5. CONCLUSIONS AND RECOMMENDATIONS.

5.1 Conclusions

The following major points can be made regarding objectives and the type of end products achieved:

1. The methodology was flexible enough to cope with a wide range of difficulties stemming from the very varied character of phase 1-type survey in England. Abstraction from country-wide sources revealed that the bulk of mapped lowland wet grassland was improved grassland with a poor drainage ditch network. Such gravity drainage suggests that very wet conditions are rarely achieved for much lowland wet grassland.

2. Detailed maps of lowland wet grassland were produced for most of England, though no data could be obtained for Lincolnshire. Several other counties had only restricted grassland data and maps for these underestimate the extent of the grassland habitat.

3. Selective studies of loss assessment over time using counties with recent air photo cover and an older Phase 1- survey produced results comparable in part with studies on grazing marsh. An approach was designed to adjust measured map areas to bring all counties and regions into line with a common date base - 1992. Such adjustments involve a high level of 'guesstimation' and results must be treated with caution.

4. Measured map area totalled 216,916 ha for all England and adjusted area was slightly larger, achieving a total of 219,410 ha. This was regarded as large, whilst noting that the bulk of the grassland was poor in terms of its nature conservation value. Only a small proportion of these totals is unimproved grassland, whilst a larger proportion is likely to hold breeding waders (*c.* 105,000 ha - Dr. Paul Jose, RSPB, personal communication).

5. Strong contrasts in lowland wet grassland extent exist between regions. The largest is South-West (55,750 ha) and the smallest is North-East (10,214).

6. The soil parent material(s) of each grassland block was recorded and soil areas calculated, There is an approximate balance between marine and river alluvium, with some evidence that the latter is marginally more extensive. There are aslo strong regional contrasts in the balance between different soil types. Large areas of mixed soil types complicate the analysis and, in particular, obscure the extent of peat as a parent material.

5.2 Recommendations

1. A resource analysis exercise must have good-quality data to be precise and help in decision-making. The Phase 1 information underpinning this project was rather varied in age and was incomplete in several places. Air photo analysis enabled better mapping in several locations but up-to-date grassland distribution would be greatly assisted by further such studies if photography becomes available. Further studies of loss estimation are needed, especially in a changing environmental scene where financial incentives could halt the decline of grassland extent and quality, redressing the long-term trends of recent decades.

2. There is a complete lack of detailed map information on lowland wet grassland in Lincolnshire. Steps should be taken to rectify this major gap and, in the absence of air photos, an approach based on satellite-based habitat classifications is recommended. The Institute of Terrestrial Ecology completed a new land cover map of Britain in March 1993 and a grassland category in this could be matched with topographic and drain information to identify lowland wet grassland areas. The approach could also be extended to locations with inadequate Phase 1 grassland data, notably in West Midland and South Regions.

3. If English Nature is to sponsor or supervise further Phase 1 survey it is essential to ensure that all grassland types are mapped and clearly separated from arable land which should also be recorded. This would avoid underestimation of grassland extent. Repeat Phase 1 surveys of good quality would then enable a detailed analysis of grassland change, a feature which is only partly covered in this project.

6. ACKNOWLEDGEMENTS

Sources in this study were spread throughout England and work involved visits to a large number of locations. Many individuals assisted by providing advice, introduction to map collections and organising space for data abstraction to take place. This help was in all cases provided promptly, often in difficult circumstances and at short notice. I am indebted to all included in the list below but in particular I wish to single out Monica Dargie (for data collection in the 1992-93 study and all scale reductions and 1:50,000 ouline map drafting), Tim Chandler (for data collection in the 1991-92 pilot study covering South-East Region), Alison Hill and Dominic Tantram (for data collection in the 1992-93 national project, covering much of northern and central England). The nominated officers for the project (Geoff Radley for the pilot study, Patrick Denny and Richard Jefferson for the national work) were key background figures and provided essential advice at critical times of a very demanding schedule. Comments made in a project seminar in March 1993 in Peterborough were also very helpful. I offer my warmest thanks to everybody who helped and apologise sincerely to any person or organisation inadvertently omitted from the following list.

