Scottish Natural Heritage
Research Report No. 1030

Site Condition Monitoring survey of upland notified features on designated sites – Dumbarton Muir

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RESEARCH REPORT

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Site Condition Monitoring survey of upland notified features on designated sites – Dumbarton Muir

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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 – Dumbarton Muir

Research Report No. 1030
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Keywords

Site Condition Monitoring; Protected Area; Upland; Site of Special Scientific Interest; Condition; Blanket bog

Background

This report was prepared by Peak Ecology Ltd. It provides findings of monitoring undertaken at Dumbarton Muir SSSI in the Strathclyde and Ayrshire SNH Area. There was Site Condition Monitoring (SCM) of the Blanket Bog (central National Grid Reference: NS 44523 79467) and a Site Check of the Raised Bog (central NGR: NS 45370 78115).

Standard guidance and methodology were followed. SNH provided a Site Attribute Table tailored to this blanket bog feature. Desk study included the 2002 report when the blanket bog feature site was found to be in unfavourable condition owing to burning over much of its area. Fieldwork took place over two days in July and August 2012. A total of 17 sample points were assessed on the blanket bog. Positive and negative management activities were also recorded. Two sorties were made across the raised bog.

Main findings

- One atypical sample plot (B1) at the edge of the bog did not meet two targets and was marginal for a third
- Damage to the ground layer from old burning was observed in or near two sample plots meaning that target was not met and those samples and three others in sensitive areas failed owing to other signs of damage owing to the old burning
- Although the burning was 10 years ago it was the main management issue and the main reason targets weren't met. There were no signs of recent burning
- No issues arose from the raised bog site check.

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1. INTRODUCTION

This report has been prepared by Peak Ecology Ltd for Scottish Natural Heritage (SNH). It provides findings of monitoring undertaken at Dumbarton Muir SSSI in the Strathclyde and Ayrshire SNH Area. This consisted of Site Condition Monitoring (SCM) of the Blanket Bog Feature (central National Grid Reference: NS 44523 79467) and a Site Check of the Raised Bog Feature (central NGR: NS 45370 78115). The work was undertaken by Carol Crawford.

Figure 1. Typical habitat on Dumbarton Muir SSSI.

The objectives of the monitoring were:

1. An assessment of the condition of the blanket bog notified feature, in the field.
2. A report on the overall condition of the blanket bog notified feature.
3. A report on which attributes fail, and estimates of how much target variables differ from targets, at which sample locations, for the blanket bog notified feature.
4. A written general description of the state of all the notified features, in particular the raised bog feature, over the whole site, highlighting any pattern in condition across multiple features.
5. Geographically referenced target notes and photographs for notified features not covered by SCM, to allow a Site Check return to be recorded
6. Completed field recording forms, in a standardised format, showing the results for the notified feature and notes on the reliability of observations (e.g. as affected by bad weather or poor visibility).
7. A record of management activities observed which are likely to affect feature condition (from a supplied standardised list).
8. Photographs of sample points and examples of condition.

2. METHODS

2.1 Monitoring guidance

The methods for assessing the condition of the habitats followed those given in the JNCC (2009) Common Standards Monitoring (CSM) Guidance. This contains attribute tables with targets to be assessed for each feature.

A Site Attribute Table (SAT) tailored to the Dumbarton Muir Blanket Bog feature was provided by SNH with the instruction that at least one target per attribute be used; some targets being more applicable than others. Mandatory targets were indicated in the SAT. The SNH suggestion that the SAT be included in the return for the site, with final two columns completed, was followed.

SNH's detailed SCM method (MacDonald, 2004) was provided after the draft report was produced. It was referred to for the final report.

2.2 Desk study – blanket bog

Ordnance Survey (OS) maps, recent aerial photographs, the SAT and the SNH (2002) SCM report for this feature all provided by SNH Inverness, and maps referred to in the SNH (2002) report provided by SNH Clydebank, were studied before the field survey. The CSM guidance and an earlier aerial photograph on Google Earth were also referred to.

Two recording forms were designed in Excel: one to capture data necessary to assess targets; the second to record notes and photograph details. In the former the targets are in the same order as in the SAT provided for that site and feature.

2.3 Selection of blanket bog assessment points

Sample points on the 2002 SCM transects (Map 1 referred to in SNH (2002)) were generated by eye using Anquet software and uploaded to a Garmin Etrex Vista HCx GPS handset for location in the field. Additional points were added to give a wide spread. There were further amendments in the field to cover the different types of ground encountered or because of time limitations. In all 18 points were visited of which one was subsequently found to be outwith the SSSI.

2.4 Desk study – raised bog

OS maps, recent air photos and the SNH (2011) SCM report on the raised bog, all provided by SNH were studied.

