The Leasowes SSSI
Dudley

Notification under section 28 of the Wildlife and Countryside Act 1981

Supporting Information

Issued by Natural England's West Midlands Team on 7 February 2019

Contact points and further information

This supplement is issued on request by Natural England's West Midlands Land Management Team and is intended to be read in conjunction with the notification document for owners, occupiers and other notified parties.

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Summary

The Leasowes SSSI is notified under Section 28 of the Wildlife and Countryside Act 1981.

The Leasowes SSSI is considered to be of special interest for its:

- rich **assemblage of grassland fungi**
- **species-rich lowland neutral grassland** of the nationally rare NVC type MG5 crested dog's-tail *Cynosurus cristatus* – common knapweed *Centaurea nigra* grassland

1. Information used to support the selection of The Leasowes SSSI

Feature	Data source	Author	Date	Content
General	Revised Guidelines for the Selection of Biological SSSIs. Part 1: Rationale, Operational Approach and Criteria for Site Selection. JNCC, Peterborough. Published online: http://jncc.defra.gov.uk/pdf/SSSI_GuidelinesPart1_PUBLICATION_Dec2013v2.pdf	Bainbridge, I., Brown, A., Burnett, N., Corbett, P., Cork, C., Ferris, R., Howe, M., Maddock, A. & Pritchard, S. (eds)	2013	National selection guidelines for biological SSSIs
Grassland fungi	Waxcap grasslands – an assessment of English sites. English Nature Research Report 555. Published online: http://publications.naturalengland.org.uk/publication/131003	Evans, S.	2004	Review of fungus-rich grasslands and the most significant sites in England
	Identifying key fungal sites in England with potential for SSSI notification. Unpublished report to Natural England	Smith, J.H.	2012	Identification of sites apparently satisfying grassland fungi selection guidelines
	An Assessment of the fungal conservation value of The Leasowes (Halesowen, West Midlands) using NextGen DNA sequencing of soil samples. IBERS, Aberystwyth University. Unpublished report to Dudley Metropolitan Borough Council	Griffith, G.W., Detheridge, A.P. & George, L.	2015	DNA Analysis of the site's grassland fungi
	The IUCN Red List of Threatened Species. Version 2017-3. http://www.iucnredlist.org Accessed March 2018	IUCN	2017	Global red list of threatened species
	An Overview of the Grassland Fungi of The Leasowes. Unpublished report to Natural England	Adams, P., Griffith, G.W., Ravenscroft, A. & Williams, N.	2018	A collation and summary of grassland fungi records up to the end of 2017
	Updated eDNA assessment of the fungal conservation value of The Leasowes (Halesowen, West Midlands) including the golf course areas. IBERS, Aberystwyth University. Unpublished report to Natural England	Griffith, G.W., Detheridge, A.P., Cavalli, O. & Moore., T.	2018	DNA analysis repeating some areas from 2015 but focussing on areas across the site to better inform SSSI boundary
	Guidelines for the Selection of Biological SSSIs. Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 14 Non-lichenised fungi. JNCC, Peterborough. Published online: http://jncc.defra.gov.uk/pdf/SSSI_Chapter14fungi_2018a.pdf	Bosanquet, S.D.S., Ainsworth, A.M., Cooch, S.P., Genney, D.R. & Wilkins, T.C.	2018	Guidelines for selecting fungal sites for SSSI notification

