion, genetic variability, continuity in time
Factors that influence populations: size, form, resources, demes, fluctuations, environment, predictable changes (e.g. seasonality), isolation
Biotic factors: evolutionary age communities, primary productivity, community structure and competition, fecundity, natality, mortality, immigration, emigration, breeding strategies (r and K)

Habitat fragmentation

Human influence: agriculture, industry, regeneration, urbanisation, leisure use, deforestation
Non-human influence: natural disasters, seasonal events e.g. monsoons, flooding, plant succession

Unit 317 Understand Ecological Concepts and Application

Outcome 3 Be able to plan and carry out ecological surveys for plants

Assessment Criteria

The learner can:

1. Plan **surveying** of a given National Vegetation Classification (NVC) community
2. Carry out **surveying** of a given NVC community
3. State the **potential sources of error**

Unit content

Surveying

Objective setting and planning, risk assessment: Identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk, health and safety, legislation, codes of practice

Sampling (quadrat, kick, transect) Phase 1 surveys, habitat surveys, species surveys, data analysis methods.

Present information from surveys in various forms (written, data and pictoral) graphs, pie chart, basic statistics

Potential sources of error

Experimental, human, statistical, equipment

Unit 317 Understand Ecological Concepts and Application

Outcome 4 Be able to plan and carry out ecological surveys for animals

Assessment Criteria

The learner can:

1. Plan **surveying** of a given animal or animal species group
2. Carry out **surveying** of a given animal or animal species group
3. State the **potential sources of error**.

Unit content

Surveying

Objective setting and planning, risk assessment: identification of potential risks and hazards, severity of potential injury (hazard), likelihood of harm (risk), control methods to minimise or avoid risk, health and safety, legislation, codes of practice
Sampling (quadrat, kick, transect), Phase 1 surveys, habitat surveys, species surveys, data analysis methods. Present information from surveys in various forms (written, data and pictoral) graphs, pie chart, basic statistics

Potential sources of error

Experimental, human, statistical, equipment

Unit 317 Understand Ecological Concepts and Application

Notes for guidance

This unit is designed to enable the learner to investigate the theoretical concepts of ecology, and consider the practical applications of these concepts in the field. They will plan and carry out ecological surveys of plants and animals and develop their understanding of the behaviour and relationships these reveal.

This unit should consider a range of habitats and species (plants, mammals, reptiles, amphibians, invertebrates, birds) and should aim to take advantage of the local biogeography to enable the learner to fully engage with their community's ecology.

Throughout the unit the emphasis should be on the contextualisation of the principles of ecology discussed into real examples to enable the learner to fully engage with the concepts discussed. Safe working practices and compliance with relevant legislation, Codes of Practice and health and safety should be emphasised before and during practical surveying.

Outcome 1 encourages the exploration of the principles of behavioural ecology and should be discussed with reference to local, national and international contexts. Delivery is expected to be formal but should be complimented by practical activities, videos and case studies to encourage the learner to contextualise.

Outcome 2 encourages the exploration of the principles of population dynamics and should be discussed with reference to a range of examples, and should include consideration of the interrelationship of plant and animal (mammals, birds, insects and reptile) species. Delivery is expected to be formal but should be complimented by practical activities, videos and case studies to encourage the learner to contextualise the factors covered. Current and topical issues in population dynamics and conservation should be highlighted.

In Outcome 3 the learner will develop basic surveying abilities and practical opportunities to develop core skills are necessary to compliment formal delivery. A range of habitats should be available for study and a variety of sampling methods practically undertaken. Learners should be encouraged to plan, undertake and reflect on sampling in reference to method, sources of error, results, conclusions drawn, legislation and health and safety.

Outcome 4 continues with development of practical ecological surveying skills. Again practical opportunities to develop core skills are necessary to compliment formal delivery. A range of habitats that incorporate access to numerous animal species should be available for study and a variety of sampling methods practically undertaken. Learners should be encouraged to plan, undertake and reflect on sampling in reference to method, sources of error, results, conclusions drawn, legislation and health and safety.

Learners working towards Level 3 are expected to have underpinning knowledge in animal and plant biology should be able to relate this to the subjects studies in this unit. This unit aims to build upon foundation knowledge to discover the complex relationships that exist within the natural world and how these influence populations of both plants and animals. Equal emphasis should be placed on the development of practical skills and the necessary knowledge to be able to interpret the results of surveys and contextualise these into short and long term impacts on populations and ecosystems. It is important that the learner understands the influence of legislation, Codes of Practice and health and safety in respect of ecological surveying.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of habitats to add depth to the learner experience.

It is accepted that formal lectures will be necessary at Level 3 but for this unit it is necessary to compliment this with practical opportunities and recommended to introduce interactive sessions in a real environment.

References

Books

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Danchin, E., Giraldeua, L.A., Cezilly, F.,2008 *Behavioural Ecology; An Evolutionary Perspective on Behaviour*. OUP Oxford: Oxford ISBN: 0199206295 Krebs, JR Davies, B (1997) *Behavioural Ecology: An evolutionary approach.* Wiley Blackwell: UK ISBN: 0632035463

Journals

Journal of Ecology
Ecology
Behavioural Ecology
Sustainable Development
Ecologist

Websites

www.ecology.com	The Ecology Global Network
www.nhm.ac.uk	The Natural History Museum
www.globalissues.org.uk	Global Issues

Unit 318 Understanding Land Use and Environmental Issues

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of environmental issues and policies and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will consider different land uses in the UK and the organisations and laws involved. They will explore the aims and effects of rural policies on land management and the impact of industry and agriculture on the modern natural environment. They will look at the development of energy and changes to biodiversity as a result of these activities.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Know land uses in the UK
2. Understand the effect of rural policy, organisations and legislation associated with land use in the UK
3. Understand the impact of industry and agriculture on the natural environment in the UK
4. Understand the development of energy production and use
5. Understand changes to biodiversity.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 318 Understanding Land Use and Environmental Issues

Outcome 1 Know land uses in the UK

Assessment Criteria

The learner can:

1. Describe the **main land uses** in the UK
2. Outline **organisations** associated with land use in the UK
3. Describe **legislation** associated with land use in the UK.

Unit content

Main land uses

Agriculture, industry including power, forestry, transport, housing, leisure

Organisations

Department for Environment, Food and Rural Affairs (Defra), Welsh Assembly Government, Scottish Executive Environment and Rural Affairs Department, Department of Agriculture and Rural Affairs (Northern Ireland), Environment Agency, Welsh Assembly Government), non government organisations (for example BTCV, Farming and Wildlife Advisory Group (FWAG), Linking the Environment and Farming (LEAF), Organic Farmers and Growers, Royal Society for the Protection of Birds (RSPB), Save our Songbirds, Soil Association, local Wildlife Trusts, Woodland Trust, Natural England, Farming and Countryside Education

Legislation

Wildlife and Countryside Act 1981 (as amended), Environmental Protection Act 1990, Cross Compliance Nitrates Directive 1991, Hedgerows Regulations 1997, Control of Substances Hazardous to Health (COSHH) Regulations 2002, Water Framework Directive 2003, Waste Management (England and Wales) Regulations 2006, Environmental Impact Assessment (Agriculture) (England) Regulations 2006, Heather and Grass Burning Regulations and Code 2007)

Unit 318 Understanding Land Use and Environmental Issues

Outcome 2 Understand the effect of rural policy, organisations and legislation associated with land use in the UK

Assessment Criteria

The learner can:

1. Explain the aims of selected **rural policies**
2. Explain the **effects** of selected rural policies on land management.

Unit content

Rural policies

Current Natural England, Environment Agency and Defra policies, such as Economic and Social Regeneration, sustainability, Regional Development Agency policies, social justice for all, enhancing the value of our countryside

Effects

Changes to land use, farming practices, landscape development, tourism and public access, effects on budgets (income and expenditure), changes to labour use and employment, changes to habitat availability, species distribution and dynamics

Unit 318 Understanding Land Use and Environmental Issues

Outcome 3 Understand the impact of industry and agriculture upon the natural environment in the UK

Assessment Criteria

The learner can:

1. Explain how the development of selected **agricultural** and **industrial activities**, have **impacted on the natural environment**.

Unit content

Agricultural activities

Conventional farming practices: history of farming practices, landscapes and land management, suitable selection for example crop and livestock enterprises using routine and preventative treatments

Sustainable farming practices: those aiming to reduce the environmental impact, for example organic, permaculture, biodynamic farming

Industrial activities

Mining, quarries, timber production and processing, power production, manufacturing, processing

Impacted on natural environment

Visual, noise, physical (for example waste, pollution control, impact on topography), consumption of raw materials and energy, impact on plant and animal species, immediate and long term impact

Reduction of negative environmental impact: energy consumption, pollution, use of resources, use of chemicals and medicines

Unit 318 Understanding Land Use and Environmental Issues

Outcome 4 Understand the development of energy production and use

Assessment Criteria

The learner can:

1. Explain the development of conventional fossil fuel, nuclear and sustainable **energy sources**
2. Discuss the relative **impacts** of conventional fossil fuel, nuclear and sustainable energy sources on the natural environment.

Unit content

Energy sources

Coal, oil gas, burning wood plants and waste, solar, wind, wave and Hydroelectric Power (HEP)

Impacts

Visual, noise, physical (for example waste, pollution control, impact on topography), consumption of raw materials and energy, disturbance, habitat loss, damage and death to biodiversity, impact on plant and animal species, immediate and long term impact

Reduction of negative environmental impact: energy consumption, pollution, use of resources, use of chemicals and medicines

Unit 318 Understanding Land Use and Environmental Issues

Outcome 5 Understand changes in biodiversity

Assessment Criteria

The learner can:

1. Explain biodiversity **changes** in a selected **world biome** and in a **selected UK habitat**.

Unit content

Changes

Communities, populations, abiotic factors

World biome

Aquatic, grassland, desert, forest and tundra

Selected UK habitat

Upland, lowland, freshwater (ponds, lakes, reservoirs, reed beds), coastal (beaches, sand dunes, rockpools, mud-flats, buffer zones), wetland (marsh, peat bogs), grassland, heathland, meadows, woodland (ancient, deciduous, evergreen, mixed), hedgerows, rural, semi-rural, urban

Unit 318 Understanding Land Use and Environmental Issues

Notes for guidance

This unit will provide the learner with the knowledge of how the British landscape is moulded by land use policy, and that wildlife conservation must be managed on a landscape style rather then just in nature reserves. Multi-use of land will be reviewed with the needs of each land use balanced with others to give the mosaic of habitats that is currently the British Isles. The influencing policies of land use, legislation and best practice guide lines presented by Government and Non Government Organisations will be addressed. The future conflicts surrounding the need for (renewable) energy and the effect on surrounding land use and the NIMBY factor will be investigated. Learners will learn though lectures, case studies and visits to proposed and existing energy sites so they can form an opinion on future land use policy.

In Outcome 1 learners will look at the major land uses of Britain's farming, forestry and mining, industry, energy, transport, urban tourism and the Government and Non-Government Organisations trying to influence their management and legislation having the most impact on them.

In Outcome 2 the learner will look at rural policy where human need and countryside policy clash. The learner will also cover how to justify destruction of landscapes in and out of national parks to meet the local economic development and national need for resources, and the impact of this on some of Britain's most amazing habitats.

Outcome 3 looks more closely at environmental impact assessments for land use with special reference to farming and industry and the effect that land use policies have on positive and negative impacts on wildlife.

In outcome 4 the learner will research the British energy industry looking at percentage power production and whether we are self sufficient to meet our energy demand. The predicted level of energy use for the future and how International targets can be achieved within current or new land use policy will be covered.

Outcome 5 will allow the leaner to reflect on the environmental impact of land use, in particular the wildlife cost and benefit that land use will bring now and in the future.

Once the unit is complete then the learner will be able to make personal choices on future policy from an informed position to try to balance our need and desire of resources and detrimental effect we have on them.

References

Books

Cobham, R. 1990. Amenity landscape management: A resources handbook. Oxford: Routledge.
Schools Council. 1984. Agriculture land use and landscape change. Schools Council. Harlow: Longman.
Sydenham, A. 2002. Essential law for land owners and farmers. Oxford: Wiley Blackwell Publishers.
Boyle, G. 2004. Renewable energy. 2nd ed. Oxford: Oxford University Press.
Prag, P. 2001. Understanding the British countryside. London: Estates Gazette.

Websites

www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)

Unit 319 Understanding the Principles of Game Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of game management in the UK. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

This unit provides the knowledge and understanding of internal and external influences associated with the game management industry. Learners will investigate how game management has shaped the countryside and will evaluate the main legislative acts and codes of practice along with the role of organisation associated with the industry.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the physical influences of game management on the UK countryside
2. Know the social and ethical arguments for and against field sports
3. Know laws and codes of practice relating to game management in the UK
4. Know the roles of organisations associated with game management in the UK.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga1 Assist in game shooting activities

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 319 Understanding the Principles of Game Management

Outcome 1 Understand the physical influences of game management on the UK countryside

Assessment Criteria

The learner can:

1. Outline how **habitats** are managed for game
2. Summarise the **creation** of habitats for game species
3. Discuss the **impact** of game management on other species
4. Discuss the **impact** of introduction of non-native species
5. Discuss the possible reintroduction of once native species

Unit content

Habitats

Farmland, forest and woodland, moorland, wetlands, heathland

Features: topography, structure, water habitats, size and layout, cover, presence of other species, food availability and source, predator presence or absence

Creation

Planting, sowing, field margins, cover crops, new woodlands

Impact

Positive: retention and management of semi-natural habitats in upland and lowland areas, provision of new habitats, cover crops, likely future influences

Negative: impact on other species for example the control of pest and predator species, introduction of non-native species

Unit 319 Understanding the Principles of Game Management

Outcome 2 Know the social and ethical arguments for and against field sports

Assessment Criteria

The learner can:

1. Outline the **historical development** of field sports in the UK
2. Discuss the **impact on the rural economy** of field sports
3. Describe the **influence** of field sports on habitats
4. Summarise **arguments** of anti field sports pressure groups

Unit content

Historical development

Neolithic, Norman hunting forests, medieval hunting, flintlock firearms, breech loading shotguns, Edwardian shooting, commercialisation, changes to hunting (legislation and social pressures)

Types and categories of field sports (shooting, hunting, fishing), modern field sports associations, professional bodies, roles within professional field sports, training and education

Impact on the rural economy

Direct value of, field sports, multiplier effects, economic assessment of field sports, numbers employed, number of participants, impact on and interaction with landowners

Influence

Maintenance of existing habitats, creation of new habitats, management of endangered species habitats, woodlands, farmland, wetlands, moorland

Arguments

Ethics, killing for fun, utilitarian, elitism, alternative methods of controlling pest species, 'natural balance', cruelty to animals, animal protection

Unit 319 Understanding the Principles of Game Management

Outcome 3 Know laws and codes of practice relating to game management in the UK

Assessment Criteria

The learner can:

1. Outline the **Acts of Parliament** associated with game management in the UK
2. Review game management **codes of practice**

Unit content

Acts of Parliament

Wildlife and Countryside Act 1981, Game Act 1831, Game Licences Act 1860, Hunting Act 2004, Wild Game Meat (Hygiene and Inspection) Regulations 1995, Firearms Act 1982, Criminal Justice and Public Order Act 1994, Countryside Rights of Way Act 2006

Codes of practice

Code of good shooting practice, respect for quarry

Unit 319 Understanding the Principles of Game Management

Outcome 4 Know the roles of organisations associated with game management in the UK

Assessment Criteria

The learner can:

1. Discuss the role of **Government organisations** and agencies
2. Discuss the role of **Non Governmental Organisations** (NGOs)
    - Political
    - Research
    - Advisory
    - Businesses

Unit content

Government organisations

Defra, Food Standards Agency, Natural England, Forestry Commission, Deer Initiative

Non Government Organisations

For example British Association for Shooting and Conservation (BASC), National Gamekeepers Organisation (NGO), Game and Wildlife Conservation Trust (GWCT), The Countryside Alliance (CA), Masters of Foxhounds Association (MFHA), Royal Society for the Protection of Birds (RSPB), League Against Cruel Sports (LACS)

Unit 319 Understanding the Principles of Game Management

Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Outcome 1 requires the learner to be familiar with the influence of game management on the British countryside, exploring both the positive and negative aspects of a range of game management techniques on specific habitats. This may be best studied as an investigation of the species and habitats found on a local estate. They will also study the methods and associated activities commonly used to manage game habitats. Visiting expert speakers could add to the relevance of the subject for the learners. For example, a member of one of the major game organisations could talk about their work and any current research projects relevant to game habitat management.

In Outcome 2 the learner will explore a range of ethical and social arguments for and against field sports. A follow on from the investigation described for Outcome 1 could see the learner exploring the history, impact and influence of game management on a local estate. They should then be able to consider all the arguments for and against the continuation of game management.

Outcome 3 requires the learner to understand a range of laws that affect the practice of game management in the UK. Delivery techniques should be varied and should include formal lectures, demonstrations, simulated exercises, observation techniques and evidence gathering or recording.

Outcome 4 requires the learner to understand the role of a range of statutory and non-statutory bodies, and how these various organisations interact. A good way to cover this topic is to give each learner an organisation to study and get them to present their findings to the rest of the group.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

References

Books

Barnes, M. 2005. The game shooting handbook. Wiltshire: The Crowood Press Ltd.
Catlin, C. 2007. The game book: a shooting anthology. Shropshire: Quiller Publishing.
Hudson, D. 2006. Gamekeeping. Shrewsbury: Swan Hill Press.
Tapper, S.C. 1992. Game heritage - an ecological review from shooting and gamekeeping records. Hampshire: Game Conservancy.

Websites

www.defra.gov.uk	The Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.basc.org.uk	The British Association for Shooting and Conservation
www.ngo.org.uk	National Gamekeepers Association
www.rspb.org.uk	The Royal Society for the Protection of Birds
www.countryside-alliance.org.uk	The Countryside Alliance

Unit 320 Undertaking Shoot Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of shoot management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will explore the administrative requirements of a shooting enterprise and consider the physical resource requirements. They will plan and manage a shoot day.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know the administrative requirements of a shooting enterprise
2. Understand the physical resource requirements of a shoot
3. Be able to plan for a shooting season
4. Be able to manage a shoot day.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga21.1 Contribute to the development of an estate's sporting plan
Ga12 Contribute to the organisation of game shooting activities

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 320 Undertaking Shoot Management

Outcome 1 Know the administrative requirements of a shooting enterprise

Assessment Criteria

The learner can:

1. Outline the major **administrative requirements** of a **selected shooting enterprise**
2. Describe **marketing** for a selected shooting enterprise.

Range

Selected shooting enterprise: for example private, commercial, gamebirds, pests

Unit content

Administrative requirements of a **selected shooting enterprise**

Setting objectives, planning, implementation, monitoring and records, marketing, finance, staff, physical resources, health and safety, insurance

Marketing

Price, product, promotion, place, packaging, people, premises, process

Unit 320 Undertaking Shoot Management

Outcome 2 Understand the physical resource requirements of a shoot

Assessment Criteria

The learner can:

1. Examine the **physical resources** required for a selected shooting enterprise to meet given objectives.

Unit content

Physical resources

Land (type, location, vegetation, size, topography, habitat), labour (contractors, employees, volunteers), capital (investment, working capital), birds (suitable species, number, age), bird housing and rearing facilities, cover crops (planning, planting and maintaining), bird feed, machinery (for maintenance), equipment, vehicles

Unit 320 Undertaking Shoot Management

Outcome 3 Be able to plan for a shooting season

Assessment Criteria

The learner can:

1. **Plan** the physical resources required for a selected shooting enterprise
2. **Plan shooting** for a given sporting enterprise.
3. Carry out shoot **marketing** for a given sporting enterprise.

Unit content

Plan

Setting shoot management objectives, planning activities and resources, monitoring activities and resources, reviewing outcomes against objectives, recommendations and improvements

Plan shooting

Number of days, dates, number of guns, guests, fees, number of birds, drives, availability of beaters, dogs, pickers-up

Marketing

Price, product, promotion, place, packaging, people, premises, process

Unit 320 Undertaking Shoot Management

Outcome 4 Be able to manage a shoot day

Assessment Criteria

The learner can:

1. **Organise** shooting to meet given objectives.

Unit content

Organise

Guns (Collect fee, health and safety briefing, rules and regulations, allocate peg numbers, facilities, timetable for the day), beaters (briefed, organised and directed), pickers-up (briefed, organised and directed), vehicles (transport of guns, beaters, pickers-up), drives, hospitality arrangements, calculating income and expenditure

Unit 320 Undertaking Shoot Management

Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

Outcome 1 considers the administrative requirement of a shooting enterprise. Learners must understand how marketing, contractual work, health and safety and other legal requirements, finances and records are key to the successful running of a shooting enterprise. Site visits and case studies could be valuable methods of delivering this outcome. Where possible, learners should be given the opportunity to cover different types of shooting enterprises.

