

# Biological survey and assessment of land at Varley Park, Coldean Lane

Graeme Lyons

February 2020



**Fig. 1.** The nationally rare and striking tortoise beetle *Pilemostoma fastuosa* recorded from the site.

## 0 - Summary

The author was approached to carry out a survey at short notice to provide some ecological advice on where/where not, on a patch of land of around 4 ha, would be best to place a development. The area is comprised of some open areas with chalk-grassland and some wooded areas. The site is predominantly south west facing and almost entirely surrounded by developments of some form.

The author was asked to survey, assess and provide recommendations for the different areas/habitats within the site.

The site was visited on the 8<sup>th</sup> February. It was split into four recording blocks, these were; Long Glade, North Glade (both containing fragments of chalk-grassland), Woodland and Plantation (both dominated by trees). The same recording effort (1 hour 30 minutes) was made in each. A species list was made for each recording block, with standardisation allowing for comparison between blocks. The focus was on invertebrates, birds and vascular plants.

A total of 423 records of 252 species were made. This included 83 vascular plants, 128 invertebrates and 21 birds. Of the invertebrates, beetles were most numerous with 45 species, followed by spiders at 36 species.

Ten invertebrates with conservation status were recorded, eight beetles, one spider and one bug. All but the spider were phytophagous species feeding on vegetation. The most interesting was the Ploughman's Spikenard feeding tortoise beetle *Pilemostoma fastuosa* shown in figure 1. The Scarab Shieldbug was also abundant on the site.

Three England Red Listed plant species were recorded; Carline Thistle, Devil's-bit Scabious and Wild Strawberry.

The open spaces with chalk-grassland were the most biodiverse for plants and invertebrates. The wooded areas had very low biodiversity interest with none of the ten invertebrates with conservation status being recorded in these areas. They did have more fungi, birds, molluscs and lower plants but very few of these species had any conservation status. Song Thrush and Mistle Thrush were perhaps the most significant bird species of the survey, both were recorded in the wooded areas.

Four Ancient Woodland Indicators were recorded, including Spurge-laurel. Unfortunately, it was in the process of being cut down, possibly due to it being mistaken for Rhododendron or Cherry Laurel. It is however native, and the most interesting species in the woods.

The areas of chalk-grassland are a priority for the site, much of the woodland is extremely poor biologically. Prioritisation is given for the site and management recommendations to help any community groups that may work on the site are also provided. The main issue facing the site is the imminent loss of both parcels of chalk-grassland to scrub and woodland, chiefly Sycamore.

## 1 - Introduction

The author was approached to carry out a survey at short notice to provide some ecological advice on where on a patch of land of around 4 ha would be best to place a development. The area was comprised of some open areas with chalk-grassland present and some wooded areas. The site is predominantly south west facing (which is the ideal for many

invertebrates). It is bounded by halls of residence to the south west, an ongoing development to the north west. The A27 to the north east and some older woodland to the south east.

The author was asked to survey, assess and provide recommendations for the different areas/habitats within the site.

Unlike ecological consultancies, the author adopts a holistic approach that is driven by what is best for the site, not just the protected species. This survey should therefore be seen as complimentary to a protected species survey.

## **2 - Methodologies**

The site was visited on the 8<sup>th</sup> February. The site was split into four recording blocks which are shown in figure 2 below. A grid reference was assigned to the centre of each recording block (a site centroid) and within each block, records were therefore assigned to that particular grid reference. If an unusual species was recorded, then a specific eight-figure grid reference was recorded.

Each block was recorded for 1 hour and 30 minutes. All birds, plants, mammals and invertebrates were recorded and specimens taken where necessary. Being outside of the typical invertebrate survey season, the author relied heavily on the use of an electric suction-sampler. Any species that could not be identified in the field were taken back for microscopic identification.

Similarly, botanical surveying had to rely heavily on vegetative parts and last year's flower heads. Being out of the main survey season, some species could only be recorded to genus. The species list is likely to be much higher for both plants and invertebrates.

The four areas were:

- Long Glade
- Woodland
- North Glade
- Plantation



**Fig. 2.** Map of the recording blocks.

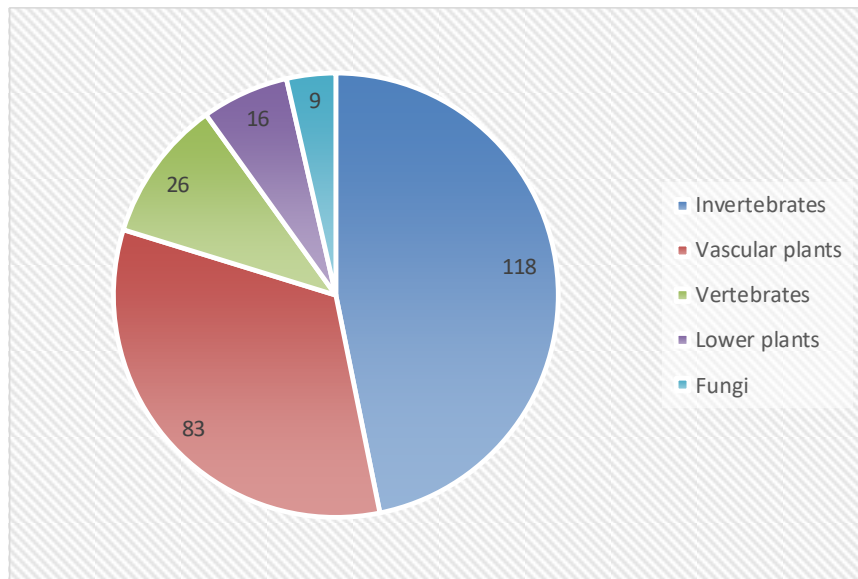
All species were entered into the author's database by compartment and in time this will be synchronised with the Sussex Biodiversity Record Centre database. Once entered, all records were pulled out and a pivot table was used to create four species lists. Additionally, the two glades and the two woodland blocks were bulked together to allow a comparison of 'open' with 'closed' habitat (i.e. glade with woodland).

### 3 - Results

Before displaying the results, the author feels that a disclaimer should be added at this point. Although 252 species may seem comprehensive, it is by no means a comprehensive list for the site. A single survey in February is not acceptable for assessing a site and this large list is more a reflection of the author's experience. However, given that time was of the essence, in the absence of a comprehensive survey, this survey can at least act as a guide.

#### 3.1 - Overview of species recorded

A total of 423 records of 252 species were made. The species recorded break down as follows:



**Fig. 3.** Overview of species recorded.

### 3.2 - Species with conservation status

Conservation status is a complex issue. Each taxonomic group has used a slightly different set of criteria for assessing their species. Within each group, some species are assessed more often or more thoroughly than others. Some are long overdue and as a result there are two systems running at present. Mike Edwards has kindly allowed the author to use this text to explain both systems:

“GB Conservation Status categories are in the process of being upgraded. This means that it is currently necessary to provide values for both systems as not all groups have been dealt with.

**The old RDB (Red Data Book) Conservation Status** categories were based purely on the number of 10km squares which a species was known to have been recorded from, with a base-line date of 1970. These categories are obviously susceptible to the progressive accumulation of new records over time. This is especially so as, for some species in particular, non-specialist recording has increased significantly. There are also known changes in range and abundance which have been increasingly commented on by specialists.

