

## The Sourhope research site



The Soil Biodiversity Programme chose Sourhope Research Station for its field research. The name Sourhope (pronounced 'Sirrup') is said to mean 'the valley of sour pastures'. The site is in the Scottish Borders, 15 miles south of Kelso at the head of the Bowmont valley. There has been farming at Sourhope since the 14th century. On the western slopes of Cheviot, the land rises from 213m to 605m. Annual rainfall is 1015mm (10 year mean). The research station now comprises two working farms, of 940ha and 179ha respectively. Sourhope is managed by the Macaulay Institute, based in Aberdeen.

### Soils

The soils developed from Old Red Sandstone Age andesitic lavas that were picked up and deposited by glaciers. Acid brown forest soils characterise the lower slopes. More acid peaty podzol soils and peaty gleys occur at higher elevations with small areas of deep peat on hill summits. Steep slopes have stony skeletal soils.

The soils at the programme's research site have been intensively studied. Researchers have characterised five soil profiles on the site, and recorded a range of chemical determinands for samples taken across the site, including

nitrogen and carbon content, moisture loss and acidity.

### Vegetation

Sourhope has rough pastures dominated by *Agrostis* and *Festuca* grasses, associated with bracken of varying intensity. There are also grass heaths dominated by *Molinia* and *Nardus* grasses. The research site is representative of mid-altitude upland grasslands on base-poor, damp, mineral soils. *Agrostis capillaris* is the dominant grass. The most closely matching National Vegetation Classification (NVC) community, which has been assigned to each plot, as well as the site as a whole, is U4d. This classification describes the site as a *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland, *Luzula multiflora-Rhytidadelphus loreus* subcommunity.

The programme surveyed the vegetation at the research site annually from 1998 until 2003. All soil and vegetation survey data for the site are freely available on the Soil Biodiversity Programme web site <http://soilbio.nerc.ac.uk/>.

### Livestock

A large flock of sheep graze the research station's rough pastures. A herd of beef cattle control the sward height, and a herd of goats are kept for cashmere wool.

## Research facilities

Visiting scientists can use the station's offices and laboratories. The laboratories are equipped with ovens and freezers, and computers are linked to the main Macaulay server. Self-catering hostel accommodation is available on site.

The Macaulay Institute is maintaining the Soil Biodiversity Programme's study site until November 2006, three years longer than originally planned. This is to enable scientists to use the facilities there, and build on the programme's work. The advantages of using the site for soil ecology research include:

- The site is fenced to prevent entry by grazers.
- The grass is regularly mown to simulate grazing.
- The treatments (lime, nitrogen, nitrogen + lime, and biocide) are still being applied to the randomised treatment blocks.
- Past research at the site is well-documented, and there are plenty of usable 50 x 50 cm cells.
- Meteorological data, collected by an automatic weather station, are available to anyone using the site.
- The site has been intensively studied in the Programme, and much of the data are freely available to other researchers.
- Work could also be carried out on other parts of the research farm, with the approval of the Macaulay Institute. A large amount of research has been conducted on the farm, particularly into grazing, sustainable management and alternative farm enterprises.
- Sourhope was one of the research sites in the SEERAD-funded Micronet programme on soil microbial ecology.
- This is undoubtedly the best-understood piece of soil in the world, at least in terms of soil biodiversity, and how the soil ecosystem functions.
- Sourhope is also an Environmental Change Network (ECN) long-term environmental monitoring site, and a large amount of data, including physical, chemical and biological measurements, is available for the site. For more information visit [www.ecn.ac.uk](http://www.ecn.ac.uk).



## Using Sourhope Research Station

If you would like to conduct research at Sourhope, please contact the following:

For further information about the site:

Gordon Common  
Site Manager  
Macaulay Institute  
Sourhope Research Station  
Yetholm  
Kelso TD5 8PZ

Tel: +44(0)1573 420229

Email: [g.common@macaulay.ac.uk](mailto:g.common@macaulay.ac.uk)

For further information about the NERC Soil Biodiversity Programme:

Dr Andrew Sier  
Programme Manager  
CEH Lancaster  
Lancaster Environment Centre  
Library Avenue  
Bailrigg  
Lancaster  
LA1 4AP

Tel: +44(0)1524 595800

Email: [soilbio@ceh.ac.uk](mailto:soilbio@ceh.ac.uk)