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WILDLIFE TRUSTS

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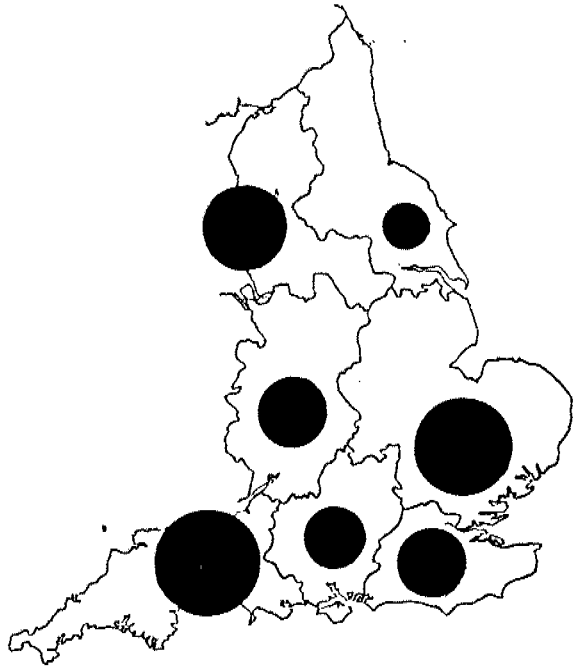
LOWLAND WET GRASSLAND IN ENGLAND

DISTRIBUTION OF THE RESOURCE

Volume 2 : Grassland Block Inventory (Annex 1)



A Report to English Nature
Contract No F72-08-17

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ANNEX 1

BLOCK DETAILS - LOWLAND WET GRASSLAND

SOUTH-EAST REGION

Key to codes used in listing

Source
1 County/district Phase 1 survey
2 SSSI habitat map
3 Published report (see text for reference)
4 Other type(s) of survey (see text for details)
5 Air photo interpretation

Origin (soil parent material): M=marine alluvium R=river alluvium P=peat
O=other non-marine

Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE1	TQ978300	189	KENT	1,2	127	M
SE2	TR313615	179	KENT	1	340	M
SE3	TR329618	179	KENT	1	26	M
SE4	TR328605	179	KENT	1	20	M
SE5	TR315629	179	KENT	1	13	M
SE6	TR323627	179	KENT	1	25	M
SE7	TR343617	179	KENT	1	60	M
SE8	TR346597	179	KENT	1	25	M
SE9	TR336607	179	KENT	1	20	M
SE10	TR301617	179	KENT	1	41	M
SE11	TR325595	179	KENT	1	54	M
SE12	TR339586	179	KENT	1	14	M
SE13	TR343576	179	KENT	1	18	M
SE14	TR352576	179	KENT	1	47	M
SE15	TR318578	179	KENT	1	14	M
SE16	TR352558	179	KENT	1	19	M
SE17	TR360555	179	KENT	1,2	194	M
SE18	TR370538	179	KENT	1	11	M
SE19	TR370532	179	KENT	1	12	M
SE20	TR357533	179	KENT	1	23	M
SE21	TR363538	179	KENT	1	12	M
SE22	TR342559	179	KENT	1	12	M
SE23	TR070638	179	KENT	1	489	M
SE24	TR232658	179	KENT	1,2	16	M
SE25	TR238672	179	KENT	1,2	11	M

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1 County/district Phase 1 survey
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5 Air photo interpretation

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O=other non-marine

* - part area only, remainder unsurveyed as at February 1993.

Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE26	TR233625	179	KENT	1,2	156	M
SE27	TR204605	179	KENT	1,2	20	R
SE28	TR213619	179	KENT	1,2	20	R
SE29	TQ978300	189	KENT	1,2	351	M
SE30	TQ982322	189	KENT	1	42	M
SE31	TQ985318	189	KENT	1,2	38	M
SE32	TQ995326	189	KENT	1	42	M
SE33	TR005319	189	KENT	1	24	M
SE34	TR018322	189	KENT	1	17	M
SE35	TR022324	189	KENT	1	12	M
SE36	TR032329	179,189	KENT	1	13	M
SE37	TR035336	179,189	KENT	1	13	M
SE38	TR044328	179,189	KENT	1	36	M
SE39	TR038325	189	KENT	1	11	M
SE40	TR028315	189	KENT	1	74	M
SE41	TR023312	189	KENT	1	22	M
SE42	TR010313	189	KENT	1	15	M
SE43	TR001312	189	KENT	1	14	M
SE44	TR047323	189	KENT	1	30	M
SE45	TQ951335	189	KENT	1	37	M
SE46	TQ968269	189	KENT	1	75	M
SE47	TQ977257	189	KENT	1	28	M
SE48	TQ983268	189	KENT	1	16	M
SE49	TQ990262	189	KENT	1	40*	M
SE50	TQ994296	189	KENT	1	22	M

