

**Table 5. Key Natural Areas for NVC Communities**

2	Border Uplands	high diversity, important for juniper scrub (W19).
3	North Pennines	very high diversity (possibly overestimate), important for upland alder (W7) and juniper (W19).
7	Yorkshire Dales	high diversity, important for upland fringe ash woods (W8 d-g).
31	Broadland	moderate diversity, important for swamp alder and willow woods (W2, W5).
34	Chilterns	low diversity, important for neutral to calcicolous beech woodland (W12, W14).
38	London Basin	high diversity, important for alder and neutral to acid beech woodland (W5, W14, W15).
41	North Downs	moderate diversity, important for lowland ash, calcicolous beech and yew woods (W8, 12, 13).
43	Low Weald	moderate diversity, important for lowland oak (including oak-hornbeam) and neutral beech woodland (W10, 14).
44	High Weald	high diversity, important for lowland oak (including oak-hornbeam) and neutral beech woodland (W10, 14).
45	South Downs	low diversity, important for calcicolous beech and yew woodland (W12, 13).
46	Greensand	high diversity, important for beech and yew woodland (W12, W13).
47	Hampshire Chalk	moderate diversity, important for neutral to calcicolous beech woodland (W12, 14).
50	New Forest	very high diversity, important for a range of types (W4, 14, 15, 16).
51	Cornish Killas and Granites	high diversity, important for willow and acid oak woods (W1, W16).
61	Dartmoor	high diversity, important for upland alder and oak woodland (W7, W11, W17).
63	Exmoor and the Quantocks	high diversity, important for upland fringe and upland oakwoods (W11, 16, 17).
66	Mendips	low diversity, important for lowland ashwoods (W8).
68	Avon Ridges and Valleys	low diversity, important for lowland ash woods (W8).
69	Greater Cotswolds	low diversity important for calcicolous beech woods (W12).
72	Dean Plateau and Wye Valley	very high diversity, important for upland fringe ash woods, lowland oak and beech woods (W8, 10, 12, 13, 14).
74	Hereford Plain	moderate diversity, important for lowland oakwood (W10).
75	Midlands Plateau	very high diversity (probably overestimate).
77	Central Marshes	high diversity, important for acid oakwoods (W16).
79	Mosses and Meres	very high diversity, important for various wet woodland types (W2, 4, 5).
83	White Peak	moderate diversity, important for upland fringe ash woods (W8e-g, W9).
87	Lancashire Plain and Valleys	high diversity important for birch-sphagnum woods (W4).
89	Cumbria Fells and Dales	very high diversity, important for a wide range of types (W3, 7, 9, 10, 11, 13, 16, 17, 19).
92	Solway Basin	low diversity, important for birch-sphagnum woods (W4).

Notes for Figure 5a:

Low diversity score <11

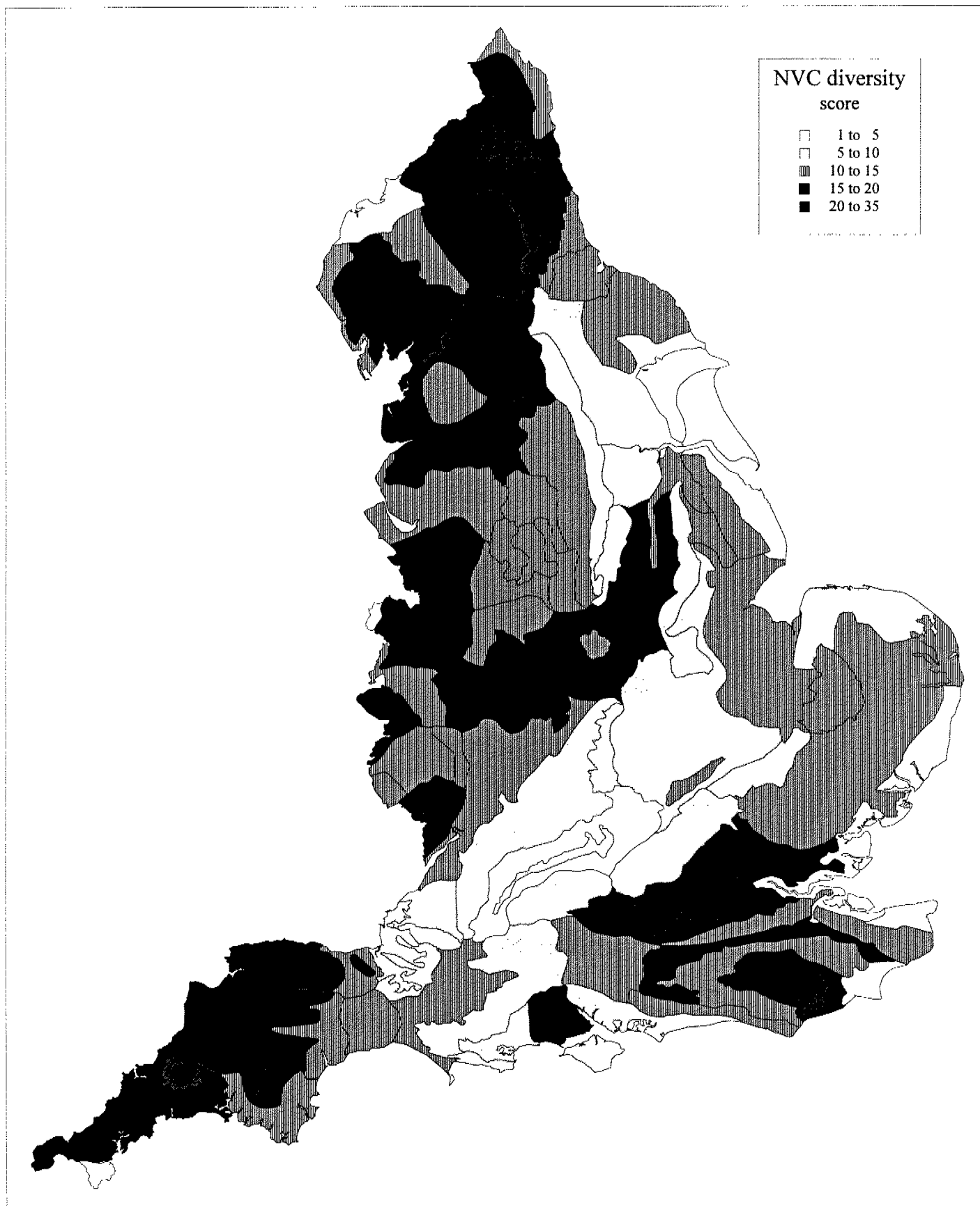
Moderate score - 11-15

High score - 15-20

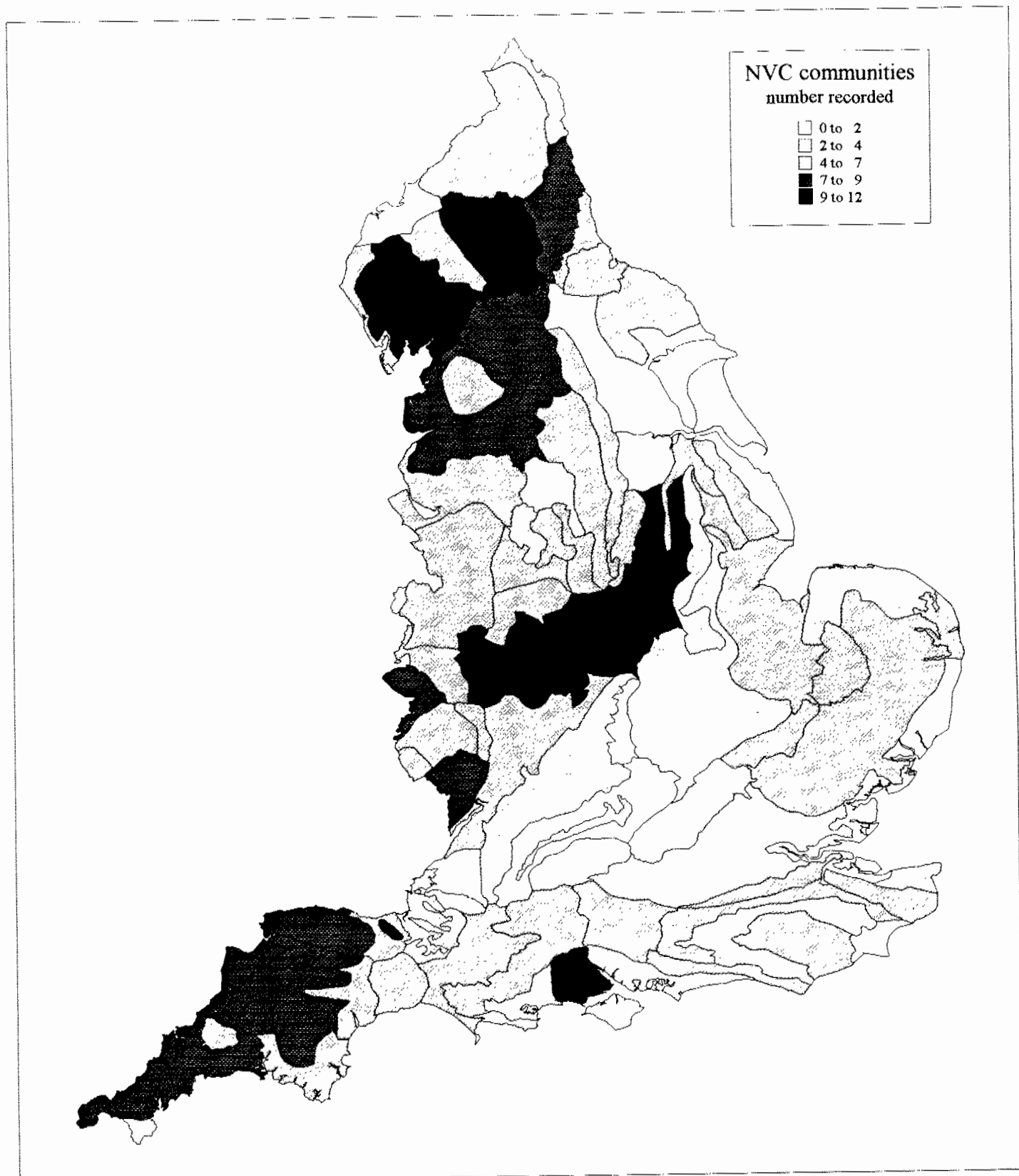
Very high score 21+

Figure 5a.

