

The European distribution of pale forget-me-not  
*Myosotis stolonifera*

# Botanical survey and habitat survey

of land at  
Thornehope  
and  
Lintzgarth

A report for  
Philip Wayre  
Upland Trust

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Pale forget-me-not *Myosotis stolonifera* in a  
sluggish stream at Lintzgarth

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## Summary

Botanical and habitat surveys of land belonging to the Philip Wayre Upland Trust at Thornehop and Lintzgarth in Weardale, County Durham were carried out by Ptyxis Ecology in June and July 2019.

Nine broad habitats were mapped at Thornehope. Heathland covered almost half of the site and acid grassland covered a further quarter. Other habitats covering smaller areas included fern-dominated vegetation, rushy vegetation, mesotrophic grassland, purple moor-grass vegetation and woodland.

Eight broad habitats were mapped at Lintzgarth. Blanket bog and acid grassland each covered over one third of the site. There were also large areas of rushy vegetation and mesotrophic grassland. The other habitats on the site covered very small areas.

182 plant species were recorded at both sites: 137 vascular plants and 45 bryophytes at Thornehope, and; 144 vascular plants and 38 bryophytes at Lintzgarth.

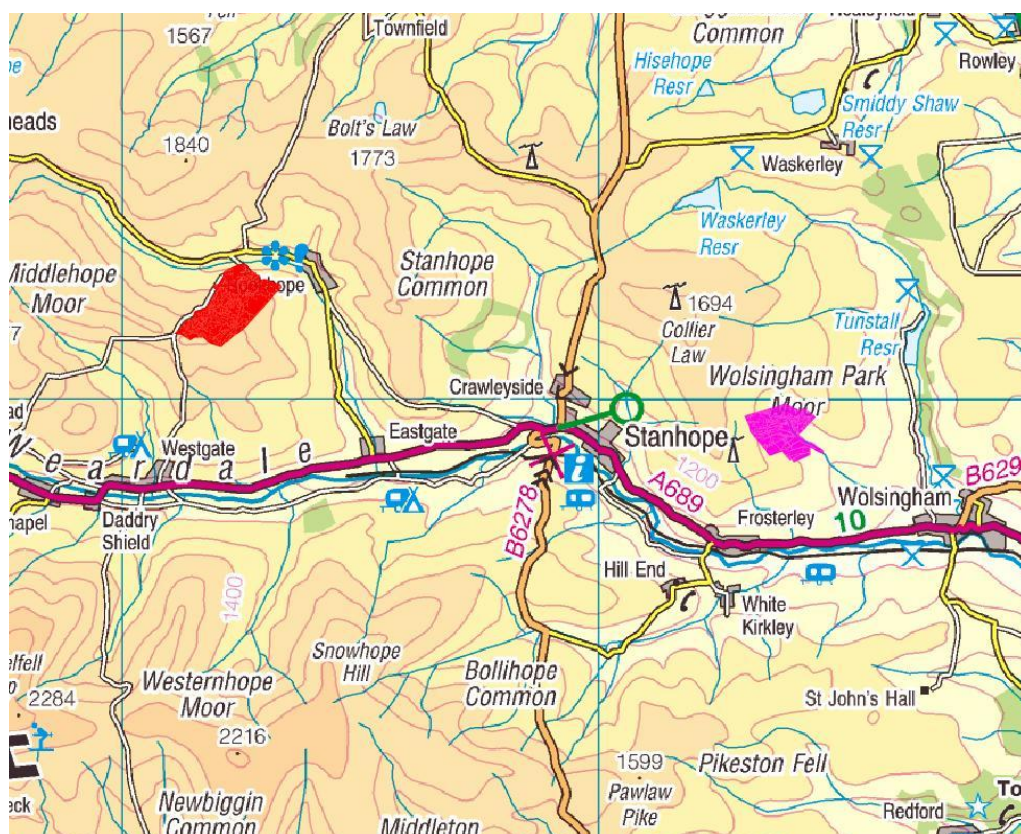
The most interesting plants at Thornehope included pale forget-me-not and lesser skullcap, which were both found in one area of rushy vegetation each, and juniper which grew in several places, including some planted bushes.

The most interesting plant at Lintzgarth was pale forget-me-not, which grew in several places in seven separate areas of rushy vegetation.

Pale forget-me-not is a scarce species globally and nationally, although it grows in quite a few places in the Pennines.

## 1 Introduction

- 1.1 Ptyxis Ecology was commissioned by Philip Wayre Upland Trust in April 2019, to undertake botanical surveys and habitat surveys of the Trust's land at Thornehope and Lintzgarth in Weardale, Co Durham.
- 1.2 The locations of the sites are shown in Fig 1. The Thornehope site lay roughly 2km north of the village of Frosterley. The Lintzgarth site lay roughly 1km to the west of the village of Rookhope.



**Fig 1: The survey sites at Thornehope (pink) and Lintzgarth (red)**

- 1.3 The Thornehope site lay in a valley bisected by the Thornehope Beck. Several smaller streams drained into the Thornehope Beck, flowing west to east or north to south. The lowest part of the site by the Thornehope Beck in the east was at roughly 240m altitude, while the highest point in the north-west corner was at roughly 395m.
- 1.4 Most of the land was gently to moderately sloping, with some steeper slopes close to the Thornehope Beck in the east. The land to the north-east of the Thornehope Beck faced roughly southwards, while the land to the south and west of the beck faced eastwards or north-eastwards.
- 1.5 The Lintzgarth site lay on the south side of the valley of the Rookhope Burn. A few sluggish, rushy flushes drained the higher land in the south and one small stream drained into the Rookhope Burn in the north of the site, flowing south to north. The lowest part of the site in the extreme north was at roughly 360m altitude, with the highest point in the extreme south at Windy Hill at



555m. Almost all of the land was roughly north-facing, mostly on moderately sloping, but undulating ground.

- 1.6 From the generalised soil map of England (Jarvis *et al.* 1984) most of Thornehope and all of Lintzgarth were underlain by soils from the WILCOCKS1 series. These are described as “slowly permeable, seasonally waterlogged fine loamy and fine loamy over clayey upland soils with a peaty subsurface horizon”, giving “wet moorland habitats of moderate and poor grazing value, some improved grassland, coniferous woodland”.
- 1.7 A small part of the Thornehope site close to the Thornehope Burn was mapped on soils from the BELMONT series, described as “coarse loamy very acid upland soils over rock with a wet peaty surface horizon and thin ironpan”. From the fieldwork, both sites also had considerable areas of peat on the surface.
- 1.8 The aims of the survey were to:
  - Compile lists of plant species for both sites;
  - Record the locations of any plant species of conservation interest;
  - Map and describe the main broad habitats on each site;
  - Record a sample of 10 vegetation quadrats from each of the main broad habitats on each site.

## **2 Methodology**

### **2.1 Introduction**

- 2.1.1 Both sites were surveyed between 25<sup>th</sup> June and 29<sup>th</sup> July 2019 by John O'Reilly. The Thornehope survey took three days and the Lintzgarth survey took four days. The weather was reasonably good for surveying on most days, apart from a dense, low fog on the first day at Lintzgarth and quite hot weather on one of the survey days at Thornehope. All areas of both sites were accessed.

### **2.2 Habitat mapping fieldwork**

- 2.2.1 Prior to the fieldwork, aerial images of the sites with 100m grid lines aligned to the OS National Grid, were produced on a Geographical Information System (GIS). These images (with the grids) were printed as base maps for the field mapping. Because the sites were moderately large, smaller sub-sections of each site were printed on separate pages.
- 2.2.2 There are several systems in use for classifying habitats in Britain and there is no single accepted system for mapping broad habitats that works well in every situation. The habitat categories used in this survey were based mainly on the Phase 1 Habitat Survey classification (JNCC 2007).
- 2.2.3 The habitats were identified in the field and their boundaries mapped directly onto the printed aerial images. Colour changes on the aerial images often corresponded to changes in habitat type on the ground, but I double-checked this in the field when drawing the boundaries.
- 2.2.4 In cases where a change of habitat in the field did not correspond to an obvious colour change on the aerial image, I checked the positioning of the boundaries by taking several 10-figure grid references using a Garmin High Sensitivity GPS (Global Positioning System) hand-held unit and cross referencing these grid references against the OS grid lines on the aerial images.

### **2.3 Quadrat data fieldwork**

- 2.3.1 10 vegetation quadrats were recorded in each of the main broad habitats on each site. For other habitats of interest that covered only small areas, fewer than 10 quadrats were recorded.
- 2.3.2 The locations of the vegetation quadrats were subjectively chosen as representative examples of the overall habitat. If a habitat was quite variable, then the quadrat locations were chosen to include as much as possible of this range of variation. Quadrat locations were spread throughout the habitat patches on each site.
- 2.3.3 At each quadrat location an area of 2m x 2m was marked out and surveyed following the guidelines for surveying NVC (National Vegetation

Classification) quadrats in Rodwell *et al.* (2006). All vascular plants, bryophytes and macrolichens growing within the quadrat were recorded. The %cover of the quadrat occupied by each species was also estimated and recorded.

## **2.4 Botanical survey fieldwork**

- 2.4.1 Vascular plant recording sheets optimised for County Durham were used to compile the plants lists for each site. Bryophyte species encountered were added to the back of the sheet.
- 2.4.2 Each new plant species found was ticked off or written onto the recording sheet from the start of the survey until the end. The survey aimed to try to find as many of the vascular plant species on each site as possible, so I visited all parts of the sites, in particular checking out any areas that looked atypical.
- 2.4.3 The survey did not aim to be as comprehensive with the list of bryophytes (mosses and liverworts). I aimed to record all of the species that were common on each site, as well as any other species encountered by chance during the survey.
- 2.4.4 At the end of the survey estimates of the relative abundance of each species were added using the DAFOR (Dominant, Abundant, Frequent, Occasional, Rare) scale. The site species lists were cross-checked against the lists of species from the quadrats to make sure that everything recorded was included.

## **2.5 GIS mapping**

- 2.5.1 The habitat field maps were used to digitise the habitat boundaries onto a GIS using QGIS software. The same aerial images as used for the fieldwork were used to digitise the habitat polygons on the GIS. The habitat type was recorded on the GIS for each habitat polygon.
- 2.5.2 Once all of the habitat polygons had been digitised, the area of each polygon was calculated so that the total area occupied by each broad habitat could be worked out. The polygons for each habitat type were then assigned different colours and habitat maps for each site were produced as JPEG images.

## **2.6 Habitat floristic tables**

- 2.6.1 The quadrat data were entered in a single master spreadsheet using Microsoft Excel. Then the data for each habitat type on each site were copied and pasted into separate sheets.
- 2.6.2 Floristic tables following the guidelines in Muller-Dombois & Ellenberg (1974) were produced as follows for each habitat type. The number of quadrats (count) each species was found in, plus the average (median) percentage cover for each species were calculated in separate columns using standard formulae. Then the data were sorted first by count and then by average cover.



- 2.6.3 For those habitat types with five or more quadrats an extra 'frequency' column was inserted. The count data were used to assign one of five frequency classes to each species using Roman numerals (I, II, III, IV, V). Then the data were sorted again first by frequency and then by average cover.
- 2.6.4 The floristic table for the woodland quadrats at Thornehope was subdivided into three sections: canopy; shrub layer and ground flora. The data in each section were sorted by frequency and average cover.
- 2.6.5 The columns for scientific name (of species), common name, frequency (or count if there were fewer than five quadrats) and average cover were copied into appendices F and G.

## **2.7 Evaluating species and habitat conservation status**

- 2.7.1 Species that have a national or regional conservation designation are highlighted in sections 5 and 6. This information is summarised in section 7.
- 2.7.2 The bryophyte species were checked in the following sources: Nationally Rare and Nationally Scarce species in Pescott (2016); UK Red List species in Hodgetts (2011); UKBAP Priority species in BRIG (2007), and; Regionally Rare and Regionally Scarce species in North-East England in O'Reilly (2011).
- 2.7.3 The vascular plant species were checked in the following sources: Nationally Rare, Nationally Scarce and UK Red List species in JNCC (2019); UKBAP Priority species in BRIG (2007), and status in County Durham in Durkin (2016).
- 2.7.4 The England Red List for vascular plants (Stroh *et al.* 2014) was also checked. This list includes many species that are still reasonably common in the uplands, but are of conservation concern in England as a whole due to significant declines in their lowland populations.
- 2.7.5 The conservation significance of the habitats is discussed in section 7. Any habitats found that corresponded to a UK BAP Priority Habitat (BRIG 2007) or to an EU Annex 1 Priority Habitat (JNCC 2016) are highlighted.

## **2.8 Species taxonomy and nomenclature**

- 2.8.1 Species taxonomy and nomenclature in this report follows Stace (2019) for vascular plants, Blockeel *et al.* (2016) for bryophytes and Smith *et al.* (2009) for lichens. Note that several recent name changes for common vascular plant species were included in Stace (2019).
- 2.8.2 The first time a vascular plant is mentioned in the report, both the scientific name and common name are given. If the species is mentioned again, only the common name is used. Scientific names only are used for bryophytes.

## **2.9 Presentation of results**

- 2.9.1 Some of the main results are summarised in sections 3 to 7 of this report, but the detailed results are presented in the appendices. The raw GIS and species data are also stored on file by Ptyxis Ecology and are available on request.
- 2.9.2 The results of the habitat (and quadrat) surveys are presented in section 3 and 4 and in appendices A to L. In sections 3 (Thornehope) and 4 (Lintzgarth) each of the main broad habitats is briefly described. When reading these habitat descriptions it may be useful to also refer to the habitat maps (appendices A and B) and habitat floristic tables (appendices F and G).
- 2.9.3 Most of the broad habitats were variable in character and some of this variation is described in sections 3 and 4. The raw quadrat data are presented in appendices H and I. At the bottom of these tables of data a NVC (National Vegetation Classification) code is inserted for each quadrat. The NVC is a much more detailed system of classifying habitats than was used in this survey. These NVC codes help to define the variation within each of the broad habitats.
- 2.9.4 The main results of the botanical surveys are presented in sections 5 (Thornehope) and 6 (Lintzgarth) and in appendices C and J to L. Full site species lists are given in alphabetical order of scientific name in appendices J and K. If a vascular plant scientific name is found elsewhere in the report that the reader is unfamiliar with, the common name can be looked up in these appendices.
- 2.9.5 A combined species list is given in appendix L arranged in taxonomic order. This list shows how closely or distantly related to each other in evolutionary terms the plant species found in the survey were. It also helps summarise the botanical character of the sites by highlighting which plant families or orders were well represented at each site.

## **2.10 Assumptions and limitations**

- 2.10.1 Any one survey can only hope to pick up a sample of the species present. Some additional species would probably have been found had there been visits at different times of the season.
- 2.10.2 However, the survey was carried out at a good time of year for picking up a high proportion of species present in a few visits. Overall, I estimate that over 95% of the vascular plant species should have been found.
- 2.10.3 The list of bryophytes is unlikely to be as comprehensive. Bryophytes are easier to spot outside of the summer months when the cover of vascular plants is not so high. Also to make the bryophyte list more comprehensive, more time would have been needed to do targeted searches of specialist bryophyte habitats (such as rocks and trees) and for identifying specimens under a microscope.

### 3 Results: Habitat survey at Thornehope

#### 3.1 Overview

- 3.1.1 The habitats at Thornehope were assigned to nine broad categories. Heathland covered almost half of the site and acid grassland covered almost a quarter. The only other habitats that covered more than 5% of the site were fern-dominated vegetation and rushy vegetation.
- 3.1.2 Most of the habitats were similar in terms of species-richness with an average number of species per quadrat of 11 or 12. The fern-dominated vegetation was less species-rich (8 species per quadrat) and the woodland was quite a bit more species-rich (19 species per quadrat).
- 3.1.3 See also the habitat map in appendix A and the habitat floristic tables in appendix F.
- 3.1.4 The habitat descriptions below include references (two letters, followed by two numbers) to quadrat numbers. The raw data for these quadrats can be viewed in appendix H.

#### 3.2 Heathland

- 3.2.1 56 hectares of heathland was mapped, covering 48% of the site. Large areas of heathland were present in most parts of the site. Areas mapped as heathland had more than 25% (often much higher) cover of dwarf shrubs but did not have any hare's-tail cottongrass *Eriophorum vaginatum*. 11 quadrats were recorded.
- 3.2.2 The most common dwarf shrub species in the heathland here included heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, bilberry *Vaccinium myrtillus* and crowberry *Empetrum nigrum*. Other species that were common overall included tormentil *Potentilla erecta*, the moss *Pseudoscleropodium purum* and the grasses sheep's-fescue *Festuca ovina*, wavy hair-grass *Avenella flexuosa* and purple moor-grass *Molinia caerulea*.
- 3.2.3 Roughly similar amounts of dry and wet heathland were present. There were three types of dry heathland. In the most common type (TH01, TH08, TH09) heather was the dominant dwarf shrub. Quite large areas of the second type (TH10) were present with mixtures of heather and bell heather *Erica cinerea*. Much smaller areas of heathland (TH11) where bilberry was the dominant dwarf shrub were present in the north-west of the site.
- 3.2.4 Most of the heathland on the east side of Thornehope Beck was wet heathland, but patches of wet heathland were frequent on the west side also. The wet heathland had mixtures of heather, cross-leaved heath, purple moor-grass, common deergrass *Trichophorum germanicum* and occasionally some *Sphagnum* species.
- 3.2.5 The wet heathland (TH02, TH03, TH04, TH05, TH06) was quite variable in appearance depending on which of these species was most prominent locally.

Some examples (TH03) with lower heather cover and more common deergrass and *Sphagnum* species looked quite similar to blanket bog, while the more heather-dominated areas looked more similar to dry heath.

- 3.2.6 Occasionally, close to areas mapped as rushy flush, there were patches that were transitional between the two habitats (TH06). In these areas cross-leaved heath was the main dwarf shrub and there was usually a high cover of *Sphagnum* and some rushes in the vegetation. Areas like this were mapped as heathland if they had dwarf shrub cover over 25% and as rushy vegetation if the dwarf shrub cover was lower.
- 3.2.7 Similarly there were some areas (TH02, TH05) transitional to purple moor-grass vegetation, but these were included in the heathland category if they had more than 25% cover of dwarf shrubs.
- 3.2.8 On the steep north-facing slopes above Thornehope Beck a much rarer type of heathland with heather over a ground layer dominated by the moss *Sphagnum capillifolium* occurred in just one area (TH07).

### 3.3 Acid grassland

- 3.3.1 29 hectares of acid grassland was mapped, covering 24% of the site. The two largest areas of acid grassland were concentrated near the entrance to the site in the south and near the north-west corner of the site. Smaller patches of acid grassland were scattered in many other parts of the site. 10 quadrats were recorded
- 3.3.2 This was grassy and relatively species-poor vegetation, with an average of 11 species per quadrat. The most common grasses included common bent *Agrostis capillaris*, sheep's-fescue, mat-grass *Nardus stricta*, sweet vernal-grass *Anthoxanthum odoratum* and Yorkshire-fog *Holcus lanatus*. Other species that were common in the acid grassland included heath bedstraw *Galium saxatile*, tormentil, field wood-rush *Luzula campestris* and the mosses *Rhytidiadelphus squarrosus* and *Pseudoscleropodium purum*.
- 3.3.3 There were three main types of acid grassland here. In the most common type (TA01, TA02, TA04, TA06), there were mixtures of the grasses listed above, but common bent and sheep's-fescue were usually the main species.
- 3.3.4 In the second type wavy hair-grass was the dominant grass. The third type was more similar to the first type in having a mixture of grasses, but this time mat-grass was the most dominant species.
- 3.3.5 A fourth type of acid grassland occurred in two or three small patches at the top of the steep slopes leading down to the Thornehope Beck on the south side. This had a similar mix of grasses to the first type, but was more herb-rich and included species like betony *Betonica officinalis*, quaking-grass *Briza media*, bitter vetch *Lathyrus linifolius*, common bird's-foot-trefoil *Lotus corniculatus* and flea sedge *Carex pulicaris*. This was the only habitat on the site where most of these species were found.

- 3.3.6 The acid grassland differed from heathland in having less than 25% (often much less than this) cover of dwarf shrubs. It differed from mesotrophic grassland in having more sheep's-fescue, mat-grass, wavy hair-grass, heath bedstraw or tormentil, and having less crested dog's-tail *Cynosurus cristatus*, red fescue *Festuca rubra* and white clover *Trifolium repens*. Very occasionally (TA10) there was acid grassland with frequent white clover, Yorkshire-fog and red fescue that was transitional to mesotrophic grassland.

### 3.4 Fern-dominated vegetation

- 3.4.1 13 hectares of fern-dominant vegetation was mapped, covering 11% of the site. Most of this occurred on the slopes beside the Thornehope Beck, with occasional (usually linear) patches elsewhere. 10 quadrats were recorded.
- 3.4.2 This was species-poor (average of eight species per quadrat) vegetation that was usually dominated by bracken *Pteridium aquilinum*. The most frequent associated species included the moss *Pseudoscleropodium purum* and the grasses common bent and wavy hair-grass.
- 3.4.3 In many areas (TF2, TF4, TF07, TF10) the bracken was very dense, with few other species present. But there were other more open areas (TF01, TF05, TF08, TF09), that were transitional between acid grassland and the very dense bracken areas. A few areas (TF03) had bracken over an understorey of dwarf shrubs and were transition to heathland.
- 3.4.4 On the steep slopes above Thornehope Burn there were a few patches (TF06) of fern-dominated vegetation in which lemon-scented fern *Oreopteris limbosperma* was the dominant species. This type of fern vegetation was more species-rich than the bracken dominated areas.

### 3.5 Rushy vegetation

- 3.5.1 Eight hectares of rushy vegetation was mapped, covering 7% of the site. The areas of rushy vegetation occurred mostly on the west side of the main becks, as linear strips running west to east down the slopes. 10 quadrats were recorded.
- 3.5.2 This vegetation was usually either dominated by soft-rush *Juncus effusus* (TR01, TR03, TR07, TR10) or sharp-flowered rush *Juncus acutiflorus* (TR02, TR04, TR05, TR06, TR09).
- 3.5.3 With both rush species there were two types of vegetation that were common. The more common type here (TR02, TR03, TR04, TR05, TR09, TR10) had mixtures wetland flowers such as marsh violet *Viola palustris*, marsh thistle *Cirsium palustre* with grasses velvet bent *Agrostis canina* and Yorkshire-fog. In the other less common type (TR01, TR06, TR07) marsh violet and velvet bent were still common, but the ground vegetation was dominated by *Sphagnum* species, especially *Sphagnum fallax* and *Sphagnum palustre*.
- 3.5.4 Also included in this category were some wet, flushed areas that did not have a high cover of rushes, but were more similar to this habitat than to any other.

These areas (TR08) had more open vegetation with mixtures of small sedges and grasses over a layer of *Sphagnum*. Similar vegetation to this also occurred in some drains but these areas were too narrow to map.

- 3.5.5 This habitat supported populations of the two plant species of most conservation interest on the site, pale forget-me-not *Myosotis stolonifera* and lesser skullcap *Scutellaria minor*.

### 3.6 Mesotrophic grassland

- 3.6.1 Six hectares of mesotrophic grassland was mapped, covering 5% of the site. This was all concentrated in the south of the site. Most of this area was in the small fenced-off field south of the old Thornehope house, with additional areas along the edges of the site near the entrance. Two quadrats were recorded.
- 3.6.2 This vegetation probably originally developed through agricultural improvement (involving ploughing, re-seeding and fertiliser application) at some point in the past, making this the least natural type of vegetation on the site. The sward was quite short and this type of vegetation was more palatable for livestock than most other areas of the site.
- 3.6.3 This was grassy vegetation with mixtures of common bent, red fescue, crested dog's-tail, Yorkshire-fog, sweet vernal-grass and cock's-foot *Dactylis glomerata*. White clover was also frequent, with smaller amounts of other common broad leaved plants including meadow buttercup *Ranunculus acris*, common sorrel *Rumex acetosa* and dandelion *Taraxacum* agg. In places within the small field, the sward was more herb-rich and contained common bird'-foot-trefoil and the moss *Rhytidiadelphus squarrosus*.

### 3.7 Purple moor-grass vegetation

- 3.7.1 Three hectares of purple moor-grass vegetation was mapped, about 3% of the site. Most of this was on the east side of Thornehope Beck with a few additional small patches on the west side in the north. Five quadrats were recorded.
- 3.7.2 Vegetation dominated by purple moor-grass is often difficult to classify. It was somewhat intermediate between the habitats mapped as acid grassland and rushy vegetation (and sometimes heathland) here, but it didn't fit neatly into either category.
- 3.7.3 Purple moor-grass was by far the dominant species in this habitat. The vegetation was mostly species-poor (average of 12 species per quadrat) and associated species were usually at much lower cover. These included the grasses wavy hair-grass, sheep's-fescue, common bent and sweet vernal-grass. Other associated species here included heath bedstraw, common deergrass, cross-leaved heath, heath woodrush *Luzula multiflora* and the moss *Polytrichum commune*.



### 3.8 Woodland

- 3.8.1 Two and a half hectares of woodland was mapped, covering 2% of the site. This was all concentrated in narrow strips along the Thornehope Beck, with the most continuous areas in the east of the site. 10 quadrats were recorded. There were two main types of woodland here, a wetter type (TW03, TW04, TW05, TW06, TW08, TW09) and a drier type (TW01, TW02, TW07, TW10).
- 3.8.2 On the wetter soils alder *Alnus glutinosa* was the most common species in the canopy, with smaller amount of downy birch *Betula pubescens*. The shrub layer was usually well-developed, mostly with one or more of alder, rowan *Sorbus aucuparia* or holly *Ilex aquifolium*, with other species appearing more locally.
- 3.8.3 On the drier soils downy birch was the dominant canopy species. A shrub layer was less consistently present compared to the wetter woodland, but when it was present, rowan or hazel *Corylus avellana* were often the main species.
- 3.8.4 The ground flora of both types of woodland had several species in common including wood sorrel *Oxalis acetosella*, creeping soft-grass *Holcus mollis* and the ferns lemon-scented fern, bracken and hard-fern *Blechnum spicant*. The wetter woodland also often had common dog-violet *Viola riviniana* and the mosses *Thuidium tamariscinum* and *Mnium hornum*, while the drier woodland often had common bent, heath bedstraw, the moss *Polytrichastrum formosum* and seedlings of holly.
- 3.8.5 This was the most species-rich habitat on the site, with an average of 19 species per quadrat. The ground flora alone (i.e. not counting any species in the canopy or shrub layer) had an average of 17 species per quadrat, which was still quite a bit higher than any other habitat on the site.
- 3.8.6 Note that several species of non-native conifers were included on the species list. These were mostly growing just outside the site boundary, but they were included when they formed part of the woodland canopy within the site.

