

***Back to purple: conserving and restoring The Stiperstones
Gatten Plantation heathland re-creation survey***

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INTRODUCTION

Gatten Plantation is a 34ha area lying on the eastern side of The Stiperstones National Nature Reserve. The Plantation was wooded as long ago as 1830 and re-afforested in 1968-70 after a c.30 year period as open ground. Between February and July 1998 the site was clear-felled, starting from the southern end, with the exception of a few scattered broad-leaved trees and a swathe of older mixed conifers and broad-leaved trees towards the north of the site.

The area was surveyed in October 1999 in order to determine the spread and density of early plant colonisers, particularly heather and bilberry, but also including species which might compromise heathland re-creation. This first survey had been undertaken as a guide to the need for and location of any management works and was indeed followed by heather seed application in the southern end of the site by helicopter in March 2000 and by planting small numbers of heather, bilberry, cowberry, crowberry and cross-leaved heath in that same year. Some of the transects surveyed in 1999 were re-visited for the purposes of the present survey.

OBJECTIVES

The present survey aimed to repeat a sample of the previous one of October 1999, in order to assess the results and effectiveness of the management works undertaken on site in the year 2000, and to help decide what further management works may be necessary [**in order to meet the objectives that have been set for the site; see Appendix X**].

METHODOLOGY

In the October 1999 survey, a series of 19 transects was walked, orientated to traverse up the slope of the site at approximately right angles to the track that runs south-north along the eastern edge of the site. The transects were positioned at 50m intervals along the site, with the exception of an area to the north which, being wooded, was not subject to management designed to restore heathland.

The present survey was carried out over 9 days in November 2001. Only 9 transects were walked, positioned at 100m intervals so as to repeat every other transect from

the previous study. The first transect was positioned 55m north of the southern boundary wall.

For each transect, a measuring tape was laid from the top of the slope (and) [**this reads oddly**] running downhill, starting 10m downslope from the western boundary wall. This excluded a buffer zone consisting of a band of fairly continuous vegetation which grew around the periphery of the previous conifer plantation. Excluding this zone avoided obscuring the interpretation of the results for the main areas of interest. Similarly, the transect line stopped 10m upslope from the last ranging pole [**Do you need to mention the ranging pole? It reads strangely because ranging poles have not been mentioned previously. I suggest you say that the transect line stopped 10 m short of the track which runs along the bottom edge of the former plantation**] by the path, excluding the downslope buffer zone.

Counts of the target species (listed below) were made along a contiguous series of 10m lengths of each transect, which were marked off by canes. The zone of survey was an area 1m either side of the transect line and a 2m long cane was carried to aid in estimating this zone.

In the previous survey individual plants were counted, but it was found that two years on, as individual plants had developed, they had in many cases grown into each other, making accurate plant-by-plant counts difficult. The figures represented on Map 2 should therefore be treated as estimates only. On this map, each disc represents an area of 20m² (10m long by 2m wide). The results from the previous survey are represented on Map 1.

In view of the difficulty of counting numbers of plants accurately, a difficulty which will increase over time, the percentage cover of each species was noted, as well as the number of plants. In an effort to increase the level of accuracy of the estimates of percentage cover, the recording area was reduced to 10m² (5m long by 2m wide). The results for heather are represented on Table 1.

Target Species for Recording:

(all species recorded as number of plants and % cover, unless otherwise indicated)

1. Desirable: Heather (*Calluna vulgaris*)
Bilberry (*Vaccinium myrtillus*)
Cowberry (*Vaccinium vitis-idaea*)
Crowberry (*Empetrum nigrum*)
Crossed-leaved heath (*Erica tetralix*)

2. 'Intermediate': Western and European gorse (recorded as 'Gorse', *Ulex sp.*)
Broad-buckler fern (... ...) [**add Latin name**]
Foxglove (*Digitalis purpurea*)
Sheep's sorrel (*Rumex acetosella*, recorded as % cover only)
Heath bedstraw (*Galium saxatile*, recorded as % cover only)
Heath groundsel (*Senecio sylvaticus*)
Rush (*Juncus effusus* and *J. squarrosus*)
Sedge (*Carex spp.*)

3. Grasses: Wavy-hair grass (*Deschampsia flexuosa*, recorded as % cover only)
Other species (recorded as 'Other Grasses' in % cover only)
4. Undesirable: Bracken (*Pteridium aquilinum*)
Rosebay willowherb (*Chamerion angustifolium*)
Bramble (*Rubus fruticosus*)
5. Trees: Rowan (*Sorbus aucuparia*)
Birch (*Betula pendula*)
Willow (*Salix sp.*)
Conifers
Holly (*Ilex aquifolium*)

RESULTS

Nine transects were walked over the site, each 2m wide and approximately 230m long, thus giving a total area covered by the survey of 4,140m² (0.41ha) within a total area of Gatten Plantation of 34ha.

Heather

Results from the counts of heather plants are represented on Map 2 -with letters 'a' to 'i' referring to the location of the 9 transects relatively [~~Delete~~] to the original 19 ~~ones~~ [~~Delete~~] on Map 1.

[There remains a band in the south-east where heather is still at a low density but the situation] A band of low density heather is still present to the south-east but the situation has improved from 1999 with a clear reduction in the number of quadrats completely void of heather - represented on Maps 1 & 2 by white circles. Overall, heather density at the Gatten seems to be on the increase.

