



National Unit specification: general information

Unit title: Principles of Biodiversity Conservation (SCQF level 6)

Unit code: FV30 12

Superclass: QA

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Version: 01

Summary

The Unit is designed to improve the candidate's knowledge and understanding of the main issues involved in biodiversity conservation. Candidates will consider why conserving biodiversity matters before going on to look at how this is achieved. Candidates will also assess the biodiversity value of a site in relation to the factors which affect it and its potential for the future. On completion of this Unit candidates will be able to understand the nuances of biodiversity conservation and assess the biodiversity value and potential of a site. This Unit is suitable for those seeking to establish a career in the natural heritage. This Unit is a mandatory Unit in the National Certificate in *Countryside Management* (SCQF Level 5) and is also available for candidates wishing to study the Unit on its own.

Outcomes

- 1 Describe the motives for and benefits of biodiversity conservation.
- 2 Describe the designations that support biodiversity conservation.
- 3 Assess the biodiversity value and potential of a given area.

Recommended entry

While entry is at the discretion of the centre, it would be beneficial if candidates have attained one of the following, or equivalent:

- ◆ Standard Grade Biology or Geography at grade 1 or 2
- ◆ Managing Environmental Resources at Intermediate 2
- ◆ Experience of working as a volunteer in the natural heritage

National Unit specification: general information (cont)

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Credit points and level

1 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Core Skills

There is no automatic certification of Core Skills or Core Skill component in this Unit. However the Unit provides opportunities for candidates to develop aspects of the following Core Skills:

- ◆ *Communication* (SCQF level 5)
- ◆ *Information and Communication Technology (ICT)* (SCQF level 4)
- ◆ *Problem Solving* (SCQF level 5)

Opportunities to develop aspects of these Core Skills are further highlighted in the support notes of this Unit specification.

National Unit specification: statement of standards

Unit title: Principles of Biodiversity Conservation (SCQF level 6)

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 the motives for and benefits of biodiversity conservation.

Performance Criteria

- (a) Describe the motives supporting biodiversity conservation.
- (b) Describe how people benefit from biodiversity conservation.

Outcome 2

Describe the designations that support biodiversity conservation.

Performance Criteria

- (a) Describe the main priorities for biodiversity designation
- (b) Describe the different levels of designation relating to biodiversity.

Outcome 3

Assess the biodiversity value and potential of a given area.

Performance Criteria

- (a) Describe a given area.
- (b) Describe the land use change in a given area.
- (c) Explain the effects of land use change on the biodiversity of a given area.
- (d) Assess the current biodiversity value of a given area.
- (e) Produce recommendations to enhance the biodiversity value of a given area.
- (f) Describe sources of advice and funding.
- (g) Produce a map showing the key habitats present.
- (h) Produce a list of the main species present in each habitat.

National Unit specification: statement of standards (cont)

Unit title: Principles of Biodiversity Conservation (SCQF Level 6)

Evidence Requirements for this Unit

Candidates must provide performance, written and/or recorded oral evidence to demonstrate that they have achieved all Outcomes and Performance Criteria.

Describe the motives for and benefits of biodiversity conservation.

Performance Criteria

The evidence for all Outcomes must be generated under open-book conditions. The assessor must be satisfied that evidence submitted is the individual candidate's own work.

Outcome 1

Written/oral or recorded evidence must contain a description of:

- ◆ two motives supporting biodiversity conservation
- ◆ five emotional benefits people derive from biodiversity conservation
- ◆ three physical benefits people derive from biodiversity conservation

Outcome 2

Written/oral or recorded evidence which must include a description of:

- ◆ the main priorities for biodiversity designation:
 - rare species/habitats
 - vulnerable/threatened species/habitats
 - important species habitats
 - representative/typical species/habitats
- ◆ the need for different levels of biodiversity designation:
 - international
 - national
 - local
- ◆ one example from each of the different levels of biodiversity designation:
 - international
 - national
 - local

National Unit specification: statement of standards (cont)

Unit title: Principles of Biodiversity Conservation (SCQF Level 6)

Outcome 3

Written and/or oral recorded evidence is required. The candidate must provide an assessment of the biodiversity value and potential of a given area where there has been a change in land use. The evidence must contain:

- ◆ a site description which must include:
 - name
 - location
 - ownership
 - summary of biodiversity value
- ◆ an accurate description of the change in land use which has taken place
- ◆ explanation of how the change in land use change affected biodiversity
- ◆ an accurate assessment of the current biodiversity value of the site
- ◆ a minimum of four recommendations to enhance the biodiversity value
- ◆ description of at least one source of advice and one source of funding
- ◆ an accurate habitat map
- ◆ an accurate list of the main species present in each habitat

National Unit specification: support notes

Unit title: Principles of Biodiversity Conservation (SCQF Level 6)

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This Unit is aligned to the following LANTRA National Occupational Standards (NOS):

- ◆ EC2 Survey and report on the condition of the environment
- ◆ EC23 Prepare, conduct and report on filed surveys

The conservation of biodiversity, it could be argued, is as much about people as it is about species and habitats. We are driven to protect biodiversity because we derive benefit from it, as we value it in some way. Even the most altruistic reasoning behind conserving biodiversity can be traced back to how it makes us feel.

