ECOLOGICAL REPORT - LIFELINES DRY STONE WALL SURVEY

MENDIP HILLS AONB
FOR
MENDIP HILLS AONB SERVICE

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CONTROL SHEET

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RESULTS SUMMARY AND RECOMMENDATIONS

Summary

- The Mendip Hills Area of Outstanding Natural Beauty is an exposed landscape, consisting largely of a high, bare plateau of carboniferous limestone that supports intensively managed calcareous grassland with a small number of arable fields. Dry stone walls are distinctive landscape features of the area.

- An ecological survey of the dry stone walls was undertaken over ten survey days between 18 June and 19 August 2007. Sampling was carried out on 74 dry stone walls within which there were 207 samples divided between lower, middle and upper wall zones.

- What part do dry stone walls play in the ecological habitat of the Mendip Hills Area of Outstanding Natural Beauty? The dry stone walls provide potential links between species and habitats in the wider landscape and within a fragmented mosaic of important semi-natural habitats such as wildflower grassland, heathland and woodland. This association is especially critical with the move away from site-based conservation towards a landscape scale approach. Dry stone walls create an important network in the *Living Landscapes Project* on the Mendip Hills: a project that aims to help species survive the predicted impacts of climate change by maintaining, creating and linking important wildlife habitats.

- How valuable is a dry stone wall for wildlife in the Mendip Hills Area of Outstanding Natural Beauty? The dry stone wall habitat is of high nature conservation value supporting fauna and flora of local, national and international importance. A number of protected, rare or notable species were found to be, or are considered likely to be, using the dry stone wall habitat for nesting, shelter and foraging. The dry stone wall habitat helps these species to survive by allowing them access to sufficient habitat to meet their needs and provides them with a potential niche in what would otherwise be a largely open and inhospitable landscape.

- Where would we find the most valuable walls for wildlife? The most valuable dry stone walls for biodiversity and nature conservation have to be those walls within and adjacent to United Kingdom priority habitats. Habitat fragmentation has been an important cause of species decline in the English countryside. The dry stone walls cross many of the designated sites and have the potential to support wildlife. They may also

have an important role to play in some species dispersal between the protected habitats.

- Is a wall more valuable for wildlife in a collapsed state? The most important dry stone walls in biodiversity and nature conservation terms are those walls in an intermediate condition in the continuum between newly restored walls and derelict walls: both extreme habitats which provide unstable, disturbed and highly stressed conditions for the majority of species. Semi-derelict walls are likely to be more attractive to wildlife and provide more niches than a tightly-built or collapsed wall.

- What species uses walls as homes and which highways? Dry stone walls support a diverse flora and fauna and offer suitable nest sites and cover for small and medium sized mammals, birds, reptiles and amphibians. Many United Kingdom Biodiversity Action Plan species of conservation concern are likely to use the habitat for part or all of their life cycle. The walls are also likely to support highly specialised invertebrate communities. There was no conclusive evidence to suggest that taxa use the walls as highways and corridors although there was evidence that numerous species pass through, across and along the walls.

- The dry stone walls of the Mendip Hills Area of Outstanding Natural Beauty constitute a distinctive habitat type for plant growth. The five plant communities identified are:

  - Group 1 - A pioneer community of crustose lichens covering large expanses of bare, inhospitable substrate in a mainly open aspect;

  - Group 2 - A species poor community with abundant bryophyte and lichens and a few vascular plants developing on dry stone walls in partial shade;

  - Group 3 - A community of moderate species richness with an extensive and diverse bryophyte cover dominated by pleurocarpous bryophytes with occasional vascular plants growing on dry stone walls with a moderate degree of shade. Lichen cover was scarce;

  - Group 4 - A species poor community dominated by bramble scrub developing and establishing itself on neglected dry stone walls with a moderate degree of shade;

  - Group 5 - A shrubby/woody plant community dominating derelict walls in a shaded position.

- The five dry stone wall plant communities demonstrate the process of vegetational successional.

- The dry stone wall habitat is a threatened resource and the habitat, with its associated fauna and flora, is intrinsically sensitive in the face of ongoing vegetation succession, human impact, weathering and neglect. The walls can be destroyed by insensitive works or lack of management.

Recommendations

1. Undertake repair rather than completely strip down and re-build the dry stone walls.

2. It is important that any repairs are carried out sympathetically in order to preserve their wildlife value *i.e.* stones should be replaced so that any bryophytes or lichens have a similar position and aspect to that on the original wall.

3. Undertake on-going maintenance *i.e.* remove woody growth like ivy, bramble and saplings as soon as possible.

4. Undertake an ecological survey to assess both the fauna and flora value of any wall before carrying out any major rebuilding or maintenance work.

5. Incorporate the appropriate management of all relevant species in the care of the dry stone walls.

6. Aim to establish buffer strips of at least 2 m of rough grassland along both sides of dry stone walls.

7. The importance of dry stone walls has received little attention in the United Kingdom Biodiversity Action Plans and very little is known about the plant communities of dry stone walls. There is a strong case for separate research and recognition of the habitat under the category of dry stone walls.

The recommendations are made in order to ensure full compliance with wildlife legislation, local and national statutory planning policies and best practice.

SURVEY RESULTS

The main aim of this research was to consider the role dry stone walls play in the ecological habitat of the Mendip Hills Area of Outstanding Natural Beauty (AONB). This report presents the results of the field and desk based survey. It describes the ecological habitat of the dry stone walls in the Mendip Hills AONB and gives a community analysis of the saxicolous plant communities observed.

Site

Sampling was carried out on 74 dry stone walls in the Mendip Hills AONB over ten survey days between 18 June and 19 August 2007. Figure 1 gives a map of the Mendip Hills AONB showing the location of the 74 dry stone walls surveyed. The map also shows the approximate location of 11 additional 1 km grid squares that were visited within the initial random selection of walls but were not surveyed either because of the absence of dry stone walls at the location or in one instance difficulty of access. The 11 randomly selected areas not surveyed are situated to the north and north-east of the Mendip Hills AONB.

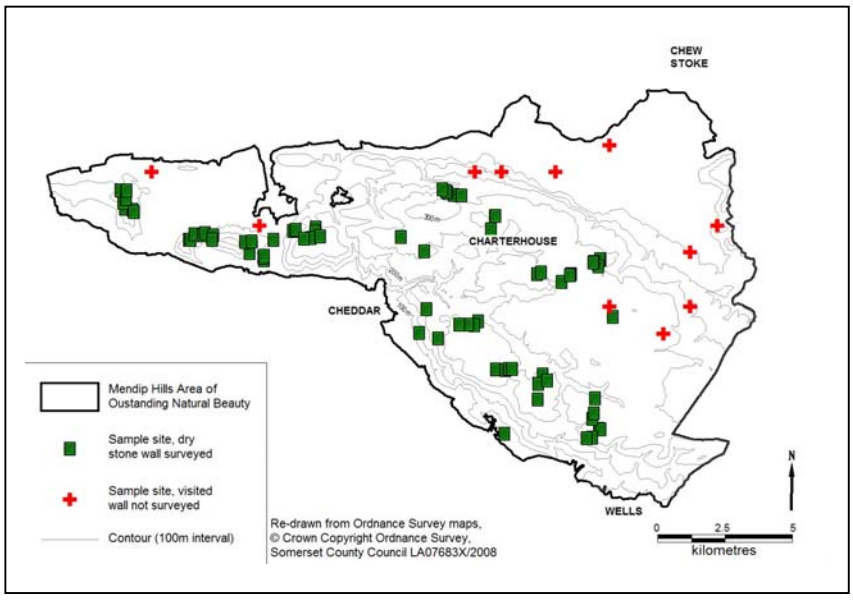


Figure 1: Map of the Mendip Hills Area of Outstanding Natural Beauty showing the location of the randomly selected survey sites. The shaded boxes represent the 74 randomly selected dry stone walls visited and surveyed. The crosses represent the approximate location of 11 randomly selected sites visited but not surveyed.

Mendip Hills AONB Dry Stone Walls

The physical properties (aspect, altitude, height and width) and the number of observations (total plant species, vascular, bryophytes and lichens) for each of the 74 dry stone walls are given in Table 1 below. Carboniferous limestone was the dominant substrate, with a small number of walls being constructed of sandstone

or breccia. The substrate of each wall was judged by eye and was not chemically tested.

Variable	Minimum	Maximum	Mean	St. Dev.
Aspect (degrees)	10	350	291.46	119.67
Altitude (metres AOD)	63	292	213.78	59.197
Height (metres)	0.28	1.77	1.02	33.025
Width (metres)	0.41	2.00	0.79	38.275
Total plant species	24	49	35.03	5.465
Vascular	11	25	14.62	3.268
Bryophytes	9	26	15.99	3.390
Lichens	1	9	4.42	2.387

Table 1: Comparison of the physical properties and plant species observations of 74 dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty.

The dry stone walls displayed a wide range of general features. These characteristics are likely to reflect the local influences and nature of the area and illustrate the range of variation encountered during the field survey. Table 2 below shows the statistical strength of the relationship between the plant species observations and the physical properties of the individual walls. In the following text, the physical properties and plant species observations and the relationships between them are discussed further.

Table 2: A contingency table of the observations recorded on 74 dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty and the power of their associated environmental variables. The correlation co-efficient indicates the strength of association. The co-efficient lies in the range between -1 and +1. Spearman's rank-order correlation ** indicates that correlation is significant at the 0.01 level (2-tailed); * correlation is significant at the 0.05 level (2-tailed).

Variable	Spearman's rank-order correlation	Wall aspect	Wall altitude	Wall height	Wall width	Total plant species	Vascular plants	Bryophytes
Wall altitude	Correlation Coefficient	0.015						
	Sig. (2-tailed)	0.900						
Wall height	Correlation Coefficient	-0.007	0.057					
	Sig. (2-tailed)	0.950	0.631					
Wall width	Correlation Coefficient	-0.079	0.005	-0.454**				
	Sig. (2-tailed)	0.502	0.968	0.000				
Total plant species	Correlation Coefficient	-0.047	-0.102	-0.395**	0.325**			
	Sig. (2-tailed)	0.693	0.389	0.001	0.005			
Vascular plants	Correlation Coefficient	-0.050	-0.020	-0.428**	0.314**	0.643**		
	Sig. (2-tailed)	0.674	0.865	0.000	0.006	0.000		
Bryophytes	Correlation Coefficient	-0.033	-0.151	-0.389**	0.184	0.779**	0.330**	
	Sig. (2-tailed)	0.780	0.198	0.001	0.117	0.000	0.004	
Lichens	Correlation Coefficient	-0.001	0.095	0.145	-0.021	0.323**	-0.235*	0.034
	Sig. (2-tailed)	0.992	0.419	0.218	0.860	0.005	0.044	0.771

Aspect

The circular plot of the aspect of each of the 74 dry stone walls shows the frequency of observations by degree, see Figure 2. The smoothed line imposed on the plot shows the distribution of observations around the circle and indicates that the dry stone walls covered a wide range of aspects and that walls run approximately in two directions: either north/east to south/west or north/west to south/east. Spearman's rank-order correlation shows that there is no significant relationship between wall aspect and the number of observations (total species, vascular plants, bryophytes and lichens).

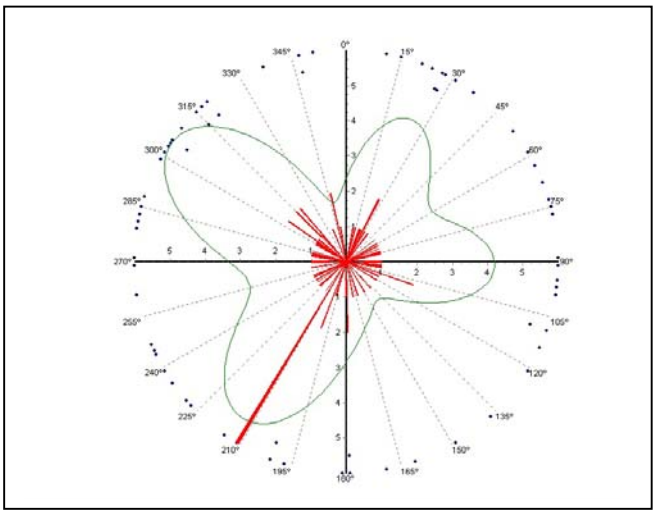


Figure 2: Circular plot of aspect of 74 dry stone walls surveyed in the Mendip Hills Area of Outstanding Natural Beauty. The plot shows the distribution of aspect observations around the circle. The green smoothed line indicates the frequency of observations.

Altitude

The average wall altitude was 214 m AOD. Over half of the dry stone walls were recorded at above 214 m AOD in the Mendip Hills AONB, see Figure 3. This reflects the difficulty experienced by the surveyor/author in finding sample walls at lower altitudes and suggests that there are less dry stone walls present in the landscape of the Mendip Hills AONB below approximately 200 m AOD.

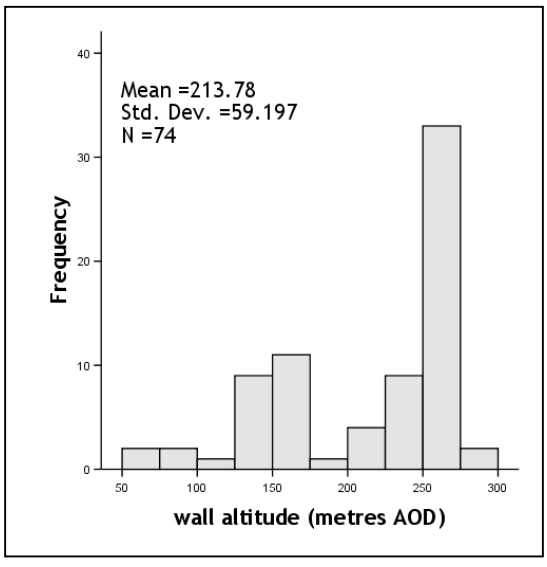


Figure 3: Histogram of the altitude of 74 dry stone walls within the Mendip Hills Area of Outstanding Natural Beauty.

Height and width

There was a wide range of sizes within the 74 dry stone wall samples, see Figure 4. The average height of a wall was 1.02 m and the average width of a wall was 0.80m. Walls ranged from tall and narrow recently restored walls through to short

and wide derelict walls. The random sample contained a higher number of wide and low dry stone walls than tall and narrow walls suggesting that a large percentage of walls within the Mendip Hills AONB are in a state of disrepair or collapse.

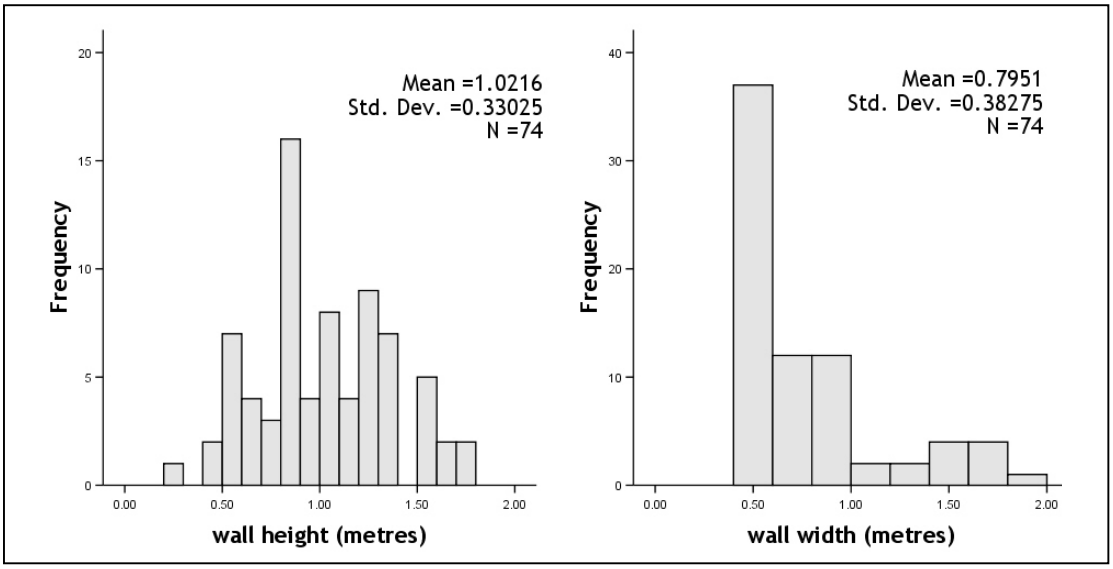


Figure 4: Histograms of the width and height of 74 dry stone walls within the Mendip Hills Area of Outstanding Natural Beauty.

Spearman's rank-order correlation between wall width and wall height (Table 2) shows that there is a significant negative relationship between the two variables, see Figure 5. As the dry stone walls reduce in height the wall width increases. This result is consistent with the premise that as walls collapse into disrepair, the width of the feature would be expected to increase (assuming proportional dimension uniformity of the original walls). It also suggests that the majority of stone from the derelict walls in the sample is not being removed from the site but is being left *in situ*.

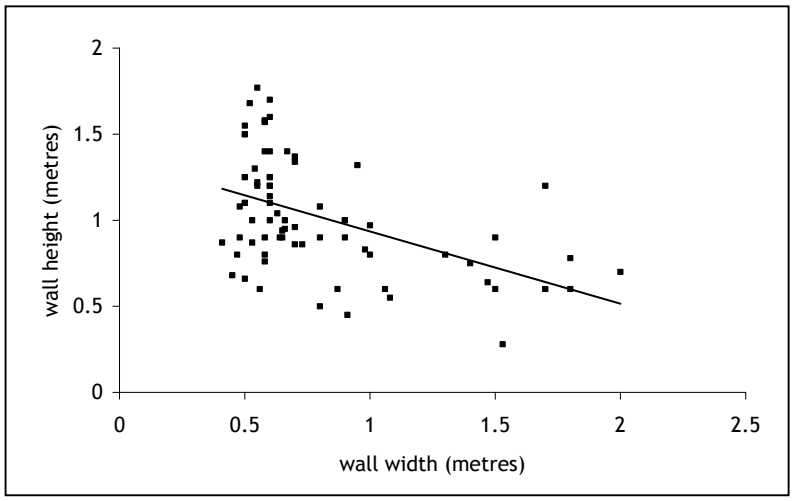


Figure 5: The relationship between wall height and width for 74 dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty.

The location of the 74 sample walls, with the relevant height and width of each wall, is given in Figure 6. There is no statistically significant relationship between the wall aspect and altitude with height and width (Table 2).

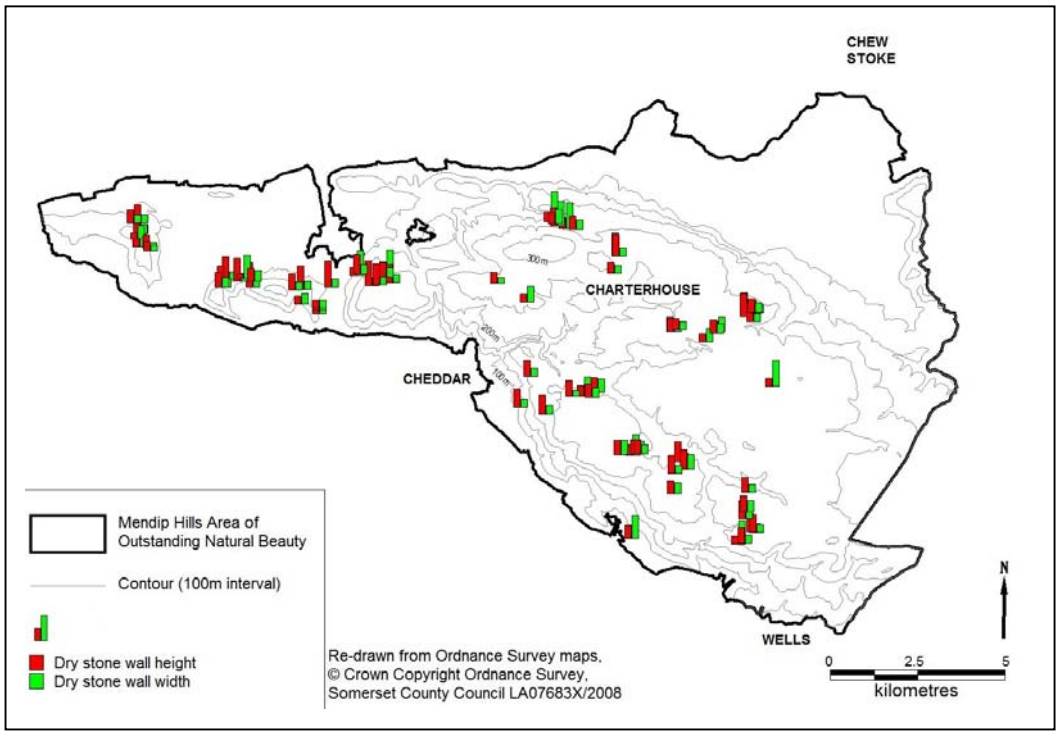


Figure 6: Map of Mendip Hills Area of Outstanding Natural Beauty showing the location, height and width of the 74 dry stone walls surveyed between June and August 2007.

Plant species observations

The number of plant species observations recorded on each wall varied across the 74 samples, Figure 7. One wall in an advanced stage of collapse had plant species observations outside the range of the other observations. Similarly, one derelict shaded wall had a higher number of bryophyte species. The average number of bryophyte observations was constantly higher than the vascular species observations. The consistently low number of lichen observations across the 74 sample is expected, because only the common lichen species were recorded during the survey.

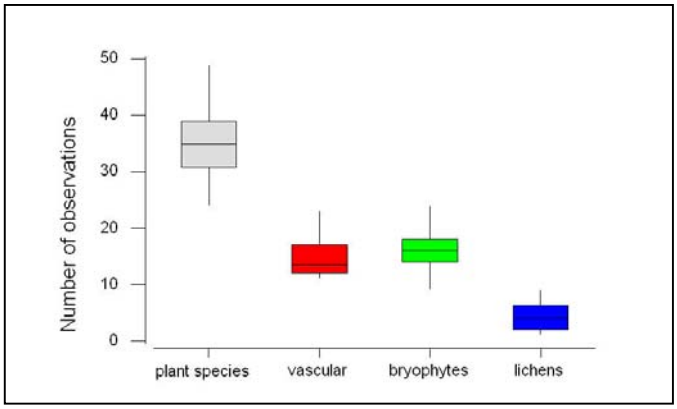


Figure 7: Comparison of the number of plant species recorded on 74 dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty. The box plots show the median and interquartile range of individual variables.

Spearman's rank-order correlation (Table 2) indicates that there is a significant negative relationship between total plant species, vascular species and bryophytes recorded and the wall height, see Figure 8. As the height of the dry stone wall decreased the number of plant species recorded decreased. There was no significant relationship between lichens and wall height.

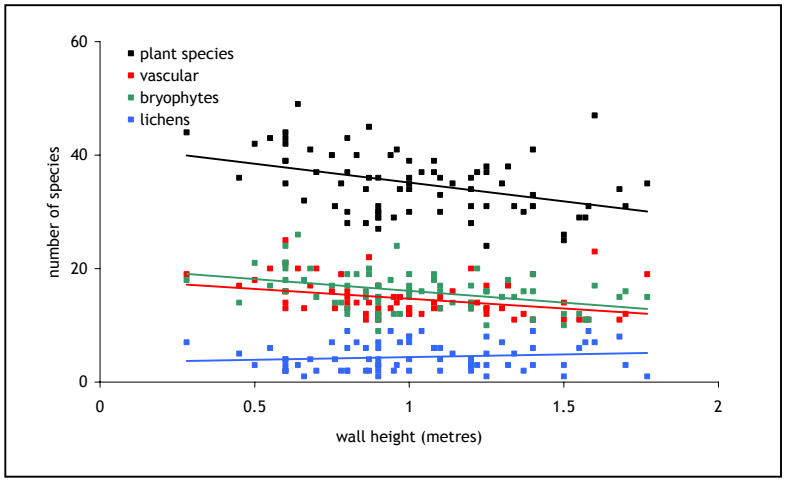


Figure 8: The relationship between the height of 74 dry stone walls and the number of species observed on each wall. Observations were recorded over ten survey days between June and August in the Mendip Hills Area of Outstanding Natural Beauty.

Spearman's rank-order correlation (Table 2) indicates that there is a significant positive relationship between total plant species and vascular species recorded and the wall width, see Figure 9. As the width of the wall increased the number of plant species increased. There was no significant relationship between bryophytes and lichens and wall width (Table 2).

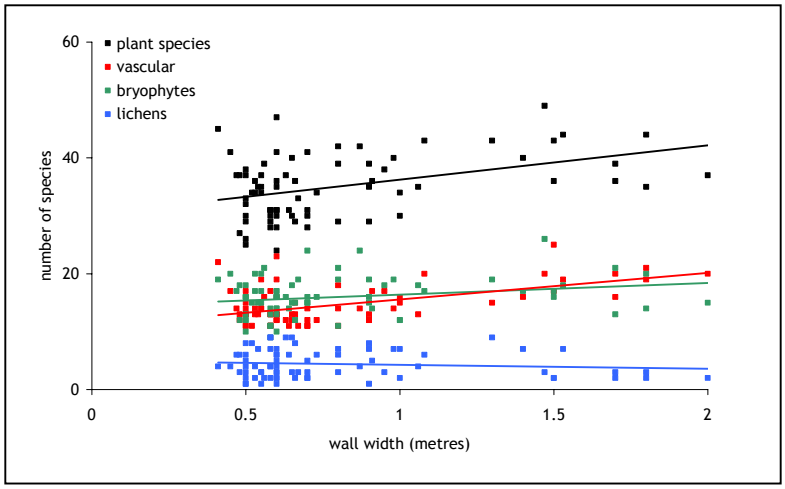


Figure 9: The relationship between the width of 74 dry stone walls and the number of species observed on each wall. Observations were recorded over ten survey days between June and August in the Mendip Hills Area of Outstanding Natural Beauty.

The relationship between species recorded and wall width and height is likely to reflect the enriched habitat created by organic matter accumulating in the derelict and collapsed walls that then become adulterated by species characteristic of other habitats. The derelict habitat favoured more vascular species such as grasses, woody plants and species of disturbed ground. Taller walls support fewer plant species.

Wall flora

A total of 149 plant species were recorded although 57 (38%) of these occurred as casuals (recorded only once or twice). There were 75 vascular plants (17 grasses, 7 ferns and 51 flowering plants), 51 bryophytes (23 acrocarpous mosses, 16 pleurocarpous mosses and 3 liverworts) and 23 lichens noted growing on the dry stone walls in the Mendip Hills AONB. Of these 36 (24 %) plant species occurred on only one wall with another 21 (14 %) plant species on only two walls. The full list of species, with the individual species' frequency and abundance values, is given in Appendix I. A map showing the number of observations at each of the 74 sample sites is given in Figure 10 below. The community constants were the bryophyte *Homalothecium sericeum* and the lichen *Verrucaria baldensis* (Plates 1 and 2 below).

Plate 1: *Homalothecium sericeum* is a common moss of dry exposed to slightly sheltered horizontal to vertical substrates. It favours moderate, but not deep shade. It has a bright silky sheen on the pale green tips of the shoots. It has a prostrate, creeping habit. Reference: Smith (2004).

Plate 2: *Verrucaria baldensis* is a very common and often abundant crustose lichen of hard limestone. The lichen is white to pale grey. *Verrucaria nigrescens* is a common crustose lichen mainly found on calcareous rocks. The lichen is chocolate-brown to black. Reference: Dobson (2005).

Schistidium apocarpum sensu lato was the frequent bryophyte with occasional *Bryum capillare* var. *capillare, Caloplaca flavescens, Hypnum cupressiforme, Neckera complanata, Rubus fruticosus, Tortula muralis* var. *muralis, Verrucaria nigrescens* and *Zygodon viridissimus* also present. Leaf litter was scarce. Bare rock was a community constant. There is no statistically significant relationship between the wall aspect and altitude and the number of observations (Table 2).

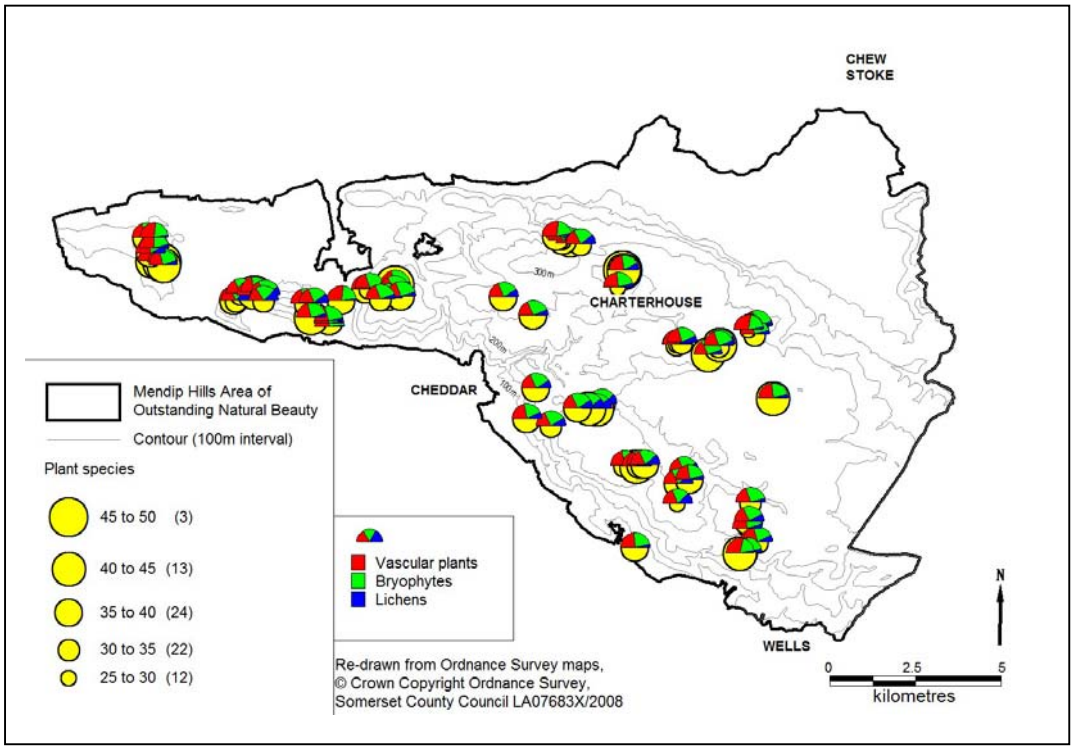


Figure 10: Map of Mendip Hills Area of Outstanding Natural Beauty showing the location and number of plant species observations of the 74 dry stone walls.

The analysis so far has shown that dry stone walls cover a wide range of aspects and run approximately in two main directions: either north/east to south/west or north/west to south/east. There is a lack of dry stone walls present in the landscape of the Mendip Hills AONB below approximately 200 m AOD. A large number of walls within the Mendip Hills AONB are in a state of disrepair and collapse. Wall height and wall width are inversely related: as the dry stone walls reduce in height the wall width increases. The majority of stone from the derelict walls in the sample is not being removed from the site but is being left *in situ*. Bryophyte observations were higher than the vascular species observations. As the height of the dry stone wall decreased there was a significant increase in the number of plant species, vascular and bryophytes recorded. As the width of the wall increased there was an increase in the number of plant species, vascular and bryophytes recorded: this increase was significant for total plant species and vascular species. This report now goes on to describe in more detail the flora of the dry stone wall plant communities.

Plant Communities of the Mendip Hills AONB Dry Stone Walls

A typical dry stone wall would be expected to be roughly divided into zones: each zone providing different habitat conditions and supporting a distinct type of vegetation community (Gilbert 1996; Segal 1969). For this reason, the vegetation of the 74 dry stone walls was sampled and recorded in three zones to create 207 samples divided between 74 lower (and base) zones, 59 middle zones and 74 upper (wall top) zones of the wall. Every wall had a lower and upper zone but the presence of a middle zone was dependent on the height of the wall. The observations from the 207 samples were entered into a plant community analysis package (Hill 1979a) whereby the vegetation samples were successively divided into categories on the basis of similar species composition. The analysis classified the 207 samples into five plant communities, identified in this report as Groups 1, 2, 3, 4 and 5. The results are presented in the form of a dendrogram, Figure 11. At each hierarchical division the main "indicator" plant species is shown. Indicator species are highlighted in Figure 11 as follows: Blue shading represents crustose lichens; Green shading represents bryophytes; Red shading represents vascular

species. Key "indicator" plant species for each division were used to assist with describing the dry stone wall plant communities. The "indicator" species for the first division was the bryophyte *Mnium hornum. Mnium hornum* is a common and often abundant moss that is often the dominant species on ground and banks in woodland where it can form dense tufts (Plate 3). The presence of *Mnium hornum* in Group 5 and not in the other plant community groups and crustose lichens (adapted to harsh open habitats) in Group 1 reflects the distinct separation at the first level of sub-division between plant communities recorded on dry stone walls running through an open landscape, with little to only partial shade (Groups 1 - 4) and those recorded on derelict dry stone walls on the edge of woodland, where the situation was more shaded (Group 5).

Plate 3: Dark green tufts of the woodland bryophyte *Mnium Hornum* found growing amongst cracks in collapsed dry stone walls of the Mendip Hills Area of Outstanding Natural Beauty.

At the next level of division the distinction was less clear with the divisions highlighting the floristic variation within the dry stone wall plant communities.

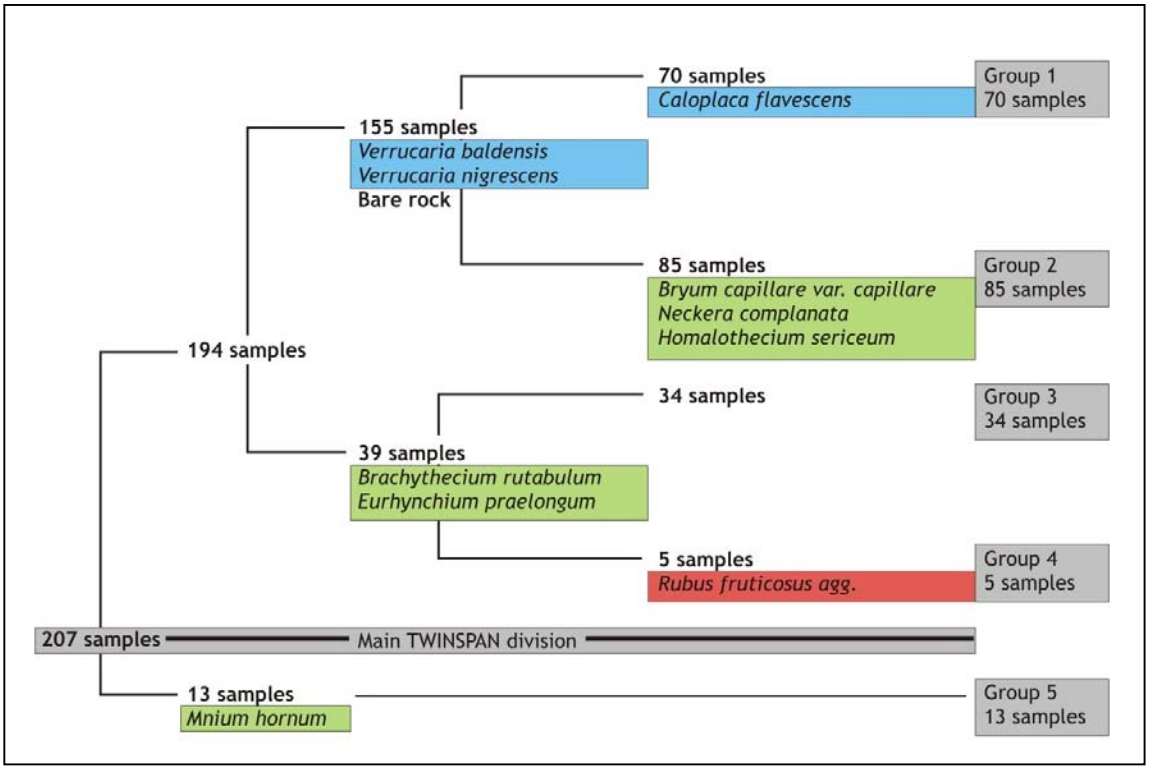


Figure 11: Dendogram of plant communities recorded on 74 dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty arranged into five plant community groups and showing the indicator species. Indicator species are highlighted as follows: Blue shading represents crustose lichens; Green shading represents bryophytes; Red shading represents vascular species.

