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Kent neutral grassland survey

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ABSTRACT

A Phase 2 survey of unimproved neutral grassland in Kent was carried out between May and July 1994. 60 sites were visited and these contained a total of 202 ha of unimproved neutral grassland. A discussion of the grassland and mire types discovered is given, together with some consideration of their ownership and present management.

Recommendations are made on the representation of unimproved neutral grassland within the SSSI series in Kent.

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1. INTRODUCTION

The purpose of this survey was to identify, map and describe those areas of unimproved mesotrophic grassland which remain in Kent. Grassland communities were described using the National Vegetation Classification (Rodwell 1992). An assessment of the conservation value of each site surveyed was made, with the aim of identifying the most important sites. The survey will also allow information on conservation management to be targeted towards the owners of valuable sites.

Lowland pastures and hay meadows are among the most threatened of Britain's semi-natural habitats. Under traditional management these grasslands develop a rich and distinctive flora, with many attractive flowers and grasses. Cutting or grazing prevents the invasion of scrub and woodland species. The removal of nutrients in fodder or directly by animals maintains a low nutrient status, which again prevents the dominance of highly competitive species. Traditional systems of management were probably very variable, with the type or types of stock used for grazing, the stocking intensity, the season of grazing, the interval between shutting up for hay crops, the rate of use of dung or artificial manures, and the use of harrowing, rolling and hand weeding, all subject to variation from place to place and year to year. These factors, combined with natural variation in soil and climate, lead to the creation of a great many ecological niches. The historical importance of this type of habitat in Britain is shown by the prevalence of hemicryptophytes (plants perennating by buds at or just below the soil surface, and thus adapted to grazed habitats) in the British flora; around 50% of native species are hemicryptophytes, as against some 27% of the flora of the world as a whole (Tansley 1939).

Recent trends in agriculture have lead to far more homogeneity in grassland communities. In order to maximize productivity per unit area, inputs of fertilizers, herbicides and machine labour have increased. Drainage and fertilization have favoured the growth of a few species, and it is these that now dominate most of the remaining lowland grassland. Conversion to arable has also been made economic by generous subsidies, most recently for growing linseed. Many other areas of grassland have simply been abandoned with the decline in mixed farming, and since grazing no longer maintains the plagioclimax these have reverted to scrub.

Mesotrophic grasslands, that is, those grasslands which grow on neutral or circumneutral soil and generally lack calcicole and calcifuge plant species, have been particularly affected by the changes in agricultural practice. Often the soils

on which they occur have few inherent limitations to agricultural improvement, and with drainage and addition of deficient nutrients can become highly productive. Another factor is the historic lack of interest in conserving these grasslands, when compared with calcareous grassland and other habitats. Comparatively few nationally rare species occur, and the degradation of the habitat is less striking as several showy species can continue to be abundant even in quite heavily improved meadows. For this reason it is hard to give estimates of the rate of loss of species-rich mesotrophic grasslands, as there are few baseline data.

2. METHODS

2.1 Sources of information

In accordance with the recommended procedure outlined in "Botanical survey and monitoring methods for grassland" (Smith 1985), the survey was "built upon" the Kent Phase 1 habitat survey. (KWHS Partnership,1993). The total amount of "Unimproved Neutral Grassland" discovered by the Phase 1 survey, including areas invaded by scrub or with planted broadleaf woodland, was 2816 ha. However, this figure includes substantial amounts of grazing marsh which, while important for other wildlife, is not particularly rich in plant species. Excluding this grazing marsh, the figure for unimproved neutral grassland in Kent is 338.4 ha (Pauline Harvey, KCC, pers.com.).

From the Phase 1 target notes a total of 60 sites were selected as worth Phase 2 survey, amounting to 292 ha. A few target noted areas were not selected for further survey, accounted for mainly by small linear features such as road verges and railway lines.

2.2 Survey Procedure

The Phase 2 surveys were carried out between May and July 1994. A total of 58 sites were visited. The standard Phase 2 methods were used, as developed by the England Field Unit. The following procedure was adopted:

a) An attempt was made to determine ownership and obtain permission for the survey. For SSSIs and many SNCIs the ownership was known, and a letter was sent requesting access. Owners were asked to reply if they wished to object, so that if no reply was received after a reasonable period (at least three weeks), access was assumed to have been allowed. This worked except in the case of site 7, where a letter refusing access was received after the survey had been carried out. Where ownership was not previously known, farms and houses in the vicinity were visited and either a direct request for access was made, or the owner was traced and a letter written, as above. In all but two cases (sites 10 and 25, which were not surveyed) this was successful, once the aims of the survey had been made clear.

b) Once on the site, homogenous stands were identified, and where these had some grassland species interest a community card was filled out. On this all species occurring within the stand were identified and a DAFOR abundance estimate was made for each. It should be noted that this is likely to be

incomplete, as some species are not easily visible at the time the survey was carried out. Also, because of time constraints little attempt was made to search thoroughly for rare species.

c) Each stand was identified, where possible, to sub-community level of the National Vegetation Classification (Rodwell 1992). Every effort was made to assign the stand to a sub-community, but in some cases a transitional category was felt to better describe the vegetation.

d) When time allowed, $1m^2$ quadrats were placed at random within the homogenous stand and a list of species with DOMIN cover estimates was made. Since quadrats were not made for all communities these data have not been used in site assessment, but provide supporting information for the community descriptions and assessments.

(e) Photographs were taken of some sites.

(f) A map was drawn of the site showing the extent of each community and of unsurveyed habitats, and positions of quadrats, photographs etc.

(g) Notes were taken on features of interest, management, fauna observed, anecdotes from local people, etc.

(h) A description of the site was made, generally after returning, but within a week of the site visit. This allowed for a more complete description than could be written in the field, and enabled comparison of communities and sometimes a revision of NVC designations.

(i) Areas of surveyed and unsurveyed habitats were calculated from 1:10,000 maps using a dot grid.

(j) Data gathered was entered onto the VEGAN database for analysis, under the title KENT.NEUTRAL.94.

The completed site, community and quadrat cards, and photographs, are now held in the English Nature office at Wye.

2.3 Methods of site evaluation

Site evaluation has been carried out in as standard and objective a way as possible. This has been done in order to grade the sites according to their

conservation value and to identify those sites meriting specific conservation measures. It is emphasised that the current survey is based only on botanical criteria, and therefore recommendations are made only on grounds of botanical interest.

Criteria recommended in "Guidelines for the Selection of Biological SSSIs" (NCC, 1989) are used for evaluating sites, namely size, diversity, naturalness and rarity. These will be dealt with in turn.

2.3.1 Size

The conservation value of a site is often proportional to its size. There are a number of reasons for this; large sites are likely to contain a greater diversity of habitats and species; large populations may contain more genetic diversity and thus be more robust in the face of environmental change; and edge effects, such as spray drift and the diffusion of fertilizers, will be less adverse on large sites. In the case of a severely fragmented habitat such as species-rich neutral grassland these factors are particularly critical.

The size measure used in evaluation was "area of surveyed habitats". This is a more realistic measure than site size, as habitats other than grassland and mire, and species poor examples of these, are likely to have little effect on the value of the site for grassland species conservation.

2.3.2 Diversity

(a) Species Diversity

A simple count of the number of species occurring within each site or community was used in the evaluation. This does not include non-vascular plants.

(b) Community Diversity

The number of NVC sub-communities occurring within each site was not used in evaluation, but a list of communities is given for each site in Appendix 5.

2.3.3 Naturalness

A simple count of species occurring on each site does not discriminate between those species which are particularly typical of unimproved neutral grassland,

and those which are ubiquitous, or invasive, and thus do not contribute to the conservation value of the site. In order to evaluate the naturalness of the species assemblage, some species have been assigned a Mesotrophic Value. This is a measure of how characteristic of, or restricted to, unimproved neutral grassland a species is. Mesotrophic Values of 8,4,2 or 1 (or 0) have been assigned by staff in the England Field Unit on the basis of national species distributions. Mesotrophic Values are given for species encountered in the survey in Appendix 6.

The figure used in evaluation of communities is "Sum Mesotrophic Index" (SMI). This is calculated as follows:-

(a) The DAFOR abundance rating for each species in the community is converted to a numerical value from 1 to 5, i.e. Rare = 1, Occasional = 2, Frequent = 3, Abundant = 4, Dominant = 5.

(b) This numerical DAFOR is multiplied by the Mesotrophic Value for that species to give a Mesotrophic Index.

(c) These Mesotrophic Indices are summed for all species in the community to give the Sum Mesotrophic Index for that community.

The criteria of size and naturalness have also been combined in the calculation of the Area Mesotrophic Index (AMI). This is simply the Sum Mesotrophic Index for a community multiplied by the area of the community.

The AMI for a whole site is the sum of the community AMIs for that site. This figure is given for each site in section 4.3, Site Descriptions and Recommendations.

2.3.4 Rarity

Another factor in the evaluation of a site is the rarity of the species which occur. It should be emphasised that intensive searches for rare species were not generally made, and also that certain species were impossible to find or identify because of the time of the survey. For example by late July it is very hard to distinguish many of the early-flowering orchid species. However, many uncommon species were found. These are divided into two categories:-

(a) Nationally Scarce species. These are defined in "Guidelines for the Selection of Biological SSSIs" as those occurring in 16-100 of the 10Km grid squares in the British Isles. Six species in this category were found.

(b) Locally Scarce species. There is still apparently no convention for defining local scarcity, so the criterion used in Hedley 1989 was used, namely species occurring in less than 5% of the 1044 tetrads (2Km x 2Km squares) in Kent. 28 such species were found in the survey.

No nationally rare or scheduled species were found. Nationally Scarce (NS) and Locally Scarce (LS) species are noted as such in Appendix 6, along with the number of tetrads in Kent in which they have been recorded (Philp 1982).

While every effort was made to identify species correctly, some errors may have occurred. In particular Juncus acutiflorus and J. articulatus may have been recorded as J. subnodulosus, which is a locally scarce species in Kent. For this reason J. subnodulosus has not been included as a rare species for the purpose of site evaluation.

3. RESULTS

Data collected are stored on standard England Field Unit site, community and quadrat cards. These are kept in the English Nature office at Wye, and copies lodged with the Lowland Team at English Nature headquarters, Peterborough. Site and community data have also been entered onto the VEGAN database using the survey name KENT.NEUTRAL.94. Codes for sites and communities follow a standard format; thus Cowden Meadow is referred to as site 49 in both the database and the report, and 4902 (or 49/2) is the code for the second community surveyed on this site.

Data are presented in appendices as follows:-

1. List of sites surveyed
2. Occurrence of NVC communities on sites
3. Number of species in communities
4. Site evaluation
5. Species found during the survey, with mesotrophic value scores and rarity categories.

In this section more general summary information is presented.

3.1 NVC communities recorded

The NVC communities and sub-communities recorded during the survey are given below. A description of the communities is contained in section 4.2

MG1 *Arrhenatherum elatius* coarse grassland
- a. *Festuca rubra* sub-community
- c. *Filipendula ulmaria* sub-community
- e. *Centaurea nigra* sub-community

MG5 *Centaurea nigra - Cynosurus cristatus* meadow and pasture
- a. *Lathyrus pratensis* sub-community
- b. *Galium verum* sub-community
- c. *Danthonia decumbens* sub-community

MG6 *Lathyrus pratensis* sub-community
- a. Typical sub-community
- b. *Anthoxanthum oderatum* sub-community

MG7 *Lolium perenne* leys and related grasslands

MG9 *Holcus lanatus* - *Deschampsia cespitosa* grassland
a. *Poa trivialis* sub-community
b. *Arrhenatherum elatius* sub-community

MG10 *Holcus lanatus* - *Juncus effusus* rush-pasture
b. *Juncus inflexus* sub-community

MG12 *Festuca arundinacea* grassland
a. *Lolium perenne* - *Holcus lanatus* sub-community

CG2 *Festuca ovina* - *Avenula pratensis* grassland
c. *Holcus lanatus* - *Trifolium repens* sub-community

M22 *Juncus subnodulosus* - *Cirsium palustre* fen-meadow
a. Typical sub-community
b. *Briza media* - *Trifolium spp.* sub-community

M23 *Juncus effusus/acutiflorus* - *Galium palustre* rush-pasture
a. *Juncus acutiflorus* sub-community
b. *Juncus effusus* sub-community

M27 *Filipendula ulmaria* - *Angelica sylvestris* mire
c. *Juncus effusus* - *Holcus lanatus* sub-community

S4 *Phragmites australis* swamp
a. *Phragmites australis* sub-community

S5 *Glyceria maxima* swamp
a. *Glyceria maxima* sub-community

S21 *Scirpus maritimus* swamp
d. *Potentilla anserina* sub-community

3.2 Quantitative summary

60 sites were visited covering a total of 493 ha, of which 296 ha were surveyed. The discrepancy is accounted for by non-grassland habitats (112 ha), unsurveyed grassland (67 ha) and areas to which access was either denied or too difficult (18 ha). Of the area surveyed, 134 ha was ascribed to communities described in "Guidelines for the Selection of Biological SSSIs" as being of high botanical interest, that is, MG5 or MG12. If other species-rich communities are added in, according to the broader definition given in section 4.1, the figure rises to 202 ha. In addition some 14 ha of mire and swamp vegetation, much of which was species rich, was surveyed.

Community Areas:

	Area/ha		Area/ha
MG1a	25.73	MG9b	5.2
MG1c	2.84	MG9b/MG5c	2.8
MG1e	26.69	MG10b	0.88
MG5a	112.99	MG12a	0.08
MG5a/MG6a	0.84	MG12a/S4a	0.88
MG5a/MG6b	15.16	CG2c	4.0
MG5b	3.38	M22a	1.44
MG5c	13.55	M22b	5.16
MG5c/M23a	0.48	M23a	0.2
MG5c/MG6b	1.06	M23b	0.65
MG6a	3.92	M27c	4.76
MG6b	16.73	S4a	0.56
MG7	26.0	S5a	0.72
MG9a	11.2	S21d	0.36

Further information on the occurrence of NVC communities on sites is given in Appendix 2.

3.3 Size distribution

The area of unimproved neutral grassland within a site (based on the area of grassland surveyed) was generally less than 4 ha. The degree of fragmentation of the resource as a whole is illustrated in following table. Sites are assumed to be isolated if they are separated from other areas of unimproved neutral grassland by a distance of more than 100m.

Table 1 Size distribution of sites

Area of grassland (ha)	Number of sites	Bar chart
0 to 0.5	14	**********
0.5 to 1.0	13	**********
1.0 to 2.0	11	**********
2.0 to 4.0	19	**********
4.0 to 8.0	7	*******
8.0 to 16.0	5	*****
more than 16.0	1	*

A list of sites surveyed and their areas is given in Appendix 1.

3.4 Ownership and Management

Table 2 below gives the number (and identity) of sites according to ownership (columns) and present management (rows). The following categories are used:-

Ownership	
Farmer	Private owners/tenants whose main business is farming
Leisure	Private owners whose main business is not farming
Public	National Trust or Parish Council
Business	Business or group whose main activity is not farming
Cons.	Trust concerned with wildlife conservation
Unknown	Unknown

Management	
None	Unmanaged
Grazing	Adequately grazed
Hay/silage	Cut for hay or silage
Mown	Mown and cuttings left, causing eutrophication
Undermanaged	Undergrazed or otherwise undermanaged
Overgrazed	Overgrazed
Cons. manage.	Managed explicitly for the conservation interest
Damage	Damaged by forestry, ploughing, herbicide etc.