The old system graded species like this:

**RDB 1.** Endangered. Species currently (post 1970) known to exist in five or fewer ten-kilometre squares.

**RDB 2.** Vulnerable. Species in severely declining or vulnerable habitats, or of low known populations. Known to exist (post 1970) in ten, or fewer, ten-kilometre squares.

**RDB 3.** Rare. Species with small populations, not at present Endangered or Vulnerable, but which are felt to be at risk. Species currently known to exist (post 1970) in fifteen, or fewer, ten-kilometre squares.

**RDB K.** Species of undoubted RDB rank, but with insufficient information for accurate placement; includes possible recent arrivals.

**Nationally Scarce.** Species currently (post 1970) known to exist in one hundred, or fewer, ten-kilometre squares.

In some groups these are further sub-divided into:-

**Nationally Scarce a.** Species currently (post 1970) known to exist in thirty, or fewer, ten-kilometre squares.

**Nationally Scarce b.** Species currently (post 1970) known to exist in thirty-one to one hundred ten-kilometre squares.

**The new IUCN-type Red Data Book Conservation Status** categories are based on perceived threat, of which distribution is only one part, the other being related to the population trend over the 10 years previous to the assessment, for the species in question. Such trends may be inferred from accumulated specialist knowledge, but, as the quantity and quality of data improves increasing effort is being made to model such changes. The output of such modelling being then compared with the specialist knowledge. Species with a negative trend may not be inherently rare, it is the decline which is the significant factor.

The new system grades species like this (This is very much a summary, there is considerable detail to this, please consult the group-appropriate published Great Britain Red List for a better understanding of how the gradings have been arrived at):

**Regionally Extinct (RE).** See group-appropriate Red List for criteria. In general, a sufficiently long time has elapsed since the last record of this species.

**Critically Endangered (CE).** Species with a very severe decline in population trend or geographic range within the area considered.

**Endangered (E).** Species with a severe decline in population trend or geographic range within the area considered.

**Vulnerable (V).** Species with a marked decline in trend or geographic range within the area considered.

**Near Threatened (NT).** Species which are suspected to qualify for Vulnerable, but where the data does not quite support such a category.

**Least Concern (LC).** Species which show no marked negative population trend or geographic range. Indeed, they may have positive values for either or both.

There will be a number of species where it has been considered that there is insufficient information to provide a supported grading, such species are called Data Deficient (DD). There are also categories for invasive (with anthropogenic agency) species, which are usually assessed as Not Applicable (NA).

The IUCN Red List system was primarily developed for assessing large mammal populations and fish stocks, adapting it for invertebrates is, inevitably, an experimental process and it is to be expected that there will be variability in its application and interpretation between groups. However, each published GB Red List has information on the actual way in which decisions have been arrived at. These should be consulted where necessary.

**There is no inherent equivalence between the old and new systems**

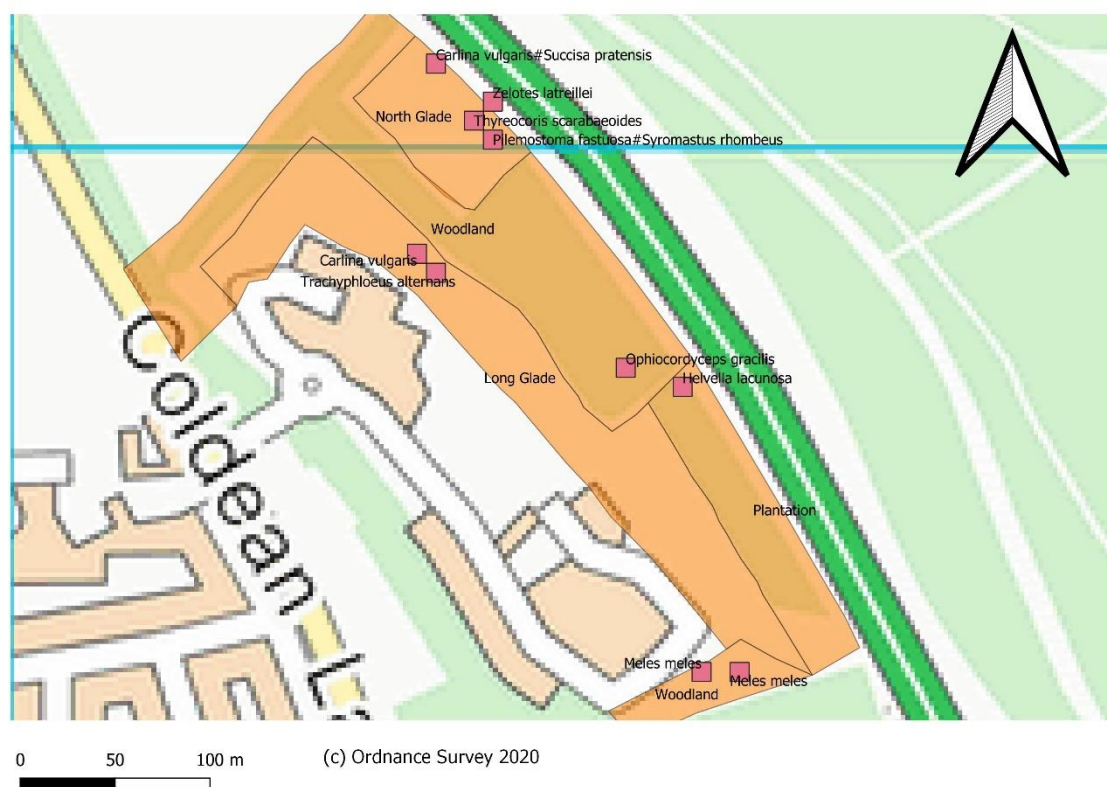
Great Britain has a considerable environmental gradient from north to south and, to a lesser extent, east to west. Species which are stable in their trend or geographic extent may still be considerably limited by the availability of suitable habitat resources. In order that such species do not get missed from conservation considerations a second, parallel, system of GB scarcity has been developed. This is similar to the old Conservation Status system in that it is based on the number of 10km squares which the species is known from, in a given time period, usually 30 years previous to the date of the assessment.

Categories for this National Scarcity rating are:

**NR**, with 1-15 10Km occupied squares

**NS**, with 16 to 100 10Km occupied squares.

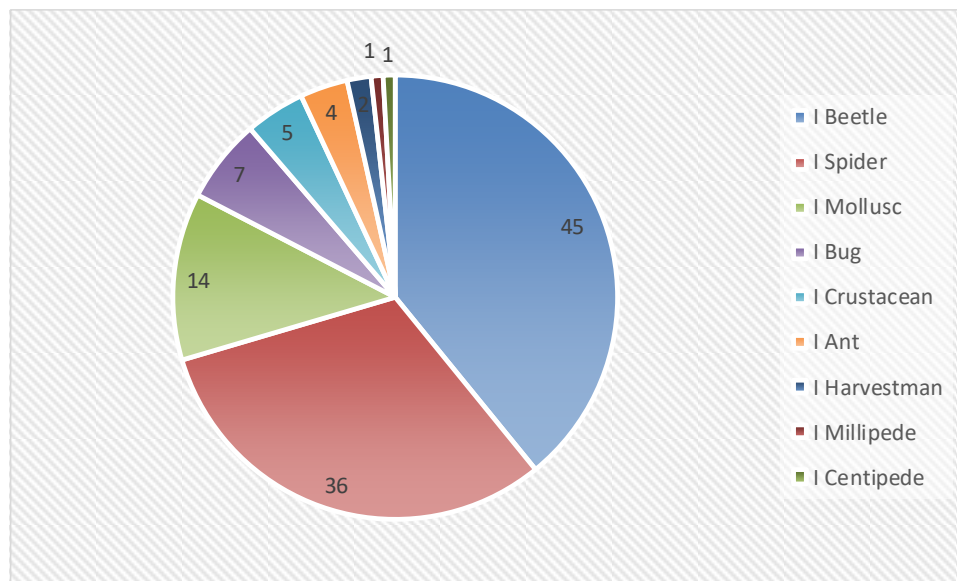
Clearly both systems will require periodic revision if they are to remain relevant to the needs of a modern country and the conservation of its fauna.”