NVC diversity based on the summary scores in Appendix 2



**Figure 5b.** NVC diversity score, based on the number of types listed by Local Team staff as significant in that natural area.



## Peterken Stand Types (based on tree and shrub species)

Information on Stand Type distribution is again only available as the 20 x 20 km dot distribution maps in Peterken (1981). While numerous surveys were done using this system, these data were rarely collated or published.

A subjective breakdown across Natural Areas has been made by Stand Types, based on the maps in Peterken and personal experience (Table 6). The East Anglian/East Midland mixed clay woodland has been highlighted because although in NVC terms the woods are mostly W8, the Stand Types pick up the small scale variation found in these woods (Stand Types 1, 2, 3 and 10). We also picked out Areas important for their lime and hornbeam interest (Stand Types Groups 4, 5 and 9), because the NVC does not bring out this variation in the canopy composition.

**Table 6. Natural Areas likely to be of high importance for Stand Type Groups**

**a. Ash, maple, elm groups (1, 2, 3, 10)**

- 24 Middle England
- 33 East Anglian Plain
- 51 South Wessex Downs

**b. Lime Groups (4, 5)**

- 20 Lincolnshire Limestone
- 21 Lincolnshire Clay Vales
- 24 Middle England
- 72 Dean Plateau and Wye Valley
- 33 East Anglian Plain
- 89 Cumbrian Fells and Dales
- 83 White Peak

**c. Hornbeam Group (9)**

- 33 East Anglian Plain
- 38 Thames Basin
- 43 Low Weald
- 44 High Weald
- 46 Greensand

## Structural and management types

There is little information at present on the distribution of structural/management types across NAs. Most ancient woods were formerly treated as coppice but neglect for much of this century has led to the development of a high forest structure. Locally there is still some worked coppice but much of the western oak woods are now grazed high forest. Scattered wood pasture/parklands with pollards and veteran trees remain. An initial assessment of the significance of NAs for important parkland sites is shown out Figure 6a. Scrub, wet woods, recent conifer plantations and other woodland features were also noted as important by the Local Team in various NAs. The hedgerow map (Figure 6b, from Core Profiles) shows a strong southwesterly bias even though hedges are also a common feature in the south-east. It may be that because ancient woodland cover is greater in the south-east hedges were seen as relatively less significant in maintaining a habitat matrix. Their omission from other NAs is surprising and needs to be revisited.

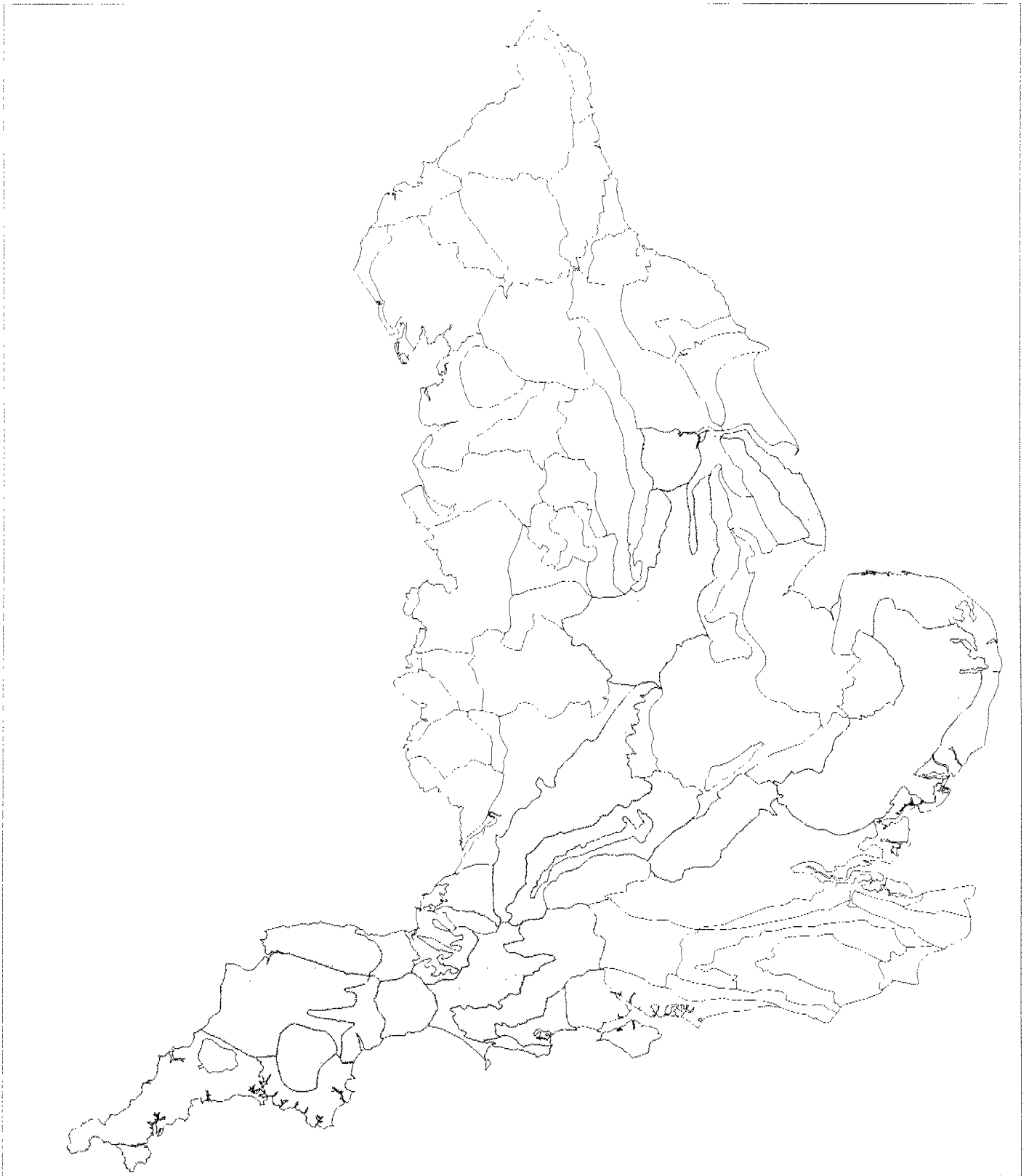
Figure 6a.

A preliminary assessment of Natural Areas where parkland is significant



**Figure 6b.**

Natural Areas where hedges were identified  
as a significant feature by the Local Team



### ***Woodland species in Natural Areas***

Each Core Profile includes a section on 'Declining/Extinct' species for woodland where this habitat has been highlighted by the Local Team as a feature (Appendix 3). The detail within these and the species selected are variable reflecting the different extent of our knowledge in different Natural Areas. Not surprisingly, because they are the groups for which there is the best information on changes in distribution, butterflies and birds featured most strongly in the lists (Table 7). A more interesting comparison may be to use 'significant species' across Natural Areas, but that has not yet been done.

**Table 7. The species associated with woodland habitats most frequently listed as extinct or declining in Natural Areas**

<b>Species</b>	<b>Natural Area where listed (numbers)</b>
Goshawk	17, 12,32
Buzzard	83,82,85,12,84,18
Nightingale	22,17,23,18,16,71
Pearl-bordered fritillary	52,53,18,22,21,35,66,65,54,55,63
Small pearl-bordered fritillary	22,83,35,18,54
High brown fritillary	75,44,64,22,54,66
Silver-washed fritillary	35,22,83,18,21
White-letter hairstreak	18,17,20,83,82,75