### 3.9 Blanket bog

- 3.9.1 One hectare of blanket bog was mapped, covering 1% of the site. This was all in four patches in the north-west sections of the site. Three quadrats were recorded.
- 3.9.2 The bulk of this vegetation was formed by combinations of heather, cross-leaved heath, hare's-tail cottongrass and the mosses *Sphagnum papillosum* and *Sphagnum capillifolium*. Other species that were often present but at lower cover included crowberry, cranberry *Vaccinium oxycoccus*, common cottongrass *Eriophorum angustifolium*, tormentil, bog asphodel *Narthecium ossifragum* and the mosses *Polytrichum commune*, *Sphagnum fallax* and *Aulacomnium palustre*.

- 3.9.3 Some areas of wet heath with common deergrass and *Sphagnum* species looked superficially similar to the blanket bog, but these areas had no hare's-tail cottongrass.

### **3.10 Weedy vegetation**

- 3.10.1 One small area (covering 0.1 of a hectare) was mapped as weedy vegetation in and around the remains of the Thornehope house.
- 3.10.2 This was vegetation dominated by common nettle *Urtica dioica* and creeping thistle *Cirsium arvense*, with a grassy understorey.

## 4 Results: Habitat survey at Lintzgarth

### 4.1 Overview

- 4.1.1 The habitats at Lintzgarth were assigned to eight broad categories. Blanket bog and acid grassland covered just over a third of the site each and rushy vegetation covered just over one fifth of the site. The only other habitat that covered more than 5% of the site was mesotrophic grassland.
- 4.1.2 Most of the habitats were similarly species-poor with an average number of species per quadrat of between 9 and 11. The mesotrophic grassland was a bit more species-rich (13 species per quadrat) and the small areas of calcareous grassland were quite a bit more species-rich (18 species per quadrat)
- 4.1.3 See also the habitat map in appendix B, target notes in appendix C and the habitat floristic tables in appendix G.
- 4.1.4 The habitat descriptions below include references (two letters, followed by two numbers) to quadrat numbers. The raw data for these quadrats can be viewed in appendix I.

### 4.2 Blanket bog

- 4.2.1 65 hectares of blanket bog was mapped, covering 36% of the site. This habitat covered large areas of most of the site, apart from parts of the north and north-west sections of the site. 10 quadrats were recorded.
- 4.2.2 Most of the blanket bog was dominated by hare's-tail cottongrass, without any dwarf shrubs apart from an occasional shoot of bilberry. Associated species included several that are typical of acid grassland including heath bedstraw, heath rush and the grasses wavy hair-grass, sheep's-fescue and sweet vernal-grass. The most common mosses were *Polytrichum commune*, *Pleurozium schreberi* and *Aulacomnium palustre*. In most areas there was no *Sphagnum*. This type of blanket bog (LB02, LB04, LB07, LB08, LB09) is transitional to acid grassland and often results from very heavy grazing in the past.
- 4.2.3 In some places, on more sloppy ground (LB03, LB06, LB10), there was a moderate to high cover of *Sphagnum fallax*, a higher cover of *Polytrichum commune* and fewer of the acid grassland species.
- 4.2.4 In a limited area around the highest points of the site at Windy Hill (LB01, LB05), the blanket bog vegetation was quite different. Here the bog vegetation was more species-rich and comprised of mixtures of hare's-tail cottongrass, common deergrass, bilberry, heather, cross-leaved heath, wavy hair-grass, the mosses *Sphagnum capillifolium*, *Polytrichum commune*, *Hypnum jutlandicum*, *Campylopus flexuosus* and *Aulacomnium palustre* and the lichens *Cladonia portentosa* and *Cladonia uncialis*.

- 4.2.5 This latter type of blanket bog vegetation was probably not as heavily impacted by grazing in the past and is more typical of the potential natural bog vegetation on the site.

### 4.3 Acid grassland

- 4.3.1 63 hectares of acid grassland was mapped, covering 35% of the site. This occurred in large patches more or less throughout the site. 10 quadrats were recorded.
- 4.3.2 Overall, the most common species in this habitat included heath bedstraw, the moss *Rhytidiadelphus squarrosus*, heath rush *Juncus squarrosus* and the grasses wavy hair-grass, sheep's-fescue, common bent and sweet vernal-grass. However, there were several different types of acid grassland with different patterns of dominant species.
- 4.3.3 The two most common types of acid grassland here included a type with very abundant heath rush (LA02, LA05, LA07, LA10) and a type that was quite mixed, without any one dominant species (LA03, LA04, LA06).
- 4.3.4 More locally there were areas of acid grassland dominated by wavy hair-grass (LA01) and areas with much purple moor-grass mixed with the other species listed above (LA09). In the fenced off area in the north of the site, some areas of wavy-hair-grass acid grassland were becoming transitional to heathland, with a moderate cover of bilberry.
- 4.3.5 The most interesting type of acid grassland occurred in a few small patches on several old spoil heaps in the north of the site (see target notes in appendix C). This was short, open vegetation with lots of sheep's-sorrel *Rumex acetosella* and a higher cover of lichens and mosses compared to the other types of acid grassland.

### 4.4 Rushy vegetation

- 4.4.1 40 hectares of rushy vegetation was mapped, covering 22% of the site. This was found in most areas of the site. It often occurred as linear patches along sluggish flushes and streams, but there were also many larger patches, especially in the north of the site. 12 quadrats were recorded; two of these were in open rushy vegetation with pale forget-me-not and the remaining 10 in more typical dense rushy vegetation.
- 4.4.2 The rushy vegetation at Lintzgarth was less variable overall than at Thornehope. Soft-rush was usually the dominant rush here, with sharp-flowered rush dominating much less frequently. The most common associated species overall included heath bedstraw, the grasses velvet bent and wavy hair-grass and the mosses *Polytrichum commune* and *Sphagnum fallax*.
- 4.4.3 By far the most common type of rushy vegetation here (LR01, LR03, LR04, LR05, LR08, LR10) had an understorey of the mosses *Polytrichum commune* and/or *Sphagnum fallax* (or sometimes *Sphagnum palustre*). The second

most common type (LR02, LR07) was less acid in character, lacked the mosses listed above and was more grassy.

- 4.4.4 Much more locally, the dominant species in the rushy vegetation was sharp flowered rush (LR06) or common sedge (LR09).
- 4.4.5 Pale forget-me-not grew in several of the areas of rushy vegetation, especially on the higher ground to the south. It was most abundant in more open flush vegetation that had only a low cover of soft-rush (LS01, LS02). Other species that often accompanied it in this more open vegetation included blinks *Montia fontana*, round-leaved water-crowfoot *Ranunculus omiophyllus*, common water-starwort *Callitriche stagnalis*, water horsetail *Equisetum fluviatile*, jointed rush *Juncus articulatus* and the mosses *Calliergonella cuspidata* and *Dichodontium palustre*.

#### 4.5 Mesotrophic grassland

- 4.5.1 13 hectares of mesotrophic grassland was mapped, covering 7% of the site. Most of this was in the north of the site, with smaller areas close to the western edge. Just under half of the mesotrophic grassland was being managed as meadow, with the remainder part of larger fields managed as pasture. 10 quadrats were recorded.
- 4.5.2 The most common species overall in the mesotrophic grassland included white clover, meadow buttercup, common sorrel, creeping buttercup *Ranunculus repens* and the grasses common bent, red fescue, Yorkshire-fog, sweet vernal-grass and crested dog's-tail.
- 4.5.3 The mesotrophic grassland in the meadows (LM01, LM02, LM03, LM04) was more species-rich than most other habitats here and in addition to the species listed above, it had frequent ribwort plantain *Plantago lanceolata*, yellow-rattle *Rhinanthus minor*, arctic eyebright *Euphrasia arctica* and yellow oat-grass *Trisetum flavescens*.
- 4.5.4 Most of the remaining mesotrophic grassland (LM06, LM07, LM08, LM09, LM10) was relatively species-poor. One area of mesotrophic grassland along a linear feature in the north of the site (LM05) probably associated with the historic mining activity was more herb-rich and had daisy *Bellis perennis*, selfheal *Prunella vulgaris*, yarrow *Achillea millefolium* and common bird's-foot-trefoil.

#### 4.6 Woodland

- 4.6.1 Half a hectare of woodland was mapped from one patch half way along the western edge of the site. This was a plantation of Scot's pine *Pinus sylvestris*.

#### 4.7 Open water

- 4.7.1 0.3 of a hectare of open water was mapped from one waterbody in the north of the site. Rushy vegetation occurred around the edges of the water body, but no plants were spotted growing in the water.

#### 4.8 Calcareous grassland

- 4.8.1 0.2 of a hectare of calcareous grassland was mapped from three small patches on spoil heaps in the north of the site. Three quadrats were recorded.
- 4.8.2 This was the most species-rich habitat found at Lintzgarth and it contained several species that did not grow in any other habitats on the site. There were two types of calcareous grassland here. The first was a type that is common throughout northern England. It had mixtures of white clover, common mouse-ear *Cerastium fontanum*, marsh thistle, confused eyebright *Euphrasia confusa*, heath bedstraw, wild thyme *Thymus drucei*, selfheal, field woodrush, the moss *Hylocomium splendens* and the grasses common bent, sheep's-fescue, sweet vernal-grass and wavy hair-grass.
- 4.8.3 The second type is generally much less common, but is typically found in similar situations on spoil heaps or in abandoned quarries. This type of calcareous grassland was less grassy and more open and mossy with frequent mouse-ear-hawkweed *Pilosella officinarum*, glaucous sedge *Carex flacca*, fairy flax *Linum catharticum*, quaking-grass and the moss *Hypnum cupressiforme* var. *lacunosum*. Autumn gentian *Gentianella amarella* also grew in this type of calcareous grassland and nowhere else on the site.

#### 4.9 Heathland

- 4.9.1 0.1 of a hectare of heathland was mapped from one patch inside the fenced off area along the sike in the north of the site. One quadrat was recorded.
- 4.9.2 This was open heathland with only a partial cover of bilberry. There was frequent wavy hair-grass and the vegetation was quite mossy, with mixtures of *Pleurozium schreberi*, *Hylocomium splendens* and *Rhytidiadelphus squarrosus*.
- 4.9.3 Some areas of acid grassland nearby in this fenced-off area had similar vegetation, but with even less cover of bilberry. The cover of bilberry and heather in these areas of developing heathland will probably continue to increase while grazing is excluded.



## 5 Results: Botanical survey at Thornehope

### 5.1 Overview

- 5.1.1 182 plant species were recorded in all at Thornehope (see appendix J). 137 of these were vascular plants. There were 42 mosses and three liverworts.
- 5.1.2 Looking through the taxonomic list in appendix L, the sedge and heather families were particularly well-represented here. There were six dwarf shrubs from the heather family and 14 sedges, including 10 species from the genus *Carex* found.

### 5.2 Most abundant species

- 5.2.1 The most abundant species found at Thornehope are listed in table 1 below. This list includes six grasses, four mosses, four dwarf shrubs and two other flowering plants.

Table 1: The most abundant plant species at Thornehope

Scientific name	Common name
<i>Agrostis capillaris</i>	Common bent
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass
<i>Avenella flexuosa</i>	Wavy hair-grass
<i>Calluna vulgaris</i>	Heather
<i>Erica cinerea</i>	Bell heather
<i>Erica tetralix</i>	Cross-leaved heath
<i>Festuca ovina</i> agg.	a sheep's fescue
<i>Galium saxatile</i>	Heath bedstraw
<i>Hypnum jutlandicum</i>	a moss
<i>Molinia caerulea</i>	Purple moor-grass
<i>Nardus stricta</i>	Mat-grass
<i>Pleurozium schreberi</i>	a moss
<i>Polytrichum commune</i>	a moss
<i>Potentilla erecta</i>	Tormentil
<i>Pseudoscleropodium purum</i>	a moss
<i>Vaccinium myrtillus</i>	Bilberry

### 5.3 Species of conservation interest

- 5.3.1 One Nationally Scarce species, pale forget-me-not; one UKBAP Priority species, juniper *Juniperus communis* and one species that is considered scarce in Durham, lesser skullcap were found.
- 5.3.2 19 species listed in one of the categories other than LC (Least Concern) in the England Red List were found. However, none of these species are considered to be particularly uncommon in County Durham.
- 5.3.3 Two of these species, common cottongrass and lesser spearwort *Ranunculus flammula* are listed as VU (Vulnerable), which means they count as Red List species in England.

5.3.4 Scot's pine is listed as WL (Waiting List) due to some doubts about its native status in England. However, the Scot's pine trees at Thornehope were obviously planted.

5.3.5 17 other species found at Thornehope are listed as NT (Near Threatened) in the England Red List. These species are listed in Table 2 below.

Table 2: Species found at Thornehope which are considered Near Threatened in England.

Scientific name	Common name
<i>Briza media</i>	Quaking-grass
<i>Calluna vulgaris</i>	Heather
<i>Campanula rotundifolia</i> ssp. <i>rotundifolia</i>	Harebell
<i>Carex echinata</i>	Star sedge
<i>Carex pulicaris</i>	Flea sedge
<i>Cruciata laevipes</i>	Crosswort
<i>Drosera rotundifolia</i>	Round-leaved sundew
<i>Erica cinerea</i>	Bell heather
<i>Erica tetralix</i>	Cross-leaved heath
<i>Gentianella amarella</i> ssp. <i>amarella</i>	Autumn gentian
<i>Juniperus communis</i> ssp. <i>communis</i>	Common juniper
<i>Lathyrus linifolius</i>	Bitter-vetch
<i>Nardus stricta</i>	Mat-grass
<i>Oxalis acetosella</i>	Wood-sorrel
<i>Polygala serpyllifolia</i>	Heath milkwort
<i>Potentilla erecta</i> ssp. <i>erecta</i>	Tormentil
<i>Sanicula europaea</i>	Sanicle
<i>Succisa pratensis</i>	Devil's-bit scabious
<i>Triglochin palustris</i>	Marsh arrowgrass
<i>Veronica officinalis</i>	Heath speedwell

## 6 Results: Botanical survey at Lintzgarth

### 6.1 Overview

- 6.1.1 182 plant species were recorded in all at Lintzgarth (see appendix K). 144 of these were vascular plants. There were 37 mosses and one liverwort.
- 6.1.2 Looking through the taxonomic list in appendix L, the grass, daisy and knotweed families were particularly well-represented here. There were 27 species from the grass family, 14 from the daisy family and six from the knotweed family.

### 6.2 Most abundant species

- 6.2.1 The most abundant species found at Lintzgarth are listed in table 3 below. This list includes seven mosses, four grasses, one sedge and two other flowering plants.

Table 3: The most abundant plant species at Lintzgarth

Scientific name	Common name
<i>Avenella flexuosa</i>	Wavy hair-grass
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass
<i>Festuca ovina</i> agg.	a sheep's fescue
<i>Galium saxatile</i>	Heath bedstraw
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hypnum jutlandicum</i>	a moss
<i>Juncus effusus</i>	Soft-rush
<i>Juncus squarrosus</i>	Heath rush
<i>Nardus stricta</i>	Mat-grass
<i>Pleurozium schreberi</i>	a moss
<i>Polytrichum commune</i>	a moss
<i>Potentilla erecta</i>	Tormentil
<i>Rhytidiadelphus squarrosus</i>	a moss
<i>Sphagnum fallax</i>	a bog-moss
<i>Sphagnum palustre</i>	a bog-moss
<i>Sphagnum papillosum</i>	a bog-moss

### 6.3 Species of conservation interest

- 6.3.1 One Nationally Scarce species, pale forget-me-not was found (see distribution maps in appendix M).
- 6.3.2 One species, arctic eyebright, listed as DD (Data Deficient) on the UK Red List was found. This species is currently undergoing taxonomic investigations, which may or may not result in more than one taxon being recognised. Until this process has been completed it is impossible to assign an appropriate conservation status to the species. However, the species as a whole is common in the north of England.

- 6.3.3 19 species listed in one of the categories other than LC (Least Concern) in the England Red List were found. However, none of these species are considered to be particularly uncommon in County Durham.
- 6.3.4 Three of these species, common cottongrass, confused eyebright and lesser spearwort are listed as VU (Vulnerable), which means they count as Red List species in England.
- 6.3.5 Arctic eyebright is listed as DD (Data Deficient) for the same reasons as outlined above in 6.3.2.
- 6.3.6 Scot's pine is listed as WL (Waiting List) due to some doubts about its native status in England. However, the Scot's pine trees at Lintzgarth were obviously planted.
- 6.3.7 14 other species found at Lintzgarth are listed as NT (Near Threatened) in the England Red List. These species are listed in Table 4 below.

Table 4: Species found at Lintzgarth which are considered Near Threatened in England.

Scientific name	Common name
<i>Briza media</i>	Quaking-grass
<i>Calluna vulgaris</i>	Heather
<i>Campanula rotundifolia</i> ssp. <i>rotundifolia</i>	Harebell
<i>Carex echinata</i>	Star sedge
<i>Carex pulicaris</i>	Flea sedge
<i>Cruciata laevipes</i>	Crosswort
<i>Drosera rotundifolia</i>	Round-leaved sundew
<i>Erica tetralix</i>	Cross-leaved heath
<i>Gentianella amarella</i> ssp. <i>amarella</i>	Autumn gentian
<i>Nardus stricta</i>	Mat-grass
<i>Oxalis acetosella</i>	Wood-sorrel
<i>Potentilla erecta</i> ssp. <i>erecta</i>	Tormentil
<i>Triglochin palustris</i>	Marsh arrowgrass
<i>Veronica officinalis</i>	Heath speedwell

## 7 Discussion

### 7.1 Habitats

- 7.1.1 Table 5 identifies which habitats at the sites fell within the definitions of UKBAP Priority Habitats (BRIG 2007) and what percentages of the sites they cover. These are habitats that are considered to be the top priorities for conservation within the UK.

Table 5: UKBAP Priority Habitats at Thornehope and Lintzgarth

Survey Habitat	UKBAP Priority Habitat	Thornehope	Lintzgarth
Woodland	Wet woodland or Upland birchwoods	2.1%	
Heathland	Upland heathland	47.8%	< 0.1%
Blanket bog	Blanket bog	0.9%	35.7%
Calcareous grassland	Upland calcareous grassland		0.1%
Rushy vegetation	Upland flushes, fens and swamps	6.7%	21.8%
<b>Total</b>		<b>57.5%</b>	<b>57.7%</b>

- 7.1.2 Over half of both sites supported habitats that are considered to be UKBAP Priority Habitats. At Thornehope, the vast majority of this was the upland heathland, while at Lintzgarth almost all was blanket bog or upland flushes, fens and swamps (rushy vegetation).
- 7.1.3 Table 6 identifies which habitats at the sites fell within the definitions of EU Annex 1 Habitats (JNCC 2016) and what percentages of the sites they cover. These are habitats that are considered to be the top priorities for conservation across the European Union.

Table 6: EU Annex 1 Habitats at Thornehope and Lintzgarth

Survey Habitat	EU Annex 1 Habitat	Thornehope	Lintzgarth
Heathland	4020 Temperate Atlantic wet heaths with <i>Erica ciliaris</i> or <i>Erica tetralix</i> , or 4030 European dry heaths	47.8%	< 0.1%
Blanket bog	7130 Blanket bog	0.9%	35.7%
Calcareous grassland	6210 Semi-natural dry grasslands and scrub facies on calcareous substrates ( <i>Festuco-Brometalia</i> )		0.1%
<b>Total</b>		<b>48.7%</b>	<b>35.8%</b>

- 7.1.4 Almost half of Thornehope supported habitats that are considered to be EU Annex 1 Habitats. The vast majority of this was the heathland, which falls within two EU Annex 1 Habitats, depending on whether it was wet or dry heathland. Over one third of Lintzgarth supported habitats that are considered to be EU Annex 1 Habitats. Almost all of this was the blanket bog.

- 7.1.5 From a nature conservation perspective, perhaps the most valuable aspect of both sites was that they both supported a mosaic of habitats. Variations in soil wetness, slope, aspect, altitude and management gave rise to different habitat types in different places. This variety of habitat conditions on a fine scale, made the habitats here more valuable for other wildlife than if each habitat had been in larger more homogenous blocks.
- 7.1.6 Rush-dominated vegetation is not often perceived to be a rich botanical habitat, so it was a little surprising that it was the rushy vegetation that supported the two most interesting plant species found in the survey, pale forget-me-not and lesser skullcap.
- 7.1.7 The woodland at Thornehope was relatively small, but was the most species-rich habitat at that site. It had added value for nature conservation because of the reasonably well-developed shrub layer. This is a relatively uncommon feature of woodlands in the Pennines, since many of them are grazed.
- 7.1.8 The calcareous grassland at Lintzgarth occupied even smaller areas, but this was the most species-rich habitat at Lintzgarth, supporting several species that grew nowhere else on the site.

## 7.2 Species

- 7.2.1 Table 7 list the species found in the survey with the highest conservation designations. **NS** stands for Nationally Scarce (JNCC 2019); **DS** for Scarce in County Durham (Durkin 2016); **UKBAP** for UK BAP Priority Species (BRIG 2007), and; **Eng VU** for Vulnerable in England (Stroh *et al.* 2014).

Table 7: Plant species of conservation interest at Thornehope and Lintzgarth

Scientific name	Common name	Designation	Thornehope	Lintzgarth
<i>Eriophorum angustifolium</i>	Common cottongrass	Eng VU	Y	Y
<i>Euphrasia confusa</i>	Confused eyebright	Eng VU		Y
<i>Juniperus communis</i>	Common juniper	UKBAP	Y	
<i>Myosotis stolonifera</i>	Pale forget-me-not	NS	Y	Y
<i>Ranunculus flammula</i>	Lesser spearwort	Eng VU	Y	Y
<i>Scutellaria minor</i>	Lesser skullcap	DS	Y	

- 7.2.2 In addition, 17 other species at Thornehope and 14 at Lintzgarth are listed as **NT** (Near Threatened) in England (Stroh *et al.* 2014). However, more or less all of the species found here listed as VU or NT on the England Red List are still relatively common in the uplands.
- 7.2.3 Overall, the two most interesting species found in this survey were pale forget-me-not and lesser skullcap. Pale forget-me-not was found at both sites. Lesser skullcap was found only at Thornehope.
- 7.2.4 Pale forget-me-not is a Nationally Scarce species, which is also scarce globally (see appendix M). Apart from the British populations, the only other places it grows as a native species are Spain, Portugal and The Azores. The North Pennines is within the main area of its British distribution and it is found reasonably frequently here in suitable habitats.



- 7.2.5 At Thornehope it was found in two places in the rushy flush just south of the of Thornehope house site at NZ0352039021 and NZ0353039019. At Lintzgarth it was found in seven separate flushes (for details see appendix C) in the middle and southern half of the site.
- 7.2.6 Lesser skullcap is more common nationally and globally, although its global distribution is restricted to parts of north-west Europe (see appendix M). In Britain it mostly has quite a pronounced western and southern distribution.
- 7.2.7 The population at Thornehope (in the rushy vegetation at NZ0387039457) lay in the middle of an area of County Durham that supports several scattered populations. These populations are interesting because they lie well to the east of its core British distribution.

### **7.3 Further surveys and monitoring**

- 7.3.1 This survey did not attempt to compile comprehensive lists of bryophytes (mosses and liverworts) or lichens. Neither site appeared to be particularly rich in bryophytes or lichens, but full surveys of these groups would add to the knowledge on the biodiversity of the site.
- 7.3.2 Since the management of the sites has changed in recent years with nature conservation a higher priority, it is likely that the species composition of the habitats will change over time. A vegetation monitoring scheme could be useful in providing feedback on how the new management is progressing and in quantifying any changes that take place in the vegetation.
- 7.3.3 Monitoring of the populations of pale forget-me-not and lesser skullcap would also be useful. Both species could struggle to maintain their populations if the rushy vegetation were to become very dense for prolonged periods.

### **7.4 Potential for habitat enhancement**

- 7.4.1 The current management of both sites seems quite favourable for wildlife. The grazing levels are neither too intensive, nor not intensive enough. There may be further scope to enhance the habitat quality for plants and other wildlife through some adjustments to management.
- 7.4.2 The rushy vegetation may become more dense and closed given the relatively unintensified levels of grazing at both sites. This could be detrimental to the populations of pale forget-me-not and lesser skullcap. Some additional rush management (e.g. cutting sections every few years) would probably be beneficial, particularly in the flushes where pale forget-me-not and lesser skullcap currently grow. This management would also open the habitat up and allow more opportunities for other low-growing wetland plants.
- 7.4.3 There is some scope to allow the woodland at Thornehope to expand. Similar woodland could develop within many of the bracken-dominated areas in the immediate valley of the beck. This process could be encouraged by preparing the ground to make it more suitable for tree and shrub seedlings to get established. This could be done by cutting back the bracken and scarifying

the ground in places, timing these operations to coincide with when seeds of main tree and shrub species in the adjacent woodland are produced. These new areas of young woodland would need to be protected from grazing for 10 years or so.

- 7.4.4 Most of the remainder of the site could potentially support woodland, but because the soils are different, it would be a different type of woodland to the existing woodland by Thornehope Beck. As the mosaic of open habitats have existing biodiversity value, it is not as immediately obvious that encouraging new woodland to develop in those areas would be as much of an enhancement as allowing the beck woodland to spread into the bracken areas would be.
- 7.4.5 The blanket bog vegetation at Lintzgarth is dominated by hare's-tail cottongrass, with few areas supporting dwarf shrubs or peat-building *Sphagnum* species. This is a degraded type of bog vegetation, often resulting from management (grazing, burning or combinations of both) that was too intensive in the past.
- 7.4.6 When areas like this are returned to more favourable management the vegetation tends not to change very much for quite a long time. Theoretically, recovery towards less degraded bog vegetation could be speeded up, but it would probably require some intensive intervention, including stripping parts of the surface of the hare's-tail cottongrass vegetation. This may not be desirable as it could encourage peat erosion and carbon release. It may be best to and leave restoration of the blanket bog vegetation to natural processes, even though this is likely to take a long time.