Feature	Data source	Author	Date	Content
	Specialist support for notification of The Leasowes as a SSSI	Wilkins, T.	2019	Support from Natural England's fungi specialist
Neutral grassland	The changing extent and conservation interest of lowland grasslands in England and Wales: a review of grassland surveys 1930-1984. *Biological Conservation* **40**, 281-300. https://www.sciencedirect.com/science/article/pii/0006320787901212	Fuller, R.M.	1987	Information on the national status of grassland habitats
	British Plant Communities. Volume 3: Grasslands and montane communities. Published by Cambridge University Press	Rodwell, J.S. (ed)	1992	National Vegetation Classification (NVC) for grasslands
	Monitoring the condition of lowland grassland SSSIs. English Nature Research Report 315. Published online: http://publications.naturalengland.org.uk/publication/64033	Robertson, H.J. & Jefferson, R.G.	2000	National extent of MG5 grassland
	The condition of lowland BAP priority grasslands: results from a sample survey of non-statutory stands in England. English Nature Research Report 636. Published online: http://publications.naturalengland.org.uk/publication/106007	Hewins, E.J., Pinches, C., Arnold, J., Lush, M., Robertson, H. & Escott, S.	2005	Information on the national status of grassland habitats
	State of the Natural Environment 2008. Natural England, Peterborough. Published online: http://publications.naturalengland.org.uk/publication/31043	Natural England	2008	Review of the state of England's natural environment
	Guidelines for the Selection of Biological SSSIs. Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 3 Lowland Grasslands. JNCC, Peterborough. Published online: http://jncc.defra.gov.uk/pdf/SSSI_Chptr03_revision_2017(v2.0).pdf	Jefferson, R.G., Smith, S.L.N. & MacKintosh, E.J.	2014	Guidelines for selecting lowland grasslands for SSSI notification
	Fate of semi-natural grasslands in England between 1960 and 2013: A test of national conservation policy. *Global Ecology and Conservation* **4**: 516-525. https://www.sciencedirect.com/science/article/pii/S2351989415300184	Ridding, L.E. Redhead, J.W & Pywell, R.F.	2015	National study on loss rates of semi-natural grasslands within and outside protected sites
	A Summary of Grassland Records and NVC Data of The Leasowes. Unpublished report to Natural England	Adams, P.	2018	Grassland descriptions, NVC data and maps from The Leasowes

Feature	Data source	Author	Date	Content
	Specialist support for notification of The Leasowes as a SSSI	Jefferson, R.J.	2019	Support from Natural England's grassland specialist

2. Explanation of how The Leasowes meets the SSSI selection guidelines

This section explains how the information listed in Section 1 has informed the decision to notify the SSSI, according to the *Guidelines for the selection of Biological SSSIs. Part 1: Rationale, Operational Approach and Criteria for Site Selection* (Bainbridge *et al.* 2013), and *Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 3 Lowland Grasslands* (Jefferson *et al.* 2014) and *Chapter 14 Non-lichenised fungi* (Bosanquet *et al.* 2018), hereafter referred to as 'the Guidelines'.

2.1 Assemblage of grassland fungi

The Guidelines (Part 2, Chapter 14, section 4, pp.17-21) are concerned with the distinctive species and assemblages of fungi associated with grasslands which have received no, or limited, agricultural improvements. These fungus-rich grasslands have been collectively termed as 'waxcap-grasslands'. The five key groups of fungi (commonly referred to by the abbreviation 'CHEGD' formed by their initials) associated with these grassland habitats are:

- **C**lavarioid fungi (the clubs, corals and spindles)
- ***H**ygrocybe* (the waxcaps)
- ***E**ntoloma* (the pinkgills)
- **G**eoglossoid fungi (the earthtongues)
- ***D**ermoloma* (the crazed caps)

Recent taxonomic changes have resulted in modifications to the CHEGD groups which are reflected in the recently-published Guidelines (Part 2, Chapter 14). A full definition of genera included is given in the Guidelines (Part 2, Chapter 14, footnote on p.17).

SSSI selection for waxcap grasslands is largely determined by the number of CHEGD species known from a site, based on fruit-body records. Species totals might be derived from a single visit or from multiple visits over successive, though not necessarily consecutive, years. For each group there is a species-count threshold given in the Guidelines (Part 2, Chapter 14, section 4.3.2, p. 18 and Table 10, p.20) and reproduced below. The Guidelines (Part 2, Chapter 14, section 4.3.2, p.18 and section 4.4.1, p.19) recommend that any site that meets or exceeds one or more group thresholds should be considered for SSSI notification. The CHEGD species-count thresholds and respective scores for The Leasowes SSSI are presented in Table 1, below.