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Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE51	TQ993290	189	KENT	1	15	M
SE52	TQ989280	189	KENT	1	45	M
SE53	TQ999285	189	KENT	1	7*	M
SE54	TR072215	189	KENT	1,2	32	M
SE55	TR062190	189	KENT	1,2	22	M
SE56	TR050180	189	KENT	1,2	167	M
SE57	TR030185	189	KENT	1,2	141	M
SE58	TR020192	189	KENT	1,2	27	M
SE59	TR010179	189	KENT	1,2	31	M
SE60	TR005185	189	KENT	1,2	61	M
SE61	TQ985236	189	KENT	1,2	97	M
SE62	TQ955215	189	E SUSSEX	1,2	1269	M
SE63	TQ920185	189	E SUSSEX	1,2	435	M
SE64	TQ915200	189	E SUSSEX	1,2	26	M
SE65	TQ910170	189	E SUSSEX	1,2	32	M
SE66	TQ905155	189,199	E SUSSEX	1,2	274	M
SE67	TQ885175	189,199	E SUSSEX	1	189	M
SE68	TQ900179	189	E SUSSEX	1	14	M
SE69	TQ852177	189,199	E SUSSEX	1	90	M
SE70	TQ904210	189	E SUSSEX	1	47	M
SE71	TQ873267	188,189	E SUSSEX	1	53	M
SE72	TQ947264	189	KENT	1	12	M
SE73	TQ933253	189	E SUSSEX	1	98	M
SE74	TQ916255	189	E SUSSEX	1	37	M
SE75	TQ520025	199	E SUSSEX	1	78	M,R

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4 Other type(s) of survey (see text for details)
5 Air photo interpretation

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O=other non-marine

* - part area only, remainder unsurveyed as at February 1993.

Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE76	TQ515010	199	E SUSSEX	1,2	43	M
SE77	TQ515992	199	E SUSSEX	1,2	161	M
SE78	TQ608010	199	E SUSSEX	1	99	M
SE79	TQ615030	199	E SUSSEX	1	233	M
SE80	TQ590065	199	E SUSSEX	1	64	M
SE81	TQ635075	199	E SUSSEX	1,2	3058	M,R,O
SE82	TQ601061	199	E SUSSEX	1	13	M
SE83	TQ844041	199	E SUSSEX	1	32	M
SE84	TQ675052	199	E SUSSEX	1	12	M
SE85	TQ683054	199	E SUSSEX	1	14	M
SE86	TQ695084	199	E SUSSEX	1	64	M
SE87	TQ621112	199	E SUSSEX	1	10	M
SE88	TQ768103	199	E SUSSEX	1	36	R
SE89	TQ724254	188,199	E SUSSEX	1	131	R
SE90	TQ741239	199	E SUSSEX	1	16	R
SE91	TQ795254	188,199	E SUSSEX	1	32	R
SE92	TQ825175	199	E SUSSEX	1	17	R
SE93	TQ877200	189,199	E SUSSEX	1	39	R
SE94	TQ813259	188,199	E SUSSEX	1	184	R
SE95	TQ888154	189,199	E SUSSEX	1	9	M
SE96	TQ478107	198	E SUSSEX	1	83	R
SE97	TQ485102	198	E SUSSEX	1	11	R
SE98	TQ470096	198	E SUSSEX	1	121	R
SE99	TQ460089	198	E SUSSEX	1	10	R
SE100	TQ440080	198	E SUSSEX	1	48	M

