



NATIONAL INVENTORY OF WOODLAND AND TREES



ENGLAND

Regional Report for EAST MIDLANDS



Forestry Commission



Forestry Commission

Inventory Report

**NATIONAL INVENTORY OF
WOODLAND AND TREES**



ENGLAND

**Regional Report for
EAST MIDLANDS**

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CONTENTS

Acknowledgements	v
Introduction	1
Background	1
Survey method	1
Main points from the survey results	2
Inventory Reports	2
Map 1: County boundaries	3
Map 2: Distribution of woodland over 2 hectares	4
Map 3: Distribution of woodland over 2 hectares by ownership	5
Map 4: Distribution of woodland over 2 hectares by Interpreted Forest Type	6
Summary results from the National Inventory of Woodland and Trees (NIWT)	7
Tables 1–5	
Table 1: Woodland area by woodland size class	9
Table 2: Woodland area by forest type and woodland size	10
Table 3: Woodland area by principal species and woodland size	11
Table 4: Numbers of live trees outside woodland by feature type	12
Table 5: Lengths of Linear Features	12
Results from the Main Woodland Survey (MWS)	13
Tables 6–12	
Table 6: Summary of woodland area by ownership	15
Chart: Woodland area by ownership	15
Table 7a: Size class distribution of woodland	16
Table 7b: Size class distribution of woodland by ownership units	16
Table 8: Area of woodland by forest type and ownership	17
Chart: Area of woodland by forest type	17
Table 9a: Area of High Forest by principal species and ownership	18
Graph: Area of High Forest by principal species and ownership	19
Table 9b: Area of High Forest by principal species, ownership and category	20
Graph: High Forest Category 1	
Area by principal species and ownership	21
Graph: High Forest Category 2	
Area by principal species and ownership	21
Table 10a: High Forest Category 1	
Area by principal species and planting year class	22
Graph: High Forest Category 1	
Area by planting year class	23
Table 10b: High Forest Category 1	
Forestry Commission: area by principal species and planting year class	24
Graph: High Forest Category 1	
Forestry Commission: area by planting year class	25

Table 10c: High Forest Category 1	
Other ownership: area by principal species and planting year class	26
Graph: High Forest Category 1	
Other ownership: area by planting year class	27
Table 11: High Forest: principal species by planting year class	28
Table 12: Ownership type by area and percentage	28
Chart: Ownership type by area	28
Results from the Survey of Small Woodland and Trees (SSWT)	29
Tables 13–22	
Table 13: Summary of information from the Survey of Small Woodland and Trees	31
Table 14: Woodland area by feature type and woodland size	31
Table 15: Woodland area by forest type, woodland size and feature type	31
Table 16: Woodland area by species and feature type	32
Table 17: Numbers of live trees outside woodland by species and feature type	33
Table 18: Numbers of dead trees outside woodland by species and feature type	34
Table 19: Numbers of live Individual Trees by species and height band	35
Table 20: Numbers of live trees in Groups by species and height band	36
Table 21: Numbers of live trees in Narrow Linear Features by species and height band	37
Table 22: Numbers of Groups by group size	38
Comparison of results with the 1980 Census and previous surveys	39
Tables 23–27	
Table 23: Comparison of woodland area between 1980 Census and 1998 Inventory	41
Table 24: Comparison of High Forest area by species between 1980 Census and 1998 Inventory	42
Chart: Comparison of High Forest area by species between 1980 Census and 1998 Inventory	43
Table 25: Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory	44
Chart: Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory	45
Table 26: Comparison of numbers of live trees outside woodland between 1980 Census and 1998 Inventory	46
Table 27: Comparison of density of non-woodland features between 1980 Census and 1998 Inventory	46
Woodland cover	47
Chart: Change in woodland cover through time (1890–2000)	47
Maps: Woodland cover by county through time (1895–1998)	48
Appendices	49
Appendix 1 Summary of woodland area by county and woodland size	51
Appendix 2 Summary of woodland area by county and forest type	52
Appendix 3 Summary of live trees outside woodland by county and feature type	53
Appendix 4 Summary of number and length of Linear Features by county	54
Glossary	55

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Woodland Surveys Branch of Forest Research was responsible for carrying out the survey and analysing the data. A large number of Forestry Commission and contract staff were involved in the survey from its inception.