**Fig. 4.** Location of some of the scarcer/more unusual species recorded during the survey

### 3.2.1 - Invertebrates

Although 118 species were recorded, only 115 of these were to genus (this latter figure is used in the following calculation). Of these, ten were found to have some form of conservation status (8.7%). These nine species are comprised of eight beetles, one spider and one bug. No flies, bees, wasps, moths, butterflies, crickets, grasshoppers, dragonflies or damselflies were recorded due to the time of year.



**Fig. 5.** Breakdown of the invertebrate groups recorded.

### **Araneae (spiders)**

A total of 36 species of spider were recorded with 35 to species but only one of these had conservation status (2.9%). None of the chalk-grassland specialists were found meaning this site was not especially important for spiders although overall diversity was high.

The site sits to the north of the author's home 10 km square of TQ30. Despite this, a number of the spiders recorded here were recorded in this square for the first time

### ***Meioneta mollis* - Nationally Rare/Section 41**

Both males and females were recorded in both the Long Glade and the North Glade. Although spider conservation statuses were only reassessed in 2017, this species seems to be clearly expanding in range. The author encounters it on practically every survey/recording excursion in the south east. It does not seem to have any particular habitat association and probably doesn't deserve such a high conservation status. On the Sussex Rare Species Inventory for example it is likely to not be assessed as a Sussex rare.

## **Coleoptera (beetles)**

The largest invertebrate group with 45 species noted, 42 of which were recorded to species with eight of these having conservation status (19.0%). This is quite a high proportion. All of the eight species can be considered phytophagous, that is they all feed on plants (of the eight species, one was a leaf beetle and the remaining seven were weevils). This is typical of chalk-grassland that has large number of different species of plant and therefore a large range of species that feed on them.

### ***Cathormiocerus spinosus* - Nationally scarce a**

Previously known as *Trachyphloeus asperatus*. Two specimens of this tiny hedgehog weevil were recorded by suction sampler along the Long Glade. This species likes light soils and warmth, where it feeds on roots. The species is flightless.



**Fig.6.** The flightless hedgehog weevil *Cathormiocerus spinosus*.

### ***Diplapion stolidum* - Nationally scarce b**

A small black apionid. This species feeds on Ox-eye Daisy that was abundant to the north of the Long Glade where it was found. This is the first time the author has encountered this species.

### ***Hypera meles* - Nationally scarce a**

Now quite a common species that does not perhaps deserve the status that it has. Feeds on clovers, usually Red Clover. A single animal was suction-sampled from the the Long Glade and another from the Northern Glade.

***Pilemostoma fastuosa* - Nationally Rare/Near Threatened**

A single animal of this striking tortoise beetle was suction-sampled from the top of the North Glade. The species feeds on Ploughman's Spikenard and Fleabane. As Ploughman's Spikenard was abundant across this site, this would be the food plant on this site.



**Fig.7.** *Pilemostoma fastuosa* suction-sampled from the Northern Glade.

***Protapion difforme* - Nationally scarce b**

A single female was suction sampled from along the Long Glade. Feeds on clovers.



**Fig. 8.** The weevil *Protapion difforme*.

***Smicronyx reichii* - Rare**

A single animal was suction sampled from somewhere along the Long Glade. This species feeds on Common Centaury and Yellow-wort.



**Fig. 9.** The tiny *Smicronyx reichii*.

***Squamapion cineraceum* - Nationally scarce a**

This species was abundant in the chalk-grassland at the top of the Northern Glade, while only a single animal was found on the Long Glade. It feeds on *Selfheal*, which was abundant in both these areas. It is the first time the author has encountered this species.



**Fig. 10.** One of many *Squamapion cineraceum* found in both glades.

***Trachyploeus alternans* - Nationally scarce b**

A single animal was suction-sampled from a large open area of chalk-grassland on the Long Glade and is shown in the map below. The species needs warm, free draining sites where it feeds on plant roots.



**Fig. 11.** *Trachyploeus alternans* with the characteristic scales on alternate elytral intervals.

## Hemiptera (true bugs)

Only seven species were recorded with one having conservation status (14.3%). This is a high proportion for this taxa but is misleading due to the small pool of species recorded.

### *Thyreocoris scarabaeoides* (Scarab Shieldbug) - Nationally Scarce

This small shieldbug is, in Sussex, entirely associated with the Downs. In this survey, a single animal was sieved from moss in the Long Glade and five were sieved from the same clump of moss in the North Glade. The species likes warm sunny situations and is thought to feed on violets, Hairy Violet the likely foodplant in this habitat (albeit this species was not recorded). This is a new 10 km square record for this species. See figure 4 for where this species was recorded.



**Fig. 12.** The five Scarab Shieldbugs sieved from moss in the Northern Glade.

### Mollusca (slugs and snail)

A total of 14 species were recorded but none had conservation status. This is a fairly large list for the survey effort but is typical of calcareous sites with a mixture of woodland, scrub and grassland. The chalk-grassland indicator *Pupilla muscorum* was found in the Long Glade by suction.



**Fig. 13.** Not a scarce species but *Merdigera obscura* was abundant on trees and in leaf litter in the woods.

### **3.2.2 - Vertebrates**

A total of 21 birds and five mammals were recorded. No reptiles or amphibians were recorded which is to be expected on a chalk slope in February.

#### **3.2.2.1 - Birds**

For this analysis, the BTO's Birds of Conservation Concern (BoCC) is used.

Herring Gull, although on the red list, was not recorded using the site (only ever flying over) and is therefore not included in this analysis.

The avifauna of the site was unremarkable and perhaps the most significant record was of a Mistle Thrush.

#### **Song Thrush - Red Listed**

Singing throughout the woodland and likely to be breeding on the site.

#### **Mistle Thrush - Red Listed**

A single animal was heard calling off site and it later landed in the mature trees in the woodland. It was not singing but it is possible it could go on to hold territory there.

#### **Dunnock - Amber Listed**

Singing mainly in the scrub along the Long Glade but also using the adjacent woodland.

#### **3.2.2.2 - Mammals**

Rabbits are the only grazers on site and are important at keeping open what little is left of the chalk-grassland. Grey Squirrel, Fox and Mole were also recorded. A Badger set was noted at the south of the site and although it may be just off the land, it is clearly going to have an impact on one of the proposed access routes (see figure 4 for a location of the set).

