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Recording cereal field margins in Countryside Survey 2000

Report to the Department for Environment, Food and Rural Affairs

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EXECUTIVE SUMMARY

1. This project involved a new survey of arable field margins across Great Britain, undertaken as part of Countryside Survey 2000 (CS2000), introduced to provide information on the plant species occurring within this Priority Habitat.
2. The vegetation of 569 1 km squares was surveyed in 1998 – 99, selected on a stratified random basis. Arable field margin plots were established adjacent to a CS2000 boundary plot, whenever it was located within an arable field.
3. The arable margin plots measured 100 m along the cultivated edge (this may involve including a second or third side of the field and one or two corners) x 1 m extending into the crop from the boundary of the cultivated land. All plant species were recorded within the plot, along with other observations, notably the crop type (nb. some of these other observational data are missing, reducing the sample size for certain analyses). The field surveys took place between June and October 1998, except for 18 plots surveyed in late spring 1999.
4. A total of 547 plots were recorded. 40 plots included neither crops nor other arable plants; these may have been sterile strips or, more likely, were surveyed shortly after cultivation. These plots are excluded from all further analyses. The remainder were found mostly in Zone 1, that includes the largely arable areas of eastern England and Wales; Zone 2, that includes the western lowlands of England and Wales, and Zone 4, the lowland of Scotland. In addition, five plots were recorded in Zone 3, the uplands and marginal uplands in England and Wales, and one in Zone 5, the marginal uplands of Scotland. All plots are included in the GB analyses, but only Zones 1, 2 and 4 are reported separately.
5. The mean species richness per plot (excluding crops and volunteers) was 14 across the whole of GB, showing substantial variation in each of the Zones. Species richness was in general greatest in Zone 2 (mean of 15.5, as opposed to 13 for the other zones). There were significant differences between the major crop categories ($F_{5,451} = 5.64$, $P < 0.001$), but with much overlap (Fig 3); cereals had significantly fewer species per plot than root crops and vegetables ($p < 0.05$).
6. A total of 294 non-crop species were recorded on the arable margins. Of these, only 110 were recorded ten times or more, and 117 occurred in only one or two plots. The most frequent were *Cirsium arvense*, *Galium aparine*, *Elytrigia repens*, *Poa annua*, *Urtica dioica*, *Anisantha sterilis*, *Rumex obtusifolius*, *Arrhenatherum elatius*, *Convolvulus arvensis*, *Stellaria media*, *Polygonum aviculare* agg. and *Veronica persica*. Of the other major arable weeds, *Avena fatua* and *Alopecurus myosuroides* were ranked 28 and 37 in frequency. No species listed in the UK Biodiversity Action Plan were recorded, nor were any of the species listed as extinct, rare or scarce species. Nevertheless, some species were of conservation interest, including *Kickxia spuria*, *K. elatine* and single records of *Chrysanthemum segetum* and *Silene noctiflora*. There were

frequent records of species that are important food plants for birds, e.g. *Stellaria media* and *Polygonum aviculare* agg.

7. The most frequent weeds are those plants that are typical of nutrient-rich situations, including *Cirsium arvense*, *Galium aparine* and *Urtica dioica*. Many of the species are likely to have appeared in the crop edge from the field boundary; they include, again, *G. aparine* and *U. dioica*, as well as woody species that will not be able to establish in this habitat (e.g. *Crateagus monogyna*). There were several species typical of grassland; they include *Holcus lanatus*, *Ranunculus repens* and *Bellis perennis*. The broad-leaved weeds that are considered as important food for animals (e.g. *Polygonum* spp.) remain widespread. Some of the more unusual arable plants were recorded, but none of the scarce or rare plants, suggesting results suggest that the scarcity of such plants is genuine, and does not simply reflect under-recording.
8. The vast majority of arable field margins contain between five and 20 non-crop plant species, and, secondly, that these species are likely to contain a high proportion of perennial weeds, including those that may be difficult to control. The differences in species-richness between crops may reflect differences between farming systems, regions and sowing dates, and are unlikely to have agronomic consequences in themselves. Multivariate analyses of species composition suggest no other patterns strong enough to influence weed management to any great extent.
9. The weed floras of western England are, in general, more species-rich and richer in broad-leaved weeds than those in eastern GB. The changing rank order of weed frequency may suggest a decline in those species of importance to animals. In particular, *Stellaria media*, a food plant for birds including finches appears to have declined in rank order of occurrence compared with previous whole field surveys.
10. A full assessment of changes in the weed flora for GB since 1978 will be considered separately, as part of the analysis of the other CS2000 plots. In the meanwhile, these results present the clearest information about the current status of crop edge vegetation, and they also provide an important baseline for assessing changes in the future. Given the rapid changes in farm management, and the conservation importance of the arable margin habitat, such a baseline will prove invaluable in the future.