## References

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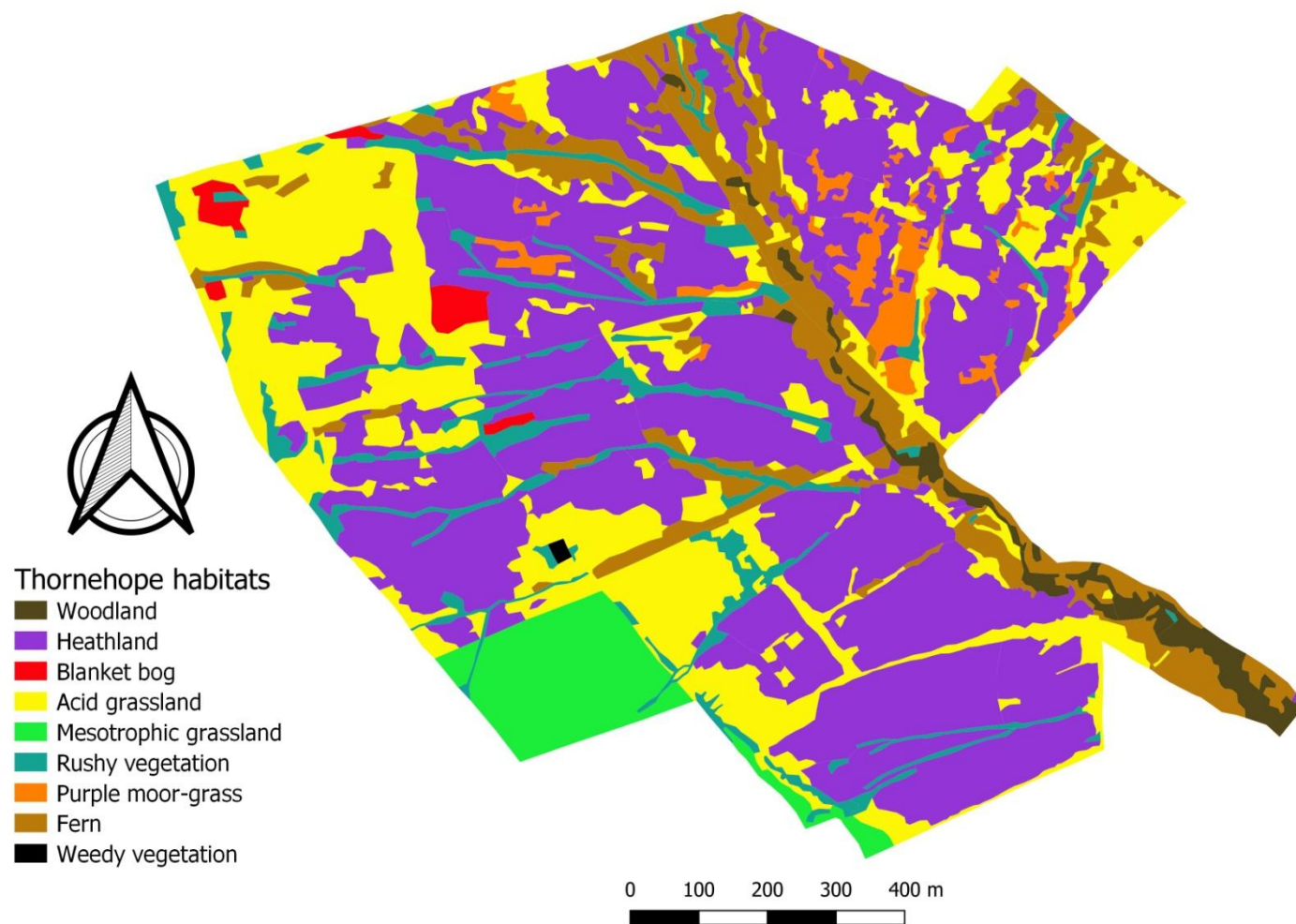
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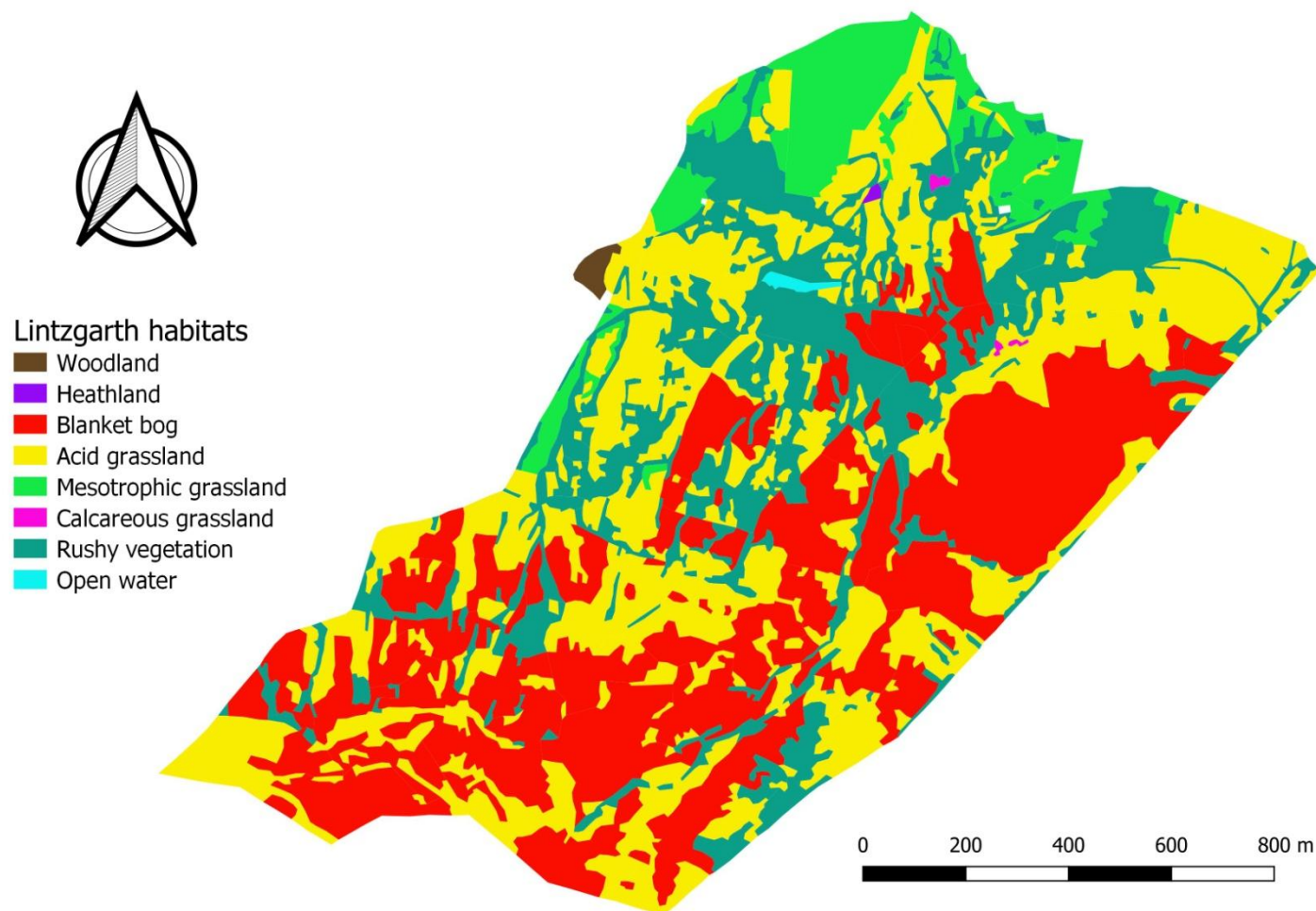
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## Appendix A: Habitat map: Thornehope

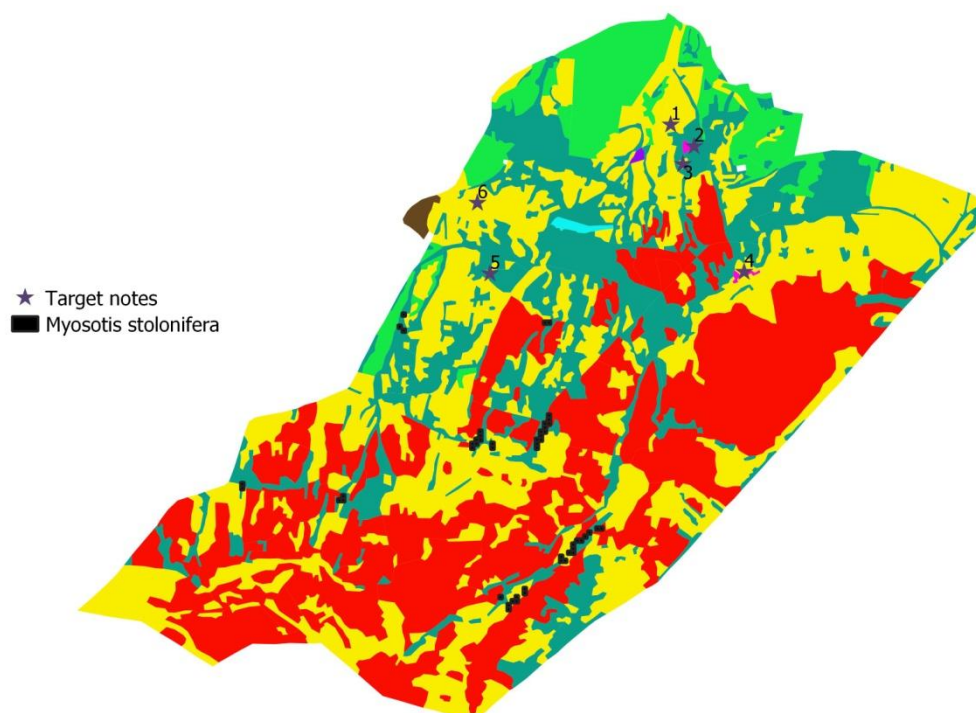


## Appendix B: Habitat map: Lintzgarth





## Appendix C: Lintzgarth target notes



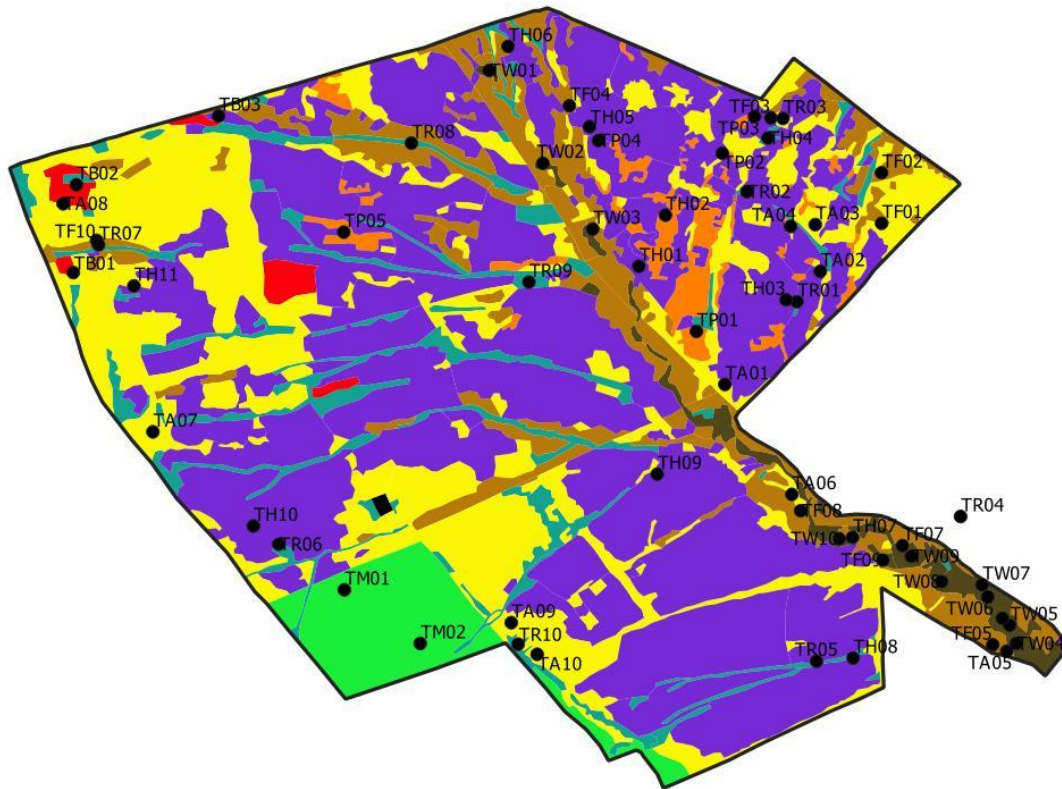
### Target notes: Areas of calcareous grassland and parched acid grassland that were too small to map

Tno	GridRef	Habitat	Note
1	NY9257642555	AG	Spoil heap with U1 parched acid grassland with lichens
2	NY9263442501	CG	Large spoil heap with CG7 parched calcareous grassland with autumn gentian
3	NY9260642457	AG	Spoil heap with U1 like at T1 with sheep's sorrel and early hair grass
4	NY9275842190	CG	Largest mining area with several small patches of CG10
5	NY9212842186	AG	Spoil heap with U1
6	NY9209742361	AG	Large spoil area with several small patches of U1

### 8-figure grid references where pale forget-me-not *Myosotis stolonifera* was recorded

NY92174136	NY91764163	NY92334151	NY92274181	NY92244175	NY92084175
NY92174135	NY91514165	NY92344152	NY92264181	NY92134175	NY91914204
NY92184137	NY91514166	NY92354152	NY92264180	NY92134176	NY91904205
NY92194137	NY92324149	NY92364153	NY92264179	NY92104179	NY91914208
NY92194138	NY92314147	NY92374154	NY92254179	NY92104178	NY92264206
NY92214139	NY92304147	NY92394155	NY92254178	NY92104177	NY92274206
NY92214140	NY92304148	NY92404155	NY92254177	NY92094177	NY92154138
NY91754162	NY92334149	NY92274183	NY92244177	NY92094176	
NY91764162	NY92334150	NY92274182	NY92244176	NY92084176	

## Appendix D: Quadrat locations: Thornehope



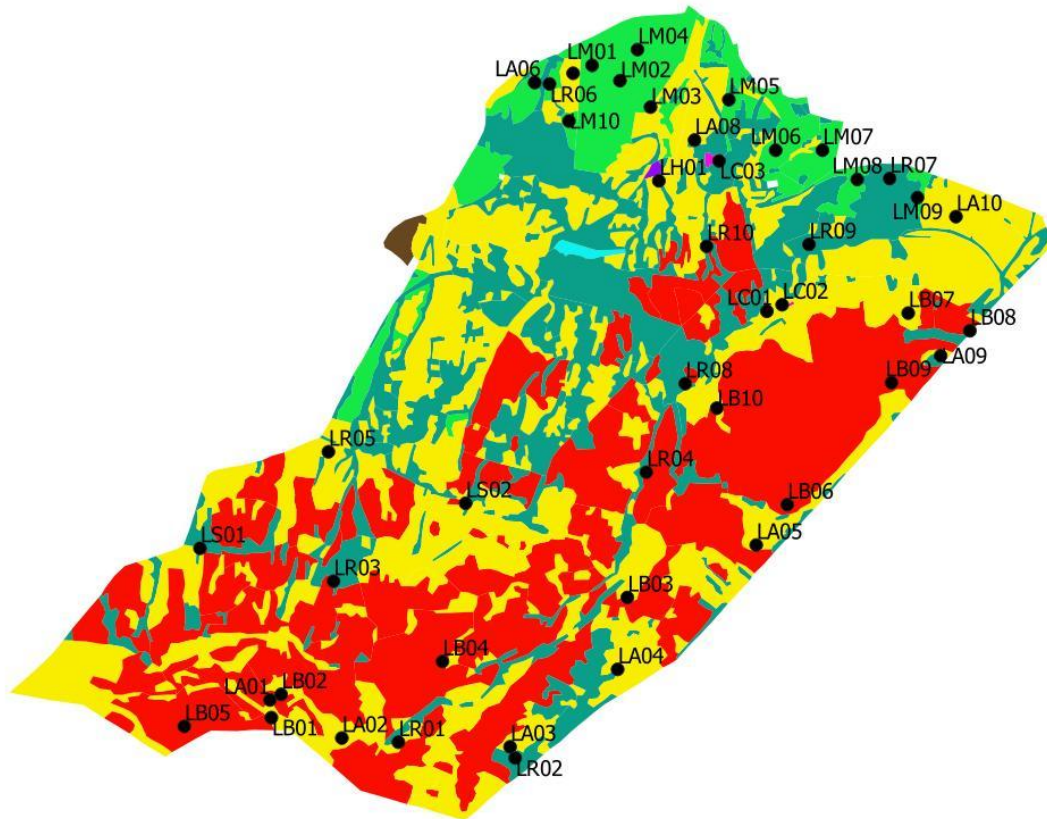
Qno	GridRef	Qno	GridRef
TW01	NZ0380739792	TH02	NZ0408639563
TW02	NZ0389239645	TH03	NZ0427739429
TW03	NZ0397139541	TH04	NZ0424839685
TW04	NZ0464138885	TH05	NZ0396639703
TW05	NZ0463138914	TH06	NZ0383739830
TW06	NZ0459638959	TH07	NZ0438239053
TW07	NZ0458738978	TH08	NZ0438338862
TW08	NZ0452338983	TH09	NZ0407339153
TW09	NZ0447539023	TH10	NZ0343439071
TW10	NZ0436139051	TH11	NZ0324539451
TF01	NZ0442839550	TB01	NZ0314939472
TF02	NZ0442839630	TB02	NZ0315439611
TF03	NZ0425339717	TB03	NZ0337939720
TF04	NZ0393439736	TA01	NZ0418039295
TF05	NZ0460438883	TA02	NZ0433139474
TF06	NZ0461938925	TA03	NZ0432339548
TF07	NZ0446139040	TA04	NZ0428439545
TF08	NZ0430039095	TA05	NZ0462638873
TF09	NZ0443039017	TA06	NZ0428639121
TF10	NZ0318639523	TA07	NZ0327539220
TR01	NZ0429439426	TA08	NZ0313339581
TR02	NZ0421539600	TA09	NZ0384238918
TR03	NZ0427239716	TA10	NZ0388338868
TR04	NZ0455339086	TM01	NZ0357838970

TR05	NZ0432538857	TM02	NZ0369838885
TR06	NZ0347439042	TP01	NZ0413539379
TR07	NZ0318939516	TP02	NZ0417639661
TR08	NZ0368439677	TP03	NZ0422739719
TR09	NZ0387039457	TP04	NZ0398039681
TR10	NZ0385338884	TP05	NZ0357739536
TH01	NZ0404439482		

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TW – Woodland  
TF – Fern-dominated vegetation  
TR – Rushy vegetation  
TH – Heathland  
TB – Blanket bog  
TA – Acid grassland  
TM – Mesotrophic grassland  
TP – Purple moor-grass vegetation

## Appendix E: Quadrat locations: Lintzgarth



Qno	GridRef	Qno	GridRef
LR01	NY9194441244	LM01	NY9236242703
LR02	NY9219641210	LM02	NY9242242670
LR03	NY9180441591	LM03	NY9248842613
LR04	NY9247941826	LM04	NY9246042737
LR05	NY9179341870	LM05	NY9265742629
LR06	NY9227042663	LM06	NY9275842520
LR07	NY9300442459	LM07	NY9285942520
LR08	NY9256342017	LM08	NY9293442457
LR09	NY9283042317	LM09	NY9306442418
LR10	NY9260942313	LM10	NY9231242583
LS01	NY9151641662	LC01	NY9273942173
LS02	NY9208941759	LC02	NY9277242187
LB01	NY9167041297	LC03	NY9263642497
LB02	NY9169141347	LA01	NY9166741335
LB03	NY9243841556	LA02	NY9182241253
LB04	NY9203941418	LA03	NY9218541234
LB05	NY9148241278	LA04	NY9241741401
LB06	NY9278341756	LA05	NY9271641669
LB07	NY9304442169	LA06	NY9223842666
LB08	NY9317742131	LA07	NY9232142686
LB09	NY9300842019	LA08	NY9258342542
LB10	NY9263141964	LA09	NY9311442077
LH01	NY9250642454	LA10	NY9314742377

LR – Rushy vegetation  
LS – *Myosotis stolonifera* flush  
LB – Blanket bog  
LH – Heathland  
LM – Mesotrophic grassland  
LC – Calcareous grassland  
LA – Acid grassland

## Appendix F: Habitat floristic tables: Thornehope

**Thornehope Heathland:** (11 quadrats; average number of species = 12)

Scientific name	Common name	Freq.	Av.Cov.
<i>Calluna vulgaris</i>	Heather	V	25
<i>Erica tetralix</i>	Cross-leaved heath	V	6
<i>Festuca ovina</i> agg.	a sheep's fescue	V	3
<i>Vaccinium myrtillus</i>	Bilberry	IV	28
<i>Empetrum nigrum</i>	Crowberry	IV	3
<i>Potentilla erecta</i>	Tormentil	IV	2
<i>Pseudoscleropodium purum</i>	a moss	III	8
<i>Avenella flexuosa</i>	Wavy hair-grass	III	3
<i>Molinia caerulea</i>	Purple moor-grass	III	3
<i>Hypnum jutlandicum</i>	a moss	II	25
<i>Pleurozium schreberi</i>	a moss	II	18
<i>Polytrichum commune</i>	a moss	II	8
<i>Hylocomium splendens</i>	a moss	II	5
<i>Carex binervis</i>	Green-ribbed sedge	II	5
<i>Erica cinerea</i>	Bell heather	II	5
<i>Trichophorum germanicum</i>	Common deergrass	II	5
<i>Nardus stricta</i>	Mat-grass	II	4
<i>Galium saxatile</i>	Heath bedstraw	II	3
<i>Carex nigra</i>	Common sedge	II	3
<i>Luzula multiflora</i>	Heath wood-rush	II	1
<i>Sorbus aucuparia</i>	Rowan	II	1
<i>Sphagnum capillifolium</i>	a bog-moss	I	50
<i>Sphagnum palustre</i>	a bog-moss	I	40
<i>Sphagnum papillosum</i>	a bog-moss	I	20
<i>Rhytidiadelphus squarrosus</i>	a moss	I	20
<i>Betula pubescens</i>	Downy birch	I	15
<i>Sphagnum fallax</i>	a bog-moss	I	10
<i>Oreopteris limbosperma</i>	Lemon-scented fern	I	10
<i>Carex panicea</i>	Carnation sedge	I	7
<i>Thuidium tamariscinum</i>	a moss	I	4
<i>Dicranum scoparium</i>	a moss	I	4
<i>Juncus squarrosus</i>	Heath rush	I	4
<i>Calliergonella cuspidata</i>	a moss	I	3
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	I	3
<i>Agrostis capillaris</i>	Common bent	I	2
<i>Cirsium palustre</i>	Marsh thistle	I	2
<i>Festuca rubra</i>	Red fescue	I	2
<i>Holcus lanatus</i>	Yorkshire-fog	I	2
<i>Juncus conglomeratus</i>	Compact rush	I	2
<i>Agrostis canina</i>	Velvet bent	I	2
<i>Blechnum spicant</i>	Hard-fern	I	2
<i>Carex echinata</i>	Star sedge	I	2
<i>Carex flacca</i>	Glaucous sedge	I	2
<i>Lathyrus linifolius</i>	Bitter-vetch	I	2
<i>Plagiothecium undulatum</i>	a moss	I	2
<i>Polytrichastrum formosum</i>	a moss	I	2
<i>Juncus effusus</i>	Soft-rush	I	2
<i>Ajuga reptans</i>	Bugle	I	1
<i>Danthonia decumbens</i>	Heath-grass	I	1
<i>Eriophorum angustifolium</i>	Common cottongrass	I	1
<i>Pteridium aquilinum</i>	Bracken	I	1



## Thornehope Acid grassland (10 quadrats; average number of species = 11)

Scientific name	Common name	Freq.	Av.Cov.
<i>Agrostis capillaris</i>	Common bent	V	10
<i>Festuca ovina</i> agg.	a sheep's fescue	IV	20
<i>Nardus stricta</i>	Mat-grass	IV	15
<i>Galium saxatile</i>	Heath bedstraw	IV	10
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	IV	10
<i>Rhytidiadelphus squarrosus</i>	a moss	IV	5
<i>Potentilla erecta</i>	Tormentil	IV	5
<i>Holcus lanatus</i>	Yorkshire-fog	IV	3
<i>Avenella flexuosa</i>	Wavy hair-grass	III	40
<i>Pseudoscleropodium purum</i>	a moss	III	23
<i>Luzula campestris</i>	Field wood-rush	III	2
<i>Festuca rubra</i>	Red fescue	II	13
<i>Hypnum jutlandicum</i>	a moss	II	5
<i>Pteridium aquilinum</i>	Bracken	II	5
<i>Vaccinium myrtillus</i>	Bilberry	II	3
<i>Carex binervis</i>	Green-ribbed sedge	II	2
<i>Carex panicea</i>	Carnation sedge	II	2
<i>Carex pilulifera</i>	Pill sedge	II	2
<i>Luzula multiflora</i>	Heath wood-rush	II	2
<i>Carex flacca</i>	Glaucous sedge	I	4
<i>Erica tetralix</i>	Cross-leaved heath	I	15
<i>Hylocomium splendens</i>	a moss	I	15
<i>Trifolium repens</i>	White clover	I	15
<i>Galium uliginosum</i>	Fen bedstraw	I	10
<i>Kindbergia praelonga</i>	a moss	I	10
<i>Achillea millefolium</i>	Yarrow	I	3
<i>Betonica officinalis</i>	Betony	I	3
<i>Veronica chamaedrys</i>	Germander speedwell	I	3
<i>Rumex acetosa</i>	Common sorrel	I	2
<i>Viola riviniana</i>	Common dog-violet	I	2
<i>Juncus conglomeratus</i>	Compact rush	I	2
<i>Molinia caerulea</i>	Purple moor-grass	I	2
<i>Briza media</i>	Quaking-grass	I	2
<i>Calluna vulgaris</i>	Heather	I	2
<i>Campanula rotundifolia</i>	Harebell	I	2
<i>Carex pulicaris</i>	Flea sedge	I	2
<i>Cirsium arvense</i>	Creeping thistle	I	2
<i>Deschampsia cespitosa</i>	Tufted hair-grass	I	2
<i>Equisetum arvense</i>	Field horsetail	I	2
<i>Lathyrus linifolius</i>	Bitter-vetch	I	2
<i>Plantago lanceolata</i>	Ribwort plantain	I	2
<i>Pleurozium schreberi</i>	a moss	I	2
<i>Cirsium palustre</i>	Marsh thistle	I	1
<i>Rumex acetosella</i>	Sheep's sorrel	I	1

