Written by Lindsay Selleck

Slepe heath management

Introduction

Slepe heath is a heathland area which is owned by the National Trust in Purbeck since 2014. Before this time, Slepe heath was a conifer plantation with areas that had been there since the 1950's, with the last pines being planted in the 1980's. The site was cleared in compartments (shown by figure 1) from the winter of 2007/2008 with the final compartment being cleared in 2014. Once the sites had the felling work complete, any of the brushwood was cleared away using the rake and burn method.

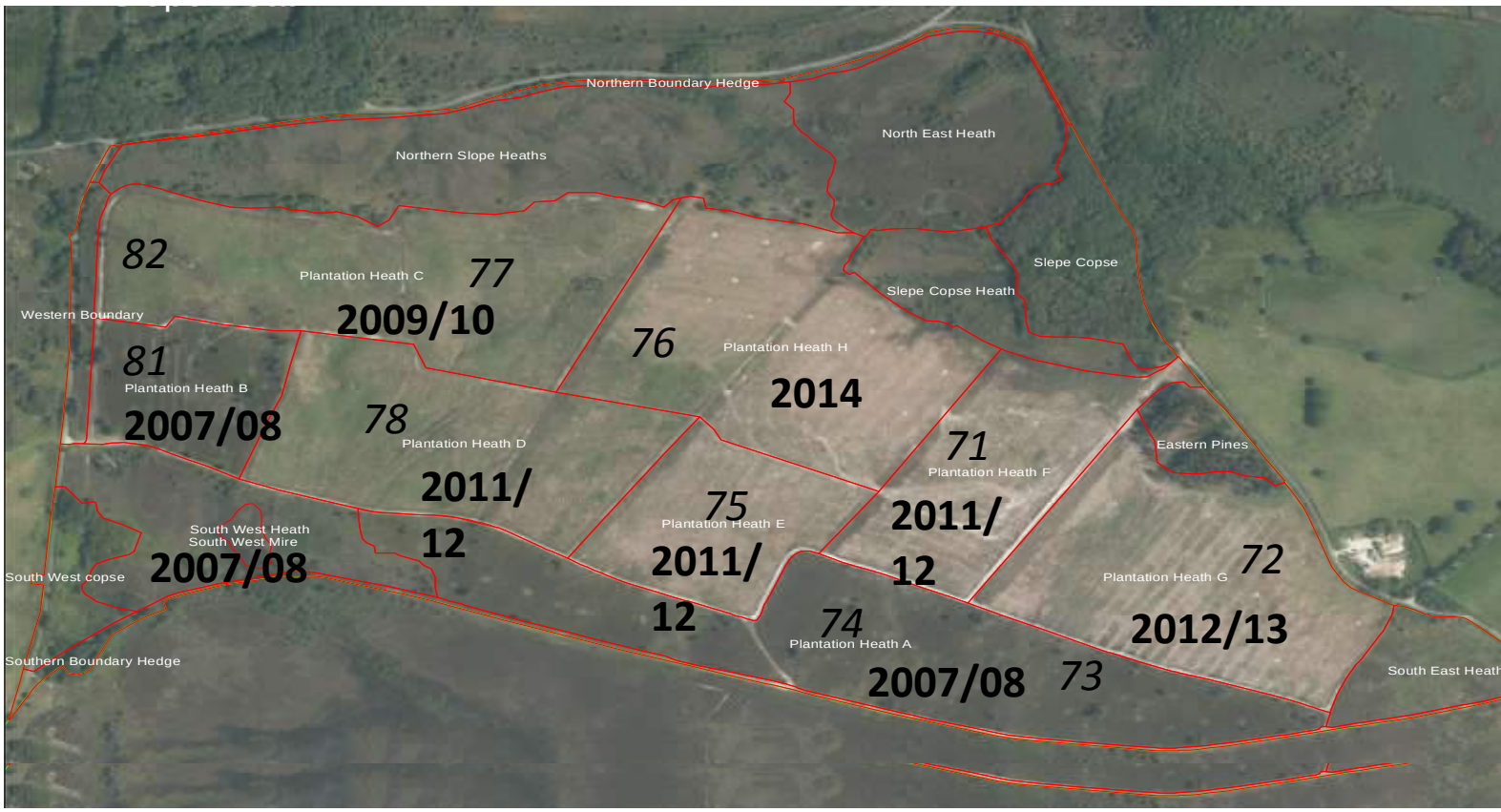

Figure 1. Map of Slepe heath showing the plantation compartments with the italic font showing the positioning of the sample sites and the bold font showing the year of which each plantation was cleared.