Preparation of the digital cartography for East Midlands Region was carried out by Graham Bull, Woodland Survey Officer, and Woodland GIS Officers Chris Brown, Robert Beck and Esther Whitton. Data processing and analysis were carried out by Woodland Data Officers Justin Gilbert and Shona Mackintosh.

The authors of this Report are Steve Smith (Head of Woodland Surveys) and Justin Gilbert (Woodland Data Officer) of Forest Research.

INTRODUCTION

This Report presents the results for East Midlands Region from the Forestry Commission National Inventory of Woodland and Trees (NIWT).

The Inventory consists of two separate surveys:

- The Main Woodland Survey (MWS) covering woodlands of 2 hectares and over.
- The Survey of Small Woodland and Trees (SSWT) covering Small Woods, Groups of Trees, Linear Features and Individual Trees.

BACKGROUND

Since 1924 the Forestry Commission has carried out a number of national woodland surveys at intervals of between 15 and 20 years. The previous survey was carried out between 1979 and 1982. With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees*.

The survey fieldwork for Great Britain was completed in July 2000. Work began in Scotland in 1994, followed by Southern England, Wales and Northern England.

SURVEY METHODS

Main Woodland Survey

In East Midlands Region, Woodland Surveys derived a digital map of all woodland showing Interpreted Forest Types from 1:25 000 scale aerial photography. This provided the basis for the sampling.

The digital map gives the extent of all woodland over 2 hectares and this was updated as survey work progressed. The maps on pages 4–6 show: overall woodland cover; woodland by ownership; and woodland by Interpreted Forest Type, respectively. The total area of woodland in East Midlands Region was obtained from the digital map with ground sampling undertaken to evaluate a wide range of woodland information such as species, age and stocking.

From the digital map the area of each woodland was recorded and this information was used to determine the intensity at which any selected woodland would be sampled. The overall sampling scheme was as follows:

- 2.0 ha – <100 ha : every fifth wood
- 100 ha – <500 ha : two woods in five
- 500 ha and larger : all woods

1 hectare square plots were used to sample the selected woodlands on the ground. This was a change of practice from all previous Census surveys, where whole woods had been selected for survey. For each of the three bands of woodland area a different sampling grid was used with the density

of the squares being reduced as the woodlands increase in size. The overall aim was to sample 1% of the woodland in each size class.

Survey of Small Woodland and Trees

The land area of East Midlands Region was stratified into coastal and inland 1 km x 1 km squares. A random sample of the 1 km² plots was then selected, representing around 1% of the land area. 1:25 000 scale aerial photos were then used to identify features in each sample square. Each 1 km² was then divided into 16 parts, and two of these were selected at random for field data collection. Data was collected on Small Woods (0.10 – <2.00 ha), Linear Features, Groups and Individual Trees. The survey did not collect information from areas of developed land of 2 hectares or more.

MAIN POINTS FROM THE SURVEY RESULTS

- The total area of woodland of 0.1 hectares and over in East Midlands Region is 79 871 hectares. This represents 5.1% of the land area (Table 1).
- Broadleaved woodland is the dominant forest type representing 62.7% of all woodland. Conifer woodland represents 17.1%, Mixed woodland 11.0% and Open Space within woodlands 8.2% (Table 2).
- The main conifer is pine covering 11 795 hectares or 65% of all conifer species. The main broadleaved species is ash covering 13 911 hectares or 26% of all broadleaved species (Table 3).
- 17 069 hectares or 24% of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 52 640 hectares or 76% of woodland is in Other ownerships (Table 6).
- There are 6 495 woods over 2 hectares within East Midlands Region with a mean wood area of 10.8 hectares (Table 7a). There are a total of 24 793 woods from 0.1 – <2.0 hectares with a mean wood area of 0.4 hectares (Table 14).
- There are 14.8 million live trees and 127.9 thousand dead trees outside woodland in East Midlands Region (Tables 17 and 18).
- Woodland land cover increased by over 11 200 hectares from 4.3% to 5.0% of the land area between 1980 and 1998 (Table 23).
- The area of Broadleaves increased by 40% between 1980 and 1998, with the relative proportion of Broadleaves to Conifers increasing from 64% to 75% (Table 24).

