Scottish Natural Heritage
Research Report No. 1025

Site Condition Monitoring survey of upland notified features on designated sites – Ben Vrackie

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RESEARCH REPORT

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Site Condition Monitoring survey of upland notified features on designated sites – Ben Vrackie

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SCM Reports

This report was commissioned by SNH as part of the Site Condition Monitoring (SCM) programme to assess the condition of special features (habitats, species populations or earth science interests) on protected areas in Scotland (Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas and Ramsar). Site Condition Monitoring is SNH's rolling programme to monitor the condition of special features on protected areas, their management and wider environmental factors which contribute to their condition.

The views expressed in the report are those of the contractor concerned and have been used by SNH staff to inform the condition assessment for the individual special features. Where the report recommends a particular condition for an individual feature, this is taken into account in the assessment process, but may not be the final condition assessment of the feature. Wider factors, which would not necessarily be known to the contractor at the time of the monitoring, are taken into consideration by SNH staff in making final condition assessments.

RESEARCH REPORT

Summary

Site Condition Monitoring survey of upland notified features on designated sites – Ben Vrackie

Research Report No. 1025
Project No: 013952
Contractor: Ruth Maier
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Keywords

Site Condition Monitoring; Protected Area; Upland; Site of Special Scientific Interest; Condition; Grazing

Background

Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), and Ramsar sites are designated on the basis of notified features of interest. Site Condition Monitoring is a six year rolling programme of assessment, against quality standards, of the condition of notified features of interest on designated sites. This project is concerned with upland habitat features on Ben Vrackie SSSI. Grid Ref: NN950630 in SNH Area: Perth & Kinross.

Main findings

The SSSI feature upland assemblage was surveyed at this site. The assemblage feature comprised the following five component habitats: rocky slopes, willow scrub, alkaline fen, springhead, rill and flush and dry heath. All waypoints were picked opportunistically. At each waypoint the species composition, cover, structure, signs of grazing, browsing, trampling, erosion, etc were assessed against attributes and targets laid down in the guidance notes for the assessment of upland habitats for the appropriate habitat. The results of the survey were as follows.

- The upland assemblage failed for three of the five component habitats, though two of these failures are considered unmerited. One component habitat was not found.
- Springhead, rill and flush failed at one out of two locations where it was assessed and it therefore failed overall. This component habitat has a very restricted distribution at this site.
- One of the unmerited failures was for alkaline fen which failed due to lack of vegetation height. This is considered to affect less than 10% of the component habitat, leaving more than 90% as passing all targets.
- The other unmerited failure was for dry heath which failed due to overgrazing in some parts of the site. This is considered to affect less than 10% of the total extent of the component habitat, leaving more than 90% as passing all targets.

- The component feature willow scrub was not found within the site and may therefore fail due to lack of presence. This needs to be investigated further.

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1. INTRODUCTION

1.1 Background

Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), and Ramsar sites are designated on the basis of notified features of interest. These features of interest may be particular habitats or vegetation types, particular species, or particular geological or geomorphological features. Site Condition Monitoring is a six year rolling programme of assessment, against quality standards, of the state of notified features of interest on designated sites. This project is concerned with upland habitat features and this report deals with the Ben Vrackie SSSI Grid Ref: NN950630 in SNH Area: Perth & Kinross.

2. METHODS

2.1 Common standards monitoring

The methods for assessing the condition of the habitats followed those given in the documents 'Common Standards Monitoring - guidance for upland habitats' (JNCC, 2009) and Site Condition Monitoring of Upland Sites in Scotland: Method of Field Assessment, by A. MacDonald 5/5/2004 (DetFieldMethod.doc)

The above CSM guidance provides attribute tables with a number of targets to be assessed for each feature.

2.2 Selection of assessment points

The only feature assessed was Upland Assemblage. Features assessed as upland assemblage component habitats were surveyed opportunistically from vantage points across the site and from a smaller number of opportunistic sample locations.