### **3.2.3 - Vegetation and fungi**

#### **3.2.3.1 - Vascular plants**

A total of 83 vascular plants were recorded. No rare or scarce species were noted so the English Red List was looked at to, this has less stringent criteria for assessing species than the Great Britain Red List but should be used with caution as they are not widely accepted national conservation statuses. That said, even using this list only two species were noted.

#### **Carline Thistle - England Red List - Near Threatened**

This chalk-grassland indicator (that particularly likes broken turf) was present in several large patches in the Long Glade and the Northern Glade.



**Fig. 14.** A stand of Carline Thistle on the Long Glade.

#### **Devil's-bit Scabious - England Red List**

Found only to the very north of the North Glade. This species is usually more abundant on the north face of chalk-grassland, liking some humidity. It is typically not found in extremely hot and dry grassland.

#### **Wild Strawberry - England Near Threatened**

Recorded in all four blocks and was too numerous to map. This is the commonest and least habitat specific of the three England Red List, Near Threatened species recorded.

### **Bluebell - Protected under schedule 8**

Not on the England Red List but Bluebell does have some protection and this should be considered if any work is done in the woods. The leaves were only just coming up above the ground so more work should be done to assess them later in the spring. There is a chance they could be Hybrid Bluebells given the nature of the site. Found on the south east end of the main block of woodland.

### **Other chalk-grassland indicators**

Salad Burnet and Wild Thyme were only recorded in the North Glade. Wild Basil and Wild Marjoram were common in both glades. Ploughman's Spikenard was abundant everywhere across the site in all four blocks at low densities. Many more species are likely to be present in summer in both these locations.

### **Ancient Woodland Indicators**

Spurge-laurel, Bluebell, Tutsan and Wild Strawberry were the only four AWIs for the south east that were recorded. This is not surprising as this is secondary woodland on the Downs, which is known to be especially poor. More species could well be present in the spring and summer. Lords-and-ladies and Dog's Mercury were the only ground flora of any abundance in the wood but these are not considered AWIs. The more established woodland to the north and west of the North Glade could well have more in the spring.



**Fig. 15.** Spurge-laurel.



**Fig. 16.** Spurge-laurel in flower.

It was alarming to see that some Spurge-laurel had actively been sought out and cut down. The author assumes that some well-meaning person or group was doing so, thinking they were controlling Rhododendron or Cherry Laurel. Spurge-laurel is not closely related to these plants and is a native species. Sadly, it is by far the most interesting plant species in the wood. Stopping this immediately is important for the site as it is unnecessary and if this area is not developed, it should be maintained.



**Fig. 17.** Spurge-laurel with some plants (front centre) recently cut down.

### 3.2.3.2 - Fungi

No fungi with conservation statues were recorded but one particularly notable species was recorded. *Ophiocordyceps gracilis* is a fungus that infects subterranean moth larvae. It fruits out of their bodies to send more spores that go onto infect other larvae.



Figs. 18 & 19. The unusual fungus *Ophiocordyceps gracilis*.

Additionally, Elfin Saddle *Helvella lacunosa* was recorded in the Plantation area where a large number were growing in Beech litter.



**Fig. 20.** Elfin Saddle.

### 3.3 - Exotica (non-native species)

#### Invertebrates

Only four species were noted that can be considered introduced, which is low for such a site. None are thought to be a major threat.

#### Garden Snail

A now ubiquitous snail around houses and buildings.

#### Kentish Snail *Monacha cantiana*

A now ubiquitous snail.

#### *Otiorhynchus carategi*

A single animal was sieved from woodland litter. This synanthropic species is known to feed on Wild Privet and is typical of 'brownfield' sites of this nature.

#### *Mermessus trilobatus*

This tiny American money spider is spreading throughout the south east rapidly. It was found in the Long Glade only, represented by a single female.

#### Vertebrates

Grey Squirrel were found to be using the site.

#### Vegetation

A site such as this often have a great deal of non-native species. However, the list was limited and none of the species were more threatening to the site than the naturally regenerating Sycamore, Dogwood and Ash in the two glades.

**Sycamore** - a major issue, invading all of the precious open space across the site.

**Holm Oak** - scattered throughout and could become a problem if not controlled.

**Turkey Oak** - only one plant noted in the Long Glade.

**Rose of Sharon** - a single small patch was noted in the Long Glade.

**Buddleiah** - saingle plant was spotted in the Plantation.

**Cotoneaster sp.** - becoming a problem along the Long Glade, particularly the north end.

**Reflexed Stonecrop** - a single plant found in the nice area of chalk-grassland to the north of the North Glade. This should be removed.

### 3.4 - Other interesting species

#### Rhombic Leatherbug

A single adult was suction-sampled from the North Glade. This species used to be particularly coastal but is increasingly found inland. This is a new 10 km square record for this species.



**Fig. 21.** A single Rhombic Leatherbug was suction-sampled from the North Glade.

#### *Ozyptila sanctuaria*

An uncommon spider found by suction in the Long Glade.



**Fig. 22.** An adult female *Ozyptila sanctuaria* showing the clavate hairs on the abdomen.

## 4 - Analysis and conclusions

The site is clearly a diverse site and has some biodiversity interest. However, most of this is associated with the remaining open spaces. However, the open spaces are clearly under threat from scrub and little has been done to prevent scrub from taking over. A small amount of scrub clearance has been done but it is negligible for what is needed to keep these sites open. What biodiversity they have now is likely to be lost unless a significant programme of winter scrub control is put in place with immediate effect.

### 4.1 - Analysis by compartment

**Tab. 1.** Summary of findings by compartment. Green shows the highest score in a category and red the lowest, allowing for an 'at a glance' analysis.

	Long	North	Wood	Plant	Open	Close	ALL
TOTAL SPECIES	145	102	91	78	175	138	252
Invertebrates	64	50	31	27	80	50	118
Vertebrates	17	12	18	9	20	22	26
Vascular plants	54	33	28	31	63	44	83
Lower plants	9	7	7	8	11	13	16
Fungi	1	0	7	3	1	9	9
All species with status	12	8	6	1	14	6	18
Invertebrates with status	9	5	0	0	10	0	10
Proportion of invertebrates with status	14.1	10.0	0.0	0.0	12.5	0.0	8.5
Beetles	27	18	7	6	35	11	45
Spiders	20	18	6	10	25	15	36
Molluscs	7	5	6	6	7	10	14

#### 4.1.1 - Species-richness

Clearly the Long Glade comes out on top for the overall species-richness, with the North Glade some distance behind this and the Plantation strip with the least species.