Outcome 2 looks at the physical resource requirements of a shoot. It should cover the complete shooting season and different types of shoot. Where possible, learners should have the opportunity to work with data that they have collected themselves.

Learning outcome 3 covers the planning of a shooting season. As with Outcome 2 delivery should cover the complete shooting season, from the sporting potential of an area to the programme of game release in preparation for individual shoots. Where possible, learners should be given the opportunity to become actively involved in the management of a shoot.

Outcome 4 covers the organisation of a shoot day. Delivery will include all aspects of management, from planning, through running the day, to evaluating it. Delivery will require learners to assist in running (under supervision) a shoot day.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

References

Books

Barnes, M. 2005. The game shooting handbook. Wiltshire: The Crowood Press Ltd.
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Hudson, D. 2007. Running your own shoot. 2nd ed. Shrewsbury: Swan Hill Press.
ISBN: 978 1 84689 011 6
McCall, I. 1986. Your shoot - gamekeepering and management. London: A & C Black.
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www.hse.gov.uk	Health and Safety Executive
www.defra.gov.uk	Department for Environment, Farming and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)

Unit 321 Stalking and Shooting Deer

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of stalking and shooting deer and how these can be applied in practice. This focus is primarily aimed for learners in a centre-based setting looking to progress into the sector or onto further /higher education

This unit provides the knowledge and skills required to approach wild deer, select animals for culling, carry out a cull and deal with carcasses in an appropriate manner.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the requirements of deer stalking
2. Be able to handle firearms safely and accurately
3. Know how to cull deer and follow up humanely
4. Be able to handle deer carcasses hygienically and keep records

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU49 Stalk and cull deer

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 321 Stalking and Shooting Deer

Outcome 1 Understand the requirements of deer stalking

Assessment Criteria

The learner can:

1. Produce a **plan** for the stalking of wild deer
2. Select **equipment**, including firearm/ammunition for selected deer stalking.

Unit content

Plan

Suitable cull animal, route, wind direction, other land uses, final approach, topography

Equipment

Suitable clothing and survival kit (if appropriate), transport, optical equipment, firearms and ammunition, communication systems, maps, compass, written permission (if required), firearms certificate, food and drink

Unit 321 Stalking and Shooting Deer

Outcome 2 Be able to handle firearms safely and accurately

Assessment Criteria

The learner can:

1. Demonstrate the **safe handling** and **humane** use of **selected firearms** using appropriate **shooting positions**/**distances** to meet given objectives
2. Suggest improvements to **shooting positions and distances**

Unit content

Safe handling

Loading/unloading procedure, muzzle awareness, use of safety catch, safe carrying position, transportation and storage of firearm

Humane

Humane shot placement, bullet behaviour, position of deer, importance of ideal shots

Selected firearms

Must be a legal calibre for deer

Shooting positions/distances

Positions: prone, sitting, kneeling, standing

Distances: within range of effective shot, clear aim, within firearm range

Unit 321 Stalking and Shooting Deer

Outcome 3 Know how to cull deer and follow-up humanely

Assessment Criteria

The learner can:

1. Describe the **humane culling** of deer
2. Describe **follow-up actions** for given scenarios

Unit content

Humane culling

Correct shot placement, internal anatomy, bullet behaviour

Follow up action

Location of shot deer, blood trailing, use of dogs, methods of humane despatch (thoracic sticking, short range shooting)

Unit 321 Stalking and Shooting Deer

Outcome 4 Be able to handle deer carcasses hygienically and keep records

Assessment Criteria

The learner can:

1. Carry out carcass **hygiene inspection**
2. **Prepare** deer carcass for food chain
3. Keep relevant **records** of deer culled

Unit content

Hygiene inspection

External and internal inspection, major carcass parts, organs and lymph nodes, notifiable diseases including bovine tuberculosis and foot and mouth disease as well as parasites such as lung worm, liver fluke, ticks, keds, lice and warble fly, storage methods and requirements of carcass

Prepare

Gralloch, remove head and feet, skin, joint

Records

Cull records, meat hygiene inspection, larder weights

Unit 321 Stalking and Shooting Deer

Notes for guidance

For Outcome 1, learners must produce a plan for the stalking of wild deer and select equipment, a firearm and ammunition to meet given objectives. Tutors should identify the objectives or agree them through discussion with the learners. Learners must produce a stalking plan for a specific area, which takes into account the factors indicated in the unit content. They must identify and select the equipment required to carry out a planned outing. This could include suitable clothing and survival kit (if appropriate), transport, optical equipment, firearms and ammunition, communications, maps, compass, written permission (if required), firearms certificate, food and drink. The equipment selected should be relevant to the plan produced.

Outcome 2 requires learners to demonstrate the safe handling and humane use of selected firearms using appropriate shooting positions and distances to meet given objectives. This will require practical assessment, during which learners demonstrate that they can adopt prone, sitting/kneeling and standing shooting positions and achieve a suitable level of accuracy in each. Assessment taking place on a rifle range should be carried out under the protocol developed for the DMQ Deer Stalking Certificate Level 1 shooting test.

Outcome 3 requires learners to describe the humane culling of deer and follow-up actions for given scenarios. Scenarios could include normal heart or lung shots, fatal wounding, e.g. to the liver, or wounding from which recovery is possible, e.g. a broken leg. It is thankfully very rare that the opportunity will arise for the wounding circumstances to be assessed 'for real,' but if witnessed evidence is available this could be included. As a minimum, learners should provide evidence covering three culling and follow-up situations. Learners must know the correct shot placement and the reasons for it. The emphasis should be on knowledge of internal anatomy and bullet behaviour such that a humane shot can be taken even if the deer is not in the perfect position in relation to the shooter. Learners should recognise the ideal shots and demonstrate that these are what should be striven for in the majority of cases. The damage caused to the carcass by shooting and the potential for carcass contamination should also be taken into account.

For Outcome 4, learners must carry out carcass hygiene inspection according to current legislation and codes of practice, keeping relevant records to meet given objectives. Outcome 4 could be assessed by a combination of practical and other forms of assessment. Inspection could be assessed by practical demonstration and must include both external and internal inspection. Learners are expected to identify all of the major carcass parts, organs and lymph nodes, and to be aware of their normal appearance. Learners should be aware of notifiable diseases including bovine tuberculosis and Foot and Mouth Disease as well as parasites such as lung worm, liver fluke, ticks, keds, lice and warble fly. Learners must show that they know the correct procedure for isolating suspect parts or carcasses and informing the appropriate organisations. They must also provide evidence of appropriate records for cull records and meat hygiene regulations.

References

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www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.thedeerinitiative.co.uK	The Deer Initiative

Unit 322 Use of Firearms in the Environmental and Land-based Sector

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of using firearms in the land-based sector and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

In the land-based industries, firearms are an essential tool, used for recreational purposes on inanimate targets as well as for culling of species where other methods are not appropriate or legal. Practice on inanimate targets is essential before shooting live targets, ensure that culling is humane and efficient. Recreational target shooting is a rapidly expanding sport and can offer discretion opportunities for landowners. Similarly, game and rough shooting opportunities are increasingly in demand and have become important sources of income. Culling of deer is essential for the maintenance of healthy deer populations that are in balance with their environment, and shooting is the only widely used legal method of culling.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the function of firearms and ammunition
2. Understand the ballistics of projectiles in the safe, efficient and humane use of firearms
3. Understand how to use firearms safely
4. Be able to safely and efficiently use firearms.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga38 Prepare and carry out shotgun training
CU47 Control vertebrate pests and predators by shooting

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 1 Understand the function of firearms and ammunition

Assessment Criteria

The learner can:

1. Examine the **functions** of **firearms** and **ammunition** covering shotguns and rifles.

Range

Firearms

Shotguns: gauges, double barrelled, pump action, semi-automatic, chokes

Rifles: rimfire, centrefire, high velocity, telescopic sights, moderators

Unit content

Functions

Stock, action, barrels, trigger and safety catch, magazine, fitting/sights, shot/bullet, powder, primer, case, wadding)

Ammunition

Cartridges: 12 bore, 20 bore, 16 bore

Rifle: .243, .308, .177

Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 2 Understand the ballistics of projectiles in the safe, efficient and humane use of firearms

Assessment Criteria

The learner can:

1. Explain the **ballistics** of **selected firearms** and the **safety issues** associated with their use
2. Explain the **terminal ballistics** of selected firearms in relation to their humane use on target species.

Unit content

Ballistics

Internal/external ballistics, muzzle velocity, trajectory, point of aim, zero point

Selected firearms

Shotguns : gauges, double barrelled, pump action, semi-automatic, chokes

Rifles : rimfire, centrefire, high velocity, telescopic sights, moderators

Safety issues

Keep broken unless shooting, keep gun pointed downwards, awareness of bystanders, muzzle never on the floor

Terminal ballistics

Stopping power, penetration and expansion, tissue damage, hydrostatic shock

Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 3 Understand how to use firearms safely

Assessment Criteria

The learner can:

1. Explain how to **handle and store** selected firearms **safely**
2. Explain **legal requirements** and restrictions on use and possession of firearms.

Unit content

Handle and store safely

In the field, whilst transporting, at home

Legal requirements

Firearms Acts, restrictions on ownership, possession and use, Shotgun and Firearm Certificates

Unit 322 Use of Firearms in the Environmental and Land-based Sector

Outcome 4 Be able to safely and efficiently use firearms

Assessment Criteria

The learner can:

1. Handle **firearms** safely
2. Safely **shoot** firearms at selected artificial targets to a given standard.

Unit content

Firearms

Shotguns, rifles

Shoot

Shotgun: maintenance of safe practice throughout; variety of targets broken, crossing, overhead, going away, 'rabbit', health and safety, safety protocols, risk assessment

Rifle: maintenance of safe practice throughout, group size, accuracy, target analysis, zeroing adjustment, prone, sitting and standing, variety of target shot, zero, rabbit/fox/deer

Unit 322 Use of Firearms in the Environmental and Land-based Sector

Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

For Outcome 1, learners must identify and describe the functions of given firearms and ammunition. As a minimum, learners should provide evidence covering three different firearms. Evidence for this could be provided by using demo firearms in a safe environment and/or pictorial assessment with notes, or a pictorial presentation with notes (possibly using appropriate software or an overhead projector), an annotated poster, or a project.

Outcome 2 requires learners to explain the ballistics of selected firearms and the safety issues associated with their use. Tutors should identify the firearms, or agree them through discussion with the learners. Learners should appreciate the consequences of firing, in particular the basic theory of obturation and pressure build-up. The effect of rifle bedding, rifle barrel crown damage, barrel blockage and misfire should also be explored. The theory for this outcome could be developed through formal lectures and individual research. There is some excellent software available to demonstrate ballistic theory which would help engage the learner in this subject.

Outcome 3 requires learners to demonstrate safe handling of selected firearms. Tutors should identify the firearms, or agree them through discussion with the learners. As a minimum, learners should provide evidence covering three different firearms. Particular reference should be made to awareness of the loaded and unloaded condition of firearms, muzzle awareness and use of the safety catch. Learners need to also explain restrictions on possession and use of each firearm. As this is a practical outcome as much delivery as possible should be dedicated to the practical handling of firearms.

Outcome 4 requires learners to safely shoot firearms at selected artificial targets to a given standard. Tutors should identify the targets and standards. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. The majority of the delivery of this unit will be spent on a clay range/rifle range developing the learner's confidence on a variety of targets using both shotguns and rifles.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

References

Books

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www.hse.org.uk	Health and Safety Executive
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)

Unit 323 Understand Working Dogs

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of training working dogs and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Health, welfare and basic field first aid of the working dog are essential parts of this unit. Correct housing requirements for a variety of breeds must be considered.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Be able to identify the most common breeds and types of working dogs and their suitability for countryside management tasks
2. Know how to plan a structured training programme for a working dog
3. Understand the health and first aid issues that can affect working dogs
4. Understand the housing requirements for a specific breed of working dog.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

Ga10 Care for animals used in support of gamekeeping and wildlife management
CU39.1 Plan the accommodation of animals
CU40 Train animals to achieve specific objectives
CU41 Handle and care for animals to enable them to work effectively

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 323 Understand Working Dogs

Outcome 1 Be able to identify the most common breeds and types of working dogs and their suitability for countryside management tasks

Assessment Criteria

The learner can:

1. Identify given **breeds** of working dog
2. Describe the **tasks** that each breed of dog is designed for

Unit content

Breeds

Retrievers (Labrador, Golden), Spaniels (Springer, Cocker, Field), HPR breeds, pointers, setters, terriers, cross breeds

Tasks

Retrieving, hunting, flushing, pointing, vermin control, tracking

Match the breed with the tasks that the breed is designed for, for example, Spaniels are versatile (hunting, flushing, retrieving)

Unit 323 Understand Working Dogs

Outcome 2 Know how to plan a structured training programme for a working dog

Assessment Criteria

The learner can:

1. Develop a **structured training programme** for a selected breed of dog

Unit content

Structured training programme

Training techniques: response reinforcement, rewards and punishment, commands, canine psychology

Underlying training principles: consistency, non-predictability, insistence

Basic obedience: Recall, sit, stay, whistle (recall and stop whistle), hand signal to sit, walking to heel

Retrieving a dummy: retrieving a visually marked dummy on command, steadiness, directional control, importance of variation in training activities, intermittent reinforcement

Hunting: following a scent, questing ahead, drop to flush, drop to shot

Entering and crossing water, jumping obstacles

Working on dead and live game

Programme: timing, sequence, review and evaluation, modifications

Unit 323 Understand Working Dogs

Outcome 3 Understand the health and first aid issues that can affect working dogs

Assessment Criteria

The learner can:

1. Compile and explain a **health check** record sheet suitable for a selected working dog
2. Describe **basic first aid** for working dogs

Unit content

Health check

Checks should include: visual assessment of condition, behaviour (including feeding and drinking), movement and posture, condition of eyes, ears and nose, coat condition, paws and claws.

Check temperature, pulse and respiration.

Basic first aid

Working dogs are particularly susceptible to:

Cuts, lacerations and abrasions (cut pads, wire cuts), exhaustion, hypothermia, hyperthermia, collapse, shock due to injury, fractures, sprains and strains, eye, ear and tail injuries, grass seeds in eyes, ears and paws, ticks

The first aid kit, what to do if on a shoot, when to call the vet

Unit 323 Understand Working Dogs

Outcome 4 Understand the housing requirements for a specific breed of working dog

Assessment Criteria

The learner can:

1. Design a new **kennel facility** for a specified breed of working dog

Unit content

Kennel facility

Site of kennel facility, number of dogs to be housed, layout, dimensions, construction material (wood, metal), sleeping areas (ventilation, light, heating), bedding, run, provision of food and water, fixtures and fitting, safety and security, whelping facilities, litter rearing facilities

Cleaning requirements (full and spot clean), cleaning methods, disinfection

Welfare: five animal needs/freedoms

Unit 323 Understand Working Dogs

Notes for guidance

Throughout the unit, the emphasis should be on safe working. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working.

For Outcome 1, learners must identify given breeds of working dog and describe their best suited tasks. As a minimum, learners should provide evidence including four different breeds of working dog to cover four different roles within countryside management, as indicated in the unit content. A visit to a gundog trainer that keeps a range of breeds will provide a valuable insight into the capabilities of each. Similarly visiting field trials and working tests will allow the learner see a variety of breeds in the field.

For Outcome 2, learners must develop a structured training programme for a selected breed of dog working in a given area of countryside management. Tutors should identify the breed of dog and area, or agree them through discussion with the learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. The input of a professional dog trainer with a range of dogs at different stages of training will be very valuable for this outcome so that the learners can ain an insight into how dogs develop and how their training needs change to reflect this.

For Outcome 3, learners must compile and explain a health check record sheet suitable for a selected working dog, describing basic first aid applications. The choice of dog could be negotiated between the tutor and the learners. The input of a Vet or veterinary nurse who has experience of a range of injuries/ailments of dogs would be very useful for this outcome.

For Outcome 4, learners are required to investigate the requirements for housing a specified breed of working dog. Tutors should identify the objectives. Visiting a range of kennel buildings should provide learners with ideas for this outcome.

Learners must consider the materials and equipment to be used in the construction process. The design must include a whelping area and litter rearing requirements, with welfare issues prominently at the forefront of the design. Specifications of utilities, drainage, water supply, electricity and waste disposal need to be considered, along with any planning authority requirements.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

References

Books

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Unit 324 Business Management in the Land-based Sector

Level: 3

Credit value: 10

Unit aim

The learner will look at the business, the role and responsibilities of those employed in land-based businesses and resource requirements. They will develop their skills in business operations and produce a business plan.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know the breadth and importance of an industry in the environmental and land-based sector
2. Understand business resources and structures
3. Understand the business marketplace
4. Understand how to use financial and physical record keeping systems

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 324 Business Management in the Land-based Sector

Outcome 1 Know the breadth and importance of an industry in the environmental and land-based sector

Assessment Criteria

The learner can:

1. Describe the **importance** of businesses within the industry **to the economy**
2. Outline the range of **associated businesses** allied to the industry

Unit content

Importance to the economy

Using measures available to the industry, e.g. value of output, contribution to Gross Domestic Product (GDP), employment, land use, economic and social benefits, trends in importance

Range of organisations: typical types of businesses and other organisations (e.g. representative, regulatory, not-for-profit) within the sector, regional variations, changes and developments in the last 50 years

Associated businesses

Relevant industries in primary, secondary and tertiary industrial sectors (e.g. suppliers of raw materials, processors, distributors, retailers, service providers)

Associated organisations: specific interrelationships between one business and other associated organisations e.g. suppliers of goods and services, representative organisations and professional bodies, regulatory bodies, competitors, customers, aims and roles of important organisations in the sector

Unit 324 Business Management in the Land-based Sector

Outcome 2 Understand business resources and structures

Assessment Criteria

The learner can:

1. Explain the **legal structure and organisation** of a land-based business
2. Explain the **physical resource requirements** of a selected land-based business
3. Describe different **job roles and responsibilities** in a selected land-based business

Unit content

Legal structure and organisation

Features of the main business types, e.g. sole trader, partnership, limited company, not-for-profit organization, charity, public sector organisations, organization staffing structure

Physical resource requirements

Property (forms of tenure, appraisal of business potential), vehicles and machinery, tools and equipment, stocks (stock control procedures), insurance of physical resources

Job roles and responsibilities

Job roles relevant to the sector, e.g. director, manager, supervisor, team worker, trainee, administrator, volunteer, sub contractor, job title, job description, responsibilities for financial, physical and human resources, staff motivation and performance management, person specification (typical skills, qualifications and experience required to fulfil the role), legal rights and responsibilities in work (e.g. pay, working hours, holidays, equal opportunities, health and safety, employment protection), relevant employment legislation

Unit 324 Business Management in the Land-based Sector

Outcome 3 Understand the business marketplace

Assessment Criteria

The learner can:

1. Describe the **marketplace, customers and competitors** for a land-based business
2. Explain features of an efficient **supply chain** in a land-based context
3. Review **quality management** systems and practices within a land-based business

Unit content

Marketplace, customers and competitors

Size of market (e.g. value of sales, number of customers), external influences on the market (political, economic, socio-cultural, technological), customer base (number, type, characteristics, market segments), direct and indirect competitors, competitor analysis, market share

Supply chain

Suppliers, distributors, customers, choosing suppliers, ensuring supplies of inputs, supply chain assurance (e.g. environmental, animal welfare)

Quality management

Important aspects of quality in the sector, formal quality standards or approval (e.g. Farm Assured, ISO 9000, BHS approval), informal systems and practices to achieve quality, problems arising if quality is not achieved

Unit 324 Business Management in the Land-based Sector

Outcome 4 Understand how to use financial and physical record keeping systems

Assessment Criteria

The learner can:

1. Review **financial records** for a selected land-based business
2. Examine **physical records** for a selected land-based business
3. Examine the use of financial and physical records in **monitoring business performance and progress**

Unit content

Financial records

Importance of keeping accurate records (legal requirements and management efficiency), purchasing and ordering procedures, order forms and orders, deliveries and receipts, invoices and sales records, credit control, payment methods, bookkeeping (cash analysis, petty cash, cash flow, budgets, computer accounts programmes), basic accounts (trading account, balance sheet, depreciation), taxation (VAT, income tax PAYE, national insurance contributions, corporation tax), wage calculation

Physical records

Records appropriate to the industry relating to e.g. production, inputs, staffing, customers, resource use, data protection, legal requirements to keep records, e.g. pesticide use, veterinary medicines, transport, animal movement, passports

Monitor business performance and progress

Use of financial and physical records to monitor business performance, e.g. production levels, costs of production, financial efficiency, monitoring against targets, budgets, previous periods, relevant review periods (e.g. weekly, monthly, annually), appropriate remedial actions, staff roles in recording and analysing information

Unit 324 Business Management in the Land-based Sector

Notes for guidance

This unit is designed to provide the learner with an understanding of the business aspects of their industry. It is applicable to all sectors of the environment and land-based sector and learners focus their study on the sector most relevant to their vocational interests.