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INTRODUCTION

- 1.1. There is substantial public and policy concern over the declines in arable plants in Great Britain. This concern partly reflects worries about arable plant species that are now nationally rare (Stewart et al., 1994) and partly worries about the declines of more common species that are regarded as being important food sources for animal groups (Campbell et al., 1997), both in terms of frequency and cover (Smart et al., 2000). These concerns have already led to a series of policy initiatives. The cereal field margin is now one of the priority habitat types under the Biodiversity Action Plan (Anon, 1995) with an action “to maintain, improve and restore by management the biodiversity of some 15,000 ha of cereal field margins on appropriate soil types in the UK by 2010.”
- 1.2. The basis for the Cereal Field Margin Habitat Action Plan is the evidence that the flora of field margins is richer in plant species than the field centres, and has a greater contribution to animal biodiversity; in particular, many farmland birds feed close to the field edges. Such evidence comes from a variety of case studies across Britain (Wilson, 1994). However, what is lacking is a general assessment of the biodiversity of this habitat across the whole country (Firbank, 1999). There is currently no baseline against which to judge changes in this important habitat.
- 1.3. This report provides initial results of a new survey of arable field margins across Great Britain, undertaken as part of Countryside Survey 2000 (CS2000) (Haines-Young, et al. 2000). Arable margin plots were introduced into the vegetation survey element of CS2000 to provide information on the plant species occurring within this habitat than was available from the existing plot types.

2. METHODS

- 2.1 Each 1 km square in Great Britain has been allocated a Land Class within the Land Classification that takes into account climate, topography and geology but not present land cover or vegetation. For field survey, all squares with more than 75 % urban cover were excluded, and from the remainder, a sample was drawn from each Land Class on a 15 km grid (to minimise spatial autocorrelation of the variables being measured). A total of 569 were surveyed for CS2000.
- 2.2 Five main vegetation plots were surveyed in open land in each 1 km square. Where the plot fell within enclosed land, a corresponding boundary plot was established, and wherever the boundary plot was in an arable field, an arable field margin plot was established.
- 2.3 The arable margin plots measured 100 m along the cultivated edge (sometimes this involves including a second or third side of the field and one or two corners) x 1 m extending inwards from the boundary of the cultivated land. They were measured using tapes. All plant species were recorded within the

plot, along with other observations, notably the crop type (nb. some of these other observational data are missing, reducing the sample size for certain analyses).

- 2.4 The field surveys took place between June and October 1998, except for 18 plots that were surveyed in late spring 1999 (out of a total of 547).

3. RESULTS

- 3.1 A total of 547 plots were recorded. 40 plots included neither crops nor other arable plants; these may have been sterile strips or, more likely, were surveyed shortly after cultivation. These plots were excluded from all further analyses. The remainder were found mostly in Zone 1, that includes the largely arable areas of eastern England and Wales; Zone 2, that includes the western lowlands of England and Wales, and Zone 4, the lowland of Scotland. In addition, five plots were recorded in Zone 3, the uplands and marginal uplands in England and Wales, and one in Zone 5, the marginal uplands of Scotland. All plots were included in the GB analyses, but only Zones 1, 2 and 4 are reported separately (Table 1). In general, more species were recorded per plot during the months of July – August than in the months of May, June, September and October, but this does not bias the results as the crop types were sampled throughout these periods. While the surveyors could not identify features explicitly managed for biodiversity with any certainty, three plots were noted as possibly having been conservation headlands and one as a game crop.