The results in Table 2 are discussed in section 4.3.1

Table 2 Comparison of ownership with type of management

	Farmer	Leisure	Publ.	Busi.	Cons.	Unknown
None	**6** (21,31,41,49,56)	**8** (3,14,17,19,30,35,36,45)	**3** (12,22,37)	**3** (16,47, 50)	**0**	**6** (15,18, 34,43,46)
Grazing	**19** (1,4,5,6,8, 10,11,13,23,25,28,37, 41,42,47,52)	**4** (20,27,35, 48)	**1** (51)	**2** (53,58)	**1** (27)	**2** (43,57)
Hay / Silage	**9** (4,7,19,21, 23,26,39,54,56)	**6** (2,20,24,26,48,53)	**0**	**0**	**2** (27,40)	**0**
Mown	**0**	**5** (3,19,35,38,52)	**1** (22)	**0**	**0**	**1**
Under-managed	**7** (11,13,39,44,47,54,55)	**3** (9,29,30)	**1** (51)	**1** (33)	**0**	**0**
Over-grazed	**2** (32,52)	**2** (35,53)	**0**	**0**	**0**	**1** (34)
Conserv. Manage.	**2** (26,59)	**3** (20,24,48)	**1** (51)	**0**	**2** (27,40)	**0**
Damage	**5** (7,13,44,54,56)	**1** (17)	**1** (37)	**1** (33)	**0**	**2** (27,40)

4. DISCUSSION

4.1 Occurrence of Unimproved Neutral Grassland in Kent

The definition of what constitutes an unimproved neutral grassland is clearly of importance in this survey, but is somewhat problematic. It is commonly stated that there is a continuum between very species-rich swards of obvious conservation value, and highly modified and species-poor grasslands, but this statement obscures the fact that the appearance of a sward at any one time is highly dependent on its recent management. For example, a sward which has been left unmanaged for several years appears rank, and is often dominated by species such as Arrhenatherum elatius and Holcus lanatus. Forbs characteristic of old meadows decline in abundance, and the sward is likely to key out to MG1, a community not included among those of high botanical interest in the "Guidelines for Selection of Biological SSSIs". In contrast, a sward which has been heavily modified by ploughing and reseeding or by the use of fertilizers, may, if managed appropriately, acquire an impressive proportion of forbs within a fairly short period of time. This presents problems when comparing sites, since NVC community assignations do not always simply reflect conservation value.

This difficulty can be illustrated by comparing two communities encountered in the survey. Community 30/2 is an unmanaged area of tall grassland, dominated by Dactylis glomerata and Alopecurus pratensis, with frequent Arrhenatherum elatius and scrub species invading, and is undoubtedly MG1e. In contrast, community 26/1 is winter grazed, and shut up for hay until late summer. The sward is very visually appealing, with a high proportion of forbs including scattered Lotus corniculatus and the locally scarce Ophioglossum vulgatum, and thus fits the NVC description of MG5a. A simple application of the "Guidelines for selection of Biological SSSI's" would favour the second community over the first. However, the second community has developed in only some 23 years on an area of former arable. Close examination revealed 28 species, with Trifolium dubium the most abundant forb. The MG1e on the other hand has 51 species, and although many of these are typical of the early stages of scrub succession, indicators of long-established grassland are still to be found, including Genista tinctoria, Silaum silaus and Ononis spinosa. Its status as part of the West Blean and Thornden Woods SSSI is justified by its long history as grassland, and with appropriate management is it is likely to develop a far more rich community than the recently established MG5a.

It therefore seems appropriate to widen the definition of unimproved neutral grassland to include those suffering from neglect, but retaining species interest. This is often the case on sites with poor drainage and/or low nutrient status, where the process of succession is slow. Sites which have suffered somewhat from inputs of fertilizers and are thus transitional with MG6 may also be included, since these have potential for recovery. Thus the following sub-communities and transitions have been included in the calculation of the area of remaining unimproved grassland:-

MG1c	MG5c	MG5c/9b	MG12a
MG1e	MG5a/MG6a	MG9a	MG12a/S4a
MG5a	MG5a/MG6b	MG9b	
MG5b	MG5c/MG6b	MG10b	

This gives more consistency, since many areas keying out to MG5 are of marginal or potential interest as conservation sites, as with the example given above, and including the two largest areas of MG5a recorded, at sites 58, Chingley Wood, and 54, Broomhill. This gives a figure of 202.11 ha of unimproved neutral grassland surveyed. Of this 42.02 ha (21%) is protected within existing SSSIs.

If only those communities which are recommended as being of conservation interest and are reasonably well managed (i.e. with a hay/silage cut and/or some form of grazing, and without recent fertilizer inputs or other damage) are considered, the figure drops to 69.8 ha. Of this 18.06 ha (26%) is protected within existing SSSIs. This alarmingly low figure reflects the general state of neglect of neutral grassland SSSIs, which will be discussed in section 4.3.

4.2 Description of NVC communities

A total of 14 communities with 22 sub-communities, as described in the National Vegetation Classification, and five transitional communities, were recognised. A description of the examples found in the survey follows. See also Appendix 2, Occurrence of NVC Communities.

4.2.1 MG1 Arrhenatheretum elatioris grassland

Found on areas which have suffered from undergrazing. All swards with a substantial component of Arrhenatherum elatius and/or Dactylis glomerata were ascribed to this community, so there is considerable variation in species

richness, from swards recently or intermittently undergrazed and retaining many species, to rank impoverished swards, often with scrub invading.

MG1a Festuca rubra sub-community

(5 sites; Mean area 5.15ha; Mean total spp. 46; Mean total mesotrophs 7)
This is the most species-poor MG1 subtype found in the survey. On moderately fertile land which has not been grazed for several years, the sward becomes overwhelmingly dominated by grasses. Arrhenatherum elatius is the characteristic species but swards dominated by Elymus repens, Dactylis glomerata or mixtures of these species were also assigned to this sub-community. Since those swards of this type covered by this survey have developed from previously unimproved grassland, a wide range of associates often persist at low abundance. While mesotrophic indicator species persist there is some potential that the diversity of this type of grassland can be restored by appropriate management.

MG1c Filipendula ulmaria sub-community

(3 sites; Mean area 0.95ha; Mean total spp. 33; Mean total mesotrophs 7)
Unmanaged swards on land with somewhat impeded drainage. Arrhenatherum elatius is common, but often surpassed in abundance by Holcus lanatus and Alopecurus pratensis. Tall forbs such as Heracleum sphondylium and Filipendula ulmaria make up a substantial part of the sward, and the latter can be dominant.

MG1e Centaurea nigra sub-community

(11 sites; Mean area 2.43ha; Mean total spp. 44; Mean total mesotrophs 10)
Stands of unmanaged grassland with constant Arrhenatherum elatius, but retaining many other species at fairly high abundance, were assigned to this sub-community. It thus occurs on sites which have not been neglected for long, or where low soil fertility limits the dominance of grasses. The type includes stands of varying base status; Conopodium majus is abundant in the slightly acidic community of this type at 55/1, and the stand at 22/2 has calcicoles such as Crepis biennis and Galium verum. Most examples, however, have a good complement of mesotrophic species. Uncommon species found in this sub-community include Vicia bithynica, Ononis spinosa, Genista tinctoria and Dactylorhiza praetermissa.

4.2.2 MG5 Cynosurus cristatus - Centaurea nigra grassland

This community represents the core group of species-rich neutral grasslands. Such swards develop on ground with at least moderately good drainage, under management regimes which prevent the accumulation of nutrients. Whilst Centaurea nigra and Cynosurus cristatus are characteristic of well maintained examples of the community, they do not seem to be ubiquitous in "species-rich swards with an abundance of herbaceous dicotyledons". The latter species may have been under recorded, but even late in the season when its flower spikes are hard to miss it could not be found in some examples of the community. The presence of Lotus corniculatus (or on more damp areas Lotus uliginosus) seemed to be a better indicator for this community, often marking a shift towards lower fertility and greater species diversity.

There is a wide variation of stand quality within this community, from stands which are rich in dicotyledons, but only of the commoner sort, to those with an abundance of mesotrophic indicator species. This variation is often obscured by the present management, as a short-grazed sward is likely to appear more species-rich than one which has been somewhat neglected. Good indicators here are Achillea millefolium, Lolium perenne, Phleum bertolonii, Trifolium repens and T. dubium, which are abundant in the more species-poor examples of this community. There is also variation in base status, but this is encompassed within the different sub-community assignations.

Management regimes also vary considerably. Arguably the ideal system, and one which was traditionally much used in Kent, is to cut for hay in mid to late summer, when most grasses and herbs have set seed. The hay is turned in the field until dry. The aftermath is grazed, and this grazing continues through the winter until the field is shut up for hay again. A few sites continue to be treated in this way,

MG5a Lathyrus pratensis sub-community

(37 sites; Mean area 3.16ha; Mean total spp. 43; Mean total mesotrophs 12)
This sub-community is defined by its lack of calcicolous or calcifuge indicators and thus represents the most neutral of the neutral grassland types. Species diversity can be very high, with up to 76 species recorded. It is very variable in appearance and species composition and may be managed in various ways. Traditional management is by taking a hay crop and/or grazing, but some small stands of this type are now managed deliberately for their conservation interest by mowing and removing cuttings. Other areas receive no management, and are either maintained by rabbit or deer grazing, or are reverting to rank grassland and scrub.

Characteristic species of good stands of this subtype include Silaum silaus, Lathyrus nissolia, Rhinanthus minor, Dactylorhiza fuchsii and Ophioglossum vulgatum. A number of nationally or locally scarce species were recorded including Oenanthe pimpinelloides, Trifolium ornithopodioides, Genista tinctoria, Dactylorhiza majalis praetermissa and Orchis morio.

MG5b Galium verum sub-community

(2 sites; Mean area 1.69ha; Mean total spp. 50; Mean total mesotrophs 13)
This sub-community was found on two sites, one on the chalk and one on calcareous alluvium near the River Medway. Moderately calcicolous species such as Galium cruciata, G. verum and Carex flacca are characteristic, and the two examples are fairly species-rich. However, they are not of great conservation interest as they lack both the extreme calcicoles of Calcareous Grassland communities and species characteristic of unimproved neutral meadows.

MG5c Danthonia decumbens sub-community

(8 sites; Mean area 1.69ha; Mean total spp. 41; Mean total mesotrophs 17)
Danthonia decumbens, the characteristic species of this sub-community, is a scarce species in Kent, and many of the typical associates are also uncommon, such as Trifolium medium and Viola canina. Thus this sub-community, to which species rich, somewhat acidic grassland is assigned, is of particular conservation importance. The examples found are generally well managed, or have retained their species interest despite a lack of management.

An unusual stand type which does not seem to be represented in the NVC is included here. This is characterised by a mixture of calcifuge and some calcicolous species, such as Cirsium acaule, Leontodon hispidus and Avenula pubescens. Calcicoles were found within a calcifuge community on three sites (41, 57 and 11), and on a slightly calcifuge MG5a community on site 37. It may be that these species are growing outside their usual ecological range (Cirsium acaule in particular is sometimes recorded from base-poor sites), or that bases have been leached from the surface layers of the soil but are available to certain deep-rooting species.

4.2.3 MG6 Lolium perenne - Cynosurus cristatus grassland

Managed swards with few dicotyledonous species, in particular lacking Lotus corniculatus, but not dominated by such species as Lolium perenne or Elymus

repens, are assigned to this sub-community. It thus represents the range of swards between unimproved MG5, and improved MG7 or the various undermanaged communities. Although generally of low conservation interest, attractive species such as Ranunculus acris and Trifolium spp. may be abundant.

MG6a Typical sub-community

(2 sites; Mean area 1.96ha; Mean total spp. 14; Mean total mesotrophs 1)
This sub-community is overwhelmingly dominated by grasses such as Agrostis capillaris and Holcus lanatus, and is of low conservation interest. It was therefore not much encountered in the survey.

MG6b Anthoxanthum odoratum sub-community

(10 sites; Mean area 1.67ha; Mean total spp. 27; Mean total mesotrophs 5)
Commonly this sub-community is found where grassland has been treated with fertilizers or herbicide, but not severely disturbed by ploughing and reseeding. A fairly large number of species may persist, but those which are easily outcompeted under the more fertile conditions are lacking. Characteristic species include Anthoxanthum odoratum, Agrostis capillaris, Holcus lanatus and Cerastium fontanum. There is continuity between the more species-rich examples of this sub-community and the more species-poor examples of MG5a, and six stands were assigned to the transitional category MG5a/MG6b.

4.2.4 MG7 Lolium perenne grassland

(1 site; Area 26.00ha; Total spp. 38; Total mesotrophs 3)
This large area of species-poor improved grassland was surveyed because of the botanical interest in the dykes which drain it.

4.2.5 MG9 Holcus lanatus - Deschampsia cespitosa grassland

This community is described in the NVC as "floristically dull" and "of little apparent interest for conservation". While this is true of some of the stands included in this community, which can be overwhelmingly dominated by Deschampsia cespitosa, others retain many species between the D. cespitosa tussocks. The community develops with the cessation or relaxation of grazing on sites with moderately poor drainage, and is thus the equivalent of the Arrhenatherum elatius grassland of dry sites. As with that community, stands which have not been neglected for long, and particularly those on oligotrophic

sites, can be species-rich. A notable example is the community on Alex Farm Pasture (14/1), which has constant D. cespitosa but also a wide range of uncommon associates including Genista tinctoria, Danthonia decumbens, Silaum silaus, Carex caryophyllea, Trifolium medium and Stachys betonica. This community is assigned to the transition MG9b/MG5c, to convey its botanical importance, but it is not structurally different from other examples of MG9 found. Uncommon species found within MG9 include Achillea ptarmica and Dactylorhiza praetermissa.

Unfortunately the level of dominance of D. cespitosa, and thus the species richness of the sward, does not correlate very well with the separation into sub-communities. Arrhenatherum elatius and Poa trivialis seem to be distributed according to soil moisture, whereas it is fertility and the period of neglect which determine species richness.

MG9a Poa trivialis sub-community

(4 sites; Mean area 2.80ha; Mean total spp. 36; Mean total mesotrophs 7)

MG9b Arrhenatherum elatius sub-community

(4 sites; Mean area 1.30ha; Mean total spp. 49; Mean total mesotrophs 12)

4.2.6 MG10 Holcus lanatus - Juncus effusus rush-pasture

MG10b Juncus inflexus sub-community

(2 sites; Mean area 0.44ha; Mean total spp. 34; Mean total mesotrophs 7)
This sub-community occurs on soils of fairly high base status with somewhat impeded drainage. Juncus inflexus is characteristic, along with Carex hirta, Juncus acutiflorus and Lotus uliginosus. Rushes are fairly sparse in comparison with the M22 and M23 communities, and associates include many species more typical of dry grassland. Uncommon species found within the sub-community include Achillea ptarmica and Dactylorhiza praetermissa.