2.3 Field methods

The only feature assessed was Upland Assemblage. The surveyor navigated around the site using a hand-held GPS receiver accurate to at least 10m. At vantage points and other suitable locations for assemblage habitat features opportunistic waypoints were recorded. The grid reference for the location of each assessment made was recorded.

At each point, all targets for the appropriate upland assemblage feature habitat to be assessed were checked and the actual value of the assessment recorded, e.g. vegetation height in cm, as well as a note of whether the feature passed or failed for each target.

The scale of assessment varied according to the habitat and attribute to be assessed. Some feature assessments were made at an 'immediate' scale of four square metres and some at the scale of the entire feature visible from the sample location.

If any target was not met at a point assessment, the feature was considered to have failed at that location. The justification used to determine passing or failure of a feature is described in the SNH paper Site Condition Monitoring of Upland Sites in Scotland: Method of Field Assessment, by A. MacDonald 5/5/2004 (DetFieldMethod.doc). Where the failure was considered to have been 'unmerited' or a 'false alarm' evidence or observations supporting this judgement are discussed in the relevant section for each feature.

For the components of the assemblage feature, the surveyor's final assessment of the component was based on point assessments combined with observations from vantage points and observations made while travelling between points. If it was judged by the

surveyor that less that 90% of the extent of a component would pass the targets then that component failed overall for the feature.

A plot and context photograph was taken of each plot. Additional photographs were taken throughout the site to illustrate general condition of the feature assessed and any particular issues related to condition or management. Each photo was given a unique reference as listed in the spreadsheet (Appendix 2).

2.4 Features surveyed

The components of the upland assemblage feature were:

- Rocky slopes
- Willow scrub
- Springhead, rill and flush
- Alkaline fen
- Dry heath

2.5 Data presentation/spreadsheets

All field data was collated into spreadsheets (Appendix 2). All records are supported by the following information: point number, surveyor's initials, date, grid reference (6 figure easting and northing), any photo details and notes. In addition, for each feature or component of an assemblage, the relevant targets are tabulated such that Y/N signifies pass (Y) or fail (N) and associated figures indicate the actual value ascribed to the target assessed, e.g. for vegetation height Y 25 indicated that the feature passed and that the vegetation was 25cm high. Units are given in the title bar for each table.

2.6 Dates, surveyors and local conditions

Ben Vrackie SSSI was surveyed on 5th September and 4th October 2012 by Ruth Maier. A few additional assessments were made for rocky slopes on 5th December by Colin Wells. Conditions were windy and sunny on both days, with a few showers in late afternoon on 4th October. On 5th December it was sunny with broken snow cover on the slopes surrounding the rock outcrops but the vegetation on the cliffs was exposed.

The dry heath feature was surveyed on 13th and 23rd October 2015 by Ruth Maier. The 13th was bright and sunny, the 23rd more overcast but still dry.

3. RESULTS

Table 1. Summary table of the overall condition assessment for each feature.

Feature/habitat	Number of assessments				Pass/ Fail	Reasons for failure or uncertainty
	passed	failed	discarded	inaccessible		
Upland assemblage					F	3 component features failed (two unmerited) due to vegetation height, grazing and presence of undesirable grasses

3.1 Upland assemblage

Table 2. Summary of the condition assessment for upland assemblage component habitats.

Habitat	Number of locations assessed	Number of locations at which habitat		Total number of targets failed
		passed on all targets	failed on at least one target	
Rocky slopes	13	13	0	0
Willow scrub	na	na	na	na
Alkaline fen	13	12	1	1
Springhead, rill and flush	2	1	1	2
Dry heath	27	23	4	1

The assessment of this feature was made from a combination of point assessments and more general observations made from vantage points around the site.

3.1.1 Upland assemblage component: Rocky slopes

Rocky slopes were present within the Ben Vrackie SSSI in the form of small outcrops, rock slabs and larger cliffs. Larger areas of exposed rock were confined to the south face of Ben Vrackie itself but there were frequent smaller cliffs and rock outcrops in other parts of the site. Exposed rock was scarce in the northern part of the site below 600m.