Table 1 CHEGD species-count thresholds and scores (fruit-bodies) at The Leasowes SSSI

CHEGD group	Species-count threshold	Score at The Leasowes SSSI
Clavarioids	7	11
Hygrocybe	19	28
Entoloma	15	11
Geoglossoids	5	5
Dermoloma	3	1

Table 2 (below) lists the CHEGD species found at The Leasowes (see photographs 2-14 in section 6) showing that the site meets or exceeds the thresholds for clavarioids (11 species), *Hygrocybe* s.l.[1] (28 species) and geoglossoids (five species). The number of *Entoloma* s.l. species recorded is 11. One species of *Dermoloma* has been recorded. Additional records derived from DNA-based

[1] *Sensu lato*, meaning 'in a broad sense', used here to indicate that the genus includes taxa previously assigned to it.

surveys have not been used for site selection, as stipulated under the current guidelines.

Table 2 CHEGD species (fruit-bodies) recorded at The Leasowes. Some of these species have undergone taxonomic/nomenclatural change (synonyms are listed below in parentheses).

Group/Species	**Last recorded (year)/Total**
Clavarioids	
Clavaria acuta (Clavaria falcata agg.*)*	2017
Clavaria fragilis (Clavaria fragilis agg.*)*	2017
Clavaria fumosa	2017
Clavaria straminea (Clavaria flavipes)	2018
Clavaria tenuipes	2018
Clavulinopsis corniculata	2018
Clavulinopsis fusiformis	2017
Clavulinopsis helvola	2018
Clavulinopsis laeticolor	2018
Clavulinopsis luteoalba	2018
Clavulinopsis umbrinella	2012
Total	**11**
***Hygrocybe* s.l.**	
Hygrocybe acutoconica (Hygrocybe acutoconica var. *acutoconica)*	2017
Hygrocybe aurantiosplendens	2016
Hygrocybe calyptriformis (Porpolomopsis calyptriformis)	2017
Hygrocybe cantharellus	2017
Hygrocybe ceracea	2018
Hygrocybe chlorophana	2018
Hygrocybe citrinovirens	2017
Hygrocybe coccinea	2018
Hygrocybe conica	2018
Hygrocybe flavipes (Cuphophyllus flavipes)	2006
Hygrocybe fornicata (Cuphophyllus fornicatus)	2015
Hygrocybe glutinipes	2018
Hygrocybe insipida	2018
Hygrocybe intermedia	2017
Hygrocybe irrigata (Gliophorus irrigatus)	2018
Hygrocybe laeta (Gliophorus laetus)	2017
Hygrocybe miniata	2002
Hygrocybe mucronella	2017
Hygrocybe pratensis (Cuphophyllus pratensis)	2018
Hygrocybe psittacina (Gliophorus psittacinus)	2018
Hygrocybe punicea	2018
Hygrocybe quieta	2018
Hygrocybe reidii	2018
Hygrocybe russocoriacea (Cuphophyllus russocoriaceus)	2018

Group/Species	Last recorded (year)/Total
Hygrocybe spadicea	2017
Hygrocybe turunda	1996
Hygrocybe virginea (Cuphophyllus virgineus)	2018
Hygrocybe vitellina (Gloioxanthomyces vitellinus)	2015
Total	**28**
***Entoloma* s.l.**	
Entoloma ameides	2018
*Entoloma cetratum (*cf.*)*	1998
Entoloma chalybeum	2014
Entoloma conferendum	2018
Entoloma hebes (Nolanea hirtipes)	2018
Entoloma lucidum (Nolanea lucida)	1997
Entoloma ortonii (Nolanea farinolens)	2018
Entoloma papillatum	2015
Entoloma porphyrophaeum	2017
Entoloma sericellum	1996
Entoloma sericeum (Nolanea sericea)	2018
Total	**11**
Geoglossoids	
Geoglossum barlae	2017
Geoglossum fallax	2017
Geoglossum glutinosum (Glutinoglossum glutinosum)	2018
Microglossum olivaceum agg*. (Microglossum truncatum)*	2017
Trichoglossum hirsutum	2018
Total	**5**
Dermoloma	
Dermoloma cuneifolium	2018
Total	**1**