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Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE101	TQ428083	198	E SUSSEX	1,2	36	M
SE102	TQ403118	198	E SUSSEX	1,2	30	R
SE103	TQ410085	198	E SUSSEX	1,2	120	M
SE104	TQ419080	198	E SUSSEX	1,2	13	M
SE105	TQ417076	198	E SUSSEX	1,2	23	M
SE106	TQ428069	198	E SUSSEX	1,2	138	M
SE107	TQ429057	198	E SUSSEX	1	9	M
SE108	TQ432046	198	E SUSSEX	1	17	M
SE109	TQ428045	198	E SUSSEX	1	24	M
SE110	TQ445033	198	E SUSSEX	1	13	M
SE111	TQ435035	198	E SUSSEX	1	35	M
SE112	TQ437025	198	E SUSSEX	1	59	M
SE113	TQ447027	198	E SUSSEX	1	11	M
SE114	TQ202175	198	W SUSSEX	1	24	R
SE115	TQ201145	198	W SUSSEX	1	200	R
SE116	TQ200120	198	W SUSSEX	1	231	M
SE117	TQ195128	198	W SUSSEX	1	171	M,R
SE118	TQ198084	198	W SUSSEX	1	9	M
SE119	TQ203075	198	W SUSSEX	1	21	M
SE120	TQ209071	198	W SUSSEX	1	30	M
SE121	TQ203064	198	W SUSSEX	1	17	M
SE122	TQ199057	198	W SUSSEX	1	32	M
SE123	TQ195046	198	W SUSSEX	1	31	M
SE124	TQ195175	198	W SUSSEX	1	36	R
SE125	SU923210	197	W SUSSEX	1	135	R

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Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE126	SU965202	197	W SUSSEX	1	48	R
SE127	SU977192	197	W SUSSEX	1	32	R
SE128	SU998182	197	W SUSSEX	1	64	R
SE129	TQ022181	197	W SUSSEX	1	98	R
SE130	TQ040183	197	W SUSSEX	1	36	R
SE131	TQ055175	197	W SUSSEX	11	184	R
SE132	TQ028159	197	W SUSSEX	1	155	R
SE133	TQ035140	197	W SUSSEX	1,2	326	R
SE134	TQ020119	197	W SUSSEX	1	25	R
SE135	TQ030100	197	W SUSSEX	1	340	M,R
SE136	TQ029091	197	W SUSSEX	1	30	M
SE137	TQ025075	197	W SUSSEX	1	58	M
SE138	TQ015050	197	W SUSSEX	1	340	M
SE139	TQ045041	197	W SUSSEX	1	111	M
SE140	SU998045	197	W SUSSEX	1	113	M
SE141	TQ010028	197	W SUSSEX	1	36	M
SE142	SU975015	197	W SUSSEX	1	20	O
SE143	SU963018	197	W SUSSEX	1	48	O
SE144	SU950025	197	W SUSSEX	1	67	O
SE145	SU948018	197	W SUSSEX	1	12	O
SE146	SU945050	197	W SUSSEX	1	26	O
SE147	SU921014	197	W SUSSEX	1	80	O
SE148	SU910015	197	W SUSSEX	1	17	O
SE149	SU889000	197	W SUSSEX	1	79	M
SE150	SU864008	197	W SUSSEX	1	29	M

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Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
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SE152	SZ850964	197	W SUSSEX	1,2	98	M
SE153	SZ846954	197	W SUSSEX	1	10	M
SE154	SZ825955	197	W SUSSEX	1,2	173	M
SE155	SU842013	197	W SUSSEX	1	71	O
SE156	SU842038	197	W SUSSEX	1	40	O
SE157	SU832040	197	W SUSSEX	1,2	64	O
SE158	SU805050	197	W SUSSEX	1	24	O
SE159	SZ795979	197	W SUSSEX	1	16	O
SE160	SZ772985	197	W SUSSEX	1	16	O
SE161	SU785008	197	W SUSSEX	1,2	11	O
SE162	SU763013	197	W SUSSEX	1,2	26	O
SE163	SU749028	197	W SUSSEX	1,2	13	O
SE164	SU756045	197	W SUSSEX	1,2	161	M
SE165	TQ073067	197	W SUSSEX	1	14	O
SE166	TQ009055	197	W SUSSEX	1	77	M
SE167	TR035670	178,179	KENT	1,2	141	M
SE168	TR010691	178	KENT	1,2	91	M
SE169	TQ988690	178	KENT	1,2	47	M
SE170	TQ995674	178	KENT	1,2	19	M
SE171	TQ940690	178	KENT	1,2	1522	M
SE172	TQ925735	178	KENT	1	346	M
SE173	TQ881716	178	KENT	1	76	M
SE174	TQ905695	178	KENT	1,2	521	M
SE175	TQ875685	178	KENT	1	61	M