4.2.7 MG12 Festuca arundinacea grassland

MG12a Lolium perenne - Holcus lanatus sub-community

(1 site; Area 0.08ha; Total spp. 16; Total mesotrophs 6)

This sub-community occurs on slightly brackish soils, in this case on a site which is probably inundated by tidal water only rarely. Although oligotrophic, it has a restricted range of species, as many mesotrophs are not sufficiently salt-tolerant to withstand inundation, but true halophytes are outcompeted during the periods between inundations. Several characteristic species are uncommon, and the community itself has a very restricted distribution, and is thus listed in "Guidelines for the Selection of Biological SSSIs as being of high botanical interest. Although small, the fragment found in this survey is notable for having abundant Carex divisa, a nationally scarce species.

4.2.8 CG2 Festuca ovina - Avenula pratensis grassland

CG2c Holcus lanatus - Trifolium repens sub-community
(1 site; Area 4.00ha; Total spp. 40; Total mesotrophs 11)

Festuca ovina - Avenula pratensis grassland is characterised by fine leaved grasses and calcicolous forbs. The example found in the survey is rabbit grazed and dominated by such forbs as Origanum vulgare and Galium cruciata, with indicators of fertility such as Trifolium repens and Phleum bertolonii. As such it is not a high quality example of Calcareous Grassland.

4.2.9 Mires

Although marshy grassland was not specifically targeted in the survey, many areas with impeded drainage were found. These varied from large expanses to small flushes within a generally dry field. Most are dominated by Juncus spp., and are ascribed to M22, Juncus subnodulosus - Cirsium palustre fen-meadow, or M23 Juncus effusus/acutiflorus - Galium palustre rush-pasture. Unfortunately the identification of Juncus subnodulosus, J. articulatus and J. acutiflorus was confused, at least at the start of the survey, so categorisations may not be accurate. It should be emphasised that comparisons can only be made between mires surveyed, which represent only a small proportion of those in the county.

M22 Juncus subnodulosus - Cirsium palustre fen-meadow

This community is found on more calcareous wet areas, and was the more commonly found of the two Juncus mires. Although Juncus subnodulosus may have been misidentified, other fen species indicating a high base status such as Juncus inflexus and Carex flacca are distinctive. The two sub-communities have been separated largely according to the degree to which they are dominated by tall rushes and grasses.

M22a Typical sub-community

(3 sites; Mean area 0.48ha; Mean total spp. 44; Mean total mesotrophs 12)
The vegetation of this sub-community is rank and dominated by Juncus spp., and the three sites where it was found have not been grazed for several years. However, a rich variety of associates persists including locally scarce species such as Achillea ptarmica and Dactylorhiza praetermissa.

M22b Briza media - Trifolium spp. sub-community

(8 sites; Mean area 0.65ha; Mean total spp. 40; Mean total mesotrophs 10)
These stands are generally grazed, though ungrazed base-rich mires with an open structure were also included. Despite this, the type seems to be slightly less species-rich than the M22a sub-community, perhaps because the better sites are less likely to be grazed.

M23 Juncus effusus/acutiflorus - Galium palustre rush-pasture

This community is found on areas flushed with base-poor water, and as such is of restricted occurrence in Kent. Those examples found are all associated with the uncommon Danthonia decumbens sub-community of MG5 Cynosurus cristatus - Centaurea nigra grassland, and are all included within SSSIs. Associates include many species more typical of western and northern Britain.

M23a Juncus acutiflorus sub-community

(1 site; Area 0.20ha; Total spp. 47; Total mesotrophs 17)
This sub-community was recorded only at one small site, where abundant Juncus acutiflorus exceeds J. effusus in dominance. Several of the associates are species scarce in Kent, such as Dactylorhiza maculata, Achillea ptarmica and Carex disticha; and calcifuges such as Potentilla erecta and Succisa pratensis are common.

M23b Juncus effusus sub-community

(2 sites; Mean area 0.33ha; Mean total spp. 31; Mean total mesotrophs 7)
The two stands ascribed to this sub-community are slightly less rich in oceanic species, but do have locally scarce species such as Cardamine amara and Genista tinctoria.

M27 Filipendula ulmaria - Angelica sylvestris mire

M27c Juncus effusus - Holcus lanatus sub-community

(1 site; Area 4.76ha; Total spp. 36; Total mesotrophs 7)
A unusual stand of fen vegetation on low lying ground adjacent to the River Medway was ascribed to this sub-community. The area has been planted with poplars and is thus ungrazed, and sufficient light penetrates the sparse canopy for a varied ground layer community to have developed. This is characterised by Filipendula ulmaria, but this species is perhaps kept in check by the light conditions, and other species dominate in patches. Notable among these is the nationally scarce Carex vulpina. A fairly wide range of other associates occur including Lychnis flos-cuculi, Cardamine amara, Carex vesicaria, Rorripa amphibia and Caltha palustris.

4.2.10 Swamps

Swamps occur on areas flooded at least seasonally with fresh or saline water, and as such were not commonly found on sites visited in this survey. However, three sites had areas sufficiently low-lying to support this vegetation type.

S21 Scirpus maritimus swamp

S21d Potentilla anserina sub-community

(1 site; Area 0.36ha; Total spp. 15; Total mesotrophs 4)
This sub-community is characteristic of the upper reaches of salt marsh, and was found in a drainage channel at one site near the coast. Moderate halophytes such as Oenanthe lachenalii, Oenanthe fistulosa and the nationally scarce Carex divisa are found together with some more salt-tolerant grasses such as Elymus repens and Agrostis stolonifera.

S4 Phragmites australis swamp

S4a Phragmites australis sub-community

(1 site; Area 0.56ha; Total spp. 22; Total mesotrophs 1)
An area adjacent to the tidal stretch of the River Stour was ascribed to this sub-community. P. australis dominates some areas, but there is a fairly wide range of associates including halophytes such as Atriplex hastata and Oenanthe

lachenalii, and the locally scarce Carex acuta is dominant in places. A nearby area of MG12a has been invaded by P. australis and is ascribed to the transitional community MG12a/S4a.

S5 Glyceria maxima swamp

S5a Glyceria maxima sub-community

(1 site; Area 0.72ha; Total spp. 12; Total mesotrophs 2)
This community was found in drainage channels on one ungrazed site adjacent to the River Beult. Glyceria maxima is the prevalent species but some areas are dominated by Carex acutiformis or Phalaris arundinacea.

4.3 Conservation Strategy

Grassland presents particular difficulties for conservation, in that active management is required for their maintenance. Unimproved grassland shows some resilience in the face of neglect, with species surviving at low abundance, often in small areas kept clear by rabbit grazing. However, the species richness of a site declines rapidly when competitive species are not kept in check. Conversely, if the site is overgrazed, or if fertilizer is applied to increase the productivity if the sward, common species are likely to increase at the expense of rarer ones. Thus the level of the owner's interest in management is of critical importance to the survival of the grassland.

4.3.1 Ownership and site management

A breakdown of management operations according to the type of ownership is given in section 3.4. This allows some inferences to be made.

Around half the sites (29) are still owned by people who make their living primarily by farming. These sites are likely to be actively managed by taking a hay or silage crop (9 sites), or more usually by grazing (19 sites), but significant numbers are suffering from neglect, either being undergrazed (7 sites) or totally unmanaged (6 sites). This ownership group also accounts for most of the sites which have suffered damage, from ploughing or herbicide use. These owners were rarely aware of the conservation value of their fields, and where these are actively managed, the use of fertilizers is common. However, two sites are actively managed for conservation.

Private owners whose main business is not farming account for the next largest group of sites (18). These were slightly more likely to be managed specifically for conservation (3 sites), but many are suffering poor or non-existent management. 5 sites are mown as amenity grassland, and are becoming eutrophicated because cuttings are not removed; 3 sites are overgrazed, 2 sites are undergrazed, and 8 receive no management. However, several sites (4) are grazed, often by horses, and 6 sites are cut for hay. If encouraged, many owners in this group might implement conservation management as they are under less pressure to get a return from the land, but the group also includes some who strongly resent any interference with their green acre.

Four sites are under the ownership of the National Trust, Forest Enterprise or a Parish Council, and six sites are owned by non-farming businesses of various kinds. This category includes a large expanse of MG5a owned by Southern Water PLC. These organisations might be successfully lobbied to change their management regimes to encourage more grassland species.

Two sites are owned by organisations dedicated to wildlife conservation, and are well managed.

Of the sites for which owners could not be found, all six had no management on at least part.

The overall impression obtained in the survey is that owners are mostly unaware of the conservation importance of areas of unimproved grassland, as they do not distinguish between these areas and other grassland. Owners also generally do not know how to manage grassland for its conservation interest. Some owners with an evident interest in wildlife believe that it is best to leave nature to her own devices, and their grassland is thus reverting to scrub.

Perhaps the most effective conservation strategy for unimproved neutral grassland would be to give owners information about the conservation value of their sites, and to recommend forms of management.

4.3.2 Sites of Special Scientific Interest

Of the nine sites notified as SSSIs, six are unmanaged or undermanaged. Two of these, Cowden Pound and Alex Farm Pastures, have been recently notified and were unmanaged before notification. The other four sites seem to have undergone a decline in quality since notification. There is perhaps a perception that when a site is notified, landowners are either not allowed to manage it, or

it is not worth their while. In the case of Richborough Pasture and Thornden Wood Meadow the decline in quality has been catastrophic, and both these large expanses of unimproved grassland are now of borderline SSSI quality. Active management is urgently required here, and on Trottiscliffe and Cowden Meadows.

Scotney Castle SSSI contains a small area of unimproved neutral grassland of exceptional quality which is being managed meticulously well, but the remaining fragments of neutral grassland would benefit from grazing, and a fertilizer free buffer zone.

Two of the SSSIs, Polebrook Farm and Marden Meadows, are well managed, and the grassland interest is being maintained or increased.

4.4 Site summaries and recommendations

A brief description of each of the sites surveyed follows, with recommendations for conservation management. More complete descriptions can be found on the site cards which are kept in the English Nature Wye office.

The sites are arranged roughly in order of conservation importance, inasmuch as sites with different characters and communities can be compared. The following categories are used:-

1. Existing SSSIs (9 sites)
2. Sites recommended for consideration as SSSIs (6 sites)
3. Sites of generally good quality, but not of SSSI standard (23 sites)
4. Sites of only moderate quality or very restricted size (16 sites)
5. Sites with little or no remaining grassland interest (3 sites)
6. Sites to which access was denied (2 sites)

A figure is given after each site name for the Area Mesotrophic Index (AMI), an indicator of site quality. The calculation of this is described in Section 2.3.3. The NVC communities surveyed on each site are also listed.

4.3.1 Existing SSSIs

(48) Polebrook Farm SSSI AMI = 431.3

MG5a

An intact traditional holding with ten small unimproved fields, together making up a substantial area of species rich neutral grassland. The fields are all ascribed to MG5a, but differ slightly in their species composition because of differences in drainage and past management. This variation is of conservation importance in itself, as the site is one of few where adjacent unimproved meadows can be compared. The site also has many locally scarce species; Carex disticha, C. pallescens, Dactylorhiza praetermissa, D. praetermissa x fuchsii, Genista tinctoria, Ophioglossum vulgatum and Orchis morio were recorded in the present survey, and Achillea ptarmica has been recorded here in the past.

Most of the fields are in good condition but one or two have suffered recently from an episode of overgrazing, followed by undergrazing, which has allowed

in thistles and lead to the accumulation of litter. Specific recommendations for the management of each field have been made to the owner.

The site is of outstanding quality and interest and fully deserves its SSSI status.

(27) **Marden Meadows SSSI** AMI = 190.5

MG5a

Three fields, two of which are managed by the Kent Trust, the other being in private ownership. All have short grassland which closely fits the NVC definition of MG5a. The locally scarce species Genista tinctoria, Ophioglossum vulgatum and Orchis morio are present, and the site is probably the last in the county where the latter species can still be seen in profusion. Another locally scarce species, Saxifraga granulata, has been recorded here in the past. Poorly drained areas and ponds add to the interest of the site.

The field in private ownership is managed sub-optimally and advice should continue to be given, but on the whole the site is in very good condition and present management should continue.

Generally an excellent site which should be retained as an SSSI.

(47) **Pasture and Woods, Cowden Pound SSSI** AMI = 248.9

MG5c,M23a

Two fields with species rich acidic grassland (MG5c) and mire communities. This type of grassland is much less common in Kent even than the MG5a sub-community, and this example is relatively extensive and species-rich, with the locally scarce species Viola canina, Danthonia decumbens and Carex caryophyllea. Small areas of M23a, the only example of this community found in the survey, add to the botanical interest with the locally scarce species Dactylorhiza maculata and D. fuchsii x maculata.

Areas outside the SSSI but within the SNCI were also surveyed. Some of these have now been ploughed for growing flax, a thin crop which can only be profitable because of the subsidy; but substantial areas of unimproved or semi-improved grassland remain. Most of this is species-poor, but the area opposite the SSSI at TQ458433 has locally frequent Viola canina.

The grassland within the SSSI is only grazed by rabbits at present, which has favoured the growth of Succisa pratensis. Bracken and scrub are invading, and clearance and a resumption of stock grazing would be beneficial.

The site contains good quality examples of a type of grassland scarce in Kent, and as such deserves its SSSI status.

(14) **Alex Farm Pasture SSSI** AMI = 258.7

MG9b/MG5c,M23b

Two fields within Stone Wood which have remained open despite a lack of grazing. Although suffering severely from invasion by bramble and other woodland species, the grassland is of interest. It includes the locally scarce species Carex caryophyllea, here growing on a somewhat acidic substrate; Genista tinctoria (which grows in abundance and is in places co-dominant with the uncommon species Trifolium medium); Danthonia decumbens; and Achillea ptarmica. The NVC designation for the grassland is MG9b/MG5c, since undergrazing has lead to the invasion of Deschampsia cespitosa, but a resumption of management could lead to its reversion to MG5c, a scarce sub-community in Kent. The oligotrophic substrate may account for the slow rate of invasion of coarse species and the survival of the grassland.

Scrub clearance and grazing would be beneficial. Parts of the site are very wet and susceptible to poaching.

Although in poor condition and threatened by scrub invasion, the site deserves its SSSI status.

(21) **Trottiscliffe Meadow SSSI** AMI = 155.1

MG5a, MG1c, M22a, M22b

This site has species-rich mire with the locally scarce species Dactylorhiza fuchsii X praetermissa, Agrimonia procera, Carex panicea, C. nigra and Cardamine amara, as well as areas of drier grassland. Two areas of MG5a occur, one a good example of a diverse yet fertile hay meadow which has escaped improvement, the other of more recent origin but with the locally scarce Geranium pratense. This species is also scattered in the hedgerows of semi-improved fields nearby. Several other locally scarce species have been

recorded here in the past including Valeriana dioica, Carex disticha and the moss Cratoneuron filicinum.

The site is suffering from lack of management; the two MG5a fields have been cut for hay in the past but this may be irregularly done, as Arrhenatherum elatius is invading in places. The wetter areas are certainly becoming eutrophicated; while the mire communities seem to be able to withstand periods without grazing, some areas of grassland on the site are now quite species-poor.