The five plant communities of the Mendip Hills AONB dry stone walls are described in detail below. Environmental variables for each plant species (Ellenberg 1988; Hill *et al*. 1999) are used to assist with describing the habitat in which the individual plant communities exist. Reference is also made to the physical properties of each habitat, see Figure 12. The text follows the usual phytosociological convention of referring to species of frequency classes IV and V in a particular community as constants; those species of Class III as frequent; of Class II as occasional and of Class I as scarce. The full list of plant species for each phytosociological group, with the individual species' frequency and abundance values, is given in Appendix II. A separate fact sheet (with photographs) for each of the five plant communities is given in Appendix III. Comparison with the National Vegetation Classification (NVC) (Rodwell 1991) is made. The National Vegetation Classification is the UK recognised standard for describing plant communities. Associated flora recorded with 1 m of the dry stone walls is given in Appendix IV. The detailed results of the analysis are given in Appendix V.

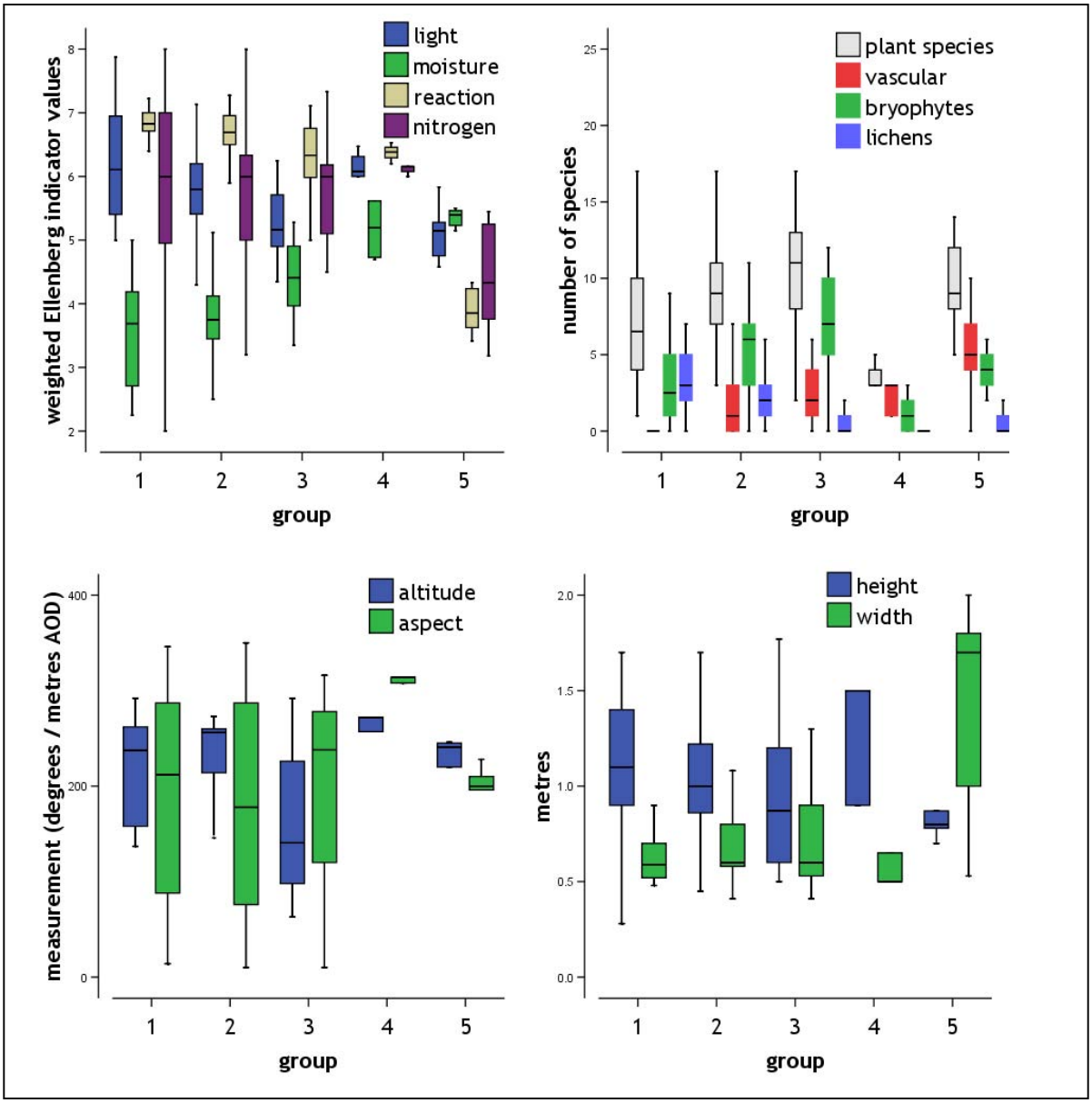


Figure 12: Habitat properties, plant species observations and environmental variables for 207 samples arranged in five phytosociological groups recorded in dry stone wall plant communities in the Mendip Hills Area of Outstanding Natural Beauty.

Group 1

There were 70 samples in Group 1. This was a very early pioneer plant community. Large areas of rock were devoid of plant cover. Lichens were the dominant taxa. The community constants were the lichens *Caloplaca flavescens, Verrucaria baldensis* and *Verrucaria nigrescens* and the moss *Homalothecium sericeum*. The

moss *Schistidium apocarpum sensu lato* was frequent. Occasional species were the crustose lichens *Aspicilia calcarea, Caloplaca teicholyta* and *Placynthium nigrum* and the small acrocarpous mosses *Grimmia pulvinata, Tortula muralis* var. *muralis* and *Zygodon viridissimus*. There were 63 plant species (22 vascular; 25 bryophytes; 16 lichens) recorded in total in the community of which 14 were recorded only once. The maximum number of species in any one sample was 17 with the average number being seven species. Leaf litter was scarce. Bare rock was a community constant.

The substrate was dominantly limestone with occasional sandstone. A few walls had evidence of mortar and one wall had been infilled with breccia. Average wall height was 1.15 m (range between 0.28 m and 1.70 m) and wall width was 0.68 m (range between 0.48 m and 1.53 m) at an average altitude of 251 m AOD (range between 137 m AOD and 292 m AOD). The condition of the walls was various from a dilapidated and collapsed state through to recently restored walls in a sound condition. The majority of the walls had an open aspect and were very exposed to weathering processes. Weighted Ellenberg indicator values indicate that the environmental conditions for the community were partial shade, dry, weakly acid to weakly basic conditions of between intermediate fertility and richly fertile places. The dominant vegetation within 1 m of wall was *Arrhenatherum elatius, Cirsium arvense, Dactylis glomerata, Holcus lanatus, Lolium perenne* and *Urtica dioica*.

This was a species-poor community that best matched the National Vegetation Classification OV42 *Cymbalaria muralis* community, wall crevice vegetation typical of sunny communities.

There was little difference between the numbers of species recorded in each wall zone and there was considerable similarity of species composition between the zones. The constant species in all three zones were *Homalothecium sericeum* and *Verrucaria baldensis*. In addition, the constant species in the middle and upper zone was the lichen *Verrucaria nigrescens* and in the upper zone only was the

bryophyte *Schistidium apocarpum sensu lato*. Bare rock remained constantly high throughout all the zones.

Group 2

There were 85 samples in Group 2. Community description was of a saxicolous community with an abundant mixture of bryophytes and lichens covering bare rock with rare to occasional vascular plants. The community constants were the bryophytes Homalothecium sericeum and *Schistidium apocarpum sensu lato* and the crustose lichen *Verrucaria baldensis*. Frequent species in the community were *Bryum capillare* var. *capillare, Neckera complanata* and *Verrucaria nigrescens* with the occasional bryophytes *Hypnum cupressiforme, Tortella tortuosa, Tortula muralis* var. *muralis* and *Zygodon viridissimus* and the perennial woody climber *Hedera helix* subsp. *helix* and the shrub *Rubus fruticosus*. There were 102 plant species (50 vascular; 34 bryophytes; 18 lichens) recorded in total in the community of which 17 were recorded only once. The maximum number of species in any one sample was 23 with the average number being nine species. Leaf litter was scarce. Bare rock was a community constant but at low abundance.

The substrate was limestone. Average wall height was 1.03 m (range between 0.45 m and 1.70 m) and wall width was 0.73 m (range between 0.41 m and 1.50 m) at an average altitude of 233 m AOD (range between 135 m AOD and 273 m AOD). The general condition of the walls was of a dilapidated state. However, a small number of walls had been restored. Many of the walls were shaded by mature *Acer pseudoplatanus, Crataegus monogyna, Fagus sylvatica, Fraxinus excelsior* and *Sambucus nigra* although in some places, especially along the West Mendip Way, the tree canopy had been recently cleared. A small number of the walls were exposed to the elements. A number of walls were splattered with slurry. Weighted Ellenberg indicator values indicate that the environmental conditions for the community were partial shade, of average dampness, weakly acid to weakly basic conditions of between intermediate fertility and richly fertile places. Dominant vegetation within 1 m of wall was *Arrhenatherum elatius, Dactylis glomerata,*

Holcus lanatus, Lolium perenne, Pteridium aquilinum, Rubus fruticosus and *Urtica dioica*. The lower zone of the wall was often heavily shaded by tall ruderal vegetation.

This was a species-poor community that best matched the National Vegetation Classification OV27 *Chamerion angustifolium* community, a tall herb weed community that exploits open ground.

There was no significant difference between the numbers of species recorded in each wall zone and there was substantial similarity and overlap in the species composition between the zones. The constant species throughout all zones were *Homalothecium sericeum* and *Verrucaria baldensis*. *Neckera complanata* and *Schistidium apocarpum sensu lato* were constant in the lower zone. *Bryum capillare* was constant in the lower zone. Leaf litter was scarce in the lower and upper zones and not present in the middle zone. Bare rock was consistently high within all wall zones.

Group 3

There were 34 samples in Group 3. Community description was of abundant bryophytes with areas of bare rock and occasional vascular species. Lichen cover was scarce. The community constant was the bryophyte *Homalothecium sericeum.* Frequent bryophytes in the community were *Amblystegium serpens* var. *serpens, Brachythecium rutabulum, Eurhynchium praelongum, Hypnum cupressiforme, Neckera complanata* and *Thamnobryum alopecurum*. Other occasional bryophytes were *Bryum capillare, Plagiomnium undulatum, Porella platyphylla, Schistidium apocarpum sensu lato, Tortella tortuosa* and *Zygodon viridissimus* and four vascular species: *Geranium robertianum, Glechoma hederacea, Rubus fruticosus* and *Urtica dioica.* There were 80 plant species (35 vascular; 35 bryophytes; 10 lichens) recorded in total in the community of which 19 were recorded only once. The maximum number of species in any one sample was 17 with the average

number being 10 species. Leaf litter was scarce. Bare rock was a community constant.

The substrate was dominantly limestone with one wall made of sandstone. One wall had evidence of mortar. The average wall height was 0.93 m (range between 0.50 m and 1.77 m) and wall width was 0.79 m (range between 0.41 m and 1.80 m) at an average altitude of 161 m AOD (range between 63 m AOD and 292 m AOD). The overall condition of the walls was stock proof but with some structural defects such as bellying and slumping. Some of the walls were shaded by adjacent woodland and/or hedgerows. Weighted Ellenberg indicator values indicate that the environmental conditions for the community were of semi-shade, of average dampness, between moderately acid and weakly basic conditions of between intermediate fertility and richly fertile places. Dominant vegetation within 1 m of wall was *Brachypodium sylvaticum, Crataegus monogyna, Mercurialis perennis, Rubus fruticosus* and *Urtica dioica.*

This was a community that best matched the National Vegetation Classification W8e *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland: *Geranium robertianum* subcommunity, a woodland community with an extensive and diverse bryophyte cover.

The wall community consisted dominantly of lower and upper wall zones with only a few middle zones. There was no significant difference between the numbers of species recorded in each zone and there was no clear differentiation between the zones. There was no constant species but there were seven frequent species in the lower zone. These were *Anomodon viticulosus, Brachythecium rutabulum, Homalothecium sericeum, Hypnum cupressiforme, Neckera complanata* and *Porella platyphylla* and the evergreen climber *Hedera helix* subsp. *helix*. Constant species of the middle zone were five bryophytes. These were *Amblystegium serpens* var. *serpens, Brachythecium rutabulum, Eurhynchium praelongum, Neckera complanata* and *Porella platyphylla*. The constant species of the upper zone were *Homalothecium sericeum* and *Hypnum cupressiforme*. Bare rock was

more visible in the middle zone and had the lowest presence in the upper zone. Leaf litter was constant in the upper zone and scarce in the lower zone. There was no leaf litter in the middle zone. Lichen cover was scarce.

Group 4

There were only five samples in Group 4. Community description was of abundant woody shrubs over pleurocarpous mosses. The community constant was *Rubus fruticosus* with frequent *Crataegus monogyna* and *Sambucus nigra* and occasional *Homalothecium sericeum*. There were nine plant species (3 vascular; 5 bryophytes; 1 lichen) recorded in total in the community. The maximum number of species in any one sample was five with the average number being four. The only other species present at low frequency were *Eurhynchium praelongum, Neckera complanata, Tortula muralis* var. *muralis, Verrucaria baldensis* and *Zygodon viridissimus*. No bare rock or leaf litter was recorded.

The substrate was limestone. The average wall height was 1.26 m (range between 0.90 m and 1.50 m) and wall width was 0.56 m (range between 0.50 m and 0.65 m) at an average altitude of 266 m AOD (range between 257 m AOD and 266 m AOD). The overall condition of the walls was neglected, rundown and very overgrown. Dense shrubby vegetation cover often prevented detailed sampling of the undercover vegetation. Slurry was splattered over those parts of the wall that were visible. Weighted Ellenberg indicator values indicate that the environmental conditions for the community were of partial shade, moist, between moderately acid and weakly basic conditions of between intermediate fertility and richly fertile places. Dominant vegetation within 1 m of wall was *Bromus hordeaceus, Cerastium fontanum, Chamerion angustifolium, Crataegus monogyna, Cynosurus cristatus, Festuca rubra, Galium aparine, Holcus lanatus, Lolium perenne, Rubus fruticosus, Sambucus nigra* and *Trifolium repens*.

This was a very species-poor community that best matched the National Vegetation Classification W21a *Crataegus monogyna - Hedera helix* scrub: *Hedera helix* -

Urtica dioica subcommunity, a woody community that develops and establishes on many kinds of neglected ground.

The upper, middle and lower wall zones were all dominated by a constant and dense cover of *Rubus fruticosus*. The shrubs/trees *Crataegus monogyna* and *Sambucus nigra* were also constant within the middle zones.

Group 5

There were 13 samples in Group 5. Community description was of mix of vascular plants and bryophytes. The community constants were the bryophytes *Hypnum cupressiforme* and *Mnium hornum*. The six frequent species of the community were *Cladonia macilenta, Isothecium myosuroides, Lonicera periclymenum, Oxalis acetosella, Polystichum setiferum* and *Rubus fruticosus*. Occasional species were the bryophytes *Eurhynchium praelongum* and *Orthotrichum diaphanum* and the vascular species *Deschampsia flexuosa, Digitalis purpurea, Holcus mollis, Hyacinthoides non-scripta, Polypodium interjectum, Pteridium aquilinum* and *Vaccinium myrtillus*. There were 37 plant species (19 vascular; 16 bryophytes; 2 lichens) recorded in total in the community of which four were recorded only once. The maximum number of species in any one sample was 14 with the average number being 10. Leaf litter was scarce. Bare rock was a community constant at a low abundance.

The substrate was limestone with frequent earth and humus also present. Advanced dereliction with a build up of humus provided a rooting medium for flowering plants and a measure of buffering against drought. The average wall height was 0.87 m (range between 0.70 m and 1.20 m) and wall width was 1.54 m (range between 0.53 m and 2.00 m) at an average altitude of 230 m AOD (range between 128 m AOD and 246 m AOD). The overall condition of the walls was in a very poor condition, often dilapidated and derelict. The majority of the walls were shaded and protected by a woodland canopy. Weighted Ellenberg indicator values indicate that the environmental conditions for the community were of semi-shade, moist, between acidity and moderately acid conditions of between less

infertile and intermediate fertility places. Dominant vegetation within 1 m of wall was *Corylus avellana, Holcus mollis, Hyacinthoides non-scripta, Oxalis acetosella, Pteridium aquilinum* and *Rubus fruticosus*.

This was a community that best matched the National Vegetation Classification W10 *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland, a semi-natural woodland community.

Wall zones were difficult to differentiate because of the derelict condition of the walls. Hypnum cupressiforme was constant throughout all the zones and Mnium hornum was constant in the lower and upper zones. The lichen *Cladonia macilenta*, the fern *Polystichum setiferum* and the shrub *Rubus fruticosus* were also constant species in the upper zone. *Digitalis purpurea, Holcus mollis* and *Lonicera periclymenum* were constant in the upper zone. Bare rock was occasional in all zones at low abundance and leaf litter was frequent in the upper zone.

To summarise, the classification of the 207 samples produced five plant communities associated with dry stone walls in the Mendip Hills AONB. The spread of the five plant communities across the 207 samples is shown in Figure 13 below.

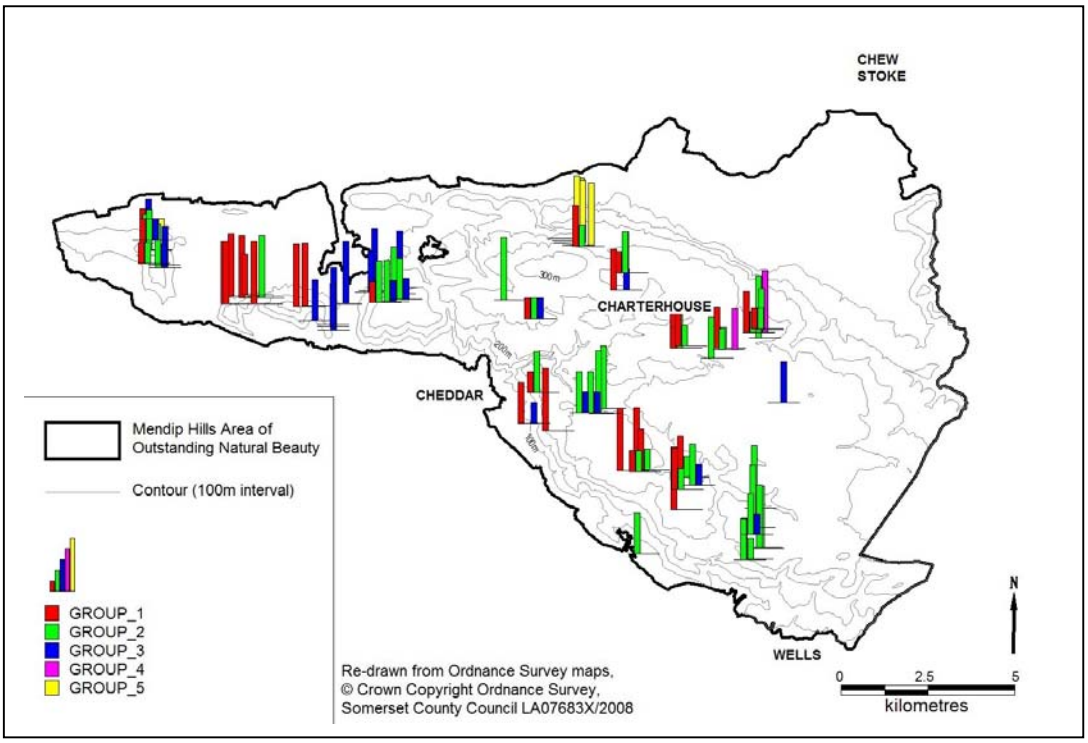


Figure 13: Location of five saxicolous plant communities within 207 samples recorded on dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty between June and August 2007.

The five saxicolous plant communities demonstrate the process of vegetational successional. Lichens act as pioneer species and are the first to become established under harsh conditions. Bryophytes also act as pioneers and precede the establishment of vascular plants on the dry stone walls. The lichens and bryophytes are the dominant forms of vegetation largely due to the adaptations they exhibit for the habitat, such as tolerance of desiccation, instability and extreme temperatures. Initially, the dry stone walls offer little or no nutrient to the higher plants, but eventually, after a few years of growth and decay, humus from decaying lichens and bryophytes provides a rooting medium for flowering plants and a measure of buffering against drought.

Species diversity of the Mendip Hills AONB Dry Stone Walls

The plant species diversity of each sample and plant community was measured using Simpson's Diversity Index. As plant species richness and evenness increase, so diversity increases. Linear regression analysis was used to examine the relationship between species diversity and the environmental values for the dry stone walls.

Species diversity and individual samples

The results of the linear regression analysis to examine the relationship between wall altitudes, wall width and wall height and species diversity of the 207 samples are given in Table 3 and shown in Figure 14. There was a statistically significant positive relationship between plant species diversity and wall width. The wider the wall the more species diversity increases. There was a statistically significant negative relationship between species diversity and wall height, moisture and light. The shorter the wall the more species diversity increases. There was no relationship between wall altitude, aspect, substrate, and nitrogen and species diversity. The results indicate that there is a statistically significant increase in plant species diversity as walls widen and grow shorter *i.e.* into a state of disrepair.

Table 3: Spearman's rank-order correlation analysis between Simpson's Diversity Index and the environmental variables of the 207 samples recorded on dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty.

Variable	Correlation co-efficient	Significance (2-tailed)	
Altitude	-0.082	0.242	n.s.
Aspect	-0.034	0.630	n.s.
Height	-0.283	0.000	0.01
Width	0.254	0.000	0.01
Weighted Ellenberg value - Light	-0.205	0.004	0.01
Weighted Ellenberg value - Moisture	-0.174	0.014	0.05
Weighted Ellenberg value - Reaction	-0.100	0.158	n.s.
Weighted Ellenberg value - Nitrogen	-0.156	0.083	n.s.

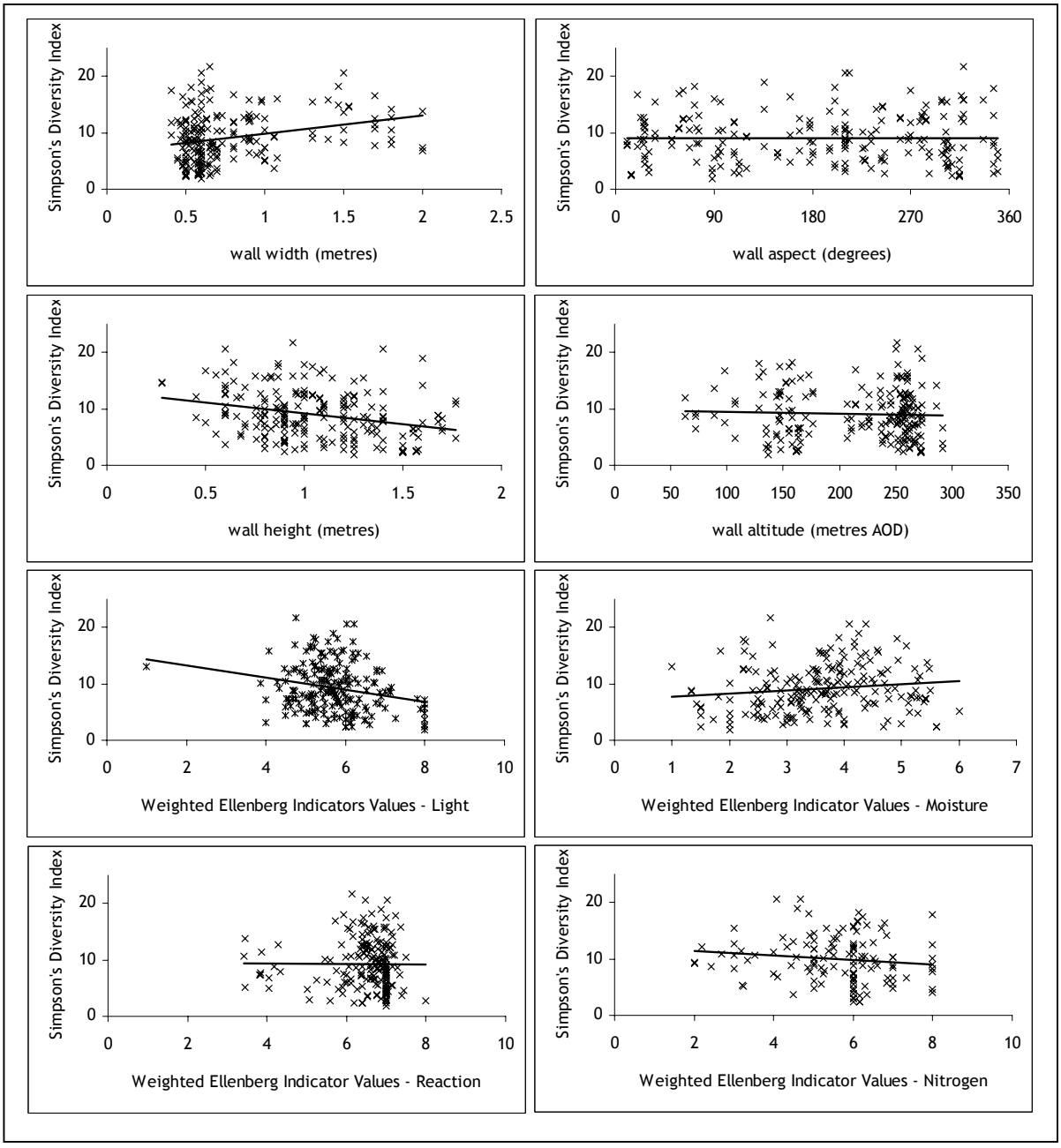


Figure 14: Relationship between Simpson's Diversity Index and wall height, width, aspect, altitude, moisture, reaction, light and nitrogen of 207 samples recorded on dry stone walls of the Mendip Hills Area of Outstanding Natural Beauty.

Species diversity and plant communities

Simpson's Diversity Index, Figure 15, shows that plant species diversity increased from the species poor pioneer community recorded in Group 1 to the plant community Group 3, where the species diversity was at its highest. Species diversity then reduced in Groups 4 and 5. The results suggest that there is an intermediate stage in the condition of the dry stone walls where the habitat

becomes established and more favourable for the plant communities. At the opposing ends of the continuum habitat conditions are less favourable and generally more unstable for the plant communities. The unfavourable conditions and/or disturbance recorded in Groups 1 and 2 were the substratum (sandstone more acidic than limestone), high disturbance levels (wall renovation works) and exposure to the weather. Walls in Groups 4 were neglected and dominated by bramble and other shrubby species. The walls in Group 5 were derelict with woody species and young trees becoming established on and around them.

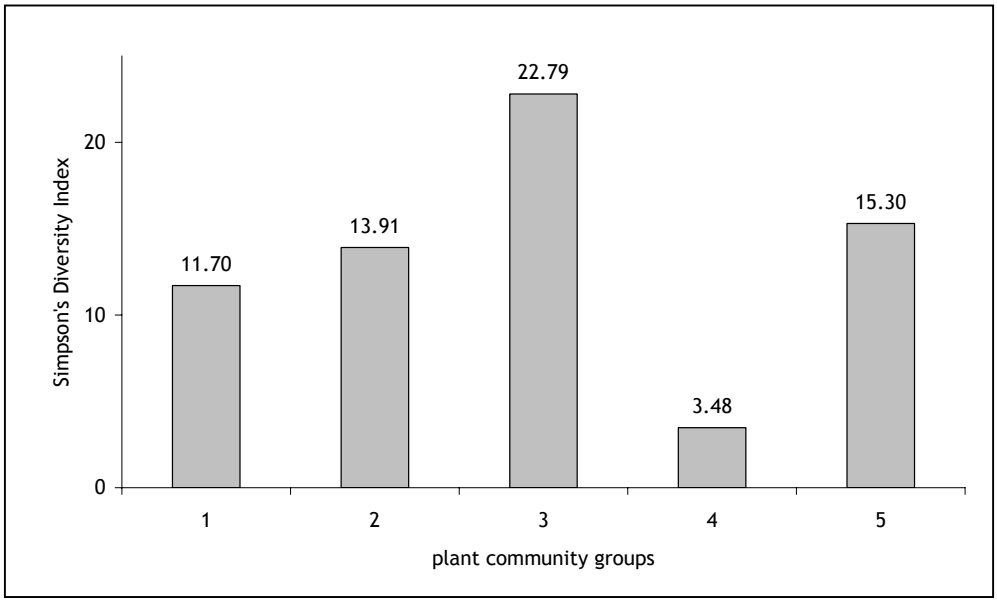


Figure 15: Simpson's Diversity Index for the five dry stone wall plant communities recorded within the Mendip Hills Area of Outstanding Natural Beauty.

To give a clearer understanding of the dry stone wall plant communities and the habitat conditions that influence them, a two dimensional ordination graph, derived from detrended correspondence analysis of the 207 sample data, was plotted. Spearman's rank-order correlation analysis of the detrended correspondence results was used to interpret the strength and significance of the underlying environmental gradients within the 207 sample data, see Table 4 below.

Table 4: Spearman's rank-order correlation analysis between detrended correspondence analysis (DECORANA) axes one and two and the habitat variables of the 207 samples recorded on dry stone walls in the Mendip Hills Area of Outstanding Natural Beauty.

DECORANA axis one			
Habitat variable	**Correlation co-efficient**	**Significance (2-tailed)**	
Altitude	-0.092	0.189	n.s.
Aspect	-0.020	0.773	n.s.
Height	-0.265	0.000	0.01
Width	0.226	0.001	0.01
Weighted Ellenberg value - Light	-0.208	0.003	0.01
Weighted Ellenberg value - Moisture	0.730	0.000	0.01
Weighted Ellenberg value - Reaction	-0.648	0.000	0.01
Weighted Ellenberg value - Nitrogen	-0.103	0.253	n.s.
DECORANA axis two			
Habitat variable	**Correlation co-efficient**	**Significance (2-tailed)**	
Altitude	0.177	0.000	0.05
Aspect	0.178	0.100	0.05
Height	0.100	0.152	n.s.
Width	-0.071	0.306	n.s.
Weighted Ellenberg value - Light	0.272	0.000	0.01
Weighted Ellenberg value - Moisture	-0.190	0.007	0.01
Weighted Ellenberg value - Reaction	0.313	0.000	0.01
Weighted Ellenberg value - Nitrogen	0.185	0.039	0.05

The two dimensional ordination graph (Figure 16) shows the relationship between the 207 samples in terms of their botanical composition. A more detailed figure is given in Appendix VI. Axes are scaled in units of the standard deviation of species turnover. The greater the distance between any two samples on the ordination graph represents a greater difference in floristic composition within the corresponding samples. The five dry stone wall plant community groups were superimposed on the ordination graph. This analysis (between habitat variables and the 207 samples), coupled with knowledge of sample site characteristics and species composition, allowed the identification of the major significant influences for the five plant communities from which the 207 samples were taken.

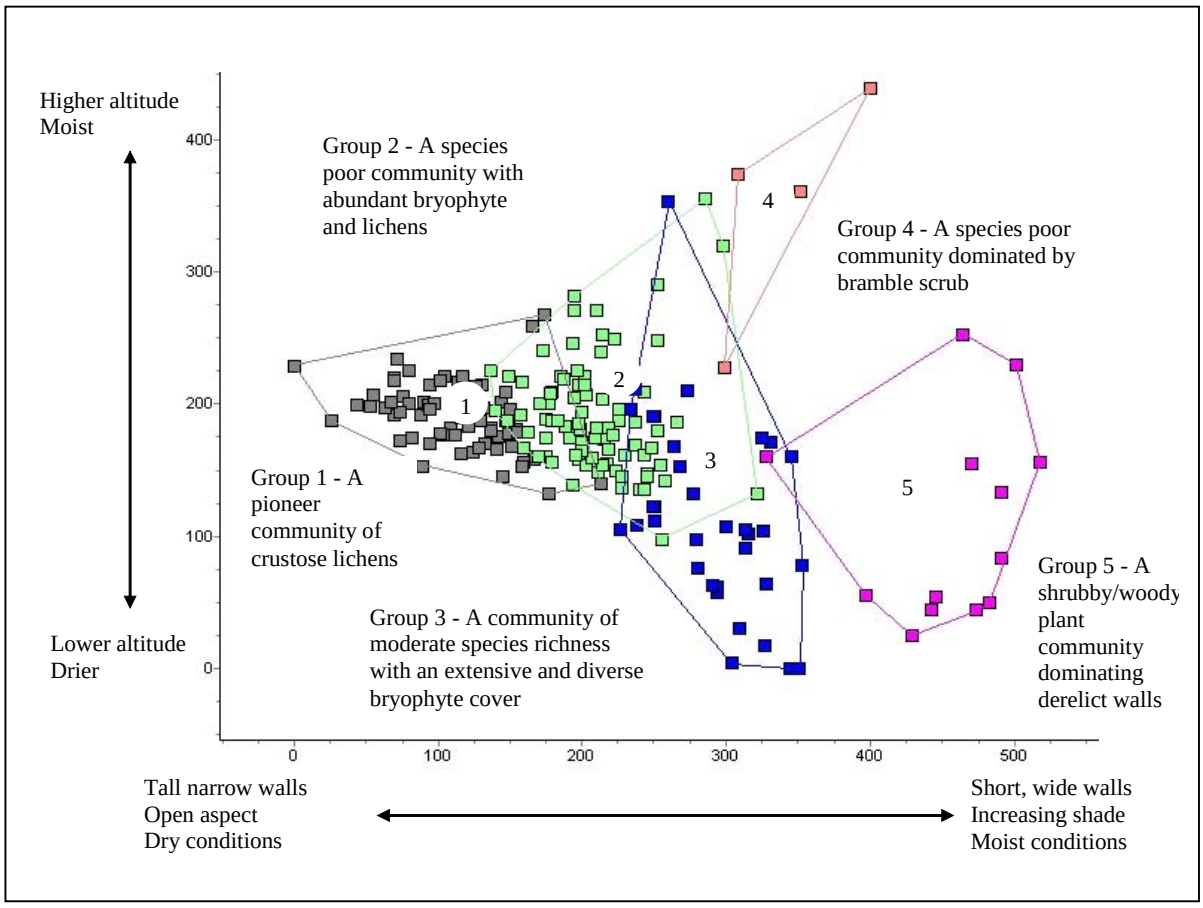


Figure 16: Sample sites ordination plot for the first two axes of detrended correspondence analysis of 207 samples of dry stone wall plant communities in the Mendip Hills Area of Outstanding Natural Beauty. The five plant communities are plotted as polygons using the same numbering. The polygons encompass all sites within each cluster.