The SNH Area Officer who visited the site in 2011 provided an estimated grid reference for notable sedges encountered so that these could be specifically visited. This NGR was uploaded to the GPS handset together with that of an old drain line given in the 2011 report.

2.5 Field survey

2.5.1 Blanket bog SCM

The blanket bog was visited on 25th July and 2nd August 2012. Field methods followed those in: SNH (2012) Statement of Requirements (SoR) issued June 2012; the SAT later provided by SNH; and the CSM guidance if more detail was required.

The GPS handset (accurate to 3m in the open) was used to navigate as close as possible to the uploaded sample points and a new ten figure national grid reference (NGR) was taken at

the arrival point. A 2m x 2m sample sample plot was set out from the arrival point. Corners of the plot were marked with pieces of kit.

As prescribed, some targets were assessed in the 4m^2 plot, some in the area visible from it and a few both inside the plot and in the surrounding visible area. Active drainage and eroding peat were looked for between sample points as well.

All mandatory targets and other targets given for attributes were used.

Positive indicator species lists are not exhaustive. Obvious species were recorded rapidly and once at least six species had been seen recording stopped. Vascular plant names follow Stace (2010) and bryophytes names follow Atherton et al (2010).

Oblique photographs were taken of each plot (and direction noted) and its context in one or more directions. At least one vertical view of the ground layer, at wide angle setting, was also captured.

Target notes cover management activities and other observations of interest and also include photographs.

The three most significant positive management activities and the three most significant negative activities for the blanket bog feature were recorded on the data form.

2.5.2 Raised bog site check

The raised bog was walked over on 2nd August 2012 on the way to and the way back from the southern part of the blanket bog. There was a different route each way. Attributes, targets and the management discussion in the 2011 report were considered en route. It was also viewed from the tops of surrounding low hills. NGRs from the desk study were visited. Observations were recorded as Target Notes and photographs taken at each such location.

2.6 Survey limitations – blanket bog

Targets for the 'Vegetation structure – indicators of browsing' were sometimes difficult to assess, given the time of year (optimum late winter – spring) and therefore these assessments may not be accurate.

Both days were dry with good visibility. However, it was a very wet summer making the going on the bog slow in places. There was not time to go into every area and there may have been a bias towards the previously burned areas as there was interest in how they had recovered. There should have been one or two samples in the area north of Gallingad Burn and south of the Long Dyke, which had not previously been burned. Because that area was particularly wet and time was running out the one sample taken there, B16, was further west than planned, being on the route out, and was subsequently found to be in a corner outwith the SSSI. B16 appeared no different to areas to its east; pristine and species-rich; its data is in the excel appendix coloured orange but not included in assessments.

3. RESULTS

3.1 Desk study – blanket bog

The extent of the SSSI could be seen on the maps and aerial photographs. No NVC mapping was available. The Blanket Bog and Valley Bog (upland) Feature is defined in the CSM guidance as comprising one or all off the following NVC communities: M1 – M3 bog pool communities and M17 – M21 blanket and raised mire communities. Communities which may indicate degraded blanket bog are also listed.

The SNH (2002) SCM report gave the following NVC communities: mostly M19, M17 in dry areas and M25 probably derived from degraded M19. That report summarised the findings of two visits, the last of which was on 16/8/2002. The maps referred to therein showed 15 transects (their Map 2); and the locations of burning seen in the field (their Map 1). The condition of the SSSI was assessed as Unfavourable Declining due to that burning which was estimated to have occurred between 2000 and 2002 and to cover 44% of the bog.

The 2009 CSM guidance recommends that to report the condition of a feature as favourable, it should be possible to state with a high degree of confidence that each target is met over at least 90% of the feature. MacDonald (2004) explains that 28 is the number of samples that gives a percentage of the feature passing closest to 90%.

3.2 Desk study – raised bog

The location of the raised bog section of the SSSI, within an outlier to the east of the main SSSI, could be seen on the aerial photograph as a reddish triangle north of Lily Loch. At the previous monitoring in January 2011 all targets were met and a baseline was established under the current CSM monitoring system. The condition of the raised bog was considered to be Favourable Maintained. However as the visit was in January a site specific target: presence of two notable sedges *Carex limosa* and *C. magellanica* could not be assessed, though both had been seen at an earlier June 2009 visit.

3.3 Field survey

The routes taken, sample points and target note locations are shown in **Figure 2**. This is also provided as shape files in the accompanying data. The data sheets; completed SAT; notes on each sample and target notes, both with lists of photographs are provided in the Excel **Appendix**.

Photographs retain their original numbers and are contained in folders in the accompanying data, each folder labelled by Sample Point or Target Note numbers.

3.3.1 Blanket bog SCM

Blanket Bog sample points are preceded with a B on Figure 2. See Excel Appendix Sheet 1 for data, Sheet 2 for SAT completed with Target Results and Sheet 3 for each sample's Notes and Target Notes.