The site retains its species and community interest and still deserves its SSSI status.

(30) **Thornden Wood Meadows SSSI** AMI = 756.2

MG5a, MG1e

A substantial area of unimproved neutral grassland with several uncommon species including a stand of the nationally scarce Oenanthe pimpinelloides, the locally scarce species Genista tinctoria, and Ononis spinosa, which is more usually a coastal plant. These species and other MG5a indicators are scattered at low abundance through a rank sward.

Part of the site is unmanaged and slowly reverting to scrub. The remainder, the bulk of the site, seems to be more fertile and is therefore likely to suffer more quickly from lack of management. These fields were cut for silage last year, but the bales were not removed. The tall sward would provide valuable fodder and it is to be hoped that some form of management can be reinstated.

The site is among the largest remaining areas of unimproved neutral grassland in Kent and therefore deserves its SSSI status. However, the botanical interest may soon decline to below SSSI quality.

(51) **Scotney Castle SSSI** AMI = 138.1

MG5c, MG5a, MG6b, M23b, MG5c/MG6b, MG5c/M23b, MG5a/MG6b

This large SSSI was notified primarily for its woodland and lichen interest, but includes areas of MG5c grassland and species-rich mire. The locally scarce species Cardamine amara, Carex caryophyllea, Orchis morio, Ophioglossum vulgatum, Narcissus pseudonarcissus and Danthonia decumbens occur, and Spiranthes spiralis has been recorded here in the past.

The best area of MG5c grassland is on an old tennis court next to the castle; this has been managed for its wildflower interest for some time, by late-summer cutting and removal of hay, and is in excellent condition. Other areas of grassland have suffered variously from addition of fertilizer and undergrazing, but may recover their botanical interest if appropriate management is resumed; in particular the areas of MG5c/MG6b.

Most of the grassland on the site is not of SSSI quality, but the scattered areas of some botanical interest, and the tennis court which is of excellent quality, add to the other features of the SSSI.

(49) **Cowden Meadow SSSI** AMI = 29.6

MG10b, M22a, MG1e

A small area with rank mire and grassland communities. Prolonged undergrazing has lead to the reversion of the grassland to MG10b and MG1e, neither of which are classified as having high botanical interest. However, the locally scarce species Achillea ptarmica and Dactylorhiza praetermissa occur, as does Scirpus maritimus at a rare inland station. The locally very rare species Dactylorhiza incarnata has been recorded here in the past.

Clearance of scrub and other vegetation is urgently needed if the species interest of the site is to be maintained. The wet ground is highly susceptible to poaching but grazing would be preferable to neglect.

The site is of borderline SSSI quality at present, but is worth protection if management can be restored, and particularly if Dactylorhiza incarnata still occurs.

(16) **Sandwich Bay (Richborough Pasture) SSSI** AMI = 294.0

MG1a, M22b,.S21d

A large area of unimproved neutral, acidic and calcareous grassland which is suffering severely from neglect. Around half the site has now reverted to scrub and much of the remainder is rank and species-poor. The site includes areas of species rich mire, which are also rapidly becoming scrubbed over. The nationally scarce Carex divisa and the locally scarce Dactylorhiza maculata occur.

Grazing should be reinstated as soon as possible, and scrub clearance would be beneficial. The mire area at TQ324625, which is fenced off from the rest of the site, should also be grazed.

The site is now of borderline SSSI quality, but is worth protection as a large block of unimproved grassland with the potential for a varied flora to be re-established.

4.3.2 Sites recommended for consideration as SSSIs

(45) **Leigh Pasture and Marsh SNCI** AMI = 122.2

M27c, MG9a, MG5a/MG6a

The mire on this site seems to be of exceptional quality, though it should be of emphasised that mires were not targeted in this survey and no others of this type, M27c, were found for comparison. The nationally scarce species Carex vulpina makes is frequent over a substantial area, and the locally scarce species Cardamine amara, Carex vesicaria and Rorippa amphibia occur. The locally very scarce species Cardamine impatiens has been recorded here in the past. The site includes an area of largely deciduous woodland, which was not surveyed, and an area of rank MG9a grassland. The latter has some botanical interest but is generally too eutrophic to consider including in an SSSI.

The marsh is planted with hybrid poplars which are not adversely affecting the conservation interest, though extraction of the timber and subsequent replanting may cause damage.

(41) **Pastures Near Hobbs Hill Farm SNCI** AMI = 201.9

MG5c, MG1c, MG5a/MG6b

The central section of this site, "Banky Field", contains the largest area of species-rich MG5c in the county. The locally scarce species Genista tinctoria and Danthonia decumbens occur. In addition, the field is a good example of an unusual stand type which does not seem to be represented in the SSSI series; a generally acidic grassland community with a scattering of calcicoles such as Cirsium acaule and Leontodon hispidus (c.f. sites 11, Howarths Pastures; 57, Bayham Abbey; and 37, Fields East of Scords Wood). The two other fields surveyed are not worth including in an SSSI.

Banky Field is quite hard-grazed at present, which is causing some poaching but maintaining the species interest. Bracken invasion is likely to be a problem.

(59) **Land by Ham Street NNR** AMI = 148.5

MG5a, MG6b

This site has a fairly substantial area (3.37 ha) of species rich neutral grassland, with two nationally scarce species, Trifolium ornithopodioides and Minuartia hybrida, as well as the locally scarce species Isolepis setacea (Scirpus setaceus). This would be sufficient grounds for notification as an SSSI, particularly as it is adjacent to an NNR and provides a nectar source for woodland invertebrates, but there is a suggestion that these species have been seeded in by the owner, a former Ham Street Woods warden. The sward is well established, and the rare species are thoroughly naturalised even if not natural, but the question of notification raises issues which are beyond the scope of this report.

The site is heavily grazed by rabbits which are maintaining the dry grassland interest, and is otherwise well managed.

(15) **Stour Banks near Richborough Castle SNCI** AMI = 33.7

MG1a, MG12a, MG12a/S4a, S4a

This site includes mesotrophic grassland with a saline influence in the MG12a sub-community, most of which is transitional with S4a. This is the only example of this community encountered in the survey, and although of small extent, should perhaps be considered as an extension of the Sandwich Bay to Hacklinge Marshes SSSI. The nationally scarce species Carex divisa occurs. Another area of S4a to the north is dominated in places by the locally scarce species Carex acuta.

Lack of grazing or other management is allowing the spread of Phragmites. This should be checked by grazing or cutting to safeguard the stand of Carex divisa.

(4) **Jarvis Farm Meadows SNCI** AMI = 271.5

MG5a, MG6b

Five fields containing a substantial amount (7.68 ha) of MG5a of poor to good quality. The largest field mapped as MG5a contains a few mesotrophic indicators, such as Silaum silaus and Lotus uliginosus, but is generally grass-dominated. The other fields are generally more diverse, particularly in the more poorly drained areas where Carex spp. are abundant. The nationally scarce sedge Carex vulpina, and the locally scarce species Ophioglossum vulgatum and Hottonia palustris have been previously recorded from the site.

The site may be becoming gradually eutrophicated as some of the fields included within the SNCI are now of little botanical interest. The three fields to the west are lightly sheep-grazed, enough to maintain the short diverse sward. The larger field to the northeast is grown for hay, or more probably silage, since it is quite wet. This and the MG6b field to the south may receive applications of fertilizer. A reduction in inputs is necessary if the conservation interest is to be maintained.

4.3.3 Sites of generally good quality, but not or dubiously of SSSI standard.

(61) Warden Point Proposed SSSI Extension SNCI AMI = 249.0

MG1e

This site contains fragments of unmanaged neutral grassland (MG1e) on eroding clay cliffs. The community is characterised by Arrhenatherum elatius, with a range of associates including several calcicoles and the nationally scarce species Vicia bithynica. The grassland is not itself of SSSI quality, and the main interest of the site is geological.

(58) Chingley Wood etc. SNCI AMI = 543.7

MG5a, M22b

A very large area of short-grazed MG5a grassland with M22b flushes. The locally scarce species Ophioglossum vulgatum occurs, but otherwise the community lacks exceptional species and much of the cover is made up by grasses. The site is therefore not recommended as an SSSI despite the fact that MG5a covers more than 5 ha. The M22b is more species-rich and the locally scarce Carex nigra has been recorded here in the past.

The site is adequately grazed, and if fertilizer is not used the grassland may develop a more interesting range of species.

(29) **Seasalter Dairy Farm SNCI** AMI = 170.2

MG5a

An area of scrubby but species-rich grassland, possibly the last remaining part of the unimproved grassland on a farm which until recently belonged to an elderly farmer. Although no exceptional species are present, the sward is unusual, with species showing a maritime influence, such as Ononis spinosa and Lotus tenuis, as well as more typical MG5a species such as Silaum silaus.

The site has been grazed in the recent past, but is generally undergrazed and suffering from scrub invasion. Scrub clearance is probably necessary as well as a resumption of grazing.

(32) **Little Polefields** AMI = 173.3

MG5a

A fair sized block of MG5a grassland with the locally scarce species Carex caryophyllea. Other forbs typical of unimproved neutral grassland are abundant.

The grassland is quite heavily grazed by horses, but the species interest is being maintained and most seem to be able to flower. An application of fertilizer was made some years ago but this will probably not be repeated.

(55) **Broomhill and Reynolds Lane Pastures SNCI** AMI = 196.9

MG5a, MG1e, MG6b

This site has 4.92 ha of MG5a, just falling short of the amount required for automatic notification, as well as a substantial area of species-rich MG1e. The grassland is generally of good quality, with a range of characteristic species, though lacking any particular rarities.

The MG5a is generally well-managed, the best areas occurring on slopes below an area cut for hay and therefore presumably grazed late in the year. Some scrub has recently been cleared. The MG1e is unmanaged; a resumption of grazing or cutting would be beneficial.

(7) **Weald Cottage Meadow etc. SNCI** AMI = 140.6

MG5a, MG6b

Much of the conservation interest of this site has been destroyed recently by the use of herbicide and by ploughing of a substantial area. Some 1.7 ha of species-rich grassland remain. This is good quality MG5a, with locally abundant Silaum silaus and the locally scarce Ophioglossum vulgatum.

The grassland treated with herbicide might recover if this was discontinued, as several mesotrophic indicator species occur as scattered individuals, and the sward is quite sparse and infertile. The owner may not be sympathetic, though, if he is capable of ploughing a meadow to prevent the use of a footpath crossing it. The remaining MG5a is in separate ownership, and at present is well managed as a hayfield.

(11) **Howarths Pastures SNCI** AMI = 114.1

MG5c, MG6a, M22b

A north facing slope with nearly 3 ha of species-rich grassland that has both calcicoles and calcifuges (c.f. sites 41, Pastures near Hobbs Hill Farm; 57, Bayham Abbey; and 37, Fields East of Scords Wood), and a small area of mire. The locally scarce species Danthonia decumbens occurs, along with the calcicoles Linum catharticum and Cirsium acaule.

Much of the grassland is well grazed by horses, which is maintaining a distinctive mixture of short grassland species. The western field is ungrazed as a hay crop is taken off the top, though it may be lightly grazed later in the year. This is allowing scrub to invade, particularly Ulex europaeus and Crataegus monogyna.

(57) **Bayham Abbey** AMI = 81.9

MG5c

Areas of grassland with an unusual mixture of calcicolous and calcifuge species. The locally scarce species Danthonia decumbens and Carex caryophyllea occur, as do other calcifuges including small areas of Calluna vulgaris. Within the same sward species such as Avenula pubescens and Leontodon hispidus occur (c.f. sites 41, Pastures near Hobbs Hill Farm; 11, Howarths Pastures; and 37,

Fields East of Scords Wood). The locally scarce Potentilla anglica may also occur.

One field is lightly sheep grazed and has a tussocky sward reminiscent of CG6; the conservation interest seems to be being maintained. Other areas are either unmanaged or mown as amenity grassland. These are more rank but retain botanical interest, and could perhaps be managed by removal of cuttings.

(39) **Pastures and Shaws below Polebrook Farm SNCI** AMI = 59.4

MG5a, MG6b

Two fields, one of which has a fairly substantial area (3 ha) of MG5a. This is not of exceptional quality, but does have the locally scarce species Ophioglossum vulgatum and might be considered as an extension to the adjacent Polebrook Farm SSSI.

The MG5a field was apparently not cut for hay last year, as it has much litter, but species indicating long-term neglect such as Arrhenatherum elatius and scrub seedlings were not common. Some form of management must be resumed if the species interest is to be maintained.

(53) **Pastures west of Langton Green** AMI = 90.9

MG5a

Three adjacent fields making up a fairly substantial area (4.68 ha) of MG5a of poor to fair quality, though lacking any exceptional species. Some areas have frequent Dactylorhiza fuchsii and other indicators of non-improvement, but other areas are more eutrophic and grass dominated.

The fields are managed separately; the southern is horse grazed, continuously but at a reasonably low intensity, and has the best flora. Grazing on the middle section should be relaxed if its species interest is to be maintained; poaching and eutrophication from stock feeding is causing deterioration. The northern section may have had some addition of fertilizer.

(54) **Broom Hill SNCI** AMI = 315.6

MG5a, M22b

A large area of grassland which just falls into the MG5a category on the basis of constant Lotus corniculatus and a few other species of forb. No exceptional species occur and so the site is not recommended as an SSSI despite having more than 5 ha of MG5a. Also included is an area of M22b which is of reasonable quality but also lacks exceptional species.

The large MG5a area is managed for hay/silage and may have had applications of fertilizer; there is evidence of harrowing and reseeding in some areas. The mire is lightly sheep-grazed, which is maintaining its botanical interest.

(36) **Mount Noddy** AMI = 73.6

MG5a

A small area of very species-rich MG5a with the locally scarce species Carex caryophyllea and Genista tinctoria, near the top of a hill near Cowden Meadow SSSI.

The site is unmanaged at present and some scrub species are invading. The owners are interested in conservation and would consider grazing the site if a grant was available for fencing.

(37) **Fields East of Scords Wood SNCI** AMI = 24.5

M22b, MG5a, MG1e

This complex site has small areas of interesting grassland and mire. A small rabbit grazed area has calcifuge species and the locally scarce species Carex caryophyllea as well as Cirsium acaule, reminiscent of similar species assemblages at Sites 41, Pastures Near Hobbs Hill Farm, 11, Howarths Pastures, and 57, Bayham Abbey, though less extensive and species-rich than those examples. Flushed areas of M22b at the base of the slope are generally more interesting; the locally scarce species Isolepis setacea (Scirpus setaceus) occurs along with a range of less common mire species. Other locally scarce species have been recorded from this area in the past including Valeriana dioica and Dactylorhiza maculata.

The best areas of mire, around TQ480520, are suffering severely from undergrazing and much of the grassland in this area is becoming dominated by

tall grasses. Fencing from the adjacent woodland, scrub clearance and grazing are urgently required here. The flushes in the adjacent semi-improved field are at the opposite extreme, severely cut up by grazing cattle, but retain more of the uncommon species including Caltha palustris.

