

# The Flora and Vegetation of Hothfield Heath

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## Introduction

Hothfield Heath is one of Kent's most popular wildlife sites. It is a small area of heathland on sandy soil with springs that seep nutrient-poor, acid water into a series of mires that are dominated by bog-mosses: a highly unusual habitat in a county dominated by chalk downs. It has been studied intensively by naturalists for nearly two hundred years, and the reams of information that have been collected can be confusing and sometimes contradictory. The purpose of this report is to gather together all the botanical records and bring them up to date, and thus provide a comprehensive guide to the plants and vegetation of this site and how they have changed over the years. The report is aimed at naturalists, ecologists, conservationists and land managers.

Please note the date given at the top. Readers may want to check whether there is a more recent version available if the date seems a little old. This document can be downloaded from the website of the Botanical Society of Britain and Ireland, and the Wildlife Trust are sent copies.

The subject of this project is Hothfield Heath, as shown on the Ordnance Survey map, which corresponds closely to the former area of Common Land, the Wildlife Trust/Ashford Borough Council Local Nature Reserve, and the SSSI boundary. The correct name to use for this site is a matter of debate. It is listed as Hothfield Common on the Ordnance Survey map, but that is not ideal: it is no longer common land and it is not in any way a functioning common, so that title is only of historical relevance. The earliest botanists used the name Hothfield Heath (as well as Hothfield Common, or simply 'Hothfield') for their records, and this name therefore has some advantage of continuity. Other possible names, such as Hothfield Bogs or Hothfield Nature Reserve seem to offer no advantage, and it would seem strange to apply a description like 'bogs' to the areas of dry grassland, or 'nature reserve' when referring to records that pre-date the existence of such spaces. Overall, therefore, I suggest that Hothfield Heath best describes the area intended, and is the most likely to have both historical and future application.

There are several compartments to the site. The main area with the four bogs lies to the west of School Road. Between School Road and the A20 is a wooded area that is roughly triangular in shape, and which is referred to here (and elsewhere) as the triangle area. It is mostly a dry, wooded compartment but with hints of a wetland flora in places. On the east side of the A20 Maidstone Road is the New Fen, a bog that was once equal to those in the main area, but which is now rather overgrown and degraded (although it still retains some important species). North of this, across Watery Lane, is a small compartment which seems to consist of dry Sweet Chestnut woodland.

I am grateful to everyone who has recorded plants or written about the flora and ecology of this site and made their findings public. I am also grateful to everyone who has helped with this report by supplying information, commenting on the text, or offering their opinion. Hopefully, this report will be a useful contribution to the ongoing study of this site.



## History of recording

The first mention of Hothfield in the botanical literature seems to be a record of *Geum rivale*, Water Avens, 'in a wood near Barber's Mill on Hothfield' in Edward Jacob's *Plantae Favershamienses*, 1777. Barber's Mill no longer exists, and I have not managed to trace its location, but it may have been on the River Stour and, as there were no woods on Hothfield Common at that time, it seems very unlikely that the record relates to our site. *Geum rivale* does, however, appear on later lists of plants of Hothfield, and all such records seem to derive from this source. This species has never otherwise been recorded in Kent and unless further evidence appears, it can safely be disregarded as a plant of the heath.

In 1829 Rev G.E. Smith produced his *Catalogue of the Plants of South Kent*, which mentions three species on Hothfield Heath. He subsequently added four more in *Cowell's Floral Guide to East Kent*, published in 1839. The later records probably date from 1830-1832 (G. Kitchener *pers. comm.*) and the earlier ones are presumably from shortly before 1829. The species he listed are an eclectic selection of some of the rarest plants in the county, and represent bog, heath and grassland habitats.

### Species recorded by G.E. Smith, ca. 1828-1832

Centunculus minimus	Chaffweed
Cuscuta epithymum	Dodder
Lycopodiella inundata	Marsh Clubmoss
Nardus stricta	Mat-grass
Narthecium ossifragum	Bog Asphodel
Trifolium glomeratum	Clustered Clover
Ulex minor	Dwarf Gorse

The philosopher and botanist John Stuart Mill (1806-1873) collected three specimens at Hothfield, according to Hanbury & Marshall's *Flora of Kent* (1899). These are probably at Kew (K) so we might eventually get their correct dates. We know he collected in Kent between 1843 and 1870, so we can fairly confidently date the list to before 1870. The plants he found were *Carex pilulifera*, *Drosera rotundifolia* and *Trifolium subterraneum*.

The next records that we have with precise dates are by Frederick Morgan Webb (1841-1880), who submitted lists to the *Flora of Kent* and whose herbarium is at the Natural History Museum (BM). Two of Webb's records are particularly interesting. First, his *Ulex gallii* was rejected by Hanbury & Marshall as merely a form of *U. minor*. At that time *U. gallii* was not known in the county, but it has subsequently turned up in several places and is now accepted as native. As it is there now and there is no reason to believe it has been introduced, it seems reasonable to conclude that Webb was in fact correct. Second, his *Ranunculus hederaceus* was accepted by Hanbury & Marshall and by all subsequent authors but, given that this species is very difficult to distinguish from *R. tripartitus* and that both are very rare in the county, it seems quite possible that this was a misidentification. At any rate, it seems more sensible to conclude that *R. tripartitus* was present all along than that one rare crowfoot disappeared, and another took its place.

### Species recorded by F.M. Webb, ca. 1875

Aira caryophyllea	Silver Hair-grass	Montia fontana	Blinks
Bidens cernua	Nodding Bur-marigold	Oenanthe fistulosa	Tubular Water-dropwort
Carex echinata	Star Sedge	Ornithopus perpusillus	Bird's-foot
Carex leporina	Oval Sedge	Polygala serpyllifolia	Heath Milkwort
Carex paniculata	Greater Tussock-sedge	Ranunculus tripartitus	Three-lobed Crowfoot
Danthonia decumbens	Heath-grass	Sagina apetala	Annual Pearlwort
Eleocharis multicaulis	Many-stalked Spike-rush	Scleranthus annuus	Annual Knawel
Epilobium palustre	Marsh Willowherb	Scutellaria minor	Lesser Skullcap
Erica tetralix	Cross-leaved Heath	Spergularia rubra	Sand Spurrey
Eriophorum angustifolium	Common Cottongrass	Stellaria alsine	Bog Stitchwort
Galium saxatile	Heath Bedstraw	Trifolium glomeratum	Clustered Clover
Isolepis setacea	Bristle Club-rush	Trifolium subterraneum	Subterranean Clover
Juncus bulbosus	Bulbous Rush	Ulex gallii	Western Gorse
Luzula multiflora	Heath Wood-rush	Viola canina	Heath Dog-violet
Marrubium vulgare	White Horehound		

In the Flora of Kent, William Rickman Jeffrey and his son, John Frederick Jeffrey (1866-1943), are described as having contributed their records after E.S. Marshall became editor in 1892, but it is likely that they were originally made some time before this. A specimen of *Lycopodiella inundata* at BM and K, collected by John, is dated 1884, and this seems a reasonable date to use for William's records as well.

**Additional species recorded by W.R. Jeffrey, ca. 1884**

Achillea ptarmica	Sneezewort	Lycopodium clavatum	Stag's-horn Clubmoss
Anagallis tenella	Bog Pimpernel	Lythrum portula	Water Purslane
Carex demissa	Common Yellow Sedge	Menyanthes trifoliata	Bogbean
Carex pilulifera	Pill Sedge	Molinia caerulea	Purple Moor-grass
Carex rostrata	Bottle Sedge	Pedicularis sylvatica	Lousewort
Filago minima	Small Cudweed	Petasites hybridus	Butterbur
Genista anglica	Petty Whin	Verbascum blattaria	Moth Mullein
Helosciadium inundatum	Lesser Marshwort	Veronica scutellata	Marsh Speedwell
Hypericum elodes	Marsh St John's-wort	Viola palustris	Marsh Violet
Juncus squarrosus	Heath Rush		

George Dowker (1828-1899) was a local man from Stourmouth who made just one record at Hothfield, but a very interesting one: he collected *Potamogeton coloratus*, Fen Pondweed. We do not know the date of the record, but from other specimens of his we know he was active between about 1867 and 1893. Although he seems rather sidelined by the authors of the Flora of Kent, he was evidently highly knowledgeable and very competent. He was responsible for two of only three known records of this species at that time, and he also discovered *Potamogeton acutifolius* at Wickhambreaux, many decades before anyone else noticed it. Given that he collected a specimen, there can be little doubt that this record was correct, even though nobody has yet found it again. Dowker's herbarium appears to be at Cambridge (CGE).

Rev John Mitchinson (1833-1918) was headmaster of the King's School, Canterbury, from 1859 to 1873, after which he moved to Barbados and subsequently to Oxford. It seems likely that his records for Kent therefore date from some time before 1873. His only contribution to the flora of Hothfield is a record of *Potentilla palustris* (*Comarum palustre*), 'near Ashford.' Hanbury & Marshall (1899) suggest that 'Hothfield Heath is a likely location' but this does not seem sufficient evidence to include it.

The other records in the Flora of Kent include mostly refinds by Frederick Janson Hanbury (1851-1938) and some new species found by Edward Shearburn Marshall (1858-1919) in the 1890s.

**Additional species recorded by E.S. Marshall, ca. 1890s**

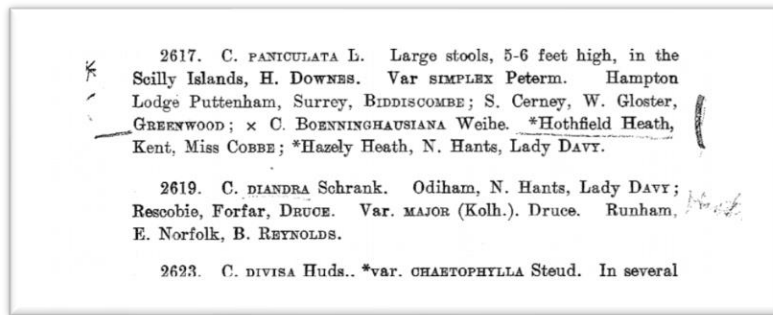
Carex laevigata	Smooth-stalked Sedge	Polygonum aviculare	Knotgrass
Epilobium obscurum x palustre	a hybrid willowherb	Potamogeton polygonifolius	Bog Pondweed
Frangula alnus	Alder Buckthorn	Sagina procumbens	Procumbent Pearlwort
Galium uliginosum	Fen Bedstraw	Salix aurita	Eared Willow
Helosciadium nodiflorum	Fool's Water-cress	Spergula arvensis	Corn Spurrey

In the years up to 1902 Rev Henry W. Russell prepared a *History of the Village* of Hothfield in manuscript form, presumably with the intention of publishing a book. The manuscript is at Maidstone Central Library and has been transcribed by members of the Hothfield History Society. It includes a list of 'Some Plants on and about Hothfield Common,' which mentions about 110 species. It is obvious that the list is a compilation, because it includes E.S. Marshall's record of *Epilobium obscurum x palustre*, which could hardly have been recorded by anyone else. It seems likely that Russell's list was largely supplied by the Jeffreys, or perhaps by Hanbury & Marshall.

One problem is that these are plants 'on and about' the common. Presumably this means it covers a wider area than the common itself and therefore includes plants that do not concern us here. For the purposes of this report I have incorporated 74 species from Russell's list, which appear likely to refer to the common.



In 1923 a Miss Cobbe (probably Mabel (d. 1936) but possibly Amy (1866-1952)) collected the hybrid sedge *Carex<sup>x</sup>boeninghausiana* (*paniculata* x *remota*), according to the Botanical Exchange Club Report for that year.



Extract from the Botanical Exchange Club report for 1923 (vol. 7 pt. 1, p. 219). This is a scan of Francis Rose's own copy, with the Kent record highlighted.

John Patrick Micklethwait Brenan (1917-1985) collected some mosses at Hothfield in January and February 1936, which are now at Cardiff (**BBSUK**). The bog-mosses are listed below.

#### J.P.M. Brenan's Sphagnum collection from 1936

<i>Sphagnum compactum</i>	Compact Bog-moss
<i>Sphagnum cuspidatum</i>	Feathery Bog-moss
<i>Sphagnum denticulatum</i>	Cow-horn Bog-moss
<i>Sphagnum fallax</i>	Flat-topped Bog-moss
<i>Sphagnum papillosum</i>	Papillose Bog-moss

Francis's Rose's *Bryophyte Flora of Kent*, published in three parts in the journal of the British Bryological Society (1949-1951) includes a description of the main bog (which is generally known as bog 2, but Rose used a different numbering system) from a bryological perspective. One would have to have some knowledge of bryology (including old nomenclature) to fully appreciate it, but for those who are interested it is worth including in full. This account includes some corrections by Rose from his copy of the published Flora:

On Hothfield Heath grow nearly eighty species of bryophytes, of which number, five are today known nowhere else in Kent (these are marked \* thus below). On the dry peaty heather moor, *Hypnum Schreberi*, *H. cupressiforme* var. *ericetorum*, and *Dicranum scoparium* are all abundant; *Dicranum spurium* appears to be absent here, though typical of such places in Surrey and Sussex. On slightly damper 'wet heath', *Ptilidium ciliare*, *Gymnocolea inflata*, *Campylopus brevipilus*\*, *Leucobryum glaucum*, *Dicranum Bonjeani* and *Hylocomium splendens* are locally abundant, with *Hypnum imponens*\* in one small area. Where conditions are permanently wet, the peat surface bears a close sward of various Sphagna, mostly *Sphagnum molluscum* and *S. papillosum*, over which grow epiphytically *Odontochisma Sphagni*, *Lepidozia setacea*, and *Cephalozia media*, while *Leptoscyphus anomalus* is frequent on the sides of peaty hummocks where drainage is better (pH 4.6). In the actual valley bog, *Sphagnum*, mostly *S. fallax*<sup>1</sup>, bears various *Cephalozias*- (*C. bicuspidata*, *C. Lammersiana*, *C. media*, *C. connivens*, *C. macrostachya*\*, *C. fluitans*\*) and *Cephaloziella myriantha*, with *Calypogeia Trichomanis* and *C. sphagnicola*\* on its surface among *Narthecium*; *Aulacomnium palustre* is plentiful and fruits well, while *Hypnum stramineum*\* is frequent, creeping on the *Sphagnum*. The margins of boggy pools have a zone of *Aneura multifida* and *Calypogeia fissa* (elongated pool form), and below this a zone of *Aneura pinguis*. In the pools *Hypnum fluitans* grows among *Hypericum elodes* and *Potamogeton polygonifolius*, with a *Bryum* (apparently *B. bimum*). In the central rill of moving water, *Hypnum stellatum* is dominant, and this spreads into the bog. *Hypnum cordifolium*, *H. cuspidatum* and *Chiloscyphus polyanthus* occur as frequent species in less acid conditions (pH 5.3) with *Anagallis tenella* lower down the bog with taller associates such as *Galium palustre*, *Myosotis secunda*, and scattered tussocks of *Polytrichum commune*. *Drosera rotundifolia* is most plentiful in the *Odontochisma-Lepidozia setacea* zone.

<sup>1</sup> *Sphagnum pulchrum* in the original version, later corrected to *fallax*.

Around the same time (1940s) Rose began to compile data for a future Flora of Kent which he never completed. After his death in 2006 the notes were scattered but they have recently been retrieved and compiled by Geoffrey Kitchener, who has published them as a series of electronic documents which are online on the BSBI web site. The Flora (I have used v. 8, 2020) gives lists of plants by botanical district (using Rose's own boundaries, which differ from those in Hanbury & Marshall) and sometimes by site and grid reference, which enables us to be confident that the records for Hothfield Heath really were from this site. Using this manuscript Flora and other sources (some BEC Reports, the Herbaria at Home website, and Wildlife Trust records) I have found details of some 41 species of vascular plants seen by him at the Heath between 1942 and 1987. These include many of the species previously recorded here plus a few additions. It also reveals that he was involved in various fruitless efforts to reintroduce some lost species, including the clubmosses; although he was apparently not responsible for the *Pinguicula vulgaris* L., Common Butterwort, which a certain Dr Scott said had been planted. As early as 1899, Hanbury & Marshall (pp. 269-270) had reported other attempts to introduce it in the county, dating back to the 17<sup>th</sup> century, but none had ever been successful.

In 1974 the Kent Field Club held a symposium on Hothfield Heath in which various papers were presented about the geology, soils, wildlife and management of the reserve. Of particular interest is Martin Pym's account of its history since the war, which shows how vital the role of the naturalists has been in protecting the area against roads, development and other threats. Eric Philp (1930-2013), who was curator at Maidstone Museum and the BSBI Recorder for the county, contributed a list of all the species that had ever been recorded at Hothfield (Philp, 1975). This seems to include many plants from the surrounding countryside, presumably because recording at that time was often done by tetrad (2 km x 2 km squares). The same thing applies to both of Philp's Atlases of Kent, in 1982 and 2010. One can only guess which species were within the reserve and which were elsewhere, and so here I have only included the ones that have otherwise been recorded within the reserve.

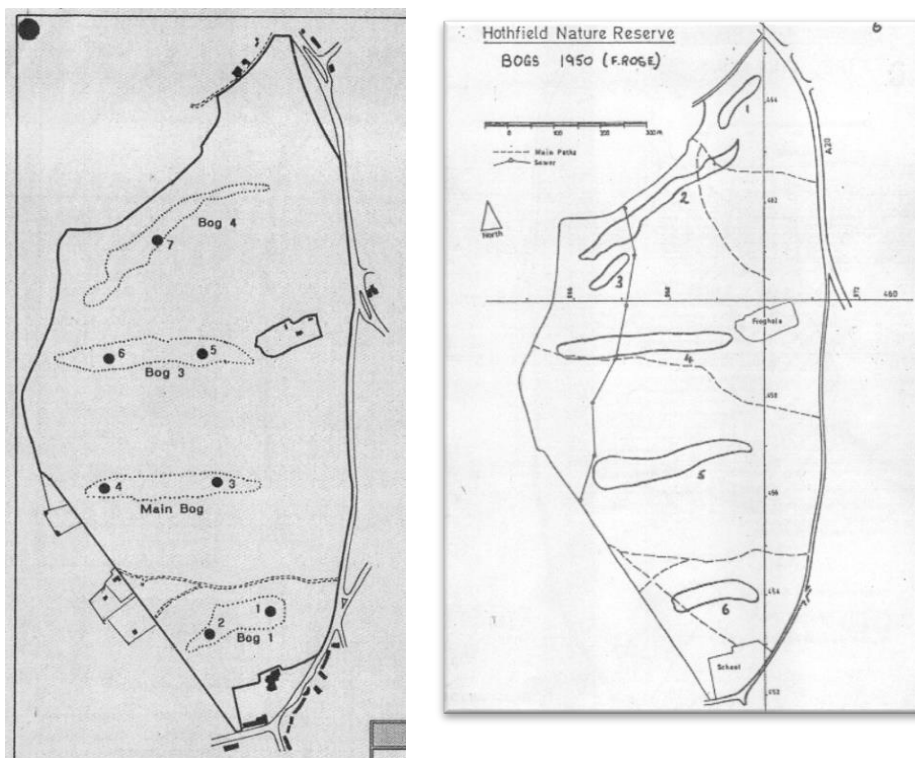
In 1994 *Ranunculus tripartitus*, Three-lobed Water-crowfoot, was discovered at Hothfield, in a vehicle rut in Bog 1 (who don't know who made the discovery). This species is considered to be 'Endangered' and declining in Britain, and it was the subject of a Biodiversity Action Plan at the time. A survey by N.F. Stewart in 1998 showed that it was present in pools in three of the bogs: 1, 2 and 3. Short lists of associated species were also recorded, giving us some of the first properly localised records of plants within the reserve.