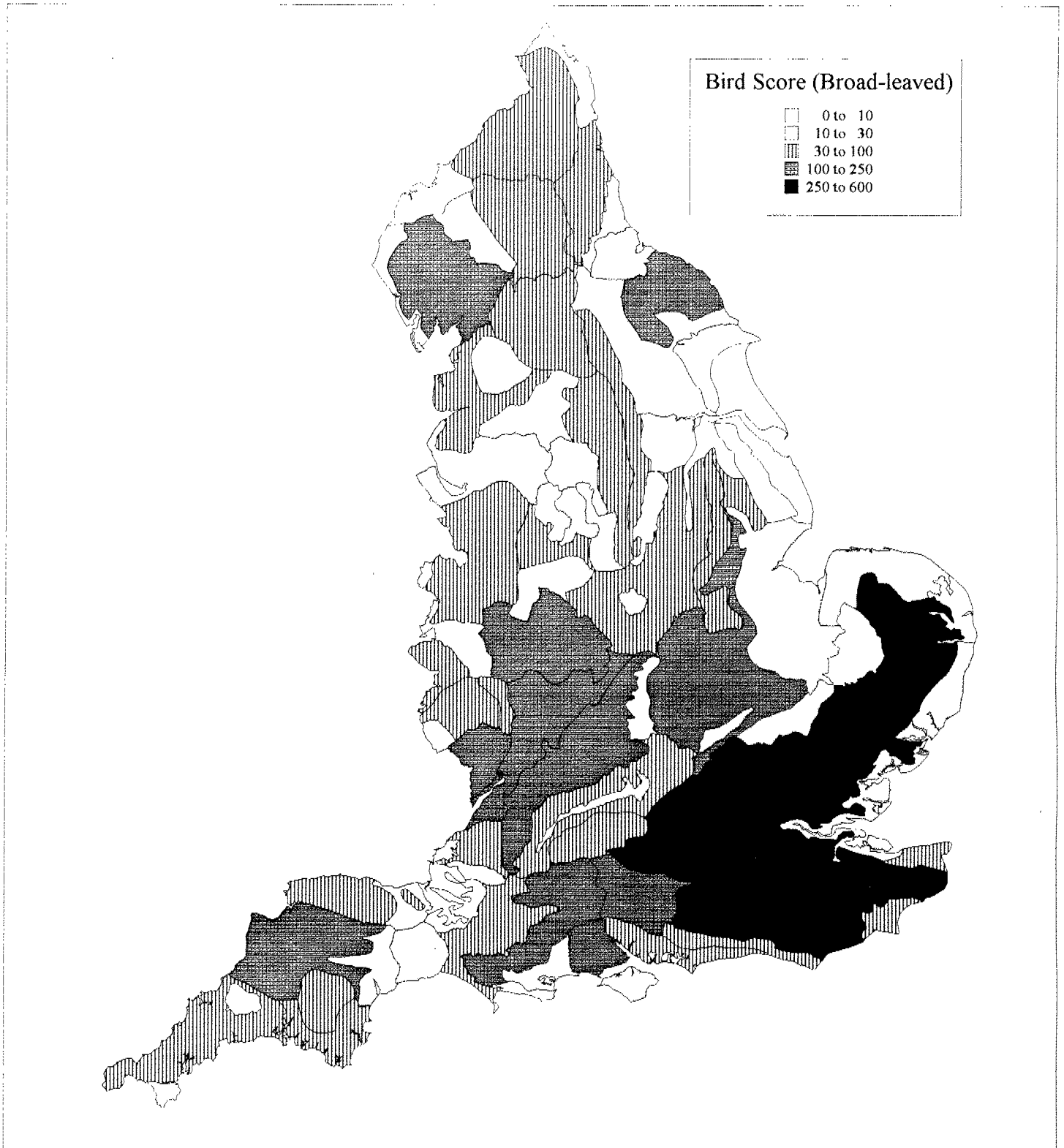
A second approach looking at species information has been to use national overviews or data sets. These are as yet incomplete and the following are examples only.

#### **Birds**

The information on this the most complete (Grice *et al* 1994). Scores based on number of woodland bird species, their rarity and amount of broadleaved woodland have been compiled and can be shown in map form (eg Figure 7).

**Figure 7.**

**Broad-leaved woodland bird score**



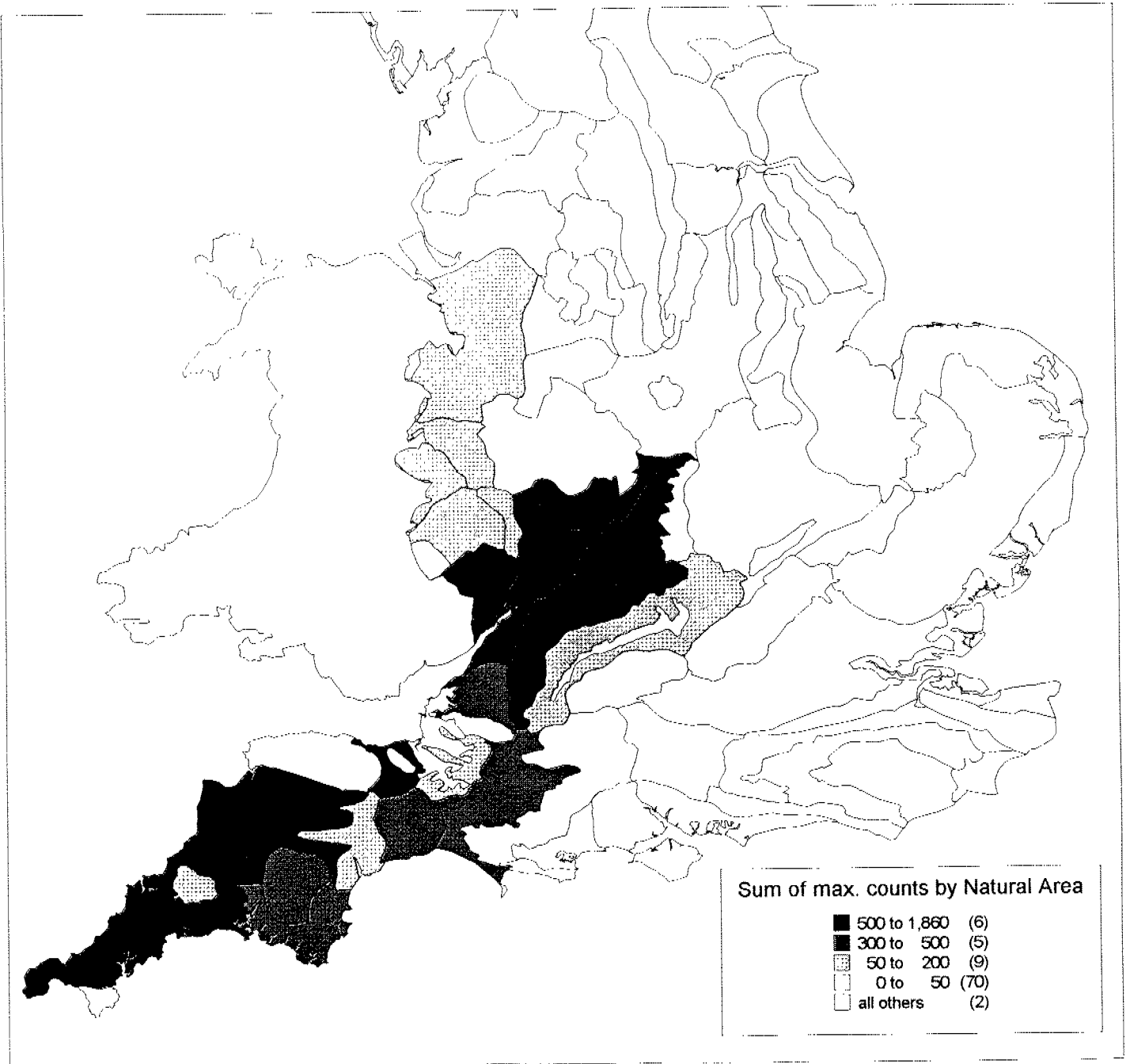
Calculated by multiplying the bird index (broadleaved) by the total area (hectares) of ancient broad-leaved woodland in each Natural Area. A higher score indicates the area is of greater importance for birds.