Aim

The aim of this field research was to find out any differences between the compartments looking at the differences in growth, plant species and % coverage in order to suggest management strategies which could be put in place to protect the area.

Method

Using a GPS tracker, search the co-ordinates given for the first site. These co-ordinates are the central points for the quadrat which will be created, they are the ones which were first

sampled in 2015. These specific areas have been chosen because in 2015 the quadrats where placed in areas of homogenous vegetation and those which were representative of the sample area. When at the centre place one bamboo cane with 14.1 metres of pink string wrapped around it in the ground, using a compass or GPS extend the string to the direction of North and place a bamboo cane in the ground attached to this. Repeat this step using a bamboo cane with green string on in the other 3 compass directions. This will form a 20m by 20m quadrat for the surveys.
Within this whole site carry out ten individual 2m by 2m quadrats, for each of these the survey looks at % cover (see appendix 1). Then carry out an overall site survey using the DAFOR scale (see appendix 2).

Repeat this method for all of the SERT square sites which you are sampling and enter the data into the excel spreadsheet.

Results

Here are a few of the core factors which can be looked at when looking at management strategies to put in place in this area.

	71	72	73	74	75	76	77	78	81	82
Average vegetation height (cm)	41.8	23	27.3	23.8	19.4	76.3	37.5	34.9	22.8	37.3

Table 2. The average height of vegetation in each site in cm's.

	71	72	73	74	75	76	77	78	81	82
BARE GROUND (%)	5.91	0	1.56	2.26	17.72	1	13.2	3.55	5.3	8.2
HEATHERS & GORSE, BRACKEN & BRAMBLE										
Ling (Calluna vulgaris)	f	a	a	a	a	n	f	a	a	f
Bell heather (Erica cinerea)	o	a	a	f	f	n	f	a	f	o
Cross leaved heath (Erica tetralix)	n	o	n	n	n	n	r	n	r	r
European gorse (Ulex europeaus)	n	f	r	o	n	n	o	f	o	o
Western/Dwarf gorse (Ulex galii)/(Ulex minor)	n	o	r	f	f	n	n	f	f	r
Bramble (Rubus fruticosus)	o	r	n	r	n	n	r	r	n	n
Bracken (Pteridium aquilinum)	d	n	n	n	n	d	a	a	n	f
TREES										
Silver birch (Betula pendula)	o	f	r	r	f	n	a	R	r	f
Scot's pine (Pinus sylvestris)	o	f	f	r	f	o	o	R	n	f

Table 3. The average % bare ground and the DAFOR coverage for any heather, gorse, bracken, bramble and trees which were present in the sites sampled.

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	71	72	73	74	75	76	77	78	81	82
Purple moor grass (Molinia caerulea)	f	f	n	n	o	r	o	r	f	f
Bristle bent (Agrostis curtissi)	f	f	n	d	f	r	r	f	o	o
Common bent (Agrostis capillaris)	n	r	n	n	o	n	n	o	n	n

Table 4a. The coverage of the 3 grass species found in the sites using the DAFOR scale.

	71	72	73	74	75	76	77	78	81	82
% Purple moor grass (*Molinia caerulea*)	10.4	4.25	0.30	0	2.60	0.11	4.1	0.30	0.9	9.8
% Bristle bent (Agrostis curtissi)	2.55	10.70	0.50	0.05	20.50	0.08	0	3.30	0	1.8
% Common bent (Agrostis capillaris)	0	0.00	0.00	0	0.00	0	0	0.60	0	0

Table 4b. The average % cover of the 3 grass species found in each site within the 10 individual quadrats.