In Outcome 1 they will investigate the size, scope and importance of their specialist sector within the environment and land-based industries, and how this has developed over the last 50 years or so. For some sectors this type of information is more readily available than other (e.g. agriculture), so learners should be supported in accessing whatever information is available relevant to their sector. They will also investigate the range of business types and other organisations that are represented in their sector, including important regulatory, professional or representative organisations. Wherever possible this should be related to specific businesses and organisations. This outcome is likely to require formal teaching, which should be supported by relevant information on businesses and organisations within the sector, and could include speakers representing these. Independent study and investigation should also be encouraged.

Outcome 2 focuses on the legal and resource implications of constituting a business. They will learn about the range of business organisations in the private and public sectors, and the legal and practical implications of different business types. This should be related to the types of business important in their sector. Learners will investigate the physical resource requirements of businesses, and how they are managed. It would be appropriate for learners to undertake a case study on a business premises in their sector and appraise its strengths and weaknesses for a given business use. The understanding that learners will gain on job roles and responsibilities has links with the requirements for Work Experience, and employers could be invited to explain their expectations in the workplace. The learners' investigations should focus on job roles within their specialist sector.

In Outcome 3 learners will analyse the market for a specific land-based business. This could involve a case study project and should identify, for that business, information on the content listed. External influences should be relevant and current to that business. Specific competitors should be identified and analysed to identify strengths and weaknesses to the case study business. When investigating the supply chain learners will need to identify the flow of resources from production of raw materials, through relevant manufacture and processing, to end consumers. Quality management will include reference to any formal standards or approvals that are relevant. It should also consider the quality standards required by the industry, any systems and practices that are used to achieve quality, and implications of failing to meet prescribed or assumed levels of quality. This should be related to specific businesses and teaching could again be supported by relevant visiting speakers from industry.

Outcome 4 focuses on the range of financial and physical records that are required to meet legal requirements as well as to ensure effective business operation. Learners will need to be able to complete simple examples of the range of financial records listed. They should be aware of paper-based and computerised systems for financial records but are not expected to become competent in the use of IT accounts software. The range of physical records investigated should be related to the needs of the learners' specialist sector, and should include important current examples of legally required records. This content could link with other specialist vocational units. In addition to completing a range of records, learners will investigate how specific examples can be used to aid decision making, monitor and control business performance.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment.

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Unit 325 Undertaking Land-based Machinery Operations

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of land-based machinery operations and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learners will study the purpose and operation of land-based machines including machine layout, systems and controls. They will explore daily checks and adjustments as well as appropriate Personal Protective Equipment and the legal and recommended requirements for land-based machinery. They will learn how to safely operate and maintain machinery and consider the different conditions in which machinery might need to operate.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the purpose and operation of land-based machines
2. Be able to prepare land-based machines ready for work
3. Be able to safely operate land-based machinery
4. Be able to carry out operator maintenance and simple repairs

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU28 Prepare for and maintain equipment and machines

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 325 Undertaking Land-based Machinery Operations

Outcome 1 Understand the purpose and operation of land-based machines

Assessment Criteria

The learner can:

1. Explain the purpose and **safe operation** of selected land-based machines
2. Discuss the **differences between selected land-based machines**

Range

A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

Safe operation

Need for operator training, certification process, Health and safety at Work etc Act1974, Provision and Use of Work Equipment Regulations 1998 (PUWER), Environment Act 1995, Control of Substances Hazardous to Health 2002 (COSHH), Personal Protective Equipment (PPE), manual handling, risk assessments, codes of practice

Differences between Land-based machines

Trailed or mounted, powered or non powered, mechanical, electric or hydraulic powered, wheels, skids or hydraulic pressure accumulation, cutting, gathering, conveying; belts, chains, shaft drives; vacuum, pressure, gravity; swath width, bout width, row width, depth control

Unit 325 Undertaking Land-based Machinery Operations

Outcome 2 Be able to prepare land-based machines ready for work

Assessment Criteria

The learner can:

1. **Prepare selected land-based machinery** ready for work safely
2. Review the **pre-start checks** and **safety requirements** for selected land-based machinery

Range

A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

Prepare selected land-based machines

Power unit suitability, removal from storage, cleaning, damage inspection, correct hitching, free movement of working components/controls, connection to power unit, wheel and tyre maintenance, braking and lighting requirements, lubrication, calibration, tying/wrapping materials, initial field settings

Pre-start checks

Power drive shaft condition, decontaminated, safety overload devices, fuel/oil requirements, tyre pressures and conditions, lighting controls including brakes, belt tensions

Safety requirements

Guards, safety rails, steps, safe attachment to power unit, component security, information decals

Unit 325 Undertaking Land-based Machinery Operations

Outcome 3 Be able to safely operate land-based machinery

Assessment Criteria

The learner can:

1. **Operate** selected land-based machinery to meet given objectives safely
2. Explain the **safe operation** of selected land-based machinery

Range

A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

Operate

Site risk assessments, PPE, operator instruction manual, data sheets, transport/field settings, calibration check, correct power engagement, correct machine speeds, safe/correct loading of materials, machine output checks/quality of work, field procedures, terrain, ground conditions/undulations, public access

Safe operation

Health and Safety at Work etc Act (1974), follow manufacturers' recommendations, dealer installation process, operator instruction manuals, manufacturer web sites

Unit 325 Undertaking Land-based Machinery Operations

Outcome 4 Be able to carry out operator maintenance and simple repairs

Assessment Criteria

The learner can:

1. Carry out **operator maintenance** and appropriate **repairs** for selected land-based machinery
2. Assess **potential faults** and/or **defective parts** on a given land-based machine

Range

A range of modern land-based machines designed for the production of a seedbed, cutting or handling of grass swaths, application of materials, harvesting of crop

Unit content

Operator maintenance

Manufacturers' service schedules/instructions, lubrication, cleaning, assessment of wear tolerances, component replacement disposal of waste

Repairs

Framework welds, joints, distortion, fractures, leaking pipes, connections

Potential faults

Uneven groundwork, crop damage, inaccurate outputs, incorrect linkage settings, incorrect drawbar settings, uneven tyre pressures, incorrect track widths, power unit unsuitable, blockages

Defective parts

Belts, chains, bearings, loose splines, shares/tines, blunt/missing knives, rotor balance, nozzles/filters, and seals

Unit 325 Undertaking Land-based Machinery Operations

Notes for guidance

This unit is designed to give learners knowledge, understanding and practical skills to enable them to recognise and understand the working principles of land-based machines typically used in their area of study.

Learners will be able to demonstrate pre start checks, initial settings and safe start up techniques for a range of selected machines prior to connecting the machine to a suitable power unit and preparing machine and power unit for work. An emphasis will be put on the correct use of manufacturers' recommended procedures and respect for health and safety issues and conformation of relevant safe working practices.

It is envisaged that all learners, prior to studying this unit will have received training in the use of tractors and have been assessed as having reached a level of competence to allow practical tasks to be demonstrated safely. Learners must show awareness and consideration of hazards and risks at all times, particularly during fieldwork situations where levels of risk may vary ay any given time.

Where possible, non-simulated field work should be programmed into the learning period to take into account seasonal opportunities. Following field operations, learners will demonstrate simple maintenance and pre storage tasks to minimise degeneration of the machine and to ensure the machine is in a useable condition for subsequent operations.
The range of machinery covered should include electric vehicles and machines if appropriate.

In Outcome 1, learners must demonstrate knowledge and understandings of the construction and working principles of a selection of Land-based machines commonly used in their area of study and demonstrate knowledge of the work and performance parameters of such machines.

In Outcome 2, learners will demonstrate an ability to prepare the machine for field operations and ensure that the machine is matched and correctly connected to a suitable power unit. Machines are to be selected from the 'range/scope' list outlined in the unit content. It is essential that manufacturers' recommendations be followed to enable machines to be initially set to achieve given fieldwork criteria.

In Outcome 3, learners will need to explain safe operational procedures and carry out risk assessment prior to engaging in fieldwork. Suitable field procedures are to be demonstrated, regular checks to be made on machine performance and necessary adjustments made to both machine and power unit to meet given fieldwork criteria economically and efficiently.

In Outcome 4, following fieldwork operations, learners must carry out pre-storage maintenance, carry out an inspection to identify and subsequently rectify any faults. Wearing components will need to be assessed and replaced if wear limits are reached. Throughout the unit the emphasis will be on safe, legal practices, working to manufacturers' recommended procedures and attention to detail when recording information.

Depending on the Land-based area the learner is studying, formal lecture delivery may be generic to all areas but practical experiences and learning should be appropriate to the area of study.

References

Books

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Bell, B. 2008. *Farm Machinery*. Ipswich: Old Pond Publishing. ISBN 1903366682.

Culpin, C. 1992. *Farm Machinery* 12th ed. Sussex: Wiley Publishing. ISBN 063203159X

Journals

Farmers Weekly
Amenity Machinery and Equipment
Profi International

Websites

www.hse.gov.uk Health and Safety Executive
Manufacturer's websites

Unit 326 Understand the Principles of Plant Science

Level: **3**

Credit value: **5**

Unit aim

This unit aims to provide learners with an understanding of the principles of plant science and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will have developed an understanding of how plants grow and develop, through knowledge of their structure and physiology.

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Understand the function of plant structures
2. Understand the main processes of plant physiology
3. Understand plant growth and development

Guided learning hours

It is recommended that **30** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

N/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 326 Understand the Principles of Plant Science

Outcome 1 Understand the function of plant structures

Assessment Criteria

The learner can:

1. Identify the **major internal** and **external structures** of plants
2. Explain the **function** of the major plant structures

Unit content

Major internal structures

Cell structure (cytoplasm, organelles), parenchyma, collenchyma, sclerenchyma, xylem tissue, phloem tissue, cambium, epidermis, guard cells, and stomata

Major external structures

Root, shoots, stem, leaves, buds, flower, fruit, and seed
Specialised internal and external structures, for example pericycle, endodermis, lenticels, cotyledons, stolons, rhizomes, storage organs

Function

Photosynthesis, reproduction, support, transport, anchorage, absorption, storage, defence, attraction, aeration, respiration, division

Unit 326 Understand the Principles of Plant Science

Outcome 2 Understand the main processes of plant physiology

Assessment Criteria

The learner can:

1. Explain the major **processes** of plant physiology
2. Identify the **factors** which can **limit** the rate **of photosynthesis**

Unit content

Processes

Photosynthesis: process (equation) for photosynthesis, function of chlorophyll, functionality of guard cells and stomata, factors needed for photosynthesis to occur (light, chlorophyll, carbon dioxide, water)

Respiration: definition of aerobic and anaerobic respiration, equation for aerobic respiration, structure and function of mitochondria, diffusion, compensation point, factors influencing the rate of respiration (temperature, water availability, seasonal growth)

Uptake, transport and loss of water and nutrients: osmosis, diffusion, plasmolysis, turgor, translocation, transpiration, factors influencing transpiration (temperature, humidity, air movement, water supply, light, stomata)

Limiting factors of photosynthesis

Temperature, carbon dioxide, leaf colour, light, water availability

Unit 326 Understand the Principles of Plant Science

Outcome 3 Understand plant growth and development

Assessment Criteria

The learner can:

1. Explain the **life cycle** of selected plants

Unit content

Life cycle

Life cycle types (ephemeral, annual, biennial, perennial), process and stages of germination, types of germination (epigeal, hypogeal), types of reproduction (sexual reproduction, for example flower structures, pollination and fertilisation, seed production, dispersal), (asexual reproduction, for example vegetative propagation, parthenogenesis), primary growth of shoots and roots (cell division, cell expansion, cell differentiation, apical meristems, lateral meristems)

Unit 326 Understand the Principles of Plant Science

Notes for guidance

On completion of this unit, the learner will have developed an understanding of how plants grow and develop, through knowledge of their structure and physiology. It will be important that delivery relates to plants that are vocationally relevant to the learners- e.g. production crops for agriculture. Laboratory based practicals could help learners to explore plant physiology and structure, and a series of visits to growing crops could help learners better understand plant growth and development. Learners are required to study a range of monocotyledon and dicotyledon plants for this unit.

Outcome 1 requires the learner to identify the main internal and external structures of both monocotyledon and dicotyledon types of plants and to explain the function of the main plant structures. The outcome is mainly theory based and can be delivered by formal lectures, discussion, internet research and directed study.

Outcome 1 and 2 are directly linked as outcome 2 identifies the need for learners to explain the major processes of plant physiology and identify factors affecting photosynthesis. Learners may find it useful to undertake practical sessions, habitat surveys or site visits to a range of habitats to learn more about plant physiology and factors affecting photosynthesis.

Outcome 3 requires the learner to explain the life cycle of plants which again can be linked into outcome 1 and 2 with careful planning. Learners should visit sites where plants can be studied at appropriate development stages i.e. at different times of the year. Formal lectures, directed study and research will be required to enhance the learners understanding of the complexities of plant physiology and life cycles. It is important that a risk assessment is carried out prior to any practical activity and that suitable Personal Protective Equipment (PPE) is provided.

Visiting speakers e.g. agronomist, rangers or plant breeders could enhance relevance of the subject to learners. Work experience may be beneficial to learners looking to develop careers in the field. Development of areas within a College environment where learners are able to modify and manipulate plant environments may enhance understanding of the complexities of plants and their life cycles

References

Books

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Raven, P.H. et al. 2005. *Biology of Plants.* 7th ed. New York: WH Freeman & Co Ltd. ISBN- 978-0716762843.

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Wayne, R. 2009. *Plant Cell Biology*. Oxford: Academic Press. ISBN 978-0867205046.

Unit 327 Understand the Principles of Soil Science

Level: 3

Credit value: 5

Unit aim

This unit aims to provide learners with an understanding of the principles of soil science. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

This unit aims to develop the learners understanding of soil characteristics, and their relationship to crop growth and development.

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Be able to investigate soil characteristics
2. Understand how soil characteristics affect plant growth and development
3. Understand how soil characteristics affect plant selection

Guided learning hours

It is recommended that **30** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge

Unit 327 Understand the Principles of Soil Science

Outcome 1 Be able to investigate soil characteristics

Assessment Criteria

The learner can:

1. Compare the **characteristics** of different **soil types**
2. Carry out **experiments** to determine the characteristics of a soil sample

Range

Soil types

Loams, clays, silts, sands, organic soils

Unit content

Characteristics

Properties of soil particles (clay, silt, sand), water holding capacity, aeration, stability, organic matter, pH, soil structure (crumb structure, aggregate sizes)

Experiments

Laboratory based tests (water holding capacity, soil pH, proportion of clay, silt and sand, nutrient content)

Unit 327 Understand the Principles of Soil Science

Outcome 2 Understand how soil characteristics affect plant growth and development

Assessment Criteria

The learner can:

1. Explain how **soil type and condition** affect plant growth and development
2. Explain how **soil structure and drainage** can **affect plant growth** and **development**.

Range

Soil types

Loams, clays, silts, sands, organic soils

Unit content

Soil condition

Stability, availability of macronutrients (nitrogen, phosphorous, potassium), micronutrients (for example iron, copper, manganese), nutrient retention, water retention and availability, effects of organic and inorganic fertiliser application, pH and organic matter

Effects of soil structure and drainage on plant growth and development

Rooting depth, availability of plant nutrients, drainage, water logging, compaction, effects of high soil water content (reduced oxygen availability, poor plant growth), effects of water availability to plants, effects on ability to cultivate

Unit 327 Understand the Principles of Soil Science

Outcome 3 Understand how soil characteristics affect plant selection

Assessment Criteria

The learner can:

1. Explain how **cultural techniques** affect **soil characteristics**

Range

Soil types

Loams, clays, silts, sands, organic soils

Unit content

Cultural techniques

Crop/plant rotations and crop/plant choice, nitrogen fixation

Cultivations: ploughing, minimal cultivation techniques, zero cultivation, subsoiling

Establishment: broadcasting, transplanting, precision seeding, direct drilling, use of green manures and muck inclusion

Crop maintenance: spraying and fertiliser application, damage by machine and its reduction

Harvesting and seasonality: harvesting damage

Soil characteristics

Proportions of sand, silt, clay, organic matter content, water holding capacity, air, permeability, pH, porosity

Plant life and earth worm populations

Compaction capping and smearing

Unit 327 Understand the Principles of Soil Science

Notes for guidance

This unit aims to provide learners with an understanding of the interrelationship between soil characteristics and crop growth and development, and explores soil characteristics through investigative experiments. As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity.

Delivery of this unit will involve classroom based activity, laboratory experiments and visits to sites with different soil characteristics, preferably also with a range of crop types. It is likely that learners will also need to undertake independent study and research.

In Outcome 1, learners will need to investigate a range of soil types and carry out supervised basic soil experiments to identify different soil characteristics. These could include investigating the proportion of sand, silt and clay through suspending in water, investigating the water holding capacity of different soil types, and determining soil pH.

For Outcome 2, learners will need to develop an understanding of the effects of soil characteristics on crop growth and development. This could be supported by some controlled experiments, where learners grow plants in different soil types. Delivery of this outcome could also be enhanced by visits to see different types of crops growing in different soil types. Visiting expert speakers, such as soil scientists or agronomists, could be useful, and could describe practical aspects of managing soil structure and plant nutrition.

Outcome 3 covers the effect that choice of crop has on soil characteristics, which is the basis of crop rotation principles. Delivery will include consideration of the range of consequential effects of crop choice i.e. methods of planting and harvesting, use of machinery, crop requirement for supplementary nutrients. Delivery is likely to include both classroom activity and site visits, and could be linked to learners' work placements. A guest speaker, particularly one able to discuss the relative merits of crop rotation, would add further vocational interest.

References

Books

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Journals

Arable Farming
Crops
Farmers Guardian
Farmers Weekly
Landwards

Websites

www.bbsrc.ac.uk	Biotechnology and Biological Sciences Research Council
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.hse.gov.uk	Health and Safety Executive
www.lantra.co.uk	Lantra SSC
www.pda.org.uk	Potash Development Association
www.rothamsted.ac.uk	Rothamsted Research
www-saps.plantsci.cam.ac.uk	The Science and Plants for Schools Website
www.soils.org.uk	British Society of Soil Science

Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of chainsaw maintenance, felling small trees (200- 300mm at felling height) and stump removal and how these can be applied in practice. This unit is aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will identify and understand a range of petrol-driven chainsaws and felling techniques currently used within the industry, to develop efficient chainsaw maintenance skills and to carry out basic repairs and troubleshooting.

This unit will **not** directly lead to certification of competence in the Level 2 Award in Chainsaw and Related Operations. This unit could be used to contribute towards preparative training for the Level 2 Award in Chainsaw and Related Operations or the Level 3 Certificate of Competence in the Thorough Examination of Arboricultural Equipment.