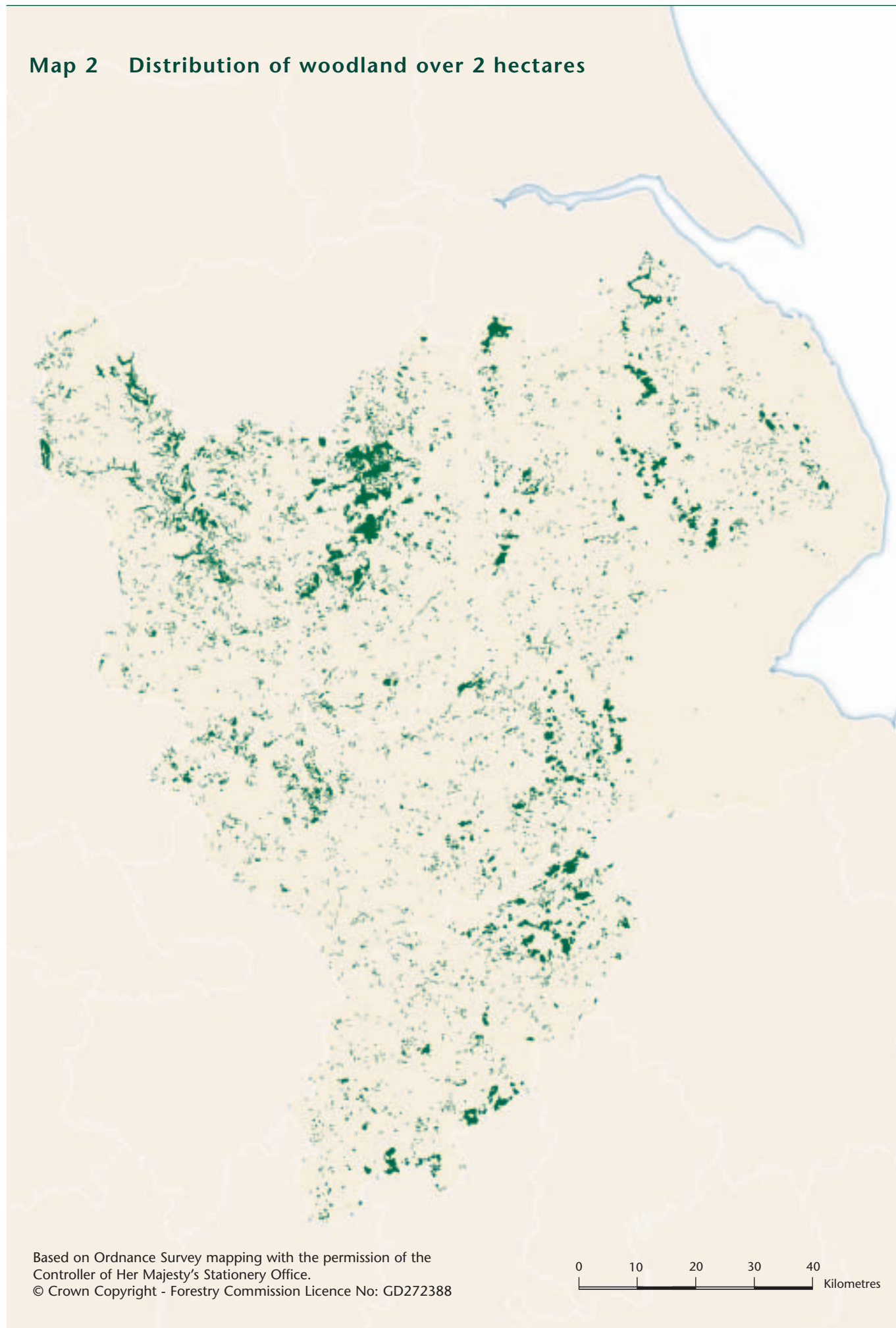
INVENTORY REPORTS

In addition to the Inventory Reports for England and the English Regions, further information is available by county (as shown on the map opposite for East Midlands Region). Country and county reports for Wales, and country and region reports for Scotland are also available.