Species richness per plot

- 3.2 The mean species richness per plot (excluding crop plants and volunteers) was 14 across the whole of GB (Table 1), showing substantial variation in each of the zones (Fig 2). Seven plots had no weeds recorded; one in Zone 1, and the plots in Zones 3 and 5. Mean species richness was greatest in Zone 2, at around 16 species per plot, as opposed to around 13 species per plot in the other zones (Table 1, Fig 2). There were significant differences between the major crop categories ($F_{5,451} = 5.64$, $P < 0.001$), but with much overlap (Fig 3); cereals had significantly fewer species per plot than root crops and vegetables ($p < 0.05$).

Individual species occurrence

- 3.3 A total of 294 non-crop species were recorded on the arable margins (Appendix). Of these, only 110 were recorded ten times or more, and 117 occurred in only one or two plots. The most frequent were *Cirsium arvense*, *Galium aparine*, *Elytrigia repens*, *Poa annua*, *Urtica dioica*, *Anisantha sterilis*, *Rumex obtusifolius*, *Arrhenatherum elatius*, *Convolvulus arvensis*, and *Veronica persica*. Of the other major arable weeds, *Avena fatua* and *Alopecurus myosuroides* were ranked 28 and 37 in frequency.
- 3.4 No species listed in the UK Biodiversity Action Plan were recorded, nor were any of the species listed as extinct, rare or scarce by Firbank and Wilson

(1995, based on Perring and Farrell, 1983, Stewart et al., 1994). Nevertheless, some species were of conservation interest in their own right, including *Kickxia spuria*, *K. elatine* and single records of *Chrysanthemum segetum* and *Silene noctiflora*. Also, some of the more frequent species, notably *Stellaria media* and *Polygonum aviculare* agg are important food sources for farmland birds.

4. DISCUSSION

- 4.1 The survey reveals that the vast majority of arable field margins contain weeds of one type or another. The most frequent weeds are those plants that are typical of nutrient-rich situations, including *Cirsium arvense*, *Galium aparine* and *Urtica dioica*. Many of the species are likely to have dispersed into the crop edge from the field boundary; they include, again, *G. aparine* and *U. dioica*, as well as woody species that will not be able to establish in this habitat (e.g. *Crataegus monogyna*). There were several species typical of grassland; they include *Holcus lanatus*, *Ranunculus repens* and *Bellis perennis*. Broad-leaved weeds that are considered as important food for animals (e.g. *Polygonum* spp.) were widespread.
- 4.2 The lack of the scarcer plant species is not unexpected, given the design of the survey, which is intended to give a broad view of the countryside, and not to target the highly restricted locations in which such species are likely to be found. Note that surveys of whole fields may yield more species. Even so, some of the more unusual arable plants were recorded. These results suggest that the scarcity of such plants is genuine, and does not simply reflect under-recording.
- 4.3 The implications of these results for weed management is largely twofold. The first is that the vast majority of arable field margins contain between five and 20 non-crop plant species, and, secondly, that these species are likely to contain a high proportion of perennial weeds, some of which are difficult to control. The differences in species-richness between crops may reflect differences between farming systems, regions and sowing dates, and are unlikely to have agronomic consequences in themselves.
- 4.4 There are several implications for conservation. The first is that the arable plant species considered of high conservation importance in their own right are now so restricted that they are not found in this general survey. The second is that the weed floras of western England are, in general, more species-rich and richer in broad-leaved weeds than those in eastern England and Scotland. The third implication is that these data suggest a decline in those species of importance to animals. In particular, *Stellaria media*, a food plant for birds including finches appears to have declined in rank order of occurrence compared with previous whole field surveys of 1967, 1972, 1978, 1989 and 1990 (Whitehead and Wright, 1989; Barr et al., 1993; Firbank, 1999). *Cirsium arvense* was not even listed among the ten most frequent plants in these surveys.

- 4.5 A full assessment of changes in the weed flora for GB since 1978 will be considered separately, as part of the analysis of the CS2000 plots in the field centres, and a further analysis will be conducted relating the vegetation at the field centres, crop edges and field boundary vegetation using additional CS2000 data. In the meanwhile, these results present the clearest information about the current status of crop edge vegetation, and they also provide an important baseline for assessing changes in the future. Given the rapid changes in farm management, and the conservation importance of the arable margin habitat, such a baseline will prove invaluable in the future.