**Thornehope Fern-dominated vegetation** (10 quadrats; average number of species = 8)

Scientific name	Common name	Freq.	Av.Cov.
<i>Pteridium aquilinum</i>	Bracken	V	73
<i>Agrostis capillaris</i>	Common bent	V	3
<i>Avenella flexuosa</i>	Wavy hair-grass	IV	5
<i>Pseudoscleropodium purum</i>	a moss	III	20
<i>Galium saxatile</i>	Heath bedstraw	II	5
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	II	5
<i>Festuca rubra</i>	Red fescue	II	5
<i>Oxalis acetosella</i>	Wood-sorrel	II	5
<i>Holcus lanatus</i>	Yorkshire-fog	II	3
<i>Viola riviniana</i>	Common dog-violet	II	3
<i>Achillea millefolium</i>	Yarrow	II	2
<i>Potentilla erecta</i>	Tormentil	II	2
<i>Oreopteris limbosperma</i>	Lemon-scented fern	I	34
<i>Holcus mollis</i>	Creeping soft-grass	I	20
<i>Hylocomium splendens</i>	a moss	I	20
<i>Pleurozium schreberi</i>	a moss	I	13
<i>Vaccinium myrtillus</i>	Bilberry	I	10
<i>Erica cinerea</i>	Bell heather	I	9
<i>Hypnum jutlandicum</i>	a moss	I	5
<i>Rhytidiadelphus squarrosus</i>	a moss	I	5
<i>Calluna vulgaris</i>	Heather	I	5
<i>Deschampsia cespitosa</i>	Tufted hair-grass	I	5
<i>Dicranum scoparium</i>	a moss	I	5
<i>Plagiomnium undulatum</i>	a moss	I	5
<i>Thuidium tamariscinum</i>	a moss	I	5
<i>Lysimachia nemorum</i>	Yellow pimpernel	I	3
<i>Poa trivialis</i>	Rough meadow-grass	I	3
<i>Potentilla sterilis</i>	Barren strawberry	I	3
<i>Festuca ovina</i> agg.	a sheep's fescue	I	2
<i>Digitalis purpurea</i>	Foxglove	I	2
<i>Erica tetralix</i>	Cross-leaved heath	I	2
<i>Rumex acetosella</i>	Sheep's sorrel	I	2
<i>Carex pulicaris</i>	Flea sedge	I	2
<i>Cirsium arvense</i>	Creeping thistle	I	2
<i>Mnium hornum</i>	a moss	I	2
<i>Nardus stricta</i>	Mat-grass	I	2
<i>Blechnum spicant</i>	Hard-fern	I	1
<i>Carex flacca</i>	Glaucous sedge	I	1
<i>Cirsium palustre</i>	Marsh thistle	I	1
<i>Crataegus monogyna</i>	Hawthorn	I	1
<i>Epilobium montanum</i>	Broad-leaved willowherb	I	1
<i>Epilobium obscurum</i>	Short-fruited willowherb	I	1
<i>Juncus conglomeratus</i>	Compact rush	I	1
<i>Luzula pilosa</i>	Hairy wood-rush	I	1

### Thornehope Rushy vegetation (10 quadrats; average number of species = 11)

Scientific name	Common name	Freq.	Av.Cov.
<i>Juncus effusus</i>	Soft-rush	IV	30
<i>Agrostis canina</i>	Velvet bent	IV	13
<i>Viola palustris</i>	Marsh violet	IV	5
<i>Holcus lanatus</i>	Yorkshire-fog	IV	3
<i>Juncus acutiflorus</i>	Sharp-flowered rush	III	80
<i>Cirsium palustre</i>	Marsh thistle	III	3
<i>Sphagnum fallax</i>	a bog-moss	II	53
<i>Sphagnum palustre</i>	a bog-moss	II	20
<i>Festuca rubra</i>	Red fescue	II	5
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	II	3
<i>Potentilla erecta</i>	Tormentil	II	2
<i>Epilobium palustre</i>	Marsh willowherb	II	1
<i>Sphagnum denticulatum</i>	a bog-moss	I	25
<i>Epilobium montanum</i>	Broad-leaved willowherb	I	20
<i>Carex panicea</i>	Carnation sedge	I	15
<i>Urtica dioica</i>	Common nettle	I	15
<i>Carex echinata</i>	Star sedge	I	12
<i>Erica tetralix</i>	Cross-leaved heath	I	11
<i>Brachythecium rivulare</i>	a moss	I	10
<i>Deschampsia cespitosa</i>	Tufted hair-grass	I	10
<i>Eriophorum angustifolium</i>	Common cottongrass	I	9
<i>Galium palustre</i>	Common marsh-bedstraw	I	6
<i>Carex binervis</i>	Green-ribbed sedge	I	5
<i>Juncus bulbosus</i>	Bulbous rush	I	5
<i>Juncus conglomeratus</i>	Compact rush	I	5
<i>Kindbergia praelonga</i>	a moss	I	5
<i>Lysimachia nemorum</i>	Yellow pimpernel	I	5
<i>Nardus stricta</i>	Mat-grass	I	5
<i>Polytrichum commune</i>	a moss	I	4
<i>Carex flacca</i>	Glaucous sedge	I	3
<i>Hylocomium splendens</i>	a moss	I	3
<i>Scutellaria minor</i>	Lesser skullcap	I	3
<i>Prunella vulgaris</i>	Selfheal	I	2
<i>Pteridium aquilinum</i>	Bracken	I	2
<i>Ranunculus flammula</i>	Lesser spearwort	I	2
<i>Drosera rotundifolia</i>	Round-leaved sundew	I	2
<i>Empetrum nigrum</i>	Crowberry	I	2
<i>Galium uliginosum</i>	Fen bedstraw	I	2
<i>Myosotis secunda</i>	Creeping forget-me-not	I	2
<i>Poa trivialis</i>	Rough meadow-grass	I	2
<i>Sphagnum subnitens</i>	a bog-moss	I	2
<i>Sphagnum teres</i>	a bog-moss	I	2
<i>Stellaria alsine</i>	Bog stitchwort	I	2
<i>Luzula multiflora</i>	Heath wood-rush	I	1
<i>Cardamine pratensis</i>	Cuckooflower	I	1
<i>Fraxinus excelsior</i>	Ash - ground layer	I	1
<i>Galium saxatile</i>	Heath bedstraw	I	1
<i>Lathyrus linifolius</i>	Bitter-vetch	I	1
<i>Molinia caerulea</i>	Purple moor-grass	I	1
<i>Succisa pratensis</i>	Devil's-bit scabious	I	1

**Thornehope Mesotrophic grassland (2 quadrats; average number of species = 14)**

<b>Scientific name</b>	<b>Common name</b>	<b>Count</b>	<b>Av.Cov.</b>
<i>Agrostis capillaris</i>	Common bent	2	33
<i>Festuca rubra</i>	Red fescue	2	30
<i>Trifolium repens</i>	White clover	2	20
<i>Cynosurus cristatus</i>	Crested dog's-tail	2	6
<i>Holcus lanatus</i>	Yorkshire-fog	2	4
<i>Ranunculus acris</i>	Meadow buttercup	2	3
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	2	2
<i>Dactylis glomerata</i>	Cock's-foot	2	2
<i>Rumex acetosa</i>	Common sorrel	2	2
<i>Taraxacum</i> agg.	Dandelion	2	2
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	1	25
<i>Rhytidiadelphus squarrosus</i>	a moss	1	10
<i>Luzula multiflora</i>	Heath wood-rush	1	3
<i>Luzula campestris</i>	Field wood-rush	1	2
<i>Cerastium fontanum</i>	Common mouse-ear	1	1
<i>Jacobaea vulgaris</i>	Common ragwort	1	1
<i>Juncus conglomeratus</i>	Compact rush	1	1
<i>Montia fontana</i>	Blinks	1	1
<i>Ranunculus repens</i>	Creeping buttercup	1	1

**Thornehope Purple moor-grass vegetation** (5 quadrats; average number of species = 12)

Scientific name	Common name	Freq.	Av.Cov.
<i>Molinia caerulea</i>	Purple moor-grass	V	80
<i>Avenella flexuosa</i>	Wavy hair-grass	V	5
<i>Galium saxatile</i>	Heath bedstraw	V	3
<i>Trichophorum germanicum</i>	Common deergrass	V	2
<i>Festuca ovina</i> agg.	a sheep's fescue	IV	6
<i>Erica tetralix</i>	Cross-leaved heath	IV	3
<i>Polytrichum commune</i>	a moss	IV	3
<i>Agrostis capillaris</i>	Common bent	III	2
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	III	2
<i>Luzula multiflora</i>	Heath wood-rush	III	1
<i>Pleurozium schreberi</i>	a moss	II	7.5
<i>Pseudoscleropodium purum</i>	a moss	II	7.5
<i>Empetrum nigrum</i>	Crowberry	II	3.5
<i>Vaccinium myrtillus</i>	Bilberry	II	3.5
<i>Juncus conglomeratus</i>	Compact rush	II	1
<i>Potentilla erecta</i>	Tormentil	II	1
<i>Sorbus aucuparia</i>	Rowan - ground layer	II	1
<i>Hypnum jutlandicum</i>	a moss	I	10
<i>Rhytidiadelphus squarrosus</i>	a moss	I	5
<i>Aulacomnium palustre</i>	a moss	I	3
<i>Calluna vulgaris</i>	Heather	I	2
<i>Carex binervis</i>	Green-ribbed sedge	I	2
<i>Nardus stricta</i>	Mat-grass	I	2
<i>Sphagnum fallax</i>	a bog-moss	I	2
<i>Juncus effusus</i>	Soft-rush	I	1

## Thornehope Woodland (10 quadrats; average number of species = 20)

Scientific name	Common name	Freq.	Av.Cov.
<b>Canopy layer</b>			
<i>Betula pubescens</i>	Downy birch	IV	38
<i>Alnus glutinosa</i>	Alder	III	50
<i>Corylus avellana</i>	Hazel	I	15
<i>Pinus sylvestris</i>	Scots pine	I	10
<i>Pseudotsuga menziesii</i>	Douglas fir	I	10
<i>Salix caprea</i>	Goat willow	I	10
<i>Betula pendula</i>	Silver birch	I	5
<i>Larix decidua</i>	European larch	I	5
<b>Shrub layer</b>			
<i>Sorbus aucuparia</i>	Rowan	III	4
<i>Corylus avellana</i>	Hazel	II	15
<i>Alnus glutinosa</i>	Alder	II	10
<i>Ilex aquifolium</i>	Holly	II	5
<i>Salix cinerea</i>	Grey willow	I	5
<i>Betula pubescens</i>	Downy birch	I	3
<i>Juniperus communis</i>	Common juniper	I	2
<i>Ulex europaeus</i>	Gorse	I	2
<b>Ground flora</b>			
<i>Oxalis acetosella</i>	Wood-sorrel	V	35
<i>Holcus mollis</i>	Creeping soft-grass	IV	23
<i>Oreopteris limbosperma</i>	Lemon-scented fern	IV	5
<i>Pteridium aquilinum</i>	Bracken	IV	4
<i>Blechnum spicant</i>	Hard-fern	IV	2
<i>Thuidium tamariscinum</i>	a moss	III	15
<i>Agrostis capillaris</i>	Common bent	III	13
<i>Mnium hornum</i>	a moss	III	3
<i>Viola riviniana</i>	Common dog-violet	III	3
<i>Ilex aquifolium</i>	Holly	III	2
<i>Festuca rubra</i>	Red fescue	II	15
<i>Polytrichastrum formosum</i>	a moss	II	5
<i>Pseudoscleropodium purum</i>	a moss	II	5
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	II	3
<i>Poa trivialis</i>	Rough meadow-grass	II	3
<i>Potentilla erecta</i>	Tormentil	II	3
<i>Plagiomnium undulatum</i>	a moss	II	3
<i>Cirsium palustre</i>	Marsh thistle	II	2
<i>Digitalis purpurea</i>	Foxglove	II	2
<i>Galium saxatile</i>	Heath bedstraw	II	2
<i>Pellia epiphylla</i>	a liverwort	II	2
<i>Carex binervis</i>	Green-ribbed sedge	I	18
<i>Kindbergia praelonga</i>	a moss	I	13
<i>Deschampsia cespitosa</i>	Tufted hair-grass	I	12
<i>Avenella flexuosa</i>	Wavy hair-grass	I	8
<i>Festuca ovina</i> agg.	a sheep's fescue	I	4
<i>Plagiothecium undulatum</i>	a moss	I	4
<i>Juncus effusus</i>	Soft-rush	I	4
<i>Atrichum undulatum</i>	a moss	I	2
<i>Dicranum majus</i>	a moss	I	2
<i>Dryopteris affinis</i> ssp. <i>borreri</i>	Golden-scaled male-fern	I	2
<i>Sorbus aucuparia</i>	Rowan	I	2
<i>Ajuga reptans</i>	Bugle	I	30
<i>Cirriphyllum piliferum</i>	a moss	I	20



Scientific name	Common name	Freq.	Av.Cov.
<i>Agrostis canina</i>	Velvet bent		10
<i>Juncus acutiflorus</i>	Sharp-flowered rush		10
<i>Brachythecium rivulare</i>	a moss		5
<i>Hypericum pulchrum</i>	Slender St John's-wort		5
<i>Nardus stricta</i>	Mat-grass		5
<i>Rhytidiadelphus loreus</i>	a moss		5
<i>Sphagnum palustre</i>	a bog-moss		5
<i>Aulacomnium palustre</i>	a moss		3
<i>Potentilla sterilis</i>	Barren strawberry		3
<i>Primula vulgaris</i>	Primrose		3
<i>Rhytidiadelphus squarrosus</i>	a moss		3
<i>Galium palustre</i>	Common marsh-bedstraw		2
<i>Luzula multiflora</i>	Heath wood-rush		2
<i>Lysimachia nemorum</i>	Yellow pimpernel		2
<i>Polytrichum commune</i>	a moss		2
<i>Veronica chamaedrys</i>	Germander speedwell		2
<i>Betula pubescens</i>	Downy birch		1
<i>Crepis paludosa</i>	Marsh hawk's-beard		1
<i>Dryopteris filix-mas</i>	Male-fern		1
<i>Luzula campestris</i>	Field wood-rush		1
<i>Quercus</i> sp.	an oak		1
<i>Sphagnum squarrosum</i>	a bog-moss		1
<i>Vicia sepium</i>	Bush vetch		1

**Thornehope Blanket bog** (3 quadrats; average number of species = 12)

Scientific name	Common name	Count	Av.Cov.
<i>Calluna vulgaris</i>	Heather	3	60
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass	3	25
<i>Sphagnum papillosum</i>	a bog-moss	3	25
<i>Erica tetralix</i>	Cross-leaved heath	3	15
<i>Sphagnum capillifolium</i>	a bog-moss	3	15
<i>Eriophorum angustifolium</i>	Common cottongrass	3	3
<i>Polytrichum commune</i>	a moss	3	2
<i>Empetrum nigrum</i>	Crowberry	2	9
<i>Sphagnum fallax</i>	a bog-moss	2	5
<i>Potentilla erecta</i>	Tormentil	2	3
<i>Vaccinium oxycoccos</i>	Cranberry	2	2
<i>Aulacomnium palustre</i>	a moss	2	2
<i>Narthecium ossifragum</i>	Bog asphodel	2	1
<i>Pleurozium schreberi</i>	a moss	1	20
<i>Trichophorum germanicum</i>	Common deergrass	1	10
<i>Avenella flexuosa</i>	Wavy hair-grass	1	2
<i>Nardus stricta</i>	Mat-grass	1	2
<i>Agrostis canina</i>	Velvet bent	1	1

## Appendix G: Habitat floristic tables: Lintzgarth

**Lintzgarth Blanket bog** (10 quadrats; average number of species = 11)

Scientific name	Common name	Freq.	Av.Cov.
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass	V	35
<i>Polytrichum commune</i>	a moss	V	13
<i>Avenella flexuosa</i>	Wavy hair-grass	V	10
<i>Pleurozium schreberi</i>	a moss	IV	15
<i>Festuca ovina</i> agg.	a sheep's fescue	IV	4
<i>Galium saxatile</i>	Heath bedstraw	III	15
<i>Rhytidiadelphus squarrosus</i>	a moss	III	15
<i>Sphagnum fallax</i>	a bog-moss	III	10
<i>Vaccinium myrtillus</i>	Bilberry	III	3
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	III	2
<i>Aulacomnium palustre</i>	a moss	III	2
<i>Juncus squarrosus</i>	Heath rush	III	2
<i>Hylocomium splendens</i>	a moss	II	15
<i>Sphagnum capillifolium</i> subsp. <i>capillifolium</i>	a bog-moss	II	10
<i>Festuca rubra</i>	Red fescue	II	5
<i>Carex nigra</i>	Common sedge	II	2
<i>Luzula multiflora</i>	Heath wood-rush	II	1
<i>Hypnum jutlandicum</i>	a moss	I	15
<i>Trichophorum germanicum</i>	Common deergrass	I	11
<i>Cladonia portentosa</i>	a lichen	I	7
<i>Calluna vulgaris</i>	Heather	I	6
<i>Agrostis canina</i>	Velvet bent	I	3
<i>Erica tetralix</i>	Cross-leaved heath	I	3
<i>Eriophorum angustifolium</i>	Common cottongrass	I	3
<i>Racomitrium lanuginosum</i>	a moss	I	3
<i>Campylopus flexuosus</i>	a moss	I	2
<i>Cladonia uncialis</i>	a lichen	I	2
<i>Sphagnum palustre</i>	a bog-moss	I	10
<i>Sphagnum papillosum</i>	a bog-moss	I	5
<i>Empetrum nigrum</i>	Crowberry	I	3
<i>Drosera rotundifolia</i>	Round-leaved sundew	I	2
<i>Nardus stricta</i>	Mat-grass	I	1

**Lintzgarth Acid grassland** (10 quadrats; average number of species = 9)

<b>Scientific name</b>	<b>Common name</b>	<b>Freq.</b>	<b>Av.Cov.</b>
<i>Galium saxatile</i>	Heath bedstraw	V	13
<i>Rhytidiadelphus squarrosus</i>	a moss	V	10
<i>Avenella flexuosa</i>	Wavy hair-grass	IV	13
<i>Festuca ovina</i> agg.	a sheep's fescue	IV	10
<i>Juncus squarrosus</i>	Heath rush	III	60
<i>Agrostis capillaris</i>	Common bent	III	7
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	III	5
<i>Pleurozium schreberi</i>	a moss	II	30
<i>Polytrichum commune</i>	a moss	II	15
<i>Nardus stricta</i>	Mat-grass	II	9
<i>Potentilla erecta</i>	Tormentil	II	7
<i>Hylocomium splendens</i>	a moss	II	5
<i>Rumex acetosa</i>	Common sorrel	II	2
<i>Festuca rubra</i>	Red fescue	I	30
<i>Pseudoscleropodium purum</i>	a moss	I	18
<i>Poa pratensis</i>	Smooth meadow-grass	I	3
<i>Luzula campestris</i>	Field wood-rush	I	3
<i>Carex nigra</i>	Common sedge	I	25
<i>Holcus lanatus</i>	Yorkshire-fog	I	25
<i>Molinia caerulea</i>	Purple moor-grass	I	25
<i>Rumex acetosella</i>	Sheep's sorrel	I	25
<i>Plantago lanceolata</i>	Ribwort plantain	I	20
<i>Cladonia furcata</i>	a lichen	I	3
<i>Cladonia portentosa</i>	a lichen	I	3
<i>Hypnum cupressiforme</i>	a moss	I	3
<i>Pseudocrossidium hornschurchianum</i>	a moss	I	3
<i>Cerastium fontanum</i>	Common mouse-ear	I	2
<i>Deschampsia cespitosa</i>	Tufted hair-grass	I	2
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass	I	2
<i>Trifolium repens</i>	White clover	I	2
<i>Vaccinium myrtillus</i>	Bilberry	I	2
<i>Cirsium vulgare</i>	Spear thistle	I	1
<i>Peltigera didactyla</i>	a lichen	I	1

## Lintzgarth Rushy vegetation (10 quadrats; average number of species = 9.5)

Scientific name	Common name	Freq.	Av.Cov.
<i>Juncus effusus</i>	Soft-rush	V	60
<i>Polytrichum commune</i>	a moss	IV	40
<i>Agrostis canina</i>	Velvet bent	IV	6
<i>Galium saxatile</i>	Heath bedstraw	IV	5
<i>Sphagnum fallax</i>	a bog-moss	III	25
<i>Avenella flexuosa</i>	Wavy hair-grass	III	3
<i>Rhytidiadelphus squarrosus</i>	a moss	II	10
<i>Holcus lanatus</i>	Yorkshire-fog	II	5
<i>Festuca rubra</i>	Red fescue	II	4
<i>Ranunculus repens</i>	Creeping buttercup	II	3
<i>Rumex acetosa</i>	Common sorrel	II	3
<i>Agrostis stolonifera</i>	Creeping bent	II	2
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	II	2
<i>Deschampsia cespitosa</i>	Tufted hair-grass	II	2
<i>Galium palustre</i>	Common marsh-bedstraw	II	2
<i>Festuca ovina</i> agg.	a sheep's fescue	I	3
<i>Cerastium fontanum</i>	Common mouse-ear	I	2
<i>Poa pratensis</i>	Smooth meadow-grass	I	2
<i>Stellaria alsine</i>	Bog stitchwort	I	2
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass	I	2
<i>Juncus squarrosus</i>	Heath rush	I	2
<i>Juncus acutiflorus</i>	Sharp-flowered rush	I	90
<i>Carex nigra</i>	Common sedge	I	60
<i>Kindbergia praelonga</i>	a moss	I	60
<i>Sphagnum palustre</i>	a bog-moss	I	20
<i>Agrostis capillaris</i>	Common bent	I	15
<i>Hypnum jutlandicum</i>	a moss	I	15
<i>Dryopteris carthusiana</i>	Narrow buckler-fern	I	10
<i>Hylocomium splendens</i>	a moss	I	5
<i>Pseudoscleropodium purum</i>	a moss	I	5
<i>Sphagnum angustifolium</i>	a bog-moss	I	5
<i>Trifolium repens</i>	White clover	I	5
<i>Cirsium palustre</i>	Marsh thistle	I	3
<i>Plagiothecium undulatum</i>	a moss	I	3
<i>Ranunculus acris</i>	Meadow buttercup	I	3
<i>Luzula campestris</i>	Field wood-rush	I	2
<i>Potentilla erecta</i>	Tormentil	I	2
<i>Cardamine pratensis</i>	Cuckooflower	I	1
<i>Cirsium arvense</i>	Creeping thistle	I	1
<i>Sphagnum russowii</i>	a bog-moss	I	1

**Lintzgarth *Myosotis stolonifera* flush vegetation** (2 quadrats; average number of species = 15)

<b>Scientific name</b>	<b>Common name</b>	<b>Count</b>	<b>Av.Cov.</b>
<i>Myosotis stolonifera</i>	Pale forget-me-not	2	10
<i>Juncus effusus</i>	Soft-rush	2	9
<i>Montia fontana</i>	Blinks	2	9
<i>Holcus lanatus</i>	Yorkshire-fog	2	2
<i>Calliergonella cuspidata</i>	a moss	1	75
<i>Agrostis canina</i>	Velvet bent	1	10
<i>Dichodontium palustre</i>	a moss	1	10
<i>Equisetum fluviatile</i>	Water horsetail	1	10
<i>Juncus articulatus</i>	Jointed rush	1	10
<i>Ranunculus omiophyllus</i>	Round-leaved water-crowfoot	1	10
<i>Warnstorfia fluitans</i>	a moss	1	10
<i>Callitriche stagnalis</i>	Common water-starwort	1	5
<i>Polytrichum commune</i>	a moss	1	5
<i>Ranunculus repens</i>	Creeping buttercup	1	5
<i>Triglochin palustris</i>	Marsh arrowgrass	1	5
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	1	3
<i>Epilobium palustre</i>	Marsh willowherb	1	3
<i>Poa trivialis</i>	Rough meadow-grass	1	3
<i>Rhytidiadelphus squarrosus</i>	a moss	1	3
<i>Festuca rubra</i>	Red fescue	1	2
<i>Galium palustre</i>	Common marsh-bedstraw	1	2
<i>Cardamine pratensis</i>	Cuckooflower	1	1
<i>Cerastium fontanum</i>	Common mouse-ear	1	1
<i>Cirsium palustre</i>	Marsh thistle	1	1
<i>Holcus mollis</i>	Creeping soft-grass	1	1
<i>Sphagnum squarrosum</i>	a bog-moss	1	1



