



Higher National Unit specification

General information

Unit title: Plants and Habitats: Ecology and Conservation
(SCQF level 8)

Unit code: H7BD 35

Superclass: QA

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Version: 01

Unit purpose

This Unit is designed to introduce the fundamental ecological processes that govern plant distribution and the structure, formation and function of plant communities. From this foundation the Unit considers how various processes and actions alter balances in nature and so damage and threaten plants and their habitats. Finally the various approaches to conserving plant species and their habitats are studied. This Unit is intended for learners who plan to enter the amenity/landscape, botanic garden and heritage sectors of the horticultural industry but the principles and issues are relevant to most aspects of the industry.

Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Describe major plant habitats and concepts of plant ecology.
- 2 Apply methods of vegetation analysis to describe plant communities and monitor vegetation changes.
- 3 Explain plant and habitat conservation methods.
- 4 Explain habitat management techniques and how they affect vegetation development.

Credit points and level

2 Higher National Unit credits at SCQF level 8: (16 SCQF credit points at SCQF level 8)

Higher National Unit Specification: General information (cont)

Unit title: Plants and Habitats: Ecology and Conservation
(SCQF level 8)

Recommended entry to the Unit

Entry to this Unit is at the discretion of the centre, however it would be beneficial for learners to have a basic knowledge of plant ecology, for example through a standard grade in Biology. The Units *Plant Recognition* and *Soil Management* would be valuable introductions. Some learners may have first-hand experience of conservation projects as volunteers, such experience could also be useful.

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes for this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

Higher National Unit specification: Statement of standards

Unit title: Plants and Habitats: Ecology and Conservation
(SCQF level 8)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Describe major plant habitats and concepts of plant ecology.

Knowledge and/or Skills

- ◆ Components of the biosphere and major vegetation types
- ◆ Past and present factors that affect plant distribution and concepts of threat and rarity
- ◆ Energy flow within ecosystems
- ◆ Structure and dynamics of plant communities and plant populations

Outcome 2

Apply methods of vegetation analysis to describe plant communities and monitor vegetation change.

Knowledge and/or Skills

- ◆ Vegetation classification
- ◆ Monitoring vegetation change
- ◆ Assessment of similarity/dissimilarity

Outcome 3

Explain plant and habitat conservation methods

Knowledge and/or Skills

- ◆ Global and local threats to plants habitats
- ◆ Roles of conservation agencies and organisations
- ◆ Conservation legislation
- ◆ Public education
- ◆ Evaluation of wildlife sites

Higher National Unit specification: Statement of standards (cont)

Unit title: Plants and Habitats: Ecology and Conservation
(SCQF level 8)

Outcome 4

Explain habitat management techniques and how they affect vegetation development

Knowledge and/or Skills

- ◆ Definition and characterisation of habitat types
- ◆ Environmental effects on habitat development and variation
- ◆ Modification and changes to habitats by application of management techniques

Evidence Requirements for this Unit

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills across all Outcomes by showing that they can:

For Outcome 1:

- ◆ state the major components that constitute the biosphere and describe the main habitat types.
- ◆ describe the main climatic and biological factors that affect the distribution of plants.
- ◆ describe how energy travels through a simple food chain.
- ◆ explain the concept of plant communities and how they are maintained.
- ◆ explain the structure and dynamics of plant populations.

For Outcome 2:

- ◆ describe the method of data collection and analysis to classify vegetation samples.
- ◆ select and apply appropriate methods for determining vegetation change.
- ◆ select appropriate methods for objective comparison between vegetation samples.

For Outcome 3:

- ◆ explain the major threats to plants and habitats on a local and global scale.
- ◆ explain the roles of a range of local, national and international conservation bodies.
- ◆ describe the development of legislation to protect plant species and habitats.
- ◆ describe the importance and methods of educating the public regarding plant and habitat conservation.
- ◆ explain the criteria by which wildlife sites are evaluated for conservation purposes.

Higher National Unit specification: Statement of standards (cont)

Unit title: Plants and Habitats: Ecology and Conservation
(SCQF level 8)

For Outcome 4:

- ◆ describe the characteristics and variation of examples of major habitat types.
- ◆ explain environmental effects and the interaction between associated plants and the dominant species.
- ◆ describe the effect of management practices on development of examples of habitat types.
- ◆ describe the choice of management techniques to optimise nature conservation and how this may differ from other land use priorities.