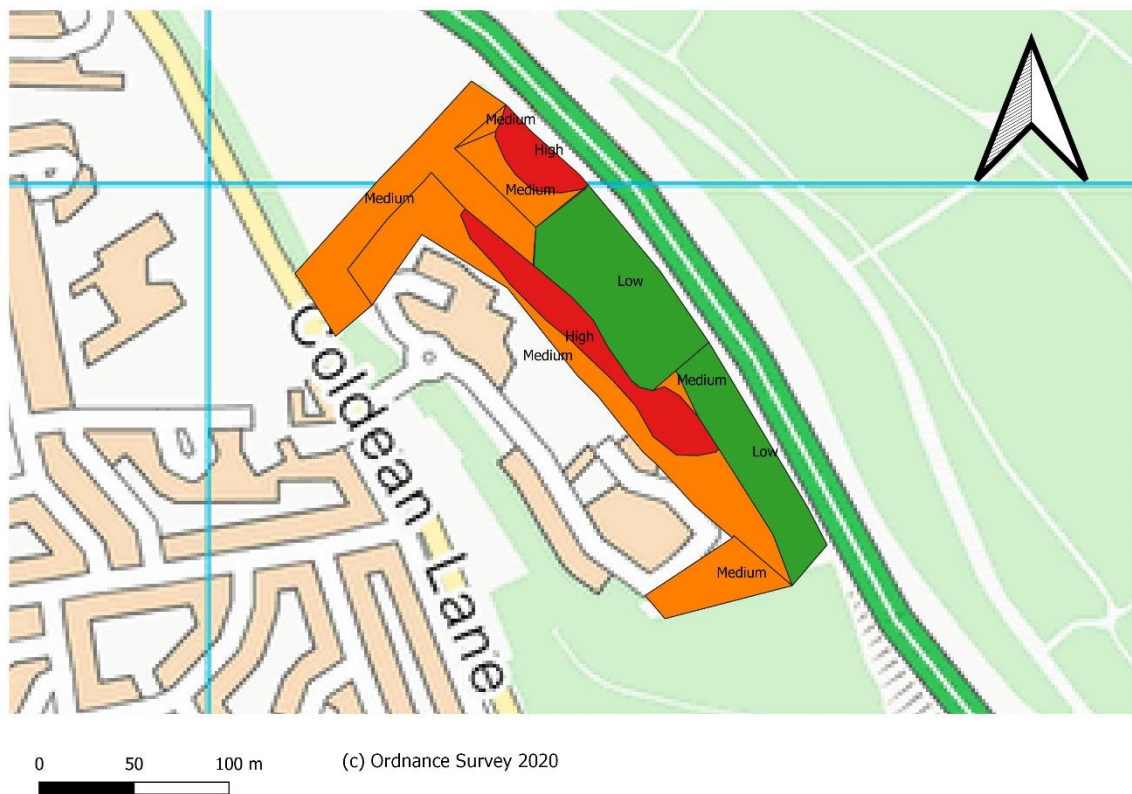
### 4.2 - Wooded versus open

The open area comes out on top in nearly every category. Only vertebrates, lower plants, fungi and molluscs all score higher in the two wooded plots. Mainly these are common species that can tolerate shade and humid conditions. More birds were found perched in the trees of the wooded areas than those in the scrub (no invertebrates were recorded in the wood that have conservation status).

### 4.3 - Ranking of the four areas in terms of their biodiversity values

1. Long Glade
2. North Glade
3. Woodland
4. Plantation

In simple terms, the Long Glade comes out on top for its biodiversity value. It has the most species, the highest proportion and number of invertebrates with conservation status. Mapping these areas in terms of priority is shown in figure 23 below.



**Fig. 23.** A heat map of the most biodiverse and priority habitat on the site.

#### **4.4 - Ranking of the four areas in terms of biodiversity and pragmatism**

The major factor here is whether the developing scrub is going to be tackled. In this instance, the author is assuming the status quo will take place. That is, the level of scrub control witnessed onsite will continue into the future, i.e. very little. This will result in the closure and over-shadowing of the open spaces in time. For the Long Glade, this is imminent in many places, the Yellow Meadow Ant nests are clearly becoming overgrown with scrub. The Northern Glade has more time before the scrub overshadows it, mainly due to the slope and the lack of buildings directly to the south. Therefore, in order of importance, the author suggests the following:

1. North Glade
2. Long Glade
3. Woodland
4. Plantation

This is not to suggest that any scrub control on the Long Glade would be pointless, quite the contrary. This is simply an exercise of combing the biodiversity data collected and observations on succession to make some judgement on the relative importance of the two open spaces. They still both come out significantly more than the wooded areas but the Northern Glade grassland is of slightly greater importance.

#### **4.5 - Comments on the three access options**

The route to the south past the allotments is likely to affect a Badger set, as is the northern route. The route coming past the western end of the Halls of Residence is perhaps the least likely damaging route to the site.

## 4.6 - Conclusions

### 4.6.1 - North Glade

The northern tip of this glade has some very nice grassland that in places looks like it could be old chalk-grassland. Species such as Wild Thyme, Salad Burnet and Devil's-bit Scabious were found here and nowhere else on the site. The site is suffering from neglect however. That said, this area of the site was the best area on the site and should be protected and enhanced where possible.



**Fig. 24.** The best area of grassland on the site is under threat from scrub on all sides.

### 4.6.2 - Long Glade



**Fig. 25.** Encroaching Sycamore is starting to negatively impact the sward, the decline of the Yellow Meadow Ant hills is evident.

This site has a rich and varied flora, it is not quite as strongly base-rich, particularly to the north but being larger and with more varied soils, has a wider range of species than the Northern Glade and more species with conservation status. It is well worth holding on to but as mentioned earlier, simply not building on it is not enough, as in a decade or two it would end up looking like the nearby woodland and lose most of its value.

#### **4.6.3 - Woodlands**

The large block of mainly Sycamore, Ash and Beech woodland was extremely dull biologically. The large trees that surround the Northern Glade are much older and the woodland here has a more diverse feel. These areas are certainly worth as little intervention as possible. The dense stands of secondary woodland however, are of limited interest.

#### **4.6.4 - Plantation**

The area of planted woodland has a relatively diverse range of scrub but almost no open space within it. Standing up is almost impossible in this area and this did make sampling more difficult than elsewhere. This kind of planting is very frustrating as it has very little value for wildlife and if planned and thought through more carefully, could be used to create some valuable habitat. As it stands, this is the least interesting of the areas surveyed.

## **5 - Management recommendations**

### **5.1 - Comments on green roofs and mitigation grassland**

Any green roofs used should be as close to the calcareous soils and associated botanical assemblages as possible. Therefore, calcareous perennials should be chosen where possible as this will allow for the least amount of after care management.

The same could be said for any mitigation grassland. Species such as Corncockle and Cornflower mentioned in the Sussex Wildlife Trust report are completely inappropriate, they are short-lived annuals, arable weeds. Species that have mainly gone extinct in the wild. They flower prolifically for the first year but by the second year they are decreasing in number. These generic one-size fits all lists of plants are not appropriate to try and recreate a chalk-grassland sward. Care should be given to not only source the right species but to secure local seed if possible.

If further advice is needed on this then more detail could be requested from the author at a later date.

### **5.2 - Management as if the site were a nature reserve**

The author appreciates that this is unlikely to be followed but it at least gives an understanding of what a site like this needs, in order for the existing biodiversity to be maintained and enhanced and could at least help any local group working on the site. The following prescriptions are listed here in order of importance.