**Lintzgarth Mesotrophic grassland** (10 quadrats; average number of species = 13)

Scientific name	Common name	Freq.	Av.Cov.
<i>Agrostis capillaris</i>	Common bent	V	23
<i>Trifolium repens</i>	White clover	V	23
<i>Festuca rubra</i>	Red fescue	V	13
<i>Holcus lanatus</i>	Yorkshire-fog	V	13
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	V	5
<i>Ranunculus acris</i>	Meadow buttercup	V	5
<i>Rumex acetosa</i>	Common sorrel	IV	3
<i>Plantago lanceolata</i>	Ribwort plantain	III	18
<i>Ranunculus repens</i>	Creeping buttercup	III	2
<i>Cynosurus cristatus</i>	Crested dog's-tail	III	5
<i>Trisetum flavescens</i>	Yellow oat-grass	II	10
<i>Trifolium pratense</i>	Red clover	II	2
<i>Dactylis glomerata</i>	Cock's-foot	II	5
<i>Rhinanthus minor</i>	Yellow-rattle	II	5
<i>Veronica chamaedrys</i>	Germander speedwell	II	3
<i>Cirsium palustre</i>	Marsh thistle	II	2
<i>Euphrasia arctica</i>	Arctic eyebright	II	2
<i>Juncus effusus</i>	Soft-rush	I	6
<i>Rhytidiadelphus squarrosus</i>	a moss	I	4
<i>Cerastium fontanum</i>	Common mouse-ear	I	3
<i>Conopodium majus</i>	Pignut	I	3
<i>Helictochloa pratensis</i>	Meadow oat-grass	I	2
<i>Poa pratensis</i>	Smooth meadow-grass	I	2
<i>Carex nigra</i>	Common sedge	I	15
<i>Holcus mollis</i>	Creeping soft-grass	I	10
<i>Agrostis stolonifera</i>	Creeping bent	I	5
<i>Bellis perennis</i>	Daisy	I	5
<i>Prunella vulgaris</i>	Selfheal	I	5
<i>Achillea millefolium</i>	Yarrow	I	3
<i>Deschampsia cespitosa</i>	Tufted hair-grass	I	3
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	I	3
<i>Plantago major</i>	Greater plantain	I	3
<i>Cirsium vulgare</i>	Spear thistle	I	2
<i>Euphrasia confusa</i>	Confused eyebright	I	2
<i>Phleum pratense</i>	Timothy	I	2
<i>Cardamine pratensis</i>	Cuckooflower	I	1
<i>Juncus squarrosus</i>	Heath rush	I	1
<i>Myosotis discolor</i>	Changing forget-me-not	I	1
<i>Nardus stricta</i>	Mat-grass	I	1
<i>Potentilla erecta</i>	Tormentil	I	1

**Lintzgarth Calcareous grassland** (3 quadrats; average number of species = 18)

Scientific name	Common name	Count	Av.Cov.
<i>Trifolium repens</i>	White clover	3	20
<i>Agrostis capillaris</i>	Common bent	3	7
<i>Cerastium fontanum</i>	Common mouse-ear	3	2
<i>Cirsium palustre</i>	Marsh thistle	3	2
<i>Euphrasia confusa</i>	Confused eyebright	3	2
<i>Hylocomium splendens</i>	a moss	2	65
<i>Festuca ovina</i> agg.	a sheep's fescue	2	22
<i>Galium saxatile</i>	Heath bedstraw	2	13
<i>Thymus drucei</i>	Wild thyme	2	13
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	2	8
<i>Luzula campestris</i>	Field wood-rush	2	4
<i>Viola riviniana</i>	Common dog-violet	2	3
<i>Avenella flexuosa</i>	Wavy hair-grass	2	2
<i>Prunella vulgaris</i>	Selfheal	2	2
<i>Ranunculus acris</i>	Meadow buttercup	2	2
<i>Pilosella officinarum</i>	Mouse-ear-hawkweed	1	40
<i>Festuca rubra</i>	Red fescue	1	20
<i>Carex flacca</i>	Glaucous sedge	1	15
<i>Hypnum cupressiforme</i> var. <i>lacunosum</i>	a moss	1	15
<i>Rhytidiadelphus squarrosus</i>	a moss	1	10
<i>Achillea millefolium</i>	Yarrow	1	3
<i>Linum catharticum</i>	Fairy flax	1	3
<i>Plantago lanceolata</i>	Ribwort plantain	1	3
<i>Racomitrium ericoides</i>	a moss	1	3
<i>Briza media</i>	Quaking-grass	1	2
<i>Dicranum scoparium</i>	a moss	1	2
<i>Gentianella amarella</i>	Autumn gentian	1	2
<i>Poa pratensis</i>	Smooth meadow-grass	1	2
<i>Scorzoneroideis autumnalis</i>	Autumn hawkbit	1	2
<i>Veronica officinalis</i>	Heath speedwell	1	2
<i>Aira praecox</i>	Early hair-grass	1	1
<i>Ajuga reptans</i>	Bugle	1	1
<i>Campanula rotundifolia</i>	Harebell	1	1
<i>Cirsium arvense</i>	Creeping thistle	1	1
<i>Cynosurus cristatus</i>	Crested dog's-tail	1	1
<i>Jacobaea vulgaris</i>	Common ragwort	1	1
<i>Rumex acetosella</i>	Sheep's sorrel	1	1
<i>Schistidium crassipilum</i>	a moss	1	1

### Lintzgarth Heathland (1 quadrat)

Scientific name	Common name	Cover
<i>Pleurozium schreberi</i>	a moss	40
<i>Vaccinium myrtillus</i>	Bilberry	40
<i>Hylocomium splendens</i>	a moss	25
<i>Avenella flexuosa</i>	Wavy hair-grass	20
<i>Rhytidiadelphus squarrosus</i>	a moss	10
<i>Cladonia portentosa</i>	a lichen	5
<i>Calluna vulgaris</i>	Heather	2
<i>Juncus squarrosus</i>	Heath rush	2
<i>Nardus stricta</i>	Mat-grass	2
<i>Potentilla erecta</i>	Tormentil	2

## Appendix H: Raw quadrat data: Thornehope

### Thornehope Heathland quadrat data

Scientific name	TH02	TH03	TH05	TH04	TH06	TH07	TH01	TH08	TH09	TH10	TH11
<i>Calluna vulgaris</i>	2		40	2	5	20	100	25	80	40	
<i>Erica tetralix</i>	10	25	5	60	55	7	2	5	3	5	
<i>Festuca ovina</i> agg.	5	3	3	5	3	3		10	2	3	2
<i>Vaccinium myrtillus</i>	25	25	3			1		40	35	30	100
<i>Empetrum nigrum</i>	20		5	3	5		2	3	3		
<i>Potentilla erecta</i>		2	1	3	2	3		2	15	1	
<i>Pseudoscleropodium purum</i>			5	10	3	5		20			40
<i>Avenella flexuosa</i>	3		3			5				2	3
<i>Molinia caerulea</i>	50	2	30		2		3				
<i>Hypnum jutlandicum</i>	20						30	10	40		
<i>Pleurozium schreberi</i>		15					10		35		20
<i>Polytrichum commune</i>	10	25	5			2					
<i>Hylocomium splendens</i>				5		3			5	70	
<i>Carex binervis</i>				5	2			5			
<i>Erica cinerea</i>						5			2	50	
<i>Trichophorum germanicum</i>	2	20	5								
<i>Nardus stricta</i>	2					2		10		5	
<i>Galium saxatile</i>	3	3	2					3			
<i>Carex nigra</i>				3	5				3		
<i>Luzula multiflora</i>			1	2					1		
<i>Sorbus aucuparia</i>		1					1		1		
<i>Sphagnum capillifolium</i>		35				65					
<i>Sphagnum palustre</i>					40						
<i>Sphagnum papillosum</i>				10	30						
<i>Rhytidiadelphus squarrosus</i>											20
<i>Betula pubescens</i>						15					
<i>Sphagnum fallax</i>				5		15					
<i>Oreopteris limbosperma</i>						10					
<i>Carex panicea</i>				7							
<i>Thuidium tamariscinum</i>				3			5				
<i>Dicranum scoparium</i>		2									5
<i>Juncus squarrosus</i>				2				5			
<i>Calliergonella cuspidata</i>					3						
<i>Anthoxanthum odoratum</i>					3	2					
<i>Agrostis capillaris</i>						2			2		
<i>Cirsium palustre</i>				2	2						
<i>Festuca rubra</i>					3	1					
<i>Holcus lanatus</i>				2	2						
<i>Juncus conglomeratus</i>				2	2						
<i>Agrostis canina</i>					2						
<i>Blechnum spicant</i>						2					
<i>Carex echinata</i>					2						
<i>Carex flacca</i>						2					
<i>Lathyrus linifolius</i>						2					
<i>Plagiothecium undulatum</i>	2										
<i>Polytrichastrum formosum</i>								2			
<i>Juncus effusus</i>					2				1		
<i>Ajuga reptans</i>						1					
<i>Danthonia decumbens</i>										1	
<i>Eriophorum angustifolium</i>		1									
<i>Pteridium aquilinum</i>						1					
<b>NVC</b>	<b>M15d</b>	<b>M15d</b>	<b>M15d</b>	<b>M15a</b>	<b>M15a</b>	<b>H21a</b>	<b>H12a</b>	<b>H12c</b>	<b>H12c</b>	<b>H10a</b>	<b>H18</b>
<b>Number of species</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>17</b>	<b>19</b>	<b>22</b>	<b>7</b>	<b>12</b>	<b>14</b>	<b>9</b>	<b>7</b>

## Thornehope Acid grassland quadrat data

Scientific name	TA03	TA07	TA01	TA10	TA05	TA02	TA04	TA06	TA08	TA09
<i>Agrostis capillaris</i>	2		10	35	20	3	5	25	5	10
<i>Festuca ovina</i> agg.			30		10	20	25	60	3	10
<i>Nardus stricta</i>	1			10	2	25	20	5	90	70
<i>Galium saxatile</i>	60	10	25	3		10	7	20	3	
<i>Anthoxanthum odoratum</i>			10	10	10	2	2	10		5
<i>Rhynchospora squarrosa</i>	3	15	5	3	5	2	5		15	
<i>Potentilla erecta</i>			3	5	7		2	5	1	5
<i>Holcus lanatus</i>	2			5	3	3	3	5		2
<i>Avenella flexuosa</i>	90	60	40			20			3	
<i>Pseudoscleropodium purum</i>	10	25	70		35	20	20			
<i>Luzula campestris</i>		2	1			1	2	2		
<i>Festuca rubra</i>				20	50	5		5		
<i>Hypnum jutlandicum</i>	5								10	5
<i>Pteridium aquilinum</i>			5		7	5				
<i>Vaccinium myrtillus</i>		7				3				2
<i>Carex binervis</i>			2			2	5			
<i>Carex panicea</i>							3		2	2
<i>Carex pilulifera</i>	1	10		2						
<i>Luzula multiflora</i>				5			2	1		
<i>Carex flacca</i>					5			2		
<i>Veronica chamaedrys</i>				2	3					
<i>Rumex acetosa</i>				3				1		
<i>Viola riviniana</i>					3			1		
<i>Juncus conglomeratus</i>							1			2
<i>Molinia caerulea</i>							2		1	
<i>Erica tetralix</i>							15			
<i>Hylocomium splendens</i>										15
<i>Trifolium repens</i>				15						
<i>Galium uliginosum</i>					10					
<i>Kindbergia praelonga</i>	10									
<i>Achillea millefolium</i>					3					
<i>Betonica officinalis</i>					3					
<i>Briza media</i>					2					
<i>Calluna vulgaris</i>		2								
<i>Campanula rotundifolia</i>					2					
<i>Carex pulicaris</i>					2					
<i>Cirsium arvense</i>					2					
<i>Deschampsia cespitosa</i>								2		
<i>Equisetum arvense</i>					2					
<i>Lathyrus linifolius</i>					2					
<i>Plantago lanceolata</i>					2					
<i>Pleurozium schreberi</i>							2			
<i>Cirsium palustre</i>					1					
<i>Rumex acetosella</i>	1									
<b>NVC</b>	<b>U2a</b>	<b>U2b</b>	<b>U4a</b>	<b>U4b</b>	<b>U4c</b>	<b>U4e</b>	<b>U4e</b>	<b>U4e</b>	<b>U5a</b>	<b>U5a</b>
<b>Number of species</b>	<b>10</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>23</b>	<b>13</b>	<b>16</b>	<b>13</b>	<b>9</b>	<b>10</b>

## Thornehope Fern-dominated vegetation quadrat data

Scientific name	TF01	TF05	TF08	TF09	TF03	TF04	TF02	TF07	TF10	TF06
<i>Pteridium aquilinum</i>	80	40	65	70	60	75	85	95	95	2
<i>Agrostis capillaris</i>		3	40	20	2	1	5	3	2	30
<i>Avenella flexuosa</i>	40	3		3	75	1	5		15	
<i>Pseudoscleropodium purum</i>	20	10		10	30		35			
<i>Galium saxatile</i>	5				5		3		10	
<i>Anthoxanthum odoratum</i>			5	10				2		
<i>Festuca rubra</i>			3	5						5
<i>Oxalis acetosella</i>		5						3		15
<i>Holcus lanatus</i>		3	10							2
<i>Viola riviniana</i>		3		2						3
<i>Achillea millefolium</i>		2	3	2						
<i>Potentilla erecta</i>		2	2	10						
<i>Oreopteris limbosperma</i>			2							65
<i>Pleurozium schreberi</i>					5		20			
<i>Erica cinerea</i>				2	15					
<i>Hypnum jutlandicum</i>	5	5								
<i>Rhytidiadelphus squarrosus</i>	7									2
<i>Festuca ovina</i> agg.	1				3					
<i>Digitalis purpurea</i>			1							2
<i>Erica tetralix</i>				1	2					
<i>Rumex acetosella</i>							2		1	
<i>Holcus mollis</i>		20								
<i>Hylocomium splendens</i>				20						
<i>Vaccinium myrtillus</i>					10					
<i>Calluna vulgaris</i>					5					
<i>Deschampsia cespitosa</i>			5							
<i>Dicranum scoparium</i>		5								
<i>Plagiomnium undulatum</i>										5
<i>Thuidium tamariscinum</i>										5
<i>Lysimachia nemorum</i>										3
<i>Poa trivialis</i>										3
<i>Potentilla sterilis</i>										3
<i>Carex pulicaris</i>			2							
<i>Cirsium arvense</i>		2								
<i>Mnium hornum</i>										2
<i>Nardus stricta</i>		2								
<i>Blechnum spicant</i>										1
<i>Carex flacca</i>				1						
<i>Cirsium palustre</i>			1							
<i>Crataegus monogyna</i>		1								
<i>Epilobium montanum</i>										1
<i>Epilobium obscurum</i>										1
<i>Juncus conglomeratus</i>			1							
<i>Luzula pilosa</i>		1								
<b>NVC</b>	<b>U20a</b>	<b>U20a</b>	<b>U20a</b>	<b>U20a</b>	<b>U20b</b>	<b>U20c</b>	<b>U20c</b>	<b>U20c</b>	<b>U20c</b>	<b>U19</b>
<b>Number of species</b>	<b>6</b>	<b>15</b>	<b>12</b>	<b>12</b>	<b>10</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>17</b>



## Thornehope Rushy vegetation quadrat data

Scientific name	TR01	TR07	TR03	TR10	TR08	TR06	TR02	TR04	TR05	TR09
<i>Juncus effusus</i>	60	50	30	75	10	3			5	
<i>Agrostis canina</i>	3	3		20	2		20	40	70	5
<i>Viola palustris</i>	5	2			15	10	5	5	15	3
<i>Holcus lanatus</i>	3		5	10		3	3	5	1	
<i>Juncus acutiflorus</i>			5			60	90	95	70	100
<i>Cirsium palustre</i>			3			1	5	3		1
<i>Sphagnum fallax</i>	70	100			35	20				
<i>Sphagnum palustre</i>	20					20				2
<i>Festuca rubra</i>	5		5				3		5	
<i>Anthoxanthum odoratum</i>					1	3			3	
<i>Potentilla erecta</i>	2		2		1				2	
<i>Epilobium palustre</i>	1						5	1		
<i>Sphagnum denticulatum</i>						25				
<i>Epilobium montanum</i>								20		
<i>Carex panicea</i>			15							
<i>Urtica dioica</i>				15						
<i>Carex echinata</i>			20		3					
<i>Erica tetralix</i>	20				2					
<i>Brachythecium rivulare</i>							10			
<i>Deschampsia cespitosa</i>				10						
<i>Eriophorum angustifolium</i>			2		15					
<i>Galium palustre</i>	2							10		
<i>Carex binervis</i>			5							
<i>Juncus bulbosus</i>					5					
<i>Juncus conglomeratus</i>			5							
<i>Kindbergia praelonga</i>							5			
<i>Lysimachia nemorum</i>								5		
<i>Nardus stricta</i>					5					
<i>Polytrichum commune</i>		2				5				
<i>Carex flacca</i>									3	
<i>Hylocomium splendens</i>						3				
<i>Scutellaria minor</i>										3
<i>Prunella vulgaris</i>			3					1		
<i>Pteridium aquilinum</i>		2						2		
<i>Ranunculus flammula</i>								2	2	
<i>Drosera rotundifolia</i>					2					
<i>Empetrum nigrum</i>						2				
<i>Galium uliginosum</i>	2									
<i>Myosotis secunda</i>			2							
<i>Poa trivialis</i>	2									
<i>Sphagnum subnitens</i>						2				
<i>Sphagnum teres</i>						2				
<i>Stellaria alsine</i>				1			2			
<i>Luzula multiflora</i>	1		1							
<i>Cardamine pratensis</i>	1									
<i>Fraxinus excelsior</i>								1		
<i>Galium saxatile</i>									1	
<i>Lathyrus linifolius</i>			1							
<i>Molinia caerulea</i>			1							
<i>Succisa pratensis</i>									1	

NVC	TR01	TR07	TR03	TR10	TR08	TR06	TR02	TR04	TR05	TR09
	M6ci	M6ci	M23b	M23b	M2/6	M6dii	M23a	M23a	M23a	M23a
Number of species	14	5	15	5	11	13	10	13	11	6

## Thornehope Mesotrophic grassland quadrat data

Scientific name	TM01	TM02
<i>Agrostis capillaris</i>	25	40
<i>Festuca rubra</i>	40	20
<i>Trifolium repens</i>	15	25
<i>Cynosurus cristatus</i>	5	7
<i>Holcus lanatus</i>	3	5
<i>Ranunculus acris</i>	1	5
<i>Anthoxanthum odoratum</i>	2	2
<i>Dactylis glomerata</i>	2	2
<i>Rumex acetosa</i>	1	3
<i>Taraxacum</i> agg.	2	1
<i>Lotus corniculatus</i>	25	
<i>Rhytidiadelphus squarrosus</i>	10	
<i>Luzula multiflora</i>	3	
<i>Luzula campestris</i>		2
<i>Cerastium fontanum</i>	1	
<i>Jacobaea vulgaris</i>		1
<i>Juncus conglomeratus</i>		1
<i>Montia fontana</i>		1
<i>Ranunculus repens</i>		1
<b>NVC</b>	<b>MG6b</b>	<b>MG6b</b>
<b>Number of species</b>	<b>13</b>	<b>14</b>

### Thornehope Purple moor-grass vegetation quadrat data

Scientific name	TP01	TP03	TP04	TP05	TP02
<i>Molinia caerulea</i>	75	80	85	85	65
<i>Avenella flexuosa</i>	5	5	2	10	5
<i>Galium saxatile</i>	5	3	2	3	7
<i>Trichophorum germanicum</i>	2	7	2	1	5
<i>Festuca ovina</i> agg.	3	5	7		10
<i>Erica tetralix</i>	10	3	2	3	
<i>Polytrichum commune</i>	3	2	3	5	
<i>Agrostis capillaris</i>	2	3	2		
<i>Anthoxanthum odoratum</i>	1	2			2
<i>Luzula multiflora</i>	1	1	1		
<i>Pleurozium schreberi</i>			5	10	
<i>Pseudoscleropodium purum</i>	5				10
<i>Empetrum nigrum</i>	5	2			
<i>Vaccinium myrtillus</i>			5	2	
<i>Juncus conglomeratus</i>	1			1	
<i>Potentilla erecta</i>		1		1	
<i>Sorbus aucuparia</i>				1	1
<i>Hypnum jutlandicum</i>				10	
<i>Rhytidiadelphus squarrosus</i>			5		
<i>Aulacomnium palustre</i>				3	
<i>Calluna vulgaris</i>					2
<i>Carex binervis</i>			2		
<i>Nardus stricta</i>					2
<i>Sphagnum fallax</i>		2			
<i>Juncus effusus</i>		1			
<b>NVC</b>	<b>M25</b>	<b>M25</b>	<b>M25</b>	<b>M25a</b>	<b>M25b</b>
<b>Number of species</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>12</b>	<b>9</b>

## Thornehope Woodland quadrat data

Scientific name	TW03	TW04	TW05	TW06	TW08	TW09	TW02	TW01	TW07	TW10
<b>Canopy layer</b>										
<i>Betula pubescens</i>	25		5	15	20		50	90	70	70
<i>Alnus glutinosa</i>	40	30	60	25	65	65				
<i>Corylus avellana</i>				15						
<i>Pinus sylvestris</i>		10	10							
<i>Pseudotsuga menziesii</i>			10							
<i>Salix caprea</i>										10
<i>Betula pendula</i>									5	
<i>Larix decidua</i>						5				
<b>Shrub layer</b>										
<i>Sorbus aucuparia</i>	1	2	5		5	2	30			
<i>Corylus avellana</i>			10	15					25	
<i>Alnus glutinosa</i>		10	20			5				
<i>Ilex aquifolium</i>	5			5		5			5	
<i>Salix cinerea</i>						5				5
<i>Betula pubescens</i>	5	1								
<i>Juniperus communis</i>					2					2
<i>Ulex europaeus</i>		2								
<b>Ground flora</b>										
<i>Oxalis acetosella</i>		60	50	30	35	35	15	7	40	50
<i>Holcus mollis</i>		50	15	15	40	90	5		20	25
<i>Oreopteris limbosperma</i>	2	10		5	25	15	1		2	5
<i>Pteridium aquilinum</i>	2		15	2	5		2	7	20	1
<i>Blechnum spicant</i>	1		2	2	2		1	1	3	2
<i>Thuidium tamariscinum</i>		30	10	10	80	2				20
<i>Agrostis capillaris</i>	15				5		5	40	15	10
<i>Mnium hornum</i>		5	3	3		5			3	
<i>Viola riviniana</i>		5	3	2		3				10
<i>Ilex aquifolium</i>	2			2				1	1	2
<i>Festuca rubra</i>			5				15	15		
<i>Polytrichastrum formosum</i>					5			5	15	2
<i>Pseudoscleropodium purum</i>			5					25		5
<i>Anthoxanthum odoratum</i>			3					5	3	
<i>Poa trivialis</i>		2		5						3
<i>Potentilla erecta</i>	3		3			2				
<i>Plagiomnium undulatum</i>		5			2		3			2
<i>Cirsium palustre</i>		3				2				1
<i>Digitalis purpurea</i>			1	2		2				
<i>Galium saxatile</i>			2					3	2	2
<i>Pellia epiphylla</i>	5	2	2							
<i>Ajuga reptans</i>				30						
<i>Cirriphyllum piliferum</i>						20				
<i>Carex binervis</i>	30		5							
<i>Kindbergia praelonga</i>			20							5
<i>Deschampsia cespitosa</i>		3	20							
<i>Agrostis canina</i>							10			
<i>Juncus acutiflorus</i>							10			
<i>Avenella flexuosa</i>	10								5	
<i>Brachythecium rivulare</i>							5			
<i>Hypericum pulchrum</i>			5							
<i>Nardus stricta</i>	5									
<i>Rhytidiadelphus loreus</i>			5							

Scientific name	TW03	TW04	TW05	TW06	TW08	TW09	TW02	TW01	TW07	TW10
<i>Sphagnum palustre</i>							5			
<i>Festuca ovina</i> agg.	5							3		
<i>Plagiothecium undulatum</i>				3					5	
<i>Juncus effusus</i>		2					5			
<i>Aulacomnium palustre</i>	3									
<i>Potentilla sterilis</i>		3								
<i>Primula vulgaris</i>		3								
<i>Rhytidadelphus squarrosus</i>						3				
<i>Atrichum undulatum</i>				1						3
<i>Dicranum majus</i>				2					2	
<i>Dryopteris affinis</i>		2		2						
<i>Galium palustre</i>							2			
<i>Luzula multiflora</i>	2									
<i>Lysimachia nemorum</i>							2			
<i>Polytrichum commune</i>	2									
<i>Veronica chamaedrys</i>		2								
<i>Sorbus aucuparia</i>						2	1			
<i>Betula pubescens</i>	1									
<i>Crepis paludosa</i>							1			
<i>Dryopteris filix-mas</i>				1						
<i>Luzula campestris</i>	1									
<i>Quercus</i> sp.									1	
<i>Sphagnum squarrosum</i>							1			
<i>Vicia sepium</i>		1								
<b>NVC</b>	<b>W7</b>	<b>W7</b>	<b>W7</b>	<b>W7</b>	<b>W7</b>	<b>W7</b>	<b>W11</b>	<b>W11</b>	<b>W11</b>	<b>W11</b>
<b>Number of species</b>	<b>20</b>	<b>23</b>	<b>25</b>	<b>21</b>	<b>12</b>	<b>18</b>	<b>19</b>	<b>11</b>	<b>18</b>	<b>20</b>

## Thornehope Blanket bog quadrat data

Scientific name	TB01	TB02	TB03
<i>Calluna vulgaris</i>	60	30	65
<i>Eriophorum vaginatum</i>	25	35	10
<i>Sphagnum papillosum</i>	35	25	10
<i>Erica tetralix</i>	5	15	20
<i>Sphagnum capillifolium</i> ssp. <i>rubellum</i>	15	15	40
<i>Eriophorum angustifolium</i>	5	2	3
<i>Polytrichum commune</i>	2	2	3
<i>Empetrum nigrum</i>		7	10
<i>Sphagnum fallax</i>	5		5
<i>Potentilla erecta</i>		3	2
<i>Vaccinium oxycoccos</i>	2		2
<i>Aulacomnium palustre</i>	1	2	
<i>Narthecium ossifragum</i>		1	1
<i>Pleurozium schreberi</i>			20
<i>Trichophorum germanicum</i>			10
<i>Avenella flexuosa</i>			2
<i>Nardus stricta</i>		2	
<i>Agrostis canina</i>		1	
<b>NVC</b>	<b>M19a</b>	<b>M19a</b>	<b>M19a</b>
<b>Number of species</b>	<b>9</b>	<b>12</b>	<b>14</b>