(56) **Bidborough Woods and Pastures SNCI** AMI = 74.8

MG5a, M22b, MG10b, MG5c

This site includes areas of fairly species rich grassland and mire communities separated by stretches of woodland. Some 2 ha of MG5a is present to the north of the site; this is generally quite fertile with few exceptional species, but one dry bank has frequent Genista tinctoria. Below this is an area of M22a. In the centre of the site is an area of damp MG10b grassland. This sub-community was not much encountered during the survey, but is not particularly rich in uncommon species. More interesting grassland occurs in the south of the site in an inaccessible area grazed only by deer and rabbits. This is fairly species rich, with the locally scarce Achillea ptarmica and a range of calcifuges, and is thus ascribed to MG5c, an uncommon sub-community in Kent.

The north section is adequately grazed, though some damage was done by stock grazing through the wet spring. The middle section is apparently left for late summer grazing or hay. The south section is unmanaged and scrub is invading around the edges; this should be cleared and stock grazing resumed if the species interest is to be maintained.

(18) **Meadow West of Hildenborough** AMI = 51.0

MG9b

A small neglected wet meadow which has developed a diverse MG9b community. Many mesotrophic indicator species occur including the locally scarce Dactylorhiza praetermissa.

The site is threatened by scrub invasion and a resumption of grazing would be beneficial.

(24) **Field House Meadow** AMI = 43.2

MG5a

A small area of low-lying MG5a grassland of generally good quality and with the locally scarce species Genista tinctoria in abundance.

The site is managed for its conservation interest by mowing and removal of cuttings. Some trees have been planted and a pond dug, but these do not greatly detract from the quality of the site. The owners are interested in conservation and have been advised on grassland management by KTNC.

(50) **River Beult Pastures** AMI = 86.4

MG9a, S5a

This area has not been grazed for some years and has a rank species poor sward of MG9a, with areas of swamp vegetation where drainage channels used to run. However, it does have several mesotrophic indicators, including the locally scarce Achillea ptarmica, and is of value because of its large size.

A resumption of grazing would benefit the botanical interest.

(26) **Fields off Stickfast Lane** AMI = 76.6

MG5a

Two small areas of MG5a, both with the locally scarce species Ophioglossum vulgatum. One is of recent origin, having been reseeded in 1971; the other is of greater interest with a forb-dominated sward.

The reseeded area is managed for its conservation interest by the owner. Ownership and management of the other area was not determined, but it is probably cut late in the year for hay as there is no evidence of scrub invasion, and Rhinanthus minor is abundant. The resulting very "weedy" sward may be in danger from herbicide treatment or reseeding.

(35) **Hever Pasture SNCI** AMI = 42.3

MG9a, M22a

This area of species rich grassland and mire has suffered greatly from subdivision and subsequent overgrazing/neglect/eutrophication, but retains an area of good quality mire with the locally scarce species Achillea ptarmica.

Much of the species-rich area of mire is in the section owned by Mr Lefavre. This is fenced but ungrazed, and trees have been planted on part of the area. Mr Lefavre expressed an interest in grant aid, and could perhaps be persuaded to cut and clear the vegetation at intervals.

(33) **Boons Park Meadow SNCI** AMI = 29.4

MG9b

An area of rank MG9b grassland on poorly drained ground on either side of a small stream. The locally scarce Achillea ptarmica occurs, but the other locally scarce species previously recorded from the site, Orchis morio and Dactylorhiza praetermissa, were not found. It seems probable that these have been lost from the site because of undergrazing.

The site is not grazed at present, and a large section has been planted with christmas trees. A resumption of grazing would benefit the conservation interest and might allow the return of the orchid species.

(52) **Hollonds** AMI = 114.7

MG5a/MG6b, MG5a

This site comprises a small area of slightly acidic MG5a surrounded by woodland, with a good range of species; and three fields of fairly fertile grassland retaining some MG5a indicators including the locally scarce species Ophioglossum vulgatum.

The small area is managed as amenity grassland by mowing; removal of cuttings should be encouraged if diversity is to be maintained. The fields have been managed by grazing, topping and addition of organic fertilizer for at least 30 years. A cut in the rate of fertilizer use would benefit the diversity of the sward.

(23) **Ponds and Pasture, Staplehurst SNCI** AMI = 161.7

MG5a

Four small fields close to the centre of Staplehurst. Some areas have become quite eutrophic and species poor, but most of the site is fairly diverse MG5a

with mesotrophic indicators such as Silaum silaus. The locally scarce species Ophioglossum vulgatum has been recorded here in the past.

Two of the fields have been grown for hay, the other two are heavily grazed by horses. The MG5a is fairly fertile, as indicated by locally abundant Achillea millefolium, and measures to reduce this fertility would benefit the conservation interest.

(34) **Markbeech Wood** AMI = 123.4

MG5a, MG1e

Fairly substantial areas of unimproved grassland within Markbeech Wood, which have suffered from poor management. The site is in two main parts; an undergrazed area of MG1e which retains many mesotrophic and marshy grassland indicators such as Silaum silaus; and an overgrazed area of MG5a which is dominated by a few species of forb.

The MG1e, which has much of the species interest of the site, is reverting to woodland and urgently needs scrub clearance and grazing. The diversity of the MG5a would be benefited by a relaxation of grazing.

(46) **Elbows Wood Coombe SNCI** AMI = 152.0

CG2c

This site contains around 4 ha of calcareous grassland, and is thus beyond the scope of the present survey. It seems to have been missed by Stuart Hedley in the 1987-8 Kent Phase 2 Chalk Grassland Survey. The sub-community is CG2c, which was apparently not found in that survey; but this is no great omission as it is the most mesotrophic of the CG2 sub-communities. A range of calcicolous forbs and grasses occurs.

The site is rabbit grazed, which favours certain species such as Origanum vulgare. Some scrub is invading, but the site is not immediately threatened.

4.3.4 Sites of only moderate quality or very restricted size

(17) **Stocks Green Farm** AMI = 179.9

MG1e

A large area of former unimproved neutral grassland, now rank and generally species-poor, though mesotrophic indicator species are scattered throughout. The grassland looks colourful and diverse but most of the species are common weeds. Much of the site has been converted to arable, and some of the remainder severely damaged by machinery; ironically the damaged area has been colonized by a profusion of the locally scarce species Achillea ptarmica.

A resumption of grazing or cutting for hay would bring down the nutrient status and increase the diversity of the sward. However, this seems unlikely to happen as the owner wants to plough up the remaining grassland.

(20) **Hampton's Paddock near Dark's Green SNCI** AMI = 63.0

MG5a

A fair-sized area of MG5a, with some wet areas. A range of mesotrophic indicators occurs, but no exceptional species.

The owners have been advised on conservation management. The site is grazed in winter, and in late summer, and the sward is in good condition.

(9) **Valley West of Tang Green SNCI** AMI = 72.7

MG5c, MG5a

This site contains the largest area of MG5c found in the survey. This is generally species-poor but does have locally abundant Trifolium medium. The field is becoming severely invaded by bracken, as is a smaller area of MG5a within the site. There is an interesting gradation between three adjacent fields, from the MG5c on an acidic drift deposit, through MG5a, to a calcareous community further down the valley where the chalk is shallower.

Bracken invasion is threatening the grassland communities and cutting or spraying would be beneficial. Neither seems likely as the owner is uninterested in management, and the graziers are paying a peppercorn rent.

(42) **Tubbs Hole** AMI = 55.2

MG6b, M22b

Areas of species-rich mire and semi-improved dry grassland separated by tall hedges. A range of mesotrophic indicators occurs, particularly in the wetter areas below the springline.

The bulk of the site is sheep grazed in winter and late summer. This management regime will favour the botanical interest, though some scrub clearance may be necessary. One area has been converted into a garden and was not surveyed; another small area receives no management and is being invaded by scrub.

(22) **Stoneham and the Lees SNCI** AMI = 101.1

MG1a, MG5b, MG1e

Most of this large site has little grassland interest, being either heavily disturbed, or eutrophicated because of regular mowing. Some areas retain a more diverse sward, with calcicolous indicators such as Crepis biennis. The most diverse areas are small rabbit-grazed patches by the river at TQ682488, but some areas within the MG1 grassland on The Lees are also of interest.

The Lees are managed by Yalding Parish Council as amenity grassland; perhaps the Council could be persuaded to remove cuttings from the more diverse areas of MG1e and thus maintain or increase its conservation interest.

(1) **Braid Farm** AMI = 24.0

MG5a

2.0 ha of moderately diverse MG5a, though lacking any exceptional species.

Grazed at present, but usually cut for hay.

(5) **Meadow near Gladwell Farm** AMI = 41.4

MG9b

An area of marshy MG9b grassland, the largest of this sub-community found in the survey. A range of mesotrophic indicators occurs, but no exceptional species were found. Large ponds add to the interest of the site.

The site has evidently suffered from neglect, but recent scrub clearance and cattle grazing are likely to improve the conservation interest.

(6) **Engeham Farm** AMI = 83.1

MG6b, MG9a

A semi-improved field which has species such as Silaum silaus and the locally scarce Ophioglossum vulgatum at low abundance. A large pond and a flushed area of MG9a add to the conservation interest.

Fairly heavily sheep grazed, and probably treated with fertilizer. A return to the previous management as a hay field would be beneficial.

(31) **Secret Field** AMI = 35.2

MG6b/MG5a

A generally species-poor field, though the locally scarce species Ophioglossum vulgatum and other MG5a indicators occur in some abundance in one small area associated with a flush.

The field is only grazed by deer and rabbits at present, and occasionally topped. Removal of nutrients by grazing could allow the more interesting species present on the site to spread.

(2) **Wanden Meadows SNCI** AMI = 33.1

MG5a/MG6b

One field retains forb-rich MG5a, with some Silaum silaus, but lacking exceptional species.

Probably cut late for hay as Rhinanthus minor is frequent, and generally in good condition.

(28) **Pasture by Cadehill Wood SNCI** AMI = 6.5

MG5a

Most of this site is of little interest, but some small areas with Ononis spinosa occur.

The site is adequately grazed; probably fertilizer applications are maintaining the sward at low species diversity.

(3) **Meadows near Maltman's Mill SNCI** AMI = 24.8

MG1e, MG5a

Two fragments of unimproved grassland attached to houses. One is very short-mown, the other, larger area is unmanaged and dominated by tall grasses, but both retain a variety of mesotrophic indicators including Silaum silaus.

The smaller area is mown weekly, and the cuttings removed. This is changing the character of the sward, but maintaining low nutrient status, and species diversity. The owner was asked to leave a part of the lawn to grow up and flower. The larger area is unmanaged, apart from a small, overgrazed horse paddock. Grazing would benefit the conservation interest.

(40) **Bore place Meadow** AMI = 13.4

MG1e

A small site with forb-rich though rather rank MG1e grassland. The locally scarce species Ophioglossum vulgatum and Narcissus pseudonarcissus may occur.

The meadow is now managed for its conservation interest by taking a hay crop in late summer, and is likely to revert to MG5a.

(44) **Meadow at Noah's Ark SNCI** AMI = 17.9

MG9b

Only two scrubby fragments of this site remain as unimproved neutral grassland. These are undergrazed and tussocky with much Deschampsia cespitosa (MG9b), but retain several mesotrophic/marshy grassland indicators including Silaum silaus. The locally scarce species Carex disticha has been recorded here in the past.

The remaining unimproved grassland is threatened by scrub invasion. The site is grazed after the main section has been cut for silage, but cattle probably favour the improved area.

(13) **Brabourne Lees Clay Pits** AMI = 23.1

MG6a, MG5a

A small site, most of which is scrub, or species-poor grassland treated with herbicide. Some banks retain a larger number of species, and a variety of ponds and hollows add to the interest of the site. The locally scarce species Ranunculus aquatilis occurs.

The site is now adequately grazed, though clearance of previously established scrub would be beneficial. Herbicide use is damaging the conservation interest.

(38) **Halstead Coombe SNCI** AMI = 25.2

MG5b

Most of the grassland on this site is species-poor, but one scrubby area has a range of calcicolous forbs.

Regular mowing is likely to cause the eventual eutrophication of the remaining interesting area unless cuttings are removed.

4.3.5 Sites with little or no remaining grassland interest

(8) **Harlakenden Farm Meadows** AMI = 27.2

MG6b

Two fields with eutrophic, sheep-grazed grassland communities. Some mesotrophic indicators still occur, but Stachys officinalis, recorded last year, was not found. A reduction in fertilizer use and grazing intensity would benefit the conservation interest.

(43) **River Medway etc., Leigh SNCI** AMI = 90.0

MG7, MG1a

This very large site has little remaining grassland interest. Part has been converted into a housing estate, part is very eutrophic and scrubby riverbank vegetation, and the remainder has been treated with fertilizer and herbicide. A few steep areas retain a high proportion of forbs, but these are all common species.

(19) **Nut Tree Green** AMI = 37.8

MG1a

This area of former unimproved grassland is now rank and eutrophic, though it retains occasional Lotus corniculatus.

A resumption of grazing would be beneficial, but seems unlikely.

4.3.6 Sites to which access was denied

(10) **Meadows at Shadoxhurst SNCI**

Two substantial blocks of land. The western field is in the ownership of a particularly recalcitrant farming family, but was surveyed briefly through the hedge. It is short grazed by cattle and seemed to have much Cirsium arvense, which perhaps implies that it is of little botanical interest. Ownership of the eastern block of fields was not determined. These had recently been cut for hay, and may have species of interest, particularly as they are near the Alex Farm Pastures SSSI, notified for its species rich acidic/marshy grassland.

(25) **Viney Farm**

The owner of these three small fields went to great length to complain about my request for access. It seems likely that the fields still have unimproved grassland, as she does not use chemicals, and the land is grazed and topped.

5. CONCLUSIONS

During the Phase 2 neutral grassland survey of Kent, a total of 58 sites were surveyed. These contained 134.08 ha of those communities regarded as being of high botanical interest in the Guidelines for the Selection of Biological SSSIs (NCC 1989), or 202.11 ha of unimproved neutral grassland according to the broader definition set out in section 4.1. It is probable that other areas of unimproved neutral grassland exist in Kent, but these are likely to be small and of lesser quality than the sites covered.

Comparisons with other surveys are difficult because of the problems of coverage and definition. A "Survey of Old Meadow Sites" carried out by NCC in 1978 was based upon information sent in response to a public appeal. Many of the sites covered in the present survey must have been unimproved meadows at that time, yet there is little overlap; only 7 out of the 53 sites covered in 1978 were mapped as unimproved neutral grassland by the 1992-3 Phase 1 survey. Tentative conclusions from this are that (i) public appeal is not a reliable way of locating sites suitable for survey, and (ii) most of the neutral meadows recorded in 1978 have been improved or otherwise lost. In the 1978 survey sites were not mapped in detail, and only one species list was made for each site, so detailed comparisons of definition, and area, of old meadows recorded are not possible.

Unimproved grassland in Kent is still declining rapidly in extent and quality. Several sites have been destroyed since the Phase 1 survey by conversion to arable or by spraying with herbicide. A large proportion of those sites which remain are either unmanaged or subject to management which is likely to reduce the species interest. Out of the nine sites in the survey which are protected by SSSI status, six are unmanaged or undermanaged, and the two largest are now in very poor condition.