In summary, the strongest statistically significant influences on the plant communities of the dry stone walls were wall height, width, light and moisture and substrate pH. Altitude and aspect had a significant but lesser influence on the plant communities of the walls. Nitrogen had a minor influence. The results demonstrate the continuum from tall, narrow, dry and open walls in Group 1 through to short, wide, moist and shaded walls in Group 5. Group 3 demonstrates an intermediate state in the wall conditions between the five groups. The results suggest that the habitat conditions, especially wall height and wall width, found within the walls of Group 3 are the most suitable for the plant communities of dry stone walls in the Mendip Hills AONB. The major environmental gradient associated with the dry stone wall plant communities in the Mendip Hills AONB is that of plant

community development, *i.e.* succession or the passage of time since disturbance, closely associated with soil development on derelict and collapsed walls. This study also confirms the difficulty experienced in assigning dry stone wall plant communities to NVC groups, and suggests more detailed research is required of saxicolous plant communities.

The direct relationship between the overhanging tree/shrub canopy and the micro-climate of the dry stone wall was not investigated in detail within this report. However, the canopy does effect the vegetation as shown in Plate 4. There was often a stark contrast between sheltered walls under the tree canopy that had a dense bryophyte cover to those open walls that had an impoverished vegetation cover. The canopy creates a micro-climate dependent on wall/tree orientation, tree species and age: this micro-climate affects the speed of vegetation succession on an individual wall.

Plate 4: Dry stone wall in the Mendip Hills Area of Outstanding Natural Beauty, showing the contrast between bryophyte dominated walls beneath the tree canopy and the impoverished vegetation cover of the same wall outside of the tree canopy.

Fauna of the Mendip Hills AONB Dry Stone Walls

Direct and indirect evidence of the use of the dry stone walls by fauna was recorded at the same time as the flora survey was undertaken. However, specialist surveys, to establish distribution and abundance of the individual taxa, were beyond the scope of this research. A full fauna list is given in Appendix VII.

There was frequent evidence of the use of the walls by medium and small sized mammals. There were numerous small mammal (field vole and common shrew)

runs and droppings in the plant cover alongside the wall bases and bank vole runs and droppings in the lower stems of ivy. Very small mammal droppings composed largely of insect remains were found under stones and vegetation: these most likely belong to the common shrew. There were frequent feeding signs of small rodents, most likely bank vole and wood mouse, on beechnuts, hazelnuts and acorns (Plate 5). The accumulation of organic material within the spaces between the stones made the walls suitable as nest sites for small mammals.

Plate 5: An acorn found on a dry stone wall in the Mendip Hills Area of Outstanding Natural Beauty. The acorn shows clear feeding sign of a small mammal. The absence of clear tooth marks around the gnawed edge suggests the acorn has been eaten by bank vole.

The walls provided plentiful suitable habitat and cover against predators for stoats, weasels and other small mammals. The numerous small crevices, burrows, holes and tunnels through the walls were of sufficient width to suggest their usage of this habitat (Plate 6). There was one brief sighting of a stoat, and a nest in a collapsed dry stone wall, characterised by half eaten prey, may have been a weasel's nest (the evidence for this was inconclusive). No droppings of stoats or weasels were found. Little large fauna was seen. Brown hares were occasionally seen in the surrounding landscape. Apart from frequent rabbits, the only other evidence of use of the walls by large mammals was the distinctive odour of red fox. No fox earths were found. The walls were likely to support populations of invertebrates that would provide good foraging territory for bats.

Plate 6: Entrance hole made by small mammal in the surface of a dry stone wall in the Mendip Hills Area of Outstanding Natural Beauty.

An investigation into the invertebrate assemblage at the site was beyond the scope of the survey. However, a variety of invertebrates, especially arthropods, were recorded on the walls, in moss cushions and encrusting lichens alike. *Arachnids* (spiders, mites and harvestmen) were common. Spiders were frequently present in the gaps between the loose stones and rock and within holes, on the exterior surface of the walls, as floating threads across walls, in decaying leaf litter and associated with ant's nests. Mites were very abundant everywhere. Centipedes and millipedes were also present as well as many insects. Insects found include beetles (*Coleoptera*), flies (*Diptera*) and ants, bees and wasps (*Hymenoptera*). Flies were present breeding in decaying plant matter along the wall base, visiting flowers and basking on the rocks. Ants were visible in considerable numbers, often carrying seeds around. Bees and wasps were encountered occasionally at the walls. Nectar gathering insects, including butterflies were occasionally observed. Snails and slugs (*Gastropoda*) and woodlice (*Isopoda*) were also found in association with the dry stone walls. Molluscs were abundant in all substrates but especially in the walls constructed of limestone (Plate 7). Snails recorded were wrinkled snail, herald snail, common door snail, lapidary snail, cellar snail, rock snail and hairy snail: undoubtedly many more molluscs remain unrecorded. Common shiny woodlouse, common striped woodlouse and common pygmy woodlouse were frequently present in the damper cavities at all wall zones.

Plate 7: Number of smashed, empty snail shells found on dry stone walls within the Mendip Hills Area of Outstanding Natural Beauty.

No reptiles or amphibians were observed during the survey despite extensive hand searches of the dry stone wall refuge. However, the habitat provided suitable refuges and foraging habitat for common reptile species such as grass snake and slow worm and amphibians such as great crested, palmate and smooth newts. Ponds adjacent to dry stone walls may support populations of newts (Plate 8).

Plate 8: Small pond adjacent to dry stone wall situated in the Mendip Hills Area of Outstanding Natural Beauty.

There was limited ornithological interest in the area of the dry stone walls. However, high winds and heavy rain experienced for much of the survey may have had an influence on the number and species of birds recorded. No evidence of bird nests was found in the walls but there was frequent evidence of bird perches and they are most likely to exploit the walls for foraging and shelter and even as refuges in periods of very hard weather. There were occasional feeding sites of the song thrush found on wall tops, where a large number of smashed, empty snail shells were evident. Kestrels were seen searching for voles and other small prey along the walls and field boundaries. There were 21 birds heard and or seen during

the ten day survey. The skylark and the wren were the most frequent birds recorded over the walls with occasional blue tit, carrion crow, kestrel, swift and woodpigeon.

Literature Review and Third Party Data Search

A literature search was undertaken on the ecology of dry stone walls and it was found that dry stone wall ecology is a subject with a meagre literature and often the text provided little other than descriptive lists. Dry stone walls were discussed in two large scale projects Monitoring Landscape Change (1986) and The Countryside Survey (Barr *et al,* 1993). These reports included surveys in the changes in the quantity of walls over time although no data was collected to determine their condition. Later, the Countryside Commission published research on the Condition of England's Dry Stone Walls (Countryside Commission 1996). This report found that the condition of dry stone walls has had a comparatively low profile and revealed the deteriorating condition of dry stone walls.

With regards to the ecological interest of a dry stone wall, numerous papers have been written on the flora of walls in Europe, the most notable being Segal's PhD thesis (1969) on the wall vegetation of Europe. In Britain, the ecological studies of the vegetation of walls have been limited but in recent years Gilbert (1996) examined the urban ecology of walls. However, most work has been undertaken on mortared walls and there is very little published research on dry stone walls. Two local studies were found: one on the dry stone walls in the Chew Valley by Payne (1990) and another study on the dry stone walls of the Cotswold area of Wiltshire by Presland (2008). A full list of references and bibliography is given in Appendix VIII.

The ecological importance of dry stone walls, considered an artificial habitat, has received little attention in the United Kingdom (UK) Biodiversity Action Plan. Also, the NVC, the recognised standard for describing UK plant communities, fails to do justice to dry stone wall plant communities, possibly because walls are man-made structures. There is now a growing awareness of the nature conservation of

artificial urban habitats and the importance of these to local people for educational, recreational, cultural, health and spiritual reasons (Tucker, Ash and Plant 2005). They suggest that there should be further research to consider the status of (amongst other habitats) urban rock habitats.

Species distribution maps and lists of species with National, County and local status for the Mendip Hills AONB were provided by Bristol Regional Environmental Records Centre (BRERC) and Somerset Environmental Records Centre (SERC). BRERC supplied 2000+ records for the Mendip Hills AONB. SERC supplied 741 records for the Mendip Hills AONB. Table 5 below summarises the results of the third party data search relating to Mendip Hills AONB. Comment is only made on relevant habitats and those protected species considered likely to be in or using the habitat. The extensive list of records can be found in the Appendix IX.

Table 5: Summary of data search results for wildlife records and nature conservation designations relevant to the dry stone wall habitat within the Mendip Hills Area of Outstanding Natural Beauty.

Source	Data/Response	Betts Ecology comment
Somerset Environmental Records Centre	A total of 741 species with varying levels of designation were notified as being present in the Mendip Hills AONB. The designations and number of species designated were: AMBER = 58 species; RED = 30 species; FEP = 152 species; EURO Non Priority = 7 species; EURO Priority = 18 species; EURO Protected = 102 species; Red List = 192 species; Notable = 65 species; Nationally Scarce = 97 species; BAP = 47 species; UK Protected = 40 species; County Notable = 551 species; LBAP = 141 species.	Twelve bird species with designations were recorded in proximity to the habitat (Blackbird, Blue tit, Buzzard, Greenfinch, Green woodpecker, Kestrel, Meadow pipit, Robin, Skylark, Song thrush, Swallow and Wren). Other listed birds that may use the habitat include the Wheatear that nests in rocky and stoney places and the Robin.
		No reptiles or amphibians were recorded but the habitat is highly suitable for basking, foraging and nesting. Some walls are within and/or adjacent to suitable breeding habitat i.e. ponds.
		No funghi, ferns, lichens or bryophytes with designations were recorded on the dry stone walls. Bluebell was the only designated vascular plant recorded although the habitat is suitable for many of the designated species such as rock stonecrop (AVON BAP) and some orchid and geranium species.
		A complete list of invertebrate fauna present in the habitat was beyond the scope of this survey. However, the dry stone walls are likely to support a high diversity of scarce, rare or otherwise specialised invertebrates and may include some of the listed species with designations.
		Brown hares were present in the area around the dry stone walls. No bats were recorded but the habitat is likely to be used for foraging.
Bristol Regional Environmental Records Centre	A total of 402 species with varying levels of designation were notified as being present in the Mendip Hills AONB.	In addition to the bird species mentioned above, two additional bird species with designations were recorded in proximity to the habitat (Blackcap and Chiffchaff).
		No weasels were seen but the habitat is suitable for the species and they are likely to be using the dry stone walls for nesting, foraging and shelter.
		Bluebell and Bilberry. Bluebell was recorded on five walls and bilberry was recorded on three walls.

Source	Data/Response	Betts Ecology comment
		For other fauna and flora see comments above.
Natural England	The Mendip Hills grasslands (centred on ST401557) is a Special Area of Conservation (SAC). The grasslands are semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia). The area support the largest area of CG1 Festuca ovina - Carlina vulgaris grassland in England including two sub types (CG1a Carex humilis and CG1cTrinia glauca sub communities) known from no others site in the UK. Areas of short turf grassland also occur. The site is exceptional in that it supports a number of rare and scarce vascular plants typical of the oceanic southern temperate and Mediterranean elements of the British flora. Transitions to a limestone heath (4030 dry heaths) situated on flatter terrain also occur.	Habitat fragmentation has been an important cause of species decline in the English countryside. The dry stone walls are present in many of the designated sites and have the potential to support wildlife and act as lifelines between UK and EU priority habitats. Figure 17 shows the location of the designated sites within the Mendip Hills AONB.
	There are two National Nature Reserves, 27 Sites of Special Scientific Interest and many Local Nature Reserves within and/or adjacent to the AONB. Habitats include unimproved and semi-improved calcareous grassland, neutral grassland, ancient semi-natural broadleaved woodland.	

Footnotes:

1. With the exception of eleven derogated pest or very common species, the Wildlife and Countryside Act (1981 and amendments) gives protection to all wild birds in Britain from killing, injuring or taking as well as taking, damaging or destroying nests in use or being built, and taking or destroying eggs.

2. The grass snake, slow-worm, viviparous (common) lizard and adder (viper) are all protected from intentional or reckless killing and injury under Schedule 5, Section 9(1), of the Wildlife and Countryside Act as amended/reinforced by the CROW Act 2000. They are also protected under Schedule 5, Section 9(5) which prohibits selling, offering for sale, possessing or transporting for the purpose of sale, or advertising for sale, any live or dead animal, or any part of, or anything derived from the species.

3. Wild bluebells are protected in Britain with respect to sale under the Wildlife and Countryside Act 1981. Classified as a UK Biodiversity Action Plan species of conservation concern and in the Avon BAP, although not a priority species.

4. The brown hare is a priority species under the UK Biodiversity Action Plan (UK BAP), the AVON BAP, Bath and North East Somerset BAP and is a FEP and County Notable species.

5. Bats and their roosts are afforded strict protection under various legal instruments including the Wildlife and Countryside Act 1981 (as amended), and the Habitats Directive (92/43/EEC) as implemented by the Conservation (Natural Habitats &c.) Regulations 1994 in Britain. These prohibit intentional killing, injuring or taking; possessing; intentional or reckless damage, destruction or obstruction of any structure or place used for shelter or protections, and selling or offering for sale.

6. Classified as a species of conservation concern by the UK Biodiversity Action Plan (UK BAP) and in the Avon BAP, although not a priority species. Listed under Appendix III of the Bern Convention.

7. Bilberry is classified as a species of conservation concern in the Avon BAP.

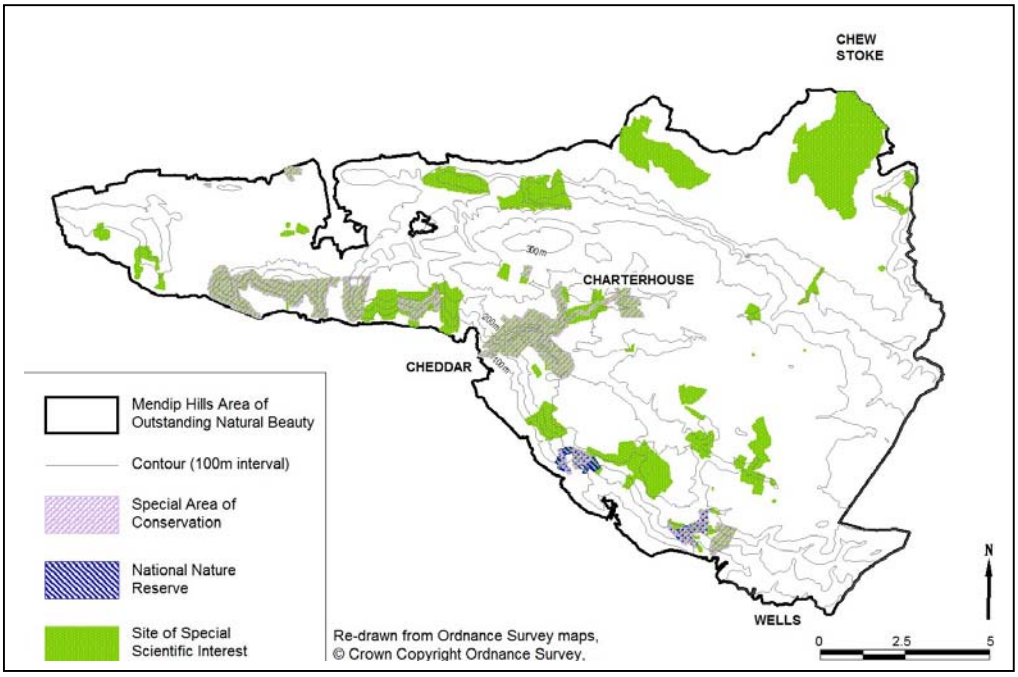


Figure 17: Map of Mendip Hills Area of Outstanding Natural Beauty showing the location of the designated sites (Special Area of Conservation, National Nature Reserves and Sites of Special Scientific Interest).

The desk based review and consultation exercise concludes that very little is known about the ecological interest and biodiversity value of dry stone walls although the habitat has the potential to support numerous fauna and flora of local, national and international interest.

Appraisal of the Ecological Interest of the Mendip Hills AONB Dry Stone Walls

The primary question to be answered by this report is the part dry stone walls play in the ecological habitat of the Mendip Hills AONB. Secondary questions to be considered are the value of a dry stone wall for wildlife in the Mendip Hills AONB, the location of the most valuable walls are for wildlife and whether dry stone walls are more valuable for wildlife in a collapsed state. These issues are considered by reference to the well-known, if subjective, evaluation criteria of Ratcliffe (1977), Nature Conservancy Council/ Joint Nature Conservation Committee (1989 updates) and Hawkswell (1997), Table 6 below.

Table 6: A "Ratcliffe" appraisal of the dry stone wall habitat of the Mendip Hills Area of Outstanding Natural Beauty.

Criterion	Betts Ecology appraisal
Size	The Mendip Hills AONB is a large area and covers approximately 19 790 ha. The length and density of the dry stone wall coverage is unknown.
Diversity	The walls are of high species diversity value. Fauna and flora associated with this habitat may be considered to be of value at the local and national and international scale. Fauna diversity is likely to reflect the flora species diversity which is the most rich in those walls in an intermediate condition *i.e.* Group 3.
Naturalness	Although to some extent the walls resemble and mimic natural formations such as bare stone and rock faces, the walls are a highly modified and artificial habitat that has been heavily influenced by human activity. However, the colonisation of the habitat by fauna and flora is a natural process. The process of vegetational successional change from Group 1 where lichens function as pioneer species, through successional trends where simple acrocarpous mosses in Group 2 precede the more complex pleurocarpous mosses in Group 3 through to succession to vascular plants in Group 4 to the end of succession in Group 5 where woody plants dominate is considered to be a natural development. The neglected areas adjacent to the walls exhibit a moderate degree of naturalness.
Rarity	A number of rare or notable species *i.e.* bats, amphibians, reptiles and birds, were found to be or are considered likely to be using the dry stone wall habitat for shelter and foraging. Invertebrate faunas of limestone walls are also likely to be species-rich and may include many rare, important and uncommon species. Saxicolous plant communities of dry stone walls are little documented so their rarity value is unknown.
Fragility	The habitat, with it's associated fauna and flora, is intrinsically sensitive in the face of ongoing vegetation succession, human impact, weathering and neglect: the walls can be destroyed by insensitive works or lack of management. There are likely to be a number of selective fauna and flora for which carboniferous dry stone walls are an optimum habitat.
	The Countryside Council (1996) state that, whilst walls remain functional after major signs of the onset of decay, unless repaired the walls are likely to deteriorate with increasing speed. The landscape impact of future decline could be significant (Countryside Council 1996).
Typicalness	There has been little research on the ecology of dry stone walls in the UK/Europe and therefore, whilst it is considered that the walls surveyed were typical of the Mendip Hills AONB, it is difficult to compare them to dry stone walls within the UK. The National Vegetation Community (Rodwell 1991) does not describe dry stone wall phytosociological communities.

Criterion	Betts Ecology appraisal
Recorded history	Not researched as part of this report. However, research on mural ecology by Darlington (1981) suggests that the older the wall the more favourable it generally becomes for the reception and retention of living things.
Position in an ecological unit	Dry stone walls create microclimates and provide varied habitats for amphibians, reptiles, invertebrates, birds and mammals. They provide potential links between species and habitats in the wider landscape and in a fragmented mosaic of semi-natural habitats: especially with the move away from site-based conservation towards a landscape scale approach (Griffiths, Porter, Simmons and Warnock 2004).
Potential value	The dry stone walls are of high potential value within an intensively agricultural landscape as a shelter, refuge and food source for fauna and flora. Adverse effects from undesirable vegetation succession can be rectified by management.
Intrinsic appeal	Very subjective. It is considered that most people would find dry stone walls appealing. Dry stone walls have an important role to play in forming the character and appeal of the Mendip Hills AONB. Dry stone walls are an important feature of the landscape (Countryside Council 1996).
Educational and social value	Dry stone walls provide a positive social impact on the landscape and are an important visual clue to the limestone landscape that is designated an Area of Outstanding Natural Beauty. Dry stone walls are numerous and easily accessible in the landscape and offer a variety of educational opportunities for study (Jennings and Stewart 2000).
Critical Natural Capital (CNC) & Constant Natural Assets (CNA) [1].	As stated previously, the habitat is man-made and whilst it cannot be seen as Natural Capital, it is undergoing many of the natural ecological processes that occur in nature and the habitat potentially is likely to hold and attain specialist ecological interest. The habitat should be considered as a Natural Asset to the Mendip Hills AONB. An objective for the Mendip Hills Natural Area is to "maintain all of the remaining semi-natural habitats in an optimal manner and to expand the area of important habitat" and also "to retain and maintain dry stone walls as a habitat feature" (http://www.english-nature.org.uk/science/natural/).

[1.] Environmental assets may be considered as Critical Natural Capital which is irreplaceable if qualitative and quantitative environmental sustainability is to be achieved, and Constant Natural Assets which are environmental features that may be traded in issues of land use change but, if so, there must be no overall loss of resource, i.e. there must be direct and full ecological compensation. (See Hawkswell 1997.)

In conclusion, the most valuable walls for biodiversity and nature conservation have to be those dry stone walls within and adjacent to Special Areas of Conservation, National Nature Reserves, Sites of Special Interest and those

habitats that support international, national and local species of conservation concern. These dry stones walls have the potential to be lifelines between the designated and protected habitats. The majority of walls are likely to be above the 200 m contour line. Priority should be given to maintaining and repairing those dry stone walls in an intermediate condition *i.e.* approximately 0.93 m high and 0.79 m wide, see Figure 18 below.

Physical attributes

- Average wall height 0.93 m (range between 50 m and 177 m)
- Average wall width 0.79 m (range between 41 m and 180 m)
- Average altitude 161 m AOD (range between 63 m AOD and 292 m AOD)
- Stock proof but with some structural defects such as bellying and slumping
- Substrate dominantly limestone
- Located within and adjacent to UK priority habitats i.e. National Nature Reserves, Sites of Special Interest, protected species habitats etc.

Recommendations

- Repair walls rather than completely strip down and rebuild
- Undertake repairs sympathetically in order to preserve their wildlife value
- Undertake on-going maintenance i.e. remove woody growth like ivy, bramble, saplings
- Undertake an ecological assessment of the fauna and flora value of any wall before carrying out any major rebuilding or maintenance work
- Incorporate the appropriate management of all relevant species in the care of the dry stone wall
- Try to establish buffer strips of at least 2 m of rough grassland along both sides of dry stone walls

Figure 18: Summary of physical attributes with appropriate recommendations for those dry stone walls that should be targeted for repair within the Mendip Hills Area of Outstanding Natural Beauty.

SUPPORTING INFORMATION

Scope and Objectives

This report was commissioned by the Mendip Hills AONB Service as part of the Lifelines Dry Stone Wall Survey project, supported by the Heritage Lottery Fund.

The objectives of the study are:
To undertake a detailed field based study of dry stone walls in the main habitats of the Mendip Hills AONB;
To collect and record site specific data on the assemblages associated with dry stone walls within the Mendip Hills AONB and the environmental variables/features associated with the habitat.
To provide a report of the results, making any appropriate recommendations to ensure compliance with wildlife law and recognised best practice.

The primary question to be answered is:
What part do dry stone walls play in the ecological habitat of the Mendip Hills Area of Outstanding Natural Beauty (AONB)?

Secondary questions to be answered are:
How valuable is a dry stone wall for wildlife in the Mendip Hills AONB?
Where would we find the most valuable walls for wildlife?
Is a wall more valuable for wildlife in a collapsed state?
What species uses walls as homes and which highways?

Limitations

It should be noted that, whilst the investigation of the site was appropriately intensive within the intended framework of the commission, and we feel it is unlikely that significant matters have been overlooked, a single visit will inevitably miss species not apparent on the date of survey by reason of seasonality, mobility, habits or chance. The months of June, July and August are within the optimal survey period for many taxa of nature conservation interest in this part of the United Kingdom.

Betts Ecology is a scientific practice. Any information relating to legal matters in this report is provided in good faith but does not purport in any way to give any advice on or interpretation of the law whatsoever. Professional legal advice should always be sought. A list of British legally protected species may be found in Betts (2001).

The species lists provided reflect only those taxa observed during survey, and only those taxa of interest to the dry stone wall habitat. It also has to be remembered that it was not cost effective to measure every species in the habitat. It is to be expected that if a larger area of dry stone walls were surveyed more taxa would be recorded. Plus species numbers would increase if walls are explored for more specialist taxa and also over a longer period so that diurnal and seasonal activity rhythms were accounted for.

Much of the survey work was undertaken in periods of heavy precipitation and high winds and this should be taken into account when considering the species lists.

Illumination, climate, inclination, management and air pollution relating to the dry stone walls were not measured as part of this study.

Where the DAFOR scale of abundance (Dominant, Abundant, Frequent, Occasional and Rare) is used in text or species lists to describe the abundance of plants, please note that this nominative scale does not refer to the conservation status of any species.

General Site Description and Methods

Site description

The site, centred on Ordnance Survey Grid Reference ST 485 556, covers approximately 19 790 ha and comprises a chain of prominent limestone hills extending inland from the coast and rising up sharply from surrounding lowlands. The Mendip Hills AONB consist largely of a high, bare plateau of Carboniferous limestone, the oldest widely occurring limestone in Britain, out of which protrude a few higher hills of the older and more resistant Old Red Sandstone. The dry stone walls are the most important visual clue to the limestone landscape and they help to create the AONB's distinctive character.

The Mendip Hills AONB, with a Special Area of Conservation, two National Nature Reserves and 27 Sites of Special Scientific Interest, contains local, national and international habitats including limestone pastures, grasslands, ancient woodland and gorge cliffs. It is an open, largely treeless, limestone plateau with karst (limestone) features, cave systems, dry stone walls and sparse settlement. Traditionally the Mendip Hills AONB is sheep farming country. Dairying is now the major farming activity plus high-investment, mixed farming units and horticulture on the fertile southern fringe. Forestry Commission plantations and limestone quarries are in operation in the Mendip Hills AONB. Its main settlements are in the villages at the foot of the plateau, many of them now commuter territory for nearby Wells and Weston Super Mare. Plans are provided in the main text above. Photographs are given below.

The Mendip Hills AONB lies within the boundaries of two District Councils (Sedgemoor District and Mendip District), two Unitary Authorities (North Somerset and Bath and North East Somerset) and one County Council (Somerset County Council).

The climate of the Mendip Hills AONB is similar to much of southern Britain. Cold winters are rare, while summers range from cool and wet to hot, dry and sunny (http://www.english-nature.org.uk/science/natural/profiles/). Rainfall (mm) from National Flow Archive (2007) Catchment Spatial Information, accessed at (http://www.nwl.ac.uk/ih/nrfa/spatialinfo/Index/indexEASouthWest.html) on 7/12/2007, shows that at low altitudes (c.70m AOD) on the west slopes is 775mm/a, whilst rainfall in the high ground is up to 1200mm/a.

Method

A qualified ecological scientist from Betts Ecology surveyed dry stone walls within the site on ten days between 18 June and 19 August 2007. Initially it had been decided to divide the AONB into seven more-or-less equal sized areas and to use stratified random sampling based using the 200 m contour line to divide the samples into strata, with the number of quadrats related to the area of stratum. However, it soon became apparent after the first two survey days that this would not be an efficient use of time and the method was refined to random sampling, which made more effective use of resources.

Each 1 km x 1 km grid square in the Mendip Hills AONB was assigned a sequential number and computer generated random numbers were selected. Twenty-one random grid squares were initially selected. Where the surveyor found no evidence of dry stone walls in a grid square or where access was difficult or impossible, a substitute grid square was used. The substitute grid square was also selected randomly.

Dry stone walls were surveyed from public rights of way or within open access land. They were chosen solely on the basis of their relative homogeneity in composition and structure. The crucial guidelines were to avoid obvious vegetation boundaries or unrepresentative floristic or physiognomic features. No prior judgements were necessary about the identity of the vegetation type, nor were the dry stone walls ever selected because of the presence of species thought characteristic for one reason or another, nor by virtue of any observed uniformity of the environment context. From within such homogeneous stands of vegetation the data were recorded in sampling units.

A sampling unit was an 8 m linear stretch of dry stone wall, sub-divided vertically into three horizontal zones: wall top; upper and middle; and the lower and base. The height of each zone measured 0.5 m. However, in practice the condition and height of the wall dictated the height of each zone. Within each horizontal zone all herbaceous vegetation was recorded and also two 0.5 m x 0.5 m plots were used to record bryophytes and lichens. The records were then combined to constitute a single set of data for each horizontal zone. All walls had a lower zone and top zone, but dependent on the state of the wall, middle zones were sometimes absent.

All higher plants, ferns and bryophytes were recorded and, where possible, the dominant lichens were also recorded. A quantitative measure of the cover abundance of every taxon was recorded using the Domin score, Table 7. Cover was defined as the proportion of dry stone wall occupied by perpendicular projection on to it of the live aerial parts of individuals of the species under consideration in the sampling unit. Where possible the majority of taxa were identified in the field although samples were taken of some species for later identification in the laboratory.

Table 7: Domin Scale (Source: Rodwell 1991).

Cover Abundance	Scale
<4% with few individuals	1
<4% with several individuals	2
<4% with many individuals	3
4-10%	4
11-25%	5
26-33%	6
34-50%	7
51-75%	8
76-90%	9
91-100%	10

Dry stone wall and habitat features were recorded as per Lifelines recording sheet. Environmental variables such as wall height, width and aspect were also noted. The use of the habitat by other taxa was explored and recorded also. Adjacent vegetation to within 1 m of the wall base was also recorded.

Records from the detailed field survey data were analysed and aggregated into sample groups using a two-way indicator species analysis program: TWINSPAN (Hill 1979a). TWINSPAN is a program for classifying species and samples, producing an ordered two-way table of their occurrence. The process of classification is hierarchical: samples are successively divided into categories, and species are then divided into categories on the basis of the sample classification. The output of the analysis was ordered into a hierarchical dendrogram to show the relationship between each of the various groups of dry stone walls. Data were processed using the TWINSPAN program as

implemented in the Community Analysis Package Version 3.0 (Seaby, Henderson, Prendergast and Somes 2004).

DECORANA is an acronym for detrended correspondence analysis, a standard ordination method where the closeness/distance between any two points representing samples on the graph was an approximation to their similarity/dissimilarity of species composition. Ordination assumes that species and floristic composition of samples from plant communities are a reflection of environmental gradients and orders them accordingly (Hill 1979b).

MATCH Version 4 (Thompson 2004) was used as a guide to identification of the NVC community and sub-community groups. MATCH statistically compares the sample data with the diagnostic NVC data held in the computer. Coefficients of similarity are calculated and a list of the diagnoses that are most similar to the collected sample data area displayed, together with the value of the coefficient and details of the major departures of the sample data from the diagnoses.

The data collected in the survey was used to describe the dry stone wall communities using the National Vegetation Classification (NVC) (Rodwell 1991) adopted by Natural England as the main system for classifying plant communities. The NVC is a phytosociological classification that groups species according to the presence and quantity of higher and lower plants. The NVC approach assumes that a sampling unit is placed in a more-or-less homogeneous area and attempts to describe the most commonly occurring mid point in the range of variation in any particular homogeneous area. Sampling unit size was compatible with the requirements of the NVC recording of vegetation.

Ellenberg (Ellenberg 1988) defined a set of indicator values for the vascular plants of central Europe based on ecological information of the field response of some 200 species to a range of climatic and edaphic factors. Hill et al. (1999) recalibrated Ellenberg's original European values for British conditions and are on the scales outlined in Table 8 below. For each quadrat, a weighted average was calculated for each of the indicator values, using abundance dominance of each species as the weighting factor (Schaffers and Sykora 2000).

Table 8: Ellenberg values scale as defined by Hill, Mountford, Roy and Bunce (1999).

Environmental Variable	Ellenberg Value
Light	1 (shaded) – 9 (open)
Moisture	1 (dry) – 12 (wet)
Soil pH	1 (acid) – 9 (basic)
Nitrogen	1 (infertile) – 9 (fertile)

Simpson's Diversity Index was used as a measure of the habitat diversity of the dry stone walls. It was used to measure the plant species diversity of the 207 samples and of the five phytosociological groups. The index takes into account the number of species present, as well as the abundance of each species.

Nomenclature in Betts Ecology reports is generally as follows:
Tracheophytes (vascular plants): scientific names in species lists, vernacular names in text (following Stace (1997));
Lichens: scientific names following Purvis *et al.* (1992);
Bryophytes: mosses - scientific names following Blockeel and Long (1998); liverworts - scientific names following Paton (1999); vernacular names (where used) - Edwards (1999);
Invertebrate animals: scientific names with authors in species lists, vernacular names in text if available;
All other animals: vernacular names in text, scientific names in species lists;
Vegetation communities follow Rodwell (1991 *et seq.).*

Several species could not be reliably identified to species in every case and in these instance aggregates are indicated. It is possible that there were species that were not identified during the survey.

APPENDICES

Appendix I: The full list of plant species, with the individual species' frequency and abundance values

Appendix II: The full list of plant species for each individual community group, with the individual species' frequency and abundance values

Appendix III: Fact sheets for the five plant community groups

Appendix IV:Associated flora recorded with 1 m of the dry stone walls

Appendix V: MATCH output

Appendix VI: Two dimensional ordination plots

Appendix VII: Fauna list

Appendix VIII: References and Bibliography.

Appendix IX: Third party data search
Bristol Regional Environmental Records Centre
Somerset Environmental Records Centre

Appendix I: The full list of 149 plant species, with the individual species' frequency and abundance values, recorded on dry stone walls within the Mendip Hills Area of Outstanding Natural Beauty.

Species lists were compiled from ten site visits made between June and August 2007. Species lists are compiled on a visual encounter basis and, since many are cryptic, mobile and/or seasonal, they are not exhaustive. Frequency refers to how often a plant is recorded, irrespective of how much of that species is present in each sample. This is summarised in the Table below as classes denoted by the Roman numerals I to V: 1-20% =I; 21-40%= II; 41-60% = III; 61-80% = IV and 81-100% = V. Abundance is a quantitative measure of the cover abundance of every taxon as recorded using the Domin score (see Table 7).