The rocky slopes feature was assessed at 13 waypoints and it passed all targets at each location. One assessment was for calcareous rock, the others for siliceous rock. There was some obvious trampling along the base of the calcareous cliff but trampling is not assessed as a target. Grazing was high in this part of the site but the grazing was very localised and little grazing was recorded in the southern part of the site away from the calcareous cliff.

Photo 1. South-facing calcareous cliffs below Ben Vrackie summit.

3.1.2 Upland assemblage component: Willow scrub

This feature was not found in the Ben Vrackie SSSI and no information was available about its location from SNH. Vascular plant monitoring was also carried out at this site in 2012 which may have relocated suitable willow species for this feature. This feature fails provisionally for lack of presence.

3.1.3 Upland assemblage component: Alkaline fen

Alkaline fen was found in different parts of the site. The main NVC communities present were M10 *Carex dioica – Pinguicula vulgaris* mire and M11 *Carex demissa – Saxifraga aizoides* mire. The feature was most abundant on the northern slope of Ben Vrackie where M11 flushes often contained arctic-alpine elements such as *Tofieldia pusilla*, and some flushes in this area may qualify as alpine flush.

The feature failed a single target at a single location where it was assessed. The failure was for insufficient vegetation height. More than 50% of the vegetation was less than 5cm tall and this was due to grazing on grasses and *Carex* species. Grazing and trampling was higher in the northern part of the site, but impact levels were not sufficiently high to cause the feature to fail in other areas where it was assessed. Higher trampling was recorded in a plot west of the Ben Vrackie summit where a small flock of sheep was found but this did not cause any target failures.

Alkaline fen was in good condition in most parts of the site and the target failure was restricted to a small area. The component feature would pass all targets in more than 90% of the site and it is therefore considered to have passed for this site.

Photo 2. Alkaline fen on south-facing slope of Ben Vrackie

3.1.4 Upland assemblage component: Springhead, rill and flush

This feature component was scarce within the Ben Vrackie SSSI and it was restricted to the northern slope of Ben Vrackie. The only NVC vegetation type found was M37 *Cratoneuron commutatum – Festuca rubra* spring.

The feature failed for two targets at one of the two locations where it was assessed. The moss mat, though unbroken, showed obvious hoof prints and grazing on grasses within the plot was high. The plot also failed due to a high cover of undesirable grasses. The second plot which was assessed also showed obvious trampling, with some deer dung found inside the plot, but grazing levels were lower, just within acceptable levels.

The only other examples of this component feature type found within the site were other M37 springs close to the ones assessed. Trampling and grazing were obvious in all springheads though undesirable grasses were usually scarce to absent.

As more than 10% of the component feature is considered to be in unfavourable condition due to grazing, it is considered to have failed as part of the upland assemblage.

Photo 3. Locally abundant M37 springs on north side of Ben Vrackie

3.1.5 Upland assemblage component: Dry heath

This feature was widespread within the Ben Vrackie SSSI. It was the dominant habitat in the southern part of the SSSI where it was found on all but the shallowest slopes. In the northern half it was more patchy and restricted to rocky knolls and steeper cliff slopes, within a grassier vegetation matrix. The main NVC communities were H10 *Calluna vulgaris – Erica cinerea* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. H18 was present at higher altitudes, especially on the north-facing slope of Ben Vrackie and H21 was found more locally on steep boulder slopes.

Dry heath was assessed at 27 locations within the SSSI. It failed at 4, all due to browsing on palatable dwarf shrubs. All the failures were in the northern half of the site where there is grazing by sheep as well as by deer.

Browsing levels in this northern part were mostly at acceptable levels within 20-30%, but they were too high on parts of Meall Garbh and Creag Breac either side of a stock fence where there was also more obvious tracking and frequent deer dung. Browsing was also too high on *Vaccinium myrtillus* within H18 heath on the northern slope of Ben Vrackie. The H18 heath was quite grassy, with sparse to frequent dwarf shrub cover within a dense bryophyte mat. There were frequent patches of *Polytrichum commune*, indicative of high grazing levels, though the absence of bare ground suggests this may be decreasing.