## Appendix I: Raw quadrat data Lintzgarth

### Lintzgarth Blanket bog quadrat data

Scientific name	LB01	LB05	LB03	LB06	LB10	LB02	LB04	LB07	LB08	LB09
<i>Eriophorum vaginatum</i>	30	15	40	35	75	50	35	35	35	75
<i>Polytrichum commune</i>	15	7	35	20	15	5	20	3	3	10
<i>Avenella flexuosa</i>	3	3	10	3	3	20	10	10		10
<i>Pleurozium schreberi</i>	15				15	25	30	15	15	20
<i>Festuca ovina</i> agg.			3	3	3	5	3	5	5	5
<i>Galium saxatile</i>					15	2	2	15	15	
<i>Rhytidiadelphus squarrosus</i>					15		10	40	40	10
<i>Sphagnum fallax</i>	1		50	50	10					5
<i>Vaccinium myrtillus</i>	3	25				3	2			2
<i>Anthoxanthum odoratum</i>			2	2	2	2	1		10	
<i>Aulacomnium palustre</i>	2	2		5		2	2			5
<i>Juncus squarrosus</i>	2			1	5	2		1	1	
<i>Hylocomium splendens</i>		2				60	15			
<i>Sphagnum capillifolium</i> ssp. <i>capillifolium</i>	60	10		5						
<i>Festuca rubra</i>					3			5	5	
<i>Carex nigra</i>			2	5			2			
<i>Luzula multiflora</i>						1		1	1	
<i>Hypnum jutlandicum</i>	5	25								
<i>Trichophorum germanicum</i>	2	20								
<i>Cladonia portentosa</i>	3	10								
<i>Calluna vulgaris</i>	2	10								
<i>Agrostis canina</i>			3	3						
<i>Erica tetralix</i>	3	2								
<i>Eriophorum angustifolium</i>				3		2				
<i>Racomitrium lanuginosum</i>		3					2			
<i>Campylopus flexuosus</i>	2	2								
<i>Cladonia uncialis</i>	2	1								
<i>Sphagnum palustre</i>				10						
<i>Sphagnum papillosum</i>		5								
<i>Empetrum nigrum</i>		3								
<i>Drosera rotundifolia</i>		2								
<i>Nardus stricta</i>				1						
<b>NVC</b>	<b>M19a</b>	<b>M19a</b>	<b>M20f</b>	<b>M20f</b>	<b>M20f</b>	<b>M20</b>	<b>M20</b>	<b>M20</b>	<b>M20</b>	<b>M20</b>
<b>Number of species</b>	<b>15</b>	<b>17</b>	<b>7</b>	<b>13</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>9</b>	<b>9</b>	<b>8</b>

## Lintzgarth Acid grassland quadrat data

Scientific name	LA08	LA01	LA03	LA06	LA04	LA07	LA05	LA02	LA10	LA09
<i>Galium saxatile</i>	3	25	15	20	3	20	3	5	20	10
<i>Rhytidiadelphus squarrosus</i>	5	25	40	10	10	5	10	50	3	10
<i>Avenella flexuosa</i>		20	10		15	2	20	15	3	5
<i>Festuca ovina</i> agg.	35	10	10		15		15	5		2
<i>Juncus squarrosus</i>						60	60	40	80	2
<i>Agrostis capillaris</i>	7		10	30		7			3	
<i>Anthoxanthum odoratum</i>			15	5	2	3	5			
<i>Pleurozium schreberi</i>		60			3			20		40
<i>Polytrichum commune</i>		15			15		10			
<i>Nardus stricta</i>				2	60	15				3
<i>Potentilla erecta</i>				5		10			7	
<i>Hylacomium splendens</i>		10	5		5					
<i>Rumex acetosa</i>			1	2		2			15	
<i>Festuca rubra</i>				20					40	
<i>Pseudoscleropodium purum</i>			30		5					
<i>Poa pratensis</i>			5		1					
<i>Luzula campestris</i>			3			2				
<i>Carex nigra</i>							25			
<i>Holcus lanatus</i>				25						
<i>Molinia caerulea</i>										25
<i>Rumex acetosella</i>	25									
<i>Plantago lanceolata</i>										20
<i>Cladonia furcata</i>	3									
<i>Cladonia portentosa</i>	3									
<i>Hypnum cupressiforme</i>	3									
<i>Pseudocrossidium</i>										
<i>hornschurchianum</i>	3									
<i>Cerastium fontanum</i>	2									
<i>Deschampsia cespitosa</i>				2						
<i>Eriophorum vaginatum</i>							2			
<i>Trifolium repens</i>	2									
<i>Vaccinium myrtillus</i>										2
<i>Cirsium vulgare</i>	1									
<i>Peltigera didactyla</i>	1									
<b>NVC</b>	<b>U1b</b>	<b>U2a</b>	<b>U4a</b>	<b>U4b</b>	<b>U4e</b>	<b>U6d</b>	<b>U6d</b>	<b>U6d</b>	<b>U6d</b>	<b>M25b</b>
<b>Number of species</b>	<b>12</b>	<b>6</b>	<b>10</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>5</b>	<b>7</b>	<b>9</b>

## Lintzgarth Rushy vegetation quadrat data

Scientific name	LR09	LR01	LR03	LR04	LR05	LR08	LR10	LR02	LR07	LR06
<i>Juncus effusus</i>	7	70	60	85	85	60	100	25	40	
<i>Polytrichum commune</i>	80	35	60	45	15	50	5	2		
<i>Agrostis canina</i>	2	3	15	7	10	5		15		5
<i>Galium saxatile</i>	5		5	10	5	15	3	2		
<i>Sphagnum fallax</i>		60	20	25	15	25				
<i>Avenella flexuosa</i>	3	5	10	2	2	2				
<i>Rhytiadelphus squarrosus</i>		3					10	10		
<i>Holcus lanatus</i>						2			50	5
<i>Festuca rubra</i>					3			5	3	5
<i>Ranunculus repens</i>								3	3	2
<i>Rumex acetosa</i>						3			2	3
<i>Agrostis stolonifera</i>		2	2							2
<i>Anthoxanthum odoratum</i>	2				2			15		
<i>Deschampsia cespitosa</i>								10	2	2
<i>Galium palustre</i>								1	2	3
<i>Festuca ovina</i> agg.	3				2					
<i>Cerastium fontanum</i>								1	3	
<i>Poa pratensis</i>	2							2		
<i>Stellaria alsine</i>									1	3
<i>Eriophorum vaginatum</i>			2		1					
<i>Juncus squarrosus</i>	2				1					
<i>Juncus acutiflorus</i>										90
<i>Carex nigra</i>	60									
<i>Kindbergia praelonga</i>							60			
<i>Sphagnum palustre</i>						20				
<i>Agrostis capillaris</i>									15	
<i>Hypnum jutlandicum</i>							15			
<i>Dryopteris carthusiana</i>							10			
<i>Hylocomium splendens</i>								5		
<i>Pseudoscleropodium purum</i>								5		
<i>Sphagnum angustifolium</i>						5				
<i>Trifolium repens</i>									5	
<i>Cirsium palustre</i>								3		
<i>Plagiothecium undulatum</i>							3			
<i>Ranunculus acris</i>									3	
<i>Luzula campestris</i>								2		
<i>Potentilla erecta</i>					2					
<i>Cardamine pratensis</i>								1		
<i>Cirsium arvense</i>										1
<i>Sphagnum russowii</i>						1				
<b>NVC</b>	<b>M6a</b>	<b>M6ci</b>	<b>M6ci</b>	<b>M6ci</b>	<b>M6ci</b>	<b>M6ci</b>	<b>M6c</b>	<b>M23b</b>	<b>MG10</b>	<b>M23a</b>
<b>Number of species</b>	<b>9</b>	<b>6</b>	<b>7</b>	<b>5</b>	<b>11</b>	<b>10</b>	<b>7</b>	<b>16</b>	<b>11</b>	<b>11</b>

### Lintzgarth *Myosotis stolonifera* flush vegetation quadrat data

Scientific name	LS01	LS02
<i>Myosotis stolonifera</i>	5	15
<i>Juncus effusus</i>	15	3
<i>Montia fontana</i>	2	15
<i>Holcus lanatus</i>	2	2
<i>Calliergonella cuspidata</i>	75	
<i>Agrostis canina</i>		10
<i>Dichodontium palustre</i>	10	
<i>Equisetum fluviatile</i>	10	
<i>Juncus articulatus</i>	10	
<i>Ranunculus omiophyllus</i>		10
<i>Warnstorfia fluitans</i>	10	
<i>Callitriche stagnalis</i>		5
<i>Polytrichum commune</i>		5
<i>Ranunculus repens</i>	5	
<i>Triglochin palustris</i>	5	
<i>Anthoxanthum odoratum</i>	3	
<i>Epilobium palustre</i>	3	
<i>Poa trivialis</i>	3	
<i>Rhytidiadelphus squarrosus</i>		3
<i>Festuca rubra</i>	2	
<i>Galium palustre</i>		2
<i>Cardamine pratensis</i>	1	
<i>Cerastium fontanum</i>	1	
<i>Cirsium palustre</i>	1	
<i>Holcus mollis</i>	1	
<i>Sphagnum squarrosum</i>		1
<b>NVC</b>	<b>M35</b>	<b>M35</b>
<b>Number of species</b>	<b>18</b>	<b>10</b>

## Lintzgarth Mesotrophic grassland quadrat data

Scientific name	LM01	LM02	LM03	LM04	LM05	LM06	LM07	LM08	LM09	LM10
<i>Agrostis capillaris</i>	5	5	25	15	5	20	60	40	25	75
<i>Trifolium repens</i>	50	65	10	60	25	40	5	20	20	5
<i>Festuca rubra</i>	20	5	2	5	35	40	30	10	10	15
<i>Holcus lanatus</i>	5	15	40	3	15	10	10	15	35	5
<i>Anthoxanthum odoratum</i>	7	5	5	10		5	5	10	10	5
<i>Ranunculus acris</i>	20	10	2	2	2		5	10	5	2
<i>Rumex acetosa</i>	3	3	5	5		3	3	3		3
<i>Plantago lanceolata</i>	30	30	10	25	3	2				
<i>Ranunculus repens</i>	2	2	5			2		2	2	
<i>Cynosurus cristatus</i>			5		20		5	3	5	
<i>Trisetum flavescens</i>	20	3	5	15						
<i>Trifolium pratense</i>	2	5		2	2					
<i>Dactylis glomerata</i>			15	5	5					
<i>Rhinanthus minor</i>	5	15		5						
<i>Veronica chamaedrys</i>			3	3	2					
<i>Cirsium palustre</i>						1		2	2	
<i>Euphrasia arctica</i>	5	2		2						
<i>Juncus effusus</i>								5	7	
<i>Rhytidadelphus squarrosus</i>						5				3
<i>Cerastium fontanum</i>								3		2
<i>Conopodium majus</i>	2			3						
<i>Helictochloa pratensis</i>		2		2						
<i>Poa pratensis</i>		2		2						
<i>Carex nigra</i>								15		
<i>Holcus mollis</i>										10
<i>Agrostis stolonifera</i>								5		
<i>Bellis perennis</i>					5					
<i>Prunella vulgaris</i>					5					
<i>Achillea millefolium</i>					3					
<i>Deschampsia cespitosa</i>										3
<i>Lotus corniculatus</i>					3					
<i>Plantago major</i>					3					
<i>Cirsium vulgare</i>					2					
<i>Euphrasia confusa</i>					2					
<i>Phleum pratense</i>				2						
<i>Cardamine pratensis</i>										1
<i>Juncus squarrosus</i>						1				
<i>Myosotis discolor</i>	1									
<i>Nardus stricta</i>						1				
<i>Potentilla erecta</i>						1				
<b>NVC</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>	<b>MG6b</b>
<b>Number of species</b>	<b>14</b>	<b>14</b>	<b>12</b>	<b>17</b>	<b>16</b>	<b>12</b>	<b>7</b>	<b>13</b>	<b>9</b>	<b>11</b>

## Lintzgarth Clacareous grassland quadrat data

Scientific name	LC01	LC02	LC03
<i>Trifolium repens</i>	20	35	15
<i>Agrostis capillaris</i>	10	5	7
<i>Cerastium fontanum</i>	3	2	2
<i>Cirsium palustre</i>	3	2	1
<i>Euphrasia confusa</i>	1	2	3
<i>Hylocomium splendens</i>	60	70	
<i>Festuca ovina</i> agg.	3	40	
<i>Galium saxatile</i>	20	5	
<i>Thymus drucei</i>	5	20	
<i>Anthoxanthum odoratum</i>	10	5	
<i>Luzula campestris</i>	2	5	
<i>Viola riviniana</i>		3	2
<i>Avenella flexuosa</i>	2	2	
<i>Prunella vulgaris</i>	2	2	
<i>Ranunculus acris</i>		3	1
<i>Pilosella officinarum</i>			40
<i>Festuca rubra</i>	20		
<i>Carex flacca</i>			15
<i>Hypnum cupressiforme</i> var. <i>lacunosum</i>			15
<i>Rhytidiadelphus squarrosus</i>	10		
<i>Achillea millefolium</i>			3
<i>Linum catharticum</i>			3
<i>Plantago lanceolata</i>			3
<i>Racomitrium ericoides</i>			3
<i>Briza media</i>			2
<i>Dicranum scoparium</i>		2	
<i>Gentianella amarella</i>			2
<i>Poa pratensis</i>	2		
<i>Scorzoneroides autumnalis</i>			2
<i>Veronica officinalis</i>			2
<i>Aira praecox</i>	1		
<i>Ajuga reptans</i>			1
<i>Campanula rotundifolia</i>	1		
<i>Cirsium arvense</i>			1
<i>Cynosurus cristatus</i>			1
<i>Jacobaea vulgaris</i>		1	
<i>Rumex acetosella</i>	1		
<i>Schistidium crassipilum</i>			1
<b>NVC</b>	<b>CG10a</b>	<b>CG10a</b>	<b>CG7a</b>
<b>Number of species</b>	<b>18</b>	<b>16</b>	<b>21</b>

### Lintzgarth Heathland quadrat data

Scientific name	LH01
<i>Pleurozium schreberi</i>	40
<i>Vaccinium myrtillus</i>	40
<i>Hylocomium splendens</i>	25
<i>Avenella flexuosa</i>	20
<i>Rhytidiadelphus squarrosus</i>	10
<i>Cladonia portentosa</i>	5
<i>Calluna vulgaris</i>	2
<i>Juncus squarrosus</i>	2
<i>Nardus stricta</i>	2
<i>Potentilla erecta</i>	2
<b>NVC</b>	<b>H18</b>
<b>Number of species</b>	<b>9</b>



## Appendix J: Alphabetical species lists: Thornehope

Scientific name	Common name	DAFOR
<i>Abies amabilis</i>	Pacific silver-fir	Rare
<i>Achillea millefolium</i>	Yarrow	Occasional
<i>Achillea ptarmica</i>	Sneezewort	Occasional
<i>Agrostis canina</i>	Velvet bent	Frequent
<i>Agrostis capillaris</i>	Common bent	Abundant
<i>Agrostis stolonifera</i>	Creeping bent	Occasional
<i>Ajuga reptans</i>	Bugle	Occasional
<i>Alnus glutinosa</i>	Alder	Occasional
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	Abundant
<i>Athyrium filix-femina</i>	Lady-fern	Rare
<i>Atrichum undulatum</i> var. <i>undulatum</i>	a moss	Rare
<i>Aulacomnium palustre</i>	a moss	Frequent
<i>Avenella flexuosa</i>	Wavy hair-grass	Abundant
<i>Betonica officinalis</i>	Betony	Rare
<i>Betula pendula</i>	Silver birch	Rare
<i>Betula pubescens</i> ssp. <i>pubescens</i>	Downy birch	Occasional
<i>Blechnum spicant</i>	Hard-fern	Occasional
<i>Brachythecium rivulare</i>	a moss	Occasional
<i>Brachythecium rutabulum</i>	a moss	Occasional
<i>Briza media</i>	Quaking-grass	Rare
<i>Bryum</i> sp.	a moss	Occasional
<i>Calliergonella cuspidata</i>	a moss	Occasional
<i>Calluna vulgaris</i>	Heather	Abundant
<i>Campanula rotundifolia</i> ssp. <i>rotundifolia</i>	Harebell	Occasional
<i>Campylopus introflexus</i>	a moss	Occasional
<i>Cardamine pratensis</i>	Cuckooflower	Occasional
<i>Carex binervis</i>	Green-ribbed sedge	Frequent
<i>Carex caryophyllaea</i>	Spring-sedge	Rare
<i>Carex demissa</i>	Common yellow-sedge	Rare
<i>Carex echinata</i>	Star sedge	Occasional
<i>Carex flacca</i>	Glaucous sedge	Frequent
<i>Carex nigra</i>	Common sedge	Frequent
<i>Carex pallescens</i>	Pale sedge	Occasional
<i>Carex panicea</i>	Carnation sedge	Occasional
<i>Carex pilulifera</i>	Pill sedge	Frequent
<i>Carex pulicaris</i>	Flea sedge	Occasional
<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	Common mouse-ear	Occasional
<i>Cerastium glomeratum</i>	Sticky mouse-ear	Rare
<i>Cirriphyllum piliferum</i>	a moss	Rare
<i>Cirsium arvense</i>	Creeping thistle	Occasional
<i>Cirsium palustre</i>	Marsh thistle	Frequent
<i>Conopodium majus</i>	Pignut	Occasional
<i>Corylus avellana</i>	Hazel	Rare
<i>Crataegus monogyna</i>	Hawthorn	Occasional
<i>Crepis paludosa</i>	Marsh hawk's-beard	Rare
<i>Cynosurus cristatus</i>	Crested dog's-tail	Occasional
<i>Dactylis glomerata</i>	Cock's-foot	Rare
<i>Dactylorhiza maculata</i>	Heath spotted-orchid	Rare
<i>Danthonia decumbens</i>	Heath-grass	Rare
<i>Deschampsia cespitosa</i>	Tufted hair-grass	Occasional
<i>Dicranum majus</i>	a moss	Occasional
<i>Dicranum scoparium</i>	a moss	Frequent
<i>Digitalis purpurea</i>	Foxglove	Occasional
<i>Diplophyllum albicans</i>	a liverwort	Occasional
<i>Drosera rotundifolia</i>	Round-leaved sundew	Rare

Scientific name	Common name	DAFOR
<i>Dryopteris affinis</i> ssp. <i>borreri</i>	Golden-scaled male-fern	Rare
<i>Dryopteris filix-mas</i>	Male-fern	Rare
<i>Empetrum nigrum</i> ssp. <i>nigrum</i>	Crowberry	Frequent
<i>Epilobium montanum</i>	Broad-leaved willowherb	Rare
<i>Epilobium obscurum</i>	Short-fruited willowherb	Rare
<i>Epilobium palustre</i>	Marsh willowherb	Rare
<i>Equisetum arvense</i>	Field horsetail	Occasional
<i>Erica cinerea</i>	Bell heather	Abundant
<i>Erica tetralix</i>	Cross-leaved heath	Abundant
<i>Eriophorum angustifolium</i>	Common cottongrass	Rare
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass	Rare
<i>Eurhynchium striatum</i>	a moss	Occasional
<i>Festuca ovina</i> agg.	a sheep's fescue	Abundant
<i>Festuca rubra</i>	Red fescue	Frequent
<i>Fissidens dubius</i>	a moss	Rare
<i>Fraxinus excelsior</i>	Ash	Rare
<i>Galium aparine</i>	Cleavers	Occasional
<i>Galium palustre</i>	Common marsh-bedstraw	Occasional
<i>Galium saxatile</i>	Heath bedstraw	Abundant
<i>Galium uliginosum</i>	Fen bedstraw	Occasional
<i>Holcus lanatus</i>	Yorkshire-fog	Frequent
<i>Holcus mollis</i>	Creeping soft-grass	Frequent
<i>Homalothecium sericeum</i>	a moss	Rare
<i>Hylocomium splendens</i>	a moss	Frequent
<i>Hylocomium armoricum</i>	a moss	Rare
<i>Hypericum pulchrum</i>	Slender St John's-wort	Occasional
<i>Hypnum cupressiforme</i> var. <i>cupressiforme</i>	a moss	Occasional
<i>Hypnum jutlandicum</i>	a moss	Abundant
<i>Ilex aquifolium</i>	Holly	Occasional
<i>Isolepis setacea</i>	Bristle club-rush	Rare
<i>Isoetium myosuroides</i> var. <i>myosuroides</i>	a moss	Occasional
<i>Jacobaea vulgaris</i>	Common ragwort	Rare
<i>Juncus acutiflorus</i>	Sharp-flowered rush	Occasional
<i>Juncus bufonius</i>	Toad rush	Rare
<i>Juncus bulbosus</i>	Bulbous rush	Occasional
<i>Juncus conglomeratus</i>	Compact rush	Occasional
<i>Juncus effusus</i>	Soft-rush	Frequent
<i>Juncus squarrosus</i>	Heath rush	Occasional
<i>Juniperus communis</i> ssp. <i>communis</i>	Common juniper	Occasional
<i>Kindbergia praelonga</i>	a moss	Frequent
<i>Larix decidua</i>	European larch	Rare
<i>Lathyrus linifolius</i>	Bitter-vetch	Rare
<i>Leucobryum glaucum</i>	a moss	Occasional
<i>Lolium perenne</i>	Perennial rye-grass	Rare
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	Rare
<i>Luzula campestris</i>	Field wood-rush	Frequent
<i>Luzula multiflora</i>	Heath wood-rush	Occasional
<i>Luzula pilosa</i>	Hairy wood-rush	Occasional
<i>Lysimachia nemorum</i>	Yellow pimpernel	Occasional
<i>Mnium hornum</i>	a moss	Occasional
<i>Molinia caerulea</i>	Purple moor-grass	Abundant
<i>Montia fontana</i>	Blinks	Occasional
<i>Myosotis laxa</i>	Tufted forget-me-not	Rare
<i>Myosotis secunda</i>	Creeping forget-me-not	Rare
<i>Myosotis stolonifera</i>	Pale forget-me-not	Rare
<i>Nardus stricta</i>	Mat-grass	Abundant
<i>Narthecium ossifragum</i>	Bog asphodel	Occasional

Scientific name	Common name	DAFOR
<i>Oreopteris limbosperma</i>	Lemon-scented fern	Frequent
<i>Oxalis acetosella</i>	Wood-sorrel	Frequent
<i>Pellia epiphylla</i>	a liverwort	Rare
<i>Pinus sylvestris</i>	Scots pine	Rare
<i>Plagiomnium undulatum</i>	a moss	Occasional
<i>Plagiothecium undulatum</i>	a moss	Occasional
<i>Plantago lanceolata</i>	Ribwort plantain	Rare
<i>Plantago major</i> ssp. <i>major</i>	Greater plantain	Rare
<i>Pleurozium schreberi</i>	a moss	Abundant
<i>Poa annua</i>	Annual meadow-grass	Rare
<i>Poa pratensis</i>	Smooth meadow-grass	Occasional
<i>Poa trivialis</i>	Rough meadow-grass	Occasional
<i>Polygala serpyllifolia</i>	Heath milkwort	Rare
<i>Polytrichastrum formosum</i>	a moss	Occasional
<i>Polytrichum commune</i> var. <i>commune</i>	a moss	Abundant
<i>Polytrichum juniperinum</i>	a moss	Occasional
<i>Potamogeton polygonifolius</i>	Bog pondweed	Rare
<i>Potentilla erecta</i> ssp. <i>erecta</i>	Tormentil	Abundant
<i>Potentilla sterilis</i>	Barren strawberry	Occasional
<i>Primula vulgaris</i>	Primrose	Rare
<i>Prunella vulgaris</i>	Selfheal	Occasional
<i>Pseudoscleropodium purum</i>	a moss	Abundant
<i>Pseudotsuga menziesii</i>	Douglas fir	Rare
<i>Pteridium aquilinum</i> ssp. <i>aquilinum</i>	Bracken	Frequent
<i>Quercus</i> sp.	an oak	Rare
<i>Racomitrium aciculare</i>	a moss	Rare
<i>Ranunculus acris</i> ssp. <i>acris</i>	Meadow buttercup	Rare
<i>Ranunculus flammula</i> ssp. <i>flammula</i>	Lesser spearwort	Occasional
<i>Ranunculus omiophyllus</i>	Round-leaved water-crowfoot	Rare
<i>Ranunculus repens</i>	Creeping buttercup	Occasional
<i>Rhytidiadelphus loreus</i>	a moss	Rare
<i>Rhytidiadelphus squarrosus</i>	a moss	Frequent
<i>Rumex acetosa</i> ssp. <i>acetosa</i>	Common sorrel	Occasional
<i>Rumex acetosella</i> ssp. <i>acetosella</i>	Sheep's sorrel	Rare
<i>Rumex obtusifolius</i>	Broad-leaved dock	Rare
<i>Sagina procumbens</i>	Procumbent pearlwort	Rare
<i>Salix aurita</i>	Eared willow	Rare
<i>Salix caprea</i> ssp. <i>caprea</i>	Goat willow	Rare
<i>Salix cinerea</i> ssp. <i>oleifolia</i>	Grey willow	Rare
<i>Sanicula europaea</i>	Sanicle	Rare
<i>Scapania undulata</i>	a liverwort	Occasional
<i>Scutellaria minor</i>	Lesser skullcap	Rare
<i>Sorbus aucuparia</i>	Rowan	Occasional
<i>Sphagnum capillifolium</i> ssp. <i>capillifolium</i>	a bog-moss	Frequent
<i>Sphagnum capillifolium</i> ssp. <i>rubellum</i>	a bog-moss	Frequent
<i>Sphagnum denticulatum</i>	a bog-moss	Rare
<i>Sphagnum fallax</i>	a bog-moss	Frequent
<i>Sphagnum fimbriatum</i>	a bog-moss	Rare
<i>Sphagnum palustre</i> var. <i>palustre</i>	a bog-moss	Frequent
<i>Sphagnum papillosum</i>	a bog-moss	Occasional
<i>Sphagnum squarrosum</i>	a bog-moss	Rare
<i>Sphagnum subnitens</i> var. <i>subnitens</i>	a bog-moss	Occasional
<i>Sphagnum teres</i>	a bog-moss	Rare
<i>Stellaria alsine</i>	Bog stitchwort	Occasional
<i>Stellaria graminea</i>	Lesser stitchwort	Rare
<i>Stellaria media</i>	Common chickweed	Rare
<i>Succisa pratensis</i>	Devil's-bit scabious	Rare