2.1.1 Further consideration of The Leasowes' national importance for grassland fungi

As described above, the Guidelines (Part 2, Chapter 14, section 4.3.2, p.18 and section 4.4.1, p.19) recommend that any site that meets or exceeds one or more CHEGD group thresholds should be considered for SSSI notification. Accordingly, having established that three thresholds are met, it is necessary to consider further whether the site should be notified.

The Guidelines (Part 2, Chapter 14, section 3.1, p.7) state:

> *"When evaluating and selecting sites for non-lichenised fungi, the principles outlined in Part 1 of the guidelines (Bainbridge et al 2013) should be followed. It is also advisable to consult the country specialist and an expert mycologist because of the taxonomic and ecological complexities of fungi."*

Such an approach is supported by Part 1 of the Guidelines (section 4.20, p.18) when scoring systems are employed, specifically that a mixture of attributes has to be evaluated, which requires expert judgement.

Natural England's specialist in fungi has carried out an analysis (Wilkins 2019) of the national

importance of The Leasowes for grassland fungi, in line with the aforementioned recommendations in Parts 1 and 2 of the SSSI selection guidelines. The key elements and conclusions of that analysis are summarised below.

Comparison with similar sites

The Guidelines (Part 1, section 5.14, pp.29-30) provide advice on the identification of the best example of sites to represent habitats and species. Specifically, the Guidelines (Part 1, section 5.14.2, p.30) state that:

> "The essence of the exemplary site principle procedure is that all of the examples of habitats and species assemblages within an AoS [Area of Search] are compared, to identify the best, and it is only these which are selected. If all similar sites can be arranged in order of merit, selection of the 'best' can vary from one to whatever number of examples is judged appropriate by the responsible SNCB [Statutory Nature Conservation Body]."

The AoS for The Leasowes is the Arden National Character Area (NCA)[2]. An analysis of the quality of the assemblage of fungi at The Leasowes SSSI compared with other sites in the NCA was undertaken using the British Mycological Society Fungal Records Database of Britain and Ireland (FRDBI 2016) and the current accepted species list for The Leasowes (fruitbody records only).

The Leasowes SSSI is ranked first in the analysis. Other waxcap grasslands do occur in the NCA but only one, Hawkeswell Farm (Warwickshire), meets any of the CHEGD species-count thresholds, specifically for its clavarioid fungi (eight species). The Leasowes supports 11 clavarioid species. Hawkeswell Farm is also ranked second in the NCA for its total CHEGD score of 23 (including ten *Hygrocybe* s.l. taxa); this compared to 56 (including 28 *Hygrocybe* s.l. taxa) for the Leasowes.

Additionally, at a national level, The Leasowes SSSI has been compared to inventories of waxcap grasslands compiled by Evans (2004), against which it would be ranked the joint 5th most important in England (based on CHEG species-count), and Smith (2012), where it would be ranked 4th (based on number of *Hygrocybe* s.l. taxa). Furthermore, the count of 28 *Hygrocybe* s.l. taxa, means the site would be considered to be of international importance (based on Evans 2004).

Key species

Part 1 of the Guidelines (section 5.14.3, p30) states that:

> *"The occurrence of a greater number of rare communities or species will place one site ahead of another, other conditions being similar."*

The Leasowes supports a number of key species. Citrine waxcap *Hygrocybe citrinovirens* is listed as 'Vulnerable' on the global IUCN Red List, Pink waxcap *Porpolomopsis calyptriformis* is a species of conservation concern in Europe, and date waxcap *Hygrocybe spadicea* and olive earthtongue *Microglossum olivaceum* agg. are priority species[3] in the UK. All four species are included in the assemblage of special interest, although their populations at The Leasowes SSSI are not individually considered nationally important in their own right.