In order to protect the remnants of this habitat, there must be a concerted effort to restore low-input management. New grants have recently been made available for fencing and the restoration of grazing. If these are to be effective, they must be targeted towards areas of conservation importance.

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APPENDIX 1 LIST OF SITES SURVEYED

Site Code	Site Name	Status	Grid Ref.	Site Area	Area Surv.
1	BRAID FARM		TQ866422	2.00	2.00
2	WANDEN MEADOWS	SNCI	TQ888454	2.88	1.88
3	MEADOWS NEAR MALTMAN'S MILL	SNCI	TQ902431	1.24	1.12
4	JARVIS FARM MEADOWS	SNCI	TQ928368	10.96	10.84
5	MEADOW NEAR GLADWELL FARM		TQ939365	2.80	2.40
6	ENGEHAM FARM		TQ940370	2.20	2.12
7	WEALD COTTAGE MEADOW ETC.	SNCI	TQ942348	6.88	4.40
8	HARLAKENDEN FARM MEADOWS		TQ957389	3.88	3.88
9	VALLEY WEST OF TANG GREEN	SNCI	TQ962512	5.80	3.69
10	MEADOWS AT SHADOXHURST	SNCI	TQ973371	12.08	.00
11	HOWARTHS PASTURES	SNCI	TR050364	6.92	6.38
12	DOWN WOOD MEADOW	SNCI	TR084524	3.28	.00
13	BRABOURNE LEES CLAY PITS		TR087409	1.56	1.26
14	ALEX FARM PASTURE	SSSI	TQ968369	4.56	3.36
15	STOUR BANKS NEAR RICHBOROUGH CASTLE	SNCI	TR322595	3.72	3.44
16	SANDWICH BAY (RICHBOROUGH PASTURE)	SSSI	TR328625	26.56	13.29
17	STOCKS GREEN FARM		TQ560478	15.96	6.92
18	MEADOW WEST OF HILDENBOROUGH		TQ562490	1.24	.88
19	NUT TREE GREEN		TQ577517	2.80	2.52
20	HAMPTON'S PADDOCK NEAR DARK'S GREEEN	SNCI	TQ621520	3.04	2.52
21	TROTTISCLIFFE MEADOW	SSSI	TQ643595	5.00	5.00
22	STONEHAM AND THE LEES	SNCI	TQ692497	46.53	11.10
23	PONDS AND PASTURE, STAPLEHURST	SNCI	TQ787428	5.32	3.76
24	FIELD HOUSE MEADOW		TQ776441	.84	.80
25	VINEY FARM		TQ806461	2.88	.00
26	FIELDS OFF STICKFAST LANE		TQ837476	2.20	2.20
27	MARDEN MEADOWS	SSSI	TQ762445	3.12	2.68
28	PASTURE BY CADEHILL WOOD	SNCI	TR179624	6.48	.36
29	SEASALTER DAIRY FARM	SNCI	TR093635	3.20	2.24
30	THORNDEN WOOD MEADOWS	SSSI	TR146645	15.32	15.10
31	SECRET FIELD		TQ452429	1.76	1.76
32	LITTLE POLEFIELDS		TQ457420	5.44	4.56
33	BOONS PARK MEADOW	SNCI	TQ471496	2.96	1.28
34	MARKBEECH WOOD		TQ474435	6.48	3.43
35	HEVER PASTURE	SNCI	TQ474447	3.72	2.64
36	MOUNT NODDY		TQ481419	.92	.92
37	FIELDS EAST OF SCORDS WOOD	SNCI	TQ481521	5.08	.88
38	HALSTEAD COOMBE	SNCI	TQ483611	6.52	.72
39	PASTURE AND SHAWS BELOW POLEBROOK	SNCI	TQ505473	4.76	4.40
40	BORE PLACE MEADOW		TQ506490	.60	.56
41	PASTURES NEAR HOBBS HILL FARM	SNCI	TQ507408	7.36	6.60
42	TUBBS HOLE		TQ517415	3.64	2.16
43	RIVER MEDWAY ETC.,LEIGH	SNCI	TQ555458	32.00	28.00
44	MEADOW AT NOAH'S ARK	SNCI	TQ557576	3.32	.64
45	LEIGH PASTURE AND MARSH	SNCI	TQ556462	12.98	8.44
46	ELBOWS WOOD COOMBE	SNCI	TQ628653	4.00	4.00
47	COWDEN POUND PASTURE AND WOODS	SSSI	TQ459430	20.55	9.11
48	POLEBROOK FARM	SSSI	TQ506477	12.60	10.52
49	COWDEN MEADOW	SSSI	TQ481414	1.09	.96
50	RIVER BEULT PASTURES		TQ709489	7.20	7.20
51	SCOTNEY CASTLE	SSSI	TQ689352	6.68	6.68
52	HOLLONDS		TQ542384	7.20	5.08
53	PASTURES WEST OF LANGTON GREEN		TQ540397	5.52	4.68
54	BROOMHILL	SNCI	TQ544406	16.69	14.38
55	BROOMHILL AND REYNOLDS LANE PAST	SNCI	TQ569411	15.44	7.72
56	BIDBOROUGH WOODS AND PASTURES	SNCI	TQ562422	21.60	3.84
57	BAYHAM ABBEY		TQ641367	4.52	1.26
58	CHINGLEY WOOD ETC.	SNCI	TQ682338	45.82	18.70
59	LAND BY HAM STREET NNR		TR010348	4.08	4.08
61	WARDEN POINT PROPOSED SSSI EXTENSION	SNCI	TQ961736	11.00	11.00
		Totals:		492.78	292.34

APPENDIX 2 OCCURENCE OF NVC COMMUNITIES

COMMUNITY CODE	SITE NAME	NVC TYPE	AREA (ha)
1601	SANDWICH BAY (RICHBOROUGH PASTURE)	MG1A	12.37
2201	STONEHAM AND THE LEES	MG1A	6.92
1901	NUT TREE GREEN	MG1A	2.52
4302	RIVER MEDWAY ETC., LEIGH	MG1A	2.00
1503	STOUR BANKS NEAR RICHBOROUGH CASTLE	MG1A	1.92
	Total MG1A:		**25.73**
2102	TROTTISCLIFFE MEADOW	MG1C	1.04
4103	PASTURES NEAR HOBBS HILL FARM	MG1C	.96
2104	TROTTISCLIFFE MEADOW	MG1C	.84
	Total MG1C:		**2.84**
6102	WARDEN POINT PROPOSED SSSI EXTENSION	MG1E	10.00
1701	STOCKS GREEN FARM	MG1E	6.92
3002	THORNDEN WOOD MEADOWS	MG1E	2.34
5501	BROOMHILL AND REYNOLDS LANE PASTURES	MG1E	2.04
2202	STONEHAM AND THE LEES	MG1E	1.52
6101	WARDEN POINT PROPOSED SSSI EXTENSION	MG1E	1.00
3401	MARKBEECH WOOD	MG1E	.99
0302	MEADOWS NEAR MALTMAN'S MILL	MG1E	.92
4001	BORE PLACE MEADOW	MG1E	.56
4903	COWDEN MEADOW	MG1E	.28
3703	FIELDS EAST OF SCORDS WOOD	MG1E	.12
	Total MG1E:		**26.69**
5801	CHINGLEY WOOD ETC	MG5A	17.30
5402	BROOMHILL	MG5A	13.64
3001	THORNDEN WOOD MEADOWS	MG5A	12.76
4801	POLEBROOK FARM	MG5A	10.52
0401	JARVIS FARM MEADOWS	MG5A	7.68
5503	BROOMHILL AND REYNOLDS LANE PASTURES	MG5A	4.92
3201	LITTLE POLEFIELDS	MG5A	4.56
2301	PONDS AND PASTURE, STAPLEHURST	MG5A	3.76
5901	LAND BY HAM STREET NNR	MG5A	3.37
3902	PASTURE AND SHAWS BELOW POLEBROOK FARM	MG5A	3.00
4705	COWDEN POUND PASTURE AND WOODS	MG5A	2.64
2001	HAMPTON'S PADDOCK NEAR DARK'S GREEN	MG5A	2.52
3402	MARKBEECH WOOD	MG5A	2.44
2901	SEASALTER DAIRY FARM	MG5A	2.24
5102	SCOTNEY CASTLE	MG5A	2.08
5601	BIDBOROUGH WOODS AND PASTURES	MG5A	2.04
101	BRAID FARM	MG5A	2.00
5301	PASTURES WEST OF LANGTON GREEN	MG5A	1.88
2105	TROTTISCLIFFE MEADOW	MG5A	1.84
0702	WEALD COTTAGE MEADOW ETC.	MG5A	1.68
5303	PASTURES WEST OF LANGTON GREEN	MG5A	1.52
0201	WANDEN MEADOWS	MG5A	1.44
2702	MARDEN MEADOWS	MG5A	1.44
2602	FIELDS OFF STICKFAST LANE	MG5A	1.32
5302	PASTURES WEST OF LANGTON GREEN	MG5A	1.28
2701	MARDEN MEADOWS	MG5A	1.24
3601	MOUNT NODDY	MG5A	.92
2601	FIELDS OFF STICKFAST LANE	MG5A	.88
2101	TROTTISCLIFFE MEADOW	MG5A	.80
2401	FIELD HOUSE MEADOW	MG5A	.80
5202	HOLLONDS	MG5A	.80
1302	BRABOURNE LEES CLAY PITS	MG5A	.62
2801	PASTURE BY CADEHILL WOOD	MG5A	.36
3704	FIELDS EAST OF SCORDS WOOD	MG5A	.22
0301	MEADOWS NEAR MALTMAN'S MILL	MG5A	.20
3701	FIELDS EAST OF SCORDS WOOD	MG5A	.20
0901	VALLEY WEST OF TANG GREEN	MG5A	.16
	Total MG5A:		**112.99**

COMMUNITY CODE	SITE NAME	NVC TYPE	AREA (ha)
4502	LEIGH PASTURE AND MARSH	MG5A/MG6A	.84
	Total MG5A/MG6A:		**0.84**
5201	HOLLONDS	MG5A/MG6B	4.28
4101	PASTURES NEAR HOBBS HILL FARM	MG5A/MG6B	2.32
5104	SCOTNEY CASTLE	MG5A/MG6B	2.04
4704	COWDEN POUND PASTURE AND WOODS	MG6B/MG5A	3.44
3101	SECRET FIELD	MG6B/MG5A	1.76
4703	COWDEN POUND PASTURE AND WOODS	MG6B/MG5A	1.32
	Total MG6B/MG5A:		**15.16**
2203	STONEHAM AND THE LEES	MG5B	2.66
3801	HALSTEAD COOMBE	MG5B	.72
	Total MG5B:		**3.38**
0902	VALLEY WEST OF TANG GREEN	MG5C	3.53
4102	PASTURES NEAR HOBBS HILL FARM	MG5C	3.32
1101	HOWARTHS PASTURES	MG5C	2.86
4702	COWDEN POUND PASTURE AND WOODS	MG5C	1.51
5701	BAYHAM ABBEY	MG5C	1.26
5107	SCOTNEY CASTLE	MG5C	.41
5602	BIDBOROUGH WOODS AND PASTURES	MG5C	.36
5105	SCOTNEY CASTLE	MG5C	.30
	Total MG5C:		**13.55**
5108	SCOTNEY CASTLE	MG5C/M23A	.48
	Total MG5C/M23A:		**0.48**
5103	SCOTNEY CASTLE	MG5C/MG6B	1.06
	Total MG5C/MG6B:		**1.06**
1102	HOWARTHS PASTURES	MG6A	3.28
1301	BRABOURNE LEES CLAY PITS	MG6A	.64
	Total MG6A:		**3.92**
0801	HARLAKENDEN FARM MEADOWS	MG6B	3.88
0402	JARVIS FARM MEADOWS	MG6B	3.16
0701	WEALD COTTAGE MEADOW ETC.	MG6B	2.72
0601	ENGEHAM FARM	MG6B	1.96
4201	TUBBS HOLE	MG6B	1.48
3901	PASTURE AND SHAWS BELOW POLEBROOK FARM	MG6B	1.40
5502	BROOMHILL AND REYNOLDS LANE PASTURES	MG6B	.76
5902	LAND BY HAM STREET NNR	MG6B	.71
0202	WANDEN MEADOWS	MG6B	.44
5106	SCOTNEY CASTLE	MG6B	.22
	Total MG6B:		**16.73**
4301	RIVER MEDWAY ETC., LEIGH	MG7	26.00
	Total MG7:		**26.00**
5001	RIVER BEULT PASTURES	MG9A	6.48
4501	LEIGH PASTURE AND MARSH	MG9A	2.84
3502	HEVER PASTURE	MG9A	1.72
0602	ENGEHAM FARM	MG9A	.16
	Total MG9A:		**11.20**
0501	MEADOW NEAR GLADWELL FARM	MG9B	2.40
3301	BOONS PARK MEADOW	MG9B	1.28
1801	MEADOW WEST OF HILDENBOROUGH	MG9B	.88
4401	MEADOW AT NOAH'S ARK	MG9B	.64
	Total MG9B:		**5.20**
1401	ALEX FARM PASTURE	MG9B/MG5C	2.80
	Total MG9B/MG5C:		**2.80**

COMMUNITY CODE	SITE NAME	NVC TYPE	AREA (ha)
5604	BIDBOROUGH WOODS AND PASTURES	MG10B	.56
4901	COWDEN MEADOW	MG10B	.32
	Total MG10B:		**0.88**
1502	STOUR BANKS NEAR RICHBOROUGH CASTLE	MG12A	.08
	Total MG12A:		**0.08**
1501	STOUR BANKS NEAR RICHBOROUGH CASTLE	MG12A/S4A	.88
	Total MG12A/S4A:		**0.88**
4601	ELBOWS WOOD COOMBE	CG2C	4.00
	Total CG2C:		**4.00**
3501	HEVER PASTURE	M22A	.92
4902	COWDEN MEADOW	M22A	.36
2103	TROTTISCLIFFE MEADOW	M22A	.16
	Total M22A:		**1.44**
5802	CHINGLEY WOOD ETC.	M22B	1.40
5603	BIDBOROUGH WOODS AND PASTURES	M22B	.88
5401	BROOMHILL	M22B	.74
4202	TUBBS HOLE	M22B	.68
1603	SANDWICH BAY (RICHBOROUGH PASTURE)	M22B	.56
3702	FIELDS EAST OF SCORDS WOOD	M22B	.34
2106	TROTTISCLIFFE MEADOW	M22B	.32
1103	HOWARTHS PASTURES	M22B	.24
	Total M22B:		**5.16**
4701	COWDEN POUND PASTURE AND WOODS	M23A	.20
	Total M23A:		**0.20**
1402	ALEX FARM PASTURE	M23B	.56
5101	SCOTNEY CASTLE	M23B	.09
	Total M23B:		**0.65**
4503	LEIGH PASTURE AND MARSH	M27C	4.76
	Total M27C:		**4.76**
1602	SANDWICH BAY (RICHBOROUGH PASTURE)	S21D	.36
	Total S21D:		**0.36**
1504	STOUR BANKS NEAR RICHBOROUGH CASTLE	S4A	.56
	Total S4A:		**0.56**
5002	RIVER BEULT PASTURES	S5A	.72
	Total S5A:		**0.72**