Scientific name	Common name	DAFOR
<i>Taraxacum</i> agg.	Dandelion	Rare
<i>Teucrium scorodonia</i>	Wood sage	Rare
<i>Thuidium tamariscinum</i>	a moss	Frequent
<i>Trichophorum germanicum</i>	Common deergrass	Frequent
<i>Trifolium repens</i>	White clover	Occasional
<i>Ulex europaeus</i>	Gorse	Occasional
<i>Urtica dioica</i> ssp. <i>dioica</i>	Common nettle	Occasional
<i>Vaccinium myrtillus</i>	Bilberry	Abundant
<i>Vaccinium oxycoccos</i>	Cranberry	Rare
<i>Veronica chamaedrys</i>	Germander speedwell	Occasional
<i>Vicia sepium</i>	Bush vetch	Rare
<i>Viola palustris</i> ssp. <i>palustris</i>	Marsh violet	Occasional
<i>Viola riviniana</i>	Common dog-violet	Occasional

## Appendix K: Alphabetical species lists: Lintzgarth

Scientific name	Common name	DAFOR
<i>Achillea millefolium</i>	Yarrow	Occasional
<i>Achillea ptarmica</i>	Sneezewort	Rare
<i>Agrostis canina</i>	Velvet bent	Frequent
<i>Agrostis capillaris</i>	Common bent	Frequent
<i>Agrostis stolonifera</i>	Creeping bent	Occasional
<i>Aira praecox</i>	Early hair-grass	Rare
<i>Ajuga reptans</i>	Bugle	Rare
<i>Alchemilla glabra</i>	Smooth Lady's-mantle	Rare
<i>Alnus glutinosa</i>	Alder	Rare
<i>Alopecurus geniculatus</i>	Marsh foxtail	Rare
<i>Alopecurus pratensis</i>	Meadow foxtail	Rare
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	Frequent
<i>Arrhenatherum elatius</i>	False oat-grass	Rare
<i>Athyrium filix-femina</i>	Lady-fern	Rare
<i>Aulacomnium palustre</i>	a moss	Frequent
<i>Avenella flexuosa</i>	Wavy hair-grass	Abundant
<i>Bellis perennis</i>	Daisy	Occasional
<i>Betula pubescens</i> ssp. <i>pubescens</i>	Downy birch	Rare
<i>Brachythecium rivulare</i>	a moss	Rare
<i>Briza media</i>	Quaking-grass	Rare
<i>Calliergonella cuspidata</i>	a moss	Occasional
<i>Callitriche brutia</i> ssp. <i>hamulata</i>	Intermediate water-starwort	Rare
<i>Callitriche stagnalis</i>	Common water-starwort	Rare
<i>Calluna vulgaris</i>	Heather	Rare
<i>Campanula rotundifolia</i> ssp. <i>rotundifolia</i>	Harebell	Rare
<i>Campylopus flexuosus</i>	a moss	Occasional
<i>Cardamine pratensis</i>	Cuckooflower	Occasional
<i>Carex echinata</i>	Star sedge	Occasional
<i>Carex flacca</i>	Glaucous sedge	Rare
<i>Carex leporina</i>	Oval sedge	Rare
<i>Carex nigra</i>	Common sedge	Frequent
<i>Carex panicea</i>	Carnation sedge	Occasional
<i>Carex pulicaris</i>	Flea sedge	Rare
<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	Common mouse-ear	Frequent
<i>Cerastium glomeratum</i>	Sticky mouse-ear	Rare
<i>Chamaenerion angustifolium</i>	Rosebay willowherb	Rare
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved golden-saxifrage	Rare
<i>Cirsium arvense</i>	Creeping thistle	Occasional
<i>Cirsium palustre</i>	Marsh thistle	Frequent
<i>Cirsium vulgare</i>	Spear thistle	Occasional
<i>Cladonia furcata</i> ssp. <i>furcata</i>	a lichen	Occasional
<i>Cladonia portentosa</i>	a lichen	Frequent
<i>Cladonia uncialis</i> ssp. <i>biuncialis</i>	a lichen	Occasional
<i>Climacium dendroides</i>	a moss	Rare
<i>Conopodium majus</i>	Pignut	Occasional
<i>Corylus avellana</i>	Hazel	Rare
<i>Crataegus monogyna</i>	Hawthorn	Rare
<i>Cruciata laevipes</i>	Crosswort	Rare
<i>Cynosurus cristatus</i>	Crested dog's-tail	Occasional
<i>Dactylis glomerata</i>	Cock's-foot	Occasional
<i>Deschampsia cespitosa</i>	Tufted hair-grass	Occasional
<i>Dichodontium palustre</i>	a moss	Rare
<i>Dicranum scoparium</i>	a moss	Occasional
<i>Digitalis purpurea</i>	Foxglove	Rare
<i>Drosera rotundifolia</i>	Round-leaved sundew	Rare
<i>Dryopteris carthusiana</i>	Narrow buckler-fern	Occasional

Scientific name	Common name	DAFOR
<i>Dryopteris dilatata</i>	Broad buckler-fern	Rare
<i>Empetrum nigrum</i> ssp. <i>nigrum</i>	Crowberry	Occasional
<i>Epilobium palustre</i>	Marsh willowherb	Frequent
<i>Equisetum arvense</i>	Field horsetail	Rare
<i>Equisetum fluviatile</i>	Water horsetail	Rare
<i>Equisetum palustre</i>	Marsh horsetail	Occasional
<i>Erica tetralix</i>	Cross-leaved heath	Occasional
<i>Eriophorum angustifolium</i>	Common cottongrass	Frequent
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass	Abundant
<i>Erythranthe</i> agg.	a monkeyflower	Rare
<i>Euphrasia arctica</i>	Arctic eyebright	Occasional
<i>Euphrasia confusa</i>	Confused eyebright	Occasional
<i>Festuca ovina</i> agg.	a sheep's fescue	Abundant
<i>Festuca rubra</i>	Red fescue	Frequent
<i>Filipendula ulmaria</i>	Meadowsweet	Rare
<i>Galium palustre</i>	Common marsh-bedstraw	Frequent
<i>Galium saxatile</i>	Heath bedstraw	Abundant
<i>Galium uliginosum</i>	Fen bedstraw	Rare
<i>Galium verum</i>	Lady's-bedstraw	Rare
<i>Gentianella amarella</i> ssp. <i>amarella</i>	Autumn gentian	Rare
<i>Glyceria fluitans</i>	Floating sweet-grass	Rare
<i>Helictochloa pratensis</i>	Meadow oat-grass	Rare
<i>Heracleum sphondylium</i> ssp. <i>sphondylium</i>	Hogweed	Rare
<i>Hippuris vulgaris</i>	Mare's-tail	Rare
<i>Holcus lanatus</i>	Yorkshire-fog	Abundant
<i>Holcus mollis</i>	Creeping soft-grass	Occasional
<i>Hylocomium splendens</i>	a moss	Frequent
<i>Hypnum cupressiforme</i> var. <i>cupressiforme</i>	a moss	Rare
<i>Hypnum cupressiforme</i> var. <i>lacunosum</i>	a moss	Rare
<i>Hypnum jutlandicum</i>	a moss	Abundant
<i>Hypochaeris radicata</i>	Cat's-ear	Rare
<i>Jacobaea vulgaris</i>	Common ragwort	Rare
<i>Juncus acutiflorus</i>	Sharp-flowered rush	Occasional
<i>Juncus articulatus</i>	Jointed rush	Occasional
<i>Juncus bufonius</i>	Toad rush	Rare
<i>Juncus bulbosus</i>	Bulbous rush	Occasional
<i>Juncus effusus</i>	Soft-rush	Abundant
<i>Juncus squarrosus</i>	Heath rush	Abundant
<i>Kindbergia praelonga</i>	a moss	Occasional
<i>Lapsana communis</i> ssp. <i>communis</i>	Nipplewort	Rare
<i>Lathyrus pratensis</i>	Meadow vetchling	Rare
<i>Linum catharticum</i>	Fairy flax	Rare
<i>Lolium perenne</i>	Perennial rye-grass	Rare
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	Rare
<i>Luzula campestris</i>	Field wood-rush	Frequent
<i>Luzula multiflora</i>	Heath wood-rush	Frequent
<i>Molinia caerulea</i>	Purple moor-grass	Occasional
<i>Montia fontana</i>	Blinks	Occasional
<i>Myosotis arvensis</i>	Field forget-me-not	Rare
<i>Myosotis discolor</i>	Changing forget-me-not	Rare
<i>Myosotis secunda</i>	Creeping forget-me-not	Rare
<i>Myosotis stolonifera</i>	Pale forget-me-not	Rare
<i>Nardus stricta</i>	Mat-grass	Abundant
<i>Oxalis acetosella</i>	Wood-sorrel	Rare
<i>Pellia epiphylla</i>	a liverwort	Rare
<i>Peltigera didactyla</i>	a lichen	Rare
<i>Philonotis fontana</i>	a moss	Occasional
<i>Phleum pratense</i>	Timothy	Rare
<i>Pilosella officinarum</i>	Mouse-ear-hawkweed	Rare



Scientific name	Common name	DAFOR
<i>Pinus</i> sp.	a pine	Rare
<i>Pinus sylvestris</i>	Scots pine	Rare
<i>Plagiomnium undulatum</i>	a moss	Occasional
<i>Plagiothecium undulatum</i>	a moss	Rare
<i>Plantago lanceolata</i>	Ribwort plantain	Occasional
<i>Plantago major</i> ssp. <i>major</i>	Greater plantain	Rare
<i>Pleurozium schreberi</i>	a moss	Abundant
<i>Poa annua</i>	Annual meadow-grass	Occasional
<i>Poa pratensis</i>	Smooth meadow-grass	Occasional
<i>Poa trivialis</i>	Rough meadow-grass	Occasional
<i>Polygonum aviculare</i> agg.	a knotgrass	Rare
<i>Polytrichum commune</i> var. <i>commune</i>	a moss	Abundant
<i>Polytrichum strictum</i>	a moss	Occasional
<i>Potamogeton polygonifolius</i>	Bog pondweed	Rare
<i>Potentilla erecta</i> ssp. <i>erecta</i>	Tormentil	Abundant
<i>Prunella vulgaris</i>	Selfheal	Occasional
<i>Pseudocrossidium hornschurchianum</i>	a moss	Rare
<i>Pseudoscleropodium purum</i>	a moss	Frequent
<i>Racomitrium aciculare</i>	a moss	Rare
<i>Racomitrium ericoides</i>	a moss	Rare
<i>Racomitrium lanuginosum</i>	a moss	Occasional
<i>Ranunculus acris</i> ssp. <i>acris</i>	Meadow buttercup	Occasional
<i>Ranunculus flammula</i> ssp. <i>flammula</i>	Lesser spearwort	Occasional
<i>Ranunculus omiophyllus</i>	Round-leaved water-crowfoot	Occasional
<i>Ranunculus repens</i>	Creeping buttercup	Frequent
<i>Rhinanthus minor</i> ssp. <i>minor</i>	Yellow-rattle	Occasional
<i>Rhytidadelphus loreus</i>	a moss	Rare
<i>Rhytidadelphus squarrosus</i>	a moss	Abundant
<i>Rumex acetosa</i> ssp. <i>acetosa</i>	Common sorrel	Frequent
<i>Rumex acetosella</i> ssp. <i>acetosella</i>	Sheep's sorrel	Occasional
<i>Rumex crispus</i>	Curled dock	Rare
<i>Rumex longifolius</i>	Northern dock	Rare
<i>Rumex obtusifolius</i>	Broad-leaved dock	Rare
<i>Sagina procumbens</i>	Procumbent pearlwort	Rare
<i>Salix caprea</i> ssp. <i>caprea</i>	Goat willow	Rare
<i>Salix x fragilis</i>	Hybrid crack willow	Rare
<i>Schistidium crassipilum</i>	a moss	Rare
<i>Scorzoneroideis autumnalis</i>	Autumn hawkbit	Rare
<i>Sonchus oleraceus</i>	Smooth sowthistle	Rare
<i>Sorbus aucuparia</i>	Rowan	Rare
<i>Sphagnum angustifolium</i>	a bog-moss	Occasional
<i>Sphagnum capillifolium</i> ssp. <i>capillifolium</i>	a bog-moss	Frequent
<i>Sphagnum cuspidatum</i>	a bog-moss	Rare
<i>Sphagnum fallax</i>	a bog-moss	Abundant
<i>Sphagnum inundatum</i>	a bog-moss	Abundant
<i>Sphagnum palustre</i> var. <i>palustre</i>	a bog-moss	Abundant
<i>Sphagnum papillosum</i>	a bog-moss	Abundant
<i>Sphagnum russowii</i>	a bog-moss	Rare
<i>Sphagnum squarrosum</i>	a bog-moss	Rare
<i>Stellaria alsine</i>	Bog stitchwort	Occasional
<i>Stellaria graminea</i>	Lesser stitchwort	Occasional
<i>Stellaria media</i>	Common chickweed	Rare
<i>Straminergon stramineum</i>	a moss	Rare
<i>Taraxacum</i> agg.	Dandelion	Rare
<i>Thymus drucei</i>	Wild thyme	Rare
<i>Torilis japonica</i>	Upright hedge-parsley	Rare
<i>Trichophorum germanicum</i>	Common deergrass	Frequent
<i>Trifolium pratense</i>	Red clover	Occasional
<i>Trifolium repens</i>	White clover	Frequent



Scientific name	Common name	DAFOR
<i>Triglochin palustris</i>	Marsh arrowgrass	Rare
<i>Trisetum flavescens</i> ssp. <i>flavescens</i>	Yellow oat-grass	Occasional
<i>Tussilago farfara</i>	Colt's-foot	Rare
<i>Urtica dioica</i> ssp. <i>dioica</i>	Common nettle	Occasional
<i>Vaccinium myrtillus</i>	Bilberry	Frequent
<i>Veronica arvensis</i>	Wall speedwell	Rare
<i>Veronica chamaedrys</i>	Germander speedwell	Rare
<i>Veronica officinalis</i>	Heath speedwell	Rare
<i>Vicia sepium</i>	Bush vetch	Rare
<i>Viola palustris</i> ssp. <i>palustris</i>	Marsh violet	Occasional
<i>Viola riviniana</i>	Common dog-violet	Rare
<i>Warnstorfia fluitans</i>	a moss	Rare

## Appendix L: Taxonomic species lists for both sites

Scientific name	Thornehope	Lintzgarth
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### MARCHANTOPHYTA (Liverworts)

#### JUNGERMANNIOPSIDA

##### Pelliales

###### Pelliaceae

<i>Pellia epiphylla</i>	Occasional	Rare
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##### Jungermanniales

###### Scapaniaceae

<i>Diplophyllum albicans</i>	Occasional	
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<i>Scapania undulata</i>	Occasional	
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### BRYOPHYTA (Mosses)

#### SPHAGNOPSIDA

##### Sphaginales

###### Sphagnaceae

<i>Sphagnum papillosum</i>	Occasional	Abundant
<i>Sphagnum palustre</i> var. <i>palustre</i>	Frequent	Abundant
<i>Sphagnum squarrosum</i>	Rare	Rare
<i>Sphagnum teres</i>	Rare	
<i>Sphagnum fimbriatum</i>	Rare	
<i>Sphagnum russowii</i>		Rare
<i>Sphagnum capillifolium</i> ssp. <i>capillifolium</i>	Frequent	Frequent
<i>Sphagnum capillifolium</i> ssp. <i>rubellum</i>	Frequent	
<i>Sphagnum subnitens</i> var. <i>subnitens</i>	Occasional	
<i>Sphagnum inundatum</i>		Abundant
<i>Sphagnum denticulatum</i>	Rare	
<i>Sphagnum cuspidatum</i>		Rare
<i>Sphagnum fallax</i>	Frequent	Abundant
<i>Sphagnum angustifolium</i>		Occasional

#### POLYTRICHOPSIDA

##### Polytrichales

###### Polytrichaceae

<i>Atrichum undulatum</i> var. <i>undulatum</i>	Rare	
<i>Polytrichastrum formosum</i>	Occasional	
<i>Polytrichum commune</i> var. <i>commune</i>	Abundant	Abundant
<i>Polytrichum juniperinum</i>	Occasional	
<i>Polytrichum strictum</i>		Occasional

Scientific name	Thornehope	Lintzgarth
<b>BRYOPSIDA</b>		
<b>Grimmiales</b>		
Grimmiaceae		
<i>Schistidium crassipilum</i>		Rare
<i>Racomitrium aciculare</i>	Rare	Rare
<i>Racomitrium lanuginosum</i>		Occasional
<i>Racomitrium ericoides</i>		Rare
<b>Dicranales</b>		
Fissidentaceae		
<i>Fissidens dubius</i>	Rare	
Rhabdoweisiaceae		
<i>Dichodontium palustre</i>		Rare
Dicranaceae		
<i>Dicranum scoparium</i>	Frequent	Occasional
<i>Dicranum majus</i>	Occasional	
Leucobryaceae		
<i>Campylopus flexuosus</i>		Occasional
<i>Campylopus introflexus</i>	Occasional	
<i>Leucobryum glaucum</i>	Occasional	
<b>Pottiales</b>		
Pottiaceae		
<i>Pseudocrossidium hornschurchianum</i>		Rare
<b>Bryales</b>		
Bartramiaceae		
<i>Philonotis fontana</i>		Occasional
Bryaceae		
<i>Bryum</i> sp.	Occasional	
Mniaceae		
<i>Mnium hornum</i>	Occasional	
Plagiomniaceae		
<i>Plagiomnium undulatum</i>	Occasional	Occasional
Aulacomniaceae		
<i>Aulacomnium palustre</i>	Frequent	Frequent
<b>Hypnales</b>		
Climaciaceae		
<i>Climacium dendroides</i>		Rare
Calliergonaceae		
<i>Warnstorfia fluitans</i>		Rare
<i>Straminergon stramineum</i>		Rare
Thuidiaceae		
<i>Thuidium tamariscinum</i>	Frequent	

Scientific name	Thornehope	Lintzgarth
Brachytheciaceae		
<i>Pseudoscleropodium purum</i>	Abundant	Frequent
<i>Eurhynchium striatum</i>	Occasional	
<i>Cirriphyllum piliferum</i>	Rare	
<i>Kindbergia praelonga</i>	Frequent	Occasional
<i>Brachythecium rutabulum</i>	Occasional	
<i>Brachythecium rivulare</i>	Occasional	Rare
<i>Homalothecium sericeum</i>	Rare	
Hypnaceae		
<i>Calliergonella cuspidata</i>	Occasional	Occasional
<i>Hypnum cupressiforme</i> var. <i>cupressiforme</i>	Occasional	Rare
<i>Hypnum cupressiforme</i> var. <i>lacunosum</i>		Rare
<i>Hypnum jutlandicum</i>	Abundant	Abundant
<i>Hyocomium armoricum</i>	Rare	
Hylocomiaceae		
<i>Pleurozium schreberi</i>	Abundant	Abundant
<i>Rhytidiadelphus squarrosus</i>	Frequent	Abundant
<i>Rhytidiadelphus loreus</i>	Rare	Rare
<i>Hylocomium splendens</i>	Frequent	Frequent
Plagiotheciaceae		
<i>Plagiothecium undulatum</i>	Occasional	Rare
Lembophyllaceae		
<i>Isoetium myosuroides</i> var. <i>myosuroides</i>	Occasional	

Scientific name	Common name	Thornehope	Lintzgarth
<b>CALAMOPHYTES</b>	<b>Horsetails</b>		
Equisetaceae	Horsetail Family		
<i>Equisetum fluviatile</i>	Water horsetail		Rare
<i>Equisetum arvense</i>	Field horsetail	Occasional	Rare
<i>Equisetum palustre</i>	Marsh horsetail		Occasional
<b>LEPTOSPORANGIATE FERNS</b>	<b>True ferns</b>		
Dennstaedtiaceae	Bracken Family		
<i>Pteridium aquilinum</i> ssp. <i>aquilinum</i>	Bracken	Frequent	
Thelypteridaceae	Marsh Fern Family		
<i>Oreopteris limbosperma</i>	Lemon-scented fern	Frequent	
Athyriaceae	Lady-fern Family		
<i>Athyrium filix-femina</i>	Lady-fern	Rare	Rare
Blechnaceae	Hard-fern Family		
<i>Blechnum spicant</i>	Hard-fern	Occasional	
Dryopteridaceae	Buckler-fern Family		
<i>Dryopteris filix-mas</i>	Male-fern	Rare	
<i>Dryopteris affinis</i> ssp. <i>borreri</i>	Golden-scaled male-fern	Rare	
<i>Dryopteris carthusiana</i>	Narrow buckler-fern		Occasional
<i>Dryopteris dilatata</i>	Broad buckler-fern		Rare
<b>GYMNOSPERMS</b>	<b>Conifers</b>		
Pinaceae	Pine Family		
<i>Pinus</i> sp.	a pine		Rare
<i>Pinus sylvestris</i>	Scots pine	Rare	Rare
<i>Pseudotsuga menziesii</i>	Douglas fir	Rare	
<i>Larix decidua</i>	European larch	Rare	
<i>Abies amabilis</i>	Pacific silver-fir	Rare	
Cupressaceae	Juniper Family		
<i>Juniperus communis</i> ssp. <i>communis</i>	Common juniper	Occasional	
<b>EU-DICOTS</b>	<b>True dicotyledons</b>		
<b>Ranunculales</b>			
Ranunculaceae	Buttercup Family		
<i>Ranunculus acris</i> ssp. <i>acris</i>	Meadow buttercup	Rare	Occasional
<i>Ranunculus repens</i>	Creeping buttercup	Occasional	Frequent
<i>Ranunculus flammula</i> ssp. <i>flammula</i>	Lesser spearwort	Occasional	Occasional
<i>Ranunculus omiophyllus</i>	Round-leaved water-crowfoot	Rare	Occasional
<b>Saxifragales</b>			
Saxifragaceae	Saxifrage Family		
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved golden-saxifrage		Rare
<b>Fabales</b>			
Fabaceae	Pea Family		
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	Rare	Rare
<i>Vicia sepium</i>	Bush vetch	Rare	Rare

Scientific name	Common name	Thornehope	Lintzgarth
<i>Lathyrus linifolius</i>	Bitter-vetch	Rare	
<i>Lathyrus pratensis</i>	Meadow vetchling		Rare
<i>Trifolium repens</i>	White clover	Occasional	Frequent
<i>Trifolium pratense</i>	Red clover		Occasional
<i>Ulex europaeus</i>	Gorse	Occasional	
Polygalaceae	Milkwort Family		
<i>Polygala serpyllifolia</i>	Heath milkwort	Rare	
<b>Rosales</b>			
Rosaceae	Rose Family		
<i>Sorbus aucuparia</i>	Rowan	Occasional	Rare
<i>Crataegus monogyna</i>	Hawthorn	Occasional	Rare
<i>Filipendula ulmaria</i>	Meadowsweet		Rare
<i>Potentilla erecta</i> ssp. <i>erecta</i>	Tormentil	Abundant	Abundant
<i>Potentilla sterilis</i>	Barren strawberry	Occasional	
<i>Alchemilla glabra</i>	Smooth Lady's-mantle		Rare
Urticaceae	Nettle Family		
<i>Urtica dioica</i> ssp. <i>dioica</i>	Common nettle	Occasional	Occasional
<b>Fagales</b>			
Fagaceae	Beech Family		
<i>Quercus</i> sp.	an oak	Rare	
Betulaceae	Birch Family		
<i>Betula pendula</i>	Silver birch	Rare	
<i>Betula pubescens</i> ssp. <i>pubescens</i>	Downy birch	Occasional	Rare
<i>Alnus glutinosa</i>	Alder	Occasional	Rare
<i>Corylus avellana</i>	Hazel	Rare	Rare
<b>Oxalidales</b>			
Oxalidaceae	Wood-sorrel Family		
<i>Oxalis acetosella</i>	Wood-sorrel	Frequent	Rare
<b>Malpighiales</b>			
Hypericaceae	St John's-wort Family		
<i>Hypericum pulchrum</i>	Slender St John's-wort	Occasional	
Violaceae	Violet Family		
<i>Viola riviniana</i>	Common dog-violet	Occasional	Rare
<i>Viola palustris</i> ssp. <i>palustris</i>	Marsh violet	Occasional	Occasional
Salicaceae	Willow Family		
<i>Salix x fragilis</i>	Hybrid crack willow		Rare
<i>Salix caprea</i> ssp. <i>caprea</i>	Goat willow	Rare	Rare
<i>Salix cinerea</i> ssp. <i>oleifolia</i>	Grey willow	Rare	
<i>Salix aurita</i>	Eared willow	Rare	
Linaceae	Flax Family		
<i>Linum catharticum</i>	Fairy flax		Rare
<b>Myrtales</b>			
Onagraceae	Willowherb Family		
<i>Epilobium montanum</i>	Broad-leaved willowherb	Rare	
<i>Epilobium obscurum</i>	Short-fruited willowherb	Rare	
<i>Epilobium palustre</i>	Marsh willowherb	Rare	Frequent
<i>Chamaenerion angustifolium</i>	Rosebay willowherb		Rare