Scientific name	Vernacular name	Comment	Frequency	Abundance	
				Min	Max
Achillea millefolium	Yarrow	herb	I	1	2
Acrocordia conoida	Crustose lichen	lichen	I	1	1
Agrostis tenuis	Common bent	herb	I	1	2
Amblystegium serpens var. serpens	Creeping feather-moss	bryophyte	I	1	3
Anomodon viticulosus	Rambling tail-moss	bryophyte	I	2	8
Anthoxanthum odoratum	Sweet vernal-grass	herb	I	1	1
Arrhenatherum elatius	False oat-grass	herb	I	1	2
Aspicilia calcarea	Crustose lichen	lichen	I	1	6
Aspicilia contorta	Crustose lichen	lichen	I	1	1
Asplenium ruta-muraria	Wall-rue	herb	I	2	2
Asplenium trichomanes	Maidenhair spleenwort	herb	I	2	4
Barbula convoluta	Lesser bird's-claw beard-moss	bryophyte	I	1	3
Brachypodium sylvaticum	False brome	herb	I	1	4
Brachythecium rutabulum	Rough-stalked feather-moss	bryophyte	I	1	8
Bryum capillare var. capillare	Capillary thread-moss	bryophyte	II	1	7
Calliergonella cuspidata	Pointed spear-moss	bryophyte	I	3	3
Caloplaca aurantia	Crustose lichen	lichen	I	1	6
Caloplaca citrina s. lat.	Crustose lichen	lichen	I	1	3
Caloplaca flavescens	Crustose lichen	lichen	II	1	5
Caloplaca teicholyta	Crustose lichen	lichen	I	1	1
Calystegia sepium	Hedge bindweed	herb	I	1	3
Capsella bursa-pastoris	Shepherd's-purse	herb	I	2	2
Cardamine hirsuta	Hairy bitter-cress	herb	I	2	2
Ceterach officinarum	Rustyback	herb	I	1	7
Chamerion angustifolium	Rosebay willowherb	herb	I	1	1
Circaea lutetiana	Enchanter's-nightshade	herb	I	1	1
Cirsium arvense	Creeping thistle	herb	I	1	2
Cladonia cervicornis subsp. cervicornis	Squamulose lichen	lichen	I	1	6
Cladonia macilenta	Squamulose lichen	lichen	I	1	2
Cladonia pyxidata	Squamulose lichen	lichen	I	1	2
Collema auriforme	Foliose lichen	lichen	I	1	3
Collema crispum var. crispum	Foliose lichen	lichen	I	1	3
Collema cristatum var. cristatum	Foliose lichen	lichen	I	2	2
Convolvulus arvensis	Field bindweed	herb	I	1	1
Crataegus monogyna	Hawthorn	herb	I	1	8
Crataegus monogyna seedling	Hawthorn seedling	herb	I	1	1

Scientific name	Vernacular name	Comment	Frequency	Abundance	
				Min	Max
Crepis capillaris	Smooth hawk's-beard	herb	I	1	1
Ctenidium molluscum	Chalk comb-moss	bryophyte	I	1	2
Cymbalaria muralis	Ivy-leaved toadflax	herb	I	3	3
Dactylis glomerata	Cock's-foot	herb	I	1	4
Deschampsia cespitosa	Tufted hair-grass	herb	I	2	2
Deschampsia flexuosa	Wavy hair-grass	herb	I	1	7
Dicranum scoparium	Broom fork-moss	bryophyte	I	3	3
Didymodon insulanus	Cylindric beard-moss	bryophyte	I	1	2
Didymodon luridus	Dusky beard-moss	bryophyte	I	1	2
Didymodon rigidulus	Rigid beard-moss	bryophyte	I	1	3
Didymodon sinuosus	Wavy beard-moss	bryophyte	I	1	2
Didymodon vinealis	Soft-tufted beard-moss	bryophyte	I	2	2
Digitalis purpurea	Foxglove	herb	I	1	1
Dryopteris affinis	Scaly male-fern	herb	I	1	1
Encalypta streptocarpa	Spiral extinguisher-moss	bryophyte	I	2	2
Epilobium ciliatum	American willowherb	herb	I	1	2
Eurhynchium hians	Swartz's feather-moss	bryophyte	I	1	4
Eurhynchium praelongum	Common feather-moss	bryophyte	I	1	7
Festuca ovina	Sheep's-fescue	herb	I	1	4
Festuca rubra sens. lat.	Red fescue	herb	I	2	4
Fissidens dubius	Rock pocket-moss	bryophyte	I	2	4
Fragaria vesca	Wild strawberry	herb	I	1	1
Fraxinus excelsior seedling	Ash seedling	herb	I	1	3
Galium aparine	Cleavers	herb	I	1	3
Galium mollugo	Hedge bedstraw	herb	I	1	1
Galium verum	Lady's bedstraw	herb	I	1	7
Geranium robertianum	Herb-Robert	herb	I	1	4
Geum urbanum	Wood avens	herb	I	2	2
Glechoma hederacea	Ground-ivy	herb	I	1	4
Grimmia pulvinata	Grey-cushioned grimmia	bryophyte	I	1	4
Hedera helix subsp. helix	Common ivy	herb	I	1	9
Holcus lanatus	Yorkshire-fog	herb	I	1	6
Holcus mollis	Creeping soft-grass	herb	I	2	7
Homalothecium sericeum	Silky wall feather-moss	bryophyte	IV	1	9
Hyacinthoides non-scripta	Bluebell	herb	I	2	6
Hypnum cupressiforme	Cypress-leaved plait-moss	bryophyte	II	1	9
Hypochaeris radicata	Cat's-ear	herb	I	1	1
Isothecium alopecuroides	Larger mouse-tail moss	bryophyte	I	3	3
Isothecium myosuroides	Slender mouse-tail moss	bryophyte	I	4	8
Lathyrus pratensis	Meadow vetchling	herb	I	1	2
Lepraria incana	Leprose lichen	lichen	I	1	3
Ligustrum vulgare	Wild privet	herb	I	1	1
Linaria vulgaris	Common toadflax	herb	I	1	1
Lolium perenne	Perennial rye-grass	herb	I	1	1
Lonicera periclymenum	Honeysuckle	herb	I	1	2
Lophocolea bidentata	Bifid crestwort	bryophyte	I	1	4
Lophocolea heterophylla	Variable-leaved crestwort	bryophyte	I	1	1
Mercurialis perennis	Dog's mercury	herb	I	1	2
Mnium hornum	Swan's-neck thyme-moss	bryophyte	I	1	7
Neckera complanata	Flat neckera	bryophyte	II	1	8
Neckera crispa	Crisped neckera	bryophyte	I	8	8

Scientific name	Vernacular name	Comment	Frequency	Abundance	
				Min	Max
Orthotrichum anomalum	Anomalous bristle-moss	bryophyte	I	1	4
Orthotrichum diaphanum	White-tipped bristle-moss	bryophyte	I	2	3
Oxalis acetosella	Wood-sorrel	herb	I	1	4
Peltigera hymenina	Foliose lichen	lichen	I	2	2
Peltigera praetextata	Foliose lichen	lichen	I	2	2
Phyllitis scolopendrium	Hart's-tongue	herb	I	1	3
Placynthium nigrum	Crustose lichen	lichen	I	1	1
Plagiomnium cuspidatum	Woodsy thyme-moss	bryophyte	I	2	7
Plagiomnium undulatum	Hart's-tongue thyme-moss	bryophyte	I	1	5
Plagiothecium nemorale	Woodsy silk-moss	bryophyte	I	2	2
Plantago lanceolata	Ribwort plantain	herb	I	1	1
Poa angustifolia	Narrow-leaved meadow-grass	herb	I	1	1
Poa annua	Annual meadow-grass	herb	I	1	1
Poa nemoralis	Wood meadow-grass	herb	I	2	2
Poa pratensis sens. str.	Smooth meadow-grass	herb	I	1	1
Poa trivialis	Rough meadow-grass	herb	I	1	1
Polypodium interjectum	Intermediate polypody	herb	I	1	3
Polystichum setiferum	Soft shield-fern	herb	I	1	3
Polytrichum formosum	Bank haircap	bryophyte	I	1	6
Porella platyphylla	Wall scalewort	bryophyte	I	2	9
Potentilla reptans	Creeping cinquefoil	herb	I	1	1
Pseudotaxiphyllum elegans	Elegant silk-moss	bryophyte	I	3	3
Pteridium aquilinum	Bracken	herb	I	1	2
Quercus petraea seedling	Sessile oak seedling	herb	I	1	1
Ranunculus repens	Creeping buttercup	herb	I	1	1
Rhynchostegiella tenella	Tender feather-moss	bryophyte	I	1	4
Rhynchostegium confertum	Clustered feather-moss	bryophyte	I	1	7
Rhynchostegium murale	Wall feather-moss	bryophyte	I	1	3
Rhytidiadelphus squarrosus	Springy turf-moss	bryophyte	I	1	1
Rubus fruticosus agg.	Brambles	herb	II	1	8
Sambucus nigra	Elder	herb	I	2	2
Schistidium apocarpum sensu lato	Thickpoint grimmia	bryophyte	III	1	6
Scleropodium purum	Neat feather-moss	bryophyte	I	1	1
Sedum acre	Biting stonecrop	herb	I	1	6
Solanum dulcamara	Bittersweet	herb	I	1	2
Stellaria media	Common chickweed	herb	I	1	2
Syntrichia latifolia	Water screw-moss	bryophyte	I	2	2
Syntrichia ruralis	Great hairy screw-moss	bryophyte	I	2	5
Thamnobryum alopecurum	Fox-tail feather-moss	bryophyte	I	1	9
Thuidium tamariscinum	Common tamarisk-moss	bryophyte	I	2	6
Tortella nitida	Neat crisp-moss	bryophyte	I	1	5
Tortella tortuosa	Frizzled crisp-moss	bryophyte	I	1	5
Tortula muralis var. muralis	Wall screw-moss	bryophyte	II	1	4
Trichostomum brachydontium	Variable crisp-moss	bryophyte	I	1	1
Trifolium repens	White clover	herb	I	1	1
Ulex gallii	Western gorse	herb	I	1	1
Umbilicus rupestris	Navelwort	herb	I	1	1
Urtica dioica	Common nettle	herb	I	1	5
Vaccinium myrtillus	Bilberry	herb	I	3	8
Veronica arvensis	Wall speedwell	herb	I	1	1
Veronica serpyllifolia	Thyme-leaved speedwell	herb	I	1	1

Scientific name	Vernacular name	Comment	Frequency	Abundance	
				Min	Max
Verrucaria baldensis	Crustose lichen	lichen	IV	1	8
Verrucaria hochstetteri	Crustose lichen	lichen	I	1	2
Verrucaria macrostoma f. macrostoma	Crustose lichen	lichen	I	1	3
Verrucaria nigrescens	Crustose lichen	lichen	II	1	6
Verrucaria viridula	Crustose lichen	lichen	I	1	2
Vicia sativa	Common vetch	herb	I	1	1
Viola riviniana	Common dog-violet	herb	I	2	2
Vulpia bromoides	Squirreltail fescue	herb	I	3	3
Xanthoria parietina	Foliose lichen	lichen	I	1	1
Zygodon rupestris	Park yoke-moss	bryophyte	I	1	3
Zygodon viridissimus	Green yoke-moss	bryophyte	II	1	5
Bare rock			IV	1	9
Leaf litter			I	1	2

Appendix II: The full list of plant species for each individual community group, with the individual species' frequency and abundance values.

Species lists were compiled from ten site visits made between June and August 2007. Fr = Frequency, Ab = Abundance. Frequency refers to how often a plant is recorded, irrespective of how much of that species is present in each sample. This is summarised in the Table below as classes denoted by the Roman numerals I to V: 1-20% =I; 21-40%= II; 41-60% = III; 61-80% = IV and 81-100% = V. Abundance is a quantitative measure of the cover abundance of every taxon as recorded using the Domin score (see Table 7).

GROUP 1

Scientific name	Group 1			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Acrocordia conoida	I	1	1							I	1	1
Amblystegium serpens var. serpens	I	3	3	I	3	3						
Aspicilia calcarea	II	1	6	II	2	6	II	1	3	II	1	5
Asplenium ruta-muraria	I	2	2	I	2	2						
Asplenium trichomanes	I	4	4	I	4	4						
Brachythecium rutabulum	I	1	7	II	1	7						
Bryum capillare var. capillare	I	1	2	I	1	1	I	1	2	II	1	2
Caloplaca aurantia	I	1	6	II	1	6	I	2	2			
Caloplaca citrina s. lat.	I	1	3	I	1	1	I	1	1	I	2	3
Caloplaca flavescens	IV	1	5	III	1	5	III	1	5	IV	1	4
Caloplaca teicholyta	II	1	1	II	1	1	II	1	1	II	1	1
Calystegia sepium	I	1	1	I	1	1						
Chamerion angustifolium	I	1	1				I	1	1			
Cirsium arvense	I	1	1	I	1	1				I	1	1
Cladonia cervicornis subsp. cervicornis	I	2	2							I	2	2
Collema auriforme	I	1	2							I	1	2
Collema crispum var. crispum	I	1	1							I	1	1
Crepis capillaris	I	1	1							I	1	1
Dactylis glomerata	I	1	4	I	1	2				I	4	4
Didymodon rigidulus	I	1	3							I	1	3
Didymodon sinuosus	I	1	2	I	2	2				I	1	2
Didymodon vinealis	I	2	2				I	2	2	I	2	2
Festuca ovina	I	2	2	I	2	2						
Festuca rubra sens. lat.	I	2	4	I	2	2				I	4	4
Fissidens dubius	I	2	2	I	2	2						
Galium aparine	I	1	3	I	1	1				I	1	3
Galium mollugo	I	1	1							I	1	1
Galium verum	I	1	1	I	1	1						
Geranium robertianum	I	1	2	I	1	2	I	1	1	I	2	2
Glechoma hederacea	I	1	1	I	1	1						
Grimmia pulvinata	II	1	4	I	1	2	II	1	3	III	1	4
Hedera helix subsp. helix	I	1	2	I	1	1				I	2	2
Holcus lanatus	I	1	1							I	1	1
Homalothecium sericeum	IV	1	7	V	1	7	IV	1	6	III	1	5
Hypnum cupressiforme	I	1	4	I	4	4				I	1	2
Lepraria incana	I	3	3				I	3	3			
Neckera complanata	I	1	3	I	3	3	I	1	2	I	1	3

Scientific name	Group 1			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Orthotrichum anomalum	I	1	3				I	2	3	I	1	3
Orthotrichum diaphanum	I	3	3							I	3	3
Placynthium nigrum	II	1	1	I	1	1	II	1	1	II	1	1
Poa angustifolia	I	1	1	I	1	1						
Porella platyphylla	I	3	5	I	3	5	I	3	3			
Rhynchostegium murale	I	1	3	I	1	3						
Rhytidiadelphus squarrosus	I	1	1	I	1	1						
Rubus fruticosus agg.	I	3	5							I	3	5
Schistidium apocarpum sensu lato	III	1	4	I	1	3	II	1	4	IV	1	4
Scleropodium purum	I	1	1	I	1	1						
Sedum acre	I	6	6							I	6	6
Stellaria media	I	1	1	I	1	1						
Syntrichia ruralis	I	2	2							I	2	2
Thamnobryum alopecurum	I	8	8	I	8	8						
Tortella nitida	I	1	5	I	3	5	I	1	4	I	2	4
Tortella tortuosa	I	1	3	I	3	3	I	3	3	I	1	3
Tortula muralis var. muralis	II	1	4	II	1	2	II	1	3	III	1	4
Urtica dioica	I	1	2	I	2	2	I	1	1	I	1	2
Veronica arvensis	I	1	1	I	1	1						
Verrucaria baldensis	V	1	7	V	1	5	V	1	6	V	1	7
Verrucaria hochstetteri	I	1	1	I	1	1				I	1	1
Verrucaria macrostoma f. macrostoma	I	2	3	I	2	2	I	2	2	I	2	3
Verrucaria nigrescens	IV	1	6	III	2	5	IV	1	6	IV	1	6
Xanthoria parietina	I	1	1				I	1	1	I	1	1
Zygodon rupestris	I	2	2							I	2	2
Zygodon viridissimus	II	1	5	I	2	3	II	1	5	II	1	4
Bare rock	V	1	9	V	2	9	V	1	9	V	2	9
Leaf litter	I	1	1									
Number of samples	70			17			24			29		
Number of species/sample	7 (1-17)			7 (1-17)			6 (1-13)			8 (2 -15)		

GROUP 2

Scientific name	Group 2			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Achillea millefolium	I	1	2	I	1	2						
Agrostis tenuis	I	1	1				I	1	1			
Amblystegium serpens var. serpens	I	1	3	I	1	2	I	1	3	I	1	2
Anthoxanthum odoratum	I	1	1	I	1	1						
Arrhenatherum elatius	I	1	2							I	1	2
Aspicilia calcarea	I	2	2	I	2	2				I	2	2
Aspicilia contorta	I	1	1							I	1	1
Asplenium ruta-muraria	I	2	2				I	2	2			
Asplenium trichomanes	I	2	3	I	2	2	I	2	3			
Barbula convoluta	I	1	3	I	2	2	I	1	2	I	1	3
Brachythecium rutabulum	I	1	8	II	1	8	I	1	6	I	2	3
Bryum capillare var. capillare	III	1	5	III	1	5	III	1	4	IV	1	5

Scientific name	Group 2			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Caloplaca aurantia	I	1	4	I	1	1				I	1	4
Caloplaca citrina s. lat.	I	2	2							I	2	2
Caloplaca flavescens	I	1	4	I	1	1	I	1	2	I	1	4
Caloplaca teicholyta	I	1	1	I	1	1	I	1	1	I	1	1
Calystegia sepium	I	2	3	I	2	2				I	2	3
Ceterach officinarum	I	1	4	I	3	3	I	3	4	I	1	1
Chamerion angustifolium	I	1	1	I	1	1						
Cirsium arvense	I	1	2	I	1	2	I	2	2			
Cladonia cervicornis subsp. cervicornis	I	1	6	I	1	2	I	6	6	I	3	3
Cladonia pyxidata	I	2	2				I	2	2			
Collema auriforme	I	1	3	I	1	1	I	1	2	I	1	3
Collema crispum var. crispum	I	1	3				II	1	3	I	1	3
Convolvulus arvensis	I	1	1	I	1	1	I	1	1			
Crataegus monogyna	I	1	8	I	1	1	I	1	1	I	1	8
Crataegus monogyna seedling	I	1	1	I	1	1				I	1	1
Ctenidium molluscum	I	2	2				I	2	2			
Dactylis glomerata	I	1	2				I	2	2	I	1	1
Didymodon insulanus	I	1	2	I	2	2	I	1	1			
Didymodon luridus	I	1	2				I	1	1	I	2	2
Didymodon rigidulus	I	1	2	I	1	1				I	2	2
Didymodon sinuosus	I	2	2	I	2	2						
Didymodon vinealis	I	2	2							I	2	2
Encalypta streptocarpa	I	2	2							I	2	2
Epilobium ciliatum	I	1	2				I	2	2	I	1	1
Eurhynchium hians	I	1	3	I	1	3						
Eurhynchium praelongum	I	2	3	I	2	3						
Festuca ovina	I	1	4	I	1	4						
Fissidens dubius	I	2	4				I	2	4			
Fragaria vesca	I	1	1							I	1	1
Galium aparine	I	1	3				I	1	2	II	1	3
Galium verum	I	1	7	I	1	6				I	1	7
Geranium robertianum	I	1	4	I	1	2	I	2	4	I	2	3
Glechoma hederacea	I	1	2	I	1	2				I	1	1
Grimmia pulvinata	I	1	2	I	2	2	I	2	2	II	1	2
Hedera helix subsp. helix	II	1	9	II	1	8	II	2	8	II	2	9
Holcus lanatus	I	1	6	I	1	2	I	2	2	I	2	6
Homalothecium sericeum	V	1	9	V	2	9	V	2	9	V	1	8
Hypnum cupressiforme	II	1	9	II	1	4	II	2	7	II	1	9
Lathyrus pratensis	I	1	2	I	2	2				I	1	1
Lepraria incana	I	2	2	I	2	2						
Linaria vulgaris	I	1	1							I	1	1
Lolium perenne	I	1	1							I	1	1
Lonicera periclymenum	I	2	2							I	2	2
Mercurialis perennis	I	1	2	I	2	2				I	1	1
Neckera complanata	III	2	8	IV	2	8	III	2	8	III	2	6
Neckera crispa	I	8	8	I	8	8						
Orthotrichum anomalum	I	2	4	I	2	4				II	2	4
Peltigera praetextata	I	2	2				I	2	2			
Phyllitis scolopendrium	I	2	2				I	2	2			
Placynthium nigrum	I	1	1	I	1	1	I	1	1	I	1	1

Scientific name	Group 2			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Plagiomnium undulatum	I	2	2							I	2	2
Plantago lanceolata	I	1	1	I	1	1				I	1	1
Poa angustifolia	I	1	1				I	1	1			
Poa pratensis sens. str.	I	1	1							I	1	1
Poa trivialis	I	1	1				I	1	1	I	1	1
Polypodium interjectum	I	1	1	I	1	1	I	1	1			
Porella platyphylla	I	2	7	I	3	7	I	2	4	I	3	5
Potentilla reptans	I	1	1	I	1	1						
Pteridium aquilinum	I	1	2	I	1	2	I	1	1			
Ranunculus repens	I	1	1	I	1	1						
Rhynchostegiella tenella	I	1	2	I	1	1	I	2	2			
Rhynchostegium confertum	I	3	4				I	3	3	I	4	4
Rubus fruticosus agg.	II	1	8	I	1	4	II	1	8	II	2	8
Schistidium apocarpum sensu lato	IV	1	5	IV	1	4	III	2	5	IV	2	5
Sedum acre	I	1	1				I	1	1	I	1	1
Solanum dulcamara	I	1	2				I	1	1	I	1	2
Stellaria media	I	1	1							I	1	1
Syntrichia latifolia	I	2	2	I	2	2						
Syntrichia ruralis	I	3	3				I	3	3	I	3	3
Thamnobryum alopecurum	I	2	2	I	2	2						
Tortella nitida	I	3	3	I	3	3	I	3	3			
Tortella tortuosa	II	2	5	II	2	4	II	2	5	II	2	5
Tortula muralis var. muralis	II	1	3	I	1	3	II	1	3	III	1	3
Trichostomum brachydontium	I	1	1	I	1	1						
Trifolium repens	I	1	1	I	1	1						
Ulex gallii	I	1	1	I	1	1						
Umbilicus rupestris	I	1	1				I	1	1			
Urtica dioica	I	1	3	II	1	3	I	1	2	I	1	3
Veronica arvensis	I	1	1	I	1	1				I	1	1
Veronica serpyllifolia	I	1	1	I	1	1						
Verrucaria baldensis	V	1	8	V	1	8	V	1	7	V	1	7
Verrucaria hochstetteri	I	2	2	I	2	2	I	2	2	I	2	2
Verrucaria macrostoma f. macrostoma	I	1	2				I	1	2			
Verrucaria nigrescens	III	1	6	III	1	5	III	1	4	II	2	6
Verrucaria viridula	I	1	2	I	2	2	I	2	2	I	1	2
Vicia sativa	I	1	1	I	1	1						
Viola riviniana	I	2	2	I	2	2						
Vulpia bromoides	I	3	3							I	3	3
Zygodon rupestris	I	1	3	I	1	3						
Zygodon viridissimus	II	1	4	II	1	4	II	2	3	II	2	4
Bare rock	IV	1	7	V	1	7	IV	1	7	III	1	7
Leaf litter	I	1	1	I	1	1				I	1	1
Number of samples	85			33			26			26		
Number of species/sample	9 (3-23)			9 (3-23)			9 (3-19)			10 (4-18)		

GROUP 3

Scientific name	Group 3			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Amblystegium serpens var. serpens	III	1	3	I	1	2	IV	2	2	II	1	3
Anomodon viticulosus	I	2	8	III	6	8	II	6	6	I	2	4
Arrhenatherum elatius	I	1	1	I	1	1						
Aspicilia calcarea	I	1	1							I	1	1
Asplenium trichomanes	I	2	2	I	2	2						
Barbula convoluta	I	1	2							I	1	2
Brachypodium sylvaticum	I	1	4	I	1	3				II	1	4
Brachythecium rutabulum	III	2	8	III	2	8	IV	4	5	III	2	7
Bryum capillare var. capillare	II	1	7	II	1	7				II	1	6
Calliergonella cuspidata	I	3	3							I	3	3
Caloplaca flavescens	I	1	1							I	1	1
Calystegia sepium	I	1	1							I	1	1
Capsella bursa-pastoris	I	2	2				II	2	2			
Cardamine hirsuta	I	2	2							I	2	2
Ceterach officinarum	I	1	7							I	1	7
Circaea lutetiana	I	1	1	I	1	1						
Cirsium arvense	I	2	2							I	2	2
Cladonia cervicornis subsp. cervicornis	I	1	3	I	3	3				I	1	1
Cladonia pyxidata	I	1	1	I	1	1						
Collema auriforme	I	2	2							I	2	2
Collema crispum var. crispum	I	3	3	I	3	3						
Collema cristatum var. cristatum	I	2	2							I	2	2
Convolvulus arvensis	I	1	1	I	1	1						
Crataegus monogyna seedling	I	1	1							I	1	1
Ctenidium molluscum	I	1	1	I	1	1						
Cymbalaria muralis	I	3	3				II	3	3			
Dactylis glomerata	I	2	2							I	2	2
Didymodon insulanus	I	1	1							I	1	1
Didymodon rigidulus	I	2	3	I	2	3						
Didymodon sinuosus	I	1	2	I	2	2				II	1	2
Digitalis purpurea	I	1	1	I	1	1						
Eurhynchium hians	I	1	4	II	2	4				I	1	1
Eurhynchium praelongum	III	1	3	I	2	3	IV	1	2	III	1	2
Festuca ovina	I	1	2	I	1	2						
Fissidens dubius	I	2	3	I	2	3						
Fragaria vesca	I	1	1	I	1	1						
Fraxinus excelsior seedling	I	1	3	I	1	1				I	1	3
Galium aparine	I	1	2							II	1	2
Geranium robertianum	II	1	2	I	1	2	II	2	2	III	1	2
Geum urbanum	I	2	2	I	2	2				I	2	2
Glechoma hederacea	II	1	4	I	1	3				II	3	4
Grimmia pulvinata	I	1	1							I	1	1
Hedera helix subsp. helix	I	1	8	III	2	8				II	1	3
Holcus lanatus	I	1	1							I	1	1
Homalothecium sericeum	IV	2	8	III	2	8	II	3	3	IV	3	8
Hypnum cupressiforme	III	1	9	III	2	9				IV	1	7
Hypochaeris radicata	I	1	1							I	1	1
Isothecium alopecuroides	I	3	3	I	3	3						
Lepraria incana	I	1	3	I	1	3	II	2	2	I	1	1

Scientific name	Group 3			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Ligustrum vulgare	I	1	1							I	1	1
Lolium perenne	I	1	1							I	1	1
Lophocolea bidentata	I	1	4	II	1	4	II	1	1	I	2	4
Lophocolea heterophylla	I	1	1	I	1	1						
Mercurialis perennis	I	1	2	I	2	2				I	1	1
Neckera complanata	III	1	8	III	1	8	IV	4	6	II	1	3
Orthotrichum anomalum	I	2	2	I	2	2						
Peltigera hymenina	I	2	2							I	2	2
Phyllitis scolopendrium	I	1	3	I	1	2	II	3	3	I	1	3
Plagiomnium cuspidatum	I	2	7	I	2	2	II	3	3	I	7	7
Plagiomnium undulatum	II	1	5	II	2	5	IV	2	2	II	1	5
Plagiothecium nemorale	I	2	2	I	2	2						
Poa annua	I	1	1							I	1	1
Poa trivialis	I	1	1	I	1	1						
Polypodium interjectum	I	2	3							I	2	3
Porella platyphylla	II	2	9	III	2	9	IV	2	7	II	2	5
Rhynchostegiella tenella	I	1	4	I	1	3	II	4	4	I	1	1
Rhynchostegium confertum	I	1	7	II	2	6				I	1	7
Rubus fruticosus agg.	II	1	3	I	1	2	II	1	1	II	1	3
Schistidium apocarpum sensu lato	II	2	6	I	2	2				II	2	6
Sedum acre	I	1	1	I	1	1						
Stellaria media	I	2	2							I	2	2
Syntrichia ruralis	I	5	5	II	5	5						
Thamnobryum alopecurum	III	1	9	II	2	6	II	7	7	II	1	9
Thuidium tamariscinum	I	2	6	I	2	2	II	4	4	I	6	6
Tortella nitida	I	1	3	I	1	3						
Tortella tortuosa	II	1	5	II	1	5				I	1	3
Tortula muralis var. muralis	I	1	2							I	1	2
Urtica dioica	II	1	5	I	1	3				I	1	5
Verrucaria baldensis	I	2	2	I	2	2						
Zygodon viridissimus	II	1	4	I	2	3	II	4	4	II	1	4
Bare rock	IV	1	8	III	1	8	IV	1	7	II	1	6
Leaf litter	I	1	2	I	1	2				IV	1	2
Number of samples	34			18			3			13		
Number of species/sample	10 (2-17)			10 (5-16)			9 (8-10)			11 (2-17)		

GROUP 4

Scientific name	Group 4			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Crataegus monogyna	III	3	3	III	3	3	V	3	3	III	3	3
Eurhynchium praelongum	I	2	2	III	2	2						
Homalothecium sericeum	II	4	4	III	4	4				III	4	4
Neckera complanata	I	7	7	III	7	7						
Rubus fruticosus agg.	V	8	8	V	8	8	V	8	8	V	8	8
Sambucus nigra	III	2	2	III	2	2	V	2	2	III	2	2
Tortula muralis var. muralis	I	3	3							III	3	3

Scientific name	Group 4			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Verrucaria baldensis	I	2	2	III	2	2						
Zygodon viridissimus	I	2	2							III	2	2
Bare rock												
Leaf litter												
Number of samples	5			2			1			2		
Number of species/sample	4 (3-5)			4 (3-5)			3 (3-3)			4 (4-3)		

GROUP 5

Scientific name	Group 5			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Agrostis tenuis	I	2	2							II	2	2
Anthoxanthum odoratum	I	1	1				II	1	1	II	1	1
Arrhenatherum elatius	I	1	1	II	1	1						
Brachythecium rutabulum	I	6	6							II	6	6
Cladonia cervicornis subsp. cervicornis	I	2	2				II	2	2			
Cladonia macilenta	III	1	2	V	1	2	II	1	2			
Dactylis glomerata	I	2	2							II	2	2
Deschampsia cespitosa	I	2	2							II	2	2
Deschampsia flexuosa	II	1	7	II	2	2	II	1	1	II	7	7
Dicranum scoparium	I	3	3	II	3	3						
Digitalis purpurea	II	1	1	II	1	1	II	1	1	IV	1	1
Dryopteris affinis	I	1	1	II	1	1						
Eurhynchium praelongum	II	1	7	II	2	2	II	1	3	III	6	7
Holcus mollis	II	2	7	II	2	2	II	2	2	IV	2	7
Homalothecium sericeum	I	4	4				II	4	4			
Hyacinthoides non-scripta	II	2	6	III	3	6	II	6	6	III	2	5
Hypnum cupressiforme	V	2	7	V	2	6	IV	5	7	IV	3	6
Isothecium myosuroides	III	4	8	III	7	8	III	8	8	III	4	7
Lonicera periclymenum	III	1	2	II	1	1	II	2	2	V	1	2
Lophocolea bidentata	I	2	3				II	2	3			
Lophocolea heterophylla	I	1	1							II	1	1
Mnium hornum	IV	1	7	V	3	7	III	2	6	IV	1	4
Orthotrichum diaphanum	II	2	3				III	2	3			
Oxalis acetosella	III	1	4	III	1	4	III	3	4	III	2	2
Plagiomnium undulatum	I	2	2				II	2	2			
Plagiothecium nemorale	I	2	2				II	2	2			
Poa nemoralis	I	2	2	II	2	2	II	2	2			
Polypodium interjectum	II	1	3				II	1	2	II	3	3
Polystichum setiferum	III	1	3	IV	1	2	II	1	1	III	3	3
Polytrichum formosum	II	1	6	II	1	1	II	1	1	II	6	6
Pseudotaxiphyllum elegans	I	3	3	II	3	3	II	3	3			
Pteridium aquilinum	II	2	2	II	2	2				III	2	2
Quercus petraea seedling	I	1	1	II	1	1						
Rubus fruticosus agg.	III	1	3	IV	1	2	II	2	3	III	2	3
Thuidium tamariscinum	I	4	4	II	4	4						
Vaccinium myrtillus	II	3	8				II	3	3	III	7	8

Scientific name	Group 5			Lower zone			Middle zone			Upper zone		
	Fr	Ab		Fr	Ab		Fr	Ab		Fr	Ab	
		Min	Max		Min	Max		Min	Max		Min	Max
Zygodon viridissimus	I	2	2				II	2	2			
Bare rock	V	1	3	II	3	3	II	1	3	II	1	1
Leaf litter	I	1	2							III	1	2
Number of samples	13			4			5			4		
Number of species/sample	10 (5-14)			10 (8-13)			9 (5-14)			10 (5-14)		

Appendix III: Fact sheets for the five saxicolous plant community groups

Photographs (all taken between 18 June and 19 August 2007)

Group 1

- Early pioneer plant community
- Species-poor
- Bare rock
- Lichens - *Caloplaca flavescens, Verrucaria baldensis* and *Verrucaria nigrescens*
- Bryophyte - *Homalothecium sericeum*
- Average wall height 1.15 m, wall width 0.68 m, altitude 251 m AOD
- Dilapidated and tumbledown state through to recently restored walls
- Open aspect, very exposed to weathering processes
- National Vegetation Classification OV42 *Cymbalaria muralis* community, wall crevice vegetation typical of sunny communities







Group 2

- Species-poor community with bryophytes and lichens covering bare rock with rare to occasional vascular plants
- Bryophytes - *Homalothecium sericeum* and *Schistidium apocarpum sensu lato*
- Lichen - *Verrucaria baldensis*
- Bare rock constant
- Average wall height 1.03 m, wall width 0.73 m, altitude 233 m AOD
- Dilapidated state, small number of walls have been restored
- Partial shade
- National Vegetation Classification OV27 *Chamerion angustifolium* community, a tall herb weed community that exploits open ground

Group 3

- Abundant bryophytes: *Amblystegium serpens var. serpens, Brachythecium rutabulum, Eurhynchium praelongum, Hypnum cupressiforme, Homalothecium sericeum, Neckera complanata* and *Thamnobryum alopecurum*
- Occasional vascular species: *Geranium robertianum, Hedera helix, Rubus fruticosus* and *Urtica dioica*
- Bare rock occasional
- Average wall height 0.93 m, wall width 0.79 m, altitude 161 m AOD
- Stock proof but with some structural defects such as bellying and slumping
- Semi-shade
- National Vegetation Classification W8e *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland: *Geranium robertianum* subcommunity, a woodland community with an extensive and diverse bryophyte cover







Group 4

- Very species-poor community
- Dense shrubby vegetation cover with abundant woody shrubs *Rubus fruticosus* and frequent *Crataegus monogyna* and *Sambucus nigra*
- Bryophyte - *Homalothecium sericeum*
- Bare rock scarce
- Average wall height was 1.26 m, wall width was 0.56 m, altitude of 266 m AOD
- Neglected, rundown and very overgrown dry stone walls
- Partial shade
- National Vegetation Classification W21a *Crataegus monogyna - Hedera helix* scrub*: Hedera helix - Urtica dioica* subcommunity, a woody community that develops and establishes on many kinds of neglected ground

Group 5

- Mix of vascular species and bryophytes
- Bryophytes - *Hypnum cupressiforme* and *Mnium hornum*
- Vascular species - *Deschampsia flexuosa*, *Digitalis purpurea*, *Holcus mollis*, *Hyacinthoides non-scripta*, *Polypodium interjectum*, *Pteridium aquilinum* and *Vaccinium*
- Bare rock constant at low abundance
- Average wall height 0.87 m, wall width 1.54 m, altitude 230 m AOD
- Very poor condition, often dilapidated and derelict dry stone walls
- Shaded and protected by a woodland canopy
- National Vegetation Classification W10 *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland, a semi-natural woodland community

Appendix IV: The full list of plant species recorded within 1 m of dry stone walls of the Mendip Hills Area of Outstanding Natural Beauty.