An understanding of the principles of biodiversity conservation is important to anyone seeking to enter into a career in the management of the natural heritage. Knowing why we value biodiversity, how we go about protecting it and being able to assess the biodiversity value and potential of a given area are important skills and understanding to develop.

Outcome 1

The motives supporting biodiversity conservation are subtle and they can be seen to fall into two distinct areas. An understanding of why we value and conserve biodiversity helps inform how we protect and enhance it. Two main motives behind biodiversity conservation are:

- ◆ saving biodiversity from use
- ◆ saving biodiversity for use

Saving biodiversity from use is perhaps the easier one to understand. We save wildlife because it is under threat or being exploited and we wish to preserve it from these actions. Classic campaigns often start 'save the... *something*'. For example: whales, tigers, the rainforest, and the Cairngorms — all of these have been 'saved' in the past. Saving biodiversity from use is classic nature conservation.

Saving biodiversity for use is perhaps a little more complex and potentially controversial. However it undoubtedly occurs and is a motivation for action. Why we save biodiversity for use is complex. It can be for PR, to attract funding for projects, for political capital, simply for the pleasure of seeing it, to raise awareness of environmental issues, to make money and to exploit for sport.

Whether we save biodiversity from or for use the end result is the same – biodiversity and people benefit. What connects the two motives is this human benefit. This falls into two broad categories:

- ◆ physical wellbeing
- ◆ emotional wellbeing

National Unit specification: support notes (cont)

Unit title: Principles of Biodiversity Conservation (SCQF Level 6)

Emotional benefits we derive from saving biodiversity include:

- ◆ aesthetics: we derive pleasure from beauty in nature. Many of the things we value are aesthetically pleasing — butterflies and flowers are two examples
- ◆ emotional/spiritual: this varies much with individuals and is personal. We can feel a deep sense of connection with species and habitats which border on spiritual uplift
- ◆ moral/ethical: we often feel we have a duty to right wrongs. If we caused the beaver/sea eagle/lynx to become extinct then are we ethically bound to reintroduce them? Who are we to exploit nature just because we can? As Frank Fraser Darling said 'nature doesn't exist for man's delectation alone'
- ◆ inspiration: artists, musicians, and environmental activists can be inspired by biodiversity to take action
- ◆ cultural identity: Scotland markets itself to the world on the back of leaping salmon, red grouse, purple moors, majestic stags and a myriad other images from the natural heritage. The town motto of Peebles is based on the salmon's ability to thrive in the face of adversity, the dyes for tartan come from plants, whisky is flavoured by peat are some examples
- ◆ challenge: this can take many forms, eg to see a pine marten, to see as many different species of bird as we can in a year, to catch a salmon, to change legislation to protect raptors from persecution, or to clean up a local stream

Physical benefits are also varied. They include:

- ◆ protection: nature can provide an early warning system of trouble in the environment, vegetation filters out particulates from the air and trees on steep slopes hold the soil in place and prevents landslides
- ◆ sustainable development: this is a major reason to protect biodiversity. The biodiversity of Scotland brings in people. People spend money. This money helps local communities. Local communities recognise the benefit of the natural heritage and seek to protect and enhance it. Exploitation of nature is acceptable if it is sustainable. We can take a harvest if we are sustainable
- ◆ scientific investigation: an obvious example is the development of many medicines from wild plants and the idea for car air bags from the impact dilution systems found in diving gannets.

National Unit specification: support notes (cont)

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Outcome 2

The principal way we protect biodiversity is through designation. However we can't designate everything so we need to prioritise. The following are high up on any list of things to designate:

- ◆ rare habitats and species: if a species or habitat is rare then it is likely that it will need to be protected
- ◆ vulnerable or threatened habitats and species: even if vulnerable or threatened habitats aren't rare just now, they might be in decline or fragile and therefore need intervention before becoming rare
- ◆ representative or typical habitats and species: even if they aren't rare or threatened or vulnerable we need to preserve a bit of everything to maintain a wide resource base. We look to protect the best examples of all types of habitats and at different levels – national and local
- ◆ important habitats and species — this factor is very wide and varied. It could be because it is economically valuable, a cultural icon, very popular with the public, is endemic, is used by species on migration, because it is the subject of international statute or because a very large percentage of the world population is found here at a particular time of year

We need designations at different levels to fully protect biodiversity. We need international designation to protect migratory species and to protect species across their geographic range or because they are globally threatened. We need national designation to protect the best and most vulnerable species across the country and we need local designation to protect habitats and species important or threatened at that level. In other words, we need a suite of protected sites across the country protecting species and habitats important at different levels. What is important in Fife is not necessarily the same as what is important in Scotland, the UK or in Europe, and the reverse is also true.