Map 1 Regional and county boundaries

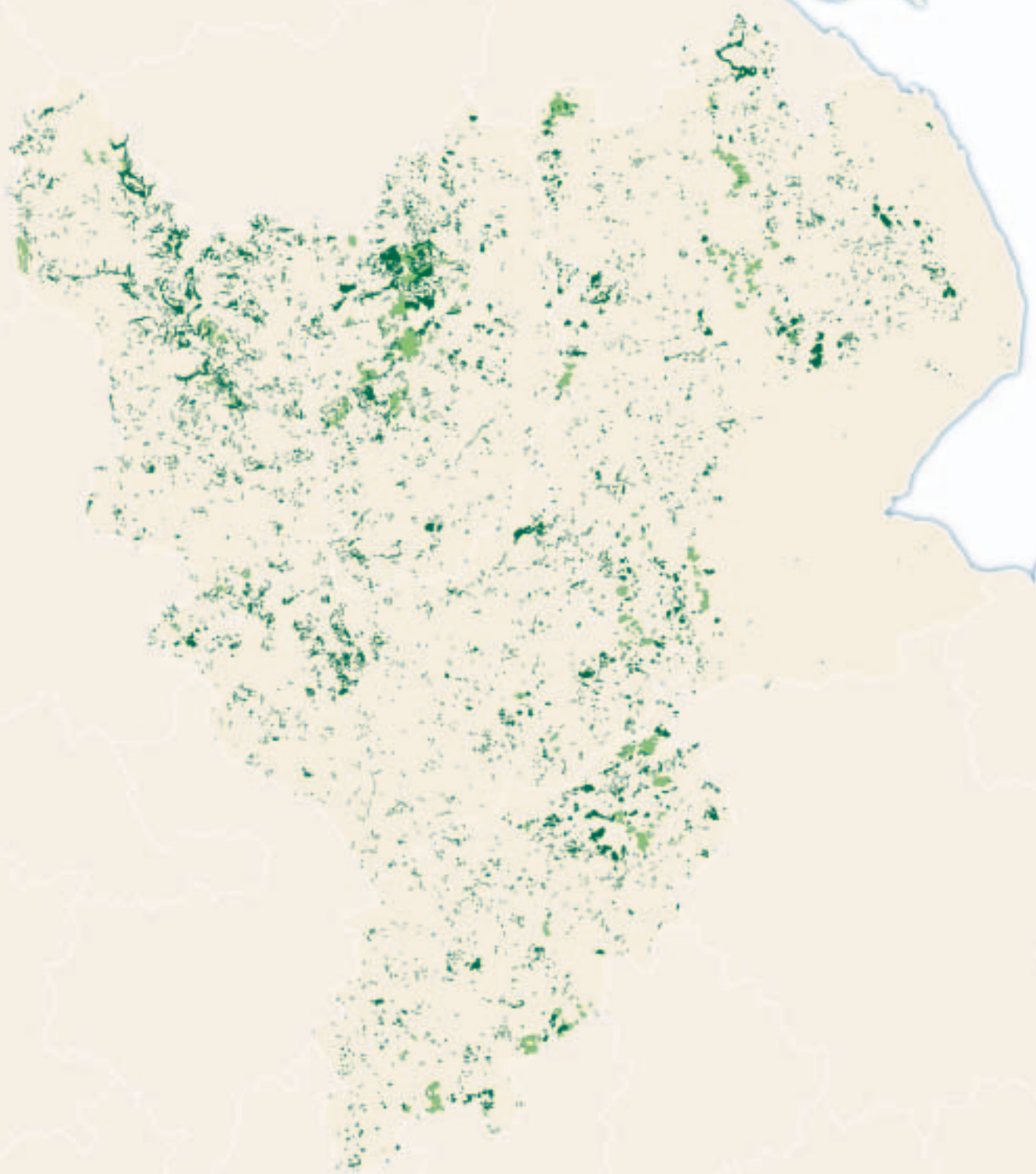


Map 2 Distribution of woodland over 2 hectares



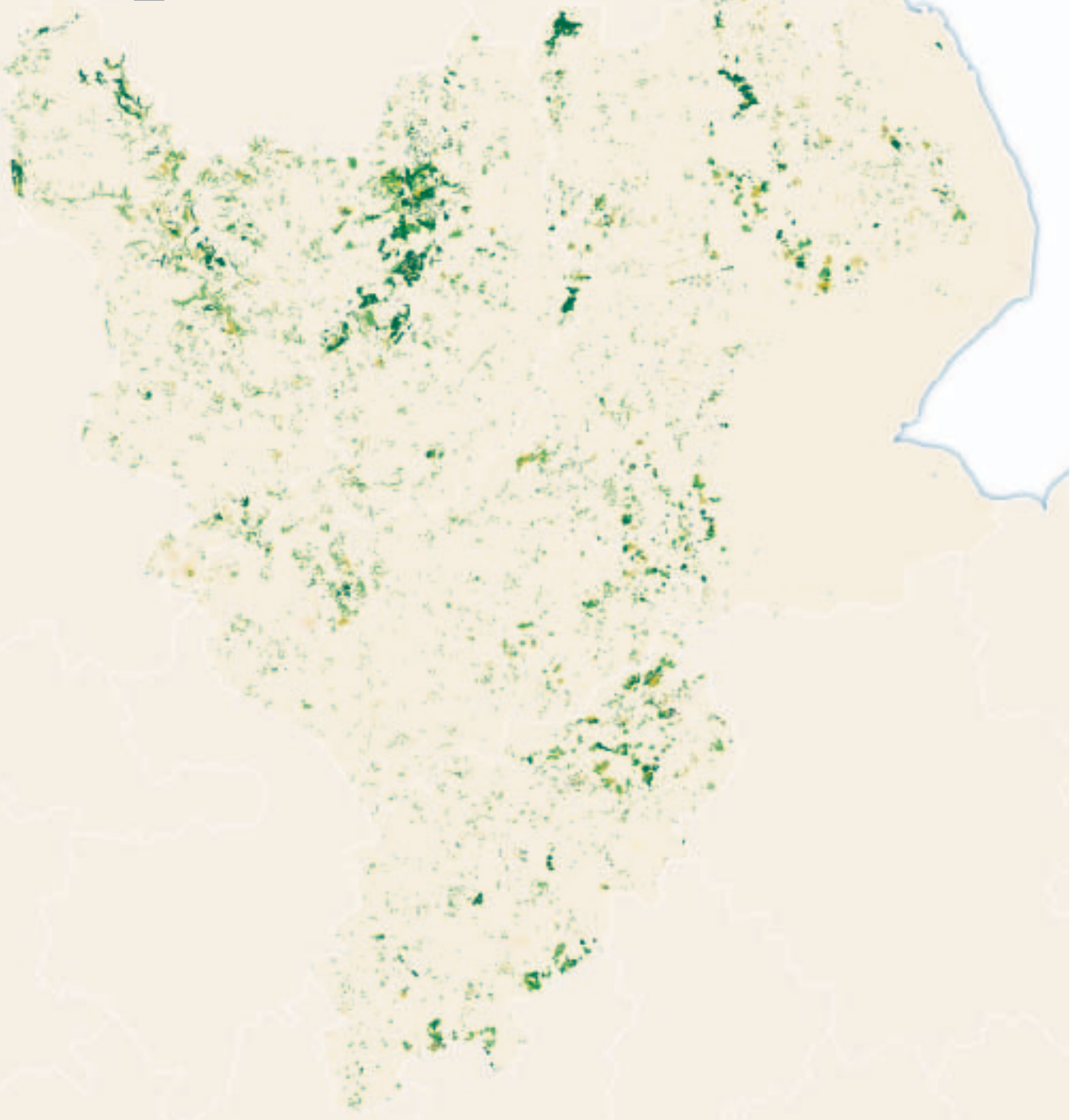
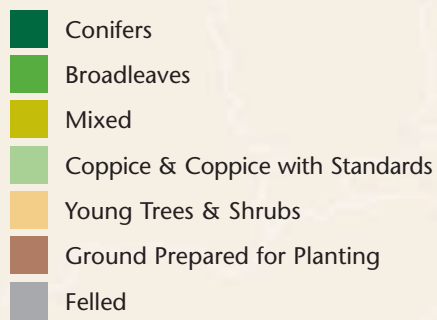
Map 3 Distribution of woodland over 2 hectares by ownership

- Forestry Commission woodland
- Other woodland



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0 10 20 30 40
Kilometres

Map 4 Distribution of woodland over 2 hectares by Interpreted Forest Type

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0 10 20 30 40
Kilometres

SUMMARY RESULTS FROM THE NATIONAL INVENTORY OF WOODLAND AND TREES (NIWT)

Both the Main Woodland Survey and the Survey of Small Woodland and Trees contributed to the estimate of woodland area for East Midlands Region.

Tables 1–3 show the combined woodland area from the Main Woodland Survey and the Survey of Small Woodland and Trees.