Species lists were compiled from ten site visits made between June and August 2007. The DAFOR scale of abundance (Dominant, Abundant, Frequent, Occasional and Rare) is used in text or species lists to describe the abundance of plants, please note that this nominative scale does not refer to the conservation status of any species.

Scientific name	Vernacular name	DAFOR
Acer campestre seedling	Field maple seedling	R
Achillea millefolium	Yarrow	F
Agrimonia eupatoria	Agrimony	R
Agrostis capillaris	Common bent	O
Allium ursinum	Ramsons	O
Alopecurus pratensis	Meadow foxtail	R
Anthoxanthum odoratum	Sweet vernal-grass	O
Arrhenatherum elatius	False oat-grass	A
Arum maculatum	Lords-and-Ladies	R
Bare earth	Bare earth	R
Bellis perennis	Daisy	O
Betula pendula	Silver birch	R
Brachypodium sylvaticum	False brome	F
Bromopsis erecta	Upright brome	O
Bromus hordeaceus	Soft-brome	O
Buddleja davidii	Butterfly-bush	R
Calystegia sepium	Hedge bindweed	R
Campanula rotundifolia	Harebell	R
Carduus crispus	Welted thistle	R
Carduus nutans	Musk thistle	O
Centaurea nigra	Common knapweed	R
Cerastium fontanum	Common mouse-ear	O
Chaerophyllum temulum	Rough chervil	O
Chamerion angustifolium	Rosebay willowherb	O
Circaea lutetiana	Enchanter's-nightshade	O
Cirsium arvense	Creeping thistle	A
Cirsium palustre	Marsh thistle	R
Cirsium vulgare	Spear thistle	O
Conopodium majus	Pignut	O
Convolvulus arvensis	Field bindweed	O
Corylus avellana	Hazel	O
Crataegus monogyna	Hawthorn	F
Crepis capillaris	Smooth hawk's-beard	O
Cynosurus cristatus	Crested dog's-tail	F
Dactylis glomerata	Cock's-foot	A
Daucus carota	Wild carrot	O
Deschampsia cespitosa	Tufted hair-grass	R
Dryopteris filix-mas	Male-fern	O
Elytrigia repens	Common couch	R

Scientific name	Vernacular name	DAFOR
Eupatorium cannabinum	Hemp-agrimony	R
Euphrasia officinalis agg.	Eyebrights	R
Festuca ovina	Sheep's-fescue	O
Festuca pratensis	Meadow fescue	O
Festuca rubra sens. lat.	Red fescue	F
Filipendula ulmaria	Meadowsweet	R
Fraxinus excelsior	Ash	O
Fraxinus excelsior seedling	Ash seedling	O
Frullania dilatata	Dilated scalewort	R
Galium aparine	Cleavers	F
Galium mollugo	Hedge bedstraw	R
Galium verum	Lady's bedstraw	O
Geranium dissectum	Cut-leaved crane's-bill	R
Geranium robertianum	Herb-Robert	F
Geum urbanum	Wood avens	O
Glechoma hederacea	Ground-ivy	F
Hedera helix subsp. helix	Common ivy	F
Heracleum sphondylium	Hogweed	F
Holcus lanatus	Yorkshire-fog	A
Holcus mollis	Creeping soft-grass	O
Hyacinthoides non-scripta	Bluebell	O
Hypochaeris radicata	Cat's-ear	O
Knautia arvensis	Field scabious	R
Lathyrus pratensis	Meadow vetchling	R
Lolium perenne	Perennial rye-grass	A
Lonicera periclymenum	Honeysuckle	R
Lotus corniculatus	Common bird's-foot-trefoil	O
Melica uniflora	Wood melick	R
Mercurialis perennis	Dog's mercury	F
Oxalis acetosella	Wood-sorrel	O
Phleum pratense	Timothy	O
Phyllitis scolopendrium	Hart's-tongue	O
Plantago lanceolata	Ribwort plantain	O
Plantago major	Greater plantain	R
Poa pratensis sens. lat.	Poa pratensis sens. lat.	R
Poa pratensis sens. str.	Smooth meadow-grass	R
Poa trivialis	Rough meadow-grass	F
Polypodium interjectum	Intermediate polypody	R
Polystichum setiferum	Soft shield-fern	R
Potentilla anserina	Silverweed	O
Potentilla reptans	Creeping cinquefoil	R
Potentilla sterilis	Barren strawberry	R
Prunella vulgaris	Selfheal	O
Prunus padus seedling	Bird cherry seedling	R
Prunus spinosa	Blackthorn	O
Prunus spinosa seedling	Blackthorn seedling	O
Pteridium aquilinum	Bracken	A
Quercus petraea	Sessile oak	O
Ranunculus repens	Creeping buttercup	F

Scientific name	Vernacular name	DAFOR
Rosa canina	Dog-rose	O
Rubus fruticosus agg.	Brambles	D
Rumex acetosa	Common sorrel	O
Rumex obtusifolius	Broad-leaved dock	O
Rumex sanguineus	Wood dock	O
Sagina nodosa	Knotted pearlwort	R
Sambucus nigra	Elder	F
Sedum acre	Biting stonecrop	R
Senecio jacobaea	Common ragwort	O
Senecio squalidus	Oxford ragwort	O
Solanum dulcamara	Bittersweet	O
Sonchus oleraceus	Smooth sow-thistle	O
Stachys sylvatica	Hedge woundwort	O
Stellaria holostea	Greater stitchwort	R
Stellaria media	Common chickweed	O
Taraxacum agg.	Dandelions	O
Thamnobryum alopecurum	Fox-tail feather-moss	R
Tilia cordata	Small-leaved lime	O
Torilis japonica	Upright hedge-parsley	O
Trifolium medium	Zigzag clover	R
Trifolium pratense	Red clover	F
Trifolium repens	White clover	F
Ulex gallii	Western gorse	R
Ulmus glabra	Wych elm	R
Urtica dioica	Common nettle	D
Veronica arvensis	Wall speedwell	R
Veronica officinalis	Heath speedwell	R
Veronica serpyllifolia	Thyme-leaved speedwell	R
Vicia cracca	Tufted vetch	O
Vicia sativa	Common vetch	F
Viola riviniana	Common dog-violet	O
Vulpia myuros	Rat's-tail fescue	R

Appendix V: MATCH output

GROUP 1
Matches for constancy aggregated from samples in Group 1 data. Sample matched against the following vegetation types:-

All types

Community		Coefficient	
OV42	37.1	0	subcommunities
OV27	27.4	5	subcommunities
OV41	23.2	2	subcommunities
OV39	21.4	2	subcommunities
W25	19.8	2	subcommunities
SD7	19.6	4	subcommunities
U1	19.3	6	subcommunities
MG1	19.2	5	subcommunities
OV24	18.9	2	subcommunities
W10	18.7	5	subcommunities

Matches against sub-communities

Community		Coefficient	
OV42	37.1	0	subcommunities
OV27	27.4	5	subcommunities
OV41a	26.7	0	subcommunities
OV41	23.2	2	subcommunities
MG1b	22.0	0	subcommunities
MG1a	21.4	0	subcommunities
OV39	21.4	2	subcommunities
SD7d	19.9	0	subcommunities
W25	19.8	2	subcommunities
SD7	19.6	4	subcommunities

Table of Group 1 data matched against diagnosis of OV42 Cymbalaria muralis community, coefficient = 37.1

The information for each species is presented in the order: code, species name, constancy, maximum quantitative value with the constancy and maximum quantitative values of the N.V.C. unit in brackets. Any marked discrepancies are indicated by asterisks.

457	Cymbalaria muralis	.	(V)*	0(7)
1564	Homalothecium sericeum	IV	(III)7	(8)
1709	Schistidium apocarpum	III	(III)4	(4)
1730	Grimmia pulvinata	II	(II)	4(4)
2019	Tortula muralis	II	(II)	4(4)
206	Asplenium ruta-muraria	I	(II)	2(4)
981	Poa annua	.	(II)*	0(3)
1225	Sedum acre	I	(II)	6(5)*
194	Arenaria serpyllifolia	.	(I)	0(3)
652	Hedera helix (g)	I	(I)	2(4)
3037	Polypodium vulgare agg	.	(I)	0(4)
1531	Bryum capillare	I	(I)	2(3)
123	Agrostis capillaris	.	(I)	0(2)
208	Asplenium trichomanes	I	(I)	4(4)
465	Dactylis glomerata	I	(I)	4(3)*
1272	Sonchus asper	.	(I)	0(2)
1500	Barbula unguiculata	.	(I)	0(4)
122	Agrostis stolonifera	.	(I)	0(3)
576	Festuca rubra	I	(I)	4(2)*
680	Holcus lanatus	I	(I)	1(4)
988	Poa pratensis	.	(I)	0(3)
1204	Saxifraga tridactylites	.	(I)	0(5)

1243	Senecio vulgaris	.	(I)	0(3)
1368	Urtica dioica	I	(I)	2(2)
1385	Valerianella locusta	.	(I)	0(4)
1495	Barbula revoluta	.	(I)	0(2)
1526	Bryum argenteum	.	(I)	0(3)
1824	Orthotrichum anomalum	I	(I)	3(3)
2601	Acer pseudoplatanus (g)	.	(I)	0(2)
2982	Taraxacum seedling/sp	.	(I)	0(2)
104	Achillea millefolium	.	(I)	0(2)
197	Arrhenatherum elatius	.	(I)	0(1)
248	Brassica napus	.	(I)	0(2)
265	Buddleja davidii	.	(I)	0(1)
281	Calystegia sepium	I	(I)	1(3)
369	Catapodium rigidum	.	(I)	0(3)
384	Cerastium fontanum	.	(I)	0(1)
385	Cerastium semidecandrum	.	(I)	0(1)
404	Tanacetum parthenium	.	(I)	0(1)
434	Conyza canadensis	.	(I)	0(3)
447	Crepis capillaris	I	(I)	1(2)
522	Epilobium montanum	.	(I)	0(1)
566	Euphorbia peplus	.	(I)	0(1)

The following species found in the test data at a constancy of II or more are not recorded in the N.V.C. diagnostic table for the unit OV42. The data for each species are presented as follows: species code, name, constancy,

2011	Tortella nitida	II	5
2053	Zygodon viridissimus	II	5
4539	Aspicilia calcarea	II	6
4673	Caloplaca flavescens	IV	5
4696	Caloplaca teicholyta	II	1
5282	Placynthium nigrum	II	1
5601	Verrucaria baldensis	V	7
5628	Verrucaria nigrescens	IV	6

The following numbers of species per sample were recorded:

	Mean	Min	Max
Test data	7.1	1	17
OV42	7.0	1	20

GROUP 2
Matches for constancy aggregated from Group 2 data. Sample matched against the following vegetation types:-

All types

Community		Coefficient	
OV27	33.6	5	subcommunities
W24	30.3	2	subcommunities
OV42	28.7	0	subcommunities
W21	28.0	4	subcommunities
W10	27.8	5	subcommunities
MG1	26.6	5	subcommunities
W22	25.8	3	subcommunities
OV24	25.7	2	subcommunities
W25	24.0	2	subcommunities
SD18	24.0	2	subcommunities

Matches against sub-communities

Community		Coefficient	
OV27	33.6	5	subcommunities
W24	30.3	2	subcommunities
MG1b	29.6	0	subcommunities
W24a	29.2	0	subcommunities
OV42	28.7	0	subcommunities
W21	28.0	4	subcommunities
MG1a	27.9	0	subcommunities
W10	27.8	5	subcommunities
W21c	26.8	0	subcommunities
OV27b	26.6	0	subcommunities

Table of Group 2 data matched against diagnosis of OV27 Chamerion angustifolium community, coefficient = 33.6

The information for each species is presented in the order: code, species name, constancy, maximum quantitative value with the constancy and maximum quantitative values of the N.V.C. unit in brackets. Any marked discrepancies are indicated by asterisks.

391	Chamerion angustifolium	I	(V)*	1(10)
680	Holcus lanatus	I	(III)*	6(6)
574	Festuca ovina	I	(I)	4(5)
171	Anthoxanthum odoratum	I	(I)	1(4)
1046	Potentilla erecta	.	(I)	0(5)
1321	Teucrium scorodonia	.	(I)	0(6)
541	Erica cinerea	.	(I)	0(4)
278	Calluna vulgaris	.	(I)	0(4)
610	Galium saxatile	.	(I)	0(6)
1363	Ulex europaeus (s)	.	(I)	0(7)
900	Nardus stricta	.	(I)	0(4)
1364	Ulex gallii	I	(I)	1(7)
1193	Cytisus scoparius (s)	.	(I)	0(5)
1368	Urtica dioica	I	(II)	3(6)
415	Cirsium arvense	I	(I)	2(5)
605	Galium aparine	I	(I)	3(4)
197	Arrhenatherum elatius	I	(I)	2(8)
465	Dactylis glomerata	I	(I)	2(4)
661	Heracleum sphondylium	.	(I)	0(4)
477	Deschampsia cespitosa cespitosa	.	(I)	0(5)
681	Holcus mollis	.	(I)	0(6)
990	Poa trivialis	I	(I)	1(4)

419	Cirsium vulgare	.	(I)	0(5)
1268	Solanum dulcamara (g)	I	(I)	2(4)
118	Elytrigia repens	.	(I)	0(6)
173	Anthriscus sylvestris	.	(I)	0(4)
281	Calystegia sepium	I	(I)	3(3)
521	Epilobium hirsutum	.	(I)	0(3)
1136	Rubus fruticosus agg.	II	(III)8	(7)*
499	Dryopteris dilatata	.	(I)	0(7)
2604	Betula pubescens (s)	.	(I)	0(7)
1481	Aulacomnium androgynum	.	(I)	0(4)
1794	Mnium hornum	.	(I)	0(3)
2168	Lophocolea cuspidata	.	(I)	0(5)
3204	Pinus nigra (s)	.	(I)	0(6)
2600	Acer pseudoplatanus (s)	.	(I)	0(6)
2614	Fraxinus excelsior (s)	.	(I)	0(6)
1187	Sambucus nigra (s)	.	(I)	0(8)
414	Circaea lutetiana	.	(I)	0(3)
2612	Fagus sylvatica (s)	.	(I)	0(5)
2640	Ulmus glabra (s)	.	(I)	0(5)
1681	Eurhynchium striatum	.	(I)	0(4)
151	Allium ursinum	.	(I)	0(1)
247	Brachypodium sylvaticum	.	(I)	0(3)
159	Ammophila arenaria	.	(I)	0(8)
576	Festuca rubra	.	(I)	0(9)
1239	Senecio jacobaea	.	(I)	0(3)
988	Poa pratensis	I	(I)	1(7)
800	Lotus corniculatus	.	(I)	0(4)
706	Hypochoeris radicata	.	(I)	0(4)
914	Ononis repens	.	(I)	0(5)
447	Crepis capillaris	.	(I)	0(3)
809	Luzula multiflora	.	(I)	0(2)
888	Myosotis ramosissima	.	(I)	0(2)
1385	Valerianella locusta	.	(I)	0(2)
362	Carlina vulgaris	.	(I)	0(3)
1225	Sedum acre	I	(I)	1(2)
1432	Viola tricolor	.	(I)	0(1)
123	Agrostis capillaris	I	(I)	1(6)
1066	Pteridium aquilinum	I	(I)	2(8)
1519	Brachythecium rutabulum	I	(I)	8(6)*
1677	Eurhynchium praelongum	I	(I)	3(6)
522	Epilobium montanum	.	(I)	0(3)
384	Cerastium fontanum	.	(I)	0(3)
730	Juncus effusus	.	(I)	0(9)
1638	Dicranum scoparium	.	(I)	0(6)
1127	Rubus caesius	.	(I)	0(5)
758	Lathyrus pratensis	I	(I)	2(3)
418	Cirsium palustre	.	(I)	0(3)
864	Mercurialis perennis	I	(I)	2(6)
1254	Silene dioica	.	(I)	0(5)
1147	Rumex obtusifolius	.	(I)	0(3)
215	Athyrium filix-femina	.	(I)	0(3)
500	Dryopteris filix-mas	.	(I)	0(5)
516	Hyacinthoides nonscripta	.	(I)	0(8)
1766	Hypnum cupressiforme	II	(I)	9(6)*
652	Hedera helix (g)	II	(I)	9(5)*
104	Achillea millefolium	I	(I)	2(5)
729	Juncus conglomeratus	.	(I)	0(5)
1139	Rumex acetosa	.	(I)	0(4)
482	Digitalis purpurea	.	(I)	0(6)
1137	Rubus idaeus	.	(I)	0(7)
1148	Rumex sanguineus	.	(I)	0(2)
1807	Plagiomnium undulatum	I	(I)	2(3)
637	Glechoma hederacea	I	(I)	2(5)
1293	Stachys sylvatica	.	(I)	0(4)

The following species found in the test data at a constancy of II or more are not recorded in the N.V.C. diagnostic table for the unit OV27. The data for each species are presented as follows: species code, name, constancy.

1531	Bryum capillare	III	5
1564	Homalothecium sericeum	V	9
1709	Schistidium apocarpum	IV	5
1812	Neckera complanata	III	8
2012	Tortella tortuosa	II	5
2019	Tortula muralis	II	3
2053	Zygodon viridissimus	II	4
5601	Verrucaria baldensis	V	8
5628	Verrucaria nigrescens	III	6

The following numbers of species per sample were recorded:

	Mean	Min	Max
Test data	9.5	3	23
OV27	13.0	4	45

GROUP 3
Matches for constancy aggregated from Group 3 samples. Sample matched against the following vegetation types:-

All types

Community		Coefficient	
W8	34.1	7	subcommunities
OV27	32.8	5	subcommunities
W22	30.0	3	subcommunities
W21	29.9	4	subcommunities
W24	29.7	2	subcommunities
W10	29.1	5	subcommunities
W6	28.5	4	subcommunities
W2	27.9	2	subcommunities
OV42	27.0	0	subcommunities
W12	26.2	3	subcommunities

Matches against sub-communities

Community		Coefficient	
W8e	36.3	0	subcommunities
W8	34.1	7	subcommunities
OV27	32.8	5	subcommunities
W8a	32.4	0	subcommunities
W8f	32.0	0	subcommunities
W24a	30.5	0	subcommunities
W22	30.0	3	subcommunities
W21	29.9	4	subcommunities
W24	29.7	2	subcommunities
W10	29.1	5	subcommunities

Table of Group 3 data matched against diagnosis of W8e Fraxinus - Acer campestre - Mercurialis woodland: Geranium robertianum subcommunity, coefficient = 36.3

The information for each species is presented in the order: code, species name, constancy, maximum quantitative value with the constancy and maximum quantitative values of the N.V.C. unit in brackets. Any marked discrepancies are indicated by asterisks.

589	Fraxinus excelsior (c)	.	(V)*	0(10)
102	Acer campestre (c)	.	(I)	0(6)
2741	Salix caprea (c)	.	(I)	0(5)
570	Fagus sylvatica (c)	.	(I)	0(8)
1319	Taxus baccata (c)	.	(I)	0(4)
3166	Larix sp.(c)	.	(I)	0(4)
1079	Quercus x rosacea (c)	.	(I)	0(6)
2740	Ilex aquifolium (c)	.	(I)	0(4)
1169	Salix cinerea (s)	.	(I)	0(3)
1274	Sorbus aria (c)	.	(I)	0(1)
236	Betula pubescens (c)	.	(I)	0(1)
2751	Malus sylvestris (c)	.	(I)	0(1)
1275	Sorbus aucuparia (c)	.	(I)	0(5)
1078	Quercus robur (c)	.	(I)	0(7)
363	Carpinus betulus (c)	.	(I)	0(1)
237	Betula pendula (c)	.	(I)	0(6)
1334	Tilia cordata (c)	.	(I)	0(3)
103	Acer pseudoplatanus (c)	.	(IV)*	0(10)
1365	Ulmus glabra (c)	.	(IV)*	0(10)
1077	Quercus petraea (c)	.	(II)*	0(8)
441	Corylus avellana (s)	.	(III)*	0(9)
445	Crataegus monogyna (s)	.	(IV)*	0(7)
2598	Acer campestre (s)	.	(III)*	0(6)
2614	Fraxinus excelsior (s)	.	(III)*	0(5)
1187	Sambucus nigra (s)	.	(III)*	0(6)
1325	Cornus sanguinea (s)	.	(I)	0(3)

1065	Prunus spinosa (s)	.	(I)	0(6)
557	Euonymus europaeus (s)	.	(I)	0(5)
2612	Fagus sylvatica (s)	.	(I)	0(4)
834	Malus sylvestris (s)	.	(I)	0(1)
2635	Taxus baccata (s)	.	(I)	0(1)
2997	Viburnum lantana (s)	.	(I)	0(4)
2600	Acer pseudoplatanus (s)	.	(III)*	0(5)
707	Ilex aquifolium (s)	.	(II)*	0(4)
2640	Ulmus glabra (s)	.	(II)*	0(6)
1409	Viburnum opulus (s)	.	(I)	0(2)
2597	Sorbus aucuparia (s)	.	(I)	0(3)
864	Mercurialis perennis	I	(IV)*	2(10)
1677	Eurhynchium praelongum	III	(IV)	3(8)
1136	Rubus fruticosus agg.	II	(III)3	(9)
990	Poa trivialis	I	(I)	1(5)
637	Glechoma hederacea	II	(I)	4(5)
1058	Primula vulgaris	.	(I)	0(4)
1428	Viola reichenbachiana	.	(I)	0(5)
1429	Viola riviniana	.	(I)	0(5)
127	Ajuga reptans	.	(I)	0(3)
166	Anemone nemorosa	.	(I)	0(8)
1088	Ranunculus ficaria	.	(I)	0(6)
599	Lamiastrum galeobdolon	.	(I)	0(6)
1148	Rumex sanguineus	.	(I)	0(4)
477	Deschampsia cespitosa cespitosa	.	(I)	0(7)
583	Filipendula ulmaria	.	(I)	0(5)
1051	Potentilla sterilis	.	(I)	0(3)
652	Hedera helix (g)	I	(III)*	8(10)
1368	Urtica dioica	II	(III)	5(9)
605	Galium aparine	I	(III)*	2(6)
630	Geranium robertianum	II	(III)2	(7)
1681	Eurhynchium striatum	.	(III)*	0(7)
1996	Thamnobryum alopecurum	III	(II)	9(7)*
962	Phyllitis scolopendrium	II	(II)	3(5)
1600	Ctenidium molluscum	I	(I)	1(7)
151	Allium ursinum	.	(II)*	0(4)
247	Brachypodium sylvaticum	I	(II)	4(8)
1321	Teucrium scorodonia	.	(I)	0(4)
849	Melica uniflora	.	(I)	0(7)
197	Arrhenatherum elatius	I	(I)	1(5)
285	Campanula latifolia	.	(I)	0(2)
1016	Polystichum aculeatum	.	(I)	0(6)
891	Myosotis sylvatica	.	(I)	0(3)
1858	Plagiothecium denticulatum	.	(I)	0(5)
432	Convallaria majalis	.	(I)	0(3)
516	Hyacinthoides nonscripta	.	(II)*	0(9)
1519	Brachythecium rutabulum	III	(III)8	(9)
1807	Plagiomnium undulatum	II	(III)5	(5)
414	Circaea lutetiana	I	(II)	1(7)
634	Geum urbanum	I	(II)	2(7)
1695	Fissidens taxifolius	.	(II)*	0(4)
201	Arum maculatum	.	(II)*	0(5)
1480	Atrichum undulatum	.	(I)	0(4)
1794	Mnium hornum	.	(I)	0(5)
2615	Fraxinus excelsior (g)	I	(II)	3(4)
500	Dryopteris filix-mas	.	(II)*	0(5)
1122	Rosa canina agg.	.	(I)	0(4)
798	Lonicera periclymenum (g)	.	(I)	0(4)
2003	Thuidium tamariscinum	I	(I)	6(7)
359	Carex sylvatica	.	(I)	0(3)
1313	Tamus communis	.	(I)	0(3)
1682	Eurhynchium swartzii	I	(II)	4(5)
1254	Silene dioica	.	(II)*	0(7)
2167	Lophocolea bidentata	I	(I)	4(4)

2868	Ligustrum vulgare (g)	I	(I)	1(4)
1191	Sanicula europaea	.	(I)	0(4)
167	Angelica sylvestris	.	(I)	0(1)
1293	Stachys sylvatica	.	(I)	0(5)
498	Dryopteris affinis ssp borreri	.	(I)	0(4)
986	Poa nemoralis	.	(I)	0(4)
573	Festuca gigantea	.	(I)	0(4)
260	Bromopsis ramosa	.	(I)	0(4)
1396	Veronica chamaedrys	.	(I)	0(3)
2840	Euphorbia amygdaloides	.	(I)	0(2)
1460	Amblystegium serpens	III	(I)*	3(5)
1766	Hypnum cupressiforme	III	(I)*	9(3)*
2982	Taraxacum seedling/sp	.	(I)	0(3)
1066	Pteridium aquilinum	.	(I)	0(4)
1095	Ranunculus repens	.	(I)	0(1)
932	Oxalis acetosella	.	(I)	0(3)
215	Athyrium filix-femina	.	(I)	0(5)
465	Dactylis glomerata	I	(I)	2(5)
608	Galium odoratum	.	(I)	0(6)
109	Adoxa moschatellina	.	(I)	0(5)
587	Fragaria vesca	I	(I)	1(2)
431	Conopodium majus	.	(I)	0(3)
2601	Acer pseudoplatanus (g)	.	(I)	0(3)
499	Dryopteris dilatata	.	(I)	0(4)
661	Heracleum sphondylium	.	(I)	0(6)
1297	Stellaria holostea	.	(I)	0(5)
1776	Isothecium myosuroides	.	(I)	0(4)
1674	Rhynchostegium confertum	I	(I)	7(4)*
875	Moehringia trinervia	.	(I)	0(4)
2922	Plagiochila asplenioides	.	(I)	0(4)
421	Clematis vitalba	.	(I)	0(4)
788	Listera ovata	.	(I)	0(5)
173	Anthriscus sylvestris	.	(I)	0(4)
1018	Polystichum setiferum	.	(I)	0(8)
2611	Crataegus monogyna (g)	I	(I)	1(3)
812	Luzula sylvatica	.	(I)	0(5)
1059	Prunella vulgaris	.	(I)	0(2)
1416	Vicia sepium	.	(I)	0(2)
186	Arctium minus	.	(I)	0(2)
1137	Rubus idaeus	.	(I)	0(4)
292	Cardamine flexuosa	.	(I)	0(1)
681	Holcus mollis	.	(I)	0(4)
289	Campanula trachelium	.	(I)	0(2)
867	Milium effusum	.	(I)	0(5)
1400	Veronica montana	.	(I)	0(4)
1865	Plagiothecium nemorale	I	(I)	2(3)
1791	Plagiomnium affine	.	(I)	0(2)
1114	Ribes uva-crispa	.	(I)	0(3)
1592	Cirriphyllum piliferum	.	(I)	0(6)
1939	Rhytidiadelphus loreus	.	(I)	0(4)
714	Iris foetidissima	.	(I)	0(4)
920	Orchis mascula	.	(I)	0(3)
996	Polygonatum multiflorum	.	(I)	0(4)
482	Digitalis purpurea	I	(I)	1(5)
2613	Fagus sylvatica (g)	.	(I)	0(3)
408	Chrysosplenium oppositifolium		(I)	0(5)
2599	Acer campestre (g)	.	(I)	0(2)
472	Daphne laureola (s)	.	(I)	0(2)
391	Chamerion angustifolium	.	(I)	0(7)
1795	Plagiomnium rostratum	.	(I)	0(2)
1593	Climacium dendroides	.	(I)	0(3)
522	Epilobium montanum	.	(I)	0(3)
754	Lapsana communis	.	(I)	0(3)
2226	Plagiochila porelloides	.	(I)	0(3)

2170	Lophocolea heterophylla	I	(	I)	1(1)
2616	Ilex aquifolium (g)	.	(	I)	0(2)
2610	Corylus avellana (g)	.	(	I)	0(1)
1015	Polypodium vulgare	.	(	I)	0(1)
1426	Viola odorata	.	(	I)	0(4)
3218	Ribes rubrum (g)	.	(	I)	0(3)
1801	Rhizomnium punctatum	.	(	I)	0(3)
1081	Ranunculus acris	.	(	I)	0(3)
1941	Rhytidiadelphus triquetrus	.	(	I)	0(4)
1685	Fissidens bryoides	.	(	I)	0(1)
882	Mycelis muralis	.	(	I)	0(2)
2223	Pellia epiphylla	.	(	I)	0(4)
473	Daphne mezereum	.	(	I)	0(1)

The following species found in the test data at a constancy of II or more are not recorded in the N.V.C. diagnostic table for the unit W8e. The data for each species are presented as follows: species code, name, constancy.

1531	Bryum capillare	II	7
1564	Homalothecium sericeum	IV	8
1709	Schistidium apocarpum	II	6
1812	Neckera complanata	III	8
1938	Rhynchostegiella tenella	II	4
2012	Tortella tortuosa	II	5
2053	Zygodon viridissimus	II	4
2241	Porella platyphylla	II	9
3026	Lepraria incana	II	3

The following numbers of species per sample were recorded:

	Mean	Min	Max
Test data	10.4	2	17
W8e	27.0	6	53

Group 4

Matches for constancy aggregated from Group 4 samples. Sample matched against the following vegetation types:-

All types

Community	Coefficient		
W21	30.9	4	subcommunities
W6	26.8	4	subcommunities
W13	26.4	2	subcommunities
W25	24.0	2	subcommunities
W24	21.1	2	subcommunities
OV27	20.4	5	subcommunities
W10	19.9	5	subcommunities
OV42	19.8	0	subcommunities
W12	17.9	3	subcommunities
W23	17.7	3	subcommunities

Matches against sub-communities

Community	Coefficient		
W21a	34.8	0	subcommunities
W21c	32.1	0	subcommunities
W21	30.9	4	subcommunities
W6e	28.5	0	subcommunities
W21b	27.0	0	subcommunities
W6d	26.9	0	subcommunities
W6	26.8	4	subcommunities
OV27d	26.5	0	subcommunities
W13	26.4	2	subcommunities
W13b	26.3	0	subcommunities

Table of Group 4 data matched against diagnosis of W21a Crataegus monogyna-Hedera helix scrub: Hedera helix-Urtica dioica subcommunity, coefficient = 34.8.

The information for each species is presented in the order: code, species name, constancy, maximum quantitative value with the constancy and maximum quantitative values of the N.V.C. unit in brackets. Any marked discrepancies are indicated by asterisks.

445	Crataegus monogyna (s)	IV	(V)	3(10)
1136	Rubus fruticosus agg.	V	(V)	8(10)
1065	Prunus spinosa (s)	.	(III)*	0(9)
2614	Fraxinus excelsior (s)	.	(II)*	0(4)
2950	Rosa canina (s)	.	(III)*	0(7)
441	Corylus avellana (s)	.	(II)*	0(7)
1121	Rosa arvensis	.	(I)	0(2)
2600	Acer pseudoplatanus (s)	.	(I)	0(6)
2646	Lonicera periclymenum (s)	.	(I)	0(5)
557	Euonymus europaeus (s)	.	(I)	0(3)
707	Ilex aquifolium (s)	.	(I)	0(2)
1169	Salix cinerea (s)	.	(I)	0(7)
1105	Rhamnus cathartica	.	(I)	0(4)
2606	Betula pendula (s)	.	(I)	0(3)
1187	Sambucus nigra (s)	IV	(III)	2(6)
2627	Quercus robur (s)	.	(I)	0(1)
102	Acer campestre (c)	.	(I)	0(4)
3257	Ulmus sp.(s)	.	(I)	0(8)
834	Malus sylvestris (s)	.	(I)	0(2)
2640	Ulmus glabra (s)	.	(I)	0(1)
776	Ligustrum vulgare (s)	.	(I)	0(5)
2997	Viburnum lantana (s)	.	(I)	0(4)
1325	Cornus sanguinea (s)	.	(I)	0(5)
1313	Tamus communis	.	(I)	0(3)

2635	Taxus baccata (s)	.	(I)	0(8)
652	Hedera helix (g)	.	(IV)*	0(10)
1368	Urtica dioica	.	(IV)*	0(8)
605	Galium aparine	.	(IV)*	0(7)
1254	Silene dioica	.	(II)*	0(5)
661	Heracleum sphondylium	.	(II)*	0(4)
680	Holcus lanatus	.	(II)*	0(5)
197	Arrhenatherum elatius	.	(II)*	0(6)
118	Elytrigia repens	.	(I)	0(6)
281	Calystegia sepium	.	(I)	0(5)
864	Mercurialis perennis	.	(I)	0(6)
1677	Eurhynchium praelongum	II	(I)	2(1)*
201	Arum maculatum	.	(I)	0(5)
990	Poa trivialis	.	(I)	0(7)
637	Glechoma hederacea	.	(I)	0(5)
1519	Brachythecium rutabulum	.	(I)	0(1)
151	Allium ursinum	.	(I)	0(5)
247	Brachypodium sylvaticum	.	(I)	0(6)
1293	Stachys sylvatica	.	(I)	0(3)
630	Geranium robertianum	.	(I)	0(2)
962	Phyllitis scolopendrium	.	(I)	0(5)
714	Iris foetidissima	.	(I)	0(3)
1066	Pteridium aquilinum	.	(I)	0(8)
414	Circaea lutetiana	.	(I)	0(4)
1297	Stellaria holostea	.	(I)	0(3)
500	Dryopteris filix-mas	.	(I)	0(1)
465	Dactylis glomerata	.	(I)	0(3)
1148	Rumex sanguineus	.	(I)	0(4)
875	Moehringia trinervia	.	(I)	0(2)
1337	Torilis japonica	.	(I)	0(2)
753	Lamium purpureum	.	(I)	0(3)
1296	Stellaria graminea	.	(I)	0(4)
1298	Stellaria media	.	(I)	0(1)
186	Arctium minus	.	(I)	0(5)
681	Holcus mollis	.	(I)	0(2)
415	Cirsium arvense	.	(I)	0(4)
1095	Ranunculus repens	.	(I)	0(2)
262	Anisantha sterilis	.	(I)	0(4)
1051	Potentilla sterilis	.	(I)	0(1)

The following species found in the test data at a constancy of II or more are not recorded in the N.V.C. diagnostic table for the unit W21a. The data for each species are presented as follows: species code, name, constancy.