If learners want to achieve the Level 2 Award in Chainsaw and Related Operations they will need to register and take the assessment separately through City & Guilds.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Be able to correctly maintain chainsaws to manufacturer's recommendations
2. Be able to safely fell and cross cut small diameter trees
3. Be able to safely use stump and brushchipping removal methods
4. Understand commonly used stump and brushchipping removal and tree felling methods

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

TW10 Fell small trees using a chainsaw
TW12 Cross cut small diameter timber using a chainsaw
TW14 Stack crosscut timber manually
TW41Survey and inspect trees
TW42 Soil amelioration for tree health
TW43 Undertake emergency arboricultural operations

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Outcome 1 Be able to correctly maintain chainsaws to manufacturer's recommendations

Assessment Criteria

The learner can:

1. Safely carry out **maintenance operations** on selected chainsaws in accordance with manufacturer's recommendations and health and safety guidelines
2. Identify **common faults** in chainsaws

Range

Maximum guide bar length of 380mm (15")

Unit content

Maintenance operations

Visual inspection

Operations to include: removal and cleaning of air filter, removal and checking of spark plug removal, checking and maintenance of bar and chain, sharpening of chain, checking of anti-vibration mounts, oil and fuel check

Common faults

To include: uneven sharpening (left/right hand), incorrect depth gauges, bent bar, blocked air filter, on/off switch, poor or incorrect fuel mix, lack of chainsaw oil, worn bar, worn chain, worn anti vibration mounts, slack chain, dirty chainsaw

Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Outcome 2 Be able to safely fell and cross cut small diameter trees

Assessment Criteria

The learner can:

1. **Assess risks** prior to felling and cross cutting operations
2. **Safely fell and cross cut** selected small diameter trees to meet given objectives
3. **Dispose of waste** appropriately

Range

Tree up to 380mm in diameter at felling height

Unit content

Assess risks

Risks to include: ground conditions, undergrowth, escape routes, weather conditions, overhead power lines, loose or dangerous limbs overhead, local dangerous trees including leaning trees, windblown, dead and rotten, wires, fencing, metal in tree at cutting level

Safely fell and cross cut

Safely factors to include: risk assessment carried out, escape routes established, felling only if safe to do so, direction of fell
Fell: correct use of chainsaw, choice and positioning of cuts, depth of hinge, body positioning/stance
Cross cut: to meet requirements, avoiding hitting ground with bar and chain, work technique, avoidance of 'pinching' of bar

Dispose of waste

Meeting requirements of site, cutting to suitable size if required, stacking as required, possible burning or removal, provision of saleable product

Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Outcome 3 Be able to safely use stump and brushchipping removal methods

Assessment Criteria

The learner can:

1. Select **appropriate stump and brushchipping removal methods and equipment**
2. **Safely use** appropriate stump and brushchipping removal methods
3. Identify **environmental impacts** of removal methods used

Unit content

Appropriate stump and brushchipping removal methods and equipment
Guarding, Personal Protective Equipment, manual handling techniques, mechanical aids, stabilisers, safety trip bar

Safely use
Signage and barriers as appropriate, Personal Protective Equipment to include both eye and ear protection, adherence to codes of practice, use in accordance with manufacturer's instructions
Reinstatement of soil and ground post extraction

Environmental impact
To include: noise, waste product, dust, chippings, exhaust gas pollution, possible hydraulic oil pollution, visual damage, damage to ground and soil

Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Outcome 4 Understand commonly used stump and brushchipping removal and tree felling methods

Assessment Criteria

The learner can:

1. **Evaluate** commonly used stump and brushchipping removal methods
2. Assess different **problem trees**
3. Evaluate **methods for felling problem trees**
4. Explain the **uses** of chainsaws
5. **Assess tree felling activities** carried out
6. Explain the **maintenance** of chainsaws

Range

Small trees up to 380mm in diameter at felling height

Unit content

Evaluate

Factors include: availability, cost (purchase and hire), access, waste, customer requirements, tree species

Problem trees

To include: leaning trees, trees with damage, trees with rot, dead trees, trees in difficult location, trees close to other objects, leaning trees, hung-up trees

Methods for felling problem trees

To include: dismantling, use of platforms, specialist cutting techniques

Uses

Felling, cross cutting, delimbing, snedding, logging, surgery

Assess tree felling activities

Suitability for purpose, end product, disposal of waste, finished state of site, cost, labour involved, environmental impact, disturbance to public, risk involved

Maintenance

Cleaning, sharpening, air filter, bar, spark plug, fuel and oils, checking of anti-vibration mounts

Unit 328 Understand the Principles of Tree Felling and Chainsaw Use

Notes for guidance

This unit is designed to provide the learner with a sound knowledge of chainsaws and their use and the skills required to use a chainsaw to fell and cross cut small trees. It also enables them to remove stumps and to identify and evaluate, but not deal with, problem trees.

Throughout the unit, the emphasis should be on safe working. It is expected that the learner will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working. It is a requirement for the learner to operate machinery, therefore health and safety issues relevant to the equipment and tasks involved must be stressed and regularly reinforced. Adequate Personal Protective Equipment (PPE), appropriate to the learner, the equipment and the task must be provided and worn in accordance with the associated risk assessment, industry and operator's manual.

Outcome 1 enables the learner to both carry out routine maintenance tasks on a chainsaw and to recognise common chainsaw faults. The faults may be engine related, assembly related or evident by chainsaw use and identified by cutting problems. It is important here that safe working practices are adhered to and correct PPE worn for working on the chainsaw. This outcome is best initially delivered in a workshop context with eventual move to a working woodland environment. Emphasis should also be put on the need for cleanliness throughout. The requirement for regular maintenance and sharpening and use of the manufacturer's manuals should also be identified.

This unit will **not** directly lead to certification of competence in the Level 2 Award in Chainsaw and Related Operations. This unit could be used to contribute towards preparative training for the Level 2 Award in Chainsaw and Related Operations or the Level 3 Certificate of Competence in the Thorough Examination of Arboricultural Equipment.

If learners want to achieve the Level 2 Award in Chainsaw and Related Operations they will need to register and take the assessment separately through City & Guilds.

In Outcome 2 the learner is required to assess a site and if safe to do so fell small diameter trees, cross cut them and dispose of waste. It is recommended that simple trees are used initially and as the learner gains confidence and experience then the working area can be more real. It is advised that simulation of a real working environment is used in the first instance. Pre- start checks and safe starting techniques must form part of this outcome.

In Outcome 3 the learner is required to understand the methods and equipment available for stump removal and to select and use an appropriate method for a given situation. Particular attention must be made to safe working practice and the need for PPE. Possible danger to the public and fellow workers needs to be emphasised. Where winching is carried out, the learner needs to be aware of how to check and maintain cables and the particular danger of their use.

In Outcome 4 the learner is required to assess a number of factors involved with tree felling and chainsaw use (these include problem trees). The learner will learn to identify problem trees but will not work on them. The learner will be made aware of methods of dealing with problem trees. This can all be taught in a real working environment. It is essential that risk assessments are carried out and the learner is not put at risk when examining problem trees. It is possible that some of this may initially be taught in the classroom using slides or PowerPoint presentations. The uses and maintenance of chainsaws will also be understood.

Finally the learner will gain the knowledge required to be able to assess an operation involving felling that has been carried out.

Centres are encouraged to introduce employers and specific professionals from the forestry or arboricultural industry, such as dealers or chainsaw operators to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of working sites to add depth to the learners experience by offering a range of trees and scenarios.

It is accepted that some formal lectures will be necessary. However, it is recommended that these are linked to considerable interactive practical lessons in a real working environment.

References

Books

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Kestel B., 2005. *Chainsaw Operators Manual: The Safe Use of Chainsaws*. Landlinks Press. ISBN 0643090282

Shetterly R. & Blair D., 1995. *Arborist Equipment: A Guide to the Tools and Equipment of Tree Maintenance and Removal*. International Society of Arboriculture. ISBN 188195613X

Journals

Arboricultural Association Newsletter
Forestry and British Timber

Leaflets

FASTCO chainsaw leaflets

Unit 329 Understanding Woodland Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of woodland management and how these can be applied in practice. It is designed for learners in acentre-based settings looking to progress into the sector or further education and training.

This unit aims to provide learners with sufficient skills to create their own woodland management plans and to evaluate the existing management of woodlands for multipurpose objectives.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Be able to obtain woodland data and information
2. Be able to produce woodland management plans
3. Understand woodland management objectives
4. Understand woodland management planning

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC24 Produce site management plans

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 329 Understanding Woodland Management

Outcome 1 Be able to obtain woodland data and information

Assessment Criteria

The learner can:

1. **Collect and record data** and information relevant to woodland
2. **Interpret data** and information collected

Unit content

Collect and record data

Physical data (roads, rides, public rights of way, surrounding land use, topography, orientation, boundary, drainage, watercourses, ponds, structures), biological data (species present, canopy structure, animals, pests, diseases), tree data (diameter at breast height (DBH), stocking density, species mix, height, basal area, volume, form, canopy height, potential value), meteorological data (temperature extremes, wind speed, wind direction, sunlight hours, rainfall), soil data (type, texture, structure, pH)

Interpret data

Collected and recorded data, Ordnance Survey maps, soils maps, site surveys, inventories, Met Office data, public records, historical records

Unit 329 Understanding Woodland Management

Outcome 2 Be able to produce woodland management plans

Assessment Criteria

The learner can:

1. Produce a **management plan** for a given woodland site including operational and health and safety requirements
2. **Present** a woodland management plan appropriately to a given audience

Unit content

Management plan

Introduction, site description, inventory, maps, collected data, appropriate management objectives, recommended objectives, schedule of activities, operational requirements, health and safety requirements, professional style

Present

Style, accuracy, logical, tables, graphs, maps, written

Unit 329 Understanding Woodland Management

Outcome 3 Understand woodland management objectives

Assessment Criteria

The learner can:

1. Discuss the **uses** of woodlands
2. Explain **potential conflicts** which may exist in relation to the use of woodlands
3. Explain selected woodland management **objectives**

Unit content

Uses

Timber production, amenity, conservation, landscape, community use, recreation, wildlife, game, sporting

Potential conflicts

Land owners, health and safety, Local Planning Authority, site management, requirements of different users, local population, facilities, access, maintenance

Objectives

Timber production, amenity, conservation, landscape, community use, recreation, wildlife, game, sporting

Unit 329 Understanding Woodland Management

Outcome 4 Understand woodland management planning

Assessment Criteria

The learner can:

1. Explain the **structure, content and presentation** of a woodland management plan
2. Explain how to achieve the best balance between present and potential woodland uses covering:
    - **i.) Legal**
    - **ii.) Environmental**
    - **iii.) Requirement of woodland users**
    - **iv.) Economic/financial**
    - **v.) Physical**
3. Explain **techniques used to assess** woodlands

Unit content

Structure, content and presentation

Introduction, site description, inventory, maps, collected data, appropriate management objectives, recommended objectives, schedule of activities, operational requirements, health and safety requirements, professional style, accuracy, logical, tables, graphs, maps, written

Legal

Felling licences, Tree Preservation Orders, Local Planning Authority, Health and Safety, Rights of Way, Wildlife and Countryside Act 1981

Environmental

Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, National Nature Reserve, Local Nature Reserve, National Park

Requirement of woodland users

Access, community use, recreation, timber production, conservation, wildlife, game, sporting

Economic/financial

Grants available for tree planting, local funding initiatives, community forests, national funding, Forestry Commission (eWGS), sale of products, sale of services

Physical

Topography, soil type, water courses, wildlife, plants, crop species, crop age, crop density, current management plans, public roads, internal access, car parking

Assessment techniques

Surveys, usage, biodiversity, ecology surveys, Condition, Opportunity and Threat (COT) assessments, landscape character, game cover, water catchment

Unit 329 Understanding Woodland Management

Notes for guidance

This unit is designed to provide the learner with knowledge and skills required to recognise features of woodland and create functional woodland management plans. Learners will locate, collect, summarise and present a wide range of inventory data and relevant information regarding woodlands and use this to inform management decisions. They will consider relative values and attributes of different woodland sites, and appropriate management objectives for these sites. The unit should cover a range of possible activities and potential sites.

Throughout the unit the emphasis should be on safe working and sustainability. It is expected that learners will be aware of safe working practices and familiar with accepted practices and behaviours within the context in which they are working. The importance of sustainable practices should be woven into the delivery throughout.

In Outcome 1, the leaner will be required to understand and collect different data and information relevant to woodland and be able to interpret the different data collected. Learners should look at a wide range of possible data both on sites and available from different resources. It is anticipated that the delivery of this unit will be through some formal lectures, but will mainly be delivered through independent learner research and site visits to appropriate woodland.

Outcome 2 allows the learner to put into practice knowledge gained from the other learning outcomes. It is anticipated that the delivery of this unit will contain some formal lectures and discussion, but it requires site visits to woodland and supervised classroom activities. It may be beneficial to have visiting expert speakers to add relevance to the subject particularly those that have been involved woodland management plans. Learners will develop their presentation and writing skills and an appreciation of the importance of a professional style.

In Outcome 3, the learner will develop an understanding of the management objectives relevant to different woodland. Learners will also develop an appreciation of the conflicts which can exist in relation to woodland use. It is anticipated that the delivery of this outcome will be mainly through formal lecture and discussion but the addition of guided visits to woodland managed for different objectives would add context.

In Outcome 4, the learner will develop their understanding of the woodland management planning process. It is anticipated that this outcome will be delivered mainly through formal lectures, but will benefit from interactive learner activities and supervised classroom work. A thorough understanding of what constitutes a woodland management plan and how a woodland management plan is put together will form a key element of this outcome.

This unit aims to extend the learners knowledge and skills involved with woodland management. Emphasis should be placed upon the importance of management plans and health and safety. Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of woodlands to add depth to the learner experience and put practices into context.

It is accepted that formal lectures will be necessary at level 3, but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment including identification sessions in the field. Learners must be given the opportunity to deal with a range of activities in different situations that reflect current industry trends.

References

Books

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Websites

www.forestry.gov.uk	The Forestry Commission
www.naturalengland.org.uk	Natural England
www.rfs.org.uk	Royal Forestry Society
www.woodlandtrust.org.uk	The Woodland Trust

Unit 330 Understanding Organism Identification

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of identifying organisms and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will develop skills in classification and learn how rules of classification have developed over time. These skills will be vital to roles such as surveying and habitat management. The learner will develop the ability to use a range of identification and classification methods applying these in their investigation of the five kingdoms.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the principles underpinning classification and taxonomy
2. Understand the importance of classification
3. Know the identifying features of the five kingdoms
4. Be able to use classification skills

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Outcome 1 Understand the principles underpinning classification and taxonomy

Assessment Criteria

The learner can:

1. Explain the **principles** that **underpin classification and taxonomy**
2. Compare **methods** used to classify organisms

Unit content

Principles that underpin classification and taxonomy

Lamarcism, Linnean, Darwinism, evolutionary theories, observed similarities between species, changes in species over time, adaptation and natural selection

Methods

Physical features: morphology, pendactyl limbs, organs, phylogenetics, embryology.

The five kingdom system: Monera, Protista, Fungi, Plantae, Animalia

The taxonomic hierarchy: Kingdom, phylum, class, order, family, species

Outcome 2 Understand the importance of classification

Assessment Criteria

The learner can:

1. Explain the **need for classification of organisms**
2. Discuss reasons for the **development of scientific nomenclature**

Unit content

The need for classification

Accurate identification of species, common scientific language, universal understanding, determination of poisonous species, invasives and those of value for medicine

Development of scientific nomenclature

Evolutionary theories, Darwinism, early theorists (Aristotle, Lamarc) and scientific developments

Outcome 3 Know the identifying features of the five kingdoms

Assessment Criteria

The learner can:

1. Describe **identifying features** for the five kingdoms
2. Describe, where appropriate, **significant taxa** within the five kingdoms

Unit content

Identifying features

Monera: single-celled,prokaryotic.

Protista: single-celled, eukaryotic.

Animalia: eukaryotic, multi-cellular, no cell wall, autrophic

Plantae: multicellular, cell wall, photosynthetic

Fungi: eukaryotic, cell-wall non-cellulose

Significant taxa

Monera: Bacteria.

Protista: Algae and slime-moulds, Ciliophora, Rhizopoda, Zoomastigophora and Apicomplexa, Dinoflagellata, Euglenophyta, Chlorophyta, Phaeophyta, Rhodophyta and Myxomycota

Animalia: Cnidaria, Platyhelminthes, Nematoda, Annelida, Mollusca, Arthropoda, Echinodermata and Chordata, Pisces, Reptilia, Amphibia, Aves and Mammalia

Plantae: Bryophyta e.g. mosses and liverworts, Filcinophyta e.g. ferns, Gymneophyta e.g. conifers and Angiospermophyta (flowering plants) including monocotyledons and dicotyledons,

Fungi: Zygomycota, Ascomycota and Basidiomycota

Outcome 4 Be able to use classification skills

Assessment Criteria
The learner can:
1. Select **identification keys** for given organisms
2. Use **identification** keys to the level of **species** from each significant taxon
3. Develop **dichotomous keys**

Unit content

Identification keys
Dichotomous keys, random access, multi-access, pictorial

Identification of species
Utilise appropriate keys to identify species, for example a dichotomous to identify ferns to species level

Dichotomous keys
Create keys to identify species

Notes for guidance

The ability to identify organisms to species level accurately is an important factor for those involved in all aspects of countryside management. For example, in carrying out surveys, habitat management, and engaging others in environmental education and interpretation.

This unit is designed to introduce the learner to classification methods and the knowledge and skills to identify organisms to species level. Learners will also gain an understanding of how the rules of classification have developed and utilise identification methods in a practical setting.

Outcomes 1 and 2 allow utilisation of the methods of classification, its development and the rules that apply to communicate this information around the world. Learners will be encouraged to explore the diversity of organisms inhabiting the environment and identify them according to their similarities.

In Outcomes 3 and 4 learners will be taught how to identify organisms using a range of methods. They will also develop skills to enable them to select appropriate means of identification to determine species within a range of different habitats.

This unit lends itself to a variety of teaching techniques and it is expected that as well as formal lectures, learners will benefit from a range of practical tasks, site visits and guest lectures. For example, activities such as field-work surveys and undertaking guided walks could be employed.

References

Books

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Rose F and O'Reilly C (2006) *The Wild Flower Key*: *How to Identify Wild Plants*, *Trees and Shrubs in Britain and Ireland* (Frederick Warne) ISBN 0723251754
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Tilling S (1987) *A Key to the Major Groups of British Terrestrial Invertebrates* (Field Studies Council) ISBN 1851531882

Unit 331 Understanding Principles of Forest Recreation

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of forest recreation and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will develop an appreciation of the benefits to society of forest recreation provision and be able to evaluate the factors that influence this provision. The potential problems and constraints associated with multiple use management will be examined, as well as development considerations. The learner will also be able to plan and promote recreational activities and provision.

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Understand forest recreation activities
2. Understand forest recreation planning, development and promotion
3. Be able to plan forest recreational activities.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU22 Construct, maintain and repair boundaries and access points
CU23 Construct, maintain and repair paths and related structures
CU24 Install, maintain and repair site furniture and structures
CU96 Develop, negotiate and agree proposals to offer services and products

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 331 Understanding Principles of Forest Recreation

Outcome 1 Understand forest recreation activities

Assessment Criteria

The learner can:

1. Explain the **impact on society** of forest recreation provision
2. Evaluate forest **recreation activities**
3. Discuss **factors that influence** the use of forests for recreation
4. Discuss potential **problems and constraints** to forest recreation provision

Unit content

Impact on society

Social (recreation opportunities, ecological awareness, education), economic (for example local investment, employment, property values) environmental (for example correct management, increased planting)

Recreation activities

Walking, cycling, picnics, horse riding, nature watching, motor sports, sporting (game/wildlife activities), education, orienteering, archery, camping, fishing, guided tours, nature walks, nature talks, conservation work, short courses

Factors that influence

Local area, local population, facilities, access, maintenance, disposable income, promotion
Impact of ownership and management objectives on recreational potential

Problems and constraints

Land availability, land owners, health and safety, Local Planning Authority, normal site management, requirements of different users, access and parking, damage to forest areas, litter pollution, fire risk through public access

Unit 331 Understanding Principles of Forest Recreation

Outcome 2 Understand forest recreation planning, development and promotion

Assessment Criteria

The learner can:

1. Describe appropriate **design considerations** to promote the use of forests for recreation
2. Discuss the **physical** and **financial considerations** when planning forest recreation
3. Summarise current **legislation** relevant to forest recreation
4. Evaluate methods of **promoting** forest recreation.

Unit content

Design considerations

Current use, current facilities, current flora and fauna, effect on current management, likely demand, public access, local population, public consultation, environmental impact, increased public access, areas requiring special measures, dangerous areas

Physical considerations

Topography, soil type, water courses, wildlife, plants, crop species, crop age, crop density, current management plans, public roads, internal access, car parking

Financial considerations

Financial viability, investment, grants, income, costs

Legislation

Countryside and Rights of Way Act 2000, The Disability Discrimination Act 2005, Wildlife and Countryside Act 1981, Occupiers Liability Act 1984, The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, The Adventure Activities Licensing Regulations 2004, The Activity centres (Young Persons' Safety) Act 1995, Health and Safety at Work etc Act 1974, Health and Safety (First Aid) Regulations 1981, local planning authority

Promotion

Advertising, events (e.g. walks, competitions), sponsorship, schools, websites, media involvement, local engagement

Unit 331 Understanding Principles of Forest Recreation

Outcome 3 Be able to plan forest recreational activities

Assessment Criteria

The learner can:

1. Select appropriate forest **recreational activities** for a given situation
2. Prepare a **plan** to deliver forest recreational provision
3. Produce **promotional material** for forest recreational provision

Unit content

Recreational activities

Walking, cycling, picnics, horse riding, nature watching, education, orienteering, archery, camping, fishing, guided tours, nature walks, nature talks, conservation work, short courses

Planning

Aims, objectives, plans, future management, facility provision, structures, staffing, funding

Promotional material

Flyers, posters, leaflets, guides, presentations, website, artwork, interpretation board

Unit 331 Understanding Principles of Forest Recreation

Notes for guidance

This unit is designed to provide the learner with knowledge and skills required to prepare and plan forest recreational activities. Learners will develop an understanding of the methods of promoting and marketing recreational activities together with greater appreciation of the benefits that forest recreation can bring to society. The unit should cover a wide range of possible activities and potential sites.