5. ACKNOWLEDGEMENTS

- 5.1 This survey was conducted thanks to the efforts of many surveyors and data processes, and with the kind permission of a great many land owners and land managers. We thank them greatly. The work was funded by the Department for Environment, Food and Rural Affairs and the Natural Environmental Research Council.

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Table 1. Descriptive statistics of species number per arable margin plot, excluding crop species. Values are given for the whole of GB, and for three Environmental Zones that include the vast majority of surveyed plots. Note that plots with no species present were excluded.

	N	Mean	Lower 95 % C.I.	Upper 95 % C.I.
All GB	507	13.8	13.2	14.5
Zone 1	305	13.4	12.6	14.2
Zone 2	151	15.5	14.2	16.8
Zone 4	45	13.0	10.9	15.2

Table 2. Analysis of plant species, excluding crop plants, found in arable margin plots classified by crop type. The crops were grouped as follows: *Cereals*: barley, barley and wheat, oats, sorghum / kale, wheat. *Stubbles*: æt-aside (natural regeneration), stubble, stubble – barley, stubble – oats, stubble – oilseed rape, stubble – rape, stubble – wheat. *Root crops*: potatoes, potatoes and beet, sugar beet, swedes, turnips. *Vegetables*: *brassica* spp., broccoli, cabbage, carrots, cauliflowers, field beans, onions and sugar beet, peas, sprouts. *Oil seed rape*: includes spring and winter sown. *Other*: flax, hay, kale, linseed, lucerne, maize, sorghum / kale. See also Fig. 2.

Crop category	N	Mean taxa / plot
Cereals	252	13.3
Stubbles	61	14.5
Root crops	34	17.9
Vegetables	32	17.9
Oil seed rape	49	13.6
Other	29	17.2

Fig 1. Frequency distributions of plant species per arable margin plot, excluding crop species. Plots in Environmental Zones 1,2 and 4 are shown separately.