- On (1) the Data sheet the first column shows if the target was assessed within a $4m^2$ sample plot and/or the area visible round the plot (denoted $4m^2$ or Ж respectively).
- On (2) the SAT sheet the Target Results are in the final two (yellow) columns.
- On (3) the Notes there are the NGR for each sample plot and a brief description and/or notes for each sample plot
- (3) the Notes sheet also contains Target Notes (TNs) and their NGRs. The Blanket Bog TNs are in the middle of the sheet numbered 1 – 10.

For the 17 samples within the blanket bog feature many targets were met but there were some fails as given in Table 1. Mandatory targets are given in **bold**. More detail, discussion and judgements made follow the table.

Table 1. Sample plots which failed blanket bog targets (or were marginal).

Attribute	Target	Failed plots	Number of fails
Vegetation composition – cover of indicator species	**50% cover of 3 or more indicators**	**B1 marginal**	
Vegetation composition – cover of indicator species	*Sphagnum* cover not only *S. fallax*	B1	1
Vegetation structure - disturbance	**Burning to ground layer**	**B2, B12**	**2**
Vegetation Structure – disturbance	Burning in sensitive areas	B2, B4, B12,B14,B17	5
Vegetation composition – frequency of indicator species	**At least 6 indicator species should be present**	**B1**	**1**

3.3.1.1 Vegetation composition – cover of indicator species

For the first target: at least 50% of cover should be of at least three indicator species, one plot had cover just around 50%; i.e. was marginal. It was an atypical plot at edge of bog. For the second target: '*Sphagnum fallax* should not be the only *Sphagnum'*, the same plot failed.

3.3.1.2 Vegetation structure – disturbance

The mandatory target: 'no signs of damage to the ground vegetation layer from burning', was not met in or near two sample plots owing to old burning. There may have been a bias in the survey towards previously burned areas. Local damage, i.e. bare ground, was also seen at TNs 1, 5, 6, 8 and 9 and possibly TN7. See photos for these sample plots and TNs.

The second target: no signs of damage to sensitive areas from burning, was not met in or near five plots, again owing to old burning.

For both targets negative signs were in areas burned at time of previous monitoring; there was no evidence of recent burning.

3.3.1.3 Vegetation composition – frequency of indicator species

The atypical B1 again failed the target for this attribute with only five indicators.

3.3.1.4 Vegetation structure – indicators of browsing

For the mandatory target: less than 33% of last season's dwarf shrubs shoots (except Myrica) should show signs of browsing; browsing was seen in 10 of the 17 sample plots therefore this target was judged to have been met. The low number of sheep seen support this.

For the second target: in pioneer growth or where there is Myrica, less than 66% of last season's shoots should show signs of browsing, such browsing was only seen in 5 of the 17 plots. As only one target per attribute needed to be assessed, this one could be ignored.

It is suggested that other indicators of livestock activity might be more appropriate for the second target in summer such as cover of dung and/or hoof prints. These were recorded where seen (shown bold on sheet 3 of Appendix). The thresholds of dung cover and/or number of hoof prints would require to be set by SNH experts.

3.3.2 Raised bog site check

Target Notes for the Raised Bog are contained in the **Appendix** Notes sheet 3 - lower part of the sheet numbered 11 – 18. NGRs and photograph numbers are also given for each on that sheet, the photographs themselves are in the accompanying data.

No new negative indicators were seen. The old drain line at TN17 was still largely redundant with pools and little water movement. An old quad bike track was picked up at TN12, now with pools and it was thought unlikely that a quad bike could cross the bog, even at this usually driest time of year, as the ground was so wet. There was little evidence of recent management at the raised bog and no stock were seen there. Of the uncommon sedges *Carex limosa* was seen at TN18 (poor photograph) but not *C. magellanica*.

4. MANAGEMENT OF BLANKET BOG

4.1 Positive and negative activities

The most positive activities were:

1. Sheep were the only livestock and grazing level was often light
2. Burning no longer seems to be a management tool
3. Old drains don't appear to be maintained (though some still active)

The three most negative activities were:

1. Quad bike trails though they only affect a small area. They are generally spread out and not causing too much damage except on one area of slope
2. Scattered conifer regeneration from forestry east of the bog
3. Several drains on slopes do have running water

4.2 Discussion of management

Grazing pressure from sheep appeared low and its effects were most noticeable where ground vegetation had been damaged by past burning – dung or hoof prints in bare ground or short pioneer heather. Such effects were local.

There were no signs of recent burning but some places are still recovering from the burning 10 years ago.