Conclusions

In addition to meeting the CHEGD species-count thresholds for clavarioids, *Hygrocybe* s.l. taxa and geoglossoids, The Leasowes SSSI is the most important site in the relevant Area of Search and in the top 10 sites for grassland fungi in England; is considered to be of international importance; and supports several key species that are of conservation concern nationally and internationally. Furthermore, it represents a feature for which just two SSSIs have been notified in

[2] National Character Areas (NCAs) divide England into 159 natural areas, each defined by a unique combination of landscape, biodiversity, geodiversity and economic and cultural activity. NCAs are now used as 'areas of search' for the purposes of SSSI selection (where appropriate) in England. For more information on NCAs, see https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making

[3] Priority species included on the list of habitats and species which are of principal importance for the conservation of biodiversity in England, as required under Section 41 of the Natural Environment and Rural Communities Act 2006.

England prior to 2019.

2.1.2 DNA-based fungal surveys

There have been two rounds of DNA analysis of fungal material in soil samples from The Leasowes, one set of samples taken in 2015, the other in 2017. These have provided additional records and verified existing ones. Whilst the presence of taxa detected only through DNA analysis cannot currently be used for site selection purposes, it nonetheless helps inform the potential of land for fungal interest and consequently the site boundary.

The 2015 DNA sampling (focussed on the south of the site) was expanded upon by the second round in 2017, when samples were collected from a wider area of the SSSI, including the golf course in units 2 and 3. The results of the analysis have revealed more areas of greater fungal interest across the site (Griffith *et al.* 2018) than previously anticipated. This is due, in part, to a lack of recorded fungal fruiting bodies but also a lack of previous surveyor effort in these areas. The DNA analysis has enabled the identification of grassland habitats that have the potential to be restored. These habitats also buffer the site and protect (and offer the potential expansion of) adjacent grasslands with rich fungal assemblages.

DNA barcoding has also verified the identification of sampled fruiting bodies and validated the record list for the site. In some instances DNA analysis has revealed species of interest that have not previously been found as fruiting bodies on the site. As such, the results have and will continue to help direct surveyor effort in certain areas, resulting in more rigorous and robust survey coverage.

2.2 Species-rich lowland neutral grassland

The Leasowes is considered to be of special interest for its nationally important species-rich meadows and pastures characterised by the nationally rare National Vegetation Classification (NVC) type MG5 Crested dog's-tail *Cynosurus cristatus* – Common knapweed *Centaurea nigra* grassland (see photographs 15-20 in section 6). This grassland vegetation community forms part of the 'lowland meadows' priority habitat, which is included on the list of habitats and species which are of principal importance for the conservation of biodiversity in England, as required under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Historically the area of semi-natural grassland in the UK (including MG5) has undergone a severe decline as a consequence of post-war agricultural intensification. It is estimated that by 1984 in lowland England and Wales, semi-natural grassland had declined by 97% over the previous 50 years (Fuller 1987). More recently a 47% loss has been reported between 1960 and 2013 on sites known to have supported species-rich grassland but SSSIs were found to have retained more grassland (91%), compared with non-protected sites (27%), thus highlighting their effectiveness as a means of protecting semi-natural grasslands (Ridding, Redhead & Pywell 2015).

Such widespread loss has led to extensive fragmentation, with remaining grasslands often isolated within the landscape. In addition to loss of habitat, the quality of unimproved grasslands has also declined. An assessment of the condition of semi-natural grasslands on non-statutory sites in England in 2002/2003 found that only 16% of lowland hay meadows were considered to be in good condition, with many lacking positive indicators in sufficient number and frequency due to neglect or agricultural intensification (Hewins *et al.* 2005). In England the remaining extent of MG5 grassland is estimated to be less than 6,000 ha (Robertson & Jefferson, 2000).