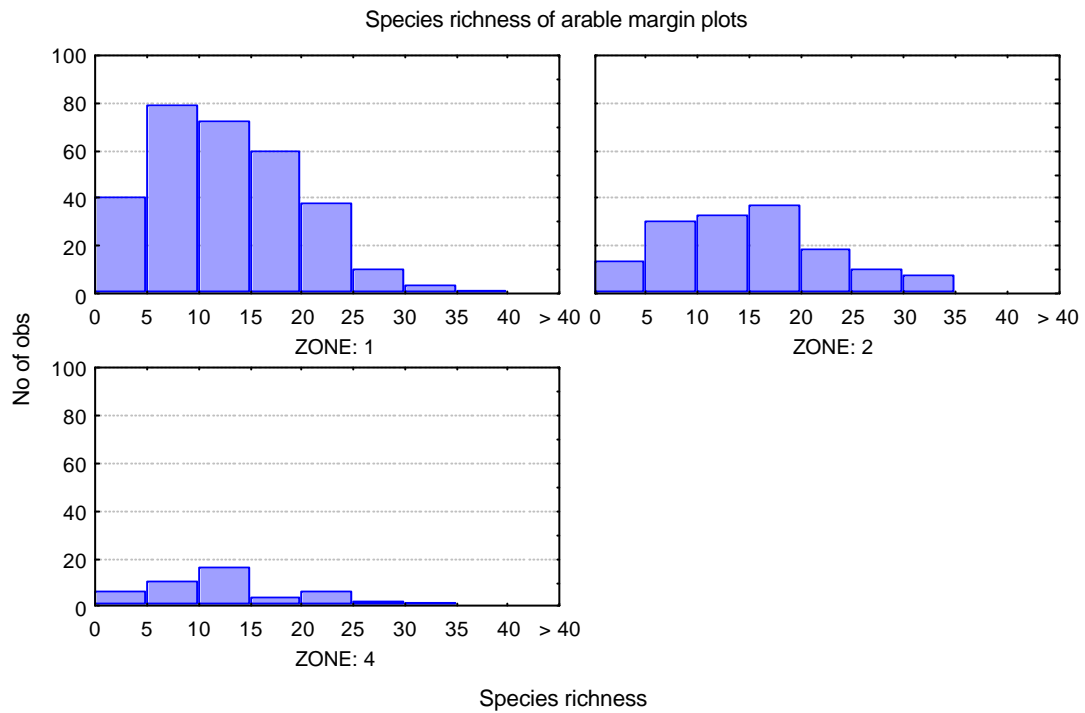
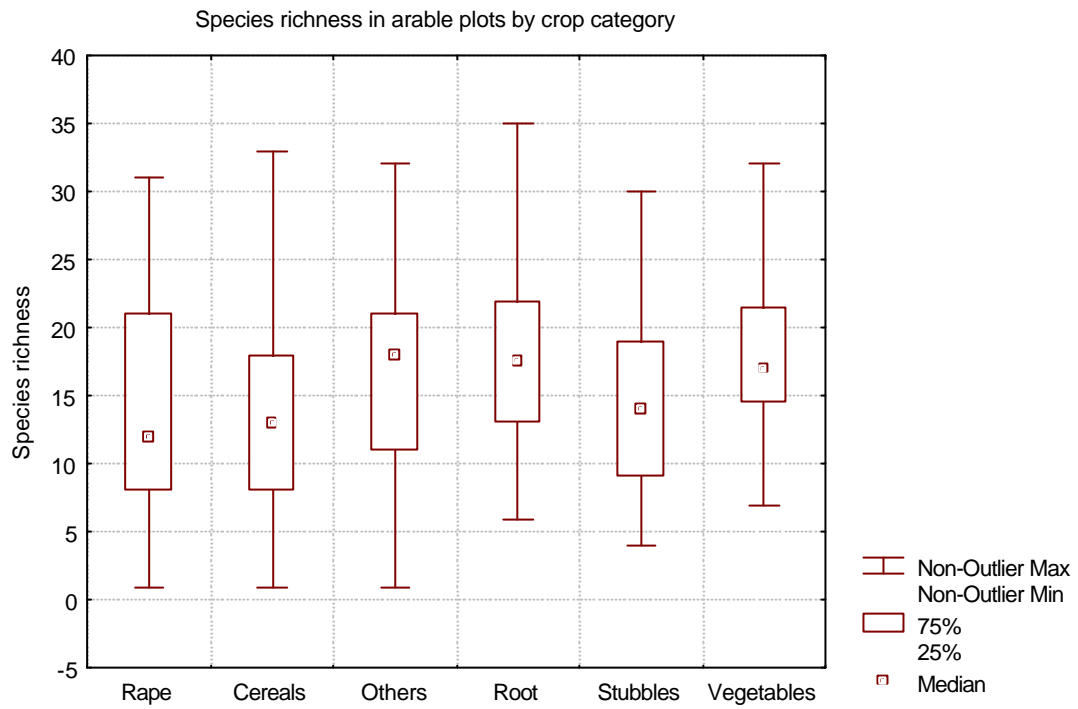


Fig 2. Box and whisker plots of species number per arable margin plot in the different crop types surveyed. Differences between crop types are significant ($F_{5,451} = 5.64, p < 0.001$). See legend to Table 2 for further details.



APPENDIX: Species occurrence on the arable margin plots in rank order of frequency of observations. 507 plots were recorded that included crops, and 500 also included non-crop plants. Crop species are excluded from this list.