APPENDIX 3 NUMBER OF SPECIES IN COMMUNITIES

COMM CODE	NVC TYPE	TOTAL GRASSES	TOTAL HERBS	TOTAL MESO.	TOTAL SPECIES	AREA
1601	MG1A	21	64	15	92	12.37
2201	MG1A	8	15	3	23	6.92
1901	MG1A	7	22	8	34	2.52
4302	MG1A	9	30	5	41	2.00
1503	MG1A	11	27	4	41	1.92
MG1a Averages		11	32	7	46	5.15
2102	MG1C	5	28	11	34	1.04
4103	MG1C	7	18	3	27	.96
2104	MG1C	10	26	6	37	.84
MG1c Averages		7	24	7	33	.95
6102	MG1E	12	46	13	72	10.00
1701	MG1E	11	41	14	56	6.92
3002	MG1E	9	38	13	51	2.34
5501	MG1E	8	20	8	30	2.04
2202	MG1E	10	29	9	40	1.52
6101	MG1E	9	34	11	54	1.00
3401	MG1E	5	39	14	48	.99
0302	MG1E	12	27	11	41	.92
4001	MG1E	11	31	9	44	.56
4903	MG1E	12	20	7	35	.28
3703	MG1E	4	11	3	15	.12
MG1e Averages		9	31	10	44	2.43
5801	MG5A	7	29	11	38	17.30
5402	MG5A	9	30	10	40	13.64
3001	MG5A	20	39	17	60	12.76
4801	MG5A	13	55	32	76	10.52
0401	MG5A	12	42	16	57	7.68
5503	MG5A	9	44	16	59	4.92
3201	MG5A	10	31	18	43	4.56
2301	MG5A	12	31	15	46	3.76
5901	MG5A	11	44	19	58	3.37
3902	MG5A	11	24	7	38	3.00
4705	MG5A	4	18	11	24	2.64
2001	MG5A	10	30	13	42	2.52
3402	MG5A	3	21	11	26	2.44
2901	MG5A	16	49	18	71	2.24
5102	MG5A	6	26	11	33	2.08
5601	MG5A	9	28	10	43	2.04
1	MG5A	7	30	7	38	2.00
5301	MG5A	10	25	10	37	1.88
2105	MG5A	9	25	11	36	1.84
0702	MG5A	8	22	12	34	1.68
5303	MG5A	9	21	6	32	1.52
0201	MG5A	9	24	7	33	1.44
2702	MG5A	8	28	17	40	1.44
2602	MG5A	10	29	10	41	1.32
5302	MG5A	9	32	12	42	1.28
2701	MG5A	12	31	19	46	1.24
36	MG5A	14	46	20	64	.92
2601	MG5A	11	16	6	28	.88
2101	MG5A	9	22	7	33	.80
2401	MG5A	8	38	15	50	.80
5202	MG5A	4	45	15	56	.80
1302	MG5A	17	46	13	66	.62
2801	MG5A	10	22	8	32	.36
3704	MG5A	8	20	11	29	.22
0301	MG5A	5	25	5	31	.20
3701	MG5A	6	27	11	34	.20
0901	MG5A	6	20	5	27	.16
MG5a Averages		9	31	12	43	3.16
4502	MG5A/MG6A	7	24	7	32	.84
MG5a/MG6a Averages		7	24	7	32	.84

COMM CODE	NVC TYPE	TOTAL GRASSES	TOTAL HERBS	TOTAL MESO.	TOTAL SPECIES	AREA
5201	MG5A/MG6B	6	22	9	30	4.28
4101	MG5A/MG6B	11	10	4	24	2.32
5104	MG5A/MG6B	7	16	6	25	2.04
4704	MG6B/MG5A	13	27	4	42	3.44
3101	MG6B/MG5A	8	33	15	46	1.76
4703	MG6B/MG5A	6	28	9	37	1.32
MG6b/MG5a Averages		9	23	8	34	2.53
2203	MG5B	8	31	9	39	2.66
3801	MG5B	11	41	17	60	.72
MG5b Averages		10	36	13	50	1.69
0902	MG5C	6	17	8	23	3.53
4102	MG5C	8	34	18	44	3.32
1101	MG5C	11	37	17	55	2.86
4702	MG5C	8	35	22	47	1.51
5701	MG5C	11	31	21	45	1.26
5107	MG5C	6	26	10	34	.41
5602	MG5C	6	24	15	32	.36
5105	MG5C	12	33	22	50	.30
MG5c Averages		9	30	17	41	1.69
5108	MG5C/M23A	9	28	8	40	.48
MG5c/M23a Averages		9	28	8	40	.48
5103	MG5C/MG6B	6	15	8	22	1.06
MG5c/MG6b Averages		6	15	8	22	1.06
1102	MG6A	7	3	0	10	3.28
1301	MG6A	6	12	1	18	.64
MG6a Averages		7	8	1	14	1.96
0801	MG6B	7	9	3	16	3.88
0402	MG6B	8	9	4	17	3.16
0701	MG6B	13	21	9	38	2.72
0601	MG6B	12	23	12	38	1.96
4201	MG6B	8	22	9	31	1.48
3901	MG6B	9	25	5	36	1.40
5502	MG6B	8	26	6	35	.76
5902	MG6B	8	16	3	25	.71
0202	MG6B	6	12	0	19	.44
5106	MG6B	7	6	1	13	.22
MG6b Averages		9	17	5	27	1.67
4301	MG7	12	25	3	38	26.00
MG7 Averages		12	25	3	38	26.00
5001	MG9A	8	37	6	50	6.48
4501	MG9A	13	28	8	45	2.84
3502	MG9A	7	18	9	25	1.72
0602	MG9A	7	16	5	24	.16
MG9a Averages		9	25	7	36	2.80
0501	MG9B	6	37	12	47	2.40
3301	MG9B	10	33	10	45	1.28
1801	MG9B	11	37	14	53	.88
4401	MG9B	14	34	12	51	.64
MG9b Averages		10	35	12	49	1.30
1401	MG9B/MG5C	12	49	21	70	2.80
MG9b/MG5c Averages		12	49	21	70	2.80
5604	MG10B	5	18	4	25	.56
4901	MG10B	13	28	10	43	.32
MG10b Averages		9	23	7	34	.44
1502	MG12A	7	9	6	16	.08
MG12a Averages		7	9	6	16	.08
1501	MG12A/S4A	10	13	3	24	.88
MG12/S4a Averages		10	13	3	24	.88
4601	CG2C	10	28	11	40	4.00
CG2c Averages		10	28	11	40	4.00
3501	M22A	13	50	17	66	.92
4902	M22A	4	26	7	34	.36
2103	M22A	4	27	12	33	.16
M22a Averages		7	34	12	44	.48

COMM CODE	NVC TYPE	TOTAL GRASSES	TOTAL HERBS	TOTAL MESO.	TOTAL SPECIES	AREA
5802	M22B	8	40	12	49	1.40
5603	M22B	8	27	6	36	.88
5401	M22B	7	32	10	39	.74
4202	M22B	7	44	15	58	.68
1603	M22B	7	29	10	40	.56
3702	M22B	11	38	18	51	.34
2106	M22B	1	12	6	14	.32
1103	M22B	7	27	5	35	.24
M22b Averages		7	31	10	40	.65
4701	M23A	10	35	17	47	.20
M23a Averages		10	35	17	47	.20
1402	M23B	8	32	14	43	.56
5101	M23B	3	15	0	18	.09
M23b Averages		6	24	7	31	.33
4503	M27C	4	32	7	36	4.76
M27c Averages		4	32	7	36	4.76
1602	S21D	4	11	4	15	.36
S21d Averages		4	11	4	15	.36
1504	S4A	3	18	1	22	.56
S4a Averages		3	18	1	22	.56
5002	S5A	2	10	2	12	.72
S5a Averages		2	10	2	12	.72
Averages for survey		**9**	**28**	**10**	**39**	**2.44**

120 Records Processed

APPENDIX 4 SITE EVALUATION

SC = Site Code
SITE NAME = Abbreviated site name
NVC TYPE = NVC subcommunity or transition for each community
AREA = Area of each community
SPP = Total species in each community
LS = Number of locally scarce species within each community. Total for site appears below.
NS = Number of nationally scarce species within each community. Total for site appears below.
SMI = Sum Mesotrophic Index (See section 2.3.3)
AMI = Area Mesotrophic Index (See section 2.3.3). Total AMI for site appears below.

SC	SITE NAME	NVC TYPE	AREA	SPP	LS	NS	SMI	AMI
1	BRAID FAR	MG5A	2.00	38	0	0	12.0	24.0
					0	**0**		**24.0**
2	WANDEN ME	MG5A	1.44	33	0	0	23.0	33.1
2	WANDEN ME	MG6B	.44	19	0	0	.0	0.0
					0	**0**		**33.1**
3	MEADOWS N	MG1E	.92	41	0	0	23.0	21.2
3	MEADOWS N	MG5A	.20	31	0	0	18.0	3.6
					0	**0**		**24.8**
4	JARVIS FA	MG5A	7.68	57	0	0	30.0	230.4
4	JARVIS FA	MG6B	3.16	17	0	0	13.0	41.1
					0	**0**		**271.5**
5	MEADOW NE	MG9B	2.40	47	1	0	39.0	41.4
					1	**0**		**41.4**
6	ENGEHAM F	MG6B	1.96	38	1	0	41.0	80.4
6	ENGEHAM F	MG9A	.16	24	0	0	17.0	2.7
					1	**0**		**83.1**
7	WEALD COT	MG6B	2.72	38	0	0	27.0	73.4
7	WEALD COT	MG5A	1.68	34	1	0	40.0	67.2
					1	**0**		**140.6**
8	HARLAKEND	MG6B	3.88	16	0	0	7.0	27.2
					0	**0**		**27.2**
9	VALLEY WE	MG5C	3.53	23	0	0	20.0	70.6
9	VALLEY WE	MG5A	.16	27	0	0	13.0	2.1
					0	**0**		**72.7**
11	HOWARTHS	MG6A	3.28	10	0	0	.0	0.0
11	HOWARTHS	MG5C	2.86	55	1	0	39.0	111.5
11	HOWARTHS	M22B	0.24	35	0	0	11.0	2.6
					1	**0**		**114.1**
13	BRABOURNE	MG6A	.64	18	0	0	4.0	2.6
13	BRABOURNE	MG5A	.62	66	1	0	33.0	20.5
					1	**0**		**23.1**
14	ALEX FARM	MG9B/MG5C	2.80	70	3	0	83.0	232.4
14	ALEX FARM	M23B	.56	43	1	0	47.0	26.3
					4	**0**		**258.7**
15	STOUR BAN	MG1A	1.92	41	0	0	9.0	17.3
15	STOUR BAN	MG12A/S4A	.88	24	0	0	14.0	12.3
15	STOUR BAN	S4A	.56	22	1	0	2.0	1.1
15	STOUR BAN	MG12A	.08	16	0	1	37.0	3.0
					1	**1**		**33.7**

SC	SITE NAME	NVC TYPE	AREA	SPP	LS	NS	SMI	AMI
16	SANDWICH	MG1A	12.37	92	0	0	21.0	259.8
16	SANDWICH	M22B	.56	40	1	0	45.0	25.2
16	SANDWICH	S21D	.36	15	0	1	25.0	9.0
					1	1		**294.0**
17	STOCKS GR	MG1E	6.92	56	1	0	26.0	179.9
					1	0		**179.9**
18	MEADOW WE	MG9B	.88	53	1	0	58.0	51.0
					1	0		**51.0**
19	NUT TREE	MG1A	2.52	34	0	0	15.0	37.8
					0	0		**37.8**
20	HAMPTON'S	MG5A	2.52	42	0	0	25.0	63.0
					0	0		**63.0**
21	TROTTISCL	MG5A	1.84	36	0	0	44.0	81.0
21	TROTTISCL	MG1C	1.04	34	1	0	38.0	39.5
21	TROTTISCL	MG1C	.84	37	0	0	11.0	9.2
21	TROTTISCL	MG5A	.80	33	1	0	21.0	16.8
21	TROTTISCL	M22B	.32	14	2	0	12.0	3.8
21	TROTTISCL	M22A	.16	33	6	0	30.0	4.8
					7	0		**155.1**
22	STONEHAM	MG1A	6.92	23	0	0	5.0	34.6
22	STONEHAM	MG5B	2.66	39	0	0	13.0	34.6
22	STONEHAM	MG1E	1.52	40	0	0	21.0	31.9
					0	0		**101.1**
23	PONDS AND	MG5A	3.76	46	0	0	43.0	161.7
					0	0		**161.7**
24	FIELD HOU	MG5A	.80	50	1	0	54.0	43.2
					1	0		**43.2**
26	FIELDS OF	MG5A	1.32	41	1	0	48.0	63.4
26	FIELDS OF	MG5A	.88	28	1	0	15.0	13.2
					1	0		**76.6**
27	MARDEN ME	MG5A	1.44	40	3	0	66.0	95.0
27	MARDEN ME	MG5A	1.24	46	2	0	77.0	95.5
					3	0		**190.5**
28	PASTURE B	MG5A	.36	32	0	0	18.0	6.5
					0	0		**6.5**
29	SEASALTER	MG5A	2.24	71	0	0	76.0	170.2
					0	0		**170.2**
30	THORNDEN	MG5A	12.76	60	1	1	49.0	625.2
30	THORNDEN	MG1E	2.34	51	1	0	56.0	131.0
					1	1		**756.2**
31	SECRET FI	MG6B/MG5A	1.76	46	1	0	20.0	35.2
					1	0		**35.2**
32	LITTLE PO	MG5A	4.56	43	1	0	38.0	173.3
					1	0		**173.3**
33	BOONS PAR	MG9B	1.28	45	1	0	23.0	29.4
					1	0		**29.4**