1564	Homalothecium sericeum	III	4
1812	Neckera complanata	II	7
2019	Tortula muralis	II	3
2053	Zygodon viridissimus	II	2
5601	Verrucaria baldensis	II	2

The following numbers of species per sample were recorded:

	Mean	Min	Max
Test data	3.6	3	5
W21a	11.0	4	24

GROUP 5

Matches for constancy aggregated from Group 5 samples. Sample matched against the following vegetation types:-

All types

Community		Coefficient	
W10	50.4	5	subcommunities
W16	43.8	2	subcommunities
W14	43.4	0	subcommunities
W15	42.0	4	subcommunities
W17	39.8	4	subcommunities
W25	35.9	2	subcommunities
OV27	35.7	5	subcommunities
W22	34.9	3	subcommunities
W11	34.5	4	subcommunities
W4	33.9	3	subcommunities

Matches against sub-communities

Community		Coefficient	
W10	50.4	5	subcommunities
W10d	46.7	0	subcommunities
W10a	46.4	0	subcommunities
W10c	45.4	0	subcommunities
W10e	45.1	0	subcommunities
W16	43.8	2	subcommunities
W11a	43.7	0	subcommunities
W14	43.4	0	subcommunities
W4a	42.7	0	subcommunities
W16b	42.6	0	subcommunities

Table of Group 5 data matched against diagnosis of W10 Quercus robur-Pteridium aquilinum-Rubus fruticosus woodland: 5 subcommunities, coefficient = 50.4

The information for each species is presented in the order: code, species name, constancy, maximum quantitative value with the constancy and maximum quantitative values of the N.V.C. unit in brackets. Any marked discrepancies are indicated by asterisks.

1078	Quercus robur (c)	.	(IV)*	0(10)
237	Betula pendula (c)	.	(II)*	0(10)
570	Fagus sylvatica (c)	.	(I)	0(10)
1275	Sorbus aucuparia (c)	.	(I)	0(5)
2740	Ilex aquifolium (c)	.	(I)	0(7)
153	Alnus glutinosa (c)	.	(I)	0(9)
1060	Prunus avium (c)	.	(I)	0(5)
236	Betula pubescens (c)	.	(I)	0(9)
1319	Taxus baccata (c)	.	(I)	0(9)
1335	Tilia x vulgaris (c)	.	(I)	0(7)
363	Carpinus betulus (c)	.	(I)	0(9)
1334	Tilia cordata (c)	.	(I)	0(5)
1022	Populus tremula (c)	.	(I)	0(4)
1077	Quercus petraea (c)	.	(II)*	0(10)
366	Castanea sativa (c)	.	(I)	0(10)
971	Pinus sylvestris (c)	.	(I)	0(10)
2920	Pinus nigra (c)	.	(I)	0(10)
2937	Pseudotsuga menziesii (c)	.	(I)	0(10)
3166	Larix sp.(c)	.	(I)	0(10)
103	Acer pseudoplatanus (c)	.	(II)*	0(9)
589	Fraxinus excelsior (c)	.	(II)*	0(8)
1079	Quercus x rosacea (c)	.	(I)	0(10)
1365	Ulmus glabra (c)	.	(I)	0(7)

441	Corylus avellana (s)	.	(III)*	0(10)
445	Crataegus monogyna (s)	.	(II)*	0(7)
707	Ilex aquifolium (s)	.	(II)*	0(9)
2997	Viburnum lantana (s)	.	(I)	0(4)
2676	Carpinus betulus (s)	.	(I)	0(8)
1409	Viburnum opulus (s)	.	(I)	0(4)
2690	Crataegus laevigata	.	(I)	0(4)
2612	Fagus sylvatica (s)	.	(I)	0(8)
1107	Rhododendron ponticum (s)	.	(I)	0(8)
2597	Sorbus aucuparia (s)	.	(I)	0(5)
2606	Betula pendula (s)	.	(I)	0(7)
2604	Betula pubescens (s)	.	(I)	0(6)
834	Malus sylvestris (s)	.	(I)	0(2)
1065	Prunus spinosa (s)	.	(I)	0(7)
2627	Quercus robur (s)	.	(I)	0(5)
2598	Acer campestre (s)	.	(I)	0(4)
2625	Quercus petraea (s)	.	(I)	0(4)
2629	Quercus x rosacea (s)	.	(I)	0(4)
2744	Castanea sativa (s)	.	(I)	0(9)
2600	Acer pseudoplatanus (s)	.	(I)	0(7)
2614	Fraxinus excelsior (s)	.	(I)	0(6)
1187	Sambucus nigra (s)	.	(I)	0(7)
2640	Ulmus glabra (s)	.	(I)	0(6)
1136	Rubus fruticosus agg.	III	(IV)	3(10)
1066	Pteridium aquilinum	II	(IV)*	2(10)
798	Lonicera periclymenum (g)	III	(IV)	2(8)
166	Anemone nemorosa	.	(I)	0(8)
1480	Atrichum undulatum	.	(I)	0(7)
599	Lamiastrum galeobdolon	.	(I)	0(5)
652	Hedera helix (g)	.	(II)*	0(10)
608	Galium odoratum	.	(I)	0(3)
630	Geranium robertianum	.	(I)	0(5)
680	Holcus lanatus	.	(I)	0(9)
465	Dactylis glomerata	I	(I)	2(4)
1239	Senecio jacobaea	.	(I)	0(3)
932	Oxalis acetosella	III	(II)	4(9)
681	Holcus mollis	II	(II)	7(10)
499	Dryopteris dilatata	.	(II)*	0(8)
1677	Eurhynchium praelongum	II	(II)	7(8)
1794	Mnium hornum	IV	(II)*	7(9)
1429	Viola riviniana	.	(I)	0(4)
2003	Thuidium tamariscinum	I	(I)	4(8)
1297	Stellaria holostea	.	(I)	0(6)
477	Deschampsia cespitosa cespitosa	I	(I)	2(9)
1519	Brachythecium rutabulum	I	(I)	6(5)*
1868	Plagiothecium undulatum	.	(I)	0(6)
1772	Isopterygium elegans	I	(I)	3(4)
1914	Pseudoscleropodium purum	.	(I)	0(8)
215	Athyrium filix-femina	.	(I)	0(7)
1681	Eurhynchium striatum	.	(I)	0(5)
1327	Oreopteris limbosperma	.	(I)	0(5)
516	Hyacinthoides nonscripta	II	(III)	6(10)
2601	Acer pseudoplatanus (g)	.	(II)*	0(9)
500	Dryopteris filix-mas	.	(II)*	0(8)
391	Chamerion angustifolium	.	(I)	0(6)
431	Conopodium majus	.	(I)	0(5)
990	Poa trivialis	.	(I)	0(7)
810	Luzula pilosa	.	(I)	0(5)
812	Luzula sylvatica	.	(I)	0(9)
1139	Rumex acetosa	.	(I)	0(5)
1254	Silene dioica	.	(I)	0(6)
849	Melica uniflora	.	(I)	0(6)
2615	Fraxinus excelsior (g)	.	(I)	0(3)
1298	Stellaria media		(I)	0(4)

1321	Teucrium scorodonia	.	(I)	0(6)
1368	Urtica dioica	.	(I)	0(9)
2611	Crataegus monogyna (g)	.	(I)	0(3)
1615	Dicranella heteromalla	.	(I)	0(4)
1766	Hypnum cupressiforme	V	(I)*	7(4)*
359	Carex sylvatica	.	(I)	0(3)
2840	Euphorbia amygdaloides	.	(I)	0(4)
661	Heracleum sphondylium	.	(I)	0(3)
637	Glechoma hederacea	.	(I)	0(6)
846	Melampyrum pratense	.	(I)	0(5)
242	Blechnum spicant	.	(I)	0(7)
1148	Rumex sanguineus	.	(I)	0(4)
1270	Solidago virgaurea	.	(I)	0(5)
2628	Quercus robur (g)	.	(I)	0(4)
1191	Sanicula europaea	.	(I)	0(4)
986	Poa nemoralis	I	(I)	2(7)
867	Milium effusum	.	(I)	0(8)
776	Ligustrum vulgare (s)	.	(I)	0(4)
414	Circaea lutetiana	.	(I)	0(4)
127	Ajuga reptans	.	(I)	0(3)
1293	Stachys sylvatica	.	(I)	0(5)
1396	Veronica chamaedrys	.	(I)	0(4)
825	Lysimachia nemorum	.	(I)	0(3)
1460	Amblystegium serpens	.	(I)	0(5)
123	Agrostis capillaris	I	(I)	2(9)
171	Anthoxanthum odoratum	I	(I)	1(5)
247	Brachypodium sylvaticum	.	(I)	0(4)
478	Deschampsia flexuosa	II	(I)	7(9)
482	Digitalis purpurea	II	(I)	1(6)
610	Galium saxatile	.	(I)	0(7)
730	Juncus effusus	.	(I)	0(4)
2607	Betula pendula (g)	.	(I)	0(3)
1375	Vaccinium myrtillus	II	(I)	8(5)*
1137	Rubus idaeus	.	(I)	0(5)
1122	Rosa canina agg.	.	(I)	0(6)
2634	Sorbus aucuparia (g)	.	(I)	0(3)
2167	Lophocolea bidentata	I	(I)	3(4)
1858	Plagiothecium denticulatum	.	(I)	0(3)
2613	Fagus sylvatica (g)	.	(I)	0(4)
1776	Isothecium myosuroides	III	(I)*	8(3)*
2616	Ilex aquifolium (g)	.	(I)	0(6)
1892	Polytrichum formosum	II	(I)	6(5)*
1193	Cytisus scoparius (s)	.	(I)	0(6)
1088	Ranunculus ficaria	.	(I)	0(5)
2223	Pellia epiphylla	.	(I)	0(5)
1807	Plagiomnium undulatum	I	(I)	2(5)
1795	Plagiomnium rostratum	.	(I)	0(3)
260	Bromopsis ramosa	.	(I)	0(4)
587	Fragaria vesca	.	(I)	0(3)
1051	Potentilla sterilis	.	(I)	0(3)
1095	Ranunculus repens	.	(I)	0(4)
864	Mercurialis perennis	.	(I)	0(4)
1058	Primula vulgaris	.	(I)	0(4)
498	Dryopteris affinis ssp borreri	I	(I)	1(5)
605	Galium aparine	.	(I)	0(4)
1638	Dicranum scoparium	I	(I)	3(4)
1363	Ulex europaeus (s)	.	(I)	0(7)
809	Luzula multiflora	.	(I)	0(6)
826	Lysimachia nummularia	.	(I)	0(3)
1626	Dicranoweissia cirrata	.	(I)	0(3)
1586	Ceratodon purpureus	.	(I)	0(4)
1059	Prunella vulgaris	.	(I)	0(3)
110	Aegopodium podagraria	.	(I)	0(3)
173	Anthriscus sylvestris	.	(I)	0(4)

2599	Acer campestre (g)	.	(I)	0(3)
899	Narcissus pseudonarcissus	.	(I)	0(3)
197	Arrhenatherum elatius	I	(I)	1(4)
439	Ceratocapnos claviculata	.	(I)	0(5)
574	Festuca ovina	.	(I)	0(5)

The following species found in the test data at a constancy of II or more are not recorded in the N.V.C. diagnostic table for the unit W10. The data for each species are presented as follows: species code, name, constancy.

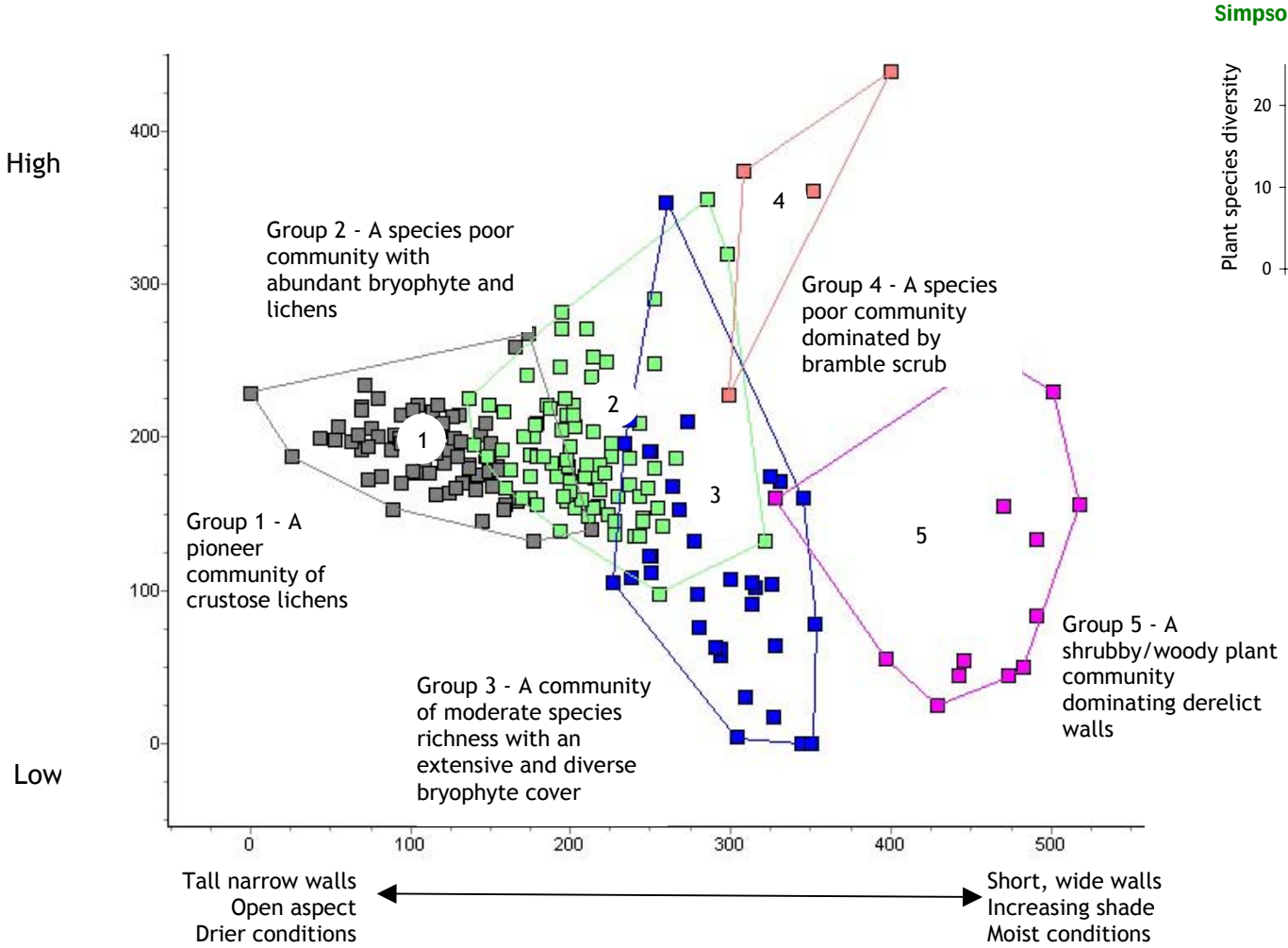
1013	Polypodium interjectum	II	3
1018	Polystichum setiferum	III	3
1826	Orthotrichum diaphanum	II	3
2370	Cladonia macilenta	III	2

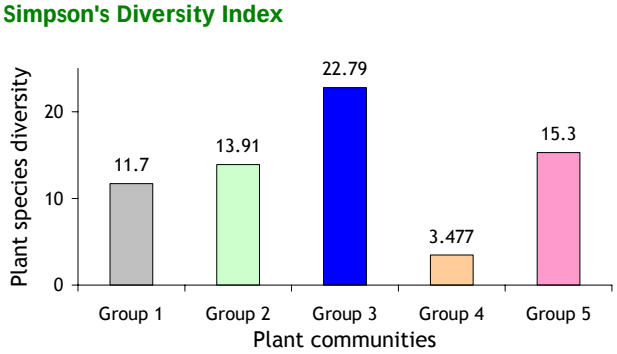
The following numbers of species per sample were recorded:

	Mean	Min	Max
Test data	9.5	5	14
W10	15.0	1	39

Appendix VI: Two dimensional ordination plot

PLANT COMMUNITIES of DRY STONE WALLS in the MENDIP HILLS AREA OF OUTSTANDING NATURAL BEAUTY





Appendix VII: Fauna recorded within or adjacent to the dry stone wall habitat of the Mendip Hills Area of Outstanding Natural Beauty.

Species lists were compiled from site visits made between June and August 2007. The DAFOR scale of abundance (Dominant, Abundant, Frequent, Occasional and Rare) is used in text or species lists to describe the abundance of plants, please note that this nominative scale does not refer to the conservation status of any species.

MAMMALS

Scientific name	Vernacular name	DAFOR	Comment
Apodemus sylvaticus	Wood mouse	O-F	No legal protection. Widespread and common throughout Britain
Clethrionomys glareolus	Bank vole	F	Not legally protected in the UK. No conservation designations.
Lepus europaeus	Brown hare	O	Classed as a game animal so little legal protection. The brown hare is widespread throughout central and western Europe
Microtus agrestis	Field vole	F	Not legally protected in the UK. No conservation designations. This species is believed to be the most numerous of the British mammals; it has a wide albeit patchy distribution throughout Britain.
Mustela erminea	Stoat	R	Listed under Appendix III of the Bern Convention, and classified as a species of conservation concern under the UK Biodiversity Action Plan, but not a priority species. Widespread and common throughout Britain. Native and common. Susceptible to habitat loss, particularly the disappearance of linear features.
Mustela nivalis	Weasel	R	Classified as a species of conservation concern by the UK Biodiversity Action Plan, although not a priority species. Listed under Appendix III of the Bern Convention. Native and common. Widespread throughout mainland Britain. Nests in collapsed dry stone walls.
Oryctolagus cuniculus	Rabbit	F	Not legally protected in Great Britain.
Sorex araneus	Common shrew	F	Partially protected in the UK under Schedule 6 of the Wildlife and Countryside Act, 1981. Listed under Schedule III of the Bern Convention, and classified as a Species of Conservation Concern under the UK Biodiversity Action Plan, although not a priority species.
Vulpes vulpes	Red fox	R	No legislative protection. Native, common and widespread.

BIRDS

Scientific name	Vernacular name	DAFOR	Comment
Alauda arvensis	Skylark	F	Red status. Protected under the Wildlife and Countryside Act (1981), as amended and the Wildlife (Northern Ireland) Order 1985. Listed under the EC Birds Directive
Anthus pratensis	Meadow pipit	R-O	Amber status.
Apus apus	Swift	O	Green status.
Buteo buteo	Buzzard	O	Green status.
Carduelis chloris	Greenfinch	R-O	Green status. Included in the Birds of Conservation Concern Amber List (medium conservation concern).
Columba palumbus	Woodpigeon	O	Green status. Widespread and common. May be killed or taken under the terms of General Licences (Wildlife and Countryside Act 1981). Included in the Birds of Conservation Concern Green List (low conservation concern).
Corvus corone	Carrion crow	O	Green status. Receives general protection under the Wildlife and Countryside Act 1981, but can be trapped, shot or their eggs and nests destroyed under the terms of General Licences issued by government. Included in the Birds of Conservation Concern Green List (low conservation concern).
Corvus monedula	Jackdaw	R-O	Green status. Receives general protection under the Wildlife and Countryside Act 1981. Included in the Birds of Conservation Concern Green List (low conservation concern).
Delichon urbica	House martin	R-O	Amber status.
Erithacus rubecula	Robin	R-O	Green status. Widespread and common species. Included in the Birds of Conservation Concern Green List (low conservation concern).
Falco tinnunculus	Kestrel	O	Amber status. Listed as a Species of Conservation Concern by the UK Biodiversity Action Plan, but not a priority species. Included in the Birds of Conservation Concern Amber List (medium conservation concern).
Fringilla coelebs	Chaffinch	R-O	Green status. Included in the Birds of Conservation Concern Green List (low conservation concern).
Hirundo rustica	Swallow	R-O	Amber status.
Parus caeruleus	Blue tit	O	Green status. Widespread and common species, not listed under any conservation designations.
Phasianus colchicus	Pheasant	R	No status. Introduced. Covered by Game Acts which give protection in the close season and allow it to be shot from 1st October to 1st February.
Phylloscopus collybita	Chiffchaff	R	Green status.
Picus viridis	Green woodpecker	R	Amber status.
Sylvia atricapilla	Blackcap	R	Green status.
Troglodytes troglodytes	Wren	F	Green status.

Scientific name	Vernacular name	DAFOR	Comment
Turdus merula	Blackbird	R-O	Green status. Widespread and common species, not listed under any conservation designations. Included in the Birds of Conservation Concern Green List (low conservation concern).
Turdus philomelos	Song thrush	O	Red status. Listed under the Birds of Conservation Concern Red List and the EC Birds Directive. Protected in the UK under the Wildlife and Countryside Act 1981, and the Wildlife (Northern Ireland) Order 1985.

INVERTEBRATES

Scientific name	Vernacular name	Comment
Aglais urticae	Small tortoishell	This widespread and common species is not threatened. It is not listed under any conservation designations.
Beetles		Frequent to abundant undetermined species.
Blatta orientalis	Common cockroach	R.
Candidula intersecta	Wrinkled snail	Common snail in dry, base-rich grassland usually in exposed sandy or stoney situations. Probably introduced; readily colonising man-made habitats; Dry and open sites; Ribbing distinct; shell opaque , white to ginger often with darker spiral bands and blotches and with marked, irregular transverse ribbing; Common in dunes and other dry calcareous habitats, often exposed.
Carabidae	Ground beetle	F. undetermined species.
Carychium tridentatum	Herald snail	Common everywhere; Characteristic of relatively moist sheltered well vegetated places; also extends into much drier habitats. Native and widespread in leaf litter etc. in woods and hedges. Especially abundant on calcareous soils. Molluscs with a wider ecological amplitude
Cast skin of *Heteroptera* (true-bug) nymph	Land bug	R.
Caterpillar sp.		R.
Chorthippus brunneus	Common field grasshopper	Common
Clausilia bidentata bidentata	Common door snail	Native; widespread; feeds on lichens and other epiphytes; therefore reflects atmospheric pollution; common species in sheltered places i.e. rocks, stone walls; moderately moist places amongst rocks and old walls. Common and widespread. Missing from some areas previously subject to heavy pollution.
Coccinella septempunctata	Seven-spot ladybird	Very common in Britain.
Cylindroiulus punctatus	Blunt-tailed snake millipede	R-O.

Scientific name	Vernacular name	Comment
Forficula auricularia	Common European earwig	Widespread and often common.
Helicigona lapicida lapicida	Lapidary snail	Characteristic of limestone rocks and stone walls; Native and in suitable habitats remains common; elsewhere it is receding. Very sharpely keeled; often in crevices and rocks; Species of limestone walls but also occur on open rocks and, very occasionally, lapicida can also be found on trees. Widespread in England, but uncommon and declining in east. On calcareous soils, especially on limestone rocks, but also in woodland.
Ichneumonidae (damaged)		A parasitic insect
Insect nest holes		A solitary bee hole?
Lasius niger	Small black ant	Widespread and very common.
Lepidoptera larvae (early instar).		
Lithobius forficatus	Common centipede	They are widespread and common in Britain and Europe.
Mites		Abundant mite species though all the dry stone walls.
Musca domestica	Common house-fly	Very common and widespread
Oniscus asellus	Common shiny woodlouse	Common and widespread throughout Britain.
Oxychilus cellarius	Cellar snail	Moist sheltered places; in rocky habitats it will penetrate deeplyy into crevices; native & widespread; Widespread in woodland, hedges, gardens and waste ground, also in caves and deep in screes. It avoids acid and oligotrophic environments.
Parasitic *Hymenoptera*		Parasitic insect (?Chalcididae)
Pardosa amentata	Wolf spider	Widespread and very common.
Philoscia muscorum	Common striped woodlouse	Common and widespread throughout Britain.
Pyramidula umbilicata = rupestris	Rock snail	Species of limestone walls but also occur on open rocks; Restricted to dry, exposed or partly shaded limestone rocks; occasional on walls and buildings. Rare in E England and Scotland. Very small snail.
Slugs		R
Staphylinus olens	Devil's coach horse	Common and widespread.
Stenus picipes		A rove beetle
Textrix denticulata		A house-spider relative
Trichoniscus pusillus	Common pygmy woodlouse	F
Trochulus hispidus	Hairy snail	Very common in a variety of habitats.
Vespa crabro	Hornet	Common only in parts of south England.

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Appendix IX: Third party data search

Bristol Regional Environmental Records Centre

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Amphibian							
Rana temporaria	Common Frog	Widespread / Declining / Locally Abundant when breeding	Unknown	EC Annex Va; Bern App III	Sch 5* W&CA 1981	SOCC AVONBAP BNESBAP	
Triturus cristatus	Great Crested Newt	Local / Declining (Avon is a stronghold of this species)	Unknown	EC Annex IIa, IVa; Bern App II	ECHD, Bern Sch 5 W&CA 1981	UKAP SWAP AVONBAP BNESBAP	
Beetle							
Aphthona lutescens	a leaf beetle	Local	Local				
Chrysolina menthastri	Mint Leaf Beetle	Local	Local				
Elodes elongata	a marsh beetle	Proposed BRERC Notable 2004	RDB I			AVONBAP	
Galerucella tenella	a leaf beetle	Local	Common				
Larinus planus	a weevil	Widespread	Nb			AVONBAP	
Bird							
Accipiter nisus	Sparrowhawk	Fairly common			Bern, Bonn	AVONBAP	
Acrocephalus schoenobaenus	Sedge Warbler	Fairly common			Bern	SOCC AVONBAP BNESBAP	
Acrocephalus scirpaceus	Reed Warbler	Fairly common			Bern	SOCC AVONBAP BNESBAP	
Alauda arvensis	Skylark	Common / Declining				UKAP AVONBAP BNESBAP	Red list
Alcedo atthis	Kingfisher	Uncommon			ECHD, Bern, Sch 1 W&CA 1981	SOCC AVONBAP BNESBAP	Amber list

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Anas clypeata	Shoveler	Fairly common	RDB		Bonn	SOCC AVONBAP BNESBAP	Amber list
Anas penelope	Wigeon	Fairly common	RDB		Bonn	SOCC AVONBAP BNESBAP	Amber list
Anas platyrhynchos	Mallard	Common			Bonn	AVONBAP	
Anas querquedula	Garganey	Scarce / Rare Breeder	RDB		Bonn, Sch 1 W&CA 1981	SOCC AVONBAP BNESBAP	Amber list
Anas strepera	Gadwall	Fairly common	RDB		Bonn	SOCC AVONBAP BNESBAP	Amber list
Anser anser	Greylag Goose	SoCC	RDB		Bonn, Sch 1 W&CA 1981	SOCC AVONBAP	
Anthus pratensis	Meadow Pipit	Fairly common			Bern	SOCC AVONBAP	Amber list
Ardea cinerea	Grey Heron	Fairly common				BNESBAP	
Aythya ferina	Pochard	Fairly common	RDB		Bonn	SOCC AVONBAP BNESBAP	Amber list
Aythya fuligula	Tufted Duck	Common			Bonn	SOCC AVONBAP BNESBAP	
Branta bernicla	Brent Goose	Scarce	RDB		Bonn	SOCC AVONBAP	Amber list
Branta leucopsis	Barnacle Goose	SoCC	RDB		ECHD, Bern, Bonn	SOCC AVONBAP	
Bucephala clangula	Goldeneye	Fairly common	RDB		Bonn, Sch 1 W&CA 1981	SOCC AVONBAP BNESBAP	Amber list
Buteo buteo	Buzzard	Fairly common / Increasing			Bern, Bonn	SOCC AVONBAP	
Calidris alpina	Dunlin	Common	RDB		Bern, Bonn	SOCC AVONBAP	Amber list
Calidris ferruginea	Curlew Sandpiper	Uncommon			Bern, Bonn	SOCC AVONBAP	
Calidris minuta	Little Stint	Uncommon			Bern, Bonn	SOCC AVONBAP	
Carduelis cannabina	Linnet	Common			Bern	UKAP AVONBAP BNESBAP	Red list

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Carduelis carduelis	Goldfinch	Common			Bern	SOCC AVONBAP	Amber list
Carduelis chloris	Greenfinch	Common			Bern	SOCC AVONBAP	
Carduelis flammea	Redpoll	Scarce			Bern	SOCC AVONBAP	
Carduelis spinus	Siskin	Fairly common			Bern	SOCC AVONBAP	
Certhia familiaris	Treecreeper	Common			Bern	SOCC AVONBAP	
Cettia cetti	Cetti's Warbler	Uncommon / Expanding	RDB		Bern, Sch 1 W&CA 1981	SOCC AVONBAP BNESBAP	Amber list
Charadrius dubius	Little Ringed Plover	Uncommon			Bern, Bonn, Sch 1 W&CA 1981	SOCC AVONBAP	
Charadrius hiaticula	Ringed Plover	Fairly common	RDB		Bern, Bonn	SOCC AVONBAP	Amber list
Chlidonias niger niger	Black Tern	Uncommon	RDB		ECHD, Bern, Sch 1 W&CA 1981	SOCC AVONBAP	
Clangula hyemalis	Long-tailed Duck	Scarce	RDB		Bonn, Sch 1 W&CA 1981	SOCC AVONBAP	Amber list
Columba oenas	Stock Dove	Fairly Common					Amber list
Corvus corax	Raven	Scarce					
Cuculus canorus	Cuckoo	Proposed BRERC Notable 2006 (RSPB Amber List)	Unknown				Amber list
Cygnus olor	Mute Swan	Fairly common			Bonn	SOCC AVONBAP	Amber list
Delichon urbica	House Martin	Common			Bern	SOCC AVONBAP	Amber list
Dendrocopos major	Great Spotted Woodpecker	Fairly common			Bern	SOCC AVONBAP	
Emberiza schoeniclus	Reed Bunting	Scarce			Bern	UKAP AVONBAP BNESBAP	Red list

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Falco peregrinus	Peregrine	Uncommon	RDB		ECHD, Bern, Bonn, Sch 1 W&CA 1981	SOCC AVONBAP BNESBAP	Amber list
Falco subbuteo	Hobby	Uncommon			Bern, Bonn, Sch 1 W&CA 1981	SOCC AVONBAP	
Falco tinnunculus	Kestrel	Fairly common / Declining?			Bern, Bonn	SOCC AVONBAP BNESBAP	Amber list
Ficedula hypoleuca	Pied Flycatcher	Scarce			Bern, Bonn	SOCC AVONBAP	
Fringilla montifringilla	Brambling	Scarce	RDB		Sch 1 W&CA 1981	SOCC AVONBAP	Amber list
Haematopus ostralegus	Oystercatcher	Fairly common	RDB			AVONBAP	Amber list
Hirundo rustica	Swallow	Common			Bern	SOCC AVONBAP	Amber list
Lanius collurio	Red-backed Shrike	Rare	RDB		ECHD, Bern, Sch 1 W&CA 1981	UKAP AVONBAP	Red list
Larus fuscus	Lesser Black-backed Gull	Common				SOCC AVONBAP	Amber list
Larus melanocephalus	Mediterranean Gull	Scarce / Increasing	RDB		ECHD, Bern, Sch 1 W&CA 1981	SOCC AVONBAP	Amber list
Limosa lapponica	Bar-tailed Godwit	Uncommon	RDB		Bonn	SOCC AVONBAP	Amber list
Locustella naevia	Grasshopper Warbler	Uncommon			Bern	SOCC AVONBAP	Red list
Loxia curvirostra	Crossbill	Uncommon			Bern, Sch 1 W&CA 1981	SOCC AVONBAP	
Mergus merganser	Goosander	Uncommon / Increasing?			Bonn	SOCC AVONBAP	
Motacilla alba	White/Pied Wagtail	Common			Bern	SOCC AVONBAP	
Motacilla alba yarrellii	Pied Wagtail	Common			Bern	AVONBAP	

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Motacilla cinerea	Grey Wagtail	Fairly common			Bern	SOCC AVONBAP	Amber list
Muscicapa striata	Spotted Flycatcher	Uncommon / Declining			Bern, Bonn	UKAP AVONBAP BNESBAP	Red list
Oenanthe oenanthe	Wheatear	Fairly common			Bern	SOCC AVONBAP	
Parus ater	Coal Tit	Common			Bern	SOCC AVONBAP	
Parus caeruleus	Blue Tit	Abundant			Bern	SOCC AVONBAP	
Parus major	Great Tit	Abundant			Bern	SOCC AVONBAP	
Parus montanus	Willow Tit	Very Scarce			Bern	SOCC AVONBAP	Red list
Parus palustris	Marsh Tit	Common / Declining			Bern	SOCC AVONBAP BNESBAP	Red list
Passer domesticus	House Sparrow	Proposed BRERC Notable 2004	Unknown				Red list
Phalacrocorax carbo	Cormorant	Common			ECHD	SOCC AVONBAP	Amber list
Philomachus pugnax	Ruff	Scarce / Uncommon	RDB		ECHD, Bonn, Sch 1 W&CA 1981	SOCC AVONBAP	Amber list
Phoenicurus ochruros	Black Redstart	Scarce / Uncommon	RDB		Bern, Sch 1 W&CA 1981	SOCC AVONBAP	Amber list
Phoenicurus phoenicurus	Redstart	Uncommon			Bern	SOCC AVONBAP	Amber list
Phylloscopus collybita	Chiffchaff	Common			Bern	SOCC AVONBAP	
Phylloscopus sibilatrix	Wood Warbler	Uncommon / Rare / Declining			Bern	SOCC AVONBAP	Amber list
Phylloscopus trochilus	Willow Warbler	Common			Bern	SOCC AVONBAP	Amber list
Picus viridis	Green Woodpecker	Fairly common			Bern	SOCC AVONBAP	Amber list
Podiceps cristatus	Great Crested Grebe	Common				SOCC AVONBAP BNESBAP	