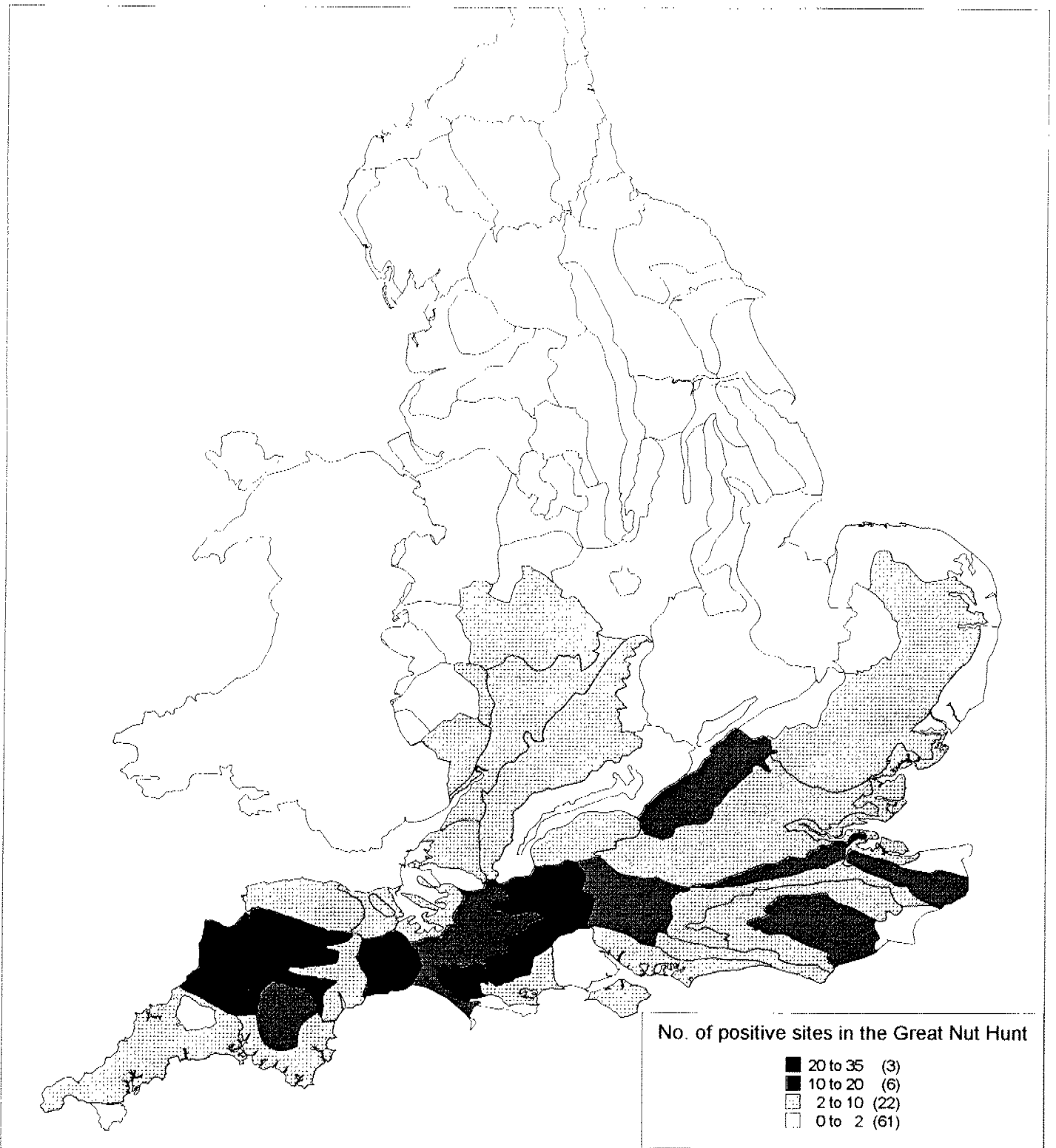
## Mammals

Distribution maps for lesser horse-shoe bat (Figure 8a) and dormouse (Figure 8b) by Natural Area (Mitchell-Jones 1996, *pers comm*) show their concentrations in the south-west and south respectively. A similar map for red squirrel would have emphasised the northern areas and the Isle of Wight.

**Figure 8a.** Significant Natural Areas for lesser horseshoe bat.



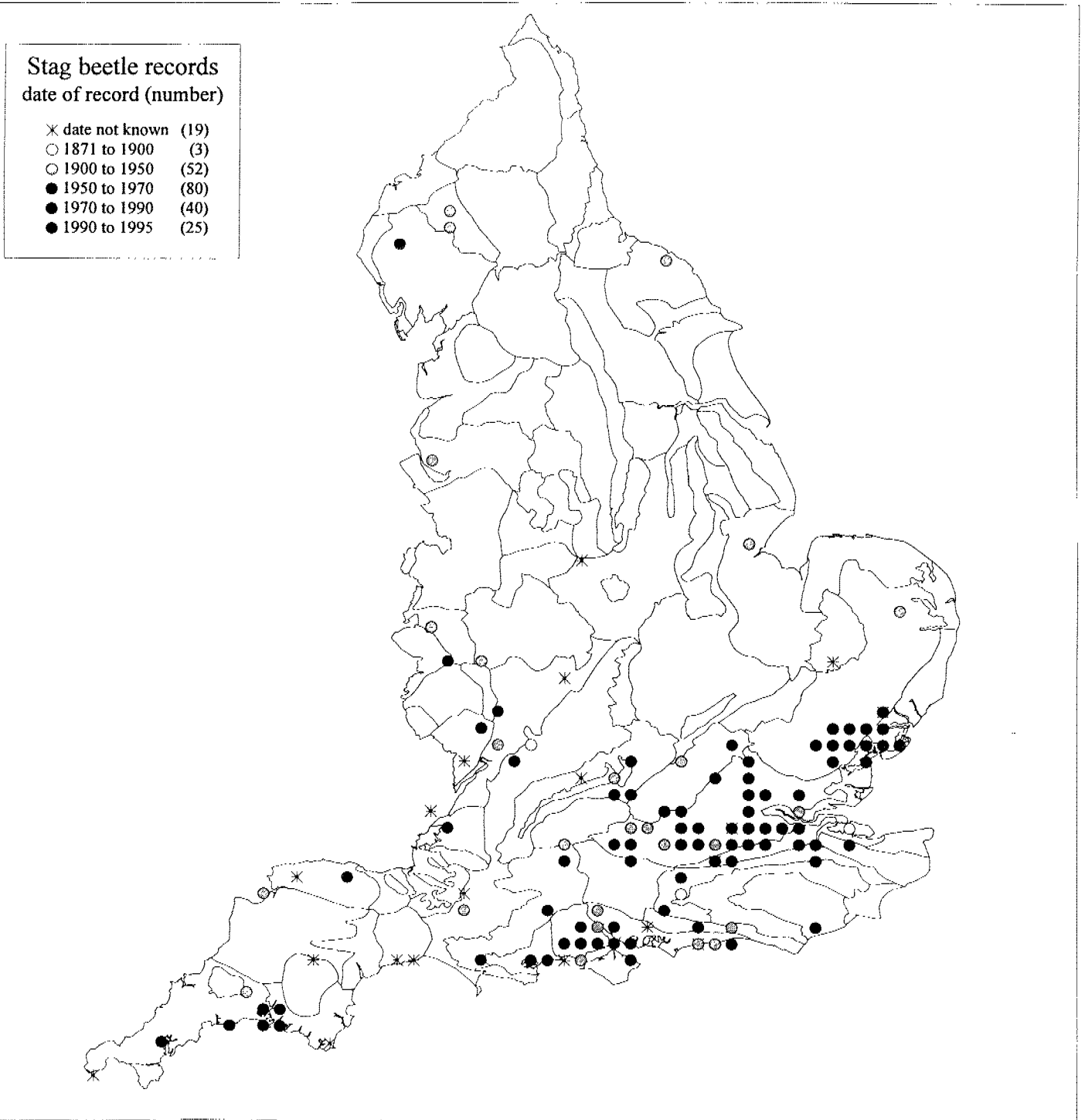
**Figure 8b.** Significant Natural Areas for dormice



## Invertebrates

The distribution of a southern dead-wood species (stag beetle) is shown in Figure 9. Interestingly it does not correspond particularly well either with the abundance of ancient woodland within its range (Figure 3) - note the absence of stag beetle records for the Weald - or with the perceived importance of parkland (Figure 6a) - lack of records for the south-west and north midlands!

**Figure 9** Distribution of stag beetle records by Natural Area

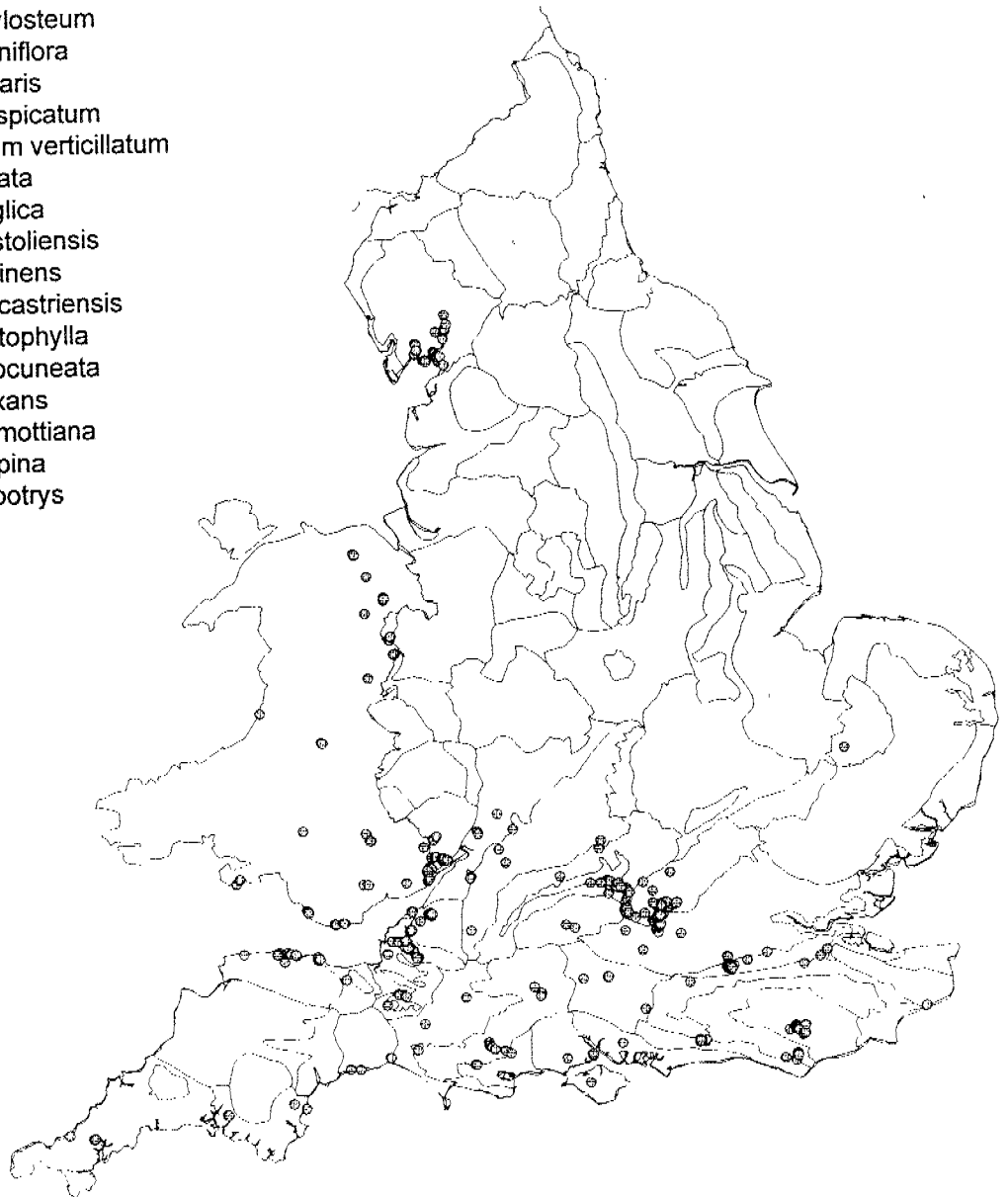


## Plants

The distribution of selected rare woodland plant records (based on data up to 1992 and excluding the rarest species) is shown in Figure 10. There is a bias towards limestone areas, partly because of the inclusion of several rare *Sorbi*. Overall the south-west, the Chilterns and Cumbria are highlighted.