Since 2010 there has been a new Kent Botanical Recording Group making records with greater thoroughness than most previous surveys. Unfortunately, many of these are by monad (1 km square), which again cannot always be localised to the reserve with much confidence, but the rarities are generally recorded precisely. Many new plants have turned up in the last decade or so, including native species, casuals, and a continual stream of apparently deliberate introductions. One of the more recent (and successful) of these has been Bog Myrtle, *Myrica gale*, which has been welcomed by the Wildlife Trust, although the Pitcherplant, *Sarracenia purpurea* L., was rapidly removed. The introduction of Sea Stork's-bill, *Erodium maritimum* (L.) L'Her., was probably inadvertent: it was found in 2017 by Heather Silk on a heap of soil in a car park. It has not come up again and, like Butterwort and Pitcherplant, it seems best not to include it in the site list.

Kent Wildlife Trust has also been active in recording on the heath. Their database, compiled by themselves and the Kent Biological Records Centre, was generously made available for use here. It adds several species and some precise locations to the previously compiled data.

## Ecology and vegetation

The most distinctive feature of Hothfield is its bogs. There are five of these, although in the 1940s Francis Rose considered there to be seven. Three have merged into bog 4, which is the northernmost one, and it is often described as a fen because it is more calcareous than the other three.



- The current bog numbering system (left) and Francis Rose's scheme.

Bog 1, at the southern end of the site, on the other side of a minor road, has been very overgrown with scrub, although it was impressively cleared and then grazed with ponies in 2019-2020. The habitat is much degraded, but there are still patches of *Sphagnum* throughout, and a large area of *Molinia caerulea*. A few stands of *Eriophorum angustifolium* show that it was once a genuine valley mire, whereas the vegetation there now is more suggestive of a heathy woodland. At the bottom (western) end of this bog there is a pond full of *Potamogeton polygonifolius*, which was the original site for *Ranunculus tripartitus* at Hothfield, although that pond has dried up in recent summers and the water-crowfoot has not appeared.

The main bog is bog 2, and this is the best part of the site for the characteristic valley mire vegetation, with plants such as *Narthecium ossifragum*, *Drosera rotundifolia* and *Sphagnum papillosum*. There is a distinct hummock and pool structure, with runnels meandering through. Around the margin there is wet heathland grading into dry heath and bracken. A lot of effort by the Wildlife Trust has been focused on trying to keep this bog in good condition, and to a great extent they seem to have succeeded. At the bottom of bog 2 there is a concrete walkway (apparently enclosing a sewer pipe) which causes a sizeable pond to form above it. Normally this is a good place for *Ranunculus tripartitus*, but in 2020 it dried up completely and there was no sign of water-crowfoot; although *Lythrum portula* was thriving on the bare mud.

Bog 3 is broadly similar, but a bit scrubbed-over and lacking some of the more distinctive bog species. In some years it contains a series of shallow pools with *Ranunculus tripartitus* in each, but in the last couple of summers these have been dry.

At the northern end is bog 4, which is the largest and most diverse one. At the top (northeastern) end it is quite acid and consists of *Juncus acutiflorus* swamp with patches of *Menyanthes trifoliata* and *Equisetum*

*fluviatile*. Here it has been invaded by *Crassula helmsii*, which has survived the application of black plastic sheeting but does not seem to thrive well enough to have spread to anywhere else. Below the path the bog is deeper and perhaps more base-rich, with an extensive stand of *Carex paniculata* lining a small stream that spreads out into a wide, boggy wetland. Below that, the water drains into a stream that runs south along the boundary of the heath through an area of woodland.

The fifth bog is called the New Fen, which is situated on the far side of the A20 and is completely isolated from the rest of the site. It was once a valley mire, but it is now a swamp of *Hydrocotyle vulgaris* and *Juncus acutiflorus* with stands of tall herbaceous plants amongst wet and dry woodland.

From a distance Hothfield Heath appears completely wooded, but in fact most of the trees are concentrated around the edges. There is very dry woodland on the hills or 'tolls,' grading into willow and alder carr in the wetlands. It is a constant battle for the site managers to try to keep the woodland in check, and considerable forests of saplings and suckers spring up wherever their attention had wavered for even a single season.

Another continuous struggle is with *Pteridium aquilinum*, which dominates the ground flora in the drier areas of woodland and extends into the heathland and grassland wherever it is left. At the 1975 Kent Field Club meeting, bracken was seen as the main threat to this site, although no effective solutions to the problem were identified.

Certain areas have evidently remained reasonably free from bracken and woodland, however. These tend to be the places where there is most footfall – down the main slope and the Froghill Slope, and along paths between these areas. Several species are largely restricted to these paths, including most of the acid grassland specialists. I'm sure mowing and grazing, spraying and hand cutting have all contributed to the preservation of these areas, but it seems likely that people just walking their dogs has been one of the most consistent and effective ways of maintaining the sward. Plants such as *Danthonia decumbens*, *Nardus stricta*, *Juncus squarrosus* and *Montia fontana* owe their continued presence to trampling.

The heathland at Hothfield is quite scarce and patchy. Much of it could be described as grass-heath or heathy woodland, but there are some areas in the middle where dwarf shrubs such as *Calluna vulgaris* and *Ulex minor* form 'proper' heath. The main threat in these areas is *Ulex europaeus*, which quickly takes over to form scrub.

## Vegetation Communities

The vegetation at Hothfield includes valley mire, wet and dry heath, acid grassland, various types of swamp, and dry woodland.

Perhaps the most distinctive community is the valley mire in the main bog (B2), which has M21 *Narthecium ossifragum* community (Q1202 & Q1203) in the middle, where the water is most acid and there are hummocks of *Sphagnum*. This is where *N. ossifragum* and *Anagallis tenella* are abundant. It is defined best by the presence of *Sphagnum papillosum* hummocks. Weaving through the bog are channels of M29 *Hypericum elodes*-*Potamogeton polygonifolius* community (Q1200). This typically contains patches of bare peat and lawns of *Sphagnum fallax*, and it is distinguished from the other communities by the lateral movement of surface water. Surrounding the core is an expanse of M6 *Carex echinata* mire.

None of these communities was recorded in Kent in *British Plant Communities* (Rodwell, 1991-2000) but their presence in the county is suggested as likely in the community descriptions. Hothfield is undoubtedly the best, and possibly the only site in the county for several of them.

Bog 4 is intriguing and more complex. There appear to be three main components to the vegetation: stands of tussock-sedge in the middle, patches of *Sphagnum*-rich bog, and a broad swathe of low-growing rushy vegetation surrounding these. The rush vegetation is mostly M23 *Juncus acutiflorus/articulatus* rush-pasture (Q1199), but above the path there is a more acid community which I think is M9 *Carex rostrata* mire (Q1242), with *Menyanthes trifoliata* and *Equisetum fluviatile*. Some parts of B4 (Q1209) taken in the boggy areas suggest that it is M29 *Potamogeton polygonifolius* community; I don't think there is any M21 there. The *Carex paniculata* stands are a curiosity. On the one hand, they could be said to be obvious examples of S3 *C. paniculata* swamp, and they certainly match the description in almost every way. On the other hand, this is



one of the weakest communities in the NVC, floristically, and it is almost impossible to demonstrate its presence through analysis of the data. Where the tussock sedge has been grazed (Q1263), it appears just a form of M23; where it forms tussocks (Q1206), it is more like W1 *Salix atrocinerea* woodland. Possibly the best solution is to say that any areas of large tussocks are indeed S3, as long as one remembers that this sedge alone determines the community, and that nothing else distinguishes it.

After the bogs, it is the acid grassland that is most distinctive at Hothfield. As far as I can make out, this is all U1 *Rumex acetosella* grassland, although it is very diverse and species-rich in places. There are lots of tiny plants and spring ephemerals such as *Montia fontana* (Q1222) and *Cerastium semidecandrum* (Q1204) which can easily be missed. The main grasses can be either *Festuca ovina*, *Agrostis capillaris*, *Aira praecox* or *Deschampsia flexuosa*. Most areas of grassland are patchy and rather scrubbed over, and it is really trampling by people rather than grazing or mowing that has maintained this habitat over the years.

The acid grassland grades into heath in places, with increasing quantities of dwarf shrubs such as *Calluna vulgaris* and taller shrubs such as gorse (three species of *Ulex*). These communities need further study.

Finally, woodland dominates about half of the total area of the reserve. It ranges from neutral W10 *Quercus robur* in the west (Q1232) to slightly base-rich W8 *Fraxinus excelsior* (Q1220) in the triangle area. There is, perhaps surprisingly, no acid woodland.

## Conservation Value

Hothfield Common SSSI was designated in 1951 (and renotified in 1985 under the Countryside & Wildlife Act 1981) as the best example of a valley bog in Kent, with associated heathland. The SSSI statement mentions that the diversity of invertebrates and birds is important, as well as twelve (un-named) species of *Sphagnum* and a number of vascular plants. The following are specifically listed:

### Species mentioned in the SSSI statement

Calluna vulgaris	Erophila verna	Narthecium ossifragum
Carex paniculata	Genista anglica	Ornithopus perpusillus
Carex pulicaris	Hypericum elodes	Trifolium glomeratum
Drosera rotundifolia	Juncus squarrosus	Ulex minor
Erica tetralix	Menyanthes trifoliata	
Eriophorum angustifolium	Molinia caerulea	

These species are essentially axiophytes: plants that strongly indicate a habitat of conservation importance. A modern list of axiophytes, drawn up by the Kent Botanical Recording Group, gives as many as 122 species that have been recorded at Hothfield over the years. This includes the bog-mosses, *Sphagnum* spp., of which 14 have now been recorded.

Just counting the axiophytes is a reasonably good way of assessing a site. More than about 30 indicates that it warrants SSSI status, so Hothfield more than qualifies on those grounds. However, one can find out more about a site by assigning the axiophytes to habitats. This reveals information about the relative value of the different habitats, as well as highlighting any changes if there is time-series data. It turns out that bog plants are best represented among the axiophytes (44 species) and there have been very few, if any, losses (symbolised by a dagger †). Eared Willow (*Salix aurita*) is conceivably still present, certainly as a hybrid with Grey Willow. *Aneura mirabilis* and *Sphagnum flexuosum* are very obscure taxa that would be easily missed. The only real loss is *S. tenellum*, which was so far beyond its range here that the climate is probably the main cause. This shows that the bog habitat has been well protected by the management.

### Bog axiophytes

Anagallis tenella	Drosera rotundifolia	Myosotis secunda	Sphagnum inundatum
†Aneura mirabilis	Dryopteris carthusiana	Narthecium ossifragum	Sphagnum magellanicum
Aneura pinguis	Eleocharis multicaulis	Potamogeton	Sphagnum papillosum
Aulacomnium palustre	Epilobium palustre	polygonifolius	Sphagnum subnitens
Carex echinata	Equisetum fluviatile	Ranunculus flammula	†Sphagnum tenellum
Carex laevigata	Erica tetralix	†Salix aurita	Stellaria alsine
Carex panicea	Eriophorum angustifolium	Scutellaria minor	Triglochin palustris
Carex paniculata	Hydrocotyle vulgaris	Sphagnum capillifolium	Veronica scutellata
Carex pulicaris	Hypericum elodes	Sphagnum cuspidatum	Viola palustris
Carex rostrata	Isolepis setacea	Sphagnum denticulatum	
Dactylorhiza maculata	Juncus bulbosus	Sphagnum fallax	
Dactylorhiza praetermissa	Menyanthes trifoliata	†Sphagnum flexuosum	

The second most important habitat is grassland, which is represented by 26 species, but the losses are much greater. Nearly half of the axiophytes recorded have disappeared and others have become so scarce that they may turn out to have been lost by now. This is probably due to the way that the grassland has been swamped by bracken in many areas or has succeeded to scrub and woodland.

### Grassland axiophytes

†Aira caryophyllea	Danthonia decumbens	Myosotis discolor	†Thymus pulegioides
Aira praecox	Deschampsia flexuosa	Ornithopus perpusillus	Trifolium glomeratum
Anacamptis pyramidalis	Festuca ovina	Plantago coronopus	Trifolium ornithopodioides
Campanula rotundifolia	†Filago minima	†Rhodobryum roseum	Trifolium subterraneum
†Centunculus minimus	†Lepidium campestre	†Scleranthus annuus	Trifolium suffocatum
†Cerastium arvense	†Moenchia erecta	†Spergula arvensis	
†Cuscuta epithymum	Montia fontana	Spergularia rubra	

Heathland plants are also well represented, with 24 species. The habitat varies from dry to wet heath, and the boundaries between this habitat and both bogs and grassland are particularly vague, but the following seem the ones best assigned to this category. A quarter of these species have been lost, presumably from the same causes as the grassland.

#### Heathland axiophytes

Calluna vulgaris	Galium saxatile	†Lycopodium clavatum	Potentilla erecta
Carex binervis	†Genista anglica	Lythrum portula	†Sphagnum compactum
Carex demissa	Hypericum humifusum	Molinia caerulea	Succisa pratensis
Carex nigra	†Hypochaeris glabra	Nardus stricta	Ulex minor
Carex pilulifera	Luzula multiflora	Pedicularis sylvatica	Veronica officinalis
Ceratocarpus claviculata	†Lycopodiella inundata	Polygala serpyllifolia	†Viola canina

Marshland is another possible category of habitat that one could use to describe Hothfield. These (12) species often occur in more neutral wetland than bog or wet heath. At Hothfield they are mostly found in the bogs, though, and it might not be worth having this as a separate category. The *Juncus acutiflorus* may all be *J. surrejanus* now, although presumably the pure species was once present. A third of these species have been lost, but the numbers are low.

†Achillea ptarmica	Eleocharis palustris	Juncus acutiflorus	Silene flos-cuculi
†Bidens cernua	Glyceria notata	†Oenanthe fistulosa	Sphagnum palustre
Carex pseudocyperus	†Helosciadium inundatum	Scirpus sylvaticus	Sphagnum squarrosum

The existence of fen at Hothfield is a moot point. Bog 4 is often described as being a fen rather than a bog, but the difference is subtle. The only strictly fenland axiophytes that have been recorded, *Galium uliginosum* and *Potamogeton coloratus*, are both long gone, if indeed they were ever present.

Finally, there are 13 ancient woodland axiophytes recorded. They have all been seen quite recently, and it seems likely that this habitat has gained rather than lost species in recent decades. The list is not long enough to make a case for Hothfield being an ancient woodland site, although it would be a fair assumption that some balance between woodland and more open habitats has been a feature of the area for centuries.

#### Woodland axiophytes recorded at Hothfield

Anemone nemorosa	Frangula alnus	Populus tremula
Athyrium filix-femina	Hyacinthoides non-scripta	Sphagnum fimbriatum
Caltha palustris	Hypericum pulchrum	Veronica montana
Chrysosplenium oppositifolium	Neottia ovata	
Dryopteris affinis	Poa nemoralis	

This division of axiophytes into broad habitats reinforces the view of Hothfield as a site of importance primarily for its bogs; but also, surprisingly perhaps, it shows that acid grassland is (or was) almost equally significant here. This can be explained by the geology, as it is the presence of the aquifer within the Greensand Folkestone Beds that creates the acid springs which allow the bogs to exist. The sandy soil that this rock produces supports some unusual plant communities. Several of the species found at Hothfield, for example, would normally be expected on beaches or coastal dune systems.

The lists of axiophytes at Hothfield can also be used to monitor the overall conservation value of the site. It is unrealistic to expect any site to always have all the plants that ever occurred there, but it is not impossible for the number of axiophytes at any one time to remain more-or-less constant. This is indeed the case at Hothfield, where losses of grassland and heathland plants have almost been offset by apparent gains in woodland plants. Part of this effect is simply that we record more species now than they did in the past.

#### Numbers of axiophytes recorded in each date class

<1970	98
<1990	74
<2010	91
>2010	90

Total ever: 122

#### Rare plants

While axiophytes or their equivalents are perhaps the most-commonly used and informative way of assessing the conservation importance of a site, rarity is another criterion that is often taken into account. But 'rare' can mean many different things. At one end of the scale are plants that have a small global population, while at the other there are plants which could be globally very common but scarce in a particular region.

One of the plants most often cited as rare at Hothfield is the liverwort *Pallavicinia lyellii* (Hook.) Carruther., which was found in the main bog (B2) by Sylvia Priestley in 2002. It is a plant of moist sandstone rocks and shaded bogs, with only a dozen or so known sites in Britain (mainly in the south and west). However, although it is apparently a rare (or overlooked) plant in Britain, it is widely distributed throughout the world, including in Asia, America and Oceania. Therefore, although it is of interest to bryologists, one could argue that it does not merit any special attention here.

*Ranunculus tripartitus* is rather more interesting. Although it occurs in slightly more sites in Britain (about 33 hectads, which makes it Nationally Scarce), it has a much more restricted global distribution, in Europe and North Africa. It is a plant of pools and wet hollows in heathland and it is not normally considered a bog plant. At Hothfield it occurs in a pool at the bottom of the main bog and in a good year in several wet hollows in bog 3. It is reasonably abundant. Bluebell, *Hyacinthoides non-scripta*, is similarly limited in its world distribution, being largely confined to NW Europe, but it is of course a very common and widespread species in Britain.

Many of the bog plants at Hothfield are distinctly rare in the local context, and several of them are found in no other site in Kent (or in East Kent, even more so). However, all of these plants are reasonably widespread in Britain and, for a peat bog enthusiast, Hothfield is of no great significance except for its position at the very SE extremity of the range of this habitat. This highlights one of the biggest issues for the site: the difficulty of maintaining such a habitat in an unfavourable climatic zone, and it is likely to become increasingly problematical if the climate continues to warm.

There are some species at Hothfield that are of more importance nationally than locally. These are the dry grassland plants such as *Trifolium glomeratum*, *T. ornithopodioides*, *T. subterraneum* and *T. suffocatum*. They are each much rarer than, say, *Carex panicea* or *Sphagnum fallax* in Britain, but common enough locally that they do not seem all that remarkable. The grassland habitat at Hothfield has not been the focus of as much attention as the bogs or heaths, but if one were drawing up a list of significant sites nationally, it is arguably for this habitat that would be selected.

There are (or were) some 46 species at Hothfield that are listed on Geoffrey Kitchener's Kent Rare Plant Register (2019 version), and detailed accounts of each of these species in Kent are available from the Kent Botanical Recording Group.