Higher National Unit Support Notes

Unit title: Plants and Habitats: Ecology and Conservation
(SCQF level 8)

Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 80 hours.

Guidance on the content and context for this Unit

The Unit aims to provide knowledge and skills needed for understanding the fundamental ecological processes that have shaped past and present vegetation types, plant communities and plant populations. It also provides knowledge of how the ecological balance can be altered to the detriment of wild plants and natural habitats and the range of methods and approaches that are undertaken to conserve and protect them. The Unit is of general relevance to learners who intend working in horticulture or in many environmentally-related professions. It will also serve as a sound grounding for learners who plan to pursue more advanced studies in plant ecology and conservation.

Outcome 1 should begin with an introduction to the concept of the biosphere and a consideration of the major factors and processes that have driven change and development of plant habitats and geographical distribution of plants, these include continental drift, historic changes in climate including the cycles of ice ages. After a broad introduction the Unit should then focus on the concept of the ecosystem including food chains and food webs. Other initial topics should consider plant distribution and rarity. The structure, function and dynamics of plant communities and plant populations should then be described.

Outcome 2 should start by describing the procedure of data gathering for identifying plant communities (the National Vegetation Classification methods are advised); it is recommended that this is carried out as a group exercise in the field. Further methods of vegetation analysis for monitoring change or for comparison of similarity between vegetation samples should also be explained and demonstrated. The impact of man, animals and pollution on the environment in general should be taken into account.

Outcome 3 builds on Outcomes 1 and 2 and should firstly consider examples of both global and more local threats to plant habitats and then review the range of conservation methods including legislation, survey and evaluation of sites, and habitat management. The roles of various organisations that carry out conservation should also be surveyed with examples of local, national and international bodies.

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Unit title: Plants and Habitats: Ecology and Conservation
(SCQF level 8)

Outcome 4

Applies knowledge gained in Outcomes 1, 2 and 3 to develop the more detailed study of examples of major habitat types and how various management practices can direct vegetation development for different purposes. This will provide learners with practical knowledge so that informed decisions can be made regarding the effects of choice, timing and intensity of vegetation management

Guidance on approaches to delivery of this Unit

This Unit is likely to form part of a Group Award, which is primarily designed to provide learners with technical or professional knowledge and skills related to occupations in amenity horticulture or landscape management.

Learners should study the kinds of vegetation on the site and then consider the current uses of the site and decide whether there are any obvious threats, damaging or potentially damaging activities and how these may be reduced or prevented. They should also make suggestions regarding improvement of the site for conservation and ways in which it may potentially provide public education and involvement.

Delivery should combine formal lectures with practical fieldwork and at least one visit to demonstrate and help reinforce some ecological concepts. Access to a range of relevant literature should be available via library facilities and the web.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

All Outcomes could be assessed using an invigilated closed–book mixed test containing short and structured questions. Alternatively, parts of these Outcomes could be assessed through group research and assessed presentations.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

Higher National Unit Support Notes (cont)

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(SCQF level 8)

Opportunities for developing Core and other essential skills

There are opportunities to develop Core Skills of *Communication* and *Problem Solving* at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

History of changes to Unit

Version	Description of change	Date

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General information for learners

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This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit is designed to provide you with knowledge and practical skills to give you a broad and solid understanding of the fundamental ecological processes that affect past and present plant distribution and the structure and dynamics of plant communities and populations. You will also learn how the delicate balance between species can be disrupted by various factors and how this can lead to changes in vegetation and habitats. The next section of the Unit will consider how plant communities can be identified and the various methods of monitoring change in vegetation. We will then survey the approaches to help conserve and protect plants and their habitats including legislation, survey and evaluation of sites for SSSI designation, habitat management, and public education. We will also look at examples of major vegetation types and, drawing on ecological principles and concepts covered in Outcomes 1, 2 and 3, discuss in some detail the distribution, conservation and economic importance and management of these habitats. Besides formal lectures there will be some fieldwork and as a group you will go through the standard procedure of collecting a vegetation sample for identifying a plant community using the National Vegetation Classification. In order to complete this Unit successfully, you will be required to achieve a satisfactory level of performance in two pieces of assessed work: a group presentation and report and one closed-book examination.