**Figure 10.** Distribution of selected rare woodland plant records by Natural Area

BRC Number	Species Name
279	<i>Buglossoides purpureocaerulea</i>
297	<i>Calamintha sylvatica</i>
362	<i>Carex depauperata</i>
378	<i>Carex flava</i>
459	<i>Cephalanthera rubra</i>
595	<i>Cynoglossum germanicum</i>
773	<i>Euphorbia hyberna</i>
781	<i>Euphorbia serrulata</i>
1140	<i>Leucojum aestivum</i>
1141	<i>Leucojum vernum</i>
1189	<i>Lonicera xylosteum</i>
1308	<i>Moneses uniflora</i>
1388	<i>Orchis militaris</i>
1468	<i>Phyteuma spicatum</i>
1519	<i>Polygonatum verticillatum</i>
1634	<i>Pyrus cordata</i>
1956	<i>Sorbus anglica</i>
1961	<i>Sorbus bristoliensis</i>
1964	<i>Sorbus eminens</i>
1967	<i>Sorbus lancastriensis</i>
1969	<i>Sorbus leptophylla</i>
1976	<i>Sorbus subcuneata</i>
1979	<i>Sorbus vexans</i>
2272	<i>Sorbus wilmottiana</i>
1998	<i>Stachys alpina</i>
2043	<i>Teucrium botrys</i>



### *Conservation status*

Ancient woodland units within SSSIs or with some other conservation status are relatively uniformly distributed across the country, allowing for those areas where there is virtually no ancient woodland (Figure 11a). NB A single SSSI may contain several separate blocks of ancient woodland). Recent woodland sites such as Holme Fen, and some ancient parkland SSSIs are not included on this map because it has been generated from data held on the Ancient Woodland Inventory. The distribution of woodland Nature Conservation Review sites, in this case including recent woodland and parkland sites, is again reasonably uniform (Figure 11b).

There is not a simple relationship between extent of ancient woodland and degree to which it is protected. Both the Fens and the New Forest end up in the same high category (Figure 11c)! In areas with a high percentage scheduled English Nature is in a strong position to determine the management and conservation of ancient woodland directly, rather as it is able to do for some other habitats (eg heathland), where nationally a high proportion is scheduled. In other areas our influence on ancient woodland conservation must be indirect, through influencing the policies and actions of others.

While there may be no need for an overall review of either the woodland NCR or SSSI series there may be a need for local re-consideration of some sites in the light of these patterns and other recent survey data.

**Figure 11a.**

Distribution of ancient woodlands  
with some conservation designation

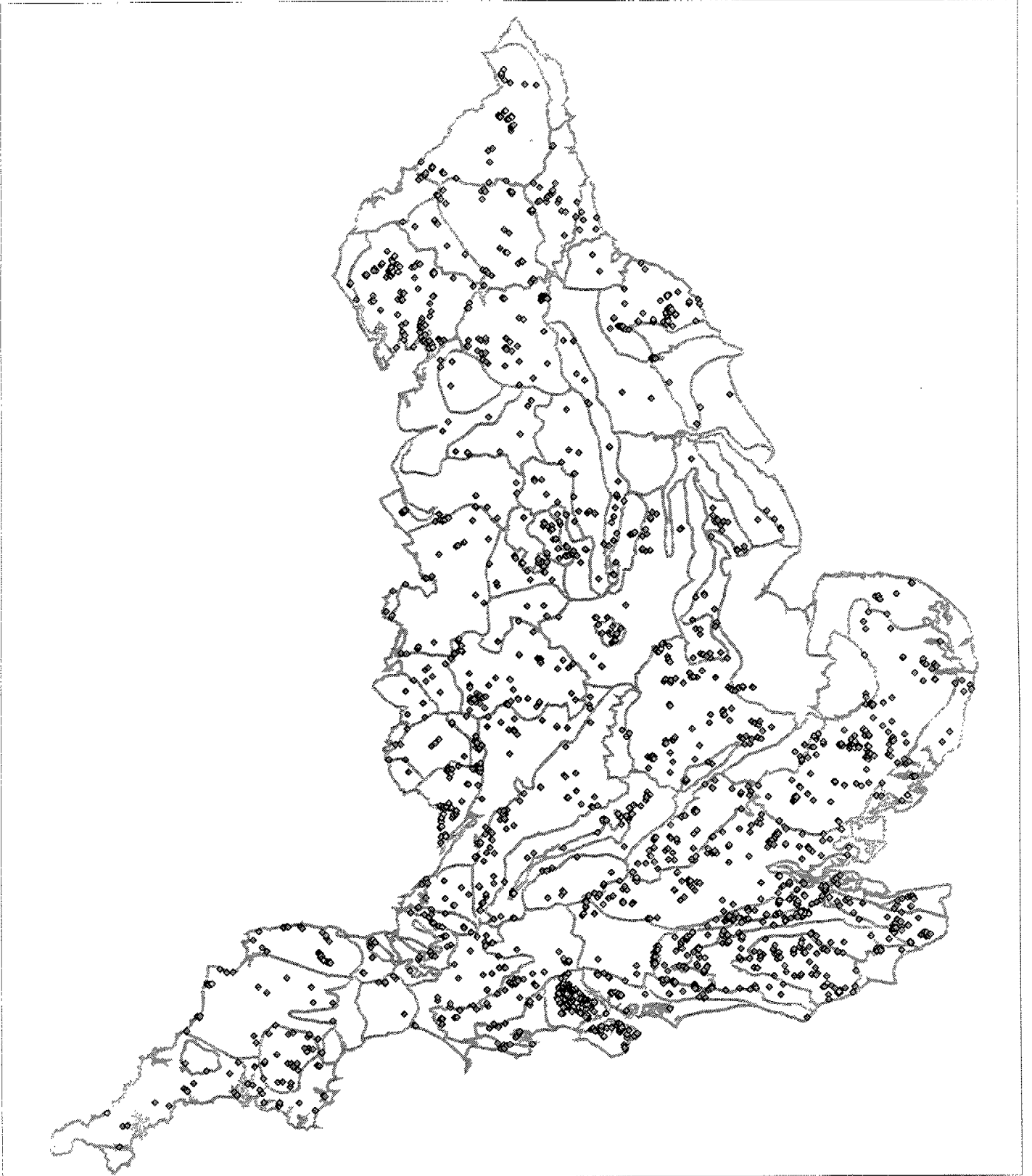
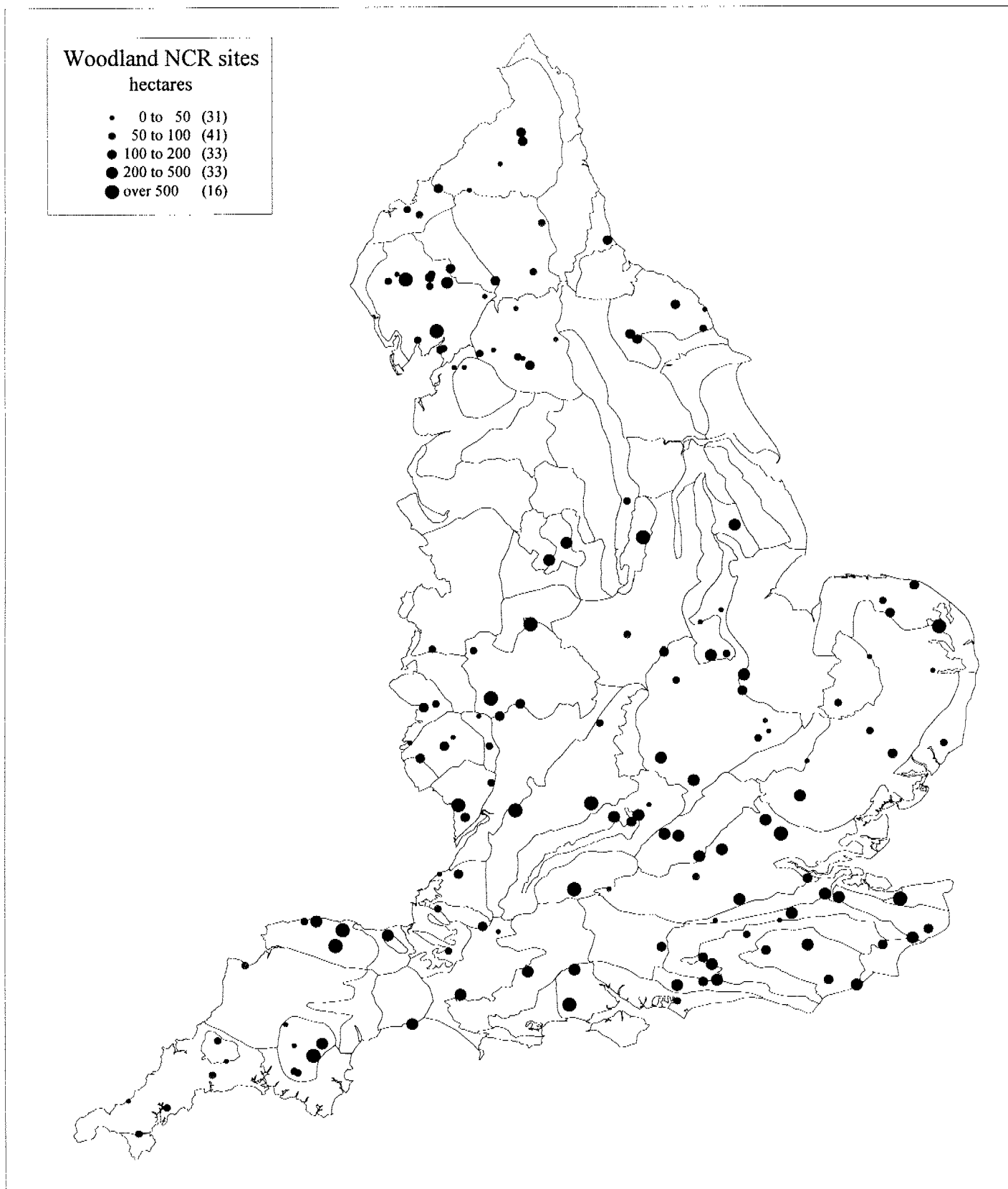