Species name	No. of plots
<i>Cirsium arvense</i>	295
<i>Galium aparine</i>	271
<i>Elytrigia repens</i>	265
<i>Poa annua</i>	228
<i>Urtica dioica</i>	212
<i>Anisantha sterilis</i>	176
<i>Rumex obtusifolius</i>	167
<i>Arrhenatherum elatius</i>	160
<i>Convolvulus arvensis</i>	159
<i>Stellaria media</i>	153
<i>Polygonum aviculare</i> agg.	151
<i>Veronica persica</i>	149
<i>Heracleum sphondylium</i>	149
<i>Cirsium vulgare</i>	146
<i>Lolium perenne</i>	141
<i>Agrostis stolonifera</i>	137
<i>Holcus lanatus</i>	126
<i>Poa trivialis</i>	125
<i>Hordeum vulgare</i> sens.str.	123
<i>Senecio vulgaris</i>	121
<i>Dactylis glomerata</i>	118
<i>Lamium purpureum</i>	102
<i>Anthriscus sylvestris</i>	102
<i>Ranunculus repens</i>	96
<i>Viola arvensis</i>	94
<i>Sonchus asper</i>	92
<i>Lapsana communis</i>	89
<i>Avena fatua</i>	86
<i>Geranium dissectum</i>	86
<i>Geranium molle</i>	85
<i>Matricaria discoidea</i>	85
<i>Persicaria maculosa</i>	83
<i>Fallopia convolvulus</i>	81
<i>Capsella bursa-pastoris</i>	81
<i>Myosotis arvensis</i>	75
<i>Plantago major</i>	64
<i>Alopecurus myosuroides</i>	63
<i>Sisymbrium officinale</i>	62
<i>Anagallis arvensis</i>	61
<i>Poa pratensis</i> sens.lat.	56
<i>Papaver rhoeas</i>	56
<i>Sonchus oleraceus</i>	56
<i>Equisetum arvense</i>	55
<i>Holcus mollis</i>	48
<i>Lamium album</i>	46
<i>Sinapis arvensis</i>	46
<i>Aethusa cynapium</i>	44
<i>Trifolium repens</i>	43
<i>Glechoma hederacea</i>	43
<i>Alliaria petiolata</i>	41

<i>Veronica arvensis</i>	41
<i>Silene latifolia</i>	37
<i>Rumex crispus</i>	36
<i>Prunus spinosa</i>	35
<i>Veronica chamaedrys</i>	33
<i>Cerastium fontanum</i>	33
<i>Senecio jacobaea</i>	33
<i>Artemisia vulgaris</i>	33
<i>Stachys sylvatica</i>	29
<i>Chenopodium album</i> agg.	28
<i>Fumaria officinalis</i>	27
<i>Epilobium hirsutum</i>	27
<i>Bromus hordeaceus</i>	27
<i>Fraxinus excelsior</i>	26
<i>Festuca rubra</i> agg.	26
<i>Euphorbia helioscopia</i>	23
<i>Agrostis capillaris</i>	22
<i>Galeopsis tetrahit</i> agg.	21
<i>Lolium multiflorum</i>	21
<i>Phleum pratense</i> sens.lat.	21
<i>Urtica urens</i>	19
<i>Sonchus arvensis</i>	18
<i>Crataegus monogyna</i>	18
<i>Malva sylvestris</i>	17
<i>Juncus bufonius</i> sens.lat.	17
<i>Bryonia dioica</i>	17
<i>Hedera helix</i>	16
<i>Plantago lanceolata</i>	16
<i>Geranium robertianum</i>	15
<i>Chamerion angustifolium</i>	15
<i>Phragmites australis</i>	14
<i>Matricaria recutita</i>	14
<i>Coronopus squamatus</i>	14
<i>Torilis japonica</i>	14
<i>Pteridium aquilinum</i>	14
<i>Silene dioica</i>	14
<i>Conium maculatum</i>	13
<i>Solanum nigrum</i>	13
<i>Anchusa arvensis</i>	12
<i>Achillea millefolium</i>	12
<i>Alopecurus pratensis</i>	12
<i>Picris echioides</i>	12
<i>Rumex acetosella</i>	12
<i>Acer pseudoplatanus</i>	11
<i>Rumex acetosa</i>	11
<i>Vicia cracca</i>	11
<i>Sherardia arvensis</i>	11
<i>Vicia sepium</i>	11
<i>Lathyrus pratensis</i>	11
<i>Calystegia sepium</i>	10
<i>Veronica agrestis</i>	10
<i>Hordeum murinum</i>	10
<i>Potentilla reptans</i>	10
<i>Thlaspi arvense</i>	9
<i>Sambucus nigra</i>	9
<i>Agrostis gigantea</i>	9