Throughout the unit the emphasis should be on safe working and sustainability. It is expected that learners will be aware of safe working practices are familiar with accepted practices and behaviours within the context in which they are working. The importance of sustainable practices should be woven into the delivery throughout.

In Outcome 1, the leaner will be required to understand and evaluate the different activities available for forest recreation provision. This outcome will require some formal delivery but should also be delivered through site visits (e.g. to current forest recreation schemes) and learner research into schemes currently in operation locally, nationally and globally. Learners should develop an understanding of the impact forest recreation provision has on society and increase their appreciation of the factors that influence the use of schemes. Developing an understanding of the problems and constraints that may be faced when setting up forest recreation provision, will assist in achieving outcome 2.

Outcome 2 covers aspects relevant to preparing for the implementation of forest recreation activities. It is anticipated that the delivery of this unit will be through formal lectures and discussion, but it would be beneficial to have visiting expert speakers to add relevance to the subject particularly those that have been involved in planning and implementing recreation activities. Learners will develop their knowledge of legislation relevant to forest recreation and opportunities available for successful promotion of planned activities. An appreciation of financial viability of activities coupled with local and nationally available funding opportunities will also be required.

In Outcome 3, the learner will be able to put into practice knowledge gained from the other learning outcomes. This outcome will require some formal delivery but it is expected that most will be delivered through supervised classroom activities and directed work. Learners will assess sites for recreation opportunities, plan for their implementation and produce material that could be used to promote relevant activities.

This unit aims to extend the learners knowledge and skills involved with providing forest recreation. Emphasis should be placed upon the importance of planning and appreciating the needs and requirements of any potential users of the forest recreation provision. It is important that the learner understands current legislation and funding opportunities in relation to forest recreation provision.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner. Teaching would also benefit from visits to a variety of establishments to add depth to the learner experience and put practices into context.

It is accepted that formal lectures will be necessary at level 3 but for this unit it is recommended that they are they are linked directly with interactive lessons in a real environment. Learners must be given the opportunity to deal with a range of activities in different situations that reflect current industry trends.

References

Books

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Hibberd B. 1989. *Urban Forestry Practice*. The Stationery Office Books. ISBN 0117102733

McCool S and Moisey R. 2001. *Tourism, Recreation and Sustainability: Linking Culture and the Environment*. CABI Publishing. ISBN 0851995055

Journals

Forestry and British Timber

Websites

www.forestry.gov.uk	The Forestry Commission
www.hse.gov.uk	The Health and Safety Executive

Unit 332 Livestock Use in Conservation Management

Level: 3

Credit value: 10

Unit aim

This unit aims to provide learners with an understanding of the principles of livestock use in conservation management and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

Britain is a historic farming nation and grazing has shaped landscapes creating a diverse range of habitats and promoting biodiversity. Conservation grazing utilises grazing animals to manage sites of conservation interest and to promote biodiversity. This unit will consider how agricultural practices interact with biodiversity and aims to develop the learner's understanding of how employing conservation grazing practices can promote an ecological approach to sustainable management for areas of conservation interest.

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Know the principles of conservation grazing
2. Understand how conservation grazing increases biodiversity and promotes sustainable management for a variety of habitats
3. Understand strengths and weaknesses for a range of conservation grazing strategies for a range of businesses.

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU87.1 Carry out habitat management

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 332 Livestock use in Conservation Management

Outcome 1 Know the principles of conservation grazing.

Assessment Criteria

The learner can:

1. Describe the **principles of conservation grazing**
2. Identify suitable **animal species and breeds** for use in conservation grazing projects for a range of **habitats**.
3. State **factors that may influence the success of conservation grazing projects**
4. Recognise **factors to maintain the health and welfare of conservation grazing species.**

Unit content

Principles of conservation grazing

Promote biodiversity, interaction between flora and fauna, ecological approach, naturalistic approach, conservation of habitats, low and high intensity habitat management

Animal species and breeds

Sheep, cattle, ponies, goats
Appropriate breeds for specific habitats for example Soay Sheep for cliff tops or chalk grasslands, Dartmoor ponies for moorland, Native Goats for scrub and steep slopes, Belted Galloways in New Forest

Habitats

Upland, lowland, coastal, rural, semi-rural

Factors that may influence the success of conservation grazing projects

Climate, suitability of species, management of animals, accessibility, legislation, biodiversity action plans, classification of sites (for example Sites of Special Scientific Interest (SSSI), interactions between animals, human interaction, stocking density

Factors to maintain the health and welfare of conservation grazing species

Abiotic factors (climate, soil, temperature, location, resources), biotic factors (flora and fauna, predation, grazing, water sources, competition), nutrition (main food sources, supplementary feeding), reproduction, prophylactic health care (parasite control, vaccination, foot care, dental care), welfare, five animal needs/freedoms

Unit 332 Livestock use in Conservation Management

Outcome 2 Understand how conservation grazing increases biodiversity and promotes sustainable management for a variety of habitats.

Assessment Criteria

The learner can:

1. Discuss the **interaction between flora and fauna** that occurs in conservation grazing
2. Describe how the interaction between flora and fauna promotes **sustainable management** of a variety of habitats

Unit content

Interaction between flora and fauna

Effects of grazing on grass and flower growth, seed dispersal and distribution, animal role in selective grazing, eating unwanted species, enabling growth and development of desirable species, manuring and improved fertility of grazed area

Sustainable management

Impact on biodiversity, reduction in pesticide and fertiliser use, integration into individual, local and national conservation and biodiversity action plans

Unit 332 Livestock use in Conservation Management

Outcome 3 Understand strengths and weaknesses for a range of conservation grazing strategies for a range of businesses

Assessment Criteria

The learner can:

1. Evaluate a range of commonly employed **conservation strategies**
2. Identify the **reasons for using conservation grazing** as a component of a habitat management plan
3. Appraise the use of conservation grazing as a habitat management tool for a **range of businesses**.

Unit content

Conservation strategies

Low intensity, high intensity, seasonality, non-intervention, naturalistic grazing, precise conservation grazing, environmental stewardship, integration into conservation and site management plans

Reasons for using conservation grazing

Reasons: sustainable management, promote biodiversity, tourism, local and national conservation agendas, individual policy, aesthetic, public perception, reduce habitat damage

Range of businesses

Businesses as appropriate to the learner's setting e.g. those involved with conservation sites, agriculture, urban environments

Unit 332 Livestock use in Conservation Management

Notes for guidance

This unit will consider how agricultural practices interact with biodiversity and aims to develop the learner's understanding of how employing conservation grazing practices can promote an ecological approach to sustainable management for areas of conservation interest.

This unit should consider a representative range of livestock species (such as cattle, sheep, ponies, goats) and breeds appropriate to a range of habitats. It should include access for learners to practical visits to organisations employing livestock use in conservation management to enable evaluation of the strategies employed and the effect on biodiversity. Throughout the unit emphasis should be placed on the consideration of animal health and welfare.

The unit should emphasize the development of underpinning knowledge to enable formulation of conservation management strategies for a range of livestock species and habitat. Safe working practices and compliance with relevant legislation, codes of practice, biodiversity action plans and health and safety should be highlighted.

In Outcome 1, the learner will develop their knowledge of how livestock can be utilised as an effective strategy for conservation management for a range of habitats. Emphasis should be placed on the selection of appropriate animal species and breeds for a range of habitats and learners will need to demonstrate a thorough understanding of the factors that affect maintenance of animal health and welfare. It is envisaged that delivery will be formal, but should be complimented by practical visits, videos, guest speakers and links with local organisations that utilise conservation grazing.

In Outcome 2, learners will be able to describe the interaction that occurs during conservation grazing between flora and fauna and identify short and long term impact on a variety of habitats. Learners should be encouraged to analyse the welfare, ethical and ecological value of livestock use in a range of conservation strategies. Again, delivery is expected to be formal but should be complimented by interactive activities, site visits, videos and case studies to enable the learner to explore current utilisation of livestock for conservation management.

Outcome 3 enables the learner to build upon their foundation knowledge and to rationalise and appraise conservation grazing use in habitat management plans. Learners should be able to identify strengths and weaknesses within conservation grazing management plans from case studies. Conservation management plans at individual organisation, local and national level should be considered for short and long term utilisation. Delivery is expected to be formal and practical, but should incorporate opportunities for interactive activities, site visits, videos and case studies to enable the learner to explore current utilisation of livestock for conservation management. Learners should be encouraged, where possible, to contribute to conservation management plans in local organisations. This could be via production of a potential conservation plan or an information leaflet to promote conservation grazing to the public.

Learners working towards Level 3 should have underpinning knowledge of reproduction, digestion and nutrition for a wide range of animal species ecological concepts and knowledge of livestock husbandry. The unit aims to build upon this foundation knowledge to consider the use of livestock within specific conservation management plans for a variety of habitats. Learners should be exposed to practical environments employing different animal species and conservation methodologies to enable consideration of how different systems and appropriate strategies are employed successfully. It is important that the learner understands the influence of legislation, Government Departments, health and safety and bio security when utilising livestock for conservation management.

Centres are encouraged to introduce employers and specific professionals from industry to provide interesting and relevant information to the learner, and mutual interaction would be valuable for learners. Teaching would also benefit from visits to a range of habitats employing a variety of conservation grazing strategies to add depth to the learner experience.

It is accepted that formal lectures will be necessary at Level 3 but for this unit it is recommended that this is complimented with practical opportunities and interactive sessions in a real environment.

References

Books

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Journals

Journal of Agriculture
Agriculture, Ecosystems and Environment
Farm Business
Farmers Weekly
Sustainable Development

Websites

www.defra.gov.uk	The Department for Environmental, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.farminguk.com	Farming UK
www.ukagriculture.com	UK Agriculture
www.wildlifetrust.org.uk	The Wildlife Trust
www.nationalparks.gov.uk	National Parks
www.grazinganimalsproject.org.uk	The Grazing Animals Project

Unit 333 Undertaking Environmental Interpretation in Land-based

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to environmental interpretation skills and understanding and how this 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.

Learning outcomes

There are **four** learning outcomes to this unit. The learners will:

1. Know the role of environmental interpretation and media
2. Be able to produce an interpretive plan for a site
3. Be able to design a relevant piece of themed environmental interpretation
4. Understand how to evaluate the effectiveness of environmental interpretation

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC1.1 Communicate effectively with the public and others
EC6 Communicate environmental information
EC25 Research and plan environmental interpretations
EC26 Prepare and deliver interpretive and educational activities
EC27 Produce interpretive media

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 333 Undertaking Environmental Interpretation in Land-based

Outcome 1 Know the role of environmental interpretation and media

Assessment Criteria

The learner can:

1. Describe the **aims, purpose and benefits** of environmental interpretation
2. Outline **media** that can be used to interpret selected sites

Unit content

Aims purpose and benefits

Origination of concept of interpretation, principles of interpretation (Tilden's six principles, Beck and Cables principles), reasons for interpretation, differences between interpretation and instruction, types of audience (captive, noncaptive, age, background, interests) and setting (for example country park, nature reserve, reservoir, nature walk, forest, botanical gardens, zoo)

Media

Guided interpretation (guided trails, tours, talks, demonstrations, role play, living history demonstrations, puppet shows, use of visual aids), self guided interpretation (interpretive panels and boards, indoor and outdoor exhibits, signage, information centre, audio headsets, guide books, leaflets, maps, touch tables, DVDs, photographs), reasons for using guided or self guided interpretation methods

Unit 333 Undertaking Environmental Interpretation in Land-based

Outcome 2 Be able to produce an interpretive plan for a site

Assessment Criteria

The learner can:

1. Carry out **interpretive planning**
2. Explain features of effective **environmental interpretation** planning

Unit content

Interpretive planning

Planning interpretive objectives, typical visitor numbers and profile (age, interest, prior knowledge, language, educational level, reason for visiting), group sizes and dynamics, planning interpretation to meet the needs of different visitor types, consideration of relevance to setting, selection of appropriate media, consideration of accessibility, planning guided and self guided interpretive activities, script/talk/story board planning, planning walks/trails, planning interpretive media (content, location and layout), planning themes and making interpretation interesting, relevant, enjoyable and organised

Environmental interpretation

Self guided interpretation: use of design principles, organisation and layout, size of text, text style, use of pictures and photographs, use of colour, interactive features, selection of construction materials, advantages and disadvantages of different construction materials

Guided interpretation: organisation of content, presentation skills, use of audio visual aids, use of props and resources, clarity of presentation

Unit 333 Undertaking Environmental Interpretation in Land-based

Outcome 3 Be able to design a relevant piece of themed environmental interpretation

Assessment Criteria

The learner can:

1. Describe **processes** that make an **effective** piece of themed environmental interpretation
2. Carry out **themed environmental interpretation** for a given site

Unit content

Processes

Planning, use of themed interpretation, building interpretive media around a theme, consideration of site layout and accessibility, consideration of visitor types and numbers, group sizes and dynamics, construction of signage, displays and exhibits, use of design principles, use of pictures and photographs, use of methods to protect media (for example use of roof or shelter for outside material, use of preservatives, selection of durable construction material)

Effective

Meets objectives for interpretation, conveys environmental information in an interesting, relevant, enjoyable and organised way, accessible for all visitors (physically and conceptually), meets safety requirements, within budget

Themed environmental interpretation

Self guided interpretation: use of design principles, organisation and layout, size of text, text style, use of pictures and photographs, use of colour, interactive features, selection of construction materials, advantages and disadvantages of different construction materials
Guided interpretation: organisation of content, presentation skills, use of audio visual aids, use of props and resources, clarity of presentation
Importance of selecting themes, identification of themes, use of thematic map in planning walks/trails, using themes for verbal and written media

Unit 333 Undertaking Environmental Interpretation in Land-based

Outcome 4 Understand how to evaluate the effectiveness of environmental interpretation

Assessment Criteria

The learner can:

1. Explain **techniques** used to evaluate selected environmental interpretation
2. **Evaluate** environmental interpretation

Unit content

Techniques

Self evaluation (using criteria, checklist), evaluation by others (questionnaire, interview, observation, direct and indirect questioning, open and closed questions, scoring and grading), when to carry out evaluation (before, during and after interpretation), how to us evaluation to suggest recommendations and improvements

Evaluate

For meeting objectives, for conveying environmental information in an interesting, relevant, enjoyable and organised way, accessibility for all visitors (physically and conceptually), meeting safety requirements, cost effectiveness, management implications, sustainability

Unit 333 Undertaking Environmental Interpretation in Land-based

Notes for guidance

This unit introduces learners to the principles and benefits of environmental interpretation, and enables them to develop practical skills in planning, carrying out and evaluating environmental interpretations.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible.

For Outcome 1 delivery is likely to include visits to a range of settings to enable learners to witness the plethora of environmental interpretive media and techniques in operation. Some classroom based and research activity is also anticipated, to enable learners to understand the concepts of interpretation and how it differs from instruction. A guest speaker involved in leading environmental interpretation would also help students to gain an understanding of the elements of planning involved.

For Outcome 2 learners need to have the opportunity to develop practical skills in producing environmental interpretations. Learners will need to have supervised practice in developing the skills in leading a guided interpretation, as well as the construction skills in creating a self guided one. Delivery will also need to include consideration of themes, their importance and how they can be determined. It would be helpful for this to be delivered after the visits for outcome one have taken place, so that learners have an understanding of the types of media and their relative advantages and disadvantages.

For Outcome 3, delivery is likely be closely linked to Outcome 2. Outcome 3 provides much of the underpinning theory for the production of the themed environmental interpretation for Outcome 2, and as such may be best delivered in parallel.

For Outcome 4 learners will need to gain skills in evaluating environmental interpretation, which may include classroom based delivery and discussion. It will be most helpful if learners have the opportunity to practice evaluation of professionally produced materials, those of other learners and their own. This will enable valuable evaluative skills to be effectively developed.

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Tilden F (1970) *Interpreting our Heritage* (University of South Carolina Press) ISBN 0807840165
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Websites

www.heritageinterpretation.org.uk Association for Heritage Interpretation

www.interpnet.com	National Association for Interpretation
www.scotinterpnet.org.uk	Scottish Interpretors Network
www.zoolex.org	Zoolex Zoo Design Organisation

Unit 334 Understanding Heathland Habitat Management

Level: 3

Credit value: 10

Unit aim
This unit aims to introduce learners to the skills and knowledge in heathland 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.

The unit ensures that the learner is given the necessary knowledge, experience and management skills to enable them to manage an area of heathland effectively. Assessment methods include the presentation of a management plan, and practical skills assessment.

Learning outcomes
There are **four** learning outcomes to this unit. The learners will:
1. Understand the origins and ecology of heathlands
2. Know potential threats to the existence of heathlands
3. Know appropriate management techniques for heathland sites
4. Be able to plan and carry out practical heathland management

Guided learning hours
It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards
CU87 Carry out habitat management work
CU88 Manage habitats

Endorsement of the unit by a sector or other appropriate body
This unit is endorsed by Lantra SSC.

Assessment and grading
This unit will be assessed by:
- An assignment covering practical skills and underpinning knowledge.

Unit 334 Understanding Heathland Habitat Management

Outcome 1 Understand the origins and ecology of heathlands

Assessment Criteria

The learner can:

1. Explain the **historical development** of heathlands
2. Outline the **ecology** of heathlands
3. Explain key elements of **heathland species**
4. Discuss the **ecology and habitat requirement** of one heathland species

Unit content

Historical development

Extent of forested area in post-glacial Britain, key historical developments: stone age clearance of woodland, heathland expansion during Mesolithic period and Bronze Age, effects of settlement and deforestation in Medieval and Napoleonic times, effects of technology and transport during the 19th and early 20th century, expansion of urban areas, afforestation and agricultural developments in late 20th and early 21st century, recent recognition of importance of heathland conservation

Ecology

Definition of heathland, difference between lowland heath and moorland (relevant models for example plant succession models, continuous woodland model), biotic and abiotic factors relating to the existence and distribution of heathlands, formation of podsolic soils, wet and dry heath communities, plant adaptation to low levels of nitrogen, characteristic heathland species (plants, invertebrates, amphibians, reptiles, mammals and birds), stages of growth for heathers and gorses

Heathland species

Dwarf shrubs (for example heather, bell heather, cross-leaved heath), gorses, mosses (for example *Sphagnum*), grasses (for example purple moor-grass, Bristle bent grass, Wavy hair-grass), bracken, Bog orchid, Marsh gentian, Spiked speedwell

Ecology and habitat requirement

Characteristics of heathland habitats (dry heath, humid heath, wet heath, mire, grassland), factors affecting heathland community development (soil nutrient availability, soil moisture, frost, precipitation patterns)

Unit 334 Understanding Heathland Habitat Management

Outcome 2 Know potential threats to the existence of heathlands

Assessment Criteria

The learner can:

1. Outline selected **potential threats** to existing heathland
2. Describe the **impact of potential threats** to existing heathland species and communities
3. State the **protection regulations** protecting heathlands

Unit content

Potential threats

Tree invasion, bracken invasion, grassland replacing heather, unmanaged fire, mire drying, erosion, pollution, recreational use (for example walking, horse riding), heathland loss due to road and housing development

Impact of potential threats

Damage or destruction of habitats, reduction in species numbers and diversity, loss of rare plants, loss of dependent species, accelerated succession, soil enrichment leading to non-heathland vegetation

Protection regulations

Relevant legislation, for example Wildlife and Countryside Act 1981, Countryside and Rights of Way Directive 2000, Natural Environment and Rural Communities Act 2006, The Heather and Grass Burning Regulations 2008, designation as Sites of Special Scientific Interest (SSSI), Special Protection Areas (SPAs)

Unit 334 Understanding Heathland Habitat Management

Outcome 3 Know appropriate management techniques for heathland sites

Assessment Criteria

The learner can:

3. Identify selected **techniques** available for heathland management
4. Describe **ecological and cultural objectives** for heathland management
5. Outline **conflicting management requirements** for promoting heathland diversity
6. State how arisings can be **disposed of ecologically**

Unit content

Techniques

Scrub control (for example clear trees and scrub, treat regeneration, weed seedlings), grass control (for example scarify, mowing, grazing regimes, stocking rate density, choice of grazing livestock), heather management (for example burning, cut and collect), gorse management (for example coppicing, burning), bracken control (for example use of herbicide, cutting), timing and importance of timing of operations

Ecological objectives

Objectives relating to site ecology, for example management for selected species of importance, improvements to species biodiversity, objectives for species recovery, heathland restoration, maintaining existing habitat, reducing fragmentation

Cultural objectives

Objectives relating to landscape character, historical features, archaeology, local community and user interests, cultural and amenity value

Conflicting management requirements

Identification of conflicts, actions to protect one species which may reduce another, methods used to prioritise species, species significance (ecologically or culturally), public opinion, cost factors, funding constraints, sustainability, regulations

Ecological disposal

Reasons for removing arisals (to prevent litter formation, to prevent nutrient retention, to discourage further succession), removal in saleable lengths, use of woodchipper or specialist baler to improve saleability of unmarketable timber

Unit 334 Understanding Heathland Habitat Management

Outcome 4 Be able to plan and carry out practical heathland management

Assessment Criteria

The learner can:

1. Plan for, and carry out practical **heathland habitat management** to achieve given objectives
2. **Evaluate** selected practical heathland habitat management
3. Outline the recommendations for improving **management plans**
4. Conduct a **risk assessment** of practical activity
5. Interpret a **management plan**

Unit content

Heathland habitat management

Scrub control (for example clear trees and scrub, treat regeneration, weed seedlings), grass control (for example scarify, mowing, grazing regimes, stocking rate density, choice of grazing livestock), heather management (for example burning, cut and collect), gorse management (for example coppicing, burning), bracken control (for example cutting), timing and importance of timing of operations, use of equipment and machinery, use of Personal Protective Equipment (PPE)

Evaluate

For meeting objectives, for improvements to heathland habitat, for improvements to conservation value, for timeliness of operation, sustainability of working practices, use of safe working practices, cost and funding implications, compliance with regulations

Management plan

Objectives, methods and techniques, prioritisation of actions, timing of actions, balancing conflicting requirements, reviewing and recommending alternative management options, methods of evaluating and determining success

Risk assessment

Assessment of likelihood of risk, severity of risk, methods to mitigate risk, assessment of risks to self and others

Unit 334 Understanding Heathland Habitat Management

Notes on guidance

This unit is designed to provide learners with an understanding of the importance of heathland habitats for conservation, their historical development and the careful management required to maintain their characteristics. Learners will also gain the opportunity to develop their practical skills in heathland habitat management.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible and practical activities should be planned to minimise disruption to habitats and their species. Whichever delivery methods are used, it is essential that tutors stress that a number of heathland species are protected by law, and that licences from Natural England are required to handle them.