1. Begin a programme of scrub clearance. The most important area being the northern end of the North Glade where chalk-grassland that is left is narrowest and easily overshadowed by the scrub. The arsing should be taken out of the area that has been cleared. There is a pile of brash from some scrub clearance that clearly happened in the summer but the arisings have been left in situ. They should be removed and burnt in a sacrificial area away from the chalk-grassland that is being cleared. It is far better to have one or two areas where burning takes place than to have large piles of brash building up around the site. Long term these have far more of a negative effect.
2. Non-natives such as Cotoneaster, Evergreen Oak and Rose of Sharon should be removed.
3. Control of the native Ancient Woodland Indicator Spurge-laurel should stop immediately.
4. Cutting of Ivy, a highly valuable plant for wildlife, should stop immediately.
5. Where dead wood falls, the minimum number of cuts should be made to the wood as possible. Ideally, this should be none.



**Fig. 26.** Cotoneaster, Rose of Sharon and Evergreen Oak all threatening the more interesting chalk sward.



**Fig. 27.** The view south from the clearing of chalk-grassland in the Northern Glade into the wall of scrub.

### 5.3 - Survey work

It would be worthwhile having any Ash Dieback assessed as soon as possible. This is not an ideal time to assess this, so the author's only input at this point is that there is Ash on site and Ash Dieback in the area so it should be expected to be present. It may have some influence on where development takes place.

### Acknowledgements

A huge thank you to Libby Morris for assisting with the recording of birds during the survey and providing a delicious lunch. Thanks to Nicola Thomas and Chris Carthy for commissioning me to carry out the survey and for their help. Thanks also to Peter Clarke and Polly Eason for meeting me on site and giving me some guidance on what is required. Thanks also to Mike Edwards for allowing me to use his text on conservation statuses of invertebrates.

### Reference and bibliography

Abraham, F., Briggs, M., Harmes, P. Hoare, A., Knapp, A., Lording, T. Scott, B., Shaw, M. Streeter, D. & Sturt, N. (2018) *The Flora of Sussex*. Sussex Botanical Recording Society.

Bee, L., Oxford, G. & Smith, H. (2017) *Britain's Spiders*. WILDGuides.

Duff, A. G. (2012) *Beetles of Britain and Ireland Volume 1: Sphaeriidae to Silphidae*. West Runton, Norfolk.

Hillyard, P. D. (2005) *Harvestmen*. Field Studies Council.

Joy, N. H. (1932) *A Practical Handbook of British Beetles*. Pisces Conservation.

Lott, D. A. & Anderson, R. (2011) The Staphylinidae (rove beetles) of Britain and Ireland Parts 7 & 8: Oxyporinae, Steninae, Euaesthetinae, Pseudopsinae, Paederinae, Staphylininae. Royal Entomological Society.

Lott, D. A. & Anderson, A. (2009) The Staphylinidae (rove beetles) of Britain and Ireland Part 5: Scaphidiinae, Piestinae, Oxytelinae. Royal Entomological Society.

Luff, M. L. (2007) *The Carabidae (ground beetles) of Britain and Ireland*. Royal Entomological Society.

Roberts, M. J. (1995) *Field Guide to Spiders of Britain and Northern Europe*. Collins.

Rose, F. (2006) *The Wildflower Key - Revised and Expanded Edition*. Warne.

Savage, A. A. (1989) *Adults of the British Aquatic Hemiptera Heteroptera*. Freshwater Biological Association.

Southgate, F. (2019) *Advice for Coldean Lane Community, Brighton*. Unpublished report from Sussex Wildlife Trust.

<https://www.sxbrc.org.uk/shieldbugs/mapping.html#> last accessed 10<sup>th</sup> February 2020.

## Appendices

Species in bold are those with conservation status. R = Red List, A = Amber List, Nb = Nationally scarce b, Na = Nationally scarce a, NS = Nationally Scarce, NR = Nationally Rare, S.41 = Section 41/BAP, NT = Near Threatened, ENG = England Red List.

Order		Status	Species	Long	North	Wood	Plant	Open	Close	ALL
fungus	F		Beech Jellydisc			1			1	1
fungus	F		Beech Woodwart			1			1	1
fungus	F		Elfin Saddle				1		1	1
fungus	F		Jelly Ear			1			1	1
fungus	F		King Alfred's Cakes			1	1		1	1
fungus	F		Maple Whitewash				1		1	1
fungus	F		Ophiocordyceps gracilis			1			1	1
fungus	F		Sycamore Tarspot	1		1		1	1	1
fungus	F		Turkeytail			1			1	1
ant	I		<i>Lasius flavus</i>	1	1			1		1
ant	I		<i>Lasius niger</i>	1	1		1	1	1	1
ant	I		<i>Myrmica sabuleti</i>	1				1		1
ant	I		<i>Stenamma debile</i>			1			1	1
beetle	I		22-spot Ladybird	1				1		1
beetle	I		<i>Acalles misellus</i>			1			1	1
beetle	I		<i>Anotylus</i> sp.	1				1		1
beetle	I		<i>Biphyllus lunatus</i>			1			1	1
beetle	I	Na	<b><i>Cathormiocerus spinosus</i></b>	1				1		1
beetle	I		<i>Ceratapion onopordi</i>	1	1			1		1
beetle	I		<i>Chaetocnema hortensis</i>	1				1		1
beetle	I		<i>Chrysolina hyperici</i>				1		1	1
beetle	I	Nb	<b><i>Diplapion stolidum</i></b>	1				1		1
beetle	I		<i>Drusilla canaliculata</i>		1			1		1
beetle	I		<i>Glocianus distinctus</i>	1				1		1
beetle	I	Na	<b><i>Hypera meles</i></b>	1	1			1		1
beetle	I		<i>Kissister minimus</i>	1				1		1
beetle	I		<i>Longitarsus dorsalis</i>	1	1			1		1
beetle	I		<i>Meligethes aenea</i>			1			1	1
beetle	I		<i>Metopsia clypeata</i>				1		1	1
beetle	I		<i>Microlestes maurus</i>	1	1			1		1
beetle	I		<i>Micropeplus fulvus</i>				1		1	1
beetle	I		<i>Mycetoporus</i> sp.				1		1	1
beetle	I		<i>Nephus redtenbacheri</i>	1				1		1
beetle	I		<i>Notiophilus biguttatus</i>			1	1		1	1
beetle	I		<i>Notiophilus rufipes</i>			1			1	1
beetle	I		<i>Olibrus aeneus</i>	1				1		1
beetle	I		<i>Olibrus affinis</i>		1			1		1
beetle	I		<i>Otiorhynchus crataegi</i>			1			1	1
beetle	I		<i>Paederus littoralis</i>	1				1		1
beetle	I		<i>Philonthus carbonarius</i>	1	1			1		1
beetle	I		<i>Philonthus cognatus</i>	1				1		1
beetle	I	NR, NT	<b><i>Pilemostoma fastuosa</i></b>		1			1		1
beetle	I	Nb	<b><i>Protapion difforme</i></b>	1				1		1
beetle	I		<i>Protapion fulvipes</i>	1				1		1
beetle	I		<i>Quedius semiobscurus</i>		1			1		1
beetle	I		<i>Sitona hispidulus</i>	1				1		1
beetle	I		<i>Sitona humeralis</i>		1			1		1
beetle	I	Rare	<b><i>Smicronyx reichi</i></b>	1				1		1
beetle	I	Na	<b><i>Squamapion cineraceum</i></b>	1	1			1		1