The southern half of the site was very different. There were few current signs of herbivore presence and the heath had a closed *Calluna vulgaris* canopy, with other dwarf shrub species subordinate but present throughout. There were occasional small patches of thistles and nettles indicating higher livestock grazing pressures in the past, but no livestock grazing is currently taking part in this part of the site (Alistair Fergusson *pers com*).

Bracken patches were present within heath below 450 metres in the southern part, but the area affected was small, as most of the site is at higher altitude. Very little bracken was present in the northern part.

Photo 4. Dry heath in the southern part of the Ben Vrackie SSSI, looking north to main summit.

Despite failing at 4 waypoints, dry heath browsing is at acceptable levels over much of the site. The area failing due to high browsing is likely to be less than 10% of the whole extent of dry heath within the site and this upland assemblage component is therefore considered to have passed for this site.

4. MANAGEMENT

4.1 Positive management activities

14. Grazing
32. Tourism and Recreation

4.2 Negative management activities

32. Tourism and Recreation

4.3 Management discussion

The southern part of the site is very lightly grazed with no obvious herbivore impacts. A flock of eight sheep was present on the south-facing cliff slope of Ben Vrackie and there were also two roe deer seen in this area. There are frequent small tracks around cliffs and outcrops on this slope and there is some localised trampling in flushes, both by sheep and deer and by hill walkers looking for alternative ways to the summit.

There is a good footpath leading to the summit which is well-maintained. This is used by the majority of people for easy access to the summit but a small number of hill walkers are looking for alternative routes. People were seen picking their way through the cliffs when descending from the summit on both survey days. However, current trampling levels are low enough not to cause feature failures in this area.

Deer numbers are higher in the northern part of the site and there were several small herds of red deer in the corries on either side of the ridge to Meall Breac. There were more obvious trampling impacts in these areas, and the level of grazing was high enough to cause target failures for dry heath in four locations. Grazing was highest in the *Vaccinium myrtillus* heath on the north slope of Ben Vrackie where both sheep and deer were seen in both 2012 and 2015.

5. DISCUSSION OF OVERALL SITE CONDITION

The component habitats of the upland assemblage feature are in good condition, despite being considered a provisional failure. Failures due to trampling and grazing are thought to affect less than 10% of the site, with the remainder thought to pass all targets. Grazing levels are too high in a small part of the site, but ungrazed heath is present in the southern half of the site. In the northern half grazing is patchy with localised higher grazing levels.

The failure due to the absence of one component feature is more critical and should be investigated further. No information about the location of the willow feature was made available to the contractor at the time of survey and no willows were found. Willows were, however, monitored for vascular plant site condition monitoring in 2008 and the information gathered from that survey may be sufficient to decide whether the willow component is in favourable condition.

Component feature habitats consist of sufficient indicator species and have acceptable levels of cover for these. Herbivore impacts are sufficiently low for much of the area. There is obvious trampling, partly due to herbivores and partly due to hill walkers, which is causing localised higher impacts but current trampling levels are acceptable. The only part where trampling is an ongoing concern is at the base of the main calcareous rock cliff, an area easily accessible from the main footpath to the summit. While some of the trampling in this area is likely to be due to amateur botanists, the high level of grazing on accessible vegetation on the calcareous cliff suggests that this is also a preferred foraging area for the

few sheep remaining on the site. Sheep grazing is also likely to be a contributing factor to the higher grazing levels on *Vaccinium myrtillus* on the north-facing slopes of the main summit.