Transect 8, marked **h** on Map 2, is the only one to show a decrease in the density of heather compared with 1999. This is probably due to the fact that the area crossed by this transect line is very wet, sometimes waterlogged, with a dense cover of rushes and mosses.

For all other transects, heather has generally spread over wider areas, although south-eastern parts of the site are not as densely covered yet as the north-western parts.

Other desirable species

Crossed-leaved heath has not been found in any of the nine transects.

Only one crowberry was found, and 9 cowberry plants spread over **a roughly [I'm not clear what this means – can we discuss?]** north-western area of the site.

Bilberry was commonly recorded with heather, but often in small numbers (see Table 2). Counts of bilberry seemed to be **more important to [suggest: higher in]** the western, upslope half of the site – apart from transect **i** also showing a consistent bilberry cover on its eastern, downslope end.

Trees

Results from the count of trees are represented on Table 3.

Willow is the tree species present in highest numbers (73 plants in total), spread along all transects apart from the last one to the north (**i**). Holly is also present in every transect apart from the second one to the south (**b**), however in total, there are less holly seedlings (41 in total) than willow seedlings.

Rowan is scarce with 7 plants in total, only present in 3 transects: one south (**a**), one north (**i**) and one halfway (**f**). In comparison, more birch seedlings were counted (22 in total) and spread out over 5 transects.

A total of 11 conifer re-growths were counted and found concentrated on the 2 transects to the north of the site (**h** and **i**).

Overall, self-seeded trees are only present in relatively low numbers but are widely spread over the site and more frequent towards the north end of the Gatten. They should be controlled while still young and easy to pull off. [out]

Gorse

The spread of gorse plants was found to be generally very limited. The last three transects to the north of the site are completely void of gorse, transects **a**, **b**, **d** and **f** show **little more than a few percents of it [low percentage scores]**, and only transects **c** and **e** show occasional gorse cover of 20-30%.

Undesirable species: bracken, bramble and rosebay willowherb

Bracken seemed to be concentrated in small patches over the site, apart from two larger areas towards the north where the plants formed a thick cover. These thick bracken areas resulted in transects **g** and **h to start [starting]** some 30m further downslope compared with the other transects. The records on most transects showed a very scarce bracken presence, as shown in Table 4: three transect were completely [de]void of the plant, and only two transects showed patches with significant bracken cover – up to 40% for transect **b** and 20% for transect **g**.

Bramble was more widespread over the site, with each transect showing at least one quadrat with the plant (see Table 4). But the percentage cover was comparatively much smaller, being frequently around 1-2% and only reaching a maximum of 8% within an upslope quadrat of transect **g**. Records also show that bramble counts are slightly higher towards the north of the site.

Rosebay willowherb records are represented on the graphs in Table 5. Willowherb is spread in wide patches all over the site, and the tall dry stalks of the previous year appeared to be **relayed [followed]** by numerous young shoots, especially over areas where wood from felled conifers was recently burnt.

Bare ground

The frequency of bare ground is one of the criteria selected to assess the development of vegetation against the objectives for the site. The results are **represented on [shown on]** Table 6, together with a comparison of the average bare ground cover per transect in 1999 and 2001. There has been a very significant reduction in the percentage cover of bare ground since the 1999 survey. This is meeting the short-term objective of the re-creation works, with large areas of bare ground still remaining but their overall frequency reducing.

The raw data are saved as S:/DesignatedSites/NNRs/Reserves-Stipertones/Records-Vegetation/General/BackToPurple-Gatten-Nov01.xls and the document also contains

most of the graphs. Maps displaying heather plant counts were produced using MapInfo, and the workspaces are saved as R:/TeamGIS/Shropshire/Gatten/Gatten/heather1.wor for Map 1, and as R:/TeamGIS/Shropshire/Gatten/Gatten/HeatherDominance.wor for Map 2.

CONCLUSION

On the whole, heather cover on Gatten Plantation is increasing, with a clear improvement from the 1999 survey as heather plants start colonising wider areas. The south-eastern areas of the site are not as densely covered yet as the north-western areas, but nevertheless heather seedlings are becoming more and more frequent.

Other desirable species such as bilberry are often associated with heather, thus **on the way to reaching [suggesting progress towards]** the expected H12 *Calluna vulgaris-Vaccinium myrtillus* community type over the site. Bilberry numbers are not as yet very high, but should show a steady increase over time following heather development. Other desirables such as cowberry and crowberry are still very rarely present and only towards the western margins of the site. But **[when setting the objectives for the site it was recognised that the increase in the frequency of these species would be a long process]** the increasing frequency of these species was recognised to be a long process as part of the site objectives.

Undesirables such as self-seeded trees should be a relatively easy problem to overcome if taken early, as tree seedlings are not densely present on site, even if they are scattered over the whole area of Gatten. **Attention might have to be primarily focused on the north end of the site where seedling numbers are slightly higher. [Attention will have to be focused on the north end of the site where the slightly higher transect counts picked up a trend which becomes much more marked to the north of the area covered by this survey]**

Apart from rosebay willowherb - which is spread in wide patches all over the site and might need some further monitoring in the coming years – most of the other undesirable species have a relatively limited extent over the Gatten. Bracken is only showing two large areas of colonisation **by [towards]** the north-western end of the site and is otherwise rarely present. Bramble is scattered around the site and is never present in a dominant position within the vegetation community.

Therefore, the short-term re-creation targets for the Gatten Plantation seem to be fully met, and a careful management of the area (especially for self-seeded trees) should ensure the vegetation continues its development towards the longer-term objectives.