#### Plants recorded at Hothfield that are on the Kent Rare Plant Register

Calluna vulgaris	Carex nigra	Carex rostrata
Campanula rotundifolia	Carex panicea	†Cuscuta epithymum
Carex echinata	Carex pulicaris	Dactylorhiza maculata

*Drosera rotundifolia*  
*Eleocharis multicaulis*  
*Epilobium palustre*  
*Erica tetralix*  
*Eriophorum angustifolium*  
†*Galium uliginosum*  
†*Genista anglica*  
†*Helosciadium inundatum*  
*Hypericum elodes*  
†*Hypochaeris glabra*  
*Juncus squarrosus*  
†*Lepidium campestre*

†*Linum radiola*  
*Anagallis tenella*  
†*Moenchia erecta*  
*Myosotis secunda*  
*Myrica gale*  
*Nardus stricta*  
*Narthecium ossifragum*  
*Pedicularis sylvatica*  
*Polygala serpyllifolia*  
*Ranunculus flammula*  
*Ranunculus tripartitus*  
†*Scleranthus annuus*

*Silene flos-cuculi*  
*Spergula arvensis*  
*Succisa pratensis*  
*Trifolium glomeratum*  
*Trifolium suffocatum*  
*Triglochin palustris*  
*Ulex gallii*  
*Veronica officinalis*  
*Veronica scutellata*  
†*Viola canina*

The plants on this list that are still present could be used for monitoring purposes, or the axiophytes would serve the same purpose.

In summary, Hothfield Heath has an extraordinary conservation status. For such a small area, 100 or so species of axiophyte is an exceptionally high number, and the rarities are similarly diverse. There is considerable evidence of a decline in the quality of the grassland and grass-heath, but the bogs have fared well since the site has been managed for conservation. Owing to its accessibility and popularity, it is a truly outstanding nature reserve with value for education and health as well as scientific interest.



## Species List

Species square brackets are those which I believe have been recorded within the site, but which I have not yet seen or been able to confirm. Anything which has not been seen for a long time is given a dagger (†) to indicate that it is probably no longer present.

### Bryophytes

A complete list of bryophytes is beyond the scope of this work, but certain species are worth mentioning because they are of particular importance, or because they can be observed by the general botanist and therefore used for monitoring purposes.

The bog-mosses (*Sphagnum* spp.) are the most important component of any mire, making up a large part of its bulk and modifying the environment, so here they are included in full detail. Unfortunately, they can be very difficult to identify reliably, so information about them is sketchy.

*Pallavicinia lyellii* (Hook.) Carruth., Veilwort is a scarce liverwort which grows in the bogs, amongst *Sphagnum*, or in tussocks of *Molinia caerulea*. It has been recorded in bog 2 by J.G. Duckett in 2002 and J.I. Hendey in 2006. This is a thallose liverwort rather similar to *Pellia* or *Aneura* in appearance which was thought to be rare in Britain and confined mainly to the south-east, but it has been recorded more widely in recent years, according to the NBN Atlas.

*Aneura pinguis* (L.) Dumort., Greasewort: occasional in the bogs. This characteristic bog plant would make a useful indicator of the state and extent of the bogs if it could be reliably separated from similar thallose liverworts. Although it is quite common nationally, it is very rare in East Kent. It was first recorded at Hothfield by L.J. Cocks in 1906 and there are recent records of it in bogs 2 and 4.



*Aneura mirabilis* (Malmb.) Wickett and Goffinet, Ghostwort: a liverwort which occurs underground, usually under a layer of *Sphagnum*, and which naturally has no chlorophyll. It is highly characteristic of peat bogs and is considered to be very rare. It was found at Hothfield in the 1980s by J.G. Duckett.

*Sphagnum papillosum* Lindb., Papillose Bog-moss: one of the more significant bog species, often (with *S. capillifolium*) making up the hummocks that are raised above the water level. It is reasonably common in the middle of bog 2 (the main bog). It is a strong axiophyte of raised and valley mires, and Hothfield is its only site in Kent.



*Sphagnum palustre* L., Blunt-leaved Bog-moss: frequent around the edges of bog 4, TQ968462. This species is tolerant of more mineral-rich water than many of the others and often grows in flushes and wet heaths rather than on the ombrotrophic parts of a bog. It is one of the more common and widespread species of bog-moss.



[*Sphagnum magellanicum* Brid., Magellanic Bog-moss: one of the most specialised of all the bog-mosses, it was recorded here in 1950 (T. Laflin), 1968 (F. Rose) and 2002 (J.G. Duckett). This is possibly its only site in Kent.]

*Sphagnum squarrosum* Crome, Spiky Bog-moss: in patches on the edges of bog 4. This species is typical of mineral-rich flushes and pools on the edges of mires, rather than ombrotrophic bogs.



[*Sphagnum fimbriatum* Wilson, Fringed Bog-moss: listed in Francis Rose's *Bryophyte Flora* in 1951 and subsequently recorded by J.I. Heney in recent years. It is a plant of boggy woodland and would not normally be expected on the mire unless it had been scrubbed-over for some time. In some places it can persist on an open mire, in which case its presence can be a useful indicator of the progress of the restoration.]

*Sphagnum capillifolium* (Ehrh.) Hedw., Red Bog-moss: occasional in bogs 2 & 3, where it is the main constituent of hummocks raised above the water level. The plants are often a distinct red colour. It has been known here since at least 1948 (F. Rose). Both ssp. *capillifolium* and ssp. *rubellum* occur in bog 2 – the former makes very dense hummocks with closely-packed heads, whereas the latter is more spreading.



*Sphagnum subnitens* Russow & Warnst., Lustrous Bog-moss: frequent in bogs 2 & 4, where it is the first species to form hummocks rising out of the *S. fallax*

lawn. In the more acid parts of bog 2 it is replaced by *papillosum* and *capillifolium*.



†*Sphagnum compactum* Lam. & DC., Compact Bog-moss: this is a plant of bare peat, usually found in wet heathland rather than deep, spongy bogs. Prof. Brenan, however, described it as being in a 'peaty bog' in 1936 and it does seem that the bogs at Hothfield have a lot of bare peat, which is more typical of heath than of a valley mire. This species is considered to regenerate well after fires. It was also collected at Hothfield in 1947 by Francis Rose (conf. A. Thompson, **BBSUK**) and he last saw it there in 1994. There were only two sites for it in Kent and if it is no longer at Hothfield then it is possibly extinct in the county.

*Sphagnum auriculatum* Schimp., Cow-horn Bog-moss: thriving in the middle part of bog 3. This is an important part of the hummock and lawn structure of the mire and is dependent on the more acidic water.

The species has now been split into two: *S. inundatum* Russow (Lesser Cow-horn Bog-moss) and *S. denticulatum* (Cow-horn Bog-moss). *S. inundatum* is the rarer of the two and requires more base-rich conditions in fens and the margins of bogs. *S. denticulatum*, however, is more widespread in Kent and is not uncommon on the more acid soils. The only confirmed record we have is of *denticulatum*, collected in 1936 by J.P.M. Brenan (NMW), although in 2009 J.I. Heney recorded *inundatum*.





†*Sphagnum tenellum* (Brid.) Bory, Soft Bog-moss: reported by Francis Rose in 1948, but not seen since. It is strongly associated with very acid habitats, growing on hummocks. Hothfield was its only recorded site in Kent.

[*Sphagnum cuspidatum* Ehrh. ex Hoffm., Feathery Bog-moss: recorded by J.P.M. Brenan in 1936 (BBSUK) and more recently by J.G. Duckett *et al.* in 2002. This species is typically found submerged in bog pools and is a good indicator of the more acid, ombrotrophic conditions.]

*Sphagnum fallax* (H. Klinggr.) H. Klinggr., Flat-topped Bog-moss: abundant in bogs 2, 3 and 4, mostly forming lawns in wet parts of the bog. It is perhaps the most important plant for the formation of the mire, because it acidifies the water and creates the substrate on which the more specialised bog plants can grow. It is known in only a few sites in East Kent. *S. flexuosum* Dozy & Molk., Flexuous Bog-moss, is very similar to *S. fallax* and they have often been regarded as the same species (*S. recurvum* P. Beauv.). It was collected by Francis Rose in 1947 (NMW).



*Polytrichastrum formosum* (Hedw.) G.L. Sm., Bank Haircap: in woodland on the banks of the stream (TQ965457). This is one of three rather similar species which are useful indicators of the three main habitats at Hothfield.



*Polytrichum commune* Hedw., Silkwood: occasional to frequent in all the bogs. This species is an important component of bogs and is usually replaced by *P. formosum* in wet woodland, so the distribution of the two could be useful in monitoring the state of

the bogs. *Polytrichum commune* has a four-sided capsule with a narrow neck.



*Polytrichum juniperinum* Hedw., Juniper Haircap: a characteristic species of the U1 *Rumex acetosella* grassland; abundant on the slope up Froghole Toll, below the football field. It is considered to be a good coloniser of bare ground and could be a useful indicator for monitoring the extent of good quality grassland, as it disappears quickly under bracken or scrub.



†*Rhodobryum roseum* (Hedw.) Limpr., Rose-moss, was recorded by W.R. Jeffrey in 1904. It is a plant of sandy grassland, often on anthills. It has not been recorded in Kent for many years, but its former presence at Hothfield shows that there was good quality grassland.

*Mnium hornum* Hedw., Swan's-neck Thyme-moss: occasional in wooded areas. This is one of the most common of woodland mosses, often found around the base of trees or on wooded banks. It is a useful indicator of shady habitats, so it is characteristic of mature woodland.



*Aulacomnium palustre* (Hedw.) Schwaegr., Bog  
Groove-moss: described by Hendeby in 2012 as being  
present in all the bogs; it is certainly frequent in bogs

2, 3 & 4. This species is often associated with *Sphagnum* and is a good peat bog indicator, not being too rare or specialised in its habitat.





## Vascular Plants

†*Lycopodiella inundata* (L.) Holub, Marsh Clubmoss: a scarce clubmoss which was found by G.E. Smith in about 1832 and subsequently collected by J.F. Jeffrey in 1884 (BM, K). In 1947 Francis Rose reintroduced it but his plants had died out by 1954. This is an axiophyte of wet heaths which is long gone from Kent, but it is still widespread in the New Forest and other southern heathlands. Its habitat is seasonally inundated, poached, peaty soils.

†*Lycopodium clavatum* L., Stag's-horn Clubmoss: recorded by W.R. Jeffrey in the 19<sup>th</sup> century and subsequently re-found by Francis Rose and Peter Wilberforce in 1960, but it does not seem to have been seen since then. An axiophyte of heathland.

*Equisetum fluviatile* L., Water Horsetail: an axiophyte of clean water, abundant in bog 4.

*Equisetum arvense* L., Field Horsetail: around bog 4 and in the woodland below bog 2.

*Pteridium aquilinum* (L.) Kuhn, Bracken: occasional to abundant on dry ground throughout. This was the subject of much discussion in the 1975 symposium, where it was agreed that the spread of bracken was the biggest threat to the site. Some parts of the site are now dominated by this species, but others seem relative unaffected.

*Athyrium filix-femina* (L.) Roth, Lady Fern: there are a few plants in the triangle area, and many in the New Fen, on the other side of the A20. In the main part of the site it only occurs only along the western edge, in the pond at Butler's Toll (TQ969464) and down the boundary stream. It grows in places where there is lateral movement of ground water, and it is considered an axiophyte of damp woodland.



*Dryopteris filix-mas* (L.) Schott, Common Male Fern: frequent in the woodland areas, especially in the triangle and around the New Fen. A curious form, with forward-pointing pinnules, occurs in the New

Fen area (TQ976456). Such forms were once collected for their ornamental value.



*Dryopteris affinis* (Lowe) Fraser-Jenk., Golden-scaled Male-fern: this species has been recorded a couple of times in the past, by Eric Philp and by the Kent Botanical Recording Group. I have only seen it in the New Fen area (TQ977465), where there is one plant in rather atypical habitat on the edge of the flush. This is normally an indicator of ancient woodland.



*Dryopteris carthusiana* (Vill.) H.P. Fuchs, Narrow Buckler-fern: an axiophyte of peaty soils. It is occasional throughout and frequent in the bogs. The hybrid *Dryopteris x deweveri* (J.T. Jansen) Wacht. (*carthusiana* x *dilatata*) is quite frequent in bog 4, with both parents (TR966460, Lockton, 2018).





*Dryopteris carthusiana*



*Dryopteris \*deweveri*

*Dryopteris dilatata* (Hoffm.) A. Gray, Broad Buckler-fern: occasional on the drier ground and in woodland; it also occurs on tussocks and tree stumps in bog 4.

*Pseudotsuga menziesii* (Mirbel) Franco, Douglas Fir: one fine specimen in the car park and another on Butler's Toll (TQ970462).

*Pinus sylvestris* L., Scots Pine: a clump of about twelve trees at Foxenhill Toll (TQ970456) and some more on Butler's Toll (TQ970463) which have evidently been there for many years, although there is no sign of them spreading.

*Pinus nigra* Arnold, Austrian Pine: two large trees, in woodland west of the car park, TQ970458, and on Butler's Toll (TQ970463).

*Taxus baccata* L., Yew: just one tree, in the New Fen.

*Sequoiadendron giganteum* (Lindl.) Buchholz, Wellingtonia: two enormous trees in the triangle area and two more on Foxenhill Toll.



*Ceratocarpus claviculata* (L.) Liden, Climbing Corydalis: in heathland near Bog 4; an axiophyte of dry heathland, open woodland or acid grassland. Philp (1975) described it as being 'quite common in the north-western portion of the reserve,' which is the area around Bog 4.

*Mahonia aquifolium* (Pursh) Nutt., Oregon Grape: well established in the woodland edge by Watery Lane (TQ975456).

*Caltha palustris* L., Marsh Marigold: a few plants by the stream on the western edge of the reserve. This is an axiophyte of wet woodland and alder carr.



*Anemone nemorosa* L., Wood Anemone: occasional in the woodland along the western edge of the site. This is an axiophyte of ancient woodland.

*Clematis vitalba* L., Traveller's Joy: in roadside hedges, grassland and scrub.

*Ranunculus acris* L., Meadow Buttercup: occasional in damp grassland and in bog 4.

*Ranunculus repens* L., Creeping Buttercup: occasional throughout.

*Ranunculus bulbosus* L., Bulbous Buttercup: in the sward on the old football pitch, in sandy grassland by bog 1 and even in woodland above bog 2.

*Ranunculus sceleratus* L., Celery-leaved Buttercup: occasional in bog 4 (TQ966461).

*Ranunculus flammula* L., Lesser Spearwort: frequent in all the bogs and pools. This is a wetland axiophyte, typical of neutral to acid woodland and swamp.

*Ranunculus tripartitus* DC., Three-lobed Crowfoot: a Nationally Rare plant of pools and muddy hollows in heathlands in southern and western Britain. It was discovered at Hothfield in 1994, but it may have been known here (mistakenly identified as *Ranunculus hederaceus*, Ivy-leaved Crowfoot) since 1875 (F.M. Webb). It is typical of hollows in rutted tracks, but at present it occurs in bogs 2 and 3 at Hothfield, where it is likely that grazing and scrub clearance work create the disturbance that it requires.



*Ficaria verna* Huds., Lesser Celandine: frequent in damp woodland along the stream and scattered in the woodland elsewhere. Most plants are ssp. *fertilis* (Lawalrée ex Laegaard) Stace but along School Lane there are clumps of ssp. *verna* with bulbils developing in the leaf-axils.

*Ribes rubrum* L., Red Currant: occasional in the dry woodland.

*Ribes uva-crispa* L., Gooseberry: several patches in the woodland above bog 3 and in the New Fen.

*Chrysosplenium oppositifolium* L., Opposite-leaved Golden-saxifrage: numerous patches along the stream at the western edge of the reserve, TQ965457.



*Crassula helmsii* (Kirk) Cockayne, New Zealand Pigmyweed: abundant in the top part of bog 4, where it has been recorded since about 2006 (E.G. Philp). There is a patch of black plastic laid over part of this bog, to suppress it, but this has not been successful.

*Lotus corniculatus* L., Common Bird's-foot-trefoil: in grassland throughout.

*Lotus pedunculatus* Cav., Large Bird's-foot-trefoil: in all four bogs and the New Fen.

*Ornithopus perpusillus* L., Bird's-foot: frequent in the short acid grassland in the area of the football pitch and the

Froghole Slope. This is an axiophyte of U1 *Rumex acetosella* grassland.

*Vicia sepium* L., Bush Vetch: surprisingly rare. I have only seen it at the far end of the New Fen.

*Vicia sativa* L., Common Vetch: occasional throughout. Two subspecies have been recorded: *V. sativa* ssp. *nigra* (L.) Ehrh., Narrow-leaved Vetch, is the native plant of acid grassland which occurs in the football pitch and adjacent areas; *V. sativa* L. ssp. *segetalis* (Thuill.) Gaudin, Common Vetch, which was in the past often used agriculturally, is more widespread and is found along paths and in the margins of the bogs.

*Lathyrus pratensis* L., Meadow Vetchling: a common grassland plant, found in tall grass and in bog 4.

*Medicago arabica* (L.) Huds., Spotted Medick: in short grassland, mainly along paths and disturbed areas, but also on anthills in the football field.

*Trifolium ornithopodioides* L., Bird's-foot Clover: this is an axiophyte of short, sandy grassland, usually near the sea. It has been recorded at Hothfield since Philp's first Atlas (1970s) and is still present. It occurs in the trampled sward of the main path near the woodland edge (TQ970457), but not in the football pitch.

*Trifolium repens* L., White Clover: occasional throughout.

*Trifolium glomeratum* L., Clustered Clover: an axiophyte of short, sandy grassland. It has been known at Hothfield since about 1832 (G.E. Smith) and is still present on the football field in 2019 (TQ970460), where it was recently refound by Lucy Carden after twenty years with no records. There appears to be only one small patch.



*Trifolium suffocatum* L., Suffocated Clover: found by Sue Buckingham in September 2011 on the western edge of the football pitch, TQ97024610. The only other record was by E.G. Philp in 2002, possibly in the same place. It is an axiophyte of short, summer-parched grassland on the coast, with only a very few



inland stations. Although it is generally considered a spring ephemeral, it is interesting to note the date of Buckingham's record.

*Trifolium dubium* Sibth., Lesser Trefoil: occasional throughout, especially on the old football field.

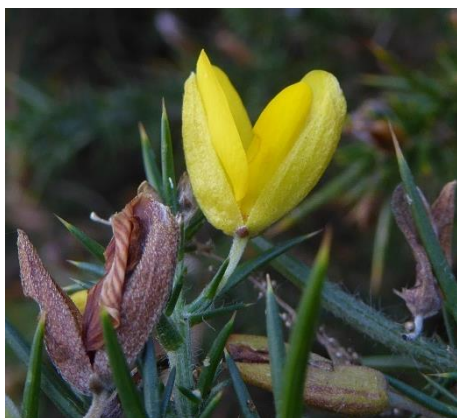
*Trifolium micranthum* Viv., Slender Trefoil: frequent in the short grassland on the football field and elsewhere. Although this is not considered an axiophyte, it is typical of the more species-rich parts of the dry grassland and would be a useful indicator of good condition.

*Trifolium subterraneum* L., Subterranean Clover: in short grassland on the old football pitch. This is another axiophyte of short, sandy grassland; known here since the 19<sup>th</sup> century.

†*Genista anglica* L., Petty Whin: a very rare heathland axiophyte, with just a couple of sites in Kent. It was recorded at Hothfield in the late 19<sup>th</sup> century by W.R. Jeffrey and found again by the Kent Field Club in 1958 or 1959, but I don't think it has been seen since then.

*Ulex europaeus* L., Gorse: widespread throughout.

*Ulex gallii* Planch., Western Gorse: one shrub on the main slope near bog 2 (TQ96704571). It is intermediate in size between the other two gorses, with medium-sized spines, but the best way to identify it is by the size of the bracteoles (illustrated below). This is best considered an axiophyte of heathland in Kent, although it is very common in western parts of Britain.