6. REFERENCES

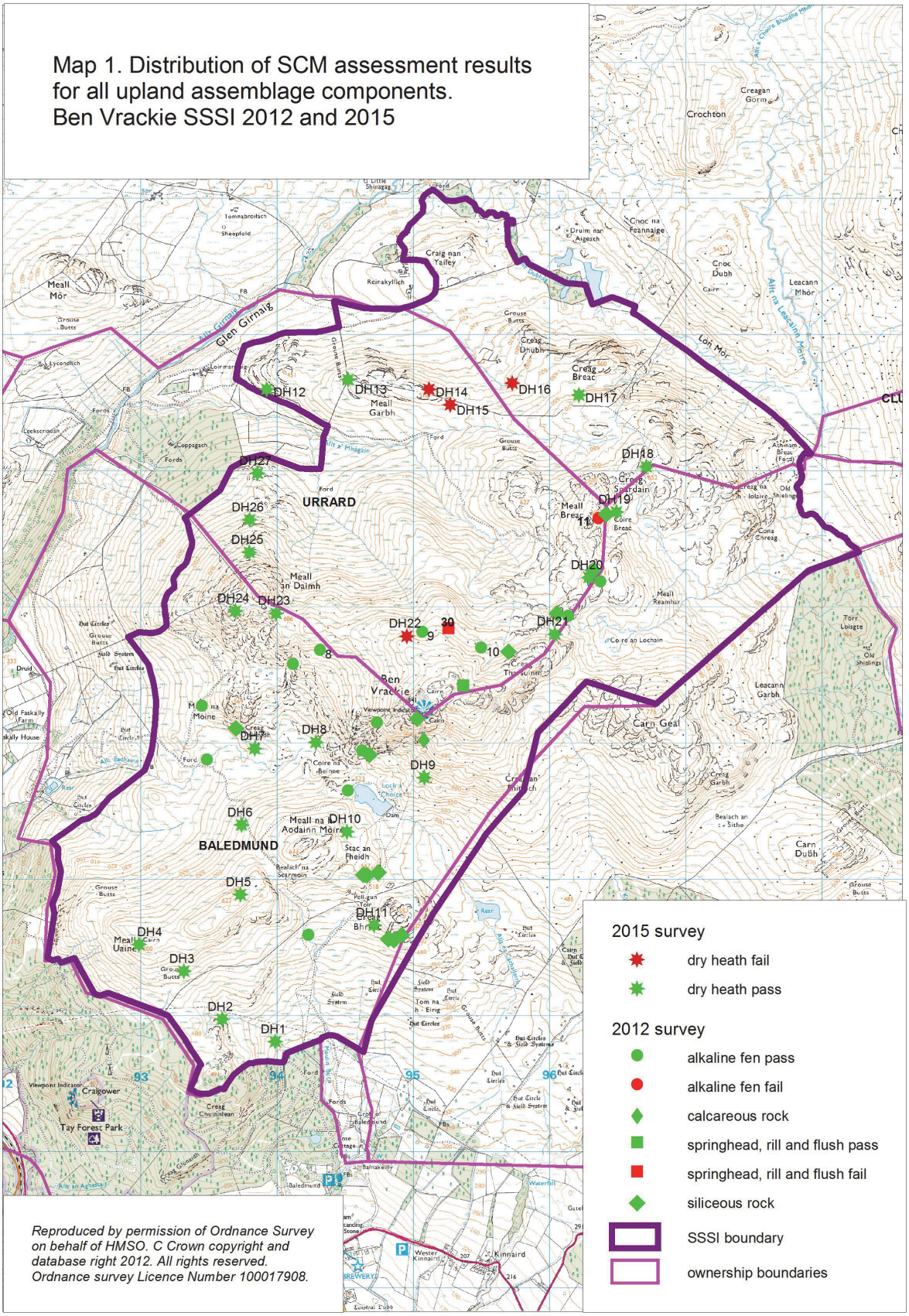
JNCC, 2006. *Common Standards Monitoring Guidance for Upland habitats.* Available at: http://jncc.defra.gov.uk/pdf/CSM_Upland_Oct_06.pdf

JNCC, 2009. *Common Standards Monitoring Guidance for Upland Habitats*. Available at: http://jncc.defra.gov.uk/Default.aspx?page=2237

Rodwell, J.S. 1991. *British Plant Communities. Volume 2 Mires and heaths*. Cambridge: Cambridge University Press.

Rodwell, J.S. 1992. *British Plant Communities. Volume 3 Grasslands and montane communities*. Cambridge: Cambridge University Press.

ANNEX 1: MAP RESULTS



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