Results

When looking at table 2, site 76 has the highest vegetation measuring 76.3cm, even though this was the last site to be cleared, this is because the site was dominated by bracken. There was a lack of bare ground in this site and the occasional Scott's Pine sapling was present. All of this data collected highlights that site 76 would be the least desirable site for a habitat for invertebrates. This is closely followed by site 71 which although has a reasonable % of bare ground it is dominated by bracken and has the occasional sapling which suggests that this bare ground will be quickly covered.

Site 75 is currently the most desirable site for invertebrates due to the high percentage of bare ground and variation in % cover of the different heather types as shown by table 3. In site 75 there is also no bracken which is a positive for the habitat, however the saplings will need to be managed as soon as possible due to them growing fast and possibly covering the available bare ground. Site 77 would also be a good site for now however the bracken is classed as abundant therefore would need to be removed which could create further bare ground.

Site 72 would make good invertebrate habitats because there is no bracken and a wide range of various heather species present. However, the issue with this site is that there is no bare ground. This could be resolved if a management plan was put into place in order to control the number of saplings as these are fast growing and appear to be frequent in this site.

Table 4a and 4b show the coverage of grasses in each site sampled. 4a shows the coverage of each overall site using the DAFOR scale whilst 4b shows the average % cover of grasses in the sites using the data from each of the 10 individual quadrats. These show how there can be a large difference in the data collected depending on the methods used. Purple moor

appears to be the grass which is most common across Slepe heath with it being found in 9 out of the 10 sites. Bristle bent is seen to dominate in one of the sites and has a higher percentage cover over all of the sites of 39.48% with Purple moor having 32.76% across the 10 locations. Common bent is only found in 4 of the 10 sites looked at. These 3 species were the only types of grasses found on the site.

To improve the survey and data collected, it would be best to also look at the age class of the heather present in each of the sample sites for both the whole site and in each of the 10 individual quadrats. This will allow for the heathland to be monitored in the future.

Conclusion

All of the sites sampled vary very differently in composition of species. In order to create successful habitats for invertebrates then further management strategies need to be put into place. A key strategy to focus on would be to increase the amount of bare ground in these areas whilst focussing on removing the saplings which can soon become overgrown.

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Appendices

Appendix 1- Survey for whole site

WHOLE SITE (20mx20m)	DAFORN - Dominant, Abundant, Frequent, Occasional, Rare, None				
Site Number					
Recorder names					
Recording date					
Slope steepness: flat; shallow (< 10 deg); Medium (10-30 deg); steep (> 30 deg)					
Slope form: straight, convex, concave					
Aspect of main overall slope direction (in degrees)					
DAFORN SCORES FOR SITE	DAFORN	DAFORN	DAFORN	DAFORN	DAFORN
Signs of disturbance					
fire					
cutting					
vehicle tracks					
footpaths (animal or people)					
waste dumping					
other (please specify) (note for entry into Excel use same cell for both)					
Signs of grazing					
Rabbit pellets					
Deer pellets					
Cow dung					
Horse dung					
Substrate and structure					
bare ground					
litter					
bare rock					
open water					
dead wood (tree)					
Dead heathers (total)					
Dead other vegetation					
short grass/lawn/moss up to 10cm high					
Long grass					
Short heathers & other shurb - up to 30cm					
Medium shrub - greater than 30cm, less than 1m					
Tall shrub - 1m to 3m					
Trees and shrubs over 3m high					
TREES					
Silver birch (Betula pendula)					
Scot's pine (Pinus sylvestris)					
HEATHERS & GORSE, BRACKEN & BRAMBLE					
Ling (Calluna vulgaris)					
Bell heather (Erica cinerea)					
Cross leaved heath (Erica tetralix)					
European gorse (Ulex europeaus)					
Western/Dwarf gorse (Ulex galii)/(Ulex minor)					
Bramble (Rubus fruticosus)					
Bracken (Pteridium aquilinum)					
FORBS					
Heath milkwort (Polygala serpyllifolia)					
Sheep's sorrel (Rumex acetosella)					
Heath bedstraw (Galium saxatile)					
Common Cat's ear (Hypochaeris radicata)					
Round leaved Sundew (Drosera rotundifolia)					
Oblong leaved Sundew (Drosera intemedia)					
Bog asphodel (Narthecium ossifragum)					
Bog Myrtle (Mirica gale)					
Tormentil (Potentilla erecta)					
GRASSES, SEDGES AND RUSHES					
Purple moor grass (Molinia caerulea)					
Bristle bent (Agrostis curtissi)					
Common bent (Agrostis capillaris)					
Sweet vernal grass (Anthoxanthum odoratum)					
Carnation sedge (Carex panicea)					
Glaucous sedge (Carex flacca)					
Deergrass (Trichophorum caespitosum)					
Common Cotton Grass (Eriophorum angustifolium)					
MOSSES & LICHENS					
Sphagnum mosses (*Spahgnum* spp)					
Heath Star-moss (*Campylopus introflexu s*)					
Other mosses					
Cladonia lichens					
ADDITIONAL SPECIES YOU FIND					