<i>Tussilago farfara</i>	8
<i>Festuca pratensis</i>	8
<i>Galium mollugo</i>	8
<i>Veronica serpyllifolia</i>	8
<i>Daucus carota</i>	8
<i>Euphorbia exigua</i>	7
<i>Digitalis purpurea</i>	7
<i>Lactuca serriola</i>	7
<i>Chaerophyllum temulum</i>	7
<i>Anthoxanthum odoratum</i>	7
<i>Ballota nigra</i>	7
<i>Solanum dulcamara</i>	7
<i>Filago vulgaris</i>	6
<i>Kickxia spuria</i>	6
<i>Carduus nutans</i>	6
<i>Ranunculus acris</i>	6
<i>Raphanus raphanistrum</i>	6
<i>Gnaphalium uliginosum</i>	6
<i>Stachys arvensis</i>	6
<i>Symphytum uplandicum</i>	6
<i>Medicago lupulina</i>	6
<i>Trifolium dubium</i>	6
<i>Vicia hirsuta</i>	5
<i>Conyza canadensis</i>	5
<i>Barbarea vulgaris</i>	5
<i>Bromus commutatus</i>	5
<i>Armoracia rusticana</i>	5
<i>Rumex conglomeratus</i>	5
<i>Geranium pusillum</i>	5
<i>Trifolium pratense</i>	5
<i>Cirsium palustre</i>	4
<i>Alopecurus geniculatus</i>	4
<i>Prunella vulgaris</i>	4
<i>Chenopodium polyspermum</i>	4
<i>Veronica hederifolia</i>	4
<i>Erodium cicutarium agg.</i>	4
<i>Rumex sanguineus</i>	4
<i>Quercus robur</i>	4
<i>Stellaria holostea</i>	4
<i>Tamus communis</i>	4
<i>Centaurea scabiosa</i>	4
<i>Geum urbanum</i>	4
<i>Linaria vulgaris</i>	4
<i>Polygonum nodosum</i>	4
<i>Acer campestre</i>	4
<i>Viola tricolor</i>	4
<i>Lamium amplexicaule</i>	4
<i>Festuca arundinacea</i>	3
<i>Cardamine pratensis</i>	3
<i>Geranium pratense</i>	3
<i>Kickxia elatine</i>	3
<i>Geranium columbinum</i>	3
<i>Odontites vernus</i>	3
<i>Phalaris arundinacea</i>	3
<i>Leontodon autumnalis</i>	3
<i>Fumaria muralis</i>	3

<i>Anisantha diandra</i>	3
<i>Lotus corniculatus</i>	3
<i>Lotus pedunculatus</i>	3
<i>Euphorbia peplus</i>	3
<i>Picris hieracioides</i>	3
<i>Chenopodium ficifolium</i>	3
<i>Geranium pyrenaicum</i>	3
<i>Coronopus didymus</i>	3
<i>Aegopodium podagraria</i>	3
<i>Dipsacus fullonum</i>	3
<i>Vicia sativa</i>	3
<i>Veronica montana</i>	3
<i>Reseda lutea</i>	3
<i>Carduus crispus</i>	3
<i>Cruciata laevipes</i>	3
<i>Veronica polita</i>	2
<i>Trifolium campestre</i>	2
<i>Teucrium scorodonia</i>	2
<i>Crepis capillaris</i>	2
<i>Corylus avellana</i>	2
<i>Persicaria amphibia</i>	2
<i>Cynoglossum officinale</i>	2
<i>Deschampsia cespitosa</i>	2
<i>Arum maculatum</i>	2
<i>Clematis vitalba</i>	2
<i>Epilobium palustre</i>	2
<i>Conopodium majus</i>	2
<i>Medicago sativa</i>	2
<i>Stachys palustris</i>	2
<i>Trisetum flavescens</i>	2
<i>Pastinaca sativa</i>	2
<i>Poa compressa</i>	2
<i>Centaurea nigra</i>	2
<i>Hypochaeris radicata</i>	2
<i>Hypericum perforatum</i>	2
<i>Pulicaria dysenterica</i>	2
<i>Potentilla anserina</i>	2
<i>Anthemis cotula</i>	2
<i>Bellis perennis</i>	2
<i>Angelica sylvestris</i>	2
<i>Silene vulgaris</i>	2
<i>Stellaria graminea</i>	2
<i>Galeopsis bifida</i>	2
<i>Festuca gigantea</i>	2
<i>Persicaria hydropiper</i>	2
<i>Castanea sativa</i>	1
<i>Acer platanoides</i>	1
<i>Carduus tenuiflorus</i>	1
<i>Calamagrostis epigejos</i>	1
<i>Cirsium heterophyllum</i>	1
<i>Apium nodiflorum</i>	1
<i>Brassica nigra</i>	1
<i>Arenaria serpyllifolia</i>	1
<i>Arabidopsis thaliana</i>	1
<i>Clinopodium vulgare</i>	1
<i>Anthriscus caucalis</i>	1