For Outcome 1, delivery is likely to be a mix of classroom activity and research relating to the development of heathland. It is anticipated that the ecology of heathland species and the characteristics of different heathland habitat categories will be explored through visits to a range of heathland areas. It is important that learners gain an understanding of the relationship between human activity through the ages and heathland development and distribution. The development of learners' identification of key elements of heathland species is likely to require learners to practice identifications. Where possible this should be carried out by viewing live specimens in situ, or alternatively using high quality photographs.

For Outcome 2, learners need to gain an understanding of the potential threats to heathland and their impact. Delivery could be assisted by visits to heathland areas, particularly those where threats or their impact are in evidence. A guest speaker, such as a countryside manager of a heathland area, could explain how they manage the area to mitigate the impact of threats. Learners also need to gain an overview of the relevant legislation and regulations, including the designation of heathland areas as SSSI.

Delivery of Outcomes 3 and 4 is likely to be linked.

For Outcome 3, delivery is likely to include practical activity to enable learners to identify management techniques, their objectives and impact. Delivery also needs to explore the types of objectives of importance in heathland habitat management, and the potentially conflicting management requirements in species protection. A guest speaker involved in heathland management could help to articulate these potential conflicts, and how they reach a decision about which species to prioritise.

For Outcome 4, learners will need supervised access to a heathland habitat to carry out practical management activity. Given the careful management planning of most UK heathland, 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 heath and safety should be stressed, as should the importance of minimising environmental impact through the habitat management activities.

References

Books

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Websites

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www.dardni.gov.uk	Department of Agriculture and Rural Development (NI)
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk	Environment Agency
www.hants.org.uk/newforest	The New Forest
www.jncc.gov.uk	Joint Nature Conservation Committee
www.naturalengland.org.uk	Natural England
www.ukbap.org.uk	UK Biodiversity Action Plan
www.wildlifetrusts.org	County Wildlife Trusts

Unit 335 Understanding Freshwater and Wetland Management

Level: 3

Credit value: 10

Unit aim

This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

The learner will investigate the full range of freshwater habitats found in the UK (lentic, lotic and wetland) and their ecology. They will undertake practical surveys of freshwater habitats and use their results to evaluate the conservation importance of the sites and undertake practical management of a freshwater site for the conservation management of freshwater habitats. This unit is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Learning outcomes

There are **four** learning outcomes to this unit. The learners will:

1. Understand ecological characteristics of lentic freshwater habitats
2. Understand ecological characteristics of lotic freshwater habitats
3. Understand ecological characteristics of wetland habitats
4. Be able to carry out freshwater habitat conservation management activities

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC2 Survey and report on the condition of the environment
EC23 Prepare, conduct and report on field surveys
CU87 Carry out habitat management work
EC3 Maintain and improve channel capacity by manual operations

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 335 Understanding Freshwater and Wetland Management

Outcome 1 Understand ecological characteristics of lentic freshwater habitats

Assessment Criteria

The learner can:

1. **Safely** carry out a **survey** of the **ecological characteristics** of a selected lentic freshwater habitat to meet given objectives
2. **Record and interpret** lentic freshwater data collected

Range

Lentic freshwater habitat: freshwater habitat in standing or still water (lake, pond, pool, reservoir, gravel pit)

Unit content

Safely

In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

Survey

Plan survey: identify objectives, plan survey method, location, timing, identify equipment and resources required, possible sources of error, methods to minimise errors
Species surveying: species identification, for example using keys, guides, guide books, use of appropriate equipment, use of survey methods for example National Pond Survey, pond dipping, netting, National Amphibian and Reptile Recording Scheme
Environmental surveying: climate surveying, water surveying, surveying physical characteristics

Ecological characteristics

Abiotic characteristics: physical characteristics (size: length, width, depth, volume, perimeter; shape, turbidity, location and catchment), chemical characteristics (pH, nitrates, phosphates, dissolved oxygen, Biochemical Oxygen Demand), water clarity
Biotic characteristics: bacteria, algae, invertebrates, fish, amphibians, reptiles, birds, mammals, vegetation

Record and interpret

Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report), interpretation: comparison with survey objectives, draw conclusions

Unit 335 Understanding Freshwater and Wetland Management

Outcome 2 Understand ecological characteristics of lotic freshwater habitats

Assessment Criteria

The learner can:

1. **Safely** carry out a **survey** of the **ecological characteristics** of a selected lotic freshwater habitat to meet given objectives
2. **Record and interpret** lotic freshwater data collected

Range

Lotic freshwater habitat: Freshwater habitat in moving water (river, stream, spring)

Unit content

Safely

In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

Survey

Plan survey: identify objectives, plan survey method and location, timing of survey, identify equipment and resources required, possible sources of error, methods to minimise errors

Surveying: Use of River Habitat Survey (method of surveying and recording, use of spot checks to record predominant channel, bank and river corridor features, identifying channel vegetation types for example use of keys, guides), use of Waterways Breeding Bird Survey (method of surveying and recording, use of transects, species identification)

Ecological characteristics

Abiotic factors: physical characteristics (river channel form: long profile, cross sectional shape, planform; flow, breadth, depth, particle type and size, catchment area and characteristics, riparian area characteristics, bank type and features, river features for example meanders, pools, riffles, oxbows); climate characteristics (light, temperature, rainfall); chemical characteristics (pH, nitrates, phosphates, dissolved oxygen, Biochemical Oxygen Demand)

Biotic characteristics: bacteria, algae, invertebrates, fish, amphibians, reptiles, birds, mammals, vegetation

Record and interpret

Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report), interpretation: comparison with survey objectives, draw conclusions

Unit 335 Understanding Freshwater and Wetland Management

Outcome 3 Understand ecological characteristics of wetland habitats

Assessment Criteria

The learner can:

1. **Safely** carry out a **survey** of the **ecological characteristics** of a selected wetland freshwater habitat to meet given objectives, recording and interpreting collected data
2. **Record and interpret** wetland freshwater data collected
3. Outline possible causes of **data collection error**

Range

Wetland freshwater habitat: as defined by Ramsar international wetland conservation treaty

Unit content

Safely

In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

Survey

Plan survey: identify objectives, plan survey method and location, identify equipment and resources required, possible sources of error, methods to minimise errors

Species surveying: Wetland Bird Survey, Phase 1/ National Vegetation Classification (NVC) methodology, species identification, for example using keys, guide books, use of appropriate equipment, use of line transects and quadrats

Environmental surveying: climate surveying, water surveying, surveying physical characteristics

Ecological characteristics

Abiotic characteristics: physical characteristics (size: length, width, area, perimeter, depth, shape, location, catchment, flow), chemical characteristics (pH, nitrates, phosphates, dissolved oxygen, Biochemical Oxygen Demand, salt content)

Biotic characteristics: bacteria, algae, invertebrates, fish, amphibians, reptiles, birds, mammals, vegetation

Convention on Wetlands (Ramsar) sites, characteristics and importance

Record and interpret

Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report), interpretation: comparison with survey objectives, draw conclusions

Data collection error

Collection errors, recording errors, identification errors, sampling errors, calculation errors

Unit 335 Understanding Freshwater and Wetland Management

Outcome 4 Be able to carry out freshwater habitat conservation management activities

Assessment Criteria

The learner can:

1. **Safely** carry out **practical management** on a freshwater site to meet given specifications
2. Describe the use of **conservation management techniques**
3. Recommend **improvements** to freshwater habitat management

Unit content

Safely

In accordance with Health and Safety at Work etc Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others, identification and avoidance of risks specific to freshwater sites

Practical management/conservation management techniques

Use of habitat action plans and species action plans

Lentic: lake/pond creation and/or management (for example clearing, planting, managing succession, managing invasive species)

Lotic: restoration of natural features, creation of off stream ponds, river margin manipulation, channel enhancement (for example dredging, desilting), bank protection and enhancement, planting, footpath creation and maintenance, improvement of habitats for specific species (for example construction of otter holts, bat boxes)

Wetlands: use of grazing (livestock choice, stocking density, grazing regime), water level management, grassland management, reed bed planting and management, scrub and tree management, visitor management (for example reducing disturbance to winter wildfowl)

Improvements

For better meeting objectives, for meeting new objectives, for improvements to freshwater habitat, for improvements to biodiversity and conservation value, for timeliness of operation, sustainability of working practices, environmental impact, use of safe working practices

Unit 335 Understanding Freshwater and Wetland Management

Notes for guidance

This unit is designed to provide learners with an understanding of the range of freshwater habitats and their characteristics, together with the species they support. Learners will also gain practical skills in surveying the different types of freshwater and wetland habitat, and in practical habitat management.

As learners will be engaged in practical activity in and near water there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible, and practical activities should be planned to minimise disruption to habitats and their species. It is also important to gain the landowner's permission before undertaking surveying or habitat management activity.

For Outcome 1, learners need to gain an understanding of the characteristics of lentic habitats, and the types of survey that will inform future management and conservation planning and action. It is likely that delivery will include visits to a range of ponds, lakes and other features such as gravel pits, and it will be particularly useful if this includes habitats of very different sizes. Learners will need the opportunity to develop their practical surveying skills within a range of these habitats.

For Outcome 2, delivery is likely to include visits to a range of rivers, streams and springs, including learners gaining skills in practical surveying in a range of settings. It will be useful for learners to witness a river at different stages, for example near to its source contrasted with meanders further downstream. Learners will also need the opportunity to practice species identification using keys and guides.

For Outcome 3, learners will need to gain an understanding of the types of freshwater wetland habitat that exist in the UK. Given their significance, both in size and biodiversity it would be helpful for this to include case study and audio visual material based on The Broads, even if distance precludes a visit. Learners will need the opportunity to visit areas of wetland, and take part in practical surveying. A guest speaker may add interest, for example discussing grazing management on wetland areas.

For Outcome 4, learners will need supervised access to a range of freshwater habitats to carry out a variety of practical management tasks. The importance of heath and safety should be stressed, particularly given that such practical work will take place in or next to water, as should the importance of minimising environmental impact through the habitat management activities.

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www.bto.org.uk	British Trust for Ornithology
www.ceh.ac.uk	Centre for Ecology and Hydrology
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.wales.gov.uk	Welsh Assembly Government
www.scotland.gov.uk	Scottish Executive Environment and Rural Affairs Department
www.dardni.gov.uk	Department of Agriculture and Rural Affairs (Northern Ireland)
www.environment-agency.gov.uk	Environment Agency
www.greatfen.org	The Great Fen Project
www.hse.gov.uk	Health and Safety Executive
www.pondconservation.org.uk	Pond Conservation
www.ramsar.org	The Ramsar Convention on Wetlands
www.rspb.org	The Royal Society for the Protection of Birds
www.sepa.org.uk	Scottish Environment Protection Agency
www.therrc.co.uk	The River Restoration Centre
www.ukbap.org.uk	UK Biodiversity Action Plan
www.wwt.org.uk	Wildfowl and wetlands trust

Unit 336 Undertaking Urban Habitat Conservation

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to urban habitat conservation skills and knowledge 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.

The learner will investigate major types of urban terrestrial and aquatic habitats and ecological processes of importance to urban habitats. They will study problem areas of urban ecology such as pollution and invasive species and their impacts. They will explore principles and constraints involved in the management of urban habitats. The unit is designed primarily for learners in a centre-based setting looking to progress into the sector or onto further education.

Learning outcomes

There are **four** learning outcomes to this unit. The learners will:

1. Be able to survey the ecological characteristics of urban habitats
2. Understand ecological processes influencing urban habitats
3. Understand the problems caused by pollution and invasive species
4. Know the conservation value of urban habitats

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

EC2 Survey and report on the condition of the environment
EC23 Prepare, conduct and report on field surveys.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 336 Undertaking Urban Habitat Conservation

Outcome 1 Be able to survey the ecological characteristics of urban habitats

Assessment Criteria

The learner can:

1. **Plan** an urban habitat **survey**
2. Select appropriate **survey techniques and equipment**
3. **Safely** carry out urban terrestrial and aquatic habitat surveying
4. **Report on** the structures, features and ecosystem of an urban habitat

Range

Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

Unit content

Plan a survey

Identify objectives, plan survey method and location, identify equipment and resources required, possible sources of error, methods to minimise errors

Survey techniques and equipment

Species surveying: use of quadrat and transect methods, species identification, for example using keys, guide books, use of appropriate equipment, for example pitfall traps, sweep nets
Environmental surveying: climate surveying e.g. light, wind, temperature, rainfall, water surveying for example temperature, nitrate level, flow, clarity, soil sampling, for example soil characteristics, mineral content, water content

Safely

In accordance with Health and Safety at Work Act 1974, use of Personal Protective Equipment (PPE), completion of risk assessment, identification of hazards, methods to reduce risks, correct use of tools and equipment, consideration of safety of self and others

Report on

Record results, use of statistical analysis, presentation of results: quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report)

Unit 336 Undertaking Urban Habitat Conservation

Outcome 2 Understand ecological processes influencing urban habitats

Assessment Criteria

The learner can:

1. Explain **physical processes** affecting urban habitats
2. Explain **spatial processes** affecting urban habitats
3. Explain **biotic processes** affecting urban habitats

Range

Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

Unit content

Physical processes

Effect of climate and microclimate (rainfall, windspeed and prevailing direction, temperature, light, humidity), effect of soil (soil type, characteristics, mineral content, organic matter, water content), effect of man made physical processes, for example building, demolition, road creation, effects on water courses for example building on flood plains, creation of flood defences, sources of pollution

Spatial processes

Habitat fragmentation, edge effects, ecotones, metapopulation concept, linear habitats for example road verges, river banks, railway embankments

Biotic processes

Species adaptations to urban environments, urban food chains, predator and prey relationships, effects of introduction on non-native species, species dispersal, movement between habitats, human influence for example garden cultivations, pet keeping, species feeding

Unit 336 Undertaking Urban Habitat Conservation

Outcome 3 Understand the problems caused by pollution and invasive species

Assessment Criteria

The learner can:

1. Assess **problems** associated with **urban pollutants** and **invasive species**
2. Identify **management strategies** to counter urban pollutants and invasive species

Range

Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

Unit content

Problems

Changes to species balance and biodiversity (decline of some species, increase in other species), effects of toxic pollutants on species (physiological response, avoidance, bioaccumulation, trophic transfer)

Urban pollutants

Air and land pollutants (for example litter, heavy metals, particulates, sulphur dioxide, nitrogen oxide), water pollutants (for example nitrogen, oil, industrial and domestic effluents), other pollutants: light, noise, heat

Invasive species

Non-indigenous species that adversely affect the habitat being invaded/introduced into, characteristics of invasive species that enable them to outcompete indigenous species, for example rapid reproduction, high growth rate, high dispersal ability, adaptability to environmental conditions, examples of plant and animal invasive species for example Japanese knotweed, Giant hogweed, Oxford ragwort, grey squirrel, Topmouth Gudgeon, Canada goose, Sika deer

Management strategies

Invasive species reduction (for example for animals planned cull programmes, capture and release, for plants use of herbicides, weeding), introduction of competitor species, changes to habitats to favour non-invasive species, air, water and soil monitoring, pollution reduction and avoidance, compliance with legislation

Unit 336 Undertaking Urban Habitat Conservation

Outcome 4 Know the conservation value of urban habitats

Assessment Criteria

The learner can:

1. Describe the **conservation value** of a given urban habitat
2. Identify **differences** between urban and rural habitat conservation

Range

Urban habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a town or city

Rural habitat: habitat (either naturally formed or man made) supporting species of flora and fauna within a countryside environment

Unit content

Conservation value

Species (flora and fauna) presence and biodiversity, presence of specific or significant species (for example rare or endangered), value for amenity, recreation or educational use, importance for human quality of life

Differences

Management strategies, conservation objectives, other objectives (for example value for amenity, recreational or educational use), size and scale, species types and diversity, problems encountered, other land uses and conflicts, funding, community involvement

Unit 336 Undertaking Urban Habitat Conservation

Notes for guidance

Urban habitats were once believed to be primarily for human benefit, through amenity and recreational use. It is now understood that they are significant in their own right as habitats, providing a range of habitat types and food sources for many species. This unit is designed to provide learners with an understanding of the features of urban habitats and the factors affecting them, and to equip them with some practical surveying skills. As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible and practical activities should be planned to minimise disruption to habitats and their species.

For Outcome 1 delivery is likely to be predominantly practically based, with the opportunity to survey a range of urban habitats. This should include aquatic habitats, such as streams, rivers, ponds and canals as well as terrestrial habitats. It is important that delivery includes all aspects of completing a survey, from planning to reporting on results. Some classroom based delivery is likely to be required to enable learners to gain an understanding of statistical techniques and results presentation.

For Outcome 2 learners need to gain an understanding of the processes affecting urban habitats. Delivery is likely to include some classroom based activity and research in understanding the types of process which can affect habitats. It will be important to supplement this with visits, preferably to a range of urban habitats to explore the effects of different processes. This could be augmented by the use of audio visual materials to demonstrate the effects of different processes not evident in the local area.

For Outcome 3 delivery is likely to include learner research and classroom based activity to investigate the types of pollutants and invasive species and their effects on urban habitats and species biodiversity. Visits to urban habitats showing the effects of pollutants or invasive species would add interest. A guest speaker would also be of benefit, such as a head gardener describing management strategies to reduce invasive plant species.

For Outcome 4 learners will need access to an urban habitat so that they can assess its conservation value. This may well be linked with delivery for outcome 1. It will also be helpful for learners to visit a range of urban and rural habitats to enable them to identify differences. This could be supplemented with audio visual material showing habitats from other locations.

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www.urbanecology.org.uk	Trust for Urban Ecology

Unit 337 Undertaking Upland Habitat Management

Level: 3

Credit value: 10

Unit aim

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.

Learning outcomes

There are **four** learning outcomes to this unit. The learners will:

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

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

CU87 Carry out habitat management work
CU88 Manage habitats
EC2 Survey and report on the condition of the environment
EC23 Prepare, conduct and report on field surveys

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- An assignment covering practical skills and underpinning knowledge.