SC	SITE NAME	NVC TYPE	AREA	SPP	LS	NS	SMI	AMI
34	MARKBEECH	MG5A	2.44	26	0	0	36.0	87.8
34	MARKBEECH	MG1E	.99	48	0	0	36.0	35.6
					0	**0**		**123.4**
35	HEVER PAS	MG9A	1.72	25	0	0	33.0	34.7
35	HEVER PAS	M22A	.92	66	1	0	46.0	42.3
					1	**0**		**42.3**
36	MOUNT NOD	MG5A	.92	64	2	0	80.0	73.6
					2	**0**		**73.6**
37	FIELDS EA	M22B	.34	51	1	0	33.0	11.2
37	FIELDS EA	MG5A	.22	29	0	0	32.0	7.0
37	FIELDS EA	MG5A	.20	34	1	0	26.0	5.2
37	FIELDS EA	MG1E	.12	15	0	0	9.0	1.1
					2	**0**		**24.5**
38	HALSTEAD	MG5B	.72	60	0	0	35.0	25.2
					0	**0**		**25.2**
39	PASTURE A	MG5A	3.00	38	1	0	17.0	51.0
39	PASTURE A	MG6B	1.40	36	0	0	6.0	8.4
					1	**0**		**59.4**
40	BORE PLAC	MG1E	.56	44	0	0	24.0	13.4
					0	**0**		**13.4**
41	PASTURES	MG5C	3.32	44	3	0	51.0	169.3
41	PASTURES	MG5A/MG6B	2.32	24	0	0	12.0	27.8
41	PASTURES	MG1C	.96	27	0	0	5.0	4.8
					3	**0**		**201.9**
42	TUBBS HOL	MG6B	1.48	31	0	0	24.0	35.5
42	TUBBS HOL	M22B	.68	58	1	0	29.0	19.7
					1	**0**		**55.2**
43	RIVER MED	MG7	26.00	38	0	0	3.0	78.0
43	RIVER MED	MG1A	2.00	41	0	0	6.0	12.0
					0	**0**		**90.0**
44	MEADOW AT	MG9B	.64	51	0	0	28.0	17.9
					0	**0**		**17.9**
45	LEIGH PAS	M27c	4.76	36	3	1	17.0	80.9
45	LEIGH PAS	MG9A	2.84	45	0	0	11.0	31.2
45	LEIGH PAS	MG5A/MG6A	.84	32	0	1	12.0	10.1
					3	**1**		**122.2**
46	ELBOWS WO	CG2C	4.00	40	0	0	38.0	152.0
					0	**0**		**152.0**
47	COWDEN PO	MG6B/MG5A	3.44	42	0	0	11.0	37.8
47	COWDEN PO	MG5A	2.64	24	1	0	29.0	76.6
47	COWDEN PO	MG5C	1.51	47	3	0	71.0	107.2
47	COWDEN PO	MG6B/MG5A	1.32	37	1	0	14.0	18.5
47	COWDEN PO	M23A	.20	47	3	1	44.0	8.8
					6	**0**		**248.9**
48	POLEBROOK	MG5A	10.52	76	7	0	41.0	431.3
					7	**0**		**431.3**
49	COWDEN ME	M22A	.36	34	1	0	24.0	8.6
49	COWDEN ME	MG10B	.32	43	2	0	49.0	15.7
49	COWDEN ME	MG1E	.28	35	1	0	19.0	5.3
					2	**0**		**29.6**

SC	SITE NAME	NVC TYPE	AREA	SPP	LS	NS	SMI	AMI
50	RIVER BEU	MG9A	6.48	50	1	0	13.0	84.2
50	RIVER BEU	S5A	.72	12	0	0	3.0	2.2
					1	0		86.4
51	SCOTNEY C	MG5A	2.08	33	0	0	26.0	54.1
51	SCOTNEY C	MG5A/MG6B	2.04	25	1	0	11.0	22.4
51	SCOTNEY C	MG5C/MG6B	1.06	22	1	0	20.0	21.2
51	SCOTNEY C	MG5C/M23A	.48	40	2	0	13.0	6.2
51	SCOTNEY C	MG5C	.41	34	1	0	32.0	13.1
51	SCOTNEY C	MG5C	.30	50	4	0	68.0	20.4
51	SCOTNEY C	MG6B	.22	13	0	0	3.0	0.7
51	SCOTNEY C	M23B	.09	18	1	0	.0	0.0
					8	0		138.1
52	HOLLONDS	MG5A/MG6B	4.28	30	1	0	21.0	89.9
52	HOLLONDS	MG5A	.80	56	1	0	31.0	24.8
					2	0		114.7
53	PASTURES	MG5A	1.88	37	0	0	22.0	41.4
53	PASTURES	MG5A	1.52	32	1	0	14.0	21.3
53	PASTURES	MG5A	1.28	42	0	0	22.0	28.2
					1	0		90.9
54	BROOMHILL	MG5A	13.64	40	0	0	22.0	300.1
54	BROOMHILL	M22B	.74	39	1	0	21.0	15.5
					1	0		315.6
55	BROOMHILL	MG5A	4.92	59	0	0	29.0	142.7
55	BROOMHILL	MG1E	2.04	30	0	0	21.0	42.8
55	BROOMHILL	MG6B	.76	35	0	0	15.0	11.4
					0	0		196.9
56	BIDBOROUG	MG5A	2.04	43	1	0	20.0	40.8
56	BIDBOROUG	M22B	.88	36	0	0	13.0	11.4
56	BIDBOROUG	MG10B	.56	25	0	0	9.0	5.0
56	BIDBOROUG	MG5C	.36	32	1	0	49.0	17.6
					2	0		74.8
57	BAYHAM AB	MG5C	1.26	45	3	0	65.0	81.9
					3	0		81.9
58	CHINGLEY	MG5A	17.30	38	1	0	29.0	501.7
58	CHINGLEY	M22B	1.40	49	0	0	30.0	42.0
					1	0		543.7
59	LAND BY H	MG5A	3.37	58	1	2	43.0	144.9
59	LAND BY H	MG6B	.71	25	0	0	5.0	3.6
					1	2		148.5
61	WARDEN PO	MG1E	10.00	72	0	1	24.0	240.0
61	WARDEN PO	MG1E	1.00	54	0	0	19.0	19.0
					0	1		249.0

APPENDIX 5: SPECIES FOUND DURING THE SURVEY, WITH MESOTROPHIC VALUE SCORES AND RARITY CATEGORIES.

SPECIES NAME	MESO. VALUE	TETRADS IN KENT	RARITY
Acer pseudoplatanus (g)			
Achillea millefolium			
Achillea ptarmica	1	38	LS
Agrimonia eupatoria	1		
Agrimonia procera	1	26	LS
Agrostis canina			
Agrostis capillaris			
Agrostis stolonifera			
Ajuga reptans	1		
Alnus glutinosa (g)			
Alopecurus geniculatus			
Alopecurus pratensis			
Anacamptis pyramidalis			
Anagallis arvensis			
Angelica sylvestris			
Anthoxanthum odoratum			
Anthriscus sylvestris			
Apium nodiflorum			
Arenaria serpyllifolia			
Arrhenatherum elatius			
Artemisia vulgaris			
Arum maculatum			
Atriplex prostrata			
Avenula pratensis			
Avenula pubescens	1		
Bellis perennis			
Berula erecta			
Betula pendula (g)			
Betula seedling/sp			
Blackstonia perfoliata			
Brachypodium sylvaticum	1		
Briza media	2		
Bromus commutatus	4		
Bromus hordeaceus hordeaceus			
Bromus sterilis			
Bryonia cretica dioica			
Callitriche seedling/sp			
Calluna vulgaris			
Caltha palustris	1		
Calystegia sepium			
Campanula rotundifolia	2		
Cardamine amara		45	LS
Cardamine flexuosa			
Cardamine pratensis	1		
Cardaria draba			
Carex acuta		16	LS
Carex acutiformis	1		
Carex caryophyllea	2	28	LS
Carex disticha	2	22	LS
Carex divisa	4	113	NS
Carex divulsa			
Carex flacca	2		
Carex hirta			
Carex nigra	2	34	LS
Carex otrubae			
Carex ovalis	2		
Carex pallescens	2	26	LS
Carex panicea	2	9	LS
Carex pendula			
Carex remota			

SPECIES NAME	MESO. VALUE	TETRADS IN KENT	RARITY
Carex riparia			
Carex seedling/sp			
Carex sylvatica			
Carex vesicaria	2	15	LS
Carex vulpina		9	NS
Carlina vulgaris			
Centaurea nigra	1		
Centaurium erythraea	1		
Cerastium fontanum triviale			
Chaerophyllum temulentum			
Chamomilla suaveolens			
Circaea lutetiana			
Cirsium acaule			
Cirsium arvense			
Cirsium palustre			
Cirsium vulgare			
Conopodium majus	1		
Convolvulus arvensis			
Corylus avellana (g)			
Crataegus laevigata			
Crataegus monogyna (g)			
Crepis biennis			
Crepis capillaris			
Cruciata laevipes			
Cynosurus cristatus			
Cytisus scoparius (g)			
Dactylis glomerata			
Dactylorhiza fuchsii	1		
Dactylorhiza maculata	2	9	LS
Dactylorhiza maculata x D. fuc	2		
Dactylorhiza majalis praetermi		38	LS
Dactylorhiza praetermissa x D.		8	LS
Danthonia decumbens	2	45	LS
Daucus carota			
Deschampsia cespitosa			
Dipsacus fullonum			
Echium vulgare			
Eleocharis palustris	1		
Elymus repens			
Epilobium adenocaulon			
Epilobium angustifolium			
Epilobium hirsutum			
Epilobium montanum			
Epilobium palustre	1	29	LS
Epilobium parviflorum	1		
Epilobium sp			
Epilobium tetragonum			
Epilobium tetragonum subsp.lam			
Equisetum arvense			
Equisetum palustre	1		
Equisetum sp			
Equisetum telmateia			
Eupatorium cannabinum			
Euphrasia officinalis agg			
Fagus sylvatica (g)			
Festuca arundinacea			
Festuca ovina			
Festuca pratensis			
Festuca rubra			
Filipendula ulmaria			
Frangula alnus			
Fraxinus excelsior (g)			
Fraxinus excelsior (s)			
Galega officinalis			
Galium aparine			

SPECIES NAME	MESO. VALUE	TETRADS IN KENT	RARITY
Galium mollugo			
Galium palustre	1		
Galium saxatile			
Galium uliginosum	1	15	LS
Galium verum	1		
Genista tinctoria	2	45	LS
Geranium dissectum			
Geranium molle			
Geranium pratense	2	39	LS
Glechoma hederacea			
Glyceria fluitans			
Glyceria maxima			
Glyceria plicata			
Hedera helix (g)			
Heracleum sphondylium			
Hieracium pilosella group	1		
Holcus lanatus			
Hordeum secalinum	1		
Hyacinthoides nonscripta	1		
Hypericum perforatum			
Hypericum tetrapterum	1		
Hypochoeris radicata			
Impatiens glandulifera			
Iris pseudacorus			
Isolepis setacea	2	31	LS
Juncus acutiflorus			
Juncus articulatus			
Juncus bufonius			
Juncus conglomeratus			
Juncus effusus			
Juncus inflexus			
Juncus subnodulosus	1	21	LS
Knautia arvensis	1		
Lamiastrum galeobdolon			
Lathyrus montanus	1		
Lathyrus nissolia	4		
Lathyrus pratensis	1		
Leontodon autumnalis			
Leontodon hispidus	2		
Leucanthemum vulgare	1		
Linaria vulgaris			
Linum catharticum	1		
Lolium perenne			
Lonicera periclymenum (g)			
Lotus corniculatus	1		
Lotus tenuis	1		
Lotus uliginosus	1		
Luzula campestris	1		
Lychnis flos-cuculi	1		
Lycopus europaeus			
Lysimachia nemorum			
Lysimachia nummularia	1		
Lysimachia vulgaris			
Lythrum salicaria			
Malva moschata			
Medicago lupulina			
Medicago sativa			
Melilotus alba			
Melilotus altissima			
Mentha aquatica			
Mentha sp.		1	NS
Minuartia hybrida			
Myosotis arvensis			
Myosotis discolor	1		
Myosotis scorpioides			

SPECIES NAME	MESO. VALUE	TETRADS IN KENT	RARITY
Narcissus pseudonarcissus	1		
Narcissus sp.			
Odontites verna			
Oenanthe crocata			
Oenanthe fistulosa	1		
Oenanthe lachenalii			
Oenanthe pimpinelloides	8	3	NS
Ononis spinosa	2		
Ophioglossum vulgatum	2	40	LS
Ophrys apifera			
Orchis morio	4	24	LS
Origanum vulgare			
Pastinaca sativa			
Petroselinum segetum			
Phalaris arundinacea			
Phleum pratense			
Phleum pratense bertolonii			
Phragmites australis			
Picris echioides			
Pimpinella saxifraga	2		
Plantago lanceolata			
Plantago major			
Plantago media	1		
Poa annua			
Poa pratensis			
Poa trivialis			
Polygala vulgaris	2		
Polygonum amphibium			
Polygonum aviculare			
Polygonum hydropiper			
Polygonum sp			
Populus sp			
Populus tremula (g)			
Potentilla anglica	1	14	LS
Potentilla anserina			
Potentilla erecta	1		
Potentilla erecta x reptans			
Potentilla reptans			
Potentilla sterilis			
Primula veris	2		
Primula vulgaris	2		
Prunella vulgaris			
Prunus spinosa (g)			
Pteridium aquilinum			
Pulicaria dysenterica	1		
Quercus seedling/sp			
Ranunculus acris			
Ranunculus aquatilis		26	LS
Ranunculus bulbosus	1		
Ranunculus ficaria	1		
Ranunculus flammula	1		
Ranunculus repens			
Ranunculus sceleratus			
Rhinanthus minor	1		
Ribes nigrum			
Rorippa amphibia		44	LS
Rosa canina agg.			
Rosa seedling/sp			
Rubus fruticosus agg.			
Rumex acetosa			
Rumex acetosella			
Rumex conglomeratus			
Rumex crispus			
Rumex hydrolapathum			
Rumex obtusifolius			

SPECIES NAME	MESO. VALUE	TETRADS IN KENT	RARITY
Rumex sanguineus			
Sagina procumbens			
Salix alba			
Salix caprea (g)			
Salix cinerea (g)			
Salix seedling/sp			
Sambucus nigra (g)			
Sanguisorba minor	1		
Scabiosa columbaria			
Scirpus maritimus			
Scirpus sylvaticus			
Scrophularia auriculata			
Scrophularia nodosa			
Senecio aquaticus	1	35	LS
Senecio erucifolius	1		
Senecio jacobaea			
Silaum silaus	8		
Silene alba			
Silene dioica			
Silene vulgaris			
Sison amomum			
Sisymbrium officinale			
Solanum dulcamara			
Sonchus asper			
Stachys officinalis	2		
Stachys palustris			
Stachys sylvatica			
Stellaria alsine			
Stellaria graminea	1		
Stellaria holostea			
Succisa pratensis	2		
Symphytum x uplandicum			
Tanacetum vulgare			
Taraxacum seedling/sp			
Teucrium scorodonia			
Torilis japonica			
Tragopogon pratensis			
Trifolium dubium			
Trifolium medium	1		
Trifolium ornithopodioides		22	NS
Trifolium pratense			
Trifolium repens			
Tripleurospermum inodorum			
Tripleurospermum maritimum			
Trisetum flavescens	1		
Tussilago farfara			
Typha latifolia			
Ulex europaeus (g)			
Ulmus procera (g)			
Urtica dioica			
Valeriana officinalis	1		
Verbascum thapsus			
Veronica arvensis			
Veronica beccabunga			
Veronica catenata			
Veronica chamaedrys			
Veronica officinalis	1		
Veronica persica			
Veronica serpyllifolia serpyll			
Viburnum lantana			
Vicia bithynica		8	NS
Vicia cracca			
Vicia hirsuta			
Vicia sativa			
Vicia sepium			

SPECIES NAME	MESO. VALUE	TETRADS IN KENT	RARITY
Vicia tetrasperma	1		
Viola canina	2	8	LS
Viola hirta	2		
Viola riviniana	2		
Viola seedling/sp			
Vulpia bromoides			