*Ulex minor* Roth, Dwarf Gorse: considered an axiophyte of heathland, this species is very rare in Kent. At Hothfield Heath it is deliberately conserved from scrub clearance and there are some good-sized patches. It is, however, much less abundant than

common gorse. *Ulex minor* has been recorded here since 1829 (G.E. Smith).



*Polygala serpyllifolia* Hose, Heath Milkwort: occasional in damper areas of heathland around the bogs; an axiophyte of heaths.

*Prunus spinosa* L., Blackthorn: occasional in woodland and scrub.

*Prunus avium* (L.) L., Wild Cherry: several trees in woodland in the triangle area, TQ973457.

*Prunus serotina* Ehrh., Rum Cherry: one large shrub by a path at Froghole Toll (TQ970460), and a few saplings in woodland at the top of bog 3. This plant has distinctive orange-brown hairs along the proximal half of the main vein on the lower side of the leaves.



*Prunus laurocerasus* L., Cherry Laurel: rare, self-sown saplings in woodland near the road (TQ971459) and along the stream. There is also a row of them planted along School Road at TQ972455, but these are not within the reserve.

*Malus domestica* Borkh., Apple: a few trees on the woodland edge near the car park.

*Sorbus aucuparia* L., Rowan: in dry woodland near bog 4 and on Butler's Toll. It is rather curious that this species, which seems to be a natural for this site, was not recorded here until 2005 (E.G. Philp), but it is a species that has spread in recent decades as planting on roadsides and in gardens has led to its wider

dispersal by birds. This is possibly how it arrived at Hothfield, and we might expect it to thrive.

*Crataegus monogyna* Jacq., Hawthorn: occasional in the woodland and scrub throughout. One shrub in the woodland at Froghole Toll (TQ970460) appears to be the hybrid *Crataegus* × *media* (*monogyna* × *laevigata*), to judge by the leaf shape, although all the fruits seem to have only one style.

*Rubus idaeus* L., Raspberry: a few straggling plants by the path through woodland at Froghole Toll (TQ970460); recorded here since 1829 (G.E. Smith).

*Rubus fruticosus* agg., Bramble: occasional to abundant throughout. The variety *R. laciniatus*, Cut-leaved Bramble, which is an introduced cultivar, has been recorded in heathland on the main slope.

*Potentilla anserina* L., Silverweed: in wet grassland in bog 4 and elsewhere.

*Potentilla erecta* (L.) Raeusch., Tormentil: frequent throughout, in wet and dry heath and dry grassland. This is considered an axiophyte in Kent and is one of the most characteristic species of the site.



*Potentilla reptans* L., Creeping Cinquefoil: occasional in grassland and by paths.

*Potentilla sterilis* (L.) Garcke, Barren Strawberry: occasional in the triangle area.

*Fragaria vesca* L., Wild Strawberry: abundant along woodland paths in the triangle area (TQ973457).

*Geum urbanum* L., Wood Avens: occasional in woodland throughout, and even in bog 4.

*Aphanes australis* Rydb., Slender Parsley-piert: abundant in the acid grassland on the football pitch and in short grassland along paths. It is a spring ephemeral typical of this habitat.



*Rosa arvensis* Hudson, Field Rose: in woodland around bog 4 and in the triangle area.

*Rosa canina* L., Dog Rose: occasional in scrub and woodland throughout.

*Frangula alnus* Mill., Alder Buckthorn: in the damp woodland at the western end of the site (TQ965458), where it has been recorded since the 19<sup>th</sup> century (E.S. Marshall). This is considered an axiophyte of acid, peaty woodland.

*Ulmus procera* Salisb., English Elm: there are patches of regrowth in the woodland below bog 2, and the remains of hedges along several of the roads.

*Ulmus minor* Mill., Small-leaved Elm: some sizeable trees on the edge of the woodland in the triangle area, and a couple of shrubs by the boundary stream, TQ96564557.

*Urtica dioica* L., Stinging Nettle: occasional throughout.

*Fagus sylvatica* L., Beech: a few trees in the woodland.

*Castanea sativa* Mill., Sweet Chestnut: occasional in the woodland. Most of the trees are mature standards, and therefore have less of a negative impact on the ground flora than the dense chestnut coppice that can be seen in many places throughout Kent.



*Quercus cerris* L., Turkey Oak: occasional in the woodland and scrub. Turkey Oak is a non-native species and is the vector for the Oak Knopper Gall, which reduces the fertility of the native oaks – a factor which could be advantageous here.

*Quercus robur* L., Pedunculate Oak: the dominant canopy tree in the woods, which are W10 *Q. robur* woodland, and scattered saplings in the scrub.

*Myrica gale* L., Bog Myrtle: one patch in bog 2, where it is protected from grazing by a wooden fence. It was first found here in 2010 and is apparently the only population in the county. It is believed to have been planted here, along with pitcher plant, *Sarracenia purpurea*, at about that time. The pitcher plants were quickly removed. Bog Myrtle can be a troublesome shrub on some bogs but at Hothfield that does not seem to be the case.

*Betula pendula* Roth, Silver Birch: occasional in the scrub.

*Betula pubescens* Ehrh., Downy Birch: occasional in the bogs and the scrub. This species might be expected to be more frequent in the bogs, and *B. pendula* more in the grassland, but they seem fairly evenly mixed, in fact.

*Alnus glutinosa* (L.) Gaertn., Alder: in wet areas along the western edge of the reserve, in bog 4 and along the stream below; less common in the other bogs. Some of the trees close to the western edge of the reserve are the hybrid with Italian Alder, *Alnus ×elliptica* Req. (conf. A.C. Leslie, CGE), which has not otherwise been recorded in Kent.

*Alnus cordata* (Lois.) Duby, Italian Alder: there are two tall hedges of Italian Alder along field margins in the extension to the reserve, to the west. These trees have given rise to many saplings on the edge of the reserve and along the stream.

*Carpinus betulus* L., Hornbeam: rare in the woodland. I have only noticed one tree, in the woodland below bog 3 (TQ96544582).

*Corylus avellana* L., Hazel: rare, around bog 4 and in the woodland around the northern part of the reserve, where there are scattered coppices.

*Bryonia dioica* Jacq., White Bryony: occasional in the woodland near the road.

*Mercurialis perennis* L., Dog's Mercury: in woodland in the triangle area and on Foxenhill Knoll.

*Populus alba* L., White Poplar: suckering prolifically near the fenceline at the end of the New Fen, TQ978456.

*Populus tremula* L., Aspen: locally abundant in areas of scrub, where it suckers freely and regenerates strongly after cutting. It is considered a woodland axiophyte in Kent.

*Salix ×fragilis* L., Crack-willow: one large tree at the end of the New Fen, TQ977456.

*Salix caprea* L., Goat Willow: a rather curious distribution, around the western margin of the heath, from the road at the south to the northernmost tip. Some of the trees are quite sizeable, notably at TQ966454. There are also a few trees on the edges of the New Fen and in the triangle area. The hybrid with grey willow, *Salix ×reichardtii* A. Kern., can be found in bog 4.

*Salix atrocinerea* Brot., Grey Willow: frequent in all the bogs and in the woodland along the stream.

*Salix aurita* L., Eared Willow: recorded by E.S. Marshall in the 19<sup>th</sup> century, and possibly still present in bogs 3 & 4. There are only a few small plants, which I think are better described as *S. ×multinervis* Doll (*atrocinerea* x *aurita*). It is likely that pure *S. aurita* was once present but has been replaced by hybrids over time.

*Viola odorata* L., Sweet Violet: occasional in woodland and on mown road verges.

*Viola riviniana* Reichb., Common Dog-violet: in grassland on the old football pitch and woodland in the triangle area.

†*Viola canina* L., Heath Dog-violet: recorded by F.M. Webb in about 1880, but there are no records of it since then. It would probably have occurred in the grass-heath, but it would not have been able to



tolerate the shade when the site scrubbed over in the 20<sup>th</sup> century.

*Viola palustris* L., Marsh Violet: occasional in bogs 1, 2 & 3. This is a rare axiophyte of bogs which has been known here since the 19<sup>th</sup> century (W.R. Jeffrey).

†*Linum radiola* L., Allseed: collected by H. Lamb in 1902 (MNE) and listed by Russell (1902); an axiophyte of sandy, acid grassland.

*Hypericum androsaemum* L., Tutsan: occasional clumps in the woodland and the bogs (for example, by the boardwalk through bog 2). This is normally a woodland plant; quite why it grows in the bogs is a bit of a mystery.

*Hypericum perforatum* L., Perforate St John's-wort: locally abundant in long grass around the football field and in wet parts of the New Fen.

*Hypericum tetrapterum* Fries, Square-stalked St John's-wort: occasional in acid grassland and bogs.



[*Hypericum humifusum* L., Trailing St John's-wort: listed by F. Rose (undated, ca. 1950) and by various people since then (but not by Philp, 1975). This is a heathland axiophyte.]

[*Hypericum pulchrum* L., Slender St John's-wort: listed by F. Rose (undated) and J. Pitt (1995); an axiophyte of heathy woodland.]

*Hypericum elodes* L., Marsh St John's-wort: thriving in bogs 2, 3 & 4. It is an axiophyte of acid flushes and the margins of peat bogs.

*Geranium oxonianum* Yeo, Druce's Crane's-bill: a spectacular display around the car park, where it presumably originated as a garden throw-out.



*Geranium rotundifolium* L., Round-leaved Crane's-bill: scattered plants around the car park.

*Geranium dissectum* L., Cut-leaved Crane's-bill: occasional on disturbed ground and path sides.

*Geranium pyrenaicum* Burm. f., Hedgerow Crane's-bill: several plants by the roadside near the car park.

*Geranium pusillum* L., Small-flowered Crane's-bill: occasional in short grassland on the football pitch.

*Geranium molle* L., Dove's-foot Crane's-bill: frequent in short dry grassland throughout.

*Geranium robertianum* L., Herb-robert: in woodland and woodland margins.

*Erodium cicutarium* (L.) L'Her., Common Stork's-bill: occasional in short grassland on the football pitch and in the vicinity.



*Lythrum portula* (L.) D. Webb, Water Purslane: in bogs 2 & 4 and in some ephemeral pools along the track between them. It is an axiophyte of acid wet grassland and pool margins.



*Epilobium hirsutum* L., Great Willowherb: occasional in wet areas and road verges.

*Epilobium parviflorum* Schreb., Hoary Willowherb: occasional in wet areas such as bog 4.

*Epilobium montanum* L., Broad-leaved Willowherb: frequent in the woodland and in bog 4.

*Epilobium obscurum* Schreb., Short-fruited Willowherb: abundant in bog 4; occasional in the other bogs. The hybrid *E. obscurum* x *palustre* was also found by E.S. Marshall in the 19<sup>th</sup> century.



*Epilobium ciliatum* Raf., American Willowherb: abundant in bog 4 and occasional on disturbed ground.

*Epilobium palustre* L., Marsh Willowherb: occasional in the bogs, particularly 2 & 4. This is an axiophyte of nutrient-poor wetlands.

*Chamerion angustifolium* (L.) Holub, Rosebay Willowherb: frequent throughout, in woodland and tall herb.

*Circaea lutetiana* L., Enchanter's-nightshade: frequent in the dry woodland and on the wooded margins of bog 4.

*Aesculus hippocastanum* L., Horse-chestnut: several large trees in the triangle area, and scattered seedlings elsewhere.

*Acer campestre* L., Field Maple: one sapling, probably planted, on the edge of the car park. This species has been recorded since 1995 (J. Pitt) and could be in other places as well.

*Acer pseudoplatanus* L., Sycamore: occasional in the woodland, with saplings throughout.

*Malva sylvestris* L., Common Mallow: on the roadside near the car park.

*Capsella bursa-pastoris* (L.) Medik., Shepherd's-purse: scattered in disturbed areas.

*Cardamine pratensis* L., Cuckoo-flower: occasional in wet areas, particularly Bog 4.

*Cardamine flexuosa* With., Wavy Bitter-cress: in bog 4 and areas of wet woodland.

*Cardamine hirsuta* L., Hairy Bitter-cress: occasional on bare ground.

†*Lepidium campestre* (L.) W.T. Aiton, Field Pepperwort: collected by J.E. Lousley in 1952 (SLBI). This is considered an axiophyte of arable fields and bare, sandy soils.

*Lepidium draba* L., Hoary Cress: occasional on road verges, but not seen within the reserve.

*Erophila verna* (L.) DC., Common Whitlowgrass: occasional in short grassland.

*Sisymbrium officinale* (L.) Scop., Hedge Mustard: on the roadside and around the car park.

*Alliaria petiolata* (M. Bieb.) Cavara & Grande, Garlic Mustard: occasional on the roadside and in the woodland edges.

*Persicaria maculosa* Gray, Redshank: some patches on the drier ground around bog 4.

*Persicaria hydropiper* (L.) Spach, Water-pepper: in wet grassland at bogs 2 and 4, and on the edges of the New Fen.



*Polygonum arenastrum* Boreau, Equal-leaved Knotgrass: occasional along paths.

*Polygonum aviculare* L., Knotgrass: on paths and disturbed ground. Recorded here since the 19<sup>th</sup> century (as *P. aviculare* var. *microspermum*, E.S. Marshall (SLBI).

*Rumex acetosella* L., Sheep's Sorrel: abundant throughout. This is the most characteristic species of

U1 *R. acetosella* grassland which occurs on the dry, sandy soil and makes up perhaps the largest area of habitat.



*Rumex acetosa* L., Common Sorrel: occasional in grassland and scrub, and extending into bog 4, where the plants grow exceptionally large.

*Rumex crispus* L., Curled Dock: occasional on disturbed ground.

*Rumex conglomeratus* Murray, Clustered Dock: rather rare – I have only seen it towards the lower end of bog 4, in marshy ground. This species is typical of wet habitats such as damp grassland and riverbanks.

*Rumex sanguineus* L., Wood Dock: frequent in the woodland and wetland areas such as bog 4 and the New Fen.

*Rumex obtusifolius* L., Broad-leaved Dock: occasional.

*Drosera rotundifolia* L., Round-leaved Sundew: thriving in bogs 2 & 3, but seemingly absent from 1 & 4. An axiophyte of acid mires and wet heath.



*Arenaria serpyllifolia* L., Thyme-leaved Sandwort: occasional in dry grassland such as the football field.

*Moehringia trinervia* (L.) Clairv., Three-nerved Sandwort: occasional in the woodland.

*Stellaria media* (L.) Villars, Chickweed: occasional.

*Stellaria pallida* (Dumort.) Pire, Lesser Chickweed: occasional in the acid grassland.



*Stellaria holostea* L., Greater Stitchwort: frequent in woodland along the stream at the western boundary of the reserve; occasional in hedges elsewhere.

*Stellaria graminea* L., Lesser Stitchwort: occasional in grassland and margins of bogs.

*Stellaria alsine* Grimm, Bog Stitchwort: in bogs 2 (C. Osborne, 2013) and 4, and the New Fen; an axiophyte of acid wetland.

†*Cerastium arvense* L., Field Mouse-ear: recorded by Russell (1902) and Rose (1943). This is an axiophyte of sandy grassland.

*Cerastium fontanum* Baumg., Common Mouse-ear: occasional in dry grassland.

*Cerastium glomeratum* Thuill., Sticky Mouse-ear: occasional on bare ground throughout.

*Cerastium semidecandrum* L., Little Mouse-ear: occasional in sandy grassland.

†*Moenchia erecta* (L.) P. Gaertn., B. Mey. & Scherb., Upright Chickweed: listed by Russell (1902), and mapped in this area in both of Philp's Atlases, although there are no records of it which are definitely from the reserve.

*Sagina procumbens* L., Procumbent Pearlwort: occasional in grassland and bogs.





[*Sagina apetala* Ard., Annual Pearlwort: recorded by F.M. Webb in the 19<sup>th</sup> century and by G.H. Morgan in 1957; also mapped for this area by Philp in the 1970s and recorded by J. Pitt in 2007, on the football field. More recently, *Sagina filicaulis* Jord., Slender Pearlwort, has been recorded by Geoffrey Kitchener in 2010. Until recently this was considered a subspecies of *S. apetala* (ssp. *erecta* F. Herm.). It is not apparent which species the earlier records refer to. *Sagina filicaulis* is considered to be a plant of man-made habitats, whereas *S. apetala* is from heaths and sandy grassland.]

†*Scleranthus annuus* L., Annual Knawel: recorded by F.M. Webb in the 19<sup>th</sup> century and still there is 1945 (E. Scott & F. Rose, **MNE**). This is an axiophyte of acid grassland.

†*Spergula arvensis* L., Corn Spurrey: recorded by E.S. Marshall in the 19<sup>th</sup> century. This is an axiophyte of arable fields and disturbed ground.

*Spergularia rubra* (L.) J.S. & C. Presl, Sand Spurrey: occasional in short grassland in and near the football pitch; first recorded here by F.M. Webb in the 19<sup>th</sup> century. This is an axiophyte of sandy, acid soils.

*Silene dioica* (L.) Clairv., Red Campion: occasional in woodland and scrub.

*Silene flos-cuculi* (L.) Clairv., Ragged Robin: abundant in the bogs; an axiophyte of wetland habitats.

*Chenopodium hybridum* L., Maple-leaved Goosefoot: rare, by the path from the car park where it crosses the road into the reserve, TQ971458. This appears to be new in 2019.



*Chenopodium album* L., Fat-hen: occasional on road verges and along paths, just occasionally spreading into the woodland.

*Atriplex prostrata* Boucher ex DC., Spear-leaved Orache: frequent along the roadsides.

*Atriplex patula* L., Common Orache: occasional along roadsides and paths.

*Claytonia sibirica* L., Pink Purslane: one patch on the western side of the reserve (TQ966460), seen by Sue Buckingham in 2012. It has been here since the 1990s (Philp, 2010).

*Montia fontana* L., Blinks: frequent in the U1 *Rumex acetosella* grassland on Froghole Slope between bog 4 and the football field (TQ969461). It was first recorded here by F.M. Webb in 1875. Philp (2010) considered all the blinks in Kent to be var. *chondrosperma* (Fenzl) Walters.



*Primula vulgaris* Huds., Primrose: occasional in the woodland.

*Anagallis tenella* (L.) L., Bog Pimpernel: some good populations in several bogs, notably 2 and 4. This is an axiophyte of oligotrophic mires.



*Anagallis arvensis* L., Scarlet Pimpernel: a small patch on sandy ground by the gate into bog 1 (TQ969454) and an extensive area above bog 2, (TQ969457).

†*Centunculus minimus* L., Chaffweed: recorded by G.E. Smith in 1829.

*Calluna vulgaris* (L.) Hull, Heather: frequent in bogs and damper areas of grassland; this is an axiophyte of mires and heaths.

*Erica tetralix* L., Cross-leaved Heath: mainly in the bogs, but also scattered in some of the drier



heathland. An axiophyte, recorded here since the 19<sup>th</sup> century by F.M. Webb and Hanbury & Marshall.



†*Galium uliginosum* L., Fen Bedstraw: recorded here by E.S. Marshall in the 19<sup>th</sup> century. An axiophyte of base-rich fens with just a few sites in Kent.

*Galium palustre* L., Common Marsh-bedstraw: abundant in the bogs.