There is still active drainage on sloping ground, again local. Running drains were seen near plot B6 and TN8 and other active drainage lines can be seen on the aerial photograph. If the owner is amenable to blocking some drains, those on sloping ground would be the ones to target. Flatter bog was much wetter and richer in *Sphagna*, though some damage at the south end of main bog (from past burning) was apparent.

Quad bike trails were the most obvious signs of recent damage to the bog surface. They were localised and not causing active drainage except on the route between TN2 and B6. A little conifer regeneration was seen at B6 and B8 and other places near the east forest. It would be worth removing the saplings, particular from drier bog on sloping ground where they are most likely to establish.

5. CONCLUSION

On the blanket bog, apart from targets not met at the atypical B1, the main issue was damage from old burning on parts of the bog which caused five samples to fail. Other parts of the bog mapped as having been burned in SNH (2002) have recovered. Overall the blanket bog feature might be best described as Unfavourable Recovering.

No issues arose from the raised bog site check.

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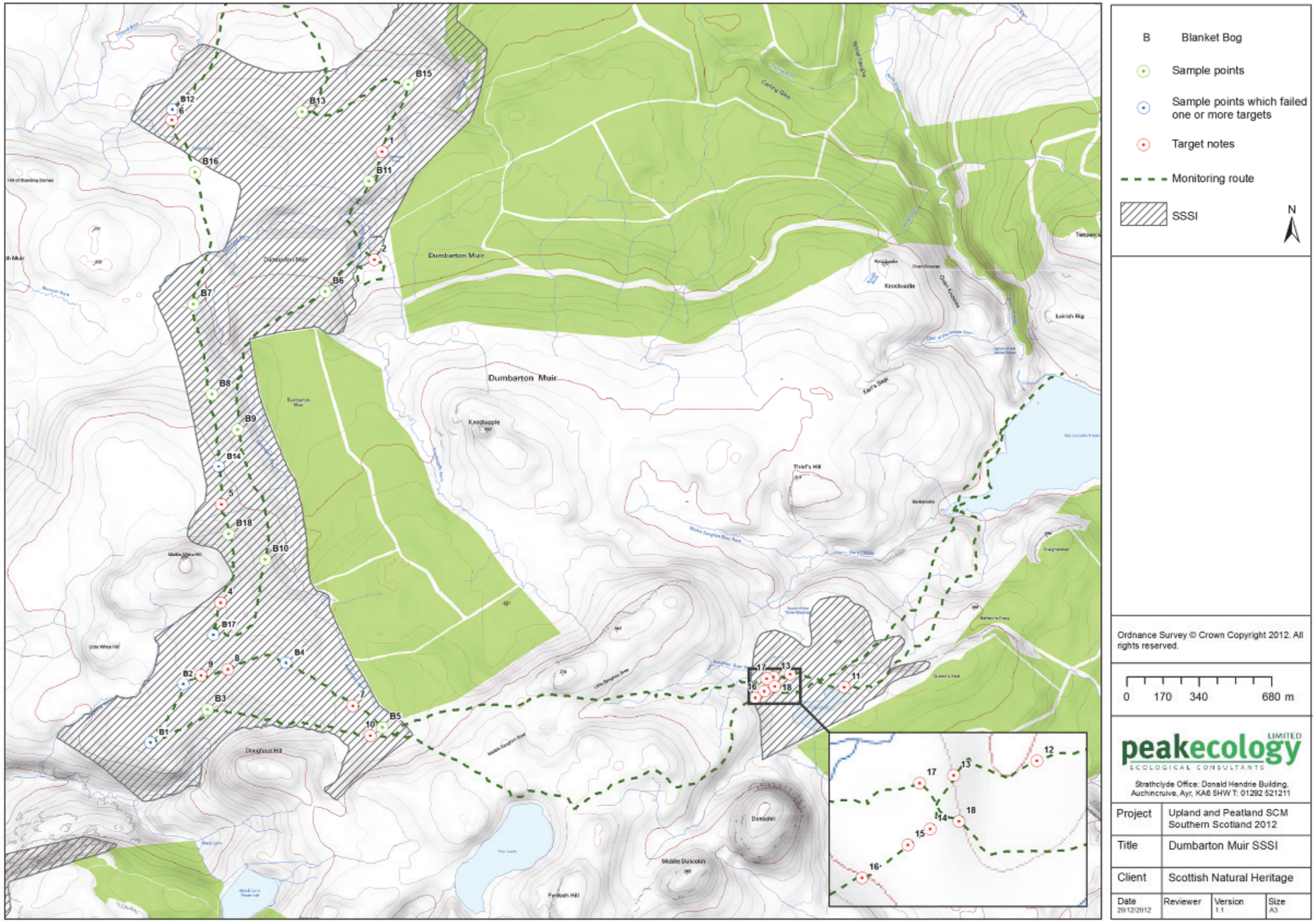

Figure 2. Route Taken, Sample Points and Target Note locations

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