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Podiceps nigricollis	Black-necked Grebe	Scarce / Uncommon	RDB		Bern, Sch 1 W&CA 1981	SOCC SWAP AVONBAP BNESBAP	Amber list
Prunella modularis	Dunnock	Abundant			Bern	SOCC AVONBAP	Amber list
Pyrrhula pyrrhula	Bullfinch	Fairly Common / Declining				UKAP AVONBAP BNESBAP SGLOSBAP	Red List
Regulus regulus	Goldcrest	Common			Bern	SOCC AVONBAP	Amber list
Riparia riparia	Sand Martin	Fairly common			Bern	SOCC AVONBAP BNESBAP	Amber list
Saxicola rubetra	Whinchat	Scarce			Bern	SOCC AVONBAP	
Saxicola torquata	Stonechat	Uncommon			Bern	SOCC AVONBAP	Amber list
Sitta europaea	Nuthatch	Fairly common / Common			Bern	SOCC AVONBAP	
Sterna hirundo	Common Tern	Fairly Common			ECHD, Bern, Bonn	SOCC AVONBAP	
Sturnus vulgaris	Starling	Abundant / Declining					Red list
Sylvia atricapilla	Blackcap	Common			Bern	SOCC AVONBAP	
Sylvia borin	Garden Warbler	Fairly common			Bern	SOCC AVONBAP	
Sylvia communis	Whitethroat	Common			Bern	SOCC AVONBAP	
Sylvia curruca	Lesser Whitethroat	Fairly common			Bern	AVONBAP	
Turdus iliacus	Redwing	Common	RDB		Sch 1 W&CA 1981	SOCC AVONBAP	Amber list
Turdus merula	Blackbird	Abundant					Amber list
Turdus philomelos	Song Thrush	Uncommon				UKAP AVONBAP BNESBAP SGLOSBAP	Red list
Turdus pilaris	Fieldfare	Common	RDB		Sch 1 W&CA 1981	SOCC AVONBAP	Amber list

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Turdus viscivorus	Mistle Thrush	Proposed BRERC Notable 2006 (RSPB Amber List)	Unknown				Amber list
Vanellus vanellus	Lapwing	Fairly common			Bonn	SOCC AVONBAP BNESBAP	Amber list
Dragonfly/Damselfly							
Aeshna grandis	Brown Hawker	Local	Common / Nr in north-eastern England. Local in northern England				
Aeshna juncea	Common Hawker	Rare. No current breeding records in BRERC recording area	Common			AVONBAP	
Brachytron pratense	Hairy Dragonfly	Rare	Nb			AVONBAP	
Brachytron pratense	Hairy Dragonfly	Rare	Nb			AVONBAP	
Cordulegaster boltonii	Golden-ringed Dragonfly	Rare. Possibly breeding in North Somerset	Nr but common in Wales, Scotland, Cumbria & south-			AVONBAP	
Cordulegaster boltonii	Golden-ringed Dragonfly	Rare. Possibly breeding in North Somerset	Nr but common in Wales, Scotland, Cumbria & south-			AVONBAP	
Cordulegaster boltonii	Golden-ringed Dragonfly	Rare. Possibly breeding in North Somerset	Nr but common in Wales, Scotland, Cumbria & south-			AVONBAP	

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Lestes sponsa	Emerald Damselfly	Local	Common / Nr in north /Local in East & West Midlands				
Libellula quadrimaculata	Four-spotted Chaser	Scarce	Common / Nr in north-eastern England / Local north				
Orthetrum coerulescens	Keeled Skimmer	Rare	Local / Nr northern England & Scotland			AVONBAP	
Sympetrum sanguineum	Ruddy Darter	Scarce	Local				
Fungus							
Agaricus placomyces	an agaric	Proposed BRERC Notable 2004	Vulnerable			AVONBAP BNESBAP	
Grasshopper/Cricket/True Cricket							
Conocephalus discolor	Long-winged Conehead	Rare	Na			AVONBAP BNESBAP	
Conocephalus dorsalis	Short-winged Conehead	Scarce	Local				
Myrmeleotettix maculatus	Mottled Grasshopper	Scarce	Common - southern England				
Omocestus viridulus	Common Green Grasshopper	Scarce	Common				
Tettigonia viridissima	Great Green Bush Cricket	Scarce	Local				
Mammal							
Capreolus capreolus	Roe Deer	Common	Common	Bern App III	Deer Act 1991	SOCC AVONBAP	
Lepus europaeus	Brown Hare	Local	Common / declining. In RDB			UKAP AVONBAP BNESBAP	
Meles meles	Badger	Widespread and common - national stronghold	Common. In RDB	Bern App III	Sch 6 W&CA 1981, Protection of Badgers Act 1992	SOCC AVONBAP	

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Mustela nivalis	Weasel	Common	Common	Bern App III		SOCC AVONBAP	
Rhinolophus ferrumequinum	Greater Horseshoe Bat	Local - Avon is a national stronghold	Endangered / declining. In RDB	EC Annex IIa, IVa; Bern App II	ECHD, Bern, Bonn, Sch 5, Sch 6 W&CA 1981	UKAP AVONBAP BNESBAP NSOMBAP	
Moss							
Racomitrium canescens	Hoary Fringe-moss	<4 10km in Avon	Nationally Scarce	Not threatened in Europe.			
Moth/Butterfly - Butterfly							
Argynnis adippe vulgoadippe	High Brown Fritillary	Extinct (last rec.1992)	RDB2		Sch 5 W&CA 1981	UKAP AVONBAP	
Argynnis aglaja	Dark Green Fritillary (agg.)	Rare				AVONBAP BNESBAP	
Argynnis paphia	Silver-washed Fritillary	Scarce				SOCC AVONBAP	
Boloria euphrosyne	Pearl Bordered Fritillary	Endangered	Nb		Sch 5* W&CA 1981	UKAP AVONBAP	
Boloria selene	Small Pearl-bordered Fritillary	Rare				SOCC AVONBAP	
Callophrys rubi	Green Hairstreak	Local				BNESBAP	
Cupido minimus	Small Blue	Rare			Sch 5* W&CA 1981	SOCC AVONBAP BNESBAP	
Erynnis tages	Dingy Skipper	Rare				AvonBAP BNESBAP	
Hipparchia semele	Grayling (agg.)	Rare				AvonBAP BNESBAP	
Hipparchia semele semele	Grayling	Rare				AvonBAP BNESBAP	
Pyrgus malvae	Grizzled Skipper	Rare				AVONBAP BNESBAP	
Satryrium w-album	White Letter Hairstreak	Local					
Acronicta aceris	Sycamore (moth)	Common	Local				
Adscita geryon	Cistus Forester	Rare	Nb			AVONBAP	
Antitype chi	Grey Chi	Local	Common				
Apamea ophiogramma	Double Lobed	Local	Local				
Aplocera efformata	Lesser Treble-bar	Local	Common				

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Bembecia ichneumoniformis	Six-belted Clearwing	Rare	Nb			AVONBAP	
Chloroclysta citrata citrata	Dark Marbled Carpet	Local	Common				
Conistra rubiginea	Dotted Chestnut	Local	Nb			AVONBAP BNESBAP	
Craniophora ligustri	Coronet	Common	L/?C				
Cyclophora linearia	Clay Triple-lines	Common	Local				
Deilephila porcellus	Small Elephant Hawk-moth	Common	Local				
Dichonia aprilina	Merveille du Jour	Local	Common				
Drepana falcataria falcataria	Pebble Hook-tip	Local	Common				
Eilema complana	Scarce Footman	Common	Local				
Furcula bicuspis	Alder Kitten	Rare	Nb			AVONBAP BNESBAP	
Gastropacha quercifolia	Lappet	Rare	Common			AVONBAP BNESBAP	
Ipimorpha subtusa	Olive (moth)	Local	Local				
Lacanobia thalassina	Pale-shouldered Brocade	Local	Common				
Lobophora halterata	Seraphim	Rare	Local			AVONBAP BNESBAP	
Lygephila pastinum	Blackneck	Common	Local				
Mythimna pudorina	Striped Wainscot	Rare	Local			AVONBAP	
Nycteola revayana	Oak Nycteoline	Local	Local				
Plagodis dolabraria	Scorched Wing	Common	Local				
Pseudopanthera macularia	Speckled Yellow	Local	Common				
Thera firmata	Pine Carpet	Local	Common				
Thera juniperata juniperata	Juniper Carpet	Proposed BRERC Notable 2004	Notable/Nb			AVONBAP	
Thumatha senex	Round-winged Muslin	Local	Local				
Thumatha senex	Round-winged Muslin	Local	Local				
Triphosa dubitata	Tissue	Common	Local				
Watsonalla cultraria	Barred Hook-tip	Common	Local				
Coleophora currucipennella	a micro-moth	Proposed BRERC Notable 2004	pRDB3			AVONBAP	
Evergestis pallidata	a pyralid moth	Local	Nb			AVONBAP	
Pyrausta ostrinalis	a pyralid	Local	Local				

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
	moth						
Plant							
Achillea ptarmica	Sneezewort	Uncommon					
Agrostis canina	Velvet Bent	Uncommon					
Aira caryophyllea	Silver Hair-grass	Scarce					
Alchemilla filicaulis ssp. vestita	a lady's-mantle	Scarce					
Anacamptis pyramidalis	Pyramidal Orchid	Uncommon					
Anagallis tenella	Bog Pimpernel	Scarce					
Anthemis cotula	Stinking Chamomile	Scarce	Vulnerable				
Anthriscus caucalis	Bur Parsley	Scarce					
Anthyllis vulneraria	Kidney Vetch	Uncommon					
Aquilegia vulgaris	Columbine	Uncommon					
Arabis hirsuta	Hairy Rock-cress	Uncommon					
Arenaria serpyllifolia ssp. leptoclados	Small Thyme-leaved Sandwort	Uncommon					
Asplenium adiantum-nigrum	Black Spleenwort	Uncommon					
Berula erecta	Lesser Water-parsnip	Uncommon					
Betula pubescens ssp. pubescens	Downy birch (in Avon)	Scarce				BNESBAP	
Bidens tripartita	Trifid Bur-marigold	Uncommon					
Blackstonia perfoliata	Yellow-wort	Uncommon					
Blechnum spicant	Hard Fern	Scarce					
Bolboschoenus maritimus	Sea Club-rush	Uncommon				BNESBAP	
Brachypodium pinnatum	Tor-grass	Scarce					
Bromus commutatus	Meadow Brome	Uncommon					
Butomus umbellatus	Flowering Rush	Scarce					
Buxus sempervirens	Box	Uncommon	Rare			SOCC AVONBAP	
Calamagrostis epigejos	Wood Small-reed	Scarce					
Calluna vulgaris	Heather	Scarce				BNESBAP	
Campanula glomerata	Clustered Bellflower	Scarce					
Campanula rotundifolia	Harebell	Uncommon					
Campanula trachelium	Nettle-leaved Bellflower	Uncommon					
Carex acutiformis	Lesser Pond-sedge	Uncommon					
Carex distans	Distant Sedge	Scarce					
Carex disticha	Brown Sedge	Scarce				BNESBAP	
Carex echinata	Star Sedge	Scarce				BNESBAP	
Carex hostiana	Tawny Sedge	Scarce					

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
						BNESBAP	
Carex humilis	Dwarf Sedge	Rare	Scarce			SOCC AVONBAP	
Carex nigra	Common Sedge	Uncommon					
Carex ovalis	Oval Sedge	Scarce					
Carex panicea	Carnation Sedge	Scarce					
Carex pulicaris	Flea Sedge	Scarce				BNESBAP	
Carex strigosa	Thin-spiked Wood-sedge	Uncommon					
Carex viridula ssp. brachyrrhyncha	Long-stalked Yellow Sedge	Scarce					
Carex viridula ssp. oedocarpa	Common Yellow Sedge	Scarce					
Carlina vulgaris	Carline Thistle	Uncommon					
Catapodium rigidum	Fern-grass	Uncommon					
Centaurium pulchellum	Lesser Centaury	Rare				AVONBAP BNESBAP	
Cerastium diffusum	Dark-green Mouse-ear	Scarce				BNESBAP	
Chaenorhinum minus	Small Toadflax	Uncommon					
Chenopodium bonus-henricus	Good King Henry	Uncommon	Vulnerable				
Chenopodium polyspermum	Many-seeded Goosefoot	Uncommon					
Cirsium dissectum	Meadow Thistle	Scarce					
Clinopodium acinos	Basil Thyme	Scarce	Vulnerable				
Clinopodium ascendens	Common Calamint	Uncommon					
Cochlearia danica	Danish Scurvygrass	Uncommon					
Colchicum autumnale	Meadow Saffron	Scarce	Near Threatened				
Cruciata laevipes	Crosswort	Uncommon					
Cystopteris fragilis	Brittle Bladder-fern	Scarce	Extinct				
Dactylorhiza fuchsii x praetermissa (D. x grandis)	a marsh-orchid	Rare	Unknown			AVONBAP	
Dactylorhiza maculata ssp. ericetorum	a heath spotted-orchid	Proposed BRERC Notable 2006 (to conform with status for D. maculata)	Unknown				
Dactylorhiza praetermissa	Southern Marsh-orchid	Scarce					

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Dactylorhiza traunsteineri	Narrow-leaved Marsh-orchid	Rare	Scarce			AVONBAP	
Danthonia decumbens	Heath-grass	Uncommon					
Daphne laureola	Spurge-laurel	Uncommon					
Deschampsia flexuosa	Wavy Hair-grass	Scarce					
Epilobium lanceolatum	Spear-leaved Willowherb	Scarce					
Epilobium obscurum	Short-fruited Willowherb	Uncommon					
Epilobium palustre	Marsh Willowherb	Scarce					
Epilobium roseum	Pale Willowherb	Scarce					
Epipactis helleborine	Broad-leaved Helleborine	Scarce					
Epipactis palustris	Marsh Helleborine	Rare				AVONBAP	
Equisetum fluviatile	Water Horsetail	Uncommon					
Erica cinerea	Bell Heather	Scarce					
Erigeron acer	Blue Fleabane	Uncommon					
Eriophorum angustifolium	Common Cottongrass	Rare				AVONBAP BNESBAP	
Erodium cicutarium sens.str.	Common Stork's-bill	Uncommon					
Euphorbia exigua	Dwarf Spurge	Uncommon	Near Threatened				
Euphrasia nemorosa	an eyebright	Uncommon					
Fallopia japonica	Japanese Knotweed	Proposed BRERC Notable 2006 as Invasive	Naturalised		9, 9(NI)		
Filipendula vulgaris	Dropwort	Scarce				BNESBAP	
Fumaria capreolata ssp. babingtonii	Ramping Fumitory	Rare				AVONBAP BNESBAP	
Galanthus nivalis	Snowdrop	Common		EC Annex Vb	ECHD	AVONBAP	
Galeopsis tetrahit sens.str.	Common Hemp-nettle	Uncommon					
Galium saxatile	Heath Bedstraw	Uncommon					
Gaudinia fragilis	French Oat-grass	Rare	Scarce			AVONBAP	
Genista tinctoria ssp. tinctoria	a dyer's greenweed	Uncommon					
Geranium columbinum	Long-stalked Crane's-bill	Uncommon					
Geranium pusillum	Small-flowered Crane's-bill	Scarce					
Glyceria declinata	Small Sweet-	Uncommon					

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
	grass						
Gnaphalium uliginosum	Marsh Cudweed	Uncommon					
Gymnadenia conopsea	Fragrant Orchid	Rare				AVONBAP BNESBAP	
Helictotrichon pratense	Meadow Oat-grass	Uncommon					
Holcus mollis	Creeping Soft-grass	Uncommon					
Hyacinthoides non-scripta	Bluebell	Common			1998 Sch 8 W&CA 1981	SOCC AVONBAP	
Hypericum androsaemum	Tutsan	Uncommon					
Hypericum humifusum	Trailing St. John's-wort	Scarce					
Hypericum pulchrum	Slender St. John's-wort	Uncommon					
Impatiens glandulifera	Indian Balsam	Proposed BRERC Notable 2006 as Invasive	Unknown				
Iris foetidissima	Stinking Iris	Uncommon					
Isolepis setacea	Bristle Club-rush	Scarce				BNESBAP	
Juncus acutiflorus	Sharp-flowered Rush	Uncommon					
Juncus conglomeratus	Compact Rush	Uncommon					
Juncus subnodulosus	Blunt-flowered Rush	Scarce				BNESBAP	
Kickxia elatine	Sharp-leaved Fluellen	Scarce					
Koeleria macrantha	Crested Hair-grass	Uncommon					
Koeleria vallesiana	Somerset Hair-grass	Scarce	Vulnerable			AVONBAP	
Lamium amplexicaule	Hen-bit Dead-nettle	Uncommon					
Lathraea squamaria	Toothwort	Uncommon					
Lathyrus nissolia	Grass Vetchling	Uncommon					
Lathyrus sylvestris	Narrow-leaved Everlasting-pea	Uncommon					
Lemna trisulca	Ivy-leaved Duckweed	Uncommon				BNESBAP	
Linum bienne	Pale Flax	Scarce				BNESBAP	
Listera ovata	Common Twayblade	Uncommon					
Lithospermum officinale	Common Gromwell	Uncommon					
Lithospermum purpureocaeruleum	Purple Gromwell	Scarce	Rare			AVONBAP	

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Lonicera xylosteum	Fly Honeysuckle	Proposed BRERC Notable 2004	Vulnerable			AVONBAP	
Luzula multiflora	Heath Wood-rush	Scarce					
Luzula pilosa	Hairy Wood-rush	Uncommon					
Luzula sylvatica	Great Wood-rush	Scarce				BNESBAP	
Lychnis flos-cuculi	Ragged Robin	Uncommon					
Lysimachia nemorum	Yellow Pimpernel	Uncommon					
Malva neglecta	Dwarf Mallow	Uncommon					
Mentha aquatica x arvensis (M. x verticillata)	Whorled Mint	Scarce					
Mentha arvensis	Corn Mint	Uncommon					
Molinia caerulea	Purple Moor-grass	Scarce				BNESBAP	
Muscari neglectum	Grape-hyacinth	Proposed BRERC Notable 2004	Vulnerable			AVONBAP	
Myosotis discolor	Changing Forget-me-not	Scarce					
Myosotis laxa	Tufted Forget-me-not	Uncommon					
Myosotis ramosissima	Early Forget-me-not	Uncommon					
Myosoton aquaticum	Water Chickweed	Uncommon					
Nymphaea alba ssp. alba	a white water-lily	Scarce					
Ononis spinosa	Spiny Restharrow	Uncommon					
Orchis mascula	Early-purple Orchid	Uncommon					
Orchis morio	Green-winged Orchid	Scarce	Near Threatened			BNESBAP	
Orobanche minor	Common Broomrape	Uncommon					
Papaver dubium ssp. lecoqii	Yellow-juiced Poppy	Uncommon					
Pastinaca sativa	Wild Parsnip	Uncommon					
Pedicularis sylvatica ssp. sylvatica	a lousewort	Scarce					
Petasites hybridus	Butterbur	Uncommon					
Picris hieracioides	Hawkweed Oxtongue	Uncommon					
Plantago coronopus	Buck's-horn Plantain	Uncommon					
Platanthera chlorantha	Greater Butterfly-orchid	Scarce	Near Threatened				

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Poa compressa	Flattened Meadow-grass	Uncommon					
Poa humilis	Spreading Meadow-grass	Scarce				BNESBAP	
Polygala serpyllifolia	Heath Milkwort	Scarce					
Polygala vulgaris	Common Milkwort	Uncommon					
Polypodium cambricum	Southern Polypody	Rare				AVONBAP BNESBAP	
Polystichum aculeatum	Hard Shield-fern	Uncommon					
Populus nigra ssp. betulifolia	Black Poplar	Scarce					
Populus tremula	Aspen	Uncommon					
Potamogeton crispus	Curled Pondweed	Uncommon					
Potamogeton pusillus	Lesser Pondweed	Scarce				BNESBAP	
Potentilla anglica	Trailing Tormentil	Scarce					
Potentilla neumanniana	Spring Cinquefoil	Scarce	Scarce			AVONBAP	
Primula veris x vulgaris (P. x polyantha)	False Oxlip	Uncommon					
Quercus petraea	Sessile Oak	Uncommon					
Ranunculus aquatilis	Common Water-crowfoot	Scarce					
Ranunculus circinatus	Fan-leaved Water-crowfoot	Scarce				BNESBAP	
Ranunculus flammula	Lesser Spearwort	Uncommon					
Ranunculus penicillatus	Stream Water-crowfoot	Scarce				SOCC AVONBAP	
Ranunculus trichophyllus	Thread-leaved Water-crowfoot	Scarce				BNESBAP	
Ribes nigrum	Black Currant	Uncommon					
Rorippa microphylla	Narrow-fruited Water-cress	Scarce					
Rorippa sylvestris	Creeping Yellow-cress	Uncommon					
Rubia peregrina	Wild Madder	Uncommon				BNESBAP	
Rubus armeniacus	a bramble	Introduced					
Rubus conjungens	a bramble	Uncommon				BNESBAP	
Rubus dasyphyllus	a bramble	Uncommon				BNESBAP	
Rubus echinatus	a bramble	Uncommon				BNESBAP	
Rubus lanaticaulis	a bramble	Scarce				BNESBAP	
Rubus leyanus	a bramble	Scarce				BNESBAP	
Rubus lindleianus	a bramble	Uncommon				BNESBAP	
Rubus polyanthemus	a bramble	Scarce					

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
						BNESBAP	
Rubus pruinosus	a bramble	Uncommon				BNESBAP	
Rubus raduloides	a bramble	Uncommon				BNESBAP	
Rubus rossensis	a bramble	Rare	Scarce			AVONBAP BNESBAP	
Rubus rubritinctus	a bramble	Uncommon				BNESBAP	
Rubus trichodes	a bramble	Scarce	Scarce			AVONBAP BNESBAP	
Rubus troiensis	a bramble	Scarce	Scarce			AVONBAP BNESBAP	
Rubus winteri	a bramble	Scarce	Scarce			AVONBAP BNESBAP	
Rumex pulcher	Fiddle Dock	Scarce					
Ruscus aculeatus	Butcher's-broom	Scarce		EC Annex Vb	ECHD	AVONBAP	
Sagina apetala ssp. apetala	Annual Pearlwort	Scarce					
Sagina apetala ssp. erecta	Fringed Pearlwort	Uncommon					
Salix caprea ssp. caprea	a goat willow	Rare				AVONBAP BNESBAP	
Salix triandra	Almond Willow	Scarce					
Salix viminalis	Osier	Uncommon					
Salvia verbenaca	Wild Clary	Scarce					
Samolus valerandi	Brookweed	Scarce				BNESBAP	
Saxifraga tridactylites	Rue-leaved Saxifrage	Uncommon					
Scutellaria galericulata	Skullcap	Scarce				BNESBAP	
Sedum album	White Stonecrop	Uncommon					
Sedum forsterianum	Rock Stonecrop	Scarce	Scarce			AVONBAP	
Sedum telephium	Orpine	Scarce				BNESBAP	
Senecio aquaticus	Marsh Ragwort	Uncommon					
Serratula tinctoria	Saw-wort	Uncommon					
Silaum silaus	Pepper-saxifrage	Uncommon					
Solidago virgaurea	Goldenrod	Uncommon					
Sorbus aria sens.str.	Whitebeam	Uncommon					
Sorbus aucuparia	Rowan	Uncommon					
Spergula arvensis	Corn Spurrey	Scarce	Vulnerable				
Spiranthes spiralis	Autumn Lady's-tresses	Scarce	Near Threatened				

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Stachys arvensis	Field Woundwort	Scarce	Near Threatened				
Stellaria uliginosa	Bog Stitchwort	Uncommon					
Thlaspi arvense	Field Penny-cress	Uncommon					
Thymus pulegioides	Large Thyme	Uncommon					
Tilia cordata	Small-leaved Lime	Uncommon				BNESBAP	
Torilis nodosa	Knotted Hedge-parsley	Scarce					
Trifolium fragiferum	Strawberry Clover	Uncommon					
Trifolium medium	Zigzag Clover	Uncommon					
Trifolium scabrum	Rough Clover	Scarce				BNESBAP	
Trifolium striatum	Knotted Clover	Scarce					
Triglochin palustre	Marsh Arrowgrass	Scarce					
Ulex gallii	Western Gorse	Uncommon				SOCC AVONBAP	
Urtica urens	Small Nettle	Uncommon					
Vaccinium myrtillus	Bilberry	Rare				AVONBAP	
Valeriana dioica	Marsh Valerian	Scarce					
Valerianella carinata	Keeled-fruited Cornsalad	Uncommon					
Valerianella locusta	Common Cornsalad	Uncommon					
Verbascum blattaria	Moth Mullein	Scarce					
Verbascum virgatum	Twiggy Mullein	Rare	Scarce			AVONBAP	
Veronica agrestis	Green Field-speedwell	Uncommon					
Veronica officinalis	Heath Speedwell	Uncommon					
Vicia sylvatica	Wood Vetch	Scarce					
Vulpia bromoides	Squirrel-tail Fescue	Uncommon					
Reptile							
Vipera berus	Adder	Uncommon / Declining	Unknown	Bern App III	Sch 5 W&CA 1981	SOCC AVONBAP BNESBAP	
Scorpion Fly (including Snow Flea)							
Panorpa cognata	a scorpion fly	Rare	Local			AVONBAP BNESBAP	
True Fly -							

Latin Name	Common Name	BRERC Area Status	National Status	International Status	Legal Protection	UKAP	RSPB
Dorylomorpha hungarica	a big-headed fly	Proposed BRERC Notable 2004	Notable/Nb			AVONBAP	
Psacadina verbekei	a snail-killing fly	?	N			AVONBAP	
Pipizella virens	a hoverfly	2 recs.	Nb			AVONBAP	
Pipizella virens	a hoverfly	2 recs.	Nb			AVONBAP	
Asilus crabroniformis	a robber fly	Rare	Notable/Nb			UKAP AVONBAP BNESBAP	
Hercostomus plagiatus	a dolichopodid fly	Proposed BRERC Notable 2004	Notable/Nb			AVONBAP	
Oxycera morrisii	a soldier fly	?	N			AVONBAP	
Oxycera pygmaea	a soldier fly	Proposed BRERC Notable 2004	Notable/Nb			AVONBAP	
Vanoyia tenuicornis	a soldier fly	?	Nb			AVONBAP	

Somerset Environmental Records Centre

Column headings signify: 1 = AMBER; 2 = RED; 3 = FEP; 4 = EURO NON PRIORITY; 5 = EURO PRIORITY; 6 = EURO PROTECTED; 7 = RED LIST; 8 = NOTABLE; 9 = NATIONALLY SCARCE; 10 = BAP; 11 = UK Protected; 12 = County Notable; 13 = LBAP

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
AMPHIBIAN														
Triturus cristatus	Warty Newt			1	1		1	1			1	1	1	1
Triturus helveticus	Palmate Newt												1	
Triturus vulgaris	Smooth Newt												1	
BIRD														
Accipiter gentilis	Goshawk						1	1					1	
Accipiter nisus	Sparrowhawk						1							
Alauda arvensis	Skylark		1	1							1		1	1
Alcedo atthis	Kingfisher	1		1		1	1	1					1	
Alectoris rufa	Red-legged Partridge							1						
Anas penelope	Wigeon	1					1	1					1	
Anas platyrhynchos	Mallard						1							
Anas strepera	Gadwall	1					1	1					1	
Anser anser	Greylag Goose	1					1	1					1	
Anthus pratensis	Meadow Pipit	1					1							

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Anthus trivialis	Tree Pipit	1					1							
Ardea cinerea	Grey Heron												1	
Asio flammeus	Short-eared Owl	1		1		1	1	1					1	
Asio otus	Long-eared Owl						1						1	1
Athene noctua	Little Owl						1						1	
Aythya fuligula	Tufted Duck						1							
Branta canadensis	Canada Goose						1					1		
Branta leucopsis	Barnacle Goose	1		1		1	1	1					1	
Bucephala clangula	Goldeneye	1					1	1					1	
Buteo buteo	Buzzard						1	1						
Calidris alpina	Dunlin	1		1			1	1					1	
Caprimulgus europaeus	Nightjar		1	1		1	1	1			1		1	1
Carduelis cannabina	Linnet		1	1			1	1			1		1	1
Carduelis carduelis	Goldfinch	1					1						1	
Carduelis chloris	Greenfinch						1							
Carduelis spinus	Siskin						1							
Certhia familiaris	Treecreeper						1							
Cinclus cinclus	Dipper						1	1						
Circus aeruginosus	Marsh Harrier	1	1	1		1	1	1					1	
Circus cyaneus	Hen Harrier		1	1		1	1	1					1	
Circus pygargus	Montagu's Harrier	1		1		1	1	1					1	
Corvus corax	Raven							1						
Coturnix coturnix	Quail		1					1					1	
Crex crex	Corncrake		1	1		1	1	1			1		1	
Cuculus canorus	Cuckoo	1												
Cygnus olor	Mute Swan	1					1							
Delichon urbica	House Martin	1					1							
Dendrocopos major	Great Spotted Woodpecker						1							
Dendrocopos minor	Lesser Spotted Woodpecker		1	1			1						1	1
Egretta garzetta	Little Egret	1				1	1						1	
Emberiza cirlus	Cirl Bunting		1	1			1	1			1		1	
Emberiza citrinella	Yellowhammer		1	1			1							1
Emberiza schoeniclus	Reed Bunting		1	1			1				1		1	1
Erithacus rubecula	Robin						1							
Falco columbarius	Merlin	1	1	1		1	1	1					1	1
Falco peregrinus	Peregrine	1				1	1	1					1	
Falco subbuteo	Hobby						1						1	
Falco tinnunculus	Kestrel	1		1			1						1	
Ficedula hypoleuca	Pied Flycatcher						1						1	
Gallinago gallinago	Snipe	1		1			1	1					1	1
Gavia immer	Great Northern Diver	1				1	1	1					1	
Hirundo rustica	Swallow	1					1	1					1	
Jynx torquilla	Wryneck		1				1	1			1		1	
Lanius collurio	Red-backed Shrike		1			1	1	1			1		1	
Larus argentatus	Herring Gull	1						1					1	
Larus canus	Common Gull	1											1	
Larus fuscus	Lesser Black-backed Gull	1											1	
Larus ridibundus	Black-headed Gull	1												