*Galium album* Mill., Hedge Bedstraw: occasional in tall grassland, for example by the football field.

*Galium saxatile* L., Heath Bedstraw: frequent throughout; known here since the 19<sup>th</sup> century (F.M. Webb). This is a heathland axiophyte.

*Galium aparine* L., Cleavers: occasional in grassland, woodland and wetland.

*Centaureum erythraea* Rafn., Common Centaury: in dry grassland around bog 4 and on a sandy bank above bog 1.

*Vinca major* L., Greater Periwinkle: a small patch in woodland near the car park; presumably a garden throw-out.

*Anchusa arvensis* (L.) M. Bieb., Bugloss: many plants on a sandy bank above bog 2, TQ969457.

*Pentaglottis sempervirens* (L.) Tausch ex L. Bailey, Green Alkanet: a patch by the gateway near the road at TQ971457, probably originating as garden throw-outs, although it has been recorded here since 1975,

*Myosotis secunda* Al. Murray, Creeping Forget-me-not: abundant in bogs 2 & 4. This is considered an axiophyte of acid soils. It was first noticed here by Francis Rose in 1949 although it must always have been present; earlier recorders probably thought it was the much commoner *M. scorpioides*.

*Myosotis arvensis* (L.) Hill, Field Forget-me-not: around the edge of the football pitch, in long grass, and in dry grassland and open woodland throughout.

*Myosotis discolor* Pers., Changing Forget-me-not: in short grassland on the football pitch and nearby areas, in U1 *Rumex acetosella* grassland. Curiously, it also occurs on ant hills raised above the water level in bog 4.

*Calystegia sepium* (L.) R. Br., Hedge Bindweed: in the scrub in the middle of bog 4; recorded here since at least 1902 (Russell).

*Calystegia silvatica* (Kit.) Griseb., Large Bindweed: in the roadside hedge by the car park.

†*Cuscuta epithimum* (L.) L., Dodder: recorded by G.E. Smith in 1832; an axiophyte of heathland which is parasitic on heather, gorse, etc.

*Solanum nigrum* L., Black Nightshade: many plants on bare ground in the woodland opposite the car park, TQ971458. The plants are ssp. *nigrum*, a weed of disturbed ground.

*Solanum dulcamara* L., Bittersweet: in bog 4 and the New Fen.

*Fraxinus excelsior* L., Ash: occasional throughout. There are some large trees in the woodland areas and many seedlings and saplings on the woodland floor.

*Syringa vulgaris* L., Lilac: one planted shrub by the path at TQ96544559.

*Digitalis purpurea* L., Foxglove: occasional in dry grassland and woodland edges.

*Veronica officinalis* L., Heath Speedwell: in acid grassland around the football pitch and elsewhere; an axiophyte of heaths.

*Veronica montana* L., Wood Speedwell: occasional in woodland in the triangle area.

*Veronica scutellata* L., Marsh Speedwell: occasional in bog 4, in *Juncus* <sup>surrejanus</sup> rush-pasture and *Hypericum elodes* flushes; it has previously been recorded in the main bog (bog 2) by N.F. Stewart in 1998 and C. Osborne in 2012/13. An axiophyte of mesotrophic wetlands, it has been known here since the 19<sup>th</sup> century (W.R. Jeffrey and Hanbury & Marshall).



*Veronica serpyllifolia* L., Thyme-leaved Speedwell: occasional in grassland and along tracks.

*Veronica hederifolia* L., Ivy-leaved Speedwell: occasional in the woodland.

*Veronica polita* Fries, Grey Field-speedwell: rare in open grassland at TQ967460 (C. Turner, 2019); a weed of disturbed ground.

*Veronica chamaedrys* L., Germander Speedwell: occasional in longer grassland such as the margins of the football field.

*Veronica arvensis* L., Wall Speedwell: occasional in dry grassland.

*Plantago coronopus* L., Buck's-horn Plantain: occasional along paths in the vicinity of the football field and in sandy grassland by bog 1.

*Plantago major* L., Greater Plantain: occasional.

*Plantago lanceolata* L., Ribwort Plantain: occasional.

*Callitriche stagnalis* Scop., Common Water-starwort: in pools at the lower end of bog 4 and in bogs 1 & 2 (det. R.V. Lansdown). It also occurs in the pond at Butler's Toll (TQ969464).

[*Callitriche brutia* Petagna, Intermediate Water-starwort, was recorded by N.F. Stewart in bog 2 in 1998.]

†*Verbascum blattaria* L., Moth Mullein: recorded on 'Hothfield Common' by W.R. Jeffrey in the 19<sup>th</sup> century.

*Scrophularia nodosa* L., Common Figwort: occasional in woodland, grassland and scrub.

*Scrophularia auriculata* L., Water Figwort: at the top of bog 2, in bog 4, along the stream and in the New Fen.

*Buddleja davidii* Franch., Butterfly-bush: several bushes by the path past the football field, TQ970460.

*Stachys sylvatica* L., Hedge Woundwort: occasional.

*Lamium album* L., White Dead-nettle: frequent along the roadside and in the woodland edge.

*Galeopsis bifida* Boenn., Bifid Hemp-nettle: a sizeable patch in the woodland edge at the top of the main bog (TR970456).

†*Marrubium vulgare* L., White Horehound: recorded by F.M. Webb in the 19<sup>th</sup> century. Although this is a Nationally Scarce native plant of sandy grassland, Hanbury & Marshall (1899) considered the plants in Kent to be escapes from cultivation.

*Scutellaria minor* Huds., Lesser Skullcap: in bogs 2, 3 & 4, and possibly elsewhere; known here since the 19<sup>th</sup> century (F.M. Webb and Hanbury & Marshall). This is an axiophyte of marshes and wet woodland.



*Teucrium scorodonia* L., Wood Sage: occasional in dry grassland and heath.

*Ajuga reptans* L., Bugle: in dry woodland at the New Fen, TQ976456.

*Glechoma hederacea* L., Ground-ivy: occasional throughout; sometimes abundant.

*Prunella vulgaris* L., Selfheal: occasional.

†*Thymus pulegioides* L., Large Thyme: recorded by F.M. Webb and Hanbury & Marshall in the 19<sup>th</sup> century, and listed by Russell (1902), possibly repeating the previous records.

*Lycopus europaeus* L., Gipsywort: occasional in bog 4 and abundant in the New Fen.

*Mentha aquatica* L., Water Mint: frequent in the bogs and wet areas.

†*Mentha spicata* x *suaveolens* = *M. <sup>x</sup>villosa* Huds.,  
Apple-mint: recorded by R.A. Graham in 1948.

*Erythranthe moschata* (Douglas ex Lindl.) G.L. Nesom,  
Musk: by the spring at the top of the main bog (B2) in  
2020 (TQ970456), where it was found by Sue  
Buckingham. This is a garden escape which has not  
been found in the wild in East Kent before, although  
it is well established in upland parts of Britain. It was  
probably planted here quite recently and it may not  
persist.



*Pedicularis sylvatica* L., Lousewort: widespread in the  
dry grassland and bogs; an axiophyte.

*Verbena officinalis* L., Vervain: in grassland near bog  
4 and along woodland paths in the triangle area.



*Ilex aquifolium* L., Holly: occasional in the woodland  
throughout.

*Campanula rotundifolia* L., Harebell: rare, on a bank  
near bog 2 (TQ96844569, I. Rickards, 2013). It has  
been recorded here since at least 1902 (H.W.  
Russell). This species is an axiophyte of acid  
grassland.

*Menyanthes trifoliata* L., Bogbean: in the flush above  
bog 4; an axiophyte of oligotrophic wetlands and bog  
margins.



*Arctium minus* (Hill) Bernh., Lesser Burdock:  
occasional on the roadside and in the woodland.

*Cirsium vulgare* (Savi) Ten., Spear Thistle: occasional  
in grassland.

*Cirsium palustre* (L.) Scop., Marsh Thistle: common in  
the bogs and wet areas.

*Cirsium arvense* (L.) Scop., Creeping Thistle:  
occasional.

*Lapsana communis* L., Nipplewort: occasional in  
woodland and scrub.

*Hypochaeris radicata* L., Cat's-ear: occasional in the  
grassland.

†*Hypochaeris glabra* L., Smooth Cat's-ear: recorded  
by Francis Rose 'on a dry bank near Froghole Cottage,  
1948-60.' It was considered by Philp to have been  
lost by 1975. This is an axiophyte of heathland which  
has declined throughout its range in recent decades.

*Leontodon saxatilis* Lam., Lesser Hawkbit: rare, in  
grassland. I have seen it alongside the concrete path  
at the bottom of the main bog (B2, TQ966456).

*Sonchus arvensis* L., Perennial Sow-thistle: in bog 4  
and possibly elsewhere.

*Sonchus oleraceus* L., Smooth Sow-thistle: in bog 4  
and on a sandy bank above bog 2; a weed of waste  
ground and roadsides.

*Sonchus asper* (L.) Hill, Prickly Sow-thistle: around  
bog 4 and possibly elsewhere; a weed of waste  
ground.

*Mycelis muralis* (L.) Dumort., Wall Lettuce: rare, on  
the hedgebank along the track beside bog 1  
(TQ969454).

*Taraxacum officinale* Weber, Dandelion: occasional.



*Crepis capillaris* (L.) Wallr., Smooth Hawk's-beard: many plants along the side of the path alongside bog 4 (TQ966461).



*Pilosella officinarum* F. Schultz & Schultz-Bip., Mouse-ear-hawkweed: occasional in short grassland.

†*Filago minima* (Smith) Pers., Small Cudweed: recorded in the 19<sup>th</sup> century by W.R. Jeffrey and Hanbury & Marshall, and last seen by Francis Rose in 1945. An axiophyte of U1 *Rumex acetosella* grassland.

*Gnaphalium uliginosum* L., Marsh Cudweed: occasional on wet mud, and seasonally inundated hollows.



*Pulicaria dysenterica* (L.) Bernh., Common Fleabane: occasional in damp areas throughout.

*Erigeron floribundus* (Kunth) Sch. Bip., Bilbao's Fleabane: on a spoil heap and disturbed ground near the entrance, TQ970459.

*Solidago gigantea* Aiton, Early Goldenrod: a large patch on the edge of bog 4, where the path crosses (TQ96864623). This was first recorded by J. Shorter in 2000 and differs in having glabrous leaves and stems glabrous below the inflorescence.



*Symphyotrichum xversicolor* (Willd.) G.L. Nelson, Late Michaelmas-daisy: rare, by the path across bog 4 (TQ968462, conf. G.D. Kitchener).

*Bellis perennis* L., Daisy: occasional.

*Artemisia vulgaris* L., Mugwort: on the roadside and by paths near the car park. This is a ruderal that is tolerant of light shade.

†*Achillea ptarmica* L., Sneezewort: recorded in the 19<sup>th</sup> century by W.R. Jeffrey and in 1960 by E. Scott; an axiophyte of mesotrophic wetlands.

*Achillea millefolium* L., Yarrow: occasional.

*Matricaria discoidea* DC., Pineapple Weed: occasional.

*Senecio jacobaea* L., Common Ragwort: occasional throughout, on bare ground, dry grassland, and even occasionally in wet places such as bog 4.

*Senecio vulgaris* L., Groundsel: listed by Philp (1975) and by various people since; a weed of disturbed soil.

†*Bidens cernua* L., Nodding Bur-marigold: found in the 19<sup>th</sup> century by F.M. Webb and Hanbury & Marshall; an axiophyte of mesotrophic wetlands.

*Sambucus nigra* L., Elder: occasional.

*Viburnum opulus* L., Guelder-rose: rare, in the woodland around the New Fen.

*Symphoricarpos albus* (L.) S.F. Blake, Snowberry: along the road verge opposite the car park, just spreading into the woodland.

*Lonicera periclymenum* L., Honeysuckle: occasional in the scrub, reflecting the previous woodland cover over almost the whole of the site. It also occurs in bog 2, by the side of the boardwalk, in habitat where it would not normally be expected.



*Succisa pratensis* Moench, Devil's-bit Scabious: frequent in the bogs; an axiophyte of acid soils.

*Hedera helix* L., Ivy: frequent in the woodland.

*Hydrocotyle vulgaris* L., Marsh Pennywort: frequent in the bogs and the New Fen; an axiophyte of oligotrophic wetland.

*Chaerophyllum temulum* L., Rough Chervil: in long grassland on the roadside.

*Anthriscus sylvestris* (L.) Hoffm., Cow Parsley: frequent along roadsides.

*Aegopodium podagraria* L., Ground-elder: in grassland on verge and in woodland towards the SW corner of the reserve.

†*Oenanthe fistulosa* L., Tubular Water-dropwort: found in the 19<sup>th</sup> century by F.M. Webb and Hanbury & Marshall; an axiophyte of mesotrophic wetlands.

*Oenanthe crocata* L., Hemlock Water-dropwort: abundant along the stream at the western edge of the site (ca. TQ965459).

†*Helosciadium inundatum* (L.) W.D.J. Koch, Lesser Marshwort: recorded by W.R. Jeffrey in 1899. An axiophyte of oligotrophic wetland.

*Helosciadium nodiflorum* (L.) W.D.J. Koch, Fool's Watercress: occasional in wetland areas, including bog 4 and the New Fen, and in the stream on the western boundary.

*Sison amomum* L., Stone Parsley: on the verge of the track in the SW corner of the heath (TQ966454). This is not really in the reserve, although it is shown on the map as being within the common.

*Angelica sylvestris* L., Wild Angelica: in bog 4 and the New Fen.

*Heracleum sphondylium* L., Hogweed: occasional throughout.

*Torilis japonica* (Houtt.) DC., Upright Hedge-parsley: frequent in tall grassland around the car park and along the roadside, but also found in the reserve, for example in woodland edge below the main bog.

*Daucus carota* L., Wild Carrot: rare, just a couple of plants by the path across the bottom of bog 2 in 2020; possibly just a casual here. There are old records for the vicinity of Hothfield, but no localised records for the reserve.

*Arum maculatum* L., Lords-and-ladies: occasional in woodland and grassland throughout.

*Arum italicum* Mill., Italian Lords-and-ladies: several clumps on Foxenhill Toll (TQ970455).



*Lemna minor* L., Common Duckweed: occasional in ponds.

*Lemna minuta* Kunth, Least Duckweed: in the flush above and the pool below bog 4.

*Alisma plantago-aquatica* L., Water-plantain: rare, in bog 4.

*Triglochin palustris* L., Marsh Arrowgrass: rare, in bog 4. This is an axiophyte of short, base-rich grassy swards in fens.

*Potamogeton polygonifolius* Pourr., Bog Pondweed: thriving in all the bogs. An axiophyte of acid mires.



†*Potamogeton coloratus* Hornem., Fen Pondweed: collected by G. Dowker in the 19<sup>th</sup> century but not recorded since. It is an axiophyte of base-rich fens and might be expected in bog 4 but not in the others.

*Narthecium ossifragum* (L.) Huds., Bog Asphodel: abundant in the main bog (B2). It is an axiophyte of mires, often favouring places where there is some

lateral water movement, or bogs that are slightly drying out.

*Tamus communis* L., Black Bryony: on a dry wooded bank where the path crosses bog 4 (TQ968462) and along the verge of School Road.

*Neottia ovata* (L.) Bluff & Fingerh., Twayblade: found 'on a clay patch' in 1948 by Francis Rose. This is an axiophyte of calcareous woodland, not at all typical of the site. However, it is still there, in the triangle area at TQ973456 (I. Rickards, 2019).

*Dactylorhiza maculata* (L.) Soó, Heath Spotted-orchid: frequent in and around bog 2. This species is more restricted to bogs and acid grassland and is considered an axiophyte of these habitats.



*Dactylorhiza* <sup>x</sup>*hallii* (Druce) Soó (*maculata* x *praetermissa*), Heath Spotted x Southern Marsh Orchid, is rare in bog 4 (TQ96744611, conf. R.M. Bateman, 2020). This hybrid, which is not uncommon, has been recorded here several times since Francis Rose first reported it in 1942, but it can be difficult to find amongst the swarm of rather variable Southern Marsh orchids.



*Dactylorhiza praetermissa* (Druce) Soó, Southern Marsh-orchid: abundant in bog 4 and rare in other bogs; it is typical of marshy grassland and fens.



*Dactylorhiza praetermissa*

*Anacamptis pyramidalis* (L.) Rich., Pyramidal Orchid: one plant on the edge of the reserve at TQ967454 (I. Rickards, 2019). It has been here a few years. This is an axiophyte of calcareous grassland.

†*Ophrys apifera* Huds., Bee Orchid: 'one plant on a clay patch' in 1944 (F. Rose).

*Iris pseudacorus* L., Yellow Iris: in bog 4 and along the stream; also in the New Fen

*Iris foetidissima* L., Stinking Iris: rare, but scattered throughout the wooded areas.

*Crocsmia* <sup>x</sup>*crocsmiiflora* (Lemoine ex Burb. & Dean) Nicholson, Montbretia: in woodland west of the car park, TR970458, and in the New Fen. Probably introduced as garden waste originally, but now well established.

*Narcissus pseudonarcissus* L., Daffodil: one clump seen, in woodland near the car park (TQ970458).

*Ornithogalum umbellatum* L., Star-of-Bethlehem: in woodland close to the car park. It has been recorded here since 1948 (H.M. Pratt) and seems very persistent for a garden throw-out.

*Hyacinthoides non-scripta* (L.) Chouard ex Rothm., Bluebell: frequent in the woodland and scattered throughout the grassland. This is an axiophyte of ancient woods which spreads into new woodland only slowly, so its prevalence at this site shows the extent to which it must have had tree cover in the past.

*Sparganium erectum* L., Branched Bur-reed: in bog 4 and the New Fen.

*Typha latifolia* L., Great Reedmace: occasional in bogs 2 & 4 and the New Fen. The hybrid with *T. angustifolia*, Lesser Reedmace (*Typha* <sup>x</sup>*glauca*), is



frequent in the lower parts of Bog 4 (TQ960460). It has a short length of stem visible between the male and female sections of the spike and narrower leaves (8 mm wide in the specimen pictured below).



*Typha x glauca*

*Juncus articulatus* L., Jointed Rush: abundant in the lower part of bog 4 and in all the other bogs, where it can be the most abundant species in what is presumably M23b rush-pasture, and it is also frequent in a variety of other communities. Many of the plants seem to have only partial fertility, and most of them have recurved tips to the outer tepals, which suggests that following hybrid is very common.



*Juncus x surrejanus* Druce ex Stace & Lambinon (*articulatus x acutiflorus*): this hybrid appears to be common on Hothfield. Most of the plants that look like *J. acutiflorus* (in bogs 1 & 4 and the New Fen) are sterile, with capsules shorter than tepals, as described by Blackstock & Roberts (1986). Everywhere else, the plants that appear to be *J. articulatus* often have somewhat intermediate characters, such as outward-curving tepals and are often sterile or with only low seed set. It seems possible that many of the rushes at Hothfield are hybrids, and surveyors may find it difficult to put a name to the plants they find.



*Juncus x surrejanus*

*Juncus acutiflorus* Ehrh. ex Hoffm., Sharp-flowered Rush: in the New Fen and the upper part of bog 4, although it never seems to set seed, and could be described as *J. x surrejanus*. It was first recorded here by H. Lamb in 1900 (MNE). Sharp-flowered Rush is much rarer than Jointed Rush in Kent, and it occurs in more acid, low-nutrient conditions; it is therefore considered an axiophyte of acid grassland and bogs.