Tables 4 and 5 summarise the numbers of live trees outside woodland, and the lengths of Linear Features from the Survey of Small Woodland and Trees.

Table 1:	Woodland area by woodland size class
Table 2:	Woodland area by forest type and woodland size
Table 3:	Woodland area by principal species and woodland size
Table 4:	Numbers of live trees outside woodland by feature type
Table 5:	Lengths of Linear Features

Note: The figures in many of the tables may not add due to rounding.

Table 1 Woodland area by woodland size class

Woodland size (ha)	Woodland area (ha)	% Woodland area
2.00 and over	69 709	87.3
0.25 – < 2.00	8 347	10.5
0.10 – < 0.25	1 815	2.3
Total area of woodland	79 871	100.0
% Woodland land cover	5.1	

1. Area of East Midlands Region, including inland water, 1 562 713 ha based on digital boundaries used in the 1991 Census of Population.

Table 2 Woodland area by forest type and woodland size

Forest type	Woodland size (ha)		Total area (ha)	Percentage of total area
	2.0 and over	0.1 – < 2.0		
Conifer	12 575	1 119	13 694	17.1
Broadleaved	41 784	8 321	50 105	62.7
Mixed	8 677	102	8 779	11.0
Coppiced	55	0	55	0.1
Copp-w-Standards	112	0	112	0.1
Windblow	22	0	22	0.0
Felled	536	0	536	0.7
Open Space	5 948	620	6 568	8.2
Total	69 709	10 162	79 871	100.0

1. See Glossary for definitions of forest types.

Table 3 Woodland area by principal species and woodland size

Species/Groups	Woodland size (ha)		Total area (ha)	Percentage of total area	
	2.0 and over	0.1 – < 2.0		Category*	Species**
Pine	11 338	457	11 795	65.0	16.2
Sitka spruce	246	0	246	1.4	0.3
Larch	2 158	0	2 158	11.9	3.0
Other conifers	2 989	661	3 650	20.1	5.0
Mixed conifers	187	102	289	1.6	0.4
Total conifers	16 920	1 220	18 140	100.0	25.0
Oak	12 906	937	13 843	25.4	19.1
Beech	2 555	81	2 636	4.8	3.6
Sycamore	5 229	712	5 941	10.9	8.2
Ash	11 784	2 127	13 911	25.5	19.2
Birch	4 756	51	4 807	8.8	6.6
Elm	364	102	466	0.9	0.6
Other broadleaves	6 573	1 938	8 511	15.6	11.7
Mixed broadleaves	1 970	2 374	4 344	8.0	6.0
Total broadleaves	46 138	8 322	54 460	100.0	75.0
Total all species†	63 058	9 542	72 600		100.0

* Category - species/group percentage of conifer or broadleaved category.

** Species - species/group percentage of all species.

† Excludes the 7 271 ha of Coppice, Felled and Open Space areas, which were included in Table 2.

1. The standard errors of the total area estimates for the most common species or species groups are as follows:

Conifers	6%
Broadleaves	5%
Pine	6%
Oak	6%
Ash	8%

2. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).

Table 4 Numbers of live trees outside woodland by feature type

Feature type	Total number of features	Total number of live trees	Mean number of trees per feature	Tree density (per sq km)
Groups	681 200	3 822 600	6	245
Narrow Linear Features	262 800	9 690 200	37	620
Individual Trees	1 300 700	1 300 700	1	83
Total		14 813 500		948

1. Land area used to calculate tree density 1 562 713 ha based on digital boundaries used in 1991 Census of Population.
2. The standard errors of the live tree number estimates for these feature types are:

Groups	12%
Narrow Linear Features	13%
Individual Trees	10%
3. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).
4. See Glossary for definitions of feature types.

Table 5 Lengths of Linear Features

Feature type	Total number of features	Total length of features (km)	Density of features (m per sq km)
Wide Linear Features	7 504	721	46
Narrow Linear Features	262 800	17 245	1 104
Total		17 966	1 150

1. Land area used to calculate feature density 1 562 713 ha based on digital boundaries used in 1991 Census of Population.
2. The standard errors of the length estimates for these feature types are:

Wide Linear Features	44%
Narrow Linear Features	12%
3. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).
4. See Glossary for definitions of feature types.