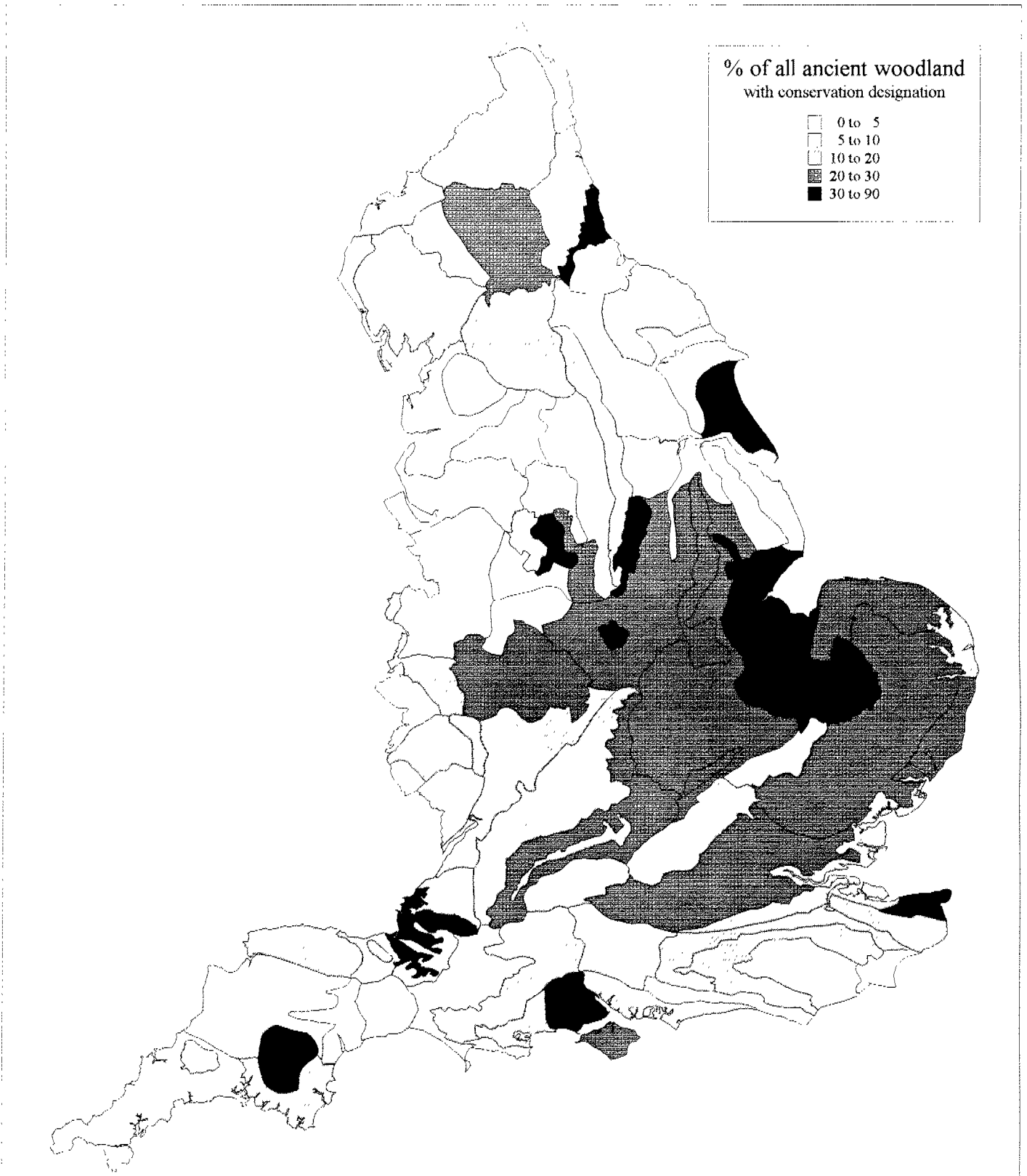
Figure 11b.

NCR site distribution



**Figure 11c.**

% of all ancient woodland area which is covered by some conservation designation

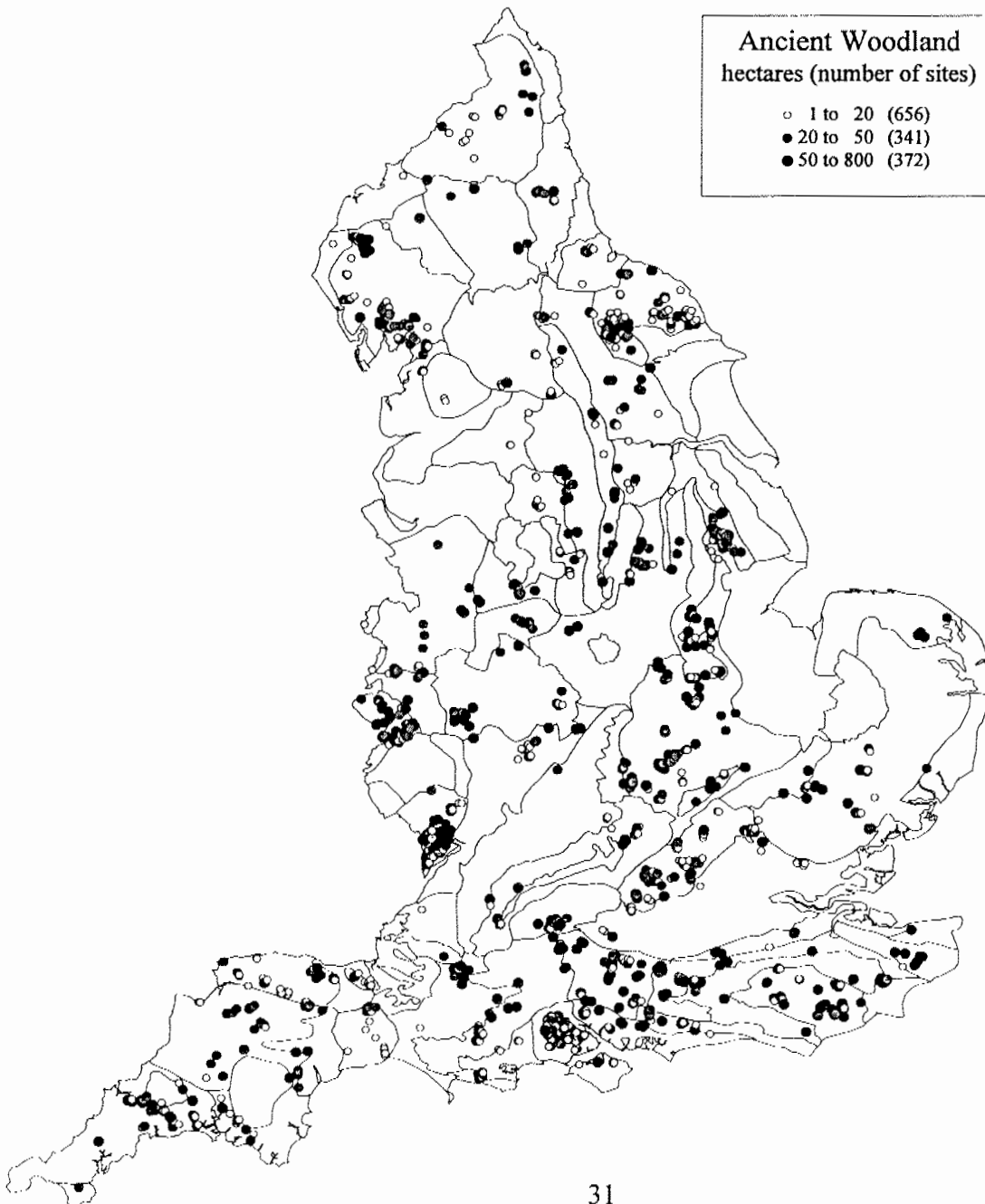




## Woodland ownership

Woodland conservation, particularly outside the SSSI system depends on sympathetic forestry policies and the views of owners and managers. Ownership by government (eg Forest Enterprise, English Nature, local government) and conservation organisations (eg the National Trust, the Woodland Trust and the County Wildlife Trusts) can be a particularly important factor. In some cases the holdings of these bodies are concentrated in relatively few Natural Areas, eg the National Trust in Cumbria and the South-East; others have a much more diffuse interest (eg the Woodland Trust). The Forest Enterprise is in-between with a strong tendency for its ancient woods to be clumped, but a good spread nonetheless. Note that recent plantations are not included so nothing is shown for the Forest Enterprise in Breckland despite their large holdings there. Forest Enterprise holdings tend to be larger than the average, but a much higher proportion of that holding has been replanted than is the case for the Woodland Trust and the National Trust.