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Appendix 2- Survey for 10 individual quadrats looking at % cover.

INDIVIDUAL QUADRATS	Score % cover unless indicated otherwise									
Site Number										
Recorder names										
Recording date										
Signs of grazing										
Rabbit pellets (number in quadrat)										
Deer pellets (number in quadrat)										
Cow dung (yes/no in quadrat)										
Horse dung (yes/no in quadrat)										
Substrate and structure										
Minimum Vegetation height (cm)										
Maximum Vegetation height (cm)										
Mean Vegetation height (cm)										
% bare ground										
% litter										
% bare rock										
% open water										
% dead wood (tree)										
% Dead heathers (total)										
% Dead other vegetation										
% short grass/lawn/moss up to 10cm high										
% Long grass										
% Short heathers & other shurb - up to 30cm										
% Medium shrub - greater than 30cm, less than 1m										
% Tall shrub - 1m to 3m										
% Trees and shrubs over 3m high										
TREES										
% Silver birch (*Betula pendula*)										
% Scot's pine (*Pinus sylvestris*)										
HEATHERS & GORSE, BRACKEN & BRAMBLE										
% Ling (*Calluna vulgaris*)										
% Bell heather (*Erica cinerea*)										
% Cross leaved heath (*Erica tetralix*)										
% European gorse (*Ulex europeaus*)										
% Western/Dwarf gorse (*Ulex galii*)/(*Ulex mino r*)										
% Bramble (*Rubus fruticosus*)										
% Bracken (*Pteridium aquilinum*)										
FORBS										
% Heath milkwort (Polygala serpyllifolia)										
% Sheep's sorrel (*Rumex acetoseil a*)										
% Heath bedstraw (*Galium saxatile*)										
% Common Cat's ear (*Hypochaeris radicata*)										
% Round leaved Sundew (Drosera rotundifolia)										
% Oblong leaved Sundew (Drosera intemedia)										
% Bog asphodel (*Narthecium ossifragum*)										
% Bog Myrtle (*Mirica gale*)										
% Tormentil (*Potentilla erecta*)										
GRASSES, SEDGES AND RUSHES										
% Purple moor grass (*Molinia caerulea*)										
% Bristle bent (Agrostis curtissi)										
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% Sweet vernal grass (Anthoxanthum odoratum)										
% Carnation sedge (Carex panicea)										
% Glaucous sedge (Carex flacca)										
% Deergrass (*Trichophorum caespitosum*)										
% Common Cotton Grass (*Eriophorum angustifolium*)										
it										
MOSSES & LICHENS										
Sphagnum mosses (*Spahgnum* spp)										
Heath Star-moss (*Campylopus introflexu s*)										
Other mosses										
Cladonia lichens										
Total Live Veg (can be over 100% if have 2 layers)	0	0	0	0	0	0	0	0	0	0
Total ground and Dead veg	0	0	0	0	0	0	0	0	0	0
Grand Total must be at least 100	0	0	0	0	0	0	0	0	0	0
ADDITIONAL SPECIES YOU FIND										