*Juncus bulbosus* L., Bulbous Rush: abundant in bogs 2, 3 & 4. This is an axiophyte of oligotrophic wetlands; here it tends to occur on patches of bare peat.



*Juncus squarrosus* L., Heath Rush: frequent in the grassland, especially along paths, near the acid bogs (1-3). It is scarcer in drier ground.





*Juncus tenuis* Willd., Slender Rush: frequent on woodland paths on Butler's Toll and occasional along heathland paths near bogs 2 and 4. This is an introduced species that always seems to grow along paths but doesn't seem to spread into semi-natural habitats.

*Juncus bufonius* L., Toad Rush: occasional throughout, especially in rutted tracks along paths.

*Juncus inflexus* L., Hard Rush: occasional throughout.

*Juncus effusus* L., Soft-rush: occasional throughout, mainly in the bogs but also in winter-wet spots in the grassland and woodland. Most of the plants have rather compact flower heads and many tiny ridges on the stems; these are *J. effusus* var. *subglomeratus*, and should not be confused with the following species, which has a dull green stem, fewer, more pronounced ridges, and a flattened bract (the top of the stem, above the inflorescence). *Juncus effusus* is a common wetland plant, typical of bogs and slightly acidic wetland.

*Juncus conglomeratus* L., Compact Rush: occasional in the New Fen. I have not seen this species in the main part of the site at all. Also recorded by Francis Rose in 1947 (MNE).

*Luzula campestris* (L.) DC., Field Wood-rush: abundant in the dry grassland.



*Luzula multiflora* (Ehrh.) Lej., Heath Wood-rush: frequent in the bogs and heath. This is an axiophyte of heathland. Francis Rose recorded both var. *congesta* (Thuill.) Arcang. and var. *multiflora* in the 1940s and 1950s.

*Eriophorum angustifolium* Honck., Common Cottongrass: locally abundant in the bogs; axiophyte.

*Scirpus sylvaticus* L., Wood Club-rush: a large patch in bog 4 (TQ967461); apparently not recorded before 2019. This is an axiophyte of base-rich fens and wetlands.

*Eleocharis palustris* (L.) Roem. & Schult., Common Spike-rush: locally abundant in bog 4.

*Eleocharis multicaulis* (Sm.) Desv., Many-stalked Spike-rush: a very rare axiophyte of peaty soils; locally abundant in bogs 2, 3 & 4. It has been known here since the 19<sup>th</sup> century (F.M. Webb and Hanbury & Marshall).



*Isolepis setacea* (L.) R. Br., Bristle Club-rush: occasional in bog 4. This is an axiophyte of marshy grassland, first recorded here by F.M. Webb in 1880.

*Carex paniculata* L., Greater Tussock-sedge: many fine plants in bog 4; a few on the edge of bog 2; and one large plant in the New Fen This is an axiophyte of fens and wet woodland.

†*Carex* ×*boeninghausiana* (*paniculata* × *remota*) was recorded in 1923 by Miss Cobbe. This is quite a common hybrid wherever the parents occur together, but it has not been seen recently despite several searches.

*Carex divulsa* Stokes, Grey Sedge: on dry ground near bog 4 (TQ966461) and in the New Fen, and along roadsides in various places.

*Carex remota* L., Remote Sedge: rare in bog 4 and frequent along the stream on the western boundary. Note that the hybrid with *C. paniculata* was found in 1923.

*Carex leporina* L., Oval Sedge: abundant in bogs 2 and 4 and in wet grassland; recorded here since the 19<sup>th</sup> century (F.M. Webb).



*Carex echinata* Murray, Star Sedge: abundant in the bogs; this is an axiophyte of mires and wet heath.

*Carex hirta* L., Hairy Sedge: occasional in damp grassland and extending into the fen at bog 4.

*Carex pseudocyperus* L., Cyperus Sedge: small patches in the New Fen and bog 4.



*Carex rostrata* Stokes, Bottle Sedge: some good-sized patches in bog 4, where it has been known since the 19<sup>th</sup> century (W.R. Jeffrey). An axiophyte of oligotrophic conditions and ombrotrophic bogs.

*Carex pendula* Hudson, Pendulous Sedge: abundant along the roadside near the car park. Within the reserve, there is a small amount in bog 4, where it is heavily grazed and therefore not abundant, and along the stream on the western boundary. There are also some plants in the New Fen. It is normally a plant of wet woodland rides and it can become very abundant if allowed to thrive.

*Carex sylvatica* Huds., Wood Sedge: rare, in woodland on the edge of the New Fen.

*Carex panicea* L., Carnation Sedge: abundant in the bogs and the New Fen; an axiophyte of acidic flushes and wet grassland which is very rare in Kent. The leaves are glaucous on both surfaces and have a trigonous tip, as illustrated below.



*Carex laevigata* Smith, Smooth-stalked Sedge: occasional throughout bog 4. It was first recorded here by E.S. Marshall in the 19<sup>th</sup> century. It is an axiophyte, normally of damp woodland on acid soils.

*Carex binervis* Smith, Green-ribbed Sedge: in grassland near bog 2 (TQ968457). This is an axiophyte of acid grassland and heath. It was first recorded here by Francis Rose in 1946.



*Carex demissa* Hornem., Common Yellow Sedge: frequent in all the bogs; an axiophyte of oligotrophic wetland. Known here since the 19<sup>th</sup> century (W.R. Jeffrey; Hanbury & Marshall).



*Carex pilulifera* L., Pill Sedge: frequent in the heathland and acid grassland; an axiophyte. Known here since the 19<sup>th</sup> century (W.R. Jeffrey; J.S. Mill).

*Carex nigra* (L.) Reichard, Common Sedge: in bogs 2 & 3 and in heathland around this area; an axiophyte of acid flushes and mires.



*Carex pulicaris* L., Flea Sedge: rare, in bogs 2 & 4. This is an axiophyte of mires; Hothfield is the only known site for it in Kent.



*Nardus stricta* L., Mat-grass: very rare. The only place where it has been seen recently is on the main slope, between bogs 2 and 3, and there may be as little as two or three clumps. It is an axiophyte of upland and acid grassland and was first recorded here by G.E. Smith in 1829.



*Schedonorus arundinaceus* (Schreb.) Dumort., Tall Fescue: along the road verge between the two main portions of the reserve.

*Schedonorus giganteus* (L.) Holub, Giant Fescue: in woodland in the triangle and on Foxenhill Toll.

*Lolium perenne* L., Perennial Rye-grass: occasional throughout.

*Festuca rubra* L., Red Fescue: occasional in grassland.

*Festuca ovina* L., Sheep's Fescue: occasional in dry grassland and on ant hills in bog 4. It is an axiophyte of dry grassland.

*Vulpia bromoides* (L.) Gray, Squirrel-tail Fescue: abundant in dry grassland and along the boardwalk to bog 2.

*Vulpia myuros* (L.) C. Gmelin, Rat's-tail Fescue: locally abundant on a dry bank above bog 1, TQ969464 and around the football field.

†*Vulpia ciliata* Dumort., Bearded Fescue: recorded in the reserve by F. Rose before 1981 and listed for this area by Philp in both his atlases. It is a plant of maritime sand and shingle, also known in a few places inland on the Greensand. The plants are described as ssp. *ambigua* (Le Gall) Stace & Auquier, which is the native type.

*Poa annua* L., Annual Meadow-grass: occasional along track sides.

*Poa trivialis* L., Rough Meadow-grass: frequent throughout, in dry grassland and bogs.

*Poa pratensis* L., Smooth Meadow-grass: in grassland on the old football pitch and elsewhere.

*Poa nemoralis* L., Wood Meadow-grass: occasional in the woodland.

*Dactylis glomerata* L., Cock's-foot: occasional in tall grassland.

*Arrhenatherum elatius* (L.) P. Beauv., False Oat-grass: occasional throughout.

*Deschampsia flexuosa* (L.) Trin., Wavy Hair-grass: abundant in dry grassland; an axiophyte of acid grassland and heath or woodland.

*Holcus lanatus* L., Yorkshire-fog: frequent throughout, in grassland, scrub and bogs.

*Holcus mollis* L., Creeping Soft-grass: Frequent in dry acid grassland and extending into the wetland of bog 4.





†*Aira caryophylla* L., Silver Hair-grass: recorded by F.M. Webb in the 19<sup>th</sup> century; an axiophyte of acid grassland.

*Aira praecox* L., Early Hair-grass: frequent in the acid grassland; an axiophyte.



*Anthoxanthum odoratum* L., Sweet Vernal Grass: frequent throughout, in both wet and dry habitats.

*Phalaris arundinacea* L., Reed Canary-grass: in bog 4.

*Agrostis capillaris* L., Common Bent: frequent in the drier areas of grassland.

*Agrostis stolonifera* L., Creeping Bent: frequent in wet grassland and the edges of bogs.

*Agrostis canina* L., Velvet Bent: locally abundant in the bogs.

*Agrostis vinealis* Schreb., Brown Bent: numerous closely-grazed clumps in heathland on the main slope (TQ969458, S. Buckingham, 2020).

*Glyceria fluitans* (L.) R. Br., Floating Sweet-grass: in the more mesotrophic wetland areas, such as the pools at the bottom of the bogs.

*Glyceria notata* Chevall., Plicate Sweet-grass: in bog 4 and the New Fen; also recorded by N.F. Stewart in 1998 in bog 2; an axiophyte of mesotrophic wetland.

*Bromus hordeaceus* L., Soft-brome: occasional in dry grassland.

*Anisantha sterilis* (L.) Nevski, Barren Brome: frequent in hedges and disturbed areas.

*Brachypodium sylvaticum* (Huds.) P. Beauv.: frequent along road verges in the triangle area and around New Fen.

*Danthonia decumbens* (L.) DC., Heath-grass: there are at least three patches: one on the south side of bog 2 (TQ968458), along the track from bog 3 to the main path (TQ96924574) and it is quite abundant along the main path (TQ96684584). It was first recorded here by F.M. Webb in about 1880; an axiophyte of acid grassland and heath.



*Molinia caerulea* (L.) Moench, Purple Moor-grass: abundant in the bogs and heathland; an axiophyte. Recorded here since the 19<sup>th</sup> century (W.R. Jeffrey; Hanbury & Marshall).

## Vegetation Quadrats

Quadrat	Habitat	GR	Date	Comment
Q1199	M23a Juncus acutiflorus rush-pasture	TQ96924623	22 Jun 2019	Flush at the top of Bog 4.
Q1200	M29 Hypericum elodes soakway	TQ96974568	01 July 2019	Top of Bog 2.
Q1202	M21 Narthecium ossifragum valley mire	TQ96944568	01 July 2019	Middle of Bog 2.
Q1203	M21 Narthecium ossifragum valley mire	TQ96824565	01 July 2019	By the boardwalk in bog 2.
Q1204	U1 Rumex acetosella grassland	TQ97014577	01 July 2019	On the side of the main path.
Q1206	S3 Carex paniculata swamp	TQ96774618	11 July 2019	Tussock sedge swamp in bog 4.
Q1209	M29 Hypericum elodes soakway	TQ96734610	11 July 2019	Bog 4.
Q1220	W8 Fraxinus excelsior woodland	TQ97314578	3 September 2019	Woodland in the triangle area.
Q1222	U1 Rumex acetosella grassland	TQ96904615	22 March 2020	Short grassland above bog 4.
Q1232	W10 Quercus robur woodland	TQ96504578	22 APR 2020	Acid woodland near the stream.
Q1242	M9 Carex rostrata mire	TQ96884621	12 May 2020	Bogbean bog.
Q1263	M23a Juncus acutiflorus rush-pasture	TQ96744612	21 June 2020	Grazed Carex paniculata swamp.

	Q1199	Q1200	Q1202	Q1203	Q1204	Q1206	Q1209	Q1220	Q1222	Q1232	Q1242	Q1263
Acer pseudoplatanus	-	-	-	-	-	4	-	4	-	-	-	-
Agrostis capillaris	-	-	-	-	2	-	-	-	4	-	-	-
Agrostis stolonifera	-	2	-	-	-	-	-	-	-	-	2	-
Aira praecox	-	-	-	-	5	-	-	-	-	-	-	-
Anagallis tenella	-	-	-	7	-	-	-	-	-	-	-	-
Anthoxanthum odoratum	2	-	-	-	-	-	-	-	-	-	-	-
Aphanes australis	-	-	-	-	3	-	-	-	4	-	-	-
Aulacomnium palustre	-	3	-	-	-	-	-	-	-	-	2	-
Betula pendula	-	-	-	-	-	-	-	4	-	4	2	-
Betula pubescens	-	4	1	1	-	-	-	-	-	9	-	-
Calliergonella cuspidata	-	-	-	-	-	-	4	-	-	-	5	4
Campylium stellatum	-	-	-	5	-	-	-	-	-	-	-	-
Carex demissa	-	-	-	2	-	-	4	-	-	-	-	-
Carex echinata	-	-	-	1	-	-	-	-	-	-	3	-
Carex laevigata	1	-	-	-	-	-	-	-	-	-	-	-
Carex panicea	1	3	4	5	-	-	3	-	-	-	3	-
Carex paniculata	-	-	-	-	-	9	1	-	-	-	4	10
Carex pulicaris	-	1	-	4	-	-	-	-	-	-	1	-
Carex rostrata	-	-	-	-	-	-	4	-	-	-	2	-
Castanea sativa	-	-	-	-	-	-	-	6	-	-	-	-
Cerastium glomeratum	-	-	-	-	-	-	-	-	4	-	-	-
Cerastium semidecandrum	-	-	-	-	2	-	-	-	4	-	-	-
Chamerion angustifolium	-	-	-	-	-	2	-	-	-	-	-	-
Circaea lutetiana	-	-	-	-	-	-	-	3	-	-	-	-
Cirsium palustre	-	1	-	1	-	2	1	-	-	-	2	4
Crassula helmsii	-	-	-	-	-	-	-	-	-	-	5	-
Crataegus monogyna	-	-	-	-	-	-	-	6	-	-	-	-
Dactylorhiza maculata	-	3	-	1	-	-	-	-	-	-	-	-
Dactylorhiza praetermissa	-	-	-	-	-	-	2	-	-	-	-	-
Deschampsia flexuosa	-	-	3	-	2	-	-	-	3	2	-	-
Drosera rotundifolia	-	2	-	4	-	-	-	-	-	-	-	-
Dryopteris dilatata	-	-	-	-	-	-	-	2	-	2	-	-
Dryopteris filix-mas	-	-	-	-	-	-	-	2	-	-	-	-
Eleocharis multicaulis	-	-	-	4	-	-	3	-	-	-	-	-
Epilobium hirsutum	2	-	-	-	-	4	-	-	-	-	-	-
Epilobium montanum	-	-	-	-	-	-	-	1	-	-	-	-
Epilobium obscurum	-	2	-	-	-	2	-	-	-	-	-	-
Epilobium palustre	-	-	-	-	-	-	-	-	-	-	-	1
Epilobium parviflorum	2	-	-	-	-	-	-	-	-	-	-	-
Epilobium tetragonum	-	-	-	-	-	-	-	-	-	-	-	2
Equisetum fluviatile	-	-	-	-	-	1	-	-	-	-	4	3
Erica tetralix	-	1	4	4	-	-	-	-	-	-	-	-
Eriophorum angustifolium	-	-	3	3	-	-	3	-	-	-	-	-
Fragaria vesca	-	-	-	-	-	-	-	5	-	-	-	-
Fraxinus excelsior	-	-	-	-	-	-	-	5	-	-	-	-
Galium aparine	-	-	-	-	-	3	-	-	-	3	-	-
Galium palustre	3	-	-	-	-	3	-	-	-	-	3	3
Geranium robertianum	-	-	-	-	-	-	-	1	-	-	-	-
Geum urbanum	-	-	-	-	-	-	-	1	-	-	-	-
Glechoma hederacea	-	-	-	-	-	-	-	4	-	-	-	-
Helosciadium nodiflorum	4	-	-	-	-	1	-	-	-	-	-	1
Holcus lanatus	3	3	1	-	-	2	2	-	-	2	-	4
Hydrocotyle vulgaris	-	4	-	4	-	-	-	-	-	-	4	4

Hypericum elodes	-	4	-	-	-	-	8	-	-	-	-	-
Hypericum tetrapterum	1	-	-	-	-	-	-	-	-	-	2	2
Hypnum cupressiforme	-	-	-	-	-	-	-	-	4	-	-	-
Ilex aquifolium	-	-	-	-	-	-	-	-	-	2	-	-
Juncus acutiflorus	10	-	-	-	-	-	-	-	-	-	3	-
Juncus bufonius	-	-	-	-	2	-	-	-	-	-	5	-
Juncus bulbosus	-	2	2	-	-	-	1	-	-	-	2	-
Juncus effusus	4	-	-	-	-	-	-	-	-	3	1	-
Juncus x surrejanus	-	7	5	-	-	3	2	-	-	-	-	5
Lonicera periclymenum	-	-	-	-	-	-	-	-	-	5	-	-
Lotus pedunculatus	5	3	3	-	-	2	-	-	-	-	4	4
Luzula campestris	-	-	-	-	-	-	-	-	4	-	-	-
Luzula multiflora	-	-	-	2	-	-	-	-	-	-	-	-
Mentha aquatica	5	-	-	-	-	3	2	-	-	-	2	4
Menyanthes trifoliata	-	-	-	-	-	-	-	-	-	-	8	-
Mercurialis perennis	-	-	-	-	-	-	-	3	-	-	-	-
Mnium hornum	-	-	-	-	-	-	-	2	-	-	-	-
Molinia caerulea	-	4	-	5	-	-	4	-	-	-	-	-
Montia fontana	-	-	-	-	-	-	-	-	3	-	-	-
Myosotis discolor	-	-	-	-	1	-	-	-	-	-	-	-
Myosotis secunda	-	-	-	-	-	-	-	-	-	-	-	2
Narthecium ossifragum	-	2	8	4	-	-	-	-	-	-	-	-
Ornithopus perpusillus	-	-	-	-	2	-	-	-	2	-	-	-
Plantago coronopus	-	-	-	-	3	-	-	-	-	-	-	-
Poa annua	-	-	-	-	3	-	-	-	4	-	-	-
Poa nemoralis	-	-	-	-	-	-	-	3	-	-	-	-
Poa trivialis	3	-	-	-	-	-	-	-	-	-	-	3
Potamogeton polygonifolius	-	3	-	5	-	-	4	-	-	-	-	-
Potentilla erecta	-	4	3	3	-	-	-	-	-	-	-	-
Prunella vulgaris	-	1	-	-	-	-	-	-	-	-	-	-
Prunus avium	-	-	-	-	-	-	-	5	-	-	-	-
Pteridium aquilinum	-	-	-	-	-	4	-	7	-	3	-	-
Quercus robur	-	-	-	-	-	-	-	8	-	5	-	-
Ranunculus flammula	2	3	-	-	-	-	1	-	-	-	4	2
Ranunculus repens	3	-	-	-	1	-	-	-	-	-	-	4
Rhytidadelphus squarrosus	-	-	-	-	4	-	-	-	4	-	-	-
Rosa canina	-	-	-	-	-	4	-	2	-	-	-	-
Rubus fruticosus	-	-	-	-	-	4	-	6	-	9	-	-
Rubus idaeus	-	-	-	-	-	-	-	2	-	-	-	-
Rumex acetosa	-	-	-	-	-	-	-	-	-	-	-	2
Rumex acetosella	-	-	-	-	5	-	-	-	5	-	-	-
Rumex sanguineus	4	-	-	-	-	-	-	3	-	-	-	1
Sagina procumbens	-	-	-	-	2	-	-	-	-	-	2	-
Salix atrocinerea	-	-	1	-	-	1	-	-	-	-	4	2
Salix caprea	-	-	-	-	-	-	-	1	-	-	-	-
Salix x multinervis	-	4	4	2	-	-	1	-	-	-	-	-
Sambucus nigra	-	-	-	-	-	-	-	4	-	-	-	-
Scutellaria minor	-	3	-	-	-	-	1	-	-	-	-	-
Silene flos-cuculi	-	-	-	-	-	-	-	-	-	-	-	3
Solanum dulcamara	-	-	-	-	-	2	-	-	-	-	-	-
Sorbus aucuparia	-	-	-	-	-	-	-	-	-	2	-	-
Sphagnum denticulatum	-	4	8	-	-	-	-	-	-	-	-	-
Sphagnum fallax	2	4	4	-	-	-	-	-	-	-	5	-
Sphagnum palustre	-	-	-	-	-	-	-	-	-	-	2	-
Sphagnum papillosum	-	4	4	-	-	-	-	-	-	-	-	-
Sphagnum squarrosum	-	-	-	-	-	-	4	-	-	-	-	-
Sphagnum subnitens	-	-	-	-	-	-	4	-	-	-	-	-
Stachys sylvatica	-	-	-	-	-	1	-	-	-	-	-	-
Stellaria alsine	1	-	-	-	-	-	-	-	-	-	-	-
Stellaria holostea	-	-	-	-	-	-	-	-	-	3	-	-
Stellaria pallida	-	-	-	-	-	-	-	-	4	-	-	-
Succisa pratensis	-	-	6	4	-	-	-	-	-	-	-	-
Trifolium micranthum	-	-	-	-	2	-	-	-	-	-	-	-
Typha latifolia	2	2	-	-	-	-	1	-	-	-	2	-
Urtica dioica	-	-	-	-	-	4	-	3	-	-	-	-
Veronica arvensis	-	-	-	-	1	-	-	-	4	-	-	-
Veronica montana	-	-	-	-	-	-	-	4	-	-	-	-
Veronica scutellata	-	-	-	-	-	-	4	-	-	-	-	-
Viola palustris	-	-	3	-	-	-	-	-	-	-	-	-
Viola riviniana	-	-	-	-	-	-	-	1	-	-	-	-
Vulpia bromoides	-	-	-	-	5	-	-	-	-	-	-	-