**Figure 12a.** Distribution of ancient woodland holdings for Forest Enterprise



Distribution of ancient woodland holdings

Figure 12b. Woodland Trust

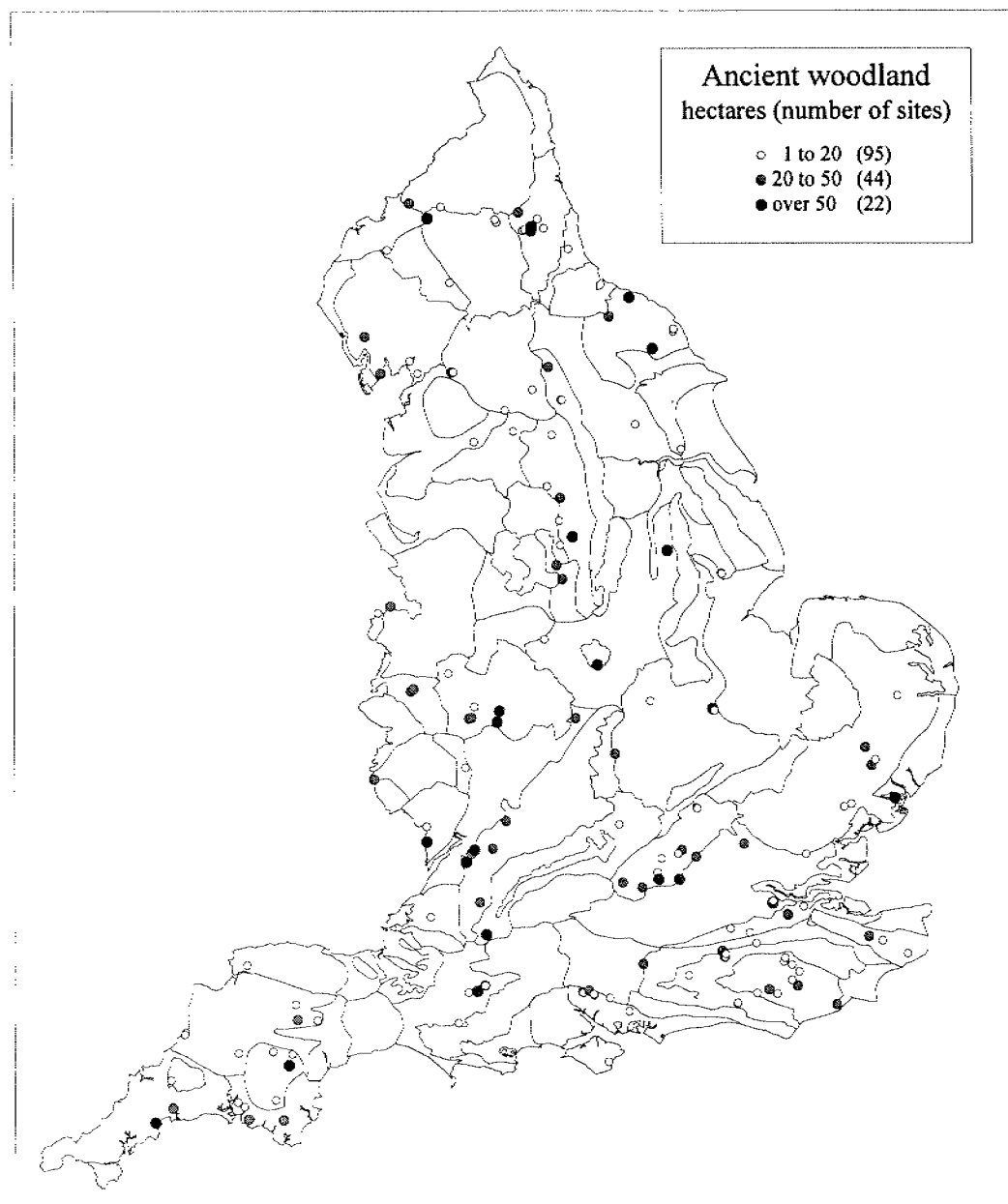
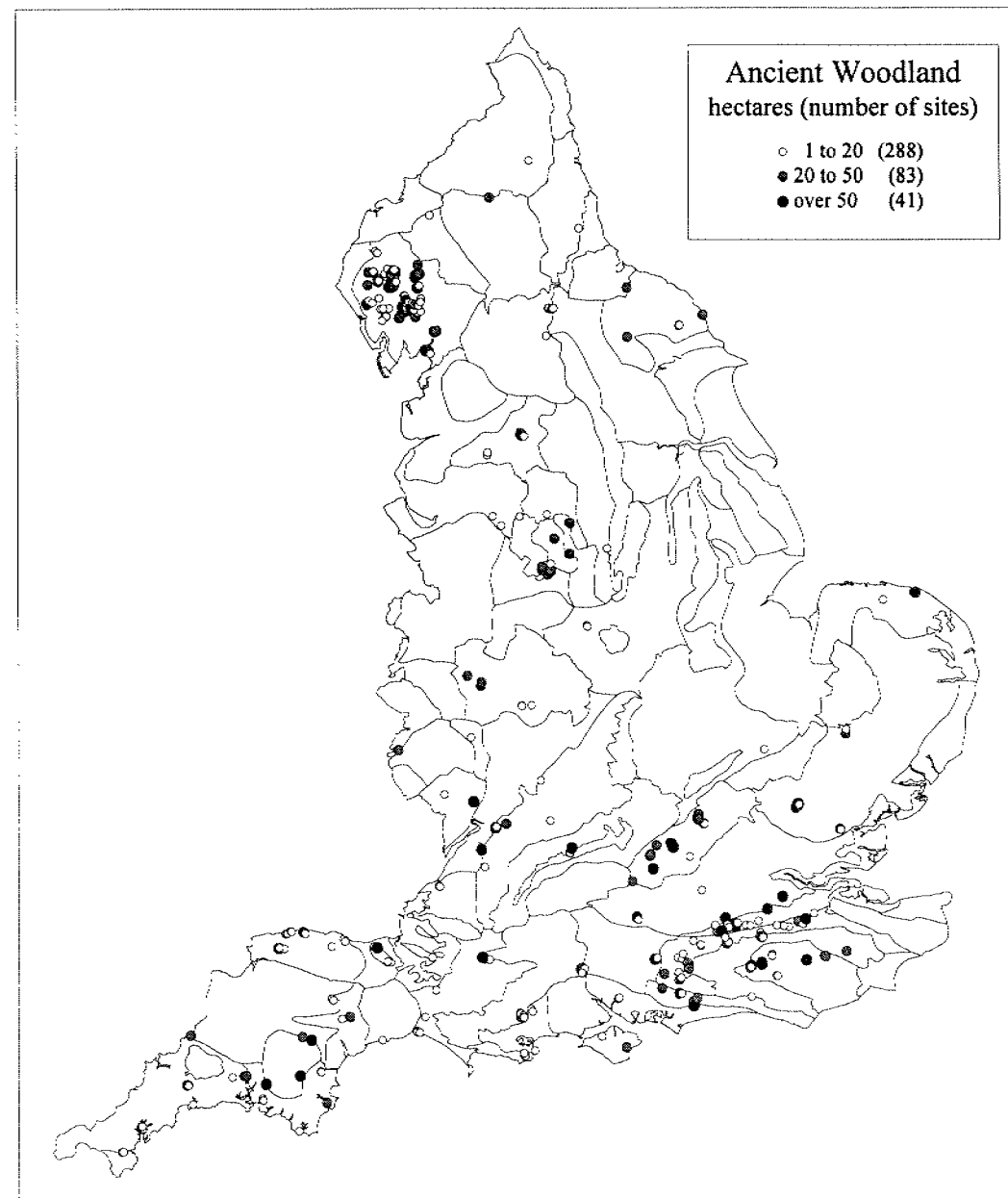


Figure 12c. National Trust



## *Woodland issues*

### Management and policy

The woodland issues section of the core profiles (Hewston & Cooke 1996) can be used to look at what are perceived as the major woodland threats and opportunities in different Natural Areas, for example fragmentation (Table 3). Not surprisingly woodland management was highlighted as an 'issue' in almost every Natural Area, but this does not by itself tell us much. Concern about woodland policy and incentives was also common. The significance of specific issues is summarised as follows:

- ▶ Agricultural threats, other than grazing, seemed not to be considered a problem for woodland but were for hedgerows;
- ▶ Grazing was identified as a problem in some 30 Natural Areas, although in the lowlands it may relate more to deer than livestock;
- ▶ Development, including quarrying, was only picked out in 11 Natural Areas as a significant threat to woodland conservation;
- ▶ Invasive species (largely sycamore and rhododendron) featured on the list of concerns in 30 Natural Areas;
- ▶ The most striking feature however was the frequency with which recreation was raised - general/informal recreation in woodland was picked up in 30 Natural Areas, whereas shooting was only noted for 7. This is surprising because at a recent woodland seminar, recreation was considered to be compatible with woodland conservation aims, certainly more so than game management. And a major review of recreational impacts in woodland again did not suggest that they were serious (Kirby *ed.* 1996, Anderson *et al* 1992).