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Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE176	TQ841695	178	KENT	1	21	M
SE177	TQ839681	178	KENT	1	86	M
SE178	TQ953658	178	KENT	1,2	233	M
SE179	TQ985652	178	KENT	1,2	706	M
SE180	TR022632	178	KENT	1,2	126	M
SE181	TR030618	178,179	KENT	1	11	M
SE182	TR042620	178,179	KENT	1	21	M
SE183	TQ793719	178	KENT	1,2	10	M
SE184	TQ803719	178	KENT	1,2	18	M
SE185	TQ870778	178	KENT	2,3	226	M
SE186	TQ855773	178	KENT	2,3	412	M
SE187	TQ803779	178	KENT	3	13	M
SE188	TQ798779	178	KENT	3	16	M
SE189	TQ790778	178	KENT	3	18	M
SE190	TQ780789	178	KENT	1,2	139	M
SE191	TQ940985	178	KENT	2,3	1021	M
SE192	TQ700745	177,178	KENT	2,3	516	M
SE193	TQ545770	177	KENT	3	19	M
SE194	TQ539774	177	KENT	3	23	M
SE195	TQ541755	177	KENT	3	40	M
SE196	TQ535757	177	KENT	3	14	M
SE197	TQ532775	177	GREATER LONDON	3	76	M
SE198	TQ535802	177	GREATER LONDON	1,3	520	M
SE199	TQ491803	177	GREATER LONDON	1,3	51	M
SE200	TQ485800	177	GREATER LONDON	1	64	M

Key to codes used in listing

Source
1 County/district Phase 1 survey
2 SSSI habitat map
3 Published report (see text for reference)
4 Other type(s) of survey (see text for details)
5 Air photo interpretation

Origin (soil parent material): M=marine alluvium R=river alluvium P=peat
O=other non-marine

Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE201	TQ472825	177	GREATER LONDON	1	127	M
SE202	TQ706645	178	KENT	1	30	M
SE203	TQ711635	178	KENT	1	23	M
SE204	TQ707625	178	KENT	1	29	M
SE205	TQ714623	178	KENT	1	36	M
SE206	TQ709603	178	KENT	1	72	M
SE207	TR293618	179	KENT	1	20	M
SE208	TR276619	179	KENT	1	11	M
SE209	TR287645	179	KENT	1	11	M
SE210	TR227590	179	KENT	1	30	R
SE211	TR046459	179	KENT	1	23	R
SE212	TR040452	179	KENT	1	16	R
SE213	TR042443	179	KENT	1	23	R
SE214	TR090334	179	KENT	1	57	M
SE215	TR073337	179	KENT	1	31	M
SE216	TQ837285	188	KENT	1	104	R
SE217	TQ549458	188	KENT	1	45	R
SE218	TQ678478	188	KENT	1	25	R
SE219	TQ669475	188	KENT	1	25	R
SE220	TQ607473	188	KENT	1	45	R
SE221	TQ624472	188	KENT	1	12	R
SE222	TR011405	189	KENT	1	171	R
SE223	TR017374	189	KENT	1	30	R
SE224	TR082333	189	KENT	1	12	M
SE225	TR056328	189	KENT	1	20	M

Key to codes used in listing

Source
1 County/district Phase 1 survey
2 SSSI habitat map
3 Published report (see text for reference)
4 Other type(s) of survey (see text for details)
5 Air photo interpretation

Origin (soil parent material): M=marine alluvium R=river alluvium P=peat
O=other non-marine

* - part area only, remainder unsurveyed as at February 1993.

+ - there is no block SE237. Inadvertently placed in SE Region but then found to be just in South Region and thus renumbered (S278).

Block Number	Grid Reference	OS 1:50,000 sheet number	County or District	Survey source type	Area (hectares)	Soil parent material type
SE226	TR068320	189	KENT	1	41	M
SE227	TR057307	189	KENT	1	124*	M
SE228	TR094303	189	KENT	1	18*	M
SE229	TQ989273	189	KENT	1	16	M
SE230	TQ938326	189	KENT	1	11	M
SE231	TQ926333	189	KENT	1	14	M
SE232	TQ927321	189	KENT	1	20	M
SE233	TQ927303	189	KENT	1	10	M
SE234	TQ905302	189	KENT	1	27	M
SE235	TQ925288	189	KENT	1	15	M
SE236	TQ943294	189	KENT	1	33	M
SE237+						
SE238	TQ031734	176	SURREY	1	50	R