The Guidelines (Part 2, Chapter 3, section 4.10, p.7) state:

> 'For those grassland communities that are now rare (less than 10,000 ha in Great Britain or less than 10,000 ha in the British lowlands, as shown in section A of Annex 1) the presumption is that all examples which are at least 0.5 ha should be selected for notification, singly or in combination.'

MG5 grassland is listed in Section A of Annex 1 of the Guidelines and is shown as a community that is rare; accordingly all examples of at least 0.5 ha should be selected. The Leasowes SSSI supports just under 1.1 ha of MG5 grassland (Adams 2018). The species-rich grassland is widely

distributed across the SSSI, with a notable concentration on the open north-facing slopes in the south of the site, where there is a more acidic expression of the community.

2.3 Site boundary determination

The Leasowes SSSI comprises a mosaic of semi-natural habitat types. In addition to the areas of the grassland community and fungal interest described above, there are small areas of scrub, semi-natural woodland, wood pasture, ponds and a stream (see Photograph 1 in Part 6). The boundary of the SSSI has been drawn to include the vegetation and fungal communities of special interest described above. This boundary falls within the readily identifiable nature reserve boundary, formed by roads, hedgerows and fence lines.

The remainder of the SSSI includes stands of other grassland communities of lower botanical interest, namely MG6 perennial rye-grass *Lolium perenne* – crested dog's-tail *Cynosurus cristatus* grassland, as well as areas of improved grassland within the Halesowen Golf Course.

The Guidelines (Part 2, Chapter 3, Section 5.1, p. 10) state:

> "SSSI boundaries should be drawn to encompass the special features of the site and all land necessary to ensure the protection and sustainability of those features…Consideration should be given to the inclusion of whole management units, entire ecological units and land required for supporting processes, such as hydrology. Thus, for example, this may require the inclusion within a site boundary of areas of land supporting grassland communities of lower botanical interest (section B of Annex 1), or non-grassland vegetation."

The other communities of lower botanical interest and non-grassland vegetation on the site are an integral part of the management units, providing potential for the restoration of less species-rich areas, and the buffering of those areas that are already of interest.

3. Assessment of the current condition of The Leasowes SSSI

Site units*	Interest features	Reported condition**	Date of last assessment
1	Lowland meadows, assemblage of grassland fungi	Favourable	4 October 2017
2	Assemblage of grassland fungi	Unfavourable – no change	6 November 2017
3	Lowland meadows, assemblage of grassland fungi	Unfavourable – no change	6 November 2017

*** Site units** are divisions used by Natural England for administrative purposes only.

**** Reported condition**
SSSIs are notified because of special biological or geological features. When these features are being managed so that their special nature conservation interest is being maintained they are said to be in 'favourable' condition. This is a United Kingdom standard and the terminology and definitions are more fully described in 'A Statement on Common Standards Monitoring', produced by the Joint Nature Conservation Committee in 1998.

3.1 Reasons for adverse condition

Units 2 and 3 are assessed as being in 'unfavourable – no change' condition due to the low fruiting body frequency of positive indicator species contributing to the assemblage of grassland fungi, which is as a result of an intensive cutting regime in some areas and a lack of any cutting in others. The required management to reinstate these units to favourable condition is to reduce the use of herbicides, to open areas of shaded grassland by clearing trees and scrub, and to introduce an appropriate cutting and/or grazing regime that will help maintain a short sward to encourage fungal fruiting-bodies. The Dudley Council wardens and the golf course green keeper are working together on applying this management to more areas of units 2 and 3. A joint management plan between the Council and the golf club is proposed.

4. Selection of 'operations requiring Natural England's consent'

Natural England selects operations from a master list when determining the list of operations requiring consent for individual SSSIs. The selection is based on the likelihood that the operations may cause damage to the special features that are the reasons for notification of the SSSI. As well as selecting operations from the master list, the precise wording of each operation may be tailored to suit the particular circumstances at the site.