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Locustella naevia	Grasshopper Warbler	1	1										1	
Loxia curvirostra	Crossbill						1						1	
Lullula arborea	Woodlark		1	1		1		1			1		1	
Luscinia megarhynchos	Nightingale	1					1	1					1	
Lymnocryptes minimus	Jack Snipe	1					1						1	
Mergus albellus	Smew					1	1							
Mergus merganser	Goosander						1	1					1	1
Miliaria calandra	Corn Bunting		1	1				1			1		1	
Milvus milvus	Red Kite	1	1	1		1	1	1					1	
Motacilla cinerea	Grey Wagtail	1					1							
Muscicapa striata	Spotted Flycatcher		1	1			1	1			1		1	
Numenius arquata	Curlew	1		1			1	1					1	1
Numenius phaeopus	Whimbrel	1					1	1					1	
Oenanthe oenanthe	Wheatear			1			1	1						
Parus ater	Coal Tit						1							
Parus caeruleus	Blue Tit						1							
Parus major	Great Tit						1							
Parus montanus	Willow Tit	1	1	1			1						1	
Parus palustris	Marsh Tit	1	1				1						1	
Passer domesticus	House Sparrow		1											1
Passer montanus	Tree Sparrow		1	1				1			1		1	1
Perdix perdix	Grey Partridge		1	1				1			1		1	1
Phoenicurus ochruros	Black Redstart	1					1	1					1	
Phoenicurus phoenicurus	Redstart	1					1	1					1	
Phylloscopus sibilatrix	Wood Warbler	1						1					1	
Phylloscopus trochilus	Willow Warbler	1												
Picus viridis	Green Woodpecker	1					1						1	
Pluvialis apricaria	Golden Plover	1		1		1	1	1					1	
Podiceps cristatus	Great Crested Grebe												1	
Prunella modularis	Dunnock	1		1			1						1	
Pyrrhula pyrrhula	Bullfinch		1	1							1		1	1
Regulus ignicapillus	Firecrest	1						1					1	
Regulus regulus	Goldcrest	1												
Saxicola rubetra	Whinchat						1	1					1	
Saxicola torquata	Stonechat	1					1	1					1	
Scolopax rusticola	Woodcock	1					1						1	
Sitta europaea	Nuthatch						1							
Streptopelia turtur	Turtle Dove		1	1				1			1		1	
Strix aluco	Tawny Owl						1							
Sturnus vulgaris	Starling	1	1	1										
Sylvia communis	Whitethroat							1						
Sylvia undata	Dartford Warbler	1	1	1		1		1					1	
Tringa ochropus	Green Sandpiper	1					1						1	
Troglodytes troglodytes	Wren						1							
Turdus iliacus	Redwing	1						1					1	
Turdus merula	Blackbird	1											1	
Turdus philomelos	Song Thrush	1	1	1				1			1		1	1
Turdus pilaris	Fieldfare	1						1					1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Turdus torquatus	Ring Ouzel	1	1	1			1	1					1	
Turdus viscivorus	Mistle Thrush	1												1
Tyto alba	Barn Owl	1		1			1	1				1	1	1
Vanellus vanellus	Lapwing	1		1			1	1					1	1
CRUSTACEAN														
Asellus cavaticus	a water slater												1	1
Asellus meridianus	a water slater													1
FERN														
Adiantum capillus-veneris	Maidenhair Fern			1						1				
Botrychium lunaria	Moonwort												1	
Cystopteris fragilis	Brittle Bladder-fern												1	
Dryopteris carthusiana	Narrow Buckler-fern												1	1
Gymnocarpium dryopteris	Oak Fern			1				1					1	1
Gymnocarpium robertianum	Limestone Fern			1				1		1			1	1
Ophioglossum vulgatum	Adder's-tongue												1	1
Oreopteris limbosperma	Lemon-scented Fern												1	
Osmunda regalis	Royal Fern												1	1
Polypodium cambricum	Southern Polypody												1	
Polystichum aculeatum	Hard Shield-fern												1	
FLOWERING PLANT														
Achillea ptarmica	Sneezewort												1	
Aconitum napellus	Monk's-hood			1						1			1	
Adoxa moschatellina	Moschatel			1				1						
Agrostemma githago	Corncockle			1				1						
Agrostis curtisii	Bristle Bent												1	
Agrostis vinealis	Brown Bent												1	
Aira caryophyllea	Silver Hair-grass												1	
Aira praecox	Early Hair-grass												1	
Alchemilla filicaulis subsp. vestita	a lady's-mantle												1	
Alchemilla vulgaris agg.	Lady's-mantle												1	
Anacamptis pyramidalis	Pyramidal Orchid												1	
Anagallis minima	Chaffweed												1	1
Anagallis tenella	Bog Pimpernel												1	
Anthemis cotula	Stinking Chamomile			1										1
Anthyllis vulneraria	Kidney Vetch												1	
Aphanes inexspectata	Slender Parsley-piert												1	
Apium inundatum	Lesser Marshwort												1	
Arabis hirsuta	Hairy Rock-cress												1	
Arenaria serpyllifolia	Thyme-leaved Sandwort						1							
Asparagus officinalis	Asparagus							1						
Asperula cynanchica subsp. cynanchica	Squinancywort												1	
Astragalus glycyphyllos	Wild Liquorice												1	
Baldellia ranunculoides	Lesser Water-plantain												1	1
Berula erecta	Lesser Water-parsnip												1	
Blackstonia perfoliata	Yellow-wort												1	
Brachypodium pinnatum	Tor-grass												1	
Bromopsis erecta	Upright Brome												1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Bromus racemosus	Smooth Brome							1						
Buxus sempervirens	Box			1				1						
Calamagrostis epigejos	Wood Small-reed							1					1	
Callitriche obtusangula	Blue-fruited Water-starwort												1	
Callitriche platycarpa	Various-leaved Water-starwort												1	
Campanula glomerata	Clustered Bellflower												1	
Campanula patula	Spreading Bellflower			1						1				
Campanula persicifolia	Peach-leaved Bell-flower			1				1						
Campanula rotundifolia	Harebell												1	
Campanula trachelium	Nettle-leaved Bellflower							1					1	
Cardamine impatiens	Narrow-leaved Bitter-cress			1				1		1			1	1
Carduus nutans	Musk Thistle							1						
Carduus tenuiflorus	Slender Thistle												1	
Carex acutiformis	Lesser Pond-sedge												1	
Carex binervis	Green-ribbed Sedge												1	
Carex depauperata	Starved Wood-sedge			1				1				1	1	1
Carex digitata	Fingered Sedge			1						1				
Carex distans	Distant Sedge												1	
Carex disticha	Brown Sedge												1	
Carex echinata	Star Sedge			1				1			1		1	
Carex hostiana	Tawny Sedge												1	
Carex humilis	Dwarf Sedge			1						1			1	1
Carex montana	Soft-leaved Sedge			1						1			1	1
Carex muricata subsp. lamprocarpa	Prickly Sedge			1				1			1			
Carex otrubae	False Fox-sedge			1				1			1			
Carex pallescens	Pale Sedge												1	
Carex paniculata	Greater Tussock-sedge												1	
Carex pilulifera	Pill Sedge												1	
Carex pulicaris	Flea Sedge												1	
Carex rostrata	Bottle Sedge												1	
Carex strigosa	Thin-spiked Wood-sedge												1	
Carex vesicaria	Bladder-sedge												1	
Carex viridula subsp. brachyrrhyncha	Long-stalked Yellow Sedge												1	1
Carlina vulgaris	Carline Thistle												1	
Catabrosa aquatica	Whorl-grass												1	
Centaurea scabiosa	Greater Knapweed												1	
Centaurium erythraea	Common Centaury							1						
Centaurium erythraea var. capitatum								1					1	
Centaurium pulchellum	Lesser Centaury							1				1		
Cerastium arvense	Field Mouse-ear												1	
Cerastium pumilum	Dwarf Mouse-ear			1						1			1	1
Cerastium semidecandrum	Little Mouse-ear												1	
Ceratophyllum demersum	Rigid Hornwort / Hornwort												1	
Chenopodium bonus-henricus	Good King Henry													1
Chenopodium murale	Nettle-leaved Goosefoot												1	1
Chrysanthemum segetum	Corn Marigold			1									1	1
Cirsium dissectum	Meadow Thistle												1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Cirsium eriophorum	Woolly Thistle												1	
Clinopodium acinos	Basil Thyme							1					1	1
Clinopodium ascendens	Common Calamint									1				
Cochlearia pyrenaica	Pyranean Scurvygrass												1	
Coeloglossum viride	Frog Orchid												1	1
Colchicum autumnale	Meadow Saffron							1					1	1
Convallaria majalis	Lily of the Valley												1	
Cruciata laevipes	Crosswort												1	
Cyperus longus	Galingale / Sweet Galingale			1						1				1
Dactylorhiza incarnata	Early Marsh-orchid												1	
Dactylorhiza maculata subsp. ericetorum	a heath spotted-orchid												1	
Dactylorhiza praetermissa	Southern Marsh-orchid												1	
Dactylorhiza traunsteineri	Narrow-leaved Marsh Orchid			1						1				
Daphne laureola	Spurge-laurel												1	
Dianthus armeria	Deptford Pink			1				1		1	1	1	1	
Dianthus gratianopolitanus	Cheddar Pink			1				1				1	1	1
Dipsacus pilosus	Small Teasel / Shepherd's [illegible]												1	
Draba incana	Hoary Whitlowgrass							1						
Draba muralis	Wall Whitlowgrass			1						1			1	
Drosera rotundifolia	Round-leaved Sundew												1	
Echium vulgare	Viper's Bugloss												1	
Eleocharis multicaulis	Many-stalked Spike-rush / Many-stemmed Spike-rush												1	
Eleogiton fluitans	Floating Club-rush												1	
Elodea nuttallii	Nuttall's Water-weed / Esthwaite Water-weed							1						
Epipactis helleborine	Broad-leaved Helleborine												1	
Epipactis leptochila	Narrow-lipped Heleborine							1		1			1	1
Epipactis leptochila agg.	Narrow-lipped Helleborine			1						1				
Epipactis muelleri	Narrow-lipped Heleborine									1				
Equisetum fluviatile	Water Horsetail												1	
Erica cinerea	Bell Heather												1	
Erica tetralix	Cross-leaved Heath												1	
Erigeron acer	Blue Fleabane			1				1						
Eriophorum angustifolium	Common Cottongrass												1	
Eriophorum latifolium	Broad-leaved Cottongrass												1	
Eriophorum vaginatum	Hare's-tail Cottongrass / Harestail												1	
Erodium maritimum	Sea Stork's-bill												1	
Erodium moschatum	Musk Stork's-bill			1						1			1	
Erophila glabrescens	Glabrous Whitlowgrass												1	
Euphorbia amygdaloides	Wood Spurge												1	
Euphorbia exigua	Dwarf Spurge													1
Euphrasia anglica	Glandular Eyebright													1
Fallopia japonica	Japanese Knotweed											1		
Festuca brevipila	Hard Fescue							1						
Filago vulgaris	Common Cudweed												1	1
Filipendula vulgaris	Dropwort							1					1	
Frangula alnus	Alder Buckthorn			1				1					1	
Fumaria bastardii	Tall Ramping-fumitory			1									1	
Fumaria capreolata	White Ramping-fumitory												1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Gagea lutea	Yellow Star-of-Bethlehem												1	
Galium fleurotii	a bedstraw			1				1		1				
Galium pumilum	Slender Bedstraw			1				1		1			1	1
Galium uliginosum	Fen Bedstraw												1	
Gastridium ventricosum	Nit-grass			1				1		1			1	
Genista tinctoria subsp. tinctoria	Dyer's Greenweed												1	
Gentianella amarella	Autumn Gentian												1	
Geranium purpureum	Little-Robin			1				1		1			1	
Geranium pusillum	Small-flowered Crane's-bill												1	
Geranium sanguineum	Bloody Crane's-bill												1	
Groenlandia densa	Opposite-leaved Pondweed							1					1	1
Gymnadenia conopsea	Fragrant Orchid												1	
Helianthemum apenninum	White Rock-rose			1				1					1	1
Helianthemum nummularium	Common Rock-rose							1					1	
Helictotrichon pratense	Meadow Oat-grass												1	
Helleborus foetidus	Stinking Hellebore			1						1			1	
Helleborus viridis	Green Hellebore												1	
Heracleum mantegazzianum	Giant Hogweed											1		
Hippocrepis comosa	Horseshoe Vetch												1	
Hippophae rhamnoides	Sea-buckthorn			1						1				
Hippuris vulgaris	Mare's-tail												1	
Hordeum secalinum	Meadow Barley							1						
Hornungia petraea	Hutchinsia			1						1			1	
Hottonia palustris	Water-violet			1				1					1	1
Hyacinthoides non-scripta	Bluebell			1								1		
Hydrocharis morsus-ranae	Frogbit												1	1
Hydrocotyle vulgaris	Marsh Pennywort												1	
Hypericum hirsutum	Hairy St. John's-wort							1						
Hypericum maculatum	Imperforate St. John's-wort									1				
Hypericum maculatum subsp. obtusiusculum	Imperforate St J's-wort												1	
Hypericum montanum	Pale St. John's-wort												1	1
Hypochaeris glabra	Smooth Cat's-ear			1				1		1			1	1
Inula conyzae	Ploughman's-spikenard												1	
Juncus acutus	Sharp Rush			1						1			1	
Juncus foliosus	Leafy Rush												1	
Juncus squarrosus	Heath Rush												1	
Juncus subnodulosus	Blunt-flowered Rush												1	
Juncus tenuis	Slender Rush							1						
Kickxia elatine	Sharp-leaved Fluellen							1						
Koeleria macrantha	Crested Hair-grass												1	
Koeleria vallesiana	Somerset Hair-grass			1				1					1	1
Lamiastrum galeobdolon	Yellow Archangel							1						
Lamiastrum galeobdolon subsp. argentatum	Garden Yellow Archangel							1						
Lamiastrum galeobdolon subsp. montanum	Yellow Archangel							1						
Lathraea squamaria	Toothwort												1	
Lathyrus aphaca	Yellow Vetchling			1						1			1	1
Lathyrus linifolius var. montanus	a bitter-vetch												1	

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Lathyrus sylvestris	Narrow-leaved Everlasting-pea												1	
Lepidium heterophyllum	Smith's Pepperwort / Smith's Cress / Downy Pepperwort			1									1	
Linum bienne	Pale Flax												1	
Listera ovata	Common Twayblade													1
Lithospermum officinale	Common Gromwell												1	
Lithospermum purpureocaeruleum	Purple Gromwell / Blue Gromwell							1						
Littorella uniflora	Shoreweed												1	
Lotus glaber	Narrow-leaved Bird's-foot-trefoil							1		1			1	
Lotus subbiflorus	Hairy Bird's-foot-trefoil			1				1		1				
Luzula sylvatica	Great Wood-rush												1	
Marrubium vulgare	White Horehound			1						1			1	
Meconopsis cambrica	Welsh Poppy			1						1				
Melampyrum pratense	Common Cow-wheat												1	
Menyanthes trifoliata	Bogbean			1									1	
Minuartia verna	Spring Sandwort			1						1			1	1
Muscari neglectum	Grape-hyacinth			1				1						1
Myosotis ramosissima	Early Forget-me-not												1	
Myriophyllum alterniflorum	Alternate Water-milfoil / Alternate-leaved Water-milfoil												1	
Narcissus pseudonarcissus subsp. pseudonarcissus	Daffodil												1	
Nardus stricta	Mat-grass												1	
Narthecium ossifragum	Bog Asphodel												1	
Neottia nidus-avis	Bird's-nest Orchid			1									1	1
Oenanthe fistulosa	Tubular Water-dropwort												1	1
Oenanthe pimpinelloides	Corky-fruited Water-dropwort							1						
Ononis spinosa	Spiny Restharrow												1	
Ophrys apifera	Bee Orchid			1									1	
Orchis morio	Green-winged Orchid			1				1					1	
Orobanche hederae	Ivy Broomrape			1						1			1	
Orobanche minor	Common Broomrape							1						
Paris quadrifolia	Herb Paris												1	
Pastinaca sativa subsp. sativa var. sylvestris													1	
Pedicularis palustris	Marsh Lousewort												1	
Pedicularis sylvatica subsp. sylvatica	Lousewort												1	
Persicaria bistorta	Common Bistort												1	
Pimpinella major	Greater Burnet-saxifrage												1	1
Pinus sylvestris	Scots Pine			1						1				
Plantago coronopus	Buck's-horn Plantain												1	
Platanthera bifolia	Lesser Butterfly-orchid												1	1
Platanthera chlorantha	Greater Butterfly-orchid												1	1
Polemonium caeruleum	Jacob's-ladder			1				1						
Polygala serpyllifolia	Heath Milkwort												1	
Polygala vulgaris	Common Milkwort												1	
Polygonatum multiflorum	Solomon's-seal												1	
Polygonatum odoratum	Angular Solomon's-Seal			1						1			1	
Populus nigra subsp. betulifolia	Black Poplar			1									1	

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Potamogeton crispus	Curled Pondweed / Curly Pondweed												1	
Potamogeton lucens	Shining Pondweed												1	
Potamogeton obtusifolius	Blunt-leaved Pondweed												1	
Potamogeton polygonifolius	Bog Pondweed												1	
Potentilla argentea	Hoary Cinquefoil													1
Potentilla neumanniana	Spring Cinquefoil			1						1			1	
Potentilla tabernaemontani	Spring Cinquefoil									1				
Prunella laciniata	Cut-leaved Selfheal												1	1
Quercus petraea	Sessile Oak			1									1	
Ranunculus lingua	Greater Spearwort												1	
Ranunculus peltatus	Pond Water-crowfoot												1	
Ranunculus trichophyllus	Thread-leaved Water-crowfoot												1	
Reseda lutea	Wild Mignonette												1	
Rhinanthus minor	Yellow-rattle												1	
Ribes alpinum	Mountain Currant			1						1				
Rorippa palustris	Marsh Yellow-cress							1						
Rosa agrestis	Small-leaved Sweet-briar			1									1	1
Rosa micrantha	Small-flowered Sweet-briar			1									1	
Rosa pimpinellifolia	Burnet Rose			1									1	
Rosa rubiginosa	Sweet Briar (sens str.)			1									1	
Rosa sherardii	Sherard's Downy-rose			1									1	
Rumex hydrolapathum	Water Dock												1	
Sagina apetala subsp. apetala	Annual Pearlwort												1	
Sagina nodosa	Knotted Pearlwort												1	
Salvia verbenaca	Wild Clary							1					1	
Sanguisorba officinalis	Great Burnet							1					1	
Saxifraga hypnoides	Mossy Saxifrage												1	1
Scabiosa columbaria	Small Scabious												1	
Schoenus nigricans	Black Bog-rush												1	1
Scutellaria minor	Lesser Skullcap												1	
Sedum anglicum	English Stonecrop												1	
Sedum forsterianum	Rock Stonecrop			1						1				
Sedum telephium	Orpine												1	
Serratula tinctoria	Saw-wort							1					1	
Silene uniflora	Sea Campion												1	
Solidago virgaurea	Goldenrod												1	
Sorbus anglica	a whitebeam			1				1					1	1
Sorbus eminens	a whitebeam			1				1					1	1
Sorbus porrigentiformis	a whitebeam			1						1			1	1
Sorbus torminalis	Wild Service-tree			1									1	
Sparganium natans	Least Bur-reed												1	
Spergula arvensis	Corn Spurrey													1
Spiranthes spiralis	Autumn Lady's-tresses												1	1
Stachys arvensis	Field Woundwort			1										1
Stachys officinalis	Betony			1				1						
Stellaria pallida	Lesser Chickweed												1	
Stellaria palustris	Marsh Stitchwort												1	1
Thalictrum flavum	Common Meadow-rue												1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Thalictrum minus subsp. minus	Lesser Meadow-rue												1	
Thlaspi caerulescens	Alpine Penny-cress			1						1			1	
Thymus polytrichus	Wild Thyme							1					1	
Thymus pulegioides	Large Thyme												1	
Tilia cordata	Small-leaved Lime			1									1	
Tilia platyphyllos	Large-leaved Lime			1						1				
Torilis arvensis	Spreading Hedge-parsley			1						1	1		1	1
Trichophorum cespitosum subsp. germanicum	Deer Grass												1	
Trifolium scabrum	Rough Clover												1	
Trinia glauca	Honewort			1				1					1	1
Typha angustifolia	Lesser Bulrush												1	
Valeriana dioica	Marsh Valerian												1	
Verbascum lychnitis	White Mullein			1						1			1	
Verbascum virgatum	Twiggy Mullein			1						1				
Veronica anagallis-aquatica	Blue Water-speedwell / Water Speedwell												1	
Vicia bithynica	Bithynian Vetch			1						1			1	1
Vicia lathyroides	Spring Vetch							1					1	
Vicia orobus	Wood Bitter-vetch							1					1	1
Vicia parviflora	Slender Tare			1						1			1	1
Vicia sylvatica	Wood Vetch												1	
Viola canina subsp. canina	Heath Dog-violet												1	1
Viola hirta	Hairy Violet							1						
Viola lutea	Mountain Pansy												1	
Viola palustris subsp. palustris	Bog Violet												1	
FUNGUS														
Agrocybe semiorbicularis	an agaric							1						
Collybia acervata	a basidiomycete fungus												1	
Cortinarius cinnamomeoluteus	an agaric												1	
Daedaleopsis confragosa	a basidiomycete fungus							1						
Entoloma prunuloides	a basidiomycete fungus												1	
Geastrum pectinatum	Beaked Earthstar												1	
Geastrum triplex	Collared Earthstar												1	
Geoglossum fallax	an ascomycete fungus												1	
Gomphidius maculatus	a bolete												1	
Grifola frondosa	a basidiomycete fungus												1	
Gymnopilus hybridus	an agaric							1						
Hygrocybe calyptraeformis	Ballerina Waxcap			1				1			1		1	
Hygrocybe cantharellus	a basidiomycete fungus												1	
Hygrocybe fornicata	a basidiomycete fungus												1	
Hygrocybe insipida	a basidiomycete fungus												1	
Hygrocybe intermedia	a basidiomycete fungus												1	
Hygrocybe nitrata	a basidiomycete fungus												1	
Hygrocybe ovina	a basidiomycete fungus												1	
Hygrocybe punicea	Crimson Wax-cap												1	
Hygrocybe quieta	a basidiomycete fungus												1	
Hygrocybe unguinosa	a basidiomycete fungus												1	
Hygrophorus hypothejus	Herald of Winter												1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Leptonia dichroa	a basidiomycete fungus												1	
Melanophyllum eyrei	an agaric												1	
Microglossum viride	an ascomycete fungus												1	
Mutinus caninus	Dog Stinkhorn												1	
Mycena rubromarginata	a basidiomycete fungus												1	
Porpoloma metapodium	a basidiomycete fungus							1					1	
Psorotichia schaereri	an ascomycete fungus									1			1	
Pyrenula chlorospila	a lichen or fungus							1					1	
Ramaria stricta	a basidiomycete fungus							1						
Strigula taylorii	an ascomycete fungus									1			1	
INSECT														
Lithobius variegatus	a centipede							1						
Macrosteles quadripunctulatus	a leafhopper													1
Meta bourneti	an orb-weaver spider												1	
Monocephalus castaneipes	a money spider													1
Pachymerium ferrugineum	a centipede												1	
Pelecopsis radicicola	a money spider							1					1	1
Psammotettix nodosus	a leafhopper							1						
Tetrix subulata	Slender Ground Hopper												1	
Trachyzelotes pedestris	a ground spider												1	
INSECT - beetle (Coleoptera)														
Agabus conspersus	a water beetle												1	
Agabus labiatus	a water beetle								1				1	
Agabus uliginosus	a water beetle												1	
Agabus unguicularis	a water beetle								1				1	
Alophus triguttatus	a weevil												1	
Amara curta	a ground beetle								1				1	
Ampedus elongantulus	a click beetle								1				1	
Anaglyptus mysticus	a longhorn beetle								1				1	
Bagous lutulentus	a weevil												1	
Brachinus crepitans	Bombardier Beetle								1				1	
Bruchus atomarius	a seed beetle								1				1	
Calodera protensa	a rove beetle							1					1	
Calomicrus circumfusus	a leaf beetle												1	
Cantharis fusca	a soldier beetle							1					1	1
Carabus monilis	a ground beetle								1				1	
Cercyon convexiusculus	a scavenger water beetle								1				1	
Ceutorhynchus trimaculatus	a weevil												1	
Chrysolina haemoptera	Plantain Leaf Beetle												1	
Chrysolina violacea	a leaf beetle												1	
Coccinella quinquepunctata	Five-spot Ladybird							1						
Cryptocephalus aureolus	a leaf beetle												1	
Cryptocephalus bipunctatus	a leaf beetle												1	
Ctenicera pectinicornis	a click beetle												1	
Dorytomus salicis	a weevil												1	
Enochrus ochropterus	a scavenger water beetle								1				1	
Eutrichapion (Psilocalymma) punctigerum	a seed weevil												1	
Geotrupes vernalis	Spring Dumbledor												1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Gymnetron melanarium	a weevil								1				1	
Harpalus azureus	a ground beetle												1	
Harpalus dimidiatus	a ground beetle										1		1	1
Helochares punctatus	a scavenger water beetle							1					1	
Hydrochus angustatus	a scavenger water beetle												1	
Hydroglyphus pusillus	a water beetle								1				1	
Hydrophilus piceus	Great Silver Water Beetle							1					1	1
Hydroporus longulus	a water beetle								1				1	
Hydroporus obsoletus	a water beetle								1				1	
Ilybius aenescens	a water beetle								1				1	
Laccornis oblongus	a water beetle							1					1	1
Lamprosoma concolor	a leaf beetle												1	
Licinus depressus	a ground beetle												1	
Licinus punctatulus	a ground beetle												1	
Meligethes solidus	a pollen or sap beetle												1	
Miarus graminis	a weevil							1	1				1	
Oncomera femorata	a thick-legged flower beetle												1	
Onthophagus vacca	a dung beetle or chafer								1				1	
Paederus fuscipes	a rove beetle								1				1	
Platyrhinus resinosus	Cramp-ball Fungus Weevil												1	
Pterostichus oblongopunctatus	a ground beetle												1	
Ptinomorphus imperialis	a wood boring beetle								1				1	
Rhantus grapii	a water beetle												1	
Rhyparochromus pini	a ground bug												1	
Sciocoris cursitans	a shield bug												1	
Sitona waterhousei	a weevil								1				1	
Stenus niveus	a rove beetle								1				1	
Strophosoma faber	a weevil												1	
Trachyphloeus alternans	a weevil												1	
Tychius squamulatus	a weevil								1				1	
Xyloterus signatus	a bark or ambrosia beetle							1					1	
INSECT - butterfly														
Argynnis adippe	High Brown Fritillary			1				1			1			
Boloria euphrosyne	Pearl Bordered Fritillary			1							1			
Boloria selene	Small Pearl-bordered Fritillary													1
Cupido minimus	Small Blue			1										1
Erynnis tages	Dingy Skipper													1
Euphydryas aurinia	Marsh Fritillary			1	1		1	1	1		1	1		
Eurodryas aurinia	Marsh Fritillary			1	1		1	1			1	1		1
Hipparchia semele	Grayling													1
Lasiommata megera	Wall													1
Lysandra bellargus	Adonis Blue			1							1			
Maculinea arion	Large Blue			1			1	1			1	1		1
Plebejus argus	Silver-studded Blue			1							1			
Pyrgus malvae	Grizzled Skipper			1										1
Satyrium w-album	White Letter Hairstreak													1
INSECT - dragonfly (Odonata)														
Aeshna juncea	Common Hawker												1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Aeshna mixta	Migrant Hawker												1	
Brachytron pratense	Hairy Dragonfly												1	
Calopteryx splendens	Banded Demoiselle												1	
Cordulia aenea	Downy Emerald												1	1
Erythromma najas	Red-eyed Damselfly												1	
Lestes sponsa	Emerald Damselfly													1
Orthetrum cancellatum	Black-tailed Skimmer												1	
Orthetrum coerulescens	Keeled Skimmer												1	
Sympetrum sanguineum	Ruddy Darter												1	
INSECT - earwig (Dermaptera)														
Forficula lesnei	an earwig												1	1
INSECT - hymenopteran														
Andrena bucephala	a solitary bee							1						
Dolichovespula media	a social wasp							1						
Myrmica schencki	an ant												1	
INSECT - moth														
Acompsia schmidtiellus									1					
Adscita geryon	Cistus Forester													1
Adscita statices	Forester													1
Agonopterix nanatella													1	
Agrotis cinerea	Light Feathered Rustic								1					
Apamea sublustris	Reddish Light Arches								1					
Atolmis rubricollis	Red-necked Footman								1					
Bembecia ichneumoniformis	Six-belted Clearwing								1					
Celypha woodiana								1					1	1
Coleophora conyzae									1				1	
Conistra rubiginea	Dotted Chestnut								1					
Cosmia affinis	Lesser-spotted Pinion													1
Cosmia diffinis	White-spotted Pinion										1			
Crambus lathoniellus									1					
Cryphia muralis	Marbled Green								1					
Cyclophora annularia	Mocha								1					
Cyclophora annulata	Mocha								1					
Deileptenia ribeata	Satin Beauty								1					
Dioryctria abietella	a pyralid moth							1						
Discoloxia blomeri	Blomer's Rivulet								1					
Drepana cultraria	Barred Hook-tip								1					
Egira conspicillaris	Silver Cloud								1					
Eilema sororcula	Orange Footman								1					
Elegia similella								1					1	
Epinotia demarniana									1				1	
Eriocrania chrysolepidella													1	
Ethmia quadrillella								1	1					
Eucosmomorpha albersana									1				1	
Euleioptilus carphodactyla									1					
Eupithecia dodoneata	Oak-tree Pug								1					
Eupithecia trisignaria	Triple-spotted Pug								1					
Eupithecia valerianata	Valerian Pug								1					

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Eupithecia virgaureata	Golden-rod Pug								1					
Evergestis pallidata									1					
Hemaris tityus	Narrow-bordered Bee Hawk			1							1			1
Hydrelia sylvata	Waved Carpet			1					1		1			1
Idaea sylvestraria	Dotted-border Wave								1					
Lacanobia contigua	Beautiful Brocade								1					
Lithophane hepatica	Pale Pinion								1					
Merrifieldia tridactyla								1						
Metzneria aestivella									1					
Metzneria aprilella													1	
Mompha langiella									1				1	
Mompha terminella									1				1	
Mythimna obsoleta	Obscure Wainscot								1					
Nephopterix angustella									1				1	
Oncocera semirubella	a pyralid moth												1	
Pancalia leuwenhoekella													1	
Paradarisa consonaria	Square Spot								1					
Paradarisa extersaria	Brindled White-spot								1					
Parasemia plantaginis	Wood Tiger													1
Parectropis similaria	Brindled White-spot								1					
Perconia strigillaria	Grass Wave								1					
Phlyctaenia stachydalis								1					1	
Phyllonorycter comparella									1					
Platyptilia ochrodactyla													1	
Psychoides filicivora									1				1	
Pterophorus spilodactylus								1					1	1
Recurvaria leucatella													1	
Sorhagenia lophyrella													1	
Synanthedon andrenaeformis	Orange-tailed Clearwing								1					
Thisanotia chrysonuchella													1	
Watsonalla cultraria	Barred Hook-tip								1					
INSECT - orthopteran														
Conocephalus discolor	Long-winged Conehead							1					1	1
Gomphocerippus rufus	Rufous Grasshopper												1	1
Microvelia reticulata	a water-cricket							1						
Stenobothrus lineatus	Stripe-Winged Grasshopper												1	1
Tettigonia viridissima	Great Green Bush Cricket												1	1
INSECT - true bug (Hemiptera)														
Dicranocephalus medius	a spurgebug												1	
Sigara dorsalis	a waterboatman							1						
Acartophthalmus bicolor	a fly							1					1	
Allodia pistillata	a fungus gnat												1	
Allodiopsis ingeniosa	a fungus gnat							1					1	
Asilus crabroniformis	a robber fly			1							1		1	1
Bombylius canescens	a bee fly												1	
Bombylius discolor	a bee fly			1							1		1	1
Brachypalpus laphriformis	a hoverfly							1					1	1
Cheilosia nigripes	a hoverfly							1					1	1

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Cheilosia soror	a hoverfly												1	
Chrysotoxum elegans	a hoverfly							1					1	1
Eumerus ornatus	a hoverfly												1	
Laphria marginata	a robber fly												1	
Leopoldius signatus	a fly												1	
Lipsothrix nervosa	a cranefly			1							1		1	1
Metasyrphus nitens	a hoverfly												1	
Mycomya pectinifera	a fungus gnat							1					1	1
Neurigona suturalis	a dolichopodid fly												1	
Odontomyia ornata	a soldier fly							1					1	1
Odontomyia tigrina	a soldier fly												1	1
Palaeodocosia alpicola	a fungus gnat							1					1	
Pherbellia annulipes	a snail-killing fly												1	
Piezura graminicola	a lesser house fly							1						
Ptiolina obscura	a snipe fly												1	
Pyrellia rapax	a muscid fly							1					1	
Rymosia winnertzi	a fungus gnat							1					1	
Sciophila fenestella	a fungus gnat							1					1	
Sphegina verecunda	a hoverfly												1	
Symphoromyia immaculata	a snipe fly												1	
Tetanocera phyllophora	a snail-killing fly												1	
Thaumastoptera calceata	a cranefly												1	
Trichocera maculipennis	a winter gnat							1					1	
Volucella inflata	a hoverfly												1	
Xanthandrus comtus	a hoverfly							1					1	
Xylota coeruleiventris	a hoverfly												1	
Xylota florum	a hoverfly												1	
LICHEN														
Arthothelium ruanum	a lichen or fungus									1			1	
Biatora sphaeroides										1			1	
Caloplaca ochracea										1			1	
Cladonia convoluta								1				1	1	1
Clauzadea metzleri										1			1	
Collema fragile								1					1	1
Collema fragrans								1					1	
Collema fuscovirens										1			1	
Collema multipartitum										1			1	
Dimerella lutea	a lichen or fungus												1	
Enterographa crassa													1	
Farnoldia jurana										1			1	
Lecania chlorotiza													1	
Lecania cuprea										1				
Lecanora conizaeoides										1				
Lepraria nivalis										1			1	
Leptogium diffractum													1	
Leptogium massiliense													1	
Mycobilimbia lobulata										1				
Opegrapha multipuncta										1			1	

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Peltigera canina										1			1	
Peltigera horizontalis													1	
Peltigera polydactyla										1			1	
Physcia stellaris										1			1	
Placidiopsis cartilaginea										1			1	
Psora decipiens										1			1	
Staurothele caesia										1			1	
Stenocybe septata	a lichen or fungus												1	
Thelidium papulare										1			1	
Wadeana dendrographa										1			1	
LIVERWORT														
Cephaloziella stellulifera										1			1	
Cololejeunea rossettiana										1			1	
Colura calyptrifolia										1				
Porella obtusata										1			1	
Targionia hypophylla										1				
MOLLUSC														
Abida secale	a chrysalis snail							1					1	
Acicula fusca	a point snail							1					1	1
Cochlodina laminata	a door snail													1
Ena montana	a bulin snail							1					1	1
Helix pomatia	Roman Snail												1	
Limax cinereoniger	Ash-grey Slug													1
Zenobiella subrufescens	a snail													1
MOSS														
Bryum canariense										1			1	
Bryum dunense										1			1	
Bryum pseudotriquetrum var. bimum										1			1	
Ditrichum flexicaule								1						
Ditrichum plumbicola								1			1		1	1
Funaria muhlenbergii										1			1	
Grimmia orbicularis										1			1	
Gymnostomum calcareum										1			1	
Gymnostomum viridulum										1			1	
Isothecium striatulum										1			1	
Leptobarbula berica										1			1	
Leptodon smithii										1			1	
Plagiothecium ruthei										1			1	
Platydictya confervoides										1			1	
Pleurochaete squarrosa										1			1	
Pottia starkeana subsp. conica										1				
Pottia starkeana subsp. starkeana var. brachyodus										1				
Rhytidium rugosum										1			1	1
Scorpiurium circinatum										1			1	
Seligeria donniana										1			1	
Seligeria pusilla										1			1	
Thuidium recognitum										1			1	
Weissia controversa var. densifolia										1			1	

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13
REPTILES														
Anguis fragilis	Slow-worm											1	1	
Lacerta vivipara	Viviparous Lizard											1	1	
Natrix natrix	Grass Snake												1	1
Vipera berus	Adder											1	1	1
TERRESTRIAL MAMMALS														
Apodemus flavicollis	Yellow-necked Mouse												1	
Arvicola terrestris	Water Vole			1							1	1	1	1
Chiroptera	a bat						1					1		
Eptesicus serotinus	Serotine			1			1					1	1	1
Erinaceus europaeus	Hedgehog							1						
Glis glis	Fat Dormouse						1					1		
Lepus capensis	Brown Hare			1							1		1	
Lutra lutra	Otter			1	1		1	1			1	1	1	1
Meles meles	Badger							1				1	1	
Micromys minutus	Harvest Mouse													1
Muntiacus reevesi	Muntjac											1		
Muscardinus avellanarius	Common Dormouse			1			1				1	1	1	1
Mustela vison	American Mink											1		
Myotis bechsteini	Bechstein's Bat			1	1		1	1			1	1	1	
Myotis brandti	Brandt's Bat			1			1					1	1	
Myotis daubentoni	Daubenton's Bat			1			1	1				1	1	
Myotis mystacinus	Whiskered Bat			1			1	1				1	1	
Myotis mystacinus/brandtii	Whiskered/Brandt's Bat						1					1		
Myotis nattereri	Natterer's Bat			1			1	1				1	1	
Myotis sp.	Unidentified bat						1					1		
Neomys fodiens	Water Shrew												1	
Nyctalus noctula	Noctule			1			1					1	1	
Pipistrellus pipistrellus	Pipistrelle			1			1	1			1	1	1	
Pipistrellus pipistrellus 45kHz	45 kHz Pipistrelle			1			1	1			1	1		
Plecotus auritus	Brown Long-eared Bat			1			1	1				1	1	
Rhinolophus ferrumequinum	Greater Horseshoe Bat			1	1		1	1			1	1	1	1
Rhinolophus hipposideros	Lesser Horseshoe Bat			1	1		1	1			1	1	1	1
Sciurus carolinensis	Grey Squirrel											1		

CAPABILITY and QUALITY ASSURANCE

The Christopher Betts Practice ("Betts Ecology") was founded in 1985 to provide high quality professional services to meet an increasing market demand in applied environmental science, especially environmental biology. The Practice stems from the Betts family business which was established in 1760 for the refining and recycling of high value industrial wastes and mineral ores. Betts Ecology thus offers an unusual blend of technical, academic and practical expertise in a range of environmental scientific disciplines, allied particularly to the biological conservation legislation and biodiversity policies of the 1980s and 1990s. Contracts undertaken cover a wide range of projects at local, national and international levels in the construction, extractive, agricultural, leisure, energy and general industrial sectors. The Practice is a member of the Institute of Environmental Management and Assessment. Scientific staff belong to appropriate professional institutes by whose codes of practice they abide.

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Dr Hill is an ecologist with extensive professional and research experience in ecological science and environmental management. Working in the public and voluntary sectors she has developed a broad experience in nature conservation and ecological assessment. Ann has specialist skills in several areas, including botanical surveying, bryophyte identification, and the National Vegetation Classification, especially with regard to the phytosociology of woodlands and grasslands. She has also developed a particular interest in avian ecology. Ann is a member of the British Trust for Ornithology, British Ecological Society, the British Bryological Society, the British Lichen Society, Worcestershire Biological Recorders Committee and is the Worcestershire Recorder for bryophytes.

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