



National Unit specification: general information

Unit title: Biodiversity in Scotland (SCQF level 5)

Unit code: FV49 11

Superclass: QA

Publication date: September 2011

Source: Scottish Qualifications Authority

Version: 02

Summary

The purpose of this Unit is to enable candidates to develop basic knowledge and understanding of biodiversity in Scotland. On completion of this Unit candidates will be able to understand the importance of Scotland's biodiversity and the critical life support system it provides and to conduct a simple investigation of the biodiversity of an area.

This Unit is suitable for candidates who are looking to develop a career in management of the natural heritage.

This is an optional Unit within 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 Explain biodiversity.
- 2 Describe biodiversity in Scotland.
- 3 Investigate the biodiversity of a given area.

Recommended entry

Entry is at the discretion of the centre.

General information (cont)

Unit title: Biodiversity in Scotland (SCQF level 5)

Credit points and level

1 National Unit credit at SCQF level 5: (6 SCQF credit points at SCQF level 5*)

**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

Achievement of this Unit gives automatic certification of the following Core Skills component:

- ◆ Critical Thinking at SCQF level 5

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

National Unit specification: statement of standards

Unit title: Biodiversity in Scotland (SCQF level 5)

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

Explain biodiversity.

Performance Criteria

- (a) Explain the term biodiversity.
- (b) Explain the different levels of diversity.

Outcome 2

Describe biodiversity in Scotland.

Performance Criteria

- (a) Describe the nature of Scotland's biodiversity.
- (b) Describe Scotland's biodiversity in terms of national assets.
- (c) Describe Scotland's biodiversity in terms of international assets.

Outcome 3

Investigate the biodiversity of a given area.

Performance Criteria

- (a) Describe key habitats present in a given area.
- (b) Describe key organisms present in a given area.
- (c) Investigate natural processes in a given area and the effect on organisms present.
- (d) Investigate human influences in a given area and the effect on organisms present.

National Unit specification: statement of standards (cont)

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Evidence Requirements for this Unit

Written and/or oral recorded evidence must be produced to demonstrate that candidates have achieved all of the Outcomes and Performance Criteria.

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

Outcome 1

Evidence must include:

- ◆ an explanation of the term 'biodiversity'
- ◆ an explanation of the different levels of diversity which must include:
 - genetic diversity
 - species diversity
 - ecosystem diversity

Evidence must include:

- ◆ a description of the nature of Scotland's biodiversity which must include:
 - climatic variation
 - landscape variation
- ◆ a description of national assets which must include nationally important species
- ◆ a description of international assets which must include internationally important species

Evidence must include:

- ◆ a description of key habitats present which must include:
 - habitat features
 - abiotic
 - biotic
- ◆ a description of key organisms present which must include:
 - flora
 - fauna
- ◆ an investigation of natural processes present in given area and the effect on organisms present
- ◆ an investigation of human influences present in given area and effect on organisms present which must include:
 - habitat and species management
 - land use

National Unit specification: support notes

Unit title: Biodiversity in Scotland (SCQF level 5)

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

Outcome 1

For Outcome 1 candidates will be required to explain the term biodiversity. To enable candidates to understand the extent and importance of the world's biodiversity they should be introduced to the foundations of the UK Biodiversity Action Plan in response to the Convention of Biological Diversity (CBD) 1992. This in turn will allow candidates to explore local biodiversity through the Local Biodiversity Action Plan looking at key species and habitats in their area. Candidates should be given the opportunity to explore the variety of life on a local level taking into account regional and international biodiversity. Candidates should be made aware that the term biodiversity includes all flora and fauna from the bottom of the food chain, eg slime moulds through to top apex predators. Local examples should be used where appropriate including field trips to habitats from the Local Biodiversity Action Plan where possible. Once candidates understand the term biodiversity the different levels of biodiversity should be introduced. Genetic variation should include variation between individuals in a single population, as well as variations between different populations of the same species. Species diversity should explore the variety of species in a geographic area including the number of different species and the evenness of each species in the area. Ecosystem diversity will include all communities of plants and animals together with the physical characteristics of their environment. Candidates should be encouraged to explore the different levels with examples being used where appropriate.

Outcome 2

Outcome 2 will allow candidates to explore the biodiversity in Scotland. Candidates should examine the extent of Scotland's biodiversity its habitats and related species. These should include coastal, woodland, wetland, moorland, grassland, montane, areas above treeline and farmland where appropriate. Field trips and/or case studies should be used to allow candidates to understand the variation in Scotland's biodiversity. The variations in climatic conditions in Scotland and related habitats should be covered to include Arctic Tundra in the Cairngorm Mountains through to the temperate forests on the west coast through the influence of the North Atlantic Drift and associated climatic conditions. The influence of climate on Scotland's biodiversity should include the different climatic zones and ocean currents that Scotland sits upon. From the warm, wet weather in the west through to Arctic air and ocean currents that influence our winters. The physical landscape of Scotland should be explored by candidates allowing an understanding of the vast diversity.