Unit 337 Undertaking Upland Habitat Management

Outcome 1 Know upland habitats of the UK

Assessment Criteria

The learner can:

1. Identify and describe **upland habitats** in the UK
2. Describe **environmental needs** and distribution of **indicator species**
3. State the major **differences** between a variety of upland habitats:
    - Moorlands
    - Blanket mires
    - Peat areas
    - Upland wetlands
    - Arctic/alpine
    - Tors
    - Limestone pavements

Unit content

Upland habitats

Habitats: moorland, woodland, upland grasslands, blanket bog, mires, peat areas, heath, upland wetlands, alpine heath; structural features (for example tors, limestone pavements), distribution and location of UK upland habitats, National Park designation

Environmental needs

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)

Indicator species

Species whose presence indicates particular upland features and characteristics: examples include soil acidity (for example heather, bilberry), air quality (for example lichens), bogs and mires (for example *Sphagnum* mosses)

Differences

Features, characteristics, landscape, geological features, location, habitat stability/fragility, species present (plant species, tree and shrub species, mammal, bird, reptile, amphibian, and invertebrate species)

Unit 337 Undertaking Upland Habitat Management

Outcome 2 Be able to survey a selection of upland habitats

Assessment Criteria

The learner can:

1. Outline the PPE required and Site Specific **Risk Assessment** for practical activity on upland areas
2. Carry out **surveys** of selected upland habitats
3. **Identify** a range of upland species of flora and fauna

Unit content

Risk Assessment

Assessment of likelihood of risk, severity of risk, methods to mitigate risk, assessment of risks to self and others, use of Personal Protective Equipment (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, for example pitfall traps, sweep nets Environmental surveying: climate surveying e.g. light, wind, temperature, rainfall, soil sampling, e.g. soil characteristics, mineral content, water content, record results, use of statistical analysis, presentation of results, quantitative (for example tables, charts, scatter graphs, histograms, pie charts), qualitative (for example annotated map, diagram, written report)

Identify

Identification using keys, guides, guide books, higher and lower order plant species e.g. lichens, fungi, grasses, trees, higher and lower order animal species for example invertebrates, birds, amphibians, reptiles, and mammals

Unit 337 Undertaking Upland Habitat Management

Outcome 3 Understand upland habitat threats and legislative controls

Assessment Criteria

The learner can:

1. Explain **threats** to selected upland habitats
2. Discuss **legislation** relevant to upland habitats
3. Evaluate the **commercial exploitation** of upland habitats:
    - Afforestation
    - Peat cutting
    - Drainage
    - Over grazing
    - Lack of management

Unit content

Threats

Human activity: sporting and recreational use, impact of tourism and visitor pressure, agricultural activity, overgrazing, environmental threats e.g. acidic deposition, global warming, air pollution, mires drying out, encroachment of trees and scrub

Legislation

Relevant legislation for example Wildlife and Countryside Act 1981, Countryside and Rights of Way Directive 2000, Natural Environment and Rural Communities Act 2006, The Heather and Grass Burning Regulations 2008, designation and protection, e.g. National Parks, Site of Special Scientific Interest

Commercial exploitation

Reasons for exploitation, impact of exploitation on selected habitats, commonly seen problems of exploitation: afforestation, peat cutting, drainage, over grazing, lack of management, tourism and recreational activities

Unit 337 Undertaking Upland Habitat Management

Outcome 4 Be able to carry out practical upland habitat management

Assessment Criteria

The learner can:

1. **Select methods** of managing an upland habitat, including livestock grazing, burning and cutting
2. Carry out **practical upland habitat management activities**
3. **Evaluate** methods of managing an upland habitat, including livestock grazing, burning and cutting

Unit content

Select methods

Planning and use of equipment and materials, resource requirements of alternative methods, timing and importance of timing of operations, use of equipment and machinery, use of PPE, health and safety implications of method choice, effectiveness in meeting habitat management objectives, level of skill required

Practical upland habitat management activities

According to nature of upland, for example stone wall building or restoration, creating boardwalks, stone pitched paths, cutting and clearing trees and scrub, weeding, plan and establish grazing, livestock movement, coppicing, bracken cutting, seeding, re-wetting and restoring mires, ditch blocking, dam repairing

Evaluate

For meeting objectives, for improvements to upland habitat, for improvements to conservation value, for timeliness of operation, sustainability of working practices, environmental impact, use of safe working practices, cost and funding implications, skill level required, compliance with regulations, advantages and disadvantages

Methods

Livestock grazing (types of livestock, stocking rates), burning (timing, methods used, compliance with legislation), cutting (manually, use of mechanisation, timing), herbicide use (timing, legislation)

Unit 337 Undertaking Upland Habitat Management

Notes for guidance

Upland habitats encompass a wide range of habitat types and locations, with differences seen in specific regions of the UK. This unit is designed to provide learners with an understanding of the range of upland habitats and their characteristics, together with the species they support. Learners will also gain practical skills in surveying and practical habitat management.

As learners will be engaged in practical activity there should be an emphasis on safe working practices, including the use of appropriate Personal Protective Equipment (PPE), and appropriate risk assessments should be undertaken. At Level 3 it is expected that learners will take an active part in completing risk assessments, so that this becomes an integral part of all practical activity. Sustainability concepts should also be demonstrated where possible and practical activities should be planned to minimise disruption to habitats and their species.

For Outcome 1 learners need to gain an overview of the different upland habitats in the UK. It is likely that delivery will be a mix of classroom activity and 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.

For Outcome 2 learners will need the opportunity to survey a range of different sites within an upland habitat. Delivery is also likely to include underpinning theory of surveying, which may be linked to other units, and needs to include how to plan a survey and analysis results as well as conducting the survey itself. Learners will also need the opportunity to practice species identification using keys and guides.

For Outcome 3 learners will need to gain an understanding of the threats to upland habitats. Delivery is likely to include study of a range of examples highlighting threats and their impact, and management strategies to mitigate and reduce the effects of the threats on the habitat. A guest speaker, such as an upland countryside ranger, could help learners to appreciate the types of management required in upland areas. Learners also need to gain an overview of the legislation protecting upland habitats, and the effect of National Park designation which covers most of the significant upland areas in England, Wales and Scotland.

For Outcome 4 learners will need supervised access to an upland habitat to carry out practical management activity. 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 heath 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.

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www.environment-agency.gov.uk	Environment Agency
www.forestry.gov.uk	Forestry Commission
www.jncc.gov.uk	Joint Nature Conservation Committee
www.moorlandassociation.org	The Moorland Association
www.nationalparks.gov.uk	National Parks
www.naturalengland.org.uk	Natural England

Unit 338 Understanding Archaeology and Landscape History

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to archaeology and landscape history and how this knowledge can be applied in practice. It is designed for learners in a centre-based setting looking to progress into the sector or onto further/higher education.

The learner will investigate how the British countryside has been used from pre-history to present day. They will learn how to 'read' the landscape and consider how its uses have resulted in present day habitats and landscapes. They will learn the integration of archaeological heritage conservation into current countryside management.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know the characteristics of prehistoric earthworks and landscape features
2. Know the changing patterns of land use between the Iron Age and the beginning of parliamentary enclosures
3. Understand the transformations in British landscape from the parliamentary enclosure to the present day
4. Be able to plan site management of an archaeological site

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

n/a

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A Centre devised assignment covering practical skills and underpinning knowledge. The procedures for creating centre devised assignments is available to download from www.cityandguilds.com

Unit 338 Understanding Archaeology and Landscape History

Outcome 1 Know the characteristics of prehistoric earthworks and landscape features

Assessment Criteria

The learner can:

1. Describe characteristics of selected **prehistoric earthworks and landscape features**
2. Outline the **uses** of selected monuments

Unit content

Prehistoric earthworks and landscape features and their uses

Neolithic eg. Causewayed enclosures, mortuary enclosures, long barrows, cursuses, henges, avenues, stone alignments, timber and stone circles, portal tombs, passage graves, long cairns or bank barrows, court cairns, recumbent stone circles, villages, ritual landscapes, flint and stone extraction, sarsen stones.

Bronze Age eg. Bowl, bell, disc and pond barrows, linear earthworks, field boundaries, reaves, coaxial field systems, clearance cairns, burnt mounds, settlement patterns, agricultural crops and livestock, modified landscapes, heathlands

Iron Age eg. Hillforts, raths and rounds, duns, crannogs, brochs, courtyard houses, souterrains, farmsteads, corn pits, banjo enclosures

Characteristics and possible uses of the above eg construction methods, orientation

Unit 338 Understanding Archaeology and Landscape History

Outcome 2 Know the changing patterns of land use between the Iron Age and the beginning of parliamentary enclosures

Assessment Criteria

The learner can:

1. Identify changes in **patterns of land use** in a selected area
2. Describe changing **patterns of land use** between the **Iron Age and the beginning of parliamentary enclosures**

Unit content

Patterns of land use between the Iron Age and the beginning of parliamentary enclosure.

Range:

Farming and husbandry eg. Roman introductions, influences of the Anglo-Saxons and Vikings cultures, the manorial system, the open field system, commons and wastes, field boundaries, crops and livestock, fish ponds, rabbit warrens, deer parks, industrial crops, strip lynchets. Monastic buildings and estates, parish churches, tythes and glebes.

Highways eg. Roman roads, holloways, droves, lanes, tracks.

Forests and woodland eg. Coppicing, assarting, wood pasture, pannage.

Rural industries eg. Extractive industries, clay, stone, salt, coal. Charcoal, lime burning, hemp and flax, wool, wind and water mills, food processing and other regionally important industries.

Military and defence eg. Motte and bailey, castles, fortified manor houses, moats.

Rural settlement patterns eg. Early farmsteads, Roman towns and forts, villas, villages, Black Death, deserted medieval settlements, market towns, dissolution of the monasteries.

Place names.

Unit 338 Understanding Archaeology and Landscape History

Outcome 3 Understand the transformations in British landscape from the parliamentary enclosures to the present day

Assessment Criteria

The learner can:

1. Explain changes in **patterns of land use** for a selected area from the **parliamentary enclosures to the present day**
2. Discuss **types of landscape and map evidence** of changing patterns of land use

Unit content

Patterns of land use from the parliamentary enclosures to the present day

Range:

Farming eg. Parliamentary enclosures, effects of improved livestock breeding, effects of ownership of large estates, market gardening, high farming, model farming, changes in the dairy industry, fruit and vegetable production.

Population changes eg. Open and Close villages, decline of rural and cottage industries, social unrest, growth of cities, suburbs, industrial centres, changes in the extractive industries. Highland clearances.

Transport eg. Turnpikes, canals, railways, roads, motorways, ports and airports.

Effects of the depression from 1880- 1945

Changes post 1945 eg. Field size and hedge removal, mechanisation, land drainage, mono-culture and new crops, intensive livestock rearing, grass silage, forestry, agriscience, heathland destruction, National Parks, tourism and recreation, military installations

Changes post 1984 eg. Milk quotas, orchard removal, poly tunnels, EU subsidies, heathland regeneration, horseyculture, effect of world trade on home market.

Types of landscape and map evidence of changing patterns of land use

Influences of land use eg Geology, topography, drainage pattern, land cover, historical land use, settlement, enclosure, perceptual and aesthetic values.

Map evidence eg: Geology (British Geological Survey Data (1:50,000 or 1:63,360)); Topography/Landform (Ordnance Survey Data (1:50,000 or 1: 25,000)); Soils (Soil survey Data (1:250,000)); Land cover/Vegetation (Phase 1 Habitat surveys, Natural Area Profiles (England), Natural Heritage Futures (Scotland)); Trees /Woodland (OS Data, Aerial photography, Forestry Commission woodland inventory, Historical maps); Land Use (Enclosure maps, Land cover map 2000, MAFF/ DEFRA Agricultural Land Classification, Aerial photographs, OS maps, Tythe apportionment maps); Settlement Patterns (Historical maps and data, Rural Settlement Atlas (England), OS maps, Census data)

Unit 338 Understanding Archaeology and Landscape History

Outcome 4 Be able to plan site management of an archaeological site

Assessment Criteria

The learner can:

1. Use **management planning techniques** for a selected archaeological site
2. Explain **processes and frameworks** of archaeological investigation and protection

Unit content

Management planning techniques

Range:
Threats to an archaeological site eg. Ploughing, burrowing animals, trees and scrub, erosion, metal detecting, damage caused by visitors, health and safety on site. Conserving both natural and archaeological features on a site.

Planning: Setting objectives and parameters, timescales, consulting stakeholders, investigating sources of funding.

Processes and frameworks

Range
Desk top study eg. Maps and documents, National Monuments Records, Sites and Monuments Records/ Historic Environment Records, RCHME volumes, Portable Antiquities Scheme, English Heritage's "gateway"

Non-invasive investigative techniques eg. Contour surveying, aerial photography and LIDAR, crop and soil marks, field walking, geophysical methods – resistivity, magnetrometry, magnetic susceptibility, ground penetrating radar, infra red photography .

Physical analysis eg. Carbon dating, pollen analysis, dendrochronology, plant and animal remains.

Legal protection: eg. Ancient Monuments and Archaeological Areas Act 1979, Natural Heritage Act 1983, Agriculture Act 1986, Electricity Act 1989, Water Resources Act 1991, Forestry Planning Regs. 1991, Local Authorities, Planning Policy Statement 5, Scheduling and English Heritage, Treasure Act 1996/2006

Unit 338 Understanding Archaeology and Landscape History

Notes for guidance

This unit is designed to provide the learner with an understanding of British archaeology and landscape history. Most locations will have evidence of former uses and it is the role of the countryside manager to ensure that they are identified, recorded and protected for future generations. The unit will cover an overview of how the countryside has changed since the Neolithic period to the present day discussing the factors that have influenced those changes.

Delivery is likely to be a mixture of classroom based learning and local site visits. Additional site visits with reconstructions of buildings or lifestyles will help to reinforce underpinning knowledge. If it can be arranged, visits to local archaeological digs can be of interest, but tutors should be aware of the archaeological issues surrounding these site visits. Learners are not expected to participate in excavations, but would clearly gain from the experience if the opportunity was available, for example through a suitable work placement. The integration of site safety, environmental awareness and good practice into all site-based activities is expected.

Where practical activities are used health and safety issues relating to working in an outdoor environment must be stressed and regularly reinforced, and risk assessments must be undertaken and recorded prior to practical activities. Adequate Personal Protective Equipment (PPE) must be provided. It is important that all learners are familiar with the tools, equipment, protocols and methods to be used in order to collect accurate data safely.

In Outcome 1 the learner will gain an overview of prehistoric earthworks and landscape features. Classroom based study should be carried out to gain an understanding of different types of features and how these relate to the landscape. Examples should be chosen from around the country which best illustrate the prominent characteristics of that type. The evolution of different types of monuments should be discussed and an understanding of how features relate to others in the area. Possible uses should be discussed with an understanding of the difficulty of interpreting lifestyles and values of prehistoric civilisations.

Where possible visits to local sites should be undertaken to identify and compare monuments and landscape features with maps and documents from a desktop study. The desktop study research prior to the visit will link with outcome 3 and 4 in this unit.

Outcome 2 requires the learner to understand changing patterns of land use between the Iron Age and the beginning of parliamentary enclosures. The tutor should choose an area which demonstrates as many examples of land use changes as possible and these should be introduced to the learners via classroom study and sites visits as in outcome 1.

Outcome 3 requires the learner to explain changes in patterns of land use for a selected area from the parliamentary enclosure to the present day. For an area consider a combination of influences and compare and contrast with a different distinct landscape types. This could be the same area as in Outcome 2 or a different area which provides suitable examples of land use changes. Site visits and class room study are recommended to introduce these features to the learner.

The class room study could include a landscape character assessment of a distinct area involving an investigation into the different landscape and map evidence available. Through this study the learners will develop an understanding of the contributions different influences have had on the landscape and its use, different landscape types and the availability and range of map evidence. This outcome links to all other outcomes in the unit.

Outcome 4 requires the learner to prepare a plan for the future management of an archaeological site. They will understand the scope of the legislation that applies to protect the archaeological features of a site . They will understand the processes and frameworks of archaeological investigation including desktop study, non-invasive investigative techniques and physical analysis. Learners will consider a range of possible threats to archaeological sites and prepare a management plan to protect a selected archaeological site.

All outcomes link with each other and so where possible one suitable site could be used for all case studies. Learners should be encouraged to visit as many sites as possible and take photographs to keep as evidence. These case studies could form the basis of the assignment.

This unit requires the assignment to be set by the Centre and approved by the External Verifier. All assessment criteria must be assessed within the assignment. Procedures for creating centre devised assignments are available on the City & Guilds website: www.cityandguilds.com

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Unit 339 Understand Greenwood Crafts

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to greenwood craft skills and knowledge 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.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will be able to:

1. Know commonly produced greenwood products
2. Understand appropriate woodland management for producing wood for greenwood crafts
3. Be able to demonstrate practical techniques in greenwood crafts
4. Know the likely markets for greenwood products

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Environmental Conservation National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.

Unit 339 Understand Greenwood Craftsrafts

Outcome 1 Know commonly produced greenwood products

Assessment Criteria

The learner can:

1. Identify selected **greenwood products** from a given locality
2. Describe the **specifications** of selected greenwood products

Unit content

Greenwood products

Furniture items e.g. stools, chairs, benches; garden items e.g. garden furniture, pergolas, trellis, poles, pea and bean sticks, rakes, climbing plant supports, wattle hurdles/panels; turned items e.g. bowls, platters, treen, chair spindles and legs, tool handles, garden dibbers, rounders bats, skittles, rolling pins; basketry items e.g. willow woven baskets; cleft wood baskets e.g. trugs, swill baskets; living items e.g. made from green willow, such as domes, fences/screens, sculptures, arches, walkways, arbours, tunnels, seats, revetments, riverbank strengthening; construction items e.g. posts and rails for fencing, roof shingles, constructional timbers, lathes, wattle rods, thatching spars, liggers and sways; hedge-laying items e.g. stakes and binders; tools and handles e.g. beetles, mallets, rakes, hay forks, scythe handles; other items e.g. besoms, tent pegs, thatching spars, hop poles, walking sticks, horse jumps, coracles, clogs, spoons, staves for Morris dancers

Specifications

Species and quality of timber used; age of timber used; sizes of components; greenwood product dimensions

Unit 339 Understand Greenwood Craftsnderstand Greenwood Crafts

Outcome 2 Be able to conduct a field study of habitats and wildlife populations

Assessment Criteria

The learner can:

1. Explain appropriate **woodland management techniques** used to **produce suitable wood** for selected **greenwood products**
2. Compare different woodland management techniques

Unit content

Woodland management techniques

Pure coppice, mixed coppice, coppice with standards; features of management systems; advantages and disadvantages of management systems; sustainable woodland management

Produce suitable wood

Techniques for producing greenwood: coppicing, pollarding, planting, layering, cuttings; features of techniques

Techniques for obtaining timber: felling, splitting, riving/cleaving, peeling, pointing; health and safety; personal protective equipment (PPE); current relevant legislation

Greenwood products

Species used in greenwood products: commonly used species e.g. ash, beech, oak, sycamore, sweet chestnut, elm, cherry, birch, alder, hazel, willow, lime, maple; common uses of each species; woodland potential for greenwood products

Furniture items e.g. stools, chairs, benches; garden items e.g. garden furniture, pergolas, trellis, poles, pea and bean sticks, rakes, climbing plant supports, wattle hurdles/panels; turned items e.g. bowls, platters, treen, chair spindles and legs, tool handles, garden dibbers, rounders bats, skittles, rolling pins; basketry items e.g. willow woven baskets; cleft wood baskets e.g. trugs, swill baskets; living items e.g. made from green willow, such as domes, fences/screens, sculptures, arches, walkways, arbours, tunnels, seats, revetments, riverbank strengthening; construction items e.g. posts and rails for fencing, roof shingles, constructional timbers, lathes, wattle rods, thatching spars, liggers and sways; hedge-laying items e.g. stakes and binders; tools and handles e.g. beetles, mallets, rakes, hay forks, scythe handles; other items e.g. besoms, tent pegs, thatching spars, hop poles, walking sticks, horse jumps, coracles, clogs, spoons, staves for Morris dancers

Unit 339 Understand Greenwood Craftsnderstand Greenwood Crafts

Outcome 3 Be able to demonstrate practical techniques in greenwood crafts **Error! No text of specified style in document.**

Assessment Criteria

The learner can:

1. **Produce greenwood products** to meet given objectives

Unit content

Produce

Tools and equipment: safe use of a range of tools and equipment e.g. pole lathe, shaving horse, drawknife, froe, chisels, gouges, brace and bits, knives, bow saw, wedges, axes, adzes, billhooks, spoke shaves, sharpening stones, hammers, maul, clamps/cramps, loppers; maintenance of tools

Techniques for making items: e.g. turning, weaving, carving, cutting, shaping, drilling, joint construction; health and safety; personal protective equipment; level of finish.