Order		Status	Species	Long	North	Wood	Plant	Open	Close	ALL
beetle	I		<i>Stenus aceris</i>		1			1		1
beetle	I		<i>Syntomus foveatus</i>	1	1			1		1
beetle	I		<i>Tachyporus atriceps</i>	1	1			1		1
beetle	I		<i>Tachyporus chrysomelinus</i>		1			1		1
beetle	I		<i>Tachyporus dispar</i>	1				1		1
beetle	I		<i>Tachyporus hypnorum</i>	1	1	1	1	1	1	1
beetle	I		<i>Tasgius melanarius</i>		1			1		1
<b>beetle</b>	<b>I</b>	<b>Na</b>	<b><i>Trachyploeus alternans</i></b>	<b>1</b>				<b>1</b>		<b>1</b>
beetle	I		<i>Trichosirocalus troglodytes</i>	1	1			1		1
bug	I		<i>Anaceratagallia ribauti</i>	1				1		1
bug	I		<i>Dolycoris baccarum</i>				1		1	1
bug	I		<i>Drymus sylvaticus</i>	1				1		1
bug	I		<i>Issus coleoptratus</i>			1			1	1
bug	I		<i>Nabis ferus</i>		1			1		1
bug	I		Rhombic Leatherbug		1			1		1
<b>bug</b>	<b>I</b>	<b>NS</b>	<b>Scarab Shieldbug</b>	<b>1</b>	<b>1</b>			<b>1</b>		<b>1</b>
centipede	I		<i>Lithobius forficatus</i>			1			1	1
crustacean	I		Common Pill Woodlouse			1	1		1	1
crustacean	I		Common Rough Woodlouse			1			1	1
crustacean	I		Common Shiny Woodlouse			1			1	1
crustacean	I		Common Striped Woodlouse	1	1	1	1	1	1	1
crustacean	I		Trichoniscus pusillus agg.			1			1	1
harvestman	I		Anelasmaocephalus cambridgei		1			1		1
harvestman	I		Platybunus triangularis			1			1	1
millipede	I		Pill Millipede	1	1			1		1
mollusc	I		<i>Aegopinella nitidula</i>			1	1		1	1
mollusc	I		<i>Arion hortensis</i>			1			1	1
mollusc	I		<i>Candidula intersecta</i>	1	1		1	1	1	1
mollusc	I		<i>Cernuella virgata</i>	1	1			1		1
mollusc	I		<i>Clausilia bidentata</i>				1		1	1
mollusc	I		<i>Cochlicella acuta</i>	1			1	1	1	1
mollusc	I		<i>Cochlicopa cf. lubricella</i>	1	1			1		1
mollusc	I		<i>Cochlodina laminata</i>			1			1	1
mollusc	I		<i>Columella edentula</i>			1			1	1
mollusc	I		<i>Cornu aspersum</i>	1	1	1	1	1	1	1
mollusc	I		<i>Lauria cylindracea</i>				1		1	1
mollusc	I		<i>Merdigera obscura</i>			1			1	1
mollusc	I		<i>Monacha cantiana</i>	1	1			1		1
mollusc	I		<i>Pupilla muscorum</i>	1				1		1
Spider	I		<i>Amaurobius fenestralis</i>			1			1	1
Spider	I		<i>Anyphaena accentuata</i>				1		1	1
Spider	I		<i>Centromerita concinna</i>				1		1	1
Spider	I		<i>Centromerus dilutus</i>				1		1	1
Spider	I		<i>Clubiona terrestris</i>				1		1	1
Spider	I		<i>Cnephalocotes obscurus</i>	1	1		1	1	1	1
Spider	I		<i>Mermessus trilobatus</i>	1				1		1
Spider	I		<i>Erigone atra</i>	1	1			1		1
Spider	I		<i>Erigone dentipalpis</i>	1	1			1		1
Spider	I		<i>Euophrys frontalis</i>		1		1	1	1	1

Order		Status	Species	Long	North	Wood	Plant	Open	Close	ALL
Spider	I		<i>Hahnia nava</i>	1	1			1		1
Spider	I		<i>Harpactea hombergi</i>			1			1	1
Spider	I		<i>Lepthyphantes minutus</i>			1			1	1
Spider	I		<i>Lepthyphantes tenuis</i>		1	1		1	1	1
Spider	I		<i>Mangora acalypha</i>	1	1			1		1
<b>Spider</b>	<b>I</b>	<b>NR, S41</b>	<b><i>Meioneta mollis</i></b>	<b>1</b>	<b>1</b>			<b>1</b>		<b>1</b>
Spider	I		<i>Meioneta rurestris</i>		1			1		1
Spider	I		<i>Microlinyphia pusilla</i>	1				1		1
Spider	I		<i>Microneta viaria</i>			1	1		1	1
Spider	I		<i>Neottiura bimaculata</i>	1				1		1
Spider	I		<i>Neriere clathrata</i>	1				1		1
Spider	I		<i>Nursery-Web Spider</i>	1	1			1		1
Spider	I		<i>Ozyptila sanctuaria</i>	1				1		1
Spider	I		<i>Pachygnatha degeeri</i>				1		1	1
Spider	I		<i>Pardosa sp.</i>		1			1		1
Spider	I		<i>Pelecopsis parallela</i>	1	1			1		1
Spider	I		<i>Philodromus albidus</i>			1			1	1
Spider	I		<i>Phrurolithus festivus</i>	1	1			1		1
Spider	I		<i>Tenuiphantes tenuis</i>	1				1		1
Spider	I		<i>Tenuiphantes zimmermanni</i>	1				1		1
Spider	I		<i>Theridion pallens</i>				1		1	1
Spider	I		<i>Tibellus oblongus</i>	1	1			1		1
Spider	I		<i>Trachyzelotes pedestris</i>	1	1			1		1
Spider	I		<i>Xysticus cristatus</i>	1	1			1		1
Spider	I		<i>Zelotes latreillei</i>		1			1		1
Spider	I		<i>Zora spinimana</i>	1	1		1	1	1	1
springtail	I		<i>Orchesella cincta</i>	1		1		1	1	1
springtail	I		<i>Orchesella villosa</i>			1	1		1	1
springtail	I		<i>Tomocerus longicornis</i>	1	1	1		1	1	1
algae	L		<i>Nostoc commune</i>	1	1		1	1	1	1
lichen	L		Common Orange Lichen	1			1	1	1	1
lichen	L		Oak Moss				1		1	1
lichen	L		<i>Ramalina farinacea</i>	1			1	1	1	1
lichen	L		<i>Ramalina fastigiata</i>	1			1	1	1	1
liverwort	L		<i>Metzgeria furcata</i>			1			1	1
moss	L		<i>Brachythecium rutabulum</i>	1	1	1	1	1	1	1
moss	L		<i>Calliergonella cuspidata</i>	1	1			1		1
moss	L		<i>Eurhynchium striatum</i>		1	1		1	1	1
moss	L		<i>Fissidens sp.</i>			1			1	1
moss	L		<i>Homalothecium lutescens</i>	1	1		1	1	1	1
moss	L		<i>Homalothecium sericeum</i>			1			1	1
moss	L		<i>Kindbergia praelonga</i>		1	1		1	1	1
moss	L		<i>Rhytidiadelphus squarrosus</i>	1				1		1
moss	L		<i>Scleropodium purum</i>	1	1			1		1
moss	L		<i>Thamnobryum alopecurum</i>			1	1		1	1
plant	P		Annual Mercury	1				1		1
plant	P		<i>Aphanes sp.</i>	1	1		1	1	1	1
plant	P		Ash			1	1		1	1
plant	P		Beech	1		1	1	1	1	1