Note that in some cases issues were noted because of their positive effect on woodland conservation - the above figures do not necessarily all relate to problems. They may however mean that some redirection of our effort is needed. Further analysis of this sort is planned.

### Restoration

One of English Nature's aims is to promote the restoration of ancient woods that have been replanted. Table 8a shows where this was specifically mentioned in the Core Profiles. However, another approach would be to identify Areas with a high area of replanted ancient woodland or of ancient woodland within Forest Enterprise ownership, since FE may be more willing and able to convert plantations back to native broadleaves than a private owner (Table 8b,c,d).

### Expansion

Another of our aims (and a component of current government policy) is to promote woodland expansion where this will benefit nature conservation. English Nature is working with the Forestry Commission and the Countryside Commission to consider where new woodland would be appropriate in a Natural Areas context. In up to two-thirds of the Natural Areas however, woodland or scrub expansion is or has recently been a threat to other habitats or features (Table 9). These problems will need to be carefully considered along with the opportunities that significant new woodland might provide for wildlife.

At a county level Natural Areas can be used to structure our responses to other bodies, such as local authorities or the Forestry Authority, where they are considering, for example, a county-based Indicative Forestry Strategy (Table 10).

**Table 8. Where might restoration of ancient replanted sites to semi-natural woodland be a priority?**

Column (a) whether woodland restoration was specifically listed as an issue, (b) highest area or (c) percentage of ancient woodland in plantations and (d) highest area within FE ownership.

Natural Area	a) issue	b) area high	c) % high	d) FE high	PRIORITY
8 Vale of York			✓		✓
9 North York Moors		✓	✓	✓	✓✓✓
10 Yorkshire Wolds			✓		✓
14 South Magnesian Limest	✓				✓
16 Coversands			✓		✓
17 Sherwood Forest	✓				✓
20 Lincolnshire Limestone			✓		✓
22 Lincolnshire Wolds	✓				✓
23 Lincoln Marsh/Coast			✓		✓
24 Middle England		✓		✓	✓✓
25 Northants Uplands			✓		✓
28 East Anglian Chalk	✓				✓
30 North Norfolk			✓		✓
33 East Anglian Plain	✓				✓
34 Chiltern	✓	✓		✓	✓✓✓
37 Wessex Downs				✓	✓
38 London Basin		✓			✓
41 North Downs	✓	✓		✓	✓✓✓
43 Low Weald		✓		✓	✓✓
44 High Weald	✓	✓		✓	✓✓✓
45 South Downs			✓		✓
46 Green Sand	✓	✓		✓	✓✓✓
47 Hampshire Chalk		✓		✓	✓✓
50 New Forest				✓	✓
51 South Wessex Downs		✓		✓	✓✓
56 Devon Redland			✓		✓

Natural Area	a) issue	b) area high	c) % high	d) FE high	PRIORITY
59 Cornish Killas&Granite			✓	✓	✓✓
60 Lizard				✓	✓
69 Gtr Cotswolds	✓	✓			✓✓
71 MalvHills&Teme Valley	✓				✓
72 DeanP&WyeValley	✓	✓	✓	✓	✓✓✓✓
75 Midland Plateau	✓	✓			✓
76 Shropshire Hills	✓				✓
77 Central Marches		✓	✓	✓	✓✓✓
78 Oswestry Upland	✓				✓
80 Staffordshire Uplands	✓				✓
83 White Peak	✓				✓
85 Dark Peak	✓				✓
89 Cumbrian Fells&Dales		✓		✓	✓✓
90 EdenValley			✓		✓

**Table 9. Where is woodland spread creating problems for nature conservation?**

Areas where tree planting, afforestation or scrub encroachment is or has been a threat to open habitats and geological features, or where opportunities for the restoration of open ground to such habitats from plantations were identified. P = plantations/tree planting; S = scrub encroachment; R = restoration potential.

Natural Area	Grassland	Fen lowland mire	Upland bog	Upland	Heath	Dune coastal	Geological feature
1. Northumberland Coastal Plain		S					S
2. Border Uplands			SP	RP			S
3. North Pennines		S		S			S
4. Northumbrian Coal Measures	P	SP			P		
5. Durham Magnesian Limestone	PS				S		S
6. Lower Tees	S						
8. The Vales of Yorkshire					P		
9. North York Moors				R			
10. Yorkshire Wolds	SP						
12. Southern Pennines	P						
13. Coal Measures					S		
14. Southern Magnesian Limestone	P						
16. Coversands	S				SP	S	S
17. Sherwood Forest					R		
18. Trent Valley and Levels	SP						
19. Charnwood Forest	SP				S		SP
20. Lincolnshire Limestone	S						
21. Lincolnshire Clay Vales	SP	S			RS		
23. Lincolnshire Marsh and Coast						S	
26. Bedfordshire Greensand					R		
27. Fenland					S		
28. East Anglian Heights		SP			S		
29. Breckland					S		
30. Suffolk Coasts and Heaths					RS		
34. Chilterns	S						
37. Wessex Downs	P						
38. London Basin					S		
40. North Kent Plain		S					
41. North Downs	S				S		S
44. High Weald					SP		

Natural Area	Grassland	Fen lowland mire	Upland bog	Upland	Heath	Dune coastal	Geological feature
46. Greensand					S		
47. Hampshire Chalk	P						
49. Isle of Wight	P				P		
50. New Forest		P			P		
52. Dorset Heaths	P	P			R		
53. Isles of Portland & Purbeck	S				S		
54. Wessex Vales	S				P		
55. Blackdowns	P				S P	S	
56. Devon Redland		P			P		
57. South Devon	P						
58. Bodmin Moor	S				S		
59. Cornish Killas & Granite		S			S		
65. Mid Somerset Hills	P						
66. Mendips	S						
68. Avon Ridges and Valleys	S						S
69. Greater Cotswolds	P						
72. Dean Plateau	R						
74. Hereford Plain	P						
75. Midland Plateau	S	S			S R		S
77. Central Marches	P				S		
79. Meres and Mosses		S					
80. Staffordshire Uplands	S	S			S		
81. Upper Trent Valley		S					
83. White Peak	S						S
85. Park Peak	S						S
86. Urban Mersey Basin	S				S		
87. Lancashire Valleys and Plain	S		P				P
89. Cumbria Fells and Dales	S	P	P S	P			S
90. Eden Valley	S	S					S
91. West Cumbria Coastal Plain	S P		S			S	S
92. Solway Basin			S P				
No of Areas	38	16	7	4	30	4	15

**Table 10.** Part of a submission to the Norfolk County Council for their Indicative Forestry Strategy

Most of the boundaries between Natural Areas correspond roughly with some of those suggested in the Norfolk Countryside Conservation Strategy Landscape Assessment (Consultation Draft).

**Breckland**

Breckland should not be targeted for further tree planting. There is great potential for the return of areas of recent plantations to open heathland. Areas which could be targeted are described in English Nature's document *A heathland recreation plan for Breckland*. If this results in any compensatory planting of open areas, these should not be areas which currently have value for wildlife or could be targeted instead for heathland recreation. Management within the pine plantations should continue to take account of the wildlife that these can support, including red squirrels, woodlark and nightjars.

**The East Anglian Plains**

This Natural Area is characterised by a large number of small ancient semi-natural woods, most of which have a history of coppice management which has influenced the communities which have developed in them over past centuries. There are opportunities for planting new areas with mixed broadleaf woodlands, ideally of a species mix appropriate to the local ancient semi-natural woodlands and linking existing woods. Planting large areas adjoining or close to existing small woods may create blocks which can be managed sustainably. This is the area of highest priority for new planting to benefit nature conservation.

The pasture in the river valley corridors should be maintained. When poplar plantations are felled, poplar should not be planted again, and the return of these areas to open grazing land and wet fen would be preferable. Within the East Anglian Plains there are areas of sandy soil where new planting should be discouraged as these could support heathland.

**Broadland**

In the valley floor of Broadland, further woodland planting should not be encouraged. The mosaic of habitats, including open fen and alder woodland is of value for wildlife. The area of open fen vegetation should be expanded, mainly by scrub clearance. An overview of areas where fen restoration is needed is given in the *Fen Management Strategy* produced jointly by English Nature and the Broads Authority. Areas of sandy soil, such as the Waveney Forest, should be targeted for heathland restoration. There could be more planting of broadleaves on the valley sides around the Broads, which are mainly arable, creating a broadleaf wooded fringe around the floodplain. However, planting on the valley sides should not include areas with important heath-fen transition habitats, or areas where these habitats could be re-created.

**North Norfolk Coast**

Planting should be discouraged on areas with potential to return to heathland (see *Norfolk Heathland Strategy*). Much of the woodland in the North Norfolk natural area is either recent (both plantation and natural woodland such as birch on heathlands) or oak pasture woodlands (mainly concentrated in the Glaven Valley and around Thursford). The open character of these pasture woods is important and any new planting within them should be at very low density. There is potential for new planting, particularly of native species close to existing ancient woodland sites.

**Fenland**

In the arable-dominated Fenland, even small woodlands can be of significant benefit to wildlife, such as herons. If poplar is planted, trees could be included of the hybrids which are suitable for golden orioles. Advice is available from the RSPB or English Nature, including the RSPB Conservation Management advisory leaflet *Golden orioles and poplars*. The inclusion of a shrub layer in planting schemes would improve diversity and therefore wildlife value. Planting should be avoided in the remaining wetland areas or on areas identified as being of priority for wetland habitat creation.