Scientific name	Common name	Thornehope	Lintzgarth
<b>Brassicales</b>			
Brassicaceae	Cabbage Family		
<i>Cardamine pratensis</i>	Cuckooflower	Occasional	Occasional
<b>Caryophyllales</b>			
Polygonaceae	Knotweed Family		
<i>Polygonum aviculare</i> agg.	a knotgrass		Rare
<i>Rumex acetosella</i> ssp. <i>acetosella</i>	Sheep's sorrel	Rare	Occasional
<i>Rumex acetosa</i> ssp. <i>acetosa</i>	Common sorrel	Occasional	Frequent
<i>Rumex longifolius</i>	Northern dock		Rare
<i>Rumex crispus</i>	Curled dock		Rare
<i>Rumex obtusifolius</i>	Broad-leaved dock	Rare	Rare
Droseraceae	Sundew Family		
<i>Drosera rotundifolia</i>	Round-leaved sundew	Rare	Rare
Caryophyllaceae	Pink Family		
<i>Stellaria media</i>	Common chickweed	Rare	Rare
<i>Stellaria graminea</i>	Lesser stitchwort	Rare	Occasional
<i>Stellaria alsine</i>	Bog stitchwort	Occasional	Occasional
<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	Common mouse-ear	Occasional	Frequent
<i>Cerastium glomeratum</i>	Sticky mouse-ear	Rare	Rare
<i>Sagina procumbens</i>	Procumbent pearlwort	Rare	Rare
Montiaceae	Blinks Family		
<i>Montia fontana</i>	Blinks	Occasional	Occasional
<b>Ericales</b>			
Primulaceae	Primrose Family		
<i>Primula vulgaris</i>	Primrose	Rare	
<i>Lysimachia nemorum</i>	Yellow pimpernel	Occasional	
Ericaceae	Heather Family		
<i>Empetrum nigrum</i> ssp. <i>nigrum</i>	Crowberry	Frequent	Occasional
<i>Calluna vulgaris</i>	Heather	Abundant	Rare
<i>Erica tetralix</i>	Cross-leaved heath	Abundant	Occasional
<i>Erica cinerea</i>	Bell heather	Abundant	
<i>Vaccinium oxycoccos</i>	Cranberry	Rare	
<i>Vaccinium myrtillus</i>	Bilberry	Abundant	Frequent
<b>Gentianales</b>			
Rubiaceae	Bedstraw Family		
<i>Galium uliginosum</i>	Fen bedstraw	Occasional	Rare
<i>Galium palustre</i>	Common marsh-bedstraw	Occasional	Frequent
<i>Galium verum</i>	Lady's-bedstraw		Rare
<i>Galium saxatile</i>	Heath bedstraw	Abundant	Abundant
<i>Galium aparine</i>	Cleavers	Occasional	
<i>Cruciata laevipes</i>	Crosswort		Rare
Gentianaceae	Gentian Family		
<i>Gentianella amarella</i> ssp. <i>amarella</i>	Autumn gentian		Rare
<b>Boraginales</b>			
Boraginaceae	Borage Family		
<i>Myosotis secunda</i>	Creeping forget-me-not	Rare	Rare
<i>Myosotis stolonifera</i>	Pale forget-me-not	Rare	Rare
<i>Myosotis laxa</i>	Tufted forget-me-not	Rare	
<i>Myosotis arvensis</i>	Field forget-me-not		Rare
<i>Myosotis discolor</i>	Changing forget-me-not		Rare

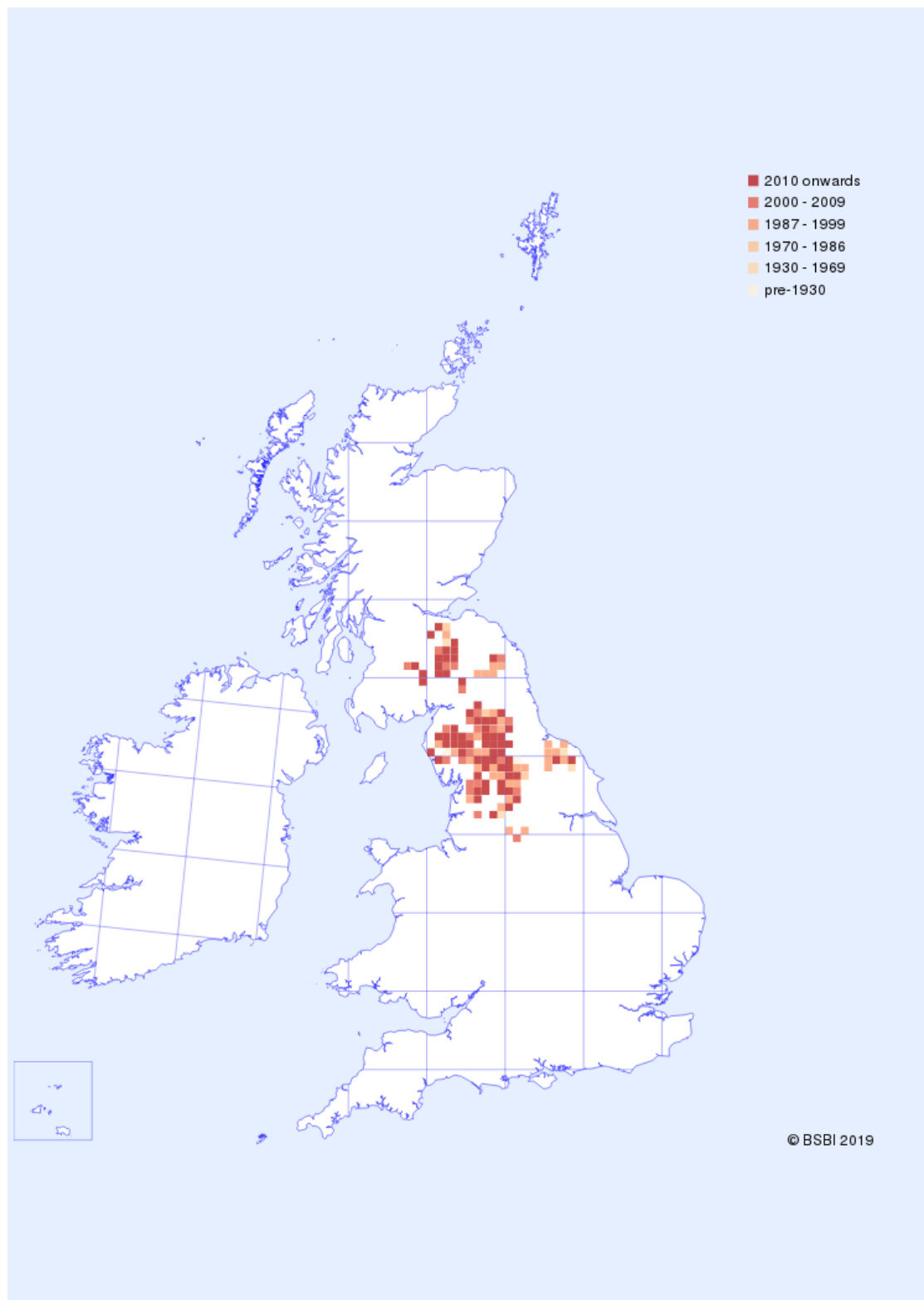


Scientific name	Common name	Thornehope	Lintzgarth
<b>Lamiales</b>			
Oleaceae	Ash Family		
<i>Fraxinus excelsior</i>	Ash	Rare	
Veronicaceae	Speedwell Family		
<i>Digitalis purpurea</i>	Foxglove	Occasional	Rare
<i>Veronica officinalis</i>	Heath speedwell		Rare
<i>Veronica chamaedrys</i>	Germander speedwell	Occasional	Rare
<i>Veronica arvensis</i>	Wall speedwell		Rare
Plantaginaceae	Plantain Family		
<i>Plantago major</i> ssp. <i>major</i>	Greater plantain	Rare	Rare
<i>Plantago lanceolata</i>	Ribwort plantain	Rare	Occasional
Hippuridaceae	Mare's-tail Family		
<i>Hippuris vulgaris</i>	Mare's-tail		Rare
Callitrichaceae	Water-starwort Family		
<i>Callitriche stagnalis</i>	Common water-starwort		Rare
<i>Callitriche brutia</i> ssp. <i>hamulata</i>	Intermediate water-starwort		Rare
Lamiaceae	Dead-nettle Family		
<i>Betonica officinalis</i>	Betony	Rare	
<i>Scutellaria minor</i>	Lesser skullcap	Rare	
<i>Teucrium scorodonia</i>	Wood sage	Rare	
<i>Ajuga reptans</i>	Bugle	Occasional	Rare
<i>Prunella vulgaris</i>	Selfheal	Occasional	Occasional
<i>Thymus drucei</i>	Wild thyme		Rare
Phymaceae	Monkeyflower Family		
<i>Erythranthe</i> agg.	a monkeyflower		Rare
Orobanchaceae	Broomrape Family		
<i>Euphrasia arctica</i>	Arctic eyebright		Occasional
<i>Euphrasia confusa</i>	Confused eyebright		Occasional
<i>Rhinanthus minor</i> ssp. <i>minor</i>	Yellow-rattle		Occasional
<b>Aquifoliales</b>			
Aquifoliaceae	Holly Family		
<i>Ilex aquifolium</i>	Holly	Occasional	
<b>Asterales</b>			
Campanulaceae	Bellflower Family		
<i>Campanula rotundifolia</i> ssp. <i>rotundifolia</i>	Harebell	Occasional	Rare
Asteraceae	Daisy Family		
<i>Cirsium vulgare</i>	Spear thistle		Occasional
<i>Cirsium palustre</i>	Marsh thistle	Frequent	Frequent
<i>Cirsium arvense</i>	Creeping thistle	Occasional	Occasional
<i>Lapsana communis</i> ssp. <i>communis</i>	Nipplewort		Rare
<i>Hypochaeris radicata</i>	Cat's-ear		Rare
<i>Scorzoneroides autumnalis</i>	Autumn hawkbit		Rare
<i>Sonchus oleraceus</i>	Smooth sowthistle		Rare
<i>Crepis paludosa</i>	Marsh hawk's-beard	Rare	
<i>Pilosella officinarum</i>	Mouse-ear-hawkweed		Rare
<i>Taraxacum</i> agg.	Dandelion	Rare	Rare
<i>Bellis perennis</i>	Daisy		Occasional
<i>Achillea ptarmica</i>	Sneezewort	Occasional	Rare
<i>Achillea millefolium</i>	Yarrow	Occasional	Occasional

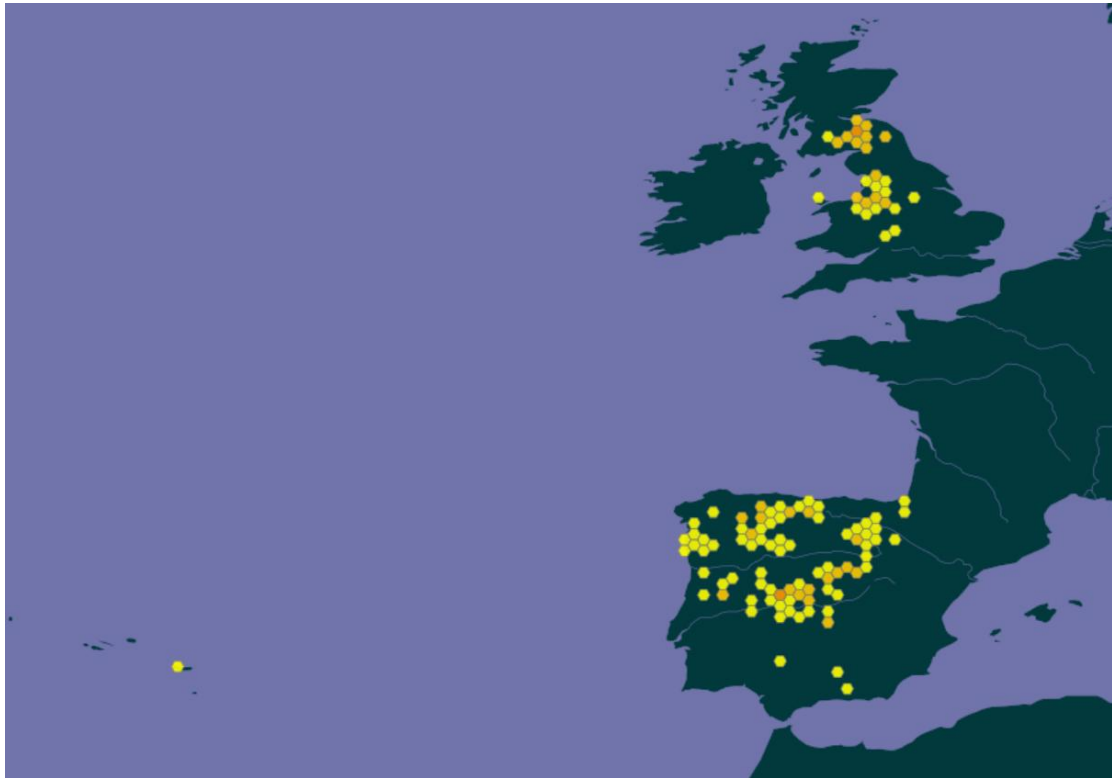
Scientific name	Common name	Thornehope	Lintzgarth
<i>Jacobaea vulgaris</i>	Common ragwort	Rare	Rare
<i>Tussilago farfara</i>	Colt's-foot		Rare
<b>Dipsacales</b>			
Dipsacaceae	Teasel Family		
<i>Succisa pratensis</i>	Devil's-bit scabious	Rare	
<b>Apiales</b>			
Apiaceae	Carrot Family		
<i>Sanicula europaea</i>	Sanicle	Rare	
<i>Conopodium majus</i>	Pignut	Occasional	Occasional
<i>Torilis japonica</i>	Upright hedge-parsley		Rare
<i>Heracleum sphondylium</i> ssp. <i>sphondylium</i>	Hogweed		Rare
<b>MONOCOTS</b>			
<b>Monocotyledons</b>			
<b>Alismatales</b>			
Juncaginaceae	Arrowgrass Family		
<i>Triglochin palustris</i>	Marsh arrowgrass		Rare
Potamogetonaceae	Pondweed Family		
<i>Potamogeton polygonifolius</i>	Bog pondweed	Rare	Rare
<b>Dioscoreales</b>			
Dioscoreaceae	Bog Asphodel Family		
<i>Narthecium ossifragum</i>	Bog asphodel	Occasional	
<b>Asparagales</b>			
Orchidaceae	Orchid Family		
<i>Dactylorhiza maculata</i>	Heath spotted-orchid	Rare	
<b>Poales</b>			
Juncaceae	Rush Family		
<i>Juncus articulatus</i>	Jointed rush		Occasional
<i>Juncus acutiflorus</i>	Sharp-flowered rush	Occasional	Occasional
<i>Juncus bulbosus</i>	Bulbous rush	Occasional	Occasional
<i>Juncus squarrosus</i>	Heath rush	Occasional	Abundant
<i>Juncus bufonius</i>	Toad rush	Rare	Rare
<i>Juncus effusus</i>	Soft-rush	Frequent	Abundant
<i>Juncus conglomeratus</i>	Compact rush	Occasional	
<i>Luzula pilosa</i>	Hairy wood-rush	Occasional	
<i>Luzula campestris</i>	Field wood-rush	Frequent	Frequent
<i>Luzula multiflora</i>	Heath wood-rush	Occasional	Frequent
Cyperaceae	Sedge Family		
<i>Eriophorum angustifolium</i>	Common cottongrass	Rare	Frequent
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass	Rare	Abundant
<i>Trichophorum germanicum</i>	Common deergrass	Frequent	Frequent
<i>Isolepis setacea</i>	Bristle club-rush	Rare	
<i>Carex leporina</i>	Oval sedge		Rare
<i>Carex echinata</i>	Star sedge	Occasional	Occasional
<i>Carex flacca</i>	Glaucous sedge	Frequent	Rare
<i>Carex panicea</i>	Carnation sedge	Occasional	Occasional
<i>Carex binervis</i>	Green-ribbed sedge	Frequent	
<i>Carex demissa</i>	Common yellow-sedge	Rare	
<i>Carex pallescens</i>	Pale sedge	Occasional	
<i>Carex caryophyllea</i>	Spring-sedge	Rare	
<i>Carex pilulifera</i>	Pill sedge	Frequent	

Scientific name	Common name	Thornehope	Lintzgarth
<i>Carex nigra</i>	Common sedge	Frequent	Frequent
<i>Carex pulicaris</i>	Flea sedge	Occasional	Rare
Poaceae	Grass Family		
<i>Nardus stricta</i>	Mat-grass	Abundant	Abundant
<i>Glyceria fluitans</i>	Floating sweet-grass		Rare
<i>Lolium perenne</i>	Perennial rye-grass	Rare	Rare
<i>Festuca rubra</i>	Red fescue	Frequent	Frequent
<i>Festuca ovina</i> agg.	a sheep's fescue	Abundant	Abundant
<i>Dactylis glomerata</i>	Cock's-foot	Rare	Occasional
<i>Cynosurus cristatus</i>	Crested dog's-tail	Occasional	Occasional
<i>Arrhenatherum elatius</i>	False oat-grass		Rare
<i>Trisetum flavescens</i> ssp. <i>flavescens</i>	Yellow oat-grass		Occasional
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	Abundant	Frequent
<i>Holcus lanatus</i>	Yorkshire-fog	Frequent	Abundant
<i>Holcus mollis</i>	Creeping soft-grass	Frequent	Occasional
<i>Deschampsia cespitosa</i>	Tufted hair-grass	Occasional	Occasional
<i>Avenella flexuosa</i>	Wavy hair-grass	Abundant	Abundant
<i>Helictochloa pratensis</i>	Meadow oat-grass		Rare
<i>Aira praecox</i>	Early hair-grass		Rare
<i>Briza media</i>	Quaking-grass	Rare	Rare
<i>Agrostis capillaris</i>	Common bent	Abundant	Frequent
<i>Agrostis stolonifera</i>	Creeping bent	Occasional	Occasional
<i>Agrostis canina</i>	Velvet bent	Frequent	Frequent
<i>Alopecurus pratensis</i>	Meadow foxtail		Rare
<i>Alopecurus geniculatus</i>	Marsh foxtail		Rare
<i>Phleum pratense</i>	Timothy		Rare
<i>Poa annua</i>	Annual meadow-grass	Rare	Occasional
<i>Poa trivialis</i>	Rough meadow-grass	Occasional	Occasional
<i>Poa pratensis</i>	Smooth meadow-grass	Occasional	Occasional
<i>Molinia caerulea</i>	Purple moor-grass	Abundant	Occasional
<i>Danthonia decumbens</i>	Heath-grass	Rare	

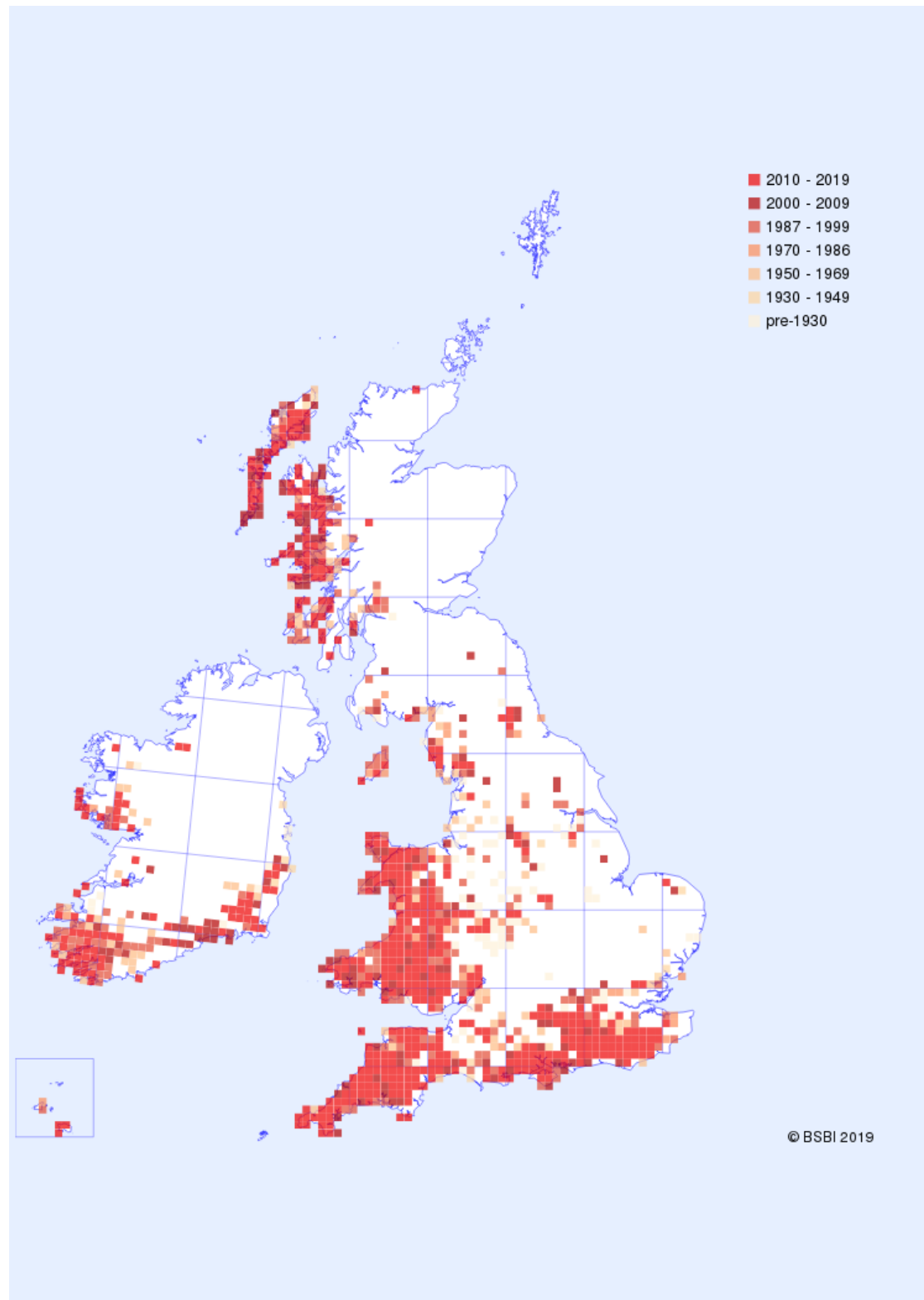
## Appendix M: Plant distribution maps



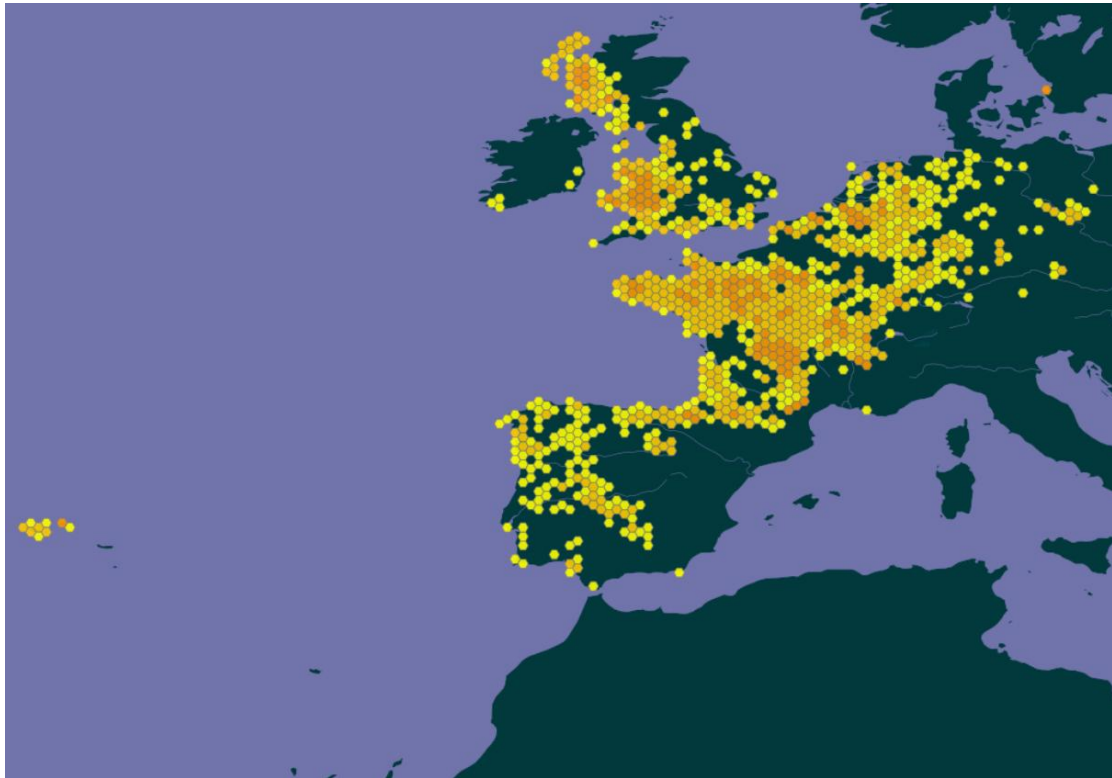
The distribution of pale forget-me-not *Myosotis stolonifera* in Britain and Ireland



The distribution of pale forget-me-not *Myosotis stolonifera* in Europe.  
Note that the previous map shows the British distribution much more accurately.



The distribution of lesser skullcap *Scutellaria minor* in Britain and Ireland



The distribution of lesser skullcap *Scutellaria minor* in Britain and Ireland



## Appendix N: Photographs



Woodland along Thornehope Beck



Acid grassland, bracken and woodland at Thornehope





Damp heathland with lots of *Sphagnum* on steep slopes above Thornehope Beck



Betony in herb-rich acid grassland on steep slopes above Thornehope Beck





Round-leaved water-crowfoot in open rushy vegetation at Thornehope



Lesser skullcap in rushy vegetation at Thornehope





Species-poor blanket bog dominated by hare's-tail cottongrass at Lintzgarth



Northern boundary of Lintzgarth showing suppressed vegetation south of the wall





Acid grassland to left and blanket bog to right of internal fenceline at Lintzgarth



Acid grassland with wavy hair-grass in fenced off area in north of Lintzgarth





Open rushy vegetation with pale forget-me-not at Lintzgarth



Pale forget-me-not in open rushy vegetation at Lintzgarth





Calcareous grassland with wild thyme on spoil heap at Lintzgarth



Autumn gentian in calcareous grassland on spoil heap at Lintzgarth





Short open acid grassland with sheep's-sorrel and lichens on spoil heap at Lintzgarth



Sheep's-sorrel in short open acid grassland on spoil heap at Lintzgarth