National Unit specification: support notes (cont)

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The physical landscape of Scotland should include its coastline, islands, glens, rivers, lochs through to the mountains, plateaux and their associated habitats. An understanding of the climatic and landscape variations in Scotland is fundamental to understanding the associated flora and fauna.

Candidates should be actively encouraged to explore the extent of Scotland's rich and varied biodiversity. Scotland is internationally important for many habitats including heather moorland, lowland raised bog and upland blanket bog and its machair. Scotland has approximately 10,000 km of coastline with sea lochs and freshwater covering 2.3% of the Scottish landmass. Due to the variation in landform and climate of Scotland many species find themselves on the edges of their range. National examples should be used wherever possible to illustrate eg Scottish primrose. Scotland's importance on an international scale should be highlighted to include its habitats for migratory birds including wildfowl and waders overwintering in rich estuaries. Scotland's seas also support a vast amount of wildlife supporting 244 species of fish as well as whales, dolphins and many seabirds. Candidates should be encouraged to explore national habitats and their associated wildlife with field trips used to enhance learning where possible.

Outcome 3

For Outcome 3 candidates will be required to undertake an investigation into the biodiversity of a given area. Local areas should be chosen where possible and field trips should be used to allow candidates to fully investigate the habitat. Habitats used for Outcome 2 could also be utilised.

Candidates will describe habitats present in their given area including key abiotic and biotic features present. These may include:

Abiotic features: temperature, soil composition (sand, clay etc.) soil moisture, humidity, wind speed, amount of daylight (daily, seasonal), amount of light reaching various areas

Biotic features: key plant and animal life

Other factors that should be discussed include the role that the simplest fungi and bacteria have within habitats.

Natural processes in the environment should be introduced to candidates these may include succession through to erosion, wind and wave action and nutrient cycling. Food chains, food webs and energy transfer should also be covered to demonstrate the fragile balance of different habitats. Candidates should be encouraged to discuss and understand what natural processes have shaped the habitat under investigation. Candidates should explore the effects or possible effects of climate change on the given area with emphasis being placed on the ability of the given area to adapt to accelerated climate change. Problems to be discussed may include raising sea levels, hotter and wetter summers and unpredictable weather.

National Unit specification: support notes (cont)

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Human influences on the land should be discussed with candidates with local examples used where appropriate. Human influences will include management techniques such as grazing, cutting, burning, coppicing, deforestation, reforestation, pond/wetland restoration, etc.

The role land use plays in the shaping of habitats should be discussed with candidates, these may include heather moorland for gamekeeping, agricultural land with the removal of hedgerows and drainage of fields through to plantation forests and the effects of a monoculture crop.

Guidance on learning and teaching approaches for this Unit

A mixture between class based sessions and field work sessions should be used in an appropriate balance. The aim of the Unit is to allow candidates to explore the biodiversity of Scotland and develop greater knowledge and understanding of the natural and human processes that shape the country. Candidates should be encouraged to undertake research into different habitats within Scotland. Small class presentations should also be used where appropriate.

Field trips could include:

- ◆ coastal habitats
 - estuaries including reed beds
 - dunes
 - salt marshes
 - rock pools
 - sea lochs
- ◆ heather moorland
- ◆ freshwater
 - rivers
 - streams
 - ponds
 - lochs
 - wetland
- ◆ woodland
- ◆ forests
- ◆ plantation
- ◆ montane
- ◆ bog
- ◆ upland

Case studies and research can be used for Outcome 1 and 2. Outcome 3 should be delivered with class based sessions and relevant field trips.

National Unit specification: support notes (cont)

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Opportunities for developing Core Skills

In this Unit candidates will develop practical research and investigation skills.

Candidates will:

- ◆ research the meaning of biodiversity
- ◆ explore and describe the nature of Scotland's biodiversity
- ◆ investigate the biodiversity of a given area

As candidates are doing this Unit they will be developing aspects of the Core Skills in *Communication, Numeracy, Problem Solving, Information and Communication Technology* and *Working with Others*.

Guidance on approaches to assessment for this Unit

Outcome 1

Assessment could be:

- ◆ open-book report

Outcome 2

Assessment could be:

- ◆ open-book report

Outcome 3

Assessment could be:

- ◆ open-book report including introduction and valid conclusion

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)*.

National Unit specification: support notes (cont)

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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
02	Core Skills Component Critical Thinking at SCQF level 5 embedded.	29/09/2011

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