## Species recorded by date class

Species	Common name	Status	<1970	<1982	<2010	2010+
<i>Aneura mirabilis</i>	Ghostwort	Axiophyte	-	+	-	-
<i>Aneura pinguis</i>	Greasewort	Axiophyte	+	-	-	+
<i>Aulacomnium palustre</i>	Bog Groove-moss	Axiophyte	+	-	+	+
<i>Calliergonella cuspidata</i>	Pointed Spear-moss	-	-	-	-	+
<i>Campylium stellatum</i>	Yellow Starry Feather-moss	-	+	-	-	+
<i>Dicranum scoparium</i>	Broom Fork-moss	-	-	-	-	+
<i>Hypnum cupressiforme</i>	Cypress-leaved Plait-moss	-	-	-	-	+
<i>Mnium hornum</i>	Swan's-neck Thyme-moss	-	-	-	-	+
<i>Pallavicinia lyellii</i>	Veilwort	-	-	-	+	-
<i>Polytrichastrum formosum</i>	Bank Haircap	-	-	-	+	+
<i>Polytrichum commune</i>	Silkwood	-	-	-	+	+
<i>Polytrichum juniperinum</i>	Juniper Haircap	-	-	-	+	+
<i>Pseudoscleropodium purum</i>	Neat Feather-moss	-	-	-	-	+
<i>Rhodobryum roseum</i>	Rose-moss	Axiophyte	+	-	-	-
<i>Rhytidiadelphus squarrosus</i>	Springy Turf-moss	-	-	-	-	+
<i>Sphagnum capillifolium</i>	Red Bog-moss	Axiophyte	+	-	-	+
<i>Sphagnum compactum</i>	Compact Bog-moss	Axiophyte	+	-	+	-
<i>Sphagnum cuspidatum</i>	Feathery Bog-moss	Axiophyte	+	-	+	-
<i>Sphagnum denticulatum</i>	Cow-horn Bog-moss	Axiophyte	+	-	+	+
<i>Sphagnum dentulax</i>	Flat-topped Bog-moss	Axiophyte	+	-	+	+
<i>Sphagnum fimbriatum</i>	Fringed Bog-moss	Axiophyte	+	-	+	-
<i>Sphagnum flexuosum</i>	Flexuous Bog-moss	Axiophyte	+	-	-	-
<i>Sphagnum inundatum</i>	Lesser Cow-horn Bog-moss	Axiophyte	+	-	+	-
<i>Sphagnum magellanicum</i>	Magellanic Bog-moss	Axiophyte	+	-	+	-
<i>Sphagnum palustre</i>	Blunt-leaved Bog-moss	Axiophyte	+	-	+	+
<i>Sphagnum papillosum</i>	Papillose Bog-moss	Axiophyte	+	-	+	+
<i>Sphagnum squarrosum</i>	Spiky Bog-moss	Axiophyte	+	-	+	+
<i>Sphagnum subnitens</i>	Lustrous Bog-moss	Axiophyte	+	-	-	+
<i>Sphagnum tenellum</i>	Soft Bog-moss	Axiophyte	+	-	-	-
<i>Acer campestre</i>	Field Maple	-	-	+	+	+
<i>Acer pseudoplatanus</i>	Sycamore	-	-	+	+	+
<i>Achillea millefolium</i>	Yarrow	-	+	+	+	+
<i>Achillea ptarmica</i>	Sneezewort	Axiophyte	+	-	-	-
<i>Aegopodium podagraria</i>	Ground-elder	-	+	+	+	+
<i>Aesculus hippocastanum</i>	Horse-chestnut	-	-	+	+	+
<i>Agrostis canina</i>	Velvet Bent	-	-	+	+	+
<i>Agrostis capillaris</i>	Common Bent	-	+	+	+	+
<i>Agrostis stolonifera</i>	Creeping Bent	-	-	+	+	+
<i>Agrostis vinealis</i>	Brown Bent	Axiophyte	-	+	-	+
<i>Aira caryophylla</i>	Silver Hair-grass	Axiophyte	+	-	-	-
<i>Aira praecox</i>	Early Hair-grass	Axiophyte	-	+	+	+
<i>Ajuga reptans</i>	Bugle	-	-	-	-	+
<i>Alisma plantago-aquatica</i>	Water-plantain	-	+	-	+	+
<i>Alliaria petiolata</i>	Garlic Mustard	-	-	+	+	+
<i>Alnus cordata</i>	Italian Alder	-	-	-	-	+
<i>Alnus x elliptica</i>	Hybrid Italian Alder	-	-	-	-	+
<i>Alnus glutinosa</i>	Alder	-	-	+	+	+
<i>Anacamptis pyramidalis</i>	Pyramidal Orchid	Axiophyte	-	-	-	+
<i>Anagallis arvensis</i>	Scarlet Pimpernel	-	+	+	+	+
<i>Anagallis tenella</i>	Bog Pimpernel	Axiophyte	+	+	+	+
<i>Anchusa arvensis</i>	Bugloss	-	-	+	+	+
<i>Anemone nemorosa</i>	Wood Anemone	Axiophyte	-	+	+	+
<i>Angelica sylvestris</i>	Wild Angelica	-	-	+	+	+
<i>Anisantha sterilis</i>	Barren Brome	-	-	+	+	+
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	-	-	+	+	+
<i>Anthriscus sylvestris</i>	Cow Parsley	-	-	+	+	+
<i>Aphanes australis</i>	Slender Parsley-piert	-	-	+	+	+
<i>Arctium minus</i>	Lesser Burdock	-	+	+	+	+
<i>Arenaria serpyllifolia</i>	Thyme-leaved Sandwort	-	-	+	+	+
<i>Arrhenatherum elatius</i>	False Oat-grass	-	-	+	+	+
<i>Artemisia vulgaris</i>	Mugwort	-	+	+	+	+
<i>Arum italicum</i>	Italian Lords-and-ladies	-	-	+	+	+
<i>Arum maculatum</i>	Lords-and-ladies	-	+	+	+	+
<i>Athyrium filix-femina</i>	Lady Fern	Axiophyte	-	+	+	+
<i>Atriplex patula</i>	Common Orache	-	-	-	-	+
<i>Atriplex prostrata</i>	Spear-leaved Orache	-	-	-	+	+

<i>Bellis perennis</i>	Daisy	-	+	+	+	+
<i>Betula pendula</i>	Silver Birch	-	-	+	+	+
<i>Betula pubescens</i>	Downy Birch	-	-	+	+	+
<i>Bidens cernua</i>	Nodding Bur-marigold	Axiophyte	+	-	-	-
<i>Brachypodium sylvaticum</i>	False-brome	-	-	+	+	+
<i>Bromus hordeaceus</i>	Soft-brome	-	-	+	+	+
<i>Bryonia dioica</i>	White Bryony	-	-	+	+	+
<i>Buddleja davidii</i>	Butterfly-bush	-	-	-	+	+
<i>Callitriche brutia</i>	Intermediate Water-starwort	-	-	-	+	-
<i>Callitriche stagnalis</i>	Common Water-starwort	-	-	-	+	+
<i>Calluna vulgaris</i>	Heather	Axiophyte	+	+	+	+
<i>Caltha palustris</i>	Marsh Marigold	Axiophyte	+	+	+	+
<i>Calystegia sepium</i>	Hedge Bindweed	-	+	+	+	+
<i>Calystegia silvatica</i>	Large Bindweed	-	-	+	-	+
<i>Campanula rotundifolia</i>	Harebell	Axiophyte	+	+	+	+
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	-	+	+	+	+
<i>Cardamine flexuosa</i>	Wavy Bitter-cress	-	-	+	+	+
<i>Cardamine hirsuta</i>	Hairy Bitter-cress	-	-	+	+	+
<i>Cardamine pratensis</i>	Cuckooflower	-	+	+	+	+
<i>Carex binervis</i>	Green-ribbed Sedge	Axiophyte	+	+	+	+
<i>Carex x boeninghausiana</i>	Remote x Tussock Sedge	-	+	-	-	-
<i>Carex demissa</i>	Common Yellow Sedge	Axiophyte	+	+	+	+
<i>Carex divulsa</i>	Grey Sedge	-	-	+	+	+
<i>Carex echinata</i>	Star Sedge	Axiophyte	+	+	+	+
<i>Carex hirta</i>	Hairy Sedge	-	+	+	+	+
<i>Carex laevigata</i>	Smooth-stalked Sedge	Axiophyte	+	+	-	+
<i>Carex leporina</i>	Oval Sedge	-	+	+	+	+
<i>Carex nigra</i>	Common Sedge	Axiophyte	+	+	+	+
<i>Carex panicea</i>	Carnation Sedge	Axiophyte	+	+	+	+
<i>Carex paniculata</i>	Greater Tussock-sedge	Axiophyte	+	+	+	+
<i>Carex pendula</i>	Pendulous Sedge	-	-	-	+	+
<i>Carex pilulifera</i>	Pill Sedge	Axiophyte	+	+	+	+
<i>Carex pseudocyperus</i>	Cyperus Sedge	Axiophyte	-	-	-	+
<i>Carex pulicaris</i>	Flea Sedge	Axiophyte	+	+	+	+
<i>Carex remota</i>	Remote Sedge	-	-	+	+	+
<i>Carex rostrata</i>	Bottle Sedge	Axiophyte	+	+	-	+
<i>Carex sylvatica</i>	Wood-sedge	Axiophyte	-	-	+	+
<i>Carpinus betulus</i>	Hornbeam	Axiophyte	-	+	-	+
<i>Castanea sativa</i>	Sweet Chestnut	-	-	+	+	+
<i>Centaureum erythraea</i>	Common Centaury	-	+	+	+	+
<i>Centunculus minimus</i>	Chaffweed	Axiophyte	+	-	-	-
<i>Cerastium arvense</i>	Field Mouse-ear	Axiophyte	+	+	-	-
<i>Cerastium fontanum</i>	Common Mouse-ear	-	-	+	+	+
<i>Cerastium glomeratum</i>	Sticky Mouse-ear	-	-	+	+	+
<i>Cerastium semidecandrum</i>	Little Mouse-ear	-	-	+	+	+
<i>Ceratocarpus claviculata</i>	Climbing Corydalis	Axiophyte	-	+	-	+
<i>Chaerophyllum temulum</i>	Rough Chervil	-	-	+	+	+
<i>Chamerion angustifolium</i>	Rosebay Willowherb	-	-	+	+	+
<i>Chenopodium album</i>	Fat-hen	-	-	+	+	+
<i>Chenopodium hybridum</i>	Maple-leaved Goosefoot	-	-	-	-	+
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden-saxifrage	Axiophyte	-	-	+	+
<i>Circaea lutetiana</i>	Enchanter's-nightshade	-	-	+	+	+
<i>Cirsium arvense</i>	Creeping Thistle	-	-	+	+	+
<i>Cirsium palustre</i>	Marsh Thistle	-	+	+	+	+
<i>Cirsium vulgare</i>	Spear Thistle	-	-	+	+	+
<i>Claytonia sibirica</i>	Pink Purslane	-	-	-	+	+
<i>Clematis vitalba</i>	Traveller's Joy	-	-	+	-	+
<i>Corylus avellana</i>	Hazel	-	-	+	+	+
<i>Crassula helmsii</i>	New Zealand Pigmyweed	-	-	-	+	+
<i>Crataegus x media</i>	Common x Midland Hawthorn	-	-	-	-	+
<i>Crataegus monogyna</i>	Hawthorn	-	+	+	+	+
<i>Crepis capillaris</i>	Smooth Hawk's-beard	-	-	+	+	+
<i>Crocsmia x crocosmiiflora</i>	Montbretia	-	-	-	-	+
<i>Cuscuta epithymum</i>	Dodder	Axiophyte	+	-	-	-
<i>Dactylis glomerata</i>	Cock's-foot	-	-	+	+	+
<i>Dactylorhiza x hallii</i>	Southern Heath Spotted-orchid	-	+	-	+	+
<i>Dactylorhiza maculata</i>	Heath Spotted-orchid	Axiophyte	+	+	+	+
<i>Dactylorhiza praetermissa</i>	Southern Marsh-orchid	Axiophyte	+	+	+	+
<i>Danthonia decumbens</i>	Heath-grass	Axiophyte	+	+	-	+
<i>Daucus carota</i>	Wild Carrot	-	-	-	-	+
<i>Deschampsia flexuosa</i>	Wavy Hair-grass	Axiophyte	-	+	+	+

<i>Digitalis purpurea</i>	Foxglove	-	-	+	+	+
<i>Drosera rotundifolia</i>	Round-leaved Sundew	Axiophyte	+	+	+	+
<i>Dryopteris affinis</i>	Golden-scaled Male-fern	Axiophyte	-	-	+	+
<i>Dryopteris carthusiana</i>	Narrow Buckler-fern	Axiophyte	+	+	+	+
<i>Dryopteris x deweveri</i>	Hybrid Buckler-fern	-	-	-	-	+
<i>Dryopteris dilatata</i>	Broad Buckler-fern	-	-	+	+	+
<i>Dryopteris filix-mas</i>	Common Male Fern	-	-	+	+	+
<i>Eleocharis multicaulis</i>	Many-stalked Spike-rush	Axiophyte	+	+	+	+
<i>Eleocharis palustris</i>	Common Spike-rush	Axiophyte	+	+	+	+
<i>Epilobium ciliatum</i>	American Willowherb	-	-	+	+	+
<i>Epilobium hirsutum</i>	Great Willowherb	-	-	+	+	+
<i>Epilobium montanum</i>	Broad-leaved Willowherb	-	-	-	-	+
<i>Epilobium obscurum</i>	Short-fruited Willowherb	-	+	+	+	+
<i>Epilobium obscurum x palustre</i>	Short-fruited x Marsh Willowherb	-	+	-	-	-
<i>Epilobium palustre</i>	Marsh Willowherb	Axiophyte	+	+	+	+
<i>Epilobium parviflorum</i>	Hoary Willowherb	-	-	-	+	+
<i>Epilobium tetragonum</i>	Square-stalked Willowherb	-	-	-	-	+
<i>Equisetum arvense</i>	Field Horsetail	-	-	+	+	+
<i>Equisetum fluviatile</i>	Water Horsetail	Axiophyte	-	+	+	+
<i>Erica tetralix</i>	Cross-leaved Heath	Axiophyte	+	+	+	+
<i>Erigeron floribundus</i>	Bilbao's Fleabane	-	-	-	-	+
<i>Eriophorum angustifolium</i>	Common Cottongrass	Axiophyte	+	+	+	+
<i>Erodium cicutarium</i>	Common Stork's-bill	-	-	+	+	+
<i>Erophila verna</i>	Common Whitlowgrass	-	+	+	+	+
<i>Erythranthe moschata</i>	Musk	-	-	-	-	+
<i>Fagus sylvatica</i>	Beech	-	-	+	+	+
<i>Festuca ovina</i>	Sheep's Fescue	-	-	-	+	+
<i>Festuca rubra</i>	Red Fescue	-	-	+	+	+
<i>Ficaria verna</i>	Lesser Celandine	-	+	+	+	+
<i>Filago minima</i>	Small Cudweed	Axiophyte	+	+	-	-
<i>Fragaria vesca</i>	Wild Strawberry	-	-	+	+	+
<i>Frangula alnus</i>	Alder Buckthorn	Axiophyte	+	-	+	+
<i>Fraxinus excelsior</i>	Ash	-	-	+	-	+
<i>Galeopsis bifida</i>	Bifid Hemp-nettle	-	-	-	-	+
<i>Galium album</i>	Hedge Bedstraw	-	-	+	+	+
<i>Galium aparine</i>	Cleavers	-	+	+	+	+
<i>Galium palustre</i>	Common Marsh-bedstraw	-	-	+	+	+
<i>Galium saxatile</i>	Heath Bedstraw	Axiophyte	+	+	+	+
<i>Galium uliginosum</i>	Fen Bedstraw	Axiophyte	+	-	-	-
<i>Genista anglica</i>	Petty Whin	Axiophyte	+	+	-	-
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	-	-	+	+	+
<i>Geranium molle</i>	Dove's-foot Crane's-bill	-	-	+	+	+
<i>Geranium x oxonianum</i>	Druce's Crane's-bill	-	-	-	+	+
<i>Geranium pusillum</i>	Small-flowered Crane's-bill	-	+	+	+	+
<i>Geranium pyrenaicum</i>	Hedgerow Crane's-bill	-	-	-	-	+
<i>Geranium robertianum</i>	Herb-robert	-	+	+	+	+
<i>Geranium rotundifolium</i>	Round-leaved Crane's-bill	-	-	-	-	+
<i>Geum urbanum</i>	Wood Avens	-	-	+	+	+
<i>Glechoma hederacea</i>	Ground-ivy	-	-	+	+	+
<i>Glyceria fluitans</i>	Floating Sweet-grass	-	-	+	+	+
<i>Glyceria notata</i>	Plicate Sweet-grass	Axiophyte	-	-	+	+
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	-	+	-	+	+
<i>Hedera helix</i>	Ivy	-	-	+	+	+
<i>Helosciadium inundatum</i>	Lesser Marshwort	Axiophyte	+	-	-	-
<i>Helosciadium nodiflorum</i>	Fool's Watercress	-	+	+	+	+
<i>Heracleum sphondylium</i>	Hogweed	-	-	+	+	+
<i>Holcus lanatus</i>	Yorkshire-fog	-	-	+	+	+
<i>Holcus mollis</i>	Creeping Soft-grass	-	-	+	+	+
<i>Hyacinthoides non-scripta</i>	Bluebell	Axiophyte	-	+	+	+
<i>Hydrocotyle vulgaris</i>	Marsh Pennywort	Axiophyte	+	+	+	+
<i>Hypericum androsaemum</i>	Tutsan	-	-	-	+	+
<i>Hypericum elodes</i>	Marsh St John's-wort	Axiophyte	+	+	+	+
<i>Hypericum humifusum</i>	Trailing St John's-wort	Axiophyte	+	-	+	+
<i>Hypericum perforatum</i>	Perforate St John's-wort	-	-	+	+	+
<i>Hypericum pulchrum</i>	Slender St John's-wort	Axiophyte	+	-	+	-
<i>Hypericum tetrapterum</i>	Square-stalked St John's-wort	-	-	-	+	+
<i>Hypochaeris glabra</i>	Smooth Cat's-ear	Axiophyte	+	-	-	-
<i>Hypochaeris radicata</i>	Cat's-ear	-	+	+	+	+
<i>Ilex aquifolium</i>	Holly	-	-	+	+	+
<i>Iris foetidissima</i>	Stinking Iris	-	-	-	-	+
<i>Iris pseudacorus</i>	Yellow Iris	-	+	+	+	+