It is not possible to predict every possible eventuality that may arise on a site but the aim is to identify all operations where it is reasonably foreseeable that, if carried out at certain times or in a particular manner somewhere within the SSSI, they are likely to damage the special interest features. The table below records at least one reason justifying the inclusion of each operation in the list for The Leasowes SSSI. It is not intended to be exhaustive and in most cases there will be other ways in which the specified operation is likely to cause damage.

Standard reference number	Type of operation	At least one reason for listing
1.	Cultivation, including ploughing, rotovating, harrowing and re-seeding.	Grassland and fungi could be destroyed.
2.	Grazing and alterations to the grazing regime (including type of stock, intensity or seasonal pattern of grazing).	Features sensitive to over or under grazing, which could lead to changes in community composition.
3.	Stock feeding and alterations to stock feeding practice.	Could lead to localised nutrient enrichment or poaching which would damage grassland and fungi.
4.	Mowing or cutting vegetation and alterations to the mowing or cutting regime (such as from haymaking to silage).	Grassland and fungi sensitive to cutting or mowing, which could lead to changes in community composition if carried out inappropriately.
5.	Application of manure, slurry, silage liquor, fertilisers and lime.	Grassland and fungi sensitive to nutrient enrichment, which could lead to dominance by competitive species.
6.	Application of pesticides, including fungicides and herbicides (weedkillers) whether terrestrial or aquatic, and veterinary products.	Grassland, fungi and associated flora/fauna all sensitive to these, both through direct loss and changes to community composition.
7.	Dumping, spreading or discharging of any materials.	Risk of obscuring/smothering grassland, damaging fungi and effects of leachate.
8.	Burning.	Grassland and fungi sensitive to burning, both through direct loss and change to community composition.
9.	Release into the site of any wild, feral, captive-bred or domestic animal, plant, seed or micro-organism (including genetically modified organisms).	Could lead to unforeseen interactions with indigenous species and changes in community composition.
10.	Killing, injuring, taking or removal of any wild animal (including dead animals or parts thereof), or their eggs and nests, including pest control and disturbing them in their places of shelter.	Could lead to unforeseen changes in community composition, for instance if key herbivores, pollinators or predators affected. Direct damage to sward and fungi could result from some methods.

Standard reference number	Type of operation	At least one reason for listing
11.	Destruction, displacement, removal or cutting of any plant, fungus or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungal fruiting body, leaf-mould or turf.	Damage to grassland habitats and constituent species and fungi.
12.	Tree and/or woodland management and alterations to tree and/or woodland management (including planting, felling, pruning and tree surgery, thinning, coppicing, changes in species composition, removal of fallen timber).	Risk of incidental damage to grassland and fungi, direct loss and changes in community composition due to shading.
13a.	Draining (including the use of mole, tile, tunnel or other artificial drains).	Risk of incidental damage and direct loss to grassland and fungi.
13b.	Modification to the structure of water courses (streams, springs, ditches, dykes, drains), including their banks and beds, as by re-alignment, regrading, damming or dredging.	Risk of incidental damage and direct loss to grassland and fungi.
13c.	Management of aquatic and bank vegetation for drainage purposes	Risk of incidental damage and direct loss to grassland and fungi.
14.	Alterations to water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes). Also the modification of current drainage operations.	Grassland sward sensitive to changes in hydrology. Direct damage to grassland and fungi in the immediate vicinity.
15.	Infilling or digging of ditches, drains, ponds, pools, marshes or pits	Direct damage to grassland and fungi.
20.	Extraction of minerals including hard rock, sand and gravel, topsoil, subsoil and spoil.	Direct loss of grassland and fungi.
21.	Destruction, construction, removal, re-routing or re-grading of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, including soil and soft rock exposures or the laying, maintenance or removal of pipelines and cables, above or below ground.	Direct loss of or incidental damage to grassland and fungi.
22.	Storage of materials.	Risk of obscuring/smothering grassland and fungi, and effects of leachate.
23.	Erection of permanent or temporary structures or the undertaking of engineering works, including drilling.	Direct loss of important habitats and fungi.
26.	Use of vehicles or craft.	Damage to grassland fungi, for instance from soil compaction or wheel-rutting.
27.	Recreational or other activities likely to damage or disturb the features of special interest.	Damage to grassland and fungi, for instance due to excessive trampling.
28a.	Game and waterfowl management and hunting practices and alterations to game and waterfowl management and hunting practice.	Inappropriate location and types could damage grassland and fungi, for instance nutrient enrichment around feeders.