Designation protects habitats and species. Examples of biodiversity designation include:

- ◆ International
 - Natura 2000
 - Special Area of Conservation (SAC)
 - Special Protection Area (SPA)
 - Ramsar sites
 - World (natural) Heritage Sites
- ◆ National
 - National Nature Reserves (NNR)
 - Sites of Special Scientific Interest (SSSI)
- ◆ Local
 - Local Nature Reserves (LNR)
 - Local Biodiversity Action Plans (LBAP)
 - Local Habitat Action Plan (LHAP)
 - Local Species Action Plan (LSAP)

National Unit specification: support notes (cont)

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Outcome 3

Assessing the biodiversity value of a site or area is often the first stage in taking action to protect it, either through designation or the production of a habitat management plan.

One of the main impacts on biodiversity is land use change. This can either be a complete change in land use or a change in practice within a land use. An area of farmland which is then developed for sand and gravel extraction or housing will impact on the habitats and species present, but so will a switch from autumn to spring sown cereal on a farm.

Habitats and species can be affected in a variety of ways. The number of species found may go up or down, the number of organisms in a single species may increase or decrease, some species or habitats may vanish, others may arrive. It is important to remember that the effects may be positive as well as negative.

In order to assess biodiversity value it is best to remain objective. This is best achieved by the use of criteria — for example: rarity, diversity, naturalness. Local and national significance should also be taken into account when looking at a site.

Once the biodiversity has been assessed then recommendations can be made to enhance it. These could cover: habitat creation, the provision of features such as nest boxes, the management of existing habitats in a new way and people management. Enhancement is usually made easier by access to funding from local and/or national sources. The Scottish Rural Development Programme, Landfill Tax and local grant schemes are possibilities.

Guidance on learning and teaching approaches for this Unit

A sensible approach to the delivery of this Unit would be to balance theoretical classroom sessions with ample field visits to contextualise what has been discussed in class.

Approaches which could be used in the classroom are:

- ◆ debate on moral issues surrounding biodiversity. Is it acceptable to save it so we can use it in some way?
- ◆ looking at case studies of biodiversity enhancement
- ◆ individual research and reporting back on allocated subjects — a particular designation for example
- ◆ the use of presentation software to illustrate examples from further afield
- ◆ guest speakers on particular subjects

National Unit specification: support notes (cont)

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Useful teaching and learning activities for the field could be:

- ◆ a trip to simply enjoy biodiversity at a site and exploration of what people get out of it by way of reward
- ◆ visits to a variety of designated sites — international, national and local should be attainable in most areas, and maybe even on the same site
- ◆ a visit to a project which is specifically targeting the enhancement of a particular habitat or species
- ◆ a visit to a site managed for biodiversity — a NNR, LNR, RSPB reserve, SWT reserve or such
- ◆ contact and input from site managers, agency staff and others (SNH, RSPB, biodiversity officers etc)
- ◆ an extended field trip to an area which differs from the habitats available locally
- ◆ a days practical involvement in biodiversity enhancement

A sound basic teaching and learning approach for the Unit could be summarised as:

- ◆ chat about it in class
- ◆ issue some support material and direct some research
- ◆ get out of the classroom to look at it in the field
- ◆ involve practitioners
- ◆ chat about it again back in the class

Opportunities for developing Core Skills

Oral Communication can be enhanced through classroom discussion and interactions on field trips. The use of individual presentations on research topics would also help in this area. Written Communication could be enhanced through the production of assessment evidence.

If assessment work is word processed then there are opportunities for the development of *Information and Communication Technology (ICT)* skills especially if images and diagrams are included. Research on the internet would also help.

The Core Skill of *Problem Solving* can be developed through making recommendations to enhance biodiversity based on information gathered on a site.

Guidance on approaches to assessment for this Unit

The nature of the Outcomes lends them to individual assessment. However the knowledge gained in Outcome 1 and Outcome 2 builds and can be utilised in Outcome 3. For this reason it may be best to deliver and assess the Outcomes sequentially.

Outcome 1: Describe the motives and benefits of biodiversity conservation.

Assessment could be by:

- ◆ restricted response questions

National Unit specification: support notes (cont)

Unit title: Principles of Biodiversity Conservation (SCQF Level 6)

Outcome 2: Describe the designations that support biodiversity conservation.

Assessment could be by:

- ◆ a combination of restricted response and short answer questions

Outcome 3: Assess the biodiversity value and potential of a given area.

Assessment could be by:

- ◆ investigation and report based on either a given site or one of the candidates own choosing

Opportunities for the use of 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 e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date

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