Greenwood products

Furniture items; garden items; turned items; basketry and willow weaving items; living items; construction items; hedge-laying items; other rustic items

Unit 339 Understand Greenwood Craftsnderstand Greenwood Crafts

Outcome 4 Know the likely markets for greenwood products

Assessment Criteria

The learner can:

1. Describe appropriate **markets** for selected greenwood products
2. Outline **marketing methods** for selected greenwood products

Unit content

Markets

Marketplaces: individual local retailers e.g. 'general' shops, specialist shops, visitor centres, craft shops, cafés and tea shops; a local event e.g. fête, craft show, open day, county/agricultural show, farmers' market; local chain retailers e.g. garden centres, petrol stations; specialist venues e.g. craft workers' cooperatives/guilds, sculpture/art galleries; direct sales marketplaces, e.g. internet, mail order

Customer: types of customer and their characteristics; personal customers e.g. age, sex, socio-economic group, family status, type of employment, location; business and organisational customers e.g. type of business/ organisation, size, location

Marketing methods

*P*romotional methods appropriate to greenwood product and customer characteristics e.g. newsletters, the internet, local newspapers, radio, door to door, pamphlets, posters, postcards, products on view or on sale, approaching potential customers directly, special offers; advantages and disadvantages of marketing methods; current relevant legislation

Unit 339 Understand Greenwood Craftsnderstand Greenwood Crafts

Notes for guidance

This unit is designed to combine the practical skills and knowledge of greenwood products and production methods with an understanding of how these products are marketed. Learners need to investigate the development of sustainable management techniques necessary to produce wood for greenwood products.

This unit should be delivered in a practical context wherever possible and for certain parts of the unit this is essential. Visits to commercial woodlands, engaging with local practitioners such as thatcher's, charcoal producers and willow weavers, visits to craft fairs and living museums, will enhance learner experience.

The nature of greenwood management and production is seasonal and care must be taken to ensure that tasks and activities are integrated within natural cycles.

Health and safety issues relating to making greenwood crafts 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.

In Outcome 1 learners will need to develop familiarity with the range of greenwood products that are, and have been, produced from British woodlands. Learners will be able to observe these first hand through visits to producers, craftspeople, points of sale or museum or similar exhibitions. Illustrated lectures and handouts, videos and similar resources would suffice. Learners will need to know which types and dimensions of timber are most useful for the manufacture of greenwood products.

In Outcome 2 Learners will look at the woodland species appropriate for greenwood products, their identification and management. The common uses of each species will also need to be explored. Site visits to woodlands to identify these species in their natural habitats is important. Learners will also need to know the different management techniques used to produce greenwood and how these can be applied to woodlands and a greenwood crop (a focus on sustainable cropping, should also be covered).

Learners should be made aware of the range of legislation affecting woodland work.

In Outcome 3 covers the practical techniques used to make greenwood products. Delivery will need to focus on the safe use of various tools as well as the various techniques for obtaining usable timber and transforming it into greenwood products. Learners will need to understand the health and safety issues arising from greenwood work, particularly the hazards and risks involved. The use of appropriate PPE will form an integral part of this unit, as well as demonstrations by tutors or craftspeople, followed by sufficient supervised practice time for learners to develop their competence.

In Outcome 4, learners need to look at the markets suitable for greenwood products, understand the features and characteristics of their customers and the likely places where customers are to be found. Learners must be aware of the methods used to advertise products to potential customers along with their advantages and disadvantages. Where possible, examples of advertising for greenwood products should be used to assist delivery.

Learners will need access to woodland that offers a variety of species and management techniques relevant to the study of greenwood products and production. They must have access to woodland to observe and practise relevant management techniques as well as produce artefacts. Learners will also need tools and equipment relevant to the products they are required to make and adequate workshop facilities. Learners will need to have suitable PPE.

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Unit 340 Undertake Gamebird Production

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills used in and understanding of gamebird production 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.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand management of reared gamebirds
2. Know how incubation is organised
3. Be able to operate an incubator/hatcher to produce day old chicks
4. Be able to rear gamebirds from day-old to poultry stage

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Gamekeeping National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.

Unit 340 Undertake Gamebird Productionroduction

Outcome 1 Understand management of reared gamebirds

Assessment Criteria

The learner can:

1. explain the **establishment and maintenance of a gamebird production programme**
2. explain management of **factors that affect the health and welfare** of selected reared gamebirds
3. assess **operations carried out recommending improvements**

Unit content

Establishment and maintenance of a gamebird production programme

Assess shoot day numbers and bag requirements, numbers and sizes of release pens, calculate an estimation of required birds

Factors that affect health and welfare

Diseases common to gamebirds, the affects of stress leading to behavioural disorders, the requirements at different stages of growth

Signs of health and welfare: changes in feed and water consumption, external symptoms including high mortality rates, normal and abnormal behaviour e.g. lethargy, ruffled/fluffed feathers. The recognition of normal internal organs

Operations carried out recommending improvements

Bio security measures: use of disinfectants, exclusion of wild birds, change of ground and the isolation of sick birds. Planning and methods of disease transmission and barriers to transmission, stocking density, care of equipment i.e. feeders and drinkers. Bitting of birds beaks, pecking reduction measures

Unit 340 Undertake Gamebird Productionroduction

Outcome 2 Know how incubation is organised

Assessment Criteria

The learner can:

1. describe **commonly used methods for obtaining gamebird eggs for incubation**
2. outline **requirements of breeding stock**
3. plan hatchery operations to meet given objectives covering:
   - **a. egg preparation**
   - **b. egg incubation**
   - **c. egg hatching**
   - **d. despatch of deformed chicks**
   - e. **boxing of day-old chicks**

Unit content

Commonly used methods for obtaining gamebird eggs for incubation

Sources of eggs and breeding stock: Buying in eggs, breeding behaviour, operation of a closed flock, sexing and identification of breeding stock, advantages and disadvantages of both systems and the cost variations, relevant up to date legislation.

Requirements of breeding stock

Welfare considerations (i.e. prevention of fighting, treading damage reduction, stock density), sex ratio suitability, normal behaviour (i.e. food consumption, egg production), signs of stress (i.e. reduced egg production and appetite). The factors that affect fertility and hatchability of eggs (i.e. cleanliness of pens stock and egg eating by stock and pest birds). Timeliness of egg collection, fertility of stock birds and storage conditions

Communal pen types i.e. movable harem, pair boxes and their specifications. Recording systems, paper and electronic based, egg handling and collection techniques, health and safety and P.P.E including relevant up to date legislation

Egg preparation

Collection times for eggs, sanitizing and disinfecting, storage of cleaned eggs, temperature control

Egg incubation

Bringing eggs up to temperature prior to incubation, setting eggs in incubation trays, creating an egg incubation records

Egg hatching

Transfer of eggs into hatching trays, create hatching record chart

Despatch of deformed chicks

Types of humane despatch and disposal of chicks, recognition of deformities

Boxing of day-old chicks

Count and box chicks into appropriate containers for transport

Unit 340 Undertake Gamebird Productionroduction

Outcome 3 Be able to operate an incubator/hatcher to produce day old chicks

Assessment Criteria

The learner can:

1. safely carry out **incubation of gamebird eggs** to meet given objectives
2. safely use **incubation equipment** to meet given objectives
3. adapt operations to meet **factors which affect incubation**

Unit content

Incubation of gamebird eggs

Incubation specifications to include suitability in grading eggs for size, damage, cleanliness. Sanitising procedures i.e. disinfecting, fogging and washing, condition required to maintain viability of eggs i.e. humidity, temperature and time

Requirements for successful incubation for both embryonic development and hatching i.e. temperature, time, turning, humidity and automatic versus manual machines. Types of incubators i.e. broody hens, electronic hatchers

Incubation equipment

Incubators, hatchers, egg monitoring equipment, temperature and humidity control equipment

Factors affecting incubation

Methods in maintaining and monitoring the incubation environment i.e. candling, weighing eggs, thermometers including wet and dry bulb types digital data loggers. Fertility confirmation methods and embryo development methods i.e. candling, weighing of eggs. Appropriate methods of recording information. Health and Safety, Personal Protective Equipment and relevant up to date legislation

Unit 340 Undertake Gamebird Productionndertake Gamebird Production

Outcome 4 Be able to rear gamebirds from day-old to poultry stage

Assessment Criteria

The learner can:

1. ensure **welfare of chicks is maintained**
2. maintain gamebird production to meet given objectives
3. adapt operations to meet **factors which affect production**

Unit content

Welfare of chicks is maintained

Stock Management: provide suitable area for maintaining chick condition i.e. temperature, water food.

Environmental Needs: resources required at each stage of chick development i.e. temperature, water, food stress reduction; importance of maintaining these requirements.

Factors affecting production

Common disorders associated with gamebirds and methods of dealing with them, gapes, coccidosis, appropriate methods of recording information, Health and Safety, Personal Protective Equipment and relevant up to date legislation to include mortality records and medication records and associated codes of practice.

Unit 340 Undertake Gamebird Productionroduction

Notes for guidance

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

Whichever methods that are used, it is essential that tutors highlight the current relevant industry codes of practice to ensure that these are understood and followed. Tutors must stress the importance of animal welfare, sound environmental management and the need to manage the resource to comply with current legislation.

Health and safety issues relating to gamebird rearing must be stressed and reinforced regularly and risk assessments must be undertaken before any practical activities. Adequate Personal Protective Equipment must be provided and used following the production of suitable risk assessments.

Tutors could consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study.

Learning outcomes 1 and 2 require learners to become familiar with a range of techniques. These are likely to be delivered through formal lectures, discussion, site visits, practical's and independent learner research.

Site visits would enable learners to witness the use of a variety of techniques at first hand. These would ideally include a range of small-scale to large-scale operations. Visiting expert speakers could add to the relevance of the subject. For example, a game farm manager or gamekeeper could talk about their work, the situations they face and the methods that they use.

Learning outcomes 3 and 4 require learners to be involved in the incubation and rearing of a batch of gamebirds. This could form a group project where small groups of learners are given the responsibility for rearing a batch of poults from hatching eggs to the six-week stage. Delivery methods should be varied and should include formal lectures, demonstrations, supervised practical instruction and visits to examine commercial practices. Visiting expert speakers could add to the relevance of the subject. For example, a game farm manager or gamekeeper could talk about their production strategies and how they maintain a safe working environment.

Unit 341 Understanding Water Quality

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to skills and knowledge associated with water quality 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.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Understand the factors, physical, chemical and biological, which influence water quality and aquatic species
2. Be able to measure basic water quality factors
3. Be able to record and interpret water quality data
4. Understand the principles of water treatment

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Environmental Conservation National Occupational Standards. .

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.

Unit 341 Understanding Water Qualityuality

Outcome 1 Understand the factors, physical, chemical and biological, which influence water quality and aquatic species Be able to carry out practical farm habitat management

Assessment Criteria

The learner can:

1. explain the hydrological cycle
2. explain how the physical environment can change water quality
3. explain how an aquatic habitats flora and fauna changes when water quality changes

Unit 341 Understanding Water Qualitynderstanding Water Quality

Outcome 2 Be able to measure basic water quality factors

Assessment Criteria

The learner can:

1. determine the basic water quality of a given aquatic habitat
2. carry out basic biological sampling for a given aquatic habitat

Unit 341 Understanding Water Qualitynderstanding Water Quality

Outcome 3 Be able to record and interpret water quality data **Error! No text of specified style in document.**

Assessment Criteria

The learner can:

1. Carry out a water quality survey on an aquatic habitat for a given period
2. produce a report on the water quality of a given aquatic habitat

Unit 341 Understanding Water Qualityuality

Outcome 4 Understand the principles of water treatment

Assessment Criteria

The learner can:

1. discuss the methods of water treatment commonly used to meet specified objectives
2. assess water treatment methods commonly used to meet specified objectives
3. explain how commonly used water treatment methods satisfy current legislation

Unit 342 Understanding Captive Deer Herd Management

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to captive deer herd management skills and understanding 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.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know the biology, ecology and behaviour of deer in a captive environment
2. Be able to plan deer production and record keeping systems
3. Understand captive deer nutritional requirements
4. Know the humane capture, handling and culling of deer

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Gamekeeping National Occupational Standards

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.

Unit 342 Understanding Captive Deer Herd Management

Outcome 1 Know the biology, ecology and behaviour of deer in a captive environment

Assessment Criteria

The learner can:

1. compare deer biology with that of given domesticated livestock
2. compare deer ecology with that of given domesticated stock
3. compare deer behaviour with that of given domesticated stock

Unit 342 Understanding Captive Deer Herd Management

Outcome 2 Be able to plan deer production and record keeping systems

Assessment Criteria

The learner can:

1. carry out deer production planning
2. plan deer production record keeping systems

Unit 342 Understanding Captive Deer Herd Management
Outcome 3 Error! No text of specified style in document.

Assessment Criteria

The learner can:

1. discuss deer nutritional requirements
2. explain how and why deer nutritional requirements change throughout the production cycle
3. outline how the nutritional requirements of deer are met in a captive environment

Unit 342 Understanding Captive Deer Herd Management

Outcome 4 Know the humane capture, handling and culling of deer

Assessment Criteria

The learner can:

1. plan humane culling, capture and handling of deer
2. describe deer production planning carried out
3. outline legislation relevant to the culling and handling of captive deer

Unit 343 Undertaking Commercial Deer Management

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills and knowledge in the management of commercial deer operations 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.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know how to arrange third party deer stalking
2. Understand how to plan commercial activities within a business framework
3. Be able to facilitate safe and humane third party deer culling
4. Be able to prepare by-products to meet client requirements

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Gamekeeping National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.

Unit 343 Undertaking Commercial Deer Management

Outcome 1 Know how to arrange third party deer stalking

Assessment Criteria

The learner can:

1. describe requirements of clients in a given visit scenarios
2. outline safety and legal considerations
3. plan third party deer stalking

Unit 343 Undertaking Commercial Deer Management

Outcome 2 Understand how to plan commercial activities within a business framework

Assessment Criteria

The learner can:

1. explain financial aspects of a third party deer stalking activity
2. compare contractual requirements of different commercial deer stalking scenarios

Unit 343 Undertaking Commercial Deer Management

Outcome 3 Be able to facilitate safe and humane third party deer culling

Assessment Criteria

The learner can:

1. lead a client in a safe and humane commercial deer stalk
2. describe responsibilities of a lead stalker

Unit 343 Undertaking Commercial Deer Management

Outcome 4 Be able to prepare by-products to meet client requirements **Error! No text of specified style in document.**

Assessment Criteria

The learner can:

1. safely process and present a deer by-product to meet given objectives
2. describe the process of by-product preparation from the time of culling through to presentation to client

Unit 344 Understanding Countryside Tourism and Recreation

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to the skills and knowledge used in countryside tourism and recreation, 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.

Learning outcomes

There are **five** learning outcomes to this unit. The learner will:

1. Understand reasons for countryside tourism and recreation
2. Understand factors affecting countryside tourism and recreation
3. Understand tourism/recreation factors affecting the countryside
4. Know the roles of organisations involved in countryside tourism and recreation
5. Be able to monitor and report on environmental conditions of tourist/recreation sites

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Environmental Conservation National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.

Unit 344 Understanding Countryside Tourism and Recreation

Outcome 1 Be able to carry out practical farm habitat management

Assessment Criteria

The learner can:

1. assess needs of countryside tourism and recreational visitors
2. explain tourist and recreational attractions of the countryside [IE1, IE3, IE4]

Unit 344 Understanding Countryside Tourism and Recreation

Outcome 2 Understand factors affecting countryside tourism and recreation

Assessment Criteria

The learner can:

1. explain factors that affect countryside tourism and recreation
2. discuss the changing demand of tourism and recreation in the countryside

Unit 344 Understanding Countryside Tourism and Recreation

Outcome 3 Error! No text of specified style in document.

Assessment Criteria

The learner can:

1. evaluate advantages and disadvantages of countryside tourism and recreation
2. explain the impact of countryside tourism and recreation for a given area

Unit 344 Understanding Countryside Tourism and Recreation

Outcome 4 Know the roles of organisations involved in countryside tourism and recreation **Error! No text of specified style in document.**

Assessment Criteria

The learner can:

1. describe the roles of organisations involved in countryside tourism and recreation
2. outline the relationship between organisations involved in countryside tourism and recreation

Unit 344 Understanding Countryside Tourism and Recreation

Outcome 5 Be able to monitor and report on environmental conditions of tourist/recreation sites **Error! No text of specified style in document.**

Assessment Criteria

The learner can:

1. select appropriate monitoring indicators
2. safely monitor and record data of a given tourist/recreation site
3. report monitoring findings and make recommendations

Unit 345 Understanding Fishery Management

Level: 3

Credit value: 10

Unit aim

This unit aims to introduce learners to fishery skills and 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.

Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know the main mammal and avian predators of fish and the methods used to legally control them
2. Know commonly used freshwater fish stock maintenance and improvement methods
3. Be able to use suitable methods of sport fishery bank maintenance, stock assessment and vegetation control
4. Understand the basic business requirements of a sport fishery

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Details of the relationship between the unit and relevant national occupational standards

This unit is linked to the Fisheries National Occupational Standards.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Lantra SSC.

Assessment and grading

This unit will be assessed by:

- A centre-devised assignment covering practical skills and underpinning knowledge.

Unit 345 Understanding Fishery Management

Outcome 1 Know the main mammal and avian predators of fish and the methods used to legally control them

Assessment Criteria

The learner can:

1. Identify the main avian predators of fish at a selected sport fishery
2. Identify the main mammal predators of fish at a selected sport fishery

Unit 345 Understanding Fishery Management

Outcome 2 Know commonly used freshwater fish stock maintenance and improvement methods Be able to conduct a field study of habitats and wildlife populations

Assessment Criteria

The learner can:

1. explain factors involved in the maintenance improvement of selected sport fishery stock
2. explain factors involved in the improvement of selected sport fishery stock

Unit 345 Understanding Fishery Management

Outcome 3 Be able to use suitable methods of sport fishery bank maintenance, stock assessment and vegetation control **Error! No text of specified style in document.**

Assessment Criteria

The learner can:

1. safely carry out practical bank maintenance
2. safely carry out fish stock assessment
3. safely carry out practical vegetation control

Unit 345 Understanding Fishery Management

Outcome 4 Understand the basic business requirements of a sport fishery

Assessment Criteria

The learner can:

1. explain major factors that influence the financial viability of a given sport fishery business
2. discuss the management of a given sport fishery

Relationships to other qualifications

Literacy, language, numeracy and ICT skills development

These qualifications include opportunities to develop and practise many of the skills and techniques required for success in the following qualifications:

- Functional Skills (England) – see **www.cityandguilds.com/functionalskill**s
- Essential Skills (Northern Ireland) – see **www.cityandguilds.com/essentialskillsni**
- Essential Skills Wales - **www.cityandguilds.com/esw**

There might also be opportunities to develop skills and/or portfolio evidence if learners are completing any Key Skills alongside these qualifications.

Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage on www.cityandguilds.com**.

Centre Guide – Delivering International Qualifications contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of learners
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Providing City & Guilds qualifications – a guide to centre and qualification approval contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of learners
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Ensuring quality contains updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document contains information on:

- Management systems
- Maintaining records
- Assessment
- Internal verification and quality assurance
- External verification.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for learners who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- **Walled Garden**

Find out how to register and certificate learners on line

- **Events**

Contains dates and information on the latest Centre events

- **Online assessment**

Contains information on how to register for Evolve assessments.

City & Guilds

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Useful contacts

Type	Contact	Query
UK learners	T: +44 (0)84 4543 0033 E: learnersupport@cityandguilds.com	• General qualification information
Centres	T: +44 (0)84 4543 0000 F: +44 (0)20 7294 2413 E: centresupport@cityandguilds.com	• Exam entries • Registrations/enrolment • Certificates • Invoices • Missing or late exam materials • Nominal roll reports • Results
Walled Garden	T: +44 (0)84 4543 0000 F: +44 (0)20 7294 2405 E: walledgarden@cityandguilds.com	• Re-issue of password or username • Technical problems • Entries • Results • GOLA • Navigation • User/menu option problems
Employer	T: +44 (0)121 503 8993 E: business_unit@cityandguilds.com	• Employer solutions • Mapping • Accreditation • Development Skills • Consultancy

If you have a complaint, or any suggestions for improvement about any of the services that City & Guilds provides, email: **feedbackandcomplaints@cityandguilds.com**

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