5. Site unit map

The map on the following page shows the provisional boundaries of the site units, which are divisions used by Natural England for administrative purposes only.

6. Photographs

Photograph 1: An aerial view of The Leasowes

Photograph 1

The Leasowes SSSI boundary shown in red

Scale (at A3): 1:4,713
Map produced by Denise Rose, Landscape, Biodiversity & Designation Team
Date: 16/01/2019.

Photographs 2 - 5: Grassland fungi in Wainhouse Leasowes

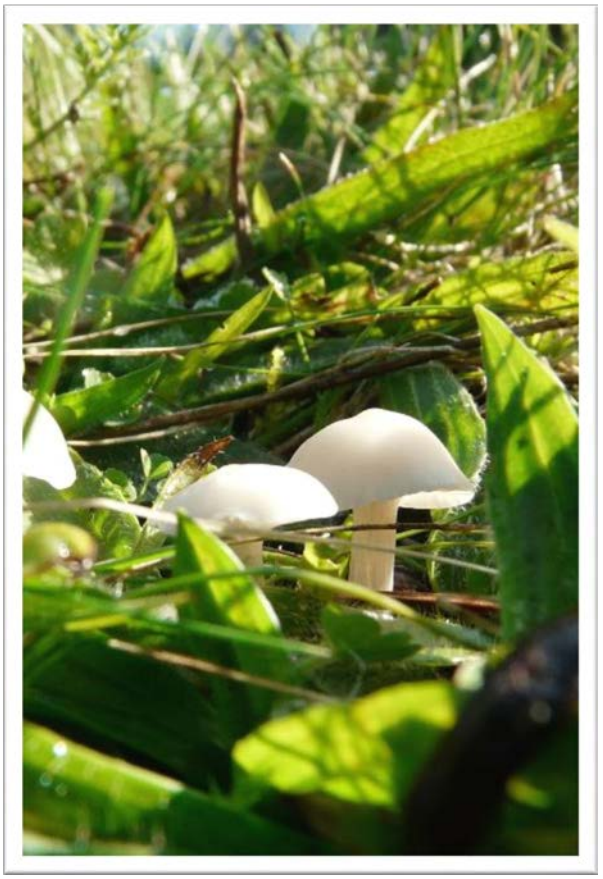
Photograph 6: *Hygrocybe coccinea* on practice green

Photograph 7: *Porpolomopsis calyptriformis* on practice green

Photograph 8: *Hygrocybe chlorophana* on practice green

Photograph 9: *Porpolomopsis calyptriformis* in The Hemms

Photograph 10: *Cuphophyllus virgineus* in The Hemms



Photograph 11: *Porpolomopsis calyptriformis*, *Hygrocybe coccinea* and *H. chlorophana* in the same sward

Photograph 12: *Hygrocybe conica* in Wainhouse Leasowes

Photograph 13: *Microglossum truncatum* from Wainhouse Leasowes

Photograph 14: *Microglossum truncatum* in Wainhouse Leasowes

Photograph 15: Longhorns in Wainhouse Leasowes, looking eastwards towards The Hemms

Photograph 16: The Hemms, looking south

Photograph 17: ‘Dry ridge’ DNA quadrat in The Hemms

Photograph 18: Common spotted-orchid in Brick Kiln Acre

Photograph 19: Marbled white butterfly on field scabious in Crown Tip

Photograph 20: Devil's-bit scabious in The Hemms