<i>Isolepis setacea</i>	Bristle Club-rush	Axiophyte	+	+	+	+
<i>Jacobaea vulgaris</i>	Ragwort	-	+	+	+	+
<i>Juncus acutiflorus</i>	Sharp-flowered Rush	Axiophyte	+	+	+	+
<i>Juncus articulatus</i>	Jointed Rush	-	-	+	+	+
<i>Juncus bufonius</i>	Toad Rush	-	+	+	+	+
<i>Juncus bulbosus</i>	Bulbous Rush	Axiophyte	+	+	+	+
<i>Juncus conglomeratus</i>	Compact Rush	-	+	+	+	+
<i>Juncus effusus</i>	Soft-rush	-	+	+	+	+
<i>Juncus inflexus</i>	Hard Rush	-	-	+	+	+
<i>Juncus squarrosus</i>	Heath Rush	-	+	+	+	+
<i>Juncus x surrejanus</i>	Jointed x Sharp-flowered Rush	-	-	-	-	+
<i>Juncus tenuis</i>	Slender Rush	-	-	-	-	+
<i>Lamium album</i>	White Dead-nettle	-	+	+	+	+
<i>Lapsana communis</i>	Nipplewort	-	+	+	+	+
<i>Lathyrus pratensis</i>	Meadow Vetchling	-	-	+	+	+
<i>Lemna minor</i>	Common Duckweed	-	-	+	+	+
<i>Lemna minuta</i>	Least Duckweed	-	-	-	+	+
<i>Leontodon saxatilis</i>	Lesser Hawkbit	-	+	+	+	+
<i>Lepidium campestre</i>	Field Pepperwort	Axiophyte	+	-	-	-
<i>Lepidium draba</i>	Hoary Cress	-	-	+	+	+
<i>Linum radiola</i>	Allseed	-	+	-	-	-
<i>Lolium perenne</i>	Perennial Rye-grass	-	+	+	+	+
<i>Lonicera periclymenum</i>	Honeysuckle	-	+	+	+	+
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	-	+	+	+	+
<i>Lotus pedunculatus</i>	Large Bird's-foot-trefoil	-	-	+	+	+
<i>Luzula campestris</i>	Field Wood-rush	-	+	+	+	+
<i>Luzula multiflora</i>	Heath Wood-rush	Axiophyte	+	+	+	+
<i>Lycopodiella inundata</i>	Marsh Clubmoss	Axiophyte	+	-	-	-
<i>Lycopodium clavatum</i>	Stag's-horn Clubmoss	Axiophyte	+	-	-	-
<i>Lycopus europaeus</i>	Gipsywort	-	-	-	-	+
<i>Lythrum portula</i>	Water Purslane	Axiophyte	+	+	+	+
<i>Lythrum salicaria</i>	Purple-loosestrife	-	+	-	+	+
<i>Mahonia aquifolium</i>	Oregon Grape	-	-	-	-	+
<i>Malus domestica</i>	Apple	-	-	+	+	+
<i>Malva sylvestris</i>	Common Mallow	-	-	+	+	+
<i>Marrubium vulgare</i>	White Horehound	-	+	-	-	-
<i>Matricaria discoidea</i>	Pineapple Weed	-	-	+	+	+
<i>Medicago arabica</i>	Spotted Medick	-	-	+	+	+
<i>Mentha aquatica</i>	Water Mint	-	+	+	+	+
<i>Mentha x villosa</i>	Apple-mint	-	+	+	+	-
<i>Menyanthes trifoliata</i>	Bogbean	Axiophyte	+	+	+	+
<i>Mercurialis perennis</i>	Dog's Mercury	-	+	+	+	+
<i>Moehringia trinervia</i>	Three-nerved Sandwort	-	-	+	+	+
<i>Moenchia erecta</i>	Upright Chickweed	Axiophyte	+	+	+	-
<i>Molinia caerulea</i>	Purple Moor-grass	Axiophyte	+	+	+	+
<i>Montia fontana</i>	Blinks	Axiophyte	+	-	+	+
<i>Mycelis muralis</i>	Wall Lettuce	-	-	-	-	+
<i>Myosotis arvensis</i>	Field Forget-me-not	-	-	+	+	+
<i>Myosotis discolor</i>	Changing Forget-me-not	Axiophyte	-	+	+	+
<i>Myosotis secunda</i>	Creeping Forget-me-not	Axiophyte	+	+	+	+
<i>Myrica gale</i>	Bog Myrtle	-	-	-	-	+
<i>Narcissus pseudonarcissus</i>	Daffodil	-	-	-	-	+
<i>Nardus stricta</i>	Mat-grass	Axiophyte	+	+	-	+
<i>Narthecium ossifragum</i>	Bog Asphodel	Axiophyte	+	+	+	+
<i>Neottia ovata</i>	Common Twayblade	Axiophyte	+	+	-	+
<i>Oenanthe crocata</i>	Hemlock Water-dropwort	-	-	+	+	+
<i>Oenanthe fistulosa</i>	Tubular Water-dropwort	Axiophyte	+	-	-	-
<i>Ophrys apifera</i>	Bee Orchid	-	+	-	-	-
<i>Ornithogalum umbellatum</i>	Star-of-Bethlehem	-	+	-	+	+
<i>Ornithopus perpusillus</i>	Bird's-foot	Axiophyte	+	+	+	+
<i>Pedicularis sylvatica</i>	Lousewort	Axiophyte	+	+	+	+
<i>Pentaglottis sempervirens</i>	Green Alkanet	-	-	+	+	+
<i>Persicaria hydropiper</i>	Water-pepper	-	-	-	+	+
<i>Persicaria maculosa</i>	Redshank	-	-	+	+	+
<i>Phalaris arundinacea</i>	Reed Canary-grass	-	-	-	-	+
<i>Pilosella officinarum</i>	Mouse-ear-hawkweed	-	+	+	+	+
<i>Pinus nigra</i>	Austrian Pine	-	-	-	-	+
<i>Pinus sylvestris</i>	Scots Pine	-	-	+	+	+
<i>Plantago coronopus</i>	Buck's-horn Plantain	Axiophyte	-	+	+	+
<i>Plantago lanceolata</i>	Ribwort Plantain	-	+	+	+	+
<i>Plantago major</i>	Greater Plantain	-	+	+	+	+

Poa annua	Annual Meadow-grass	-	-	+	+	+
Poa nemoralis	Wood Meadow-grass	Axiophyte	-	+	-	+
Poa pratensis	Smooth Meadow-grass	-	-	+	+	+
Poa trivialis	Rough Meadow-grass	-	-	+	+	+
Polygala serpyllifolia	Heath Milkwort	Axiophyte	+	+	+	+
Polygonum arenastrum	Equal-leaved Knotgrass	-	-	+	+	+
Polygonum aviculare	Knotgrass	-	+	+	+	+
Populus alba	White Poplar	-	-	-	-	+
Populus tremula	Aspen	Axiophyte	-	+	+	+
Potamogeton coloratus	Fen Pondweed	Axiophyte	+	-	-	-
Potamogeton polygonifolius	Bog Pondweed	Axiophyte	+	+	+	+
Potentilla anserina	Silverweed	-	+	+	+	+
Potentilla erecta	Tormentil	Axiophyte	+	+	+	+
Potentilla reptans	Creeping Cinquefoil	-	+	+	+	+
Potentilla sterilis	Barren Strawberry	-	+	+	+	+
Primula vulgaris	Primrose	-	-	+	+	+
Prunella vulgaris	Selfheal	-	+	+	+	+
Prunus avium	Wild Cherry	-	-	+	+	+
Prunus laurocerasus	Cherry Laurel	-	-	+	+	+
Prunus serotina	Rum Cherry	-	-	-	-	+
Prunus spinosa	Blackthorn	-	-	+	+	+
Pseudotsuga menziesii	Douglas Fir	-	-	+	-	+
Pteridium aquilinum	Bracken	-	+	+	+	+
Pulicaria dysenterica	Fleabane	-	+	+	+	+
Quercus cerris	Turkey Oak	-	-	+	+	+
Quercus robur	Pedunculate Oak	-	-	+	+	+
Ranunculus acris	Meadow Buttercup	-	-	+	+	+
Ranunculus bulbosus	Bulbous Buttercup	-	+	+	+	+
Ranunculus flammula	Lesser Spearwort	Axiophyte	+	+	+	+
Ranunculus repens	Creeping Buttercup	-	+	+	+	+
Ranunculus sceleratus	Celery-leaved Buttercup	-	-	-	-	+
Ranunculus tripartitus	Three-lobed Crowfoot	-	+	-	+	+
Ribes rubrum	Red Currant	-	-	+	+	+
Ribes uva-crispa	Gooseberry	-	-	+	+	+
Rosa arvensis	Field Rose	-	-	+	+	+
Rosa canina	Dog Rose	-	-	+	+	+
Rubus fruticosus	Bramble	-	+	+	+	+
Rubus idaeus	Raspberry	-	+	+	+	+
Rumex acetosa	Common Sorrel	-	-	+	+	+
Rumex acetosella	Sheep's Sorrel	-	+	+	+	+
Rumex conglomeratus	Clustered Dock	-	+	+	+	+
Rumex crispus	Curled Dock	-	-	+	+	+
Rumex obtusifolius	Broad-leaved Dock	-	+	+	+	+
Rumex sanguineus	Wood Dock	-	-	+	+	+
Sagina apetala	Annual Pearlwort	-	+	+	+	-
Sagina filicaulis	Slender Pearlwort	-	-	-	-	+
Sagina procumbens	Procumbent Pearlwort	-	+	+	+	+
Salix atrocinerea	Grey Willow	-	-	+	+	+
Salix aurita	Eared Willow	Axiophyte	+	-	-	-
Salix caprea	Goat Willow	-	-	+	+	+
Salix x fragilis	Crack-willow	-	-	+	-	+
Salix x multinervis	Grey x Eared Willow	-	-	-	-	+
Salix x reichardtii	Grey Goat-willow	-	-	-	-	+
Sambucus nigra	Elder	-	+	+	+	+
Schedonorus arundinaceus	Tall Fescue	-	-	+	+	+
Schedonorus giganteus	Giant Fescue	-	-	-	-	+
Scirpus sylvaticus	Wood Club-rush	Axiophyte	-	-	-	+
Scleranthus annuus	Annual Knawel	Axiophyte	+	-	-	-
Scrophularia auriculata	Water Figwort	-	+	+	+	+
Scrophularia nodosa	Common Figwort	-	-	+	+	+
Scutellaria minor	Lesser Skullcap	Axiophyte	+	+	+	+
Sequoiadendron giganteum	Wellingtonia	-	-	+	-	+
Silene dioica	Red Campion	-	+	+	+	+
Silene flos-cuculi	Ragged Robin	Axiophyte	+	+	+	+
Sison amomum	Stone Parsley	-	-	-	-	+
Sisymbrium officinale	Hedge Mustard	-	-	+	+	+
Solanum dulcamara	Bittersweet	-	-	+	+	+
Solanum nigrum	Black Nightshade	-	+	+	+	+
Solidago gigantea	Early Goldenrod	-	-	-	+	+
Sonchus arvensis	Perennial Sow-thistle	-	-	+	+	+
Sonchus asper	Prickly Sow-thistle	-	-	+	+	+

<i>Sonchus oleraceus</i>	Smooth Sow-thistle	-	-	+	+	+
<i>Sorbus aucuparia</i>	Rowan	-	-	-	+	+
<i>Sparganium erectum</i>	Branched Bur-reed	-	-	+	+	+
<i>Spergula arvensis</i>	Corn Spurrey	Axiophyte	+	-	-	-
<i>Spergularia rubra</i>	Sand Spurrey	Axiophyte	+	+	+	+
<i>Stachys sylvatica</i>	Hedge Woundwort	-	-	+	+	+
<i>Stellaria alsine</i>	Bog Stitchwort	Axiophyte	+	+	+	+
<i>Stellaria graminea</i>	Lesser Stitchwort	-	+	+	+	+
<i>Stellaria holostea</i>	Greater Stitchwort	-	+	+	+	+
<i>Stellaria media</i>	Chickweed	-	+	+	+	+
<i>Stellaria pallida</i>	Lesser Chickweed	-	-	+	+	+
<i>Succisa pratensis</i>	Devil's-bit Scabious	Axiophyte	+	+	+	+
<i>Symphoricarpos albus</i>	Snowberry	-	-	-	-	+
<i>Symphyotrichum x versicolor</i>	Late Michaelmas-daisy	-	-	+	-	+
<i>Ystringa vulgaris</i>	Lilac	-	-	-	+	+
<i>Tamus communis</i>	Black Bryony	-	-	+	+	+
<i>Taraxacum officinale</i>	Dandelion	-	+	+	-	+
<i>Taxus baccata</i>	Yew	-	-	+	+	+
<i>Teucrium scorodonia</i>	Wood Sage	-	+	+	+	+
<i>Thymus pulegioides</i>	Large Thyme	Axiophyte	+	-	-	-
<i>Torilis japonica</i>	Upright Hedge-parsley	-	-	+	+	+
<i>Trifolium dubium</i>	Lesser Trefoil	-	-	+	+	+
<i>Trifolium glomeratum</i>	Clustered Clover	Axiophyte	+	+	+	+
<i>Trifolium micranthum</i>	Slender Trefoil	-	+	+	+	+
<i>Trifolium ornithopodioides</i>	Bird's-foot Clover	Axiophyte	-	+	+	+
<i>Trifolium repens</i>	White Clover	-	-	+	+	+
<i>Trifolium subterraneum</i>	Subterranean Clover	Axiophyte	+	+	+	+
<i>Trifolium suffocatum</i>	Suffocated Clover	Axiophyte	-	-	+	+
<i>Triglochin palustris</i>	Marsh Arrowgrass	Axiophyte	-	-	-	+
<i>Typha latifolia</i>	Great Reedmace	-	+	+	+	+
<i>Typha x glauca</i>	Hybrid Reedmace	-	-	-	-	+
<i>Ulex europaeus</i>	Gorse	-	+	+	+	+
<i>Ulex gallii</i>	Western Gorse	Axiophyte	+	+	+	+
<i>Ulex minor</i>	Dwarf Gorse	Axiophyte	+	+	+	+
<i>Ulmus minor</i>	Small-leaved Elm	-	-	-	-	+
<i>Ulmus procera</i>	English Elm	-	-	+	+	+
<i>Urtica dioica</i>	Stinging Nettle	-	-	+	+	+
<i>Verbascum blattaria</i>	Moth Mullein	-	+	-	-	-
<i>Verbena officinalis</i>	Vervain	-	+	-	+	+
<i>Veronica arvensis</i>	Wall Speedwell	-	-	+	+	+
<i>Veronica chamaedrys</i>	Germander Speedwell	-	+	+	+	+
<i>Veronica hederifolia</i>	Ivy-leaved Speedwell	-	-	+	+	+
<i>Veronica montana</i>	Wood Speedwell	Axiophyte	-	+	-	+
<i>Veronica officinalis</i>	Heath Speedwell	Axiophyte	-	+	+	+
<i>Veronica polita</i>	Grey Field-speedwell	-	-	-	-	+
<i>Veronica scutellata</i>	Marsh Speedwell	Axiophyte	+	-	+	+
<i>Veronica serpyllifolia</i>	Thyme-leaved Speedwell	-	-	+	+	+
<i>Viburnum opulus</i>	Gelder-rose	-	-	-	-	+
<i>Vicia sativa</i>	Common Vetch	-	-	+	+	+
<i>Vicia sepium</i>	Bush Vetch	-	-	+	+	+
<i>Vinca major</i>	Greater Periwinkle	-	-	+	+	+
<i>Viola canina</i>	Heath Dog-violet	Axiophyte	+	-	-	-
<i>Viola odorata</i>	Sweet Violet	-	+	-	+	+
<i>Viola palustris</i>	Marsh Violet	Axiophyte	+	+	+	+
<i>Viola riviniana</i>	Common Dog-violet	-	-	+	+	+
<i>Vulpia bromoides</i>	Squirrel-tail Fescue	-	-	+	+	+
<i>Vulpia ciliata</i>	Bearded Fescue	-	+	+	+	-
<i>Vulpia myuros</i>	Rat's-tail Fescue	-	-	-	+	+
No. vascular plant species			168	276	291	346

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Other information used in this report includes:

- Kent Botanical Recording Group records since 2010
- JNCC's Threatened Plants Database (a survey of the bogs by N.F. Stewart in 1998)
- My own visits to Hothfield, sometimes with Ros Bennett while conducting Field Skills Tests for the Kent Wildlife Trust, or while leading other courses for KWT and Canterbury Christ Church University
- Data from the Herbaria at Home web site, derived from herbarium specimens in the Natural History Museum (**BM**), Kew (**K**) and the South London Botanical Institute (**SLBI**)
- The unpublished manuscript *Flora of Kent* by Francis Rose (version 8), edited by Geoffrey Kitchener
- Database of the bryological herbarium of the National Museum of Wales (**BBSUK**)
- 'Hothfield Notable Bryophytes' by Stephen Lemon (unpublished report to KWT)
- Information from Natural England's scientific files, kindly supplied by Phil Williams
- Extract from the Kent Wildlife Trust database, compiled by KWT and the Kent Biological Records Centre
- Information from the Kent Biological Records Centre, kindly supplied by Tony Witts, much of which is originally from Francis Rose.