Order		Status	Species	Long	North	Wood	Plant	Open	Close	ALL
plant	P	Protecte	Bluebell			1			1	1
plant	P		Bramble	1	1	1	1	1	1	1
plant	P		Bristly Oxtongue	1				1		1
plant	P		Bulbous Buttercup		1			1		1
plant	P		Burdock sp.	1				1		1
plant	P		Butterfly-bush				1		1	1
plant	P	ENG NT	Carline Thistle	1	1			1		1
plant	P		Cherry sp.				1		1	1
plant	P		Cleavers				1		1	1
plant	P		Common Centaury	1	1			1		1
plant	P		Common Field-speedwell	1				1		1
plant	P		Common Mouse-ear	1			1	1	1	1
plant	P		Common Nettle	1		1		1	1	1
plant	P		Common Ragwort	1				1		1
plant	P		Cotoneaster sp.	1				1		1
plant	P		Cow Parsley	1				1		1
plant	P		Creeping Buttercup	1				1		1
plant	P		Creeping Cinquefoil	1	1			1		1
plant	P		Creeping Thistle	1	1			1		1
plant	P		Daisy	1	1			1		1
plant	P		Dandelion			1			1	1
plant	P	ENG NT	Devil's-bit Scabious		1			1		1
plant	P		Dock sp.			1			1	1
plant	P		Dog-rose		1			1		1
plant	P		Dog's Mercury			1	1		1	1
plant	P		Dog-violet sp.		1	1		1	1	1
plant	P		Dogwood	1	1		1	1	1	1
plant	P		Dove's-foot Crane's-bill	1	1			1		1
plant	P		Elder			1			1	1
plant	P		Evergreen Oak	1			1	1	1	1
plant	P		False-brome		1		1	1	1	1
plant	P		Field Forget-me-not	1	1		1	1	1	1
plant	P		Field Madder	1				1		1
plant	P		Field Maple	1		1	1	1	1	1
plant	P		Germander Speedwell	1	1			1		1
plant	P		Great Mullein	1			1	1	1	1
plant	P		Ground-ivy	1	1	1	1	1	1	1
plant	P		Hawthorn			1	1		1	1
plant	P		Hazel				1		1	1
plant	P		Hedge Bedstraw	1				1		1
plant	P		Herb-Robert		1	1		1	1	1
plant	P		Holly			1			1	1
plant	P		Ivy			1			1	1
plant	P		Lesser Hawkbit	1	1		1	1	1	1
plant	P		Lords-and-Ladies			1	1		1	1
plant	P		Mouse-ear Hawkweed	1				1		1
plant	P		Oxeye Daisy	1				1		1
plant	P		Pedunculate Oak		1	1	1	1	1	1
plant	P		Perforate St John's-wort	1				1		1

Order		Status	Species	Long	North	Wood	Plant	Open	Close	ALL
plant	P		Pine sp.				1		1	1
plant	P		Ploughman's-spikenard	1	1	1	1	1	1	1
plant	P		Procumbent Pearlwort	1			1	1	1	1
plant	P		Reflexed Stonecrop		1			1		1
plant	P		Ribwort Plantain	1	1			1		1
plant	P		Rose-of-Sharon	1				1		1
plant	P		Rough Hawkbit	1	1			1		1
plant	P		Selfheal	1	1	1	1	1	1	1
plant	P		Sow Thistle sp.	1		1		1	1	1
plant	P		Spear Thistle	1				1		1
plant	P		Spindle				1		1	1
plant	P		Spurge-laurel			1	1		1	1
plant	P		Sweet Violet	1				1		1
plant	P		Sycamore	1	1	1		1	1	1
plant	P		Thyme-leaved Speedwell			1	1		1	1
plant	P		Traveller's-joy	1			1	1	1	1
plant	P		Turkey Oak	1				1		1
plant	P		Tutsan	1				1		1
plant	P		Water Figwort	1				1		1
plant	P		Whitebeam sp.	1				1		1
plant	P		Wild Basil	1	1			1		1
plant	P		Wild Marjoram	1	1			1		1
plant	P		Wild Privet	1		1		1	1	1
plant	P	ENG NT	Wild Strawberry	1	1	1	1	1	1	1
plant	P		Wild Teasel	1	1			1		1
plant	P		Wild Thyme		1			1		1
plant	P		Willowherb sp.	1	1			1		1
plant	P		Wood Avens		1	1		1	1	1
plant	P		Yew			1	1		1	1
plant	P		Yorkshire-fog	1						1
bird	V		Blackbird	1	1	1		1	1	1
bird	V		Blue Tit	1	1	1	1	1	1	1
bird	V		Buzzard		1	1	1	1	1	1
bird	V		Carrion Crow	1			1	1	1	1
bird	V	A	Dunnock	1		1		1	1	1
bird	V		Feral Pigeon	1	1		1	1	1	1
bird	V		Goldfinch	1			1	1	1	1
bird	V		Great Spotted Woodpecker			1			1	1
bird	V		Great Tit	1		1		1	1	1
bird	V		Green Woodpecker	1	1	1		1	1	1
bird	V	R	Herring Gull	1	1	1		1	1	1
bird	V		Jackdaw	1	1	1		1	1	1
bird	V		Jay			1	1		1	1
bird	V		Long-tailed Tit		1	1		1	1	1
bird	V		Magpie	1	1	1		1	1	1
bird	V	R	Mistle Thrush			1			1	1
bird	V		Robin	1		1	1	1	1	1
bird	V		Rook				1		1	1
bird	V	R	Song Thrush			1			1	1

Order		Status	Species	Long	North	Wood	Plant	Open	Close	ALL
bird	V		Woodpigeon	1	1	1	1	1	1	1
bird	V		Wren	1		1		1	1	1
mammal	V		Eastern Grey Squirrel	1				1		1
<b>mammal</b>	<b>V</b>	<b>Protected</b>	<b>Eurasian Badger</b>			<b>1</b>			<b>1</b>	<b>1</b>
mammal	V		European Mole		1			1		1
mammal	V		European Rabbit	1	1			1		1
mammal	V		Red Fox	1				1		1
				<b>Long</b>	<b>North</b>	<b>Wood</b>	<b>Plant</b>	<b>Open</b>	<b>Close</b>	<b>ALL</b>
			TOTAL SPECIES	145	102	91	78	175	138	252
			Invertebrates	64	50	31	27	80	50	118
			Vertebrates	17	12	18	9	20	22	26
			Vascular plants	54	33	28	31	63	44	83
			Lower plants	9	7	7	8	11	13	16
			Fungi	1	0	7	3	1	9	9
			All species with status	12	8	6	1	14	6	18
			Invertebrates with status	9	5	0	0	10	0	10
			Proportion of invertebrates with status	14.1	10.0	0.0	0.0	12.5	0.0	8.5
			Beetles	27	18	7	6	35	11	45
			Spiders	20	18	6	10	25	15	36
			Molluscs	7	5	6	6	7	10	14