<i>Circaea lutetiana</i>	1
<i>Chrysanthemum segetum</i>	1
<i>Cirsium dissectum</i>	1
<i>Allium vineale</i>	1
<i>Chenopodium rubrum</i>	1
<i>Bromopsis ramosa</i>	1
<i>Papaver dubium</i>	1
<i>Rubus caesius</i>	1
<i>Rosa arvensis</i>	1
<i>Ranunculus sardous</i>	1
<i>Ranunculus bulbosus</i>	1
<i>Prunus domestica</i>	1
<i>Potentilla erecta</i>	1
<i>Myosotis secunda</i>	1
<i>Petasites hybridus</i>	1
<i>Senecio viscosus</i>	1
<i>Ornithopus perpusillus</i>	1
<i>Onopordum acanthium</i>	1
<i>Onobrychis viciifolia</i>	1
<i>Oenanthe crocata</i>	1
<i>Myrrhis odorata</i>	1
<i>Juncus inflexus</i>	1
<i>Polemonium caeruleum</i>	1
<i>Stellaria uliginosa</i>	1
<i>Viola odorata</i>	1
<i>Veronica filiformis</i>	1
<i>Verbascum thapsus</i>	1
<i>Umbilicus rupestris</i>	1
<i>Ulex europaeus</i>	1
<i>Trifolium medium</i>	1
<i>Scrophularia nodosa</i>	1
<i>Symphytum officinale</i>	1
<i>Sedum album</i>	1
<i>Spergularia rubra</i>	1
<i>Sorbus aucuparia</i>	1
<i>Solanum villosum</i>	1
<i>Smyrniololus atratum</i>	1
<i>Sison amomum</i>	1
<i>Silene noctiflora</i>	1
<i>Myosotis ramosissima</i>	1
<i>Thymus polytrichus</i>	1
<i>Erysimum cheiranthoides</i>	1
<i>Hesperis matronalis</i>	1
<i>Galium saxatile</i>	1
<i>Fumaria capreolata</i>	1
<i>Fumaria bastardii</i>	1
<i>Festuca ovina agg.</i>	1
<i>Fallopia japonica</i>	1
<i>Myosotis sylvatica</i>	1
<i>Euphorbia cyparissias</i>	1
<i>Humulus lupulus</i>	1
<i>Equisetum sylvaticum</i>	1
<i>Equisetum palustre</i>	1
<i>Epilobium ciliatum</i>	1
<i>Elytrigia atherica</i>	1
<i>Echium vulgare</i>	1

<i>Descurainia sophia</i>	1
<i>Fagus sylvatica</i>	1
<i>Knautia arvensis</i>	1
<i>Mercurialis perennis</i>	1
<i>Medicago arabica</i>	1
<i>Malva moschata</i>	1
<i>Lythrum portula</i>	1
<i>Lonicera periclymenum</i>	1
<i>Leucanthemum vulgare</i>	1
<i>Hordeum marinum</i>	1
<i>Lamium hybridum</i>	1
<i>Hordeum secalinum</i>	1
<i>Juncus squarrosus</i>	1
<i>Juncus effusus</i>	1
<i>Iris foetidissima</i>	1
<i>Hypericum hirsutum</i>	1
<i>Hyoscyamus niger</i>	1
<i>Hydrocotyle vulgaris</i>	1
<i>Cynosurus cristatus</i>	1
<i>Lepidium draba</i>	1