RESULTS FROM THE MAIN WOODLAND SURVEY (MWS)

Survey method

Woods were selected from the digital map of woodland of 2 hectares and over, then sampled using a random grid of 1 hectare sample plots. The density of the sample plots was reduced as the sampled woodlands increased in size, the general aim being to sample 1% of woodland area. The ground sampling evaluated a wide range of data such as species, age and stocking.

Table 6:	Summary of woodland area by ownership
Chart:	Woodland area by ownership
Table 7a:	Size class distribution of woodland
Table 7b:	Size class distribution of woodland by ownership units
Table 8:	Area of woodland by forest type and ownership
Chart:	Area of woodland by forest type
Table 9a:	Area of High Forest by principal species and ownership
Graph:	Area of High Forest by principal species and ownership
Table 9b:	Area of High Forest by principal species, ownership and category
Graph:	High Forest Category 1 - Area by principal species and ownership
Graph:	High Forest Category 2 - Area by principal species and ownership
Table 10a:	High Forest Category 1 - Area by principal species and planting year class
Graph:	High Forest Category 1 - Area by planting year class
Table 10b:	High Forest Category 1 - Forestry Commission: area by principal species and planting year class
Graph:	High Forest Category 1 - Forestry Commission: area by planting year class
Table 10c:	High Forest Category 1 - Other ownership: area by principal species and planting year class
Graph:	High Forest Category 1 - Other ownership: area by planting year class
Table 11:	High Forest: principal species by planting year class
Table 12:	Ownership type by area and percentage
Chart:	Ownership type by area

Note: The figures in many of the tables may not add due to rounding.

Table 6 Summary of woodland area by ownership

Ownership	ha	% woodland
Forestry Commission	17 069	24
Other	52 640	76
Total area of woodland	69 709	100

- 1. Woodland area from aerial photographic interpretation map updated to 31 March 1998.
- 2. See Glossary for definitions of ownership types.

Woodland area by ownership

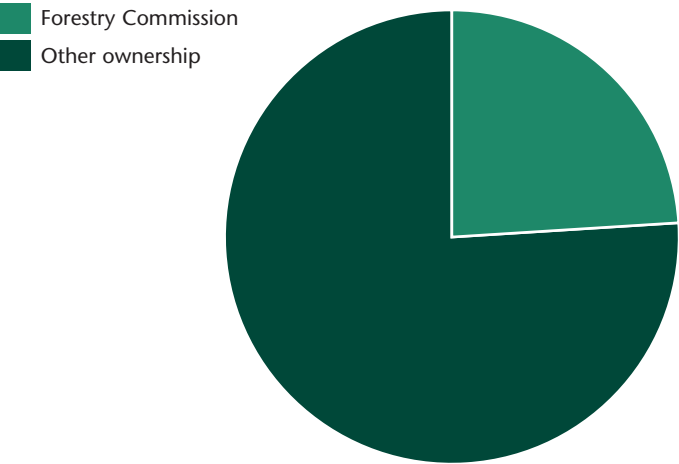


Table 7a Size class distribution of woodland

Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	4 950	23 682	34	4.8
10 – <20	846	11 605	17	13.7
20 – <50	500	14 988	21	30.0
50 – <100	141	9 678	14	68.6
<100	6 437	59 953	85	9.3
100 – <500	57	9 743	14	170.9
500 and >	1	590	1	589.9
All woods	6 495	70 285	100	10.8

Table 7b Size class distribution of woodland by ownership units

Size class (ha)	FC or Other	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	FC	436	2 386	3	5.5
	O	4 713	21 296	30	4.5
10 – <20	FC	136	1 912	3	14.1
	O	710	9 693	14	13.7
20 – <50	FC	131	4 062	6	31.0
	O	369	10 926	16	29.6
50 – <100	FC	50	3 603	5	72.1
	O	91	6 075	9	66.8
<100	FC	753	11 963	17	15.9
	O	5 883	47 990	68	8.2
100 – <500	FC	27	4 656	7	172.4
	O	30	5 087	7	169.6
500 and >	FC	1	590	1	589.9
	O	0	0	0	0.0
Total	FC	781	17 208	24	22.0
	O	5 913	53 077	76	9.0

1. Tables 7a and 7b are based solely on the digital woodland map. The other MWS tables are derived from the field sample data.
2. The total area in Tables 7a and 7b is 576 hectares more than that recorded in Tables 1 and 3. This is mainly due to the field samples recording some land in other land uses not differentiated from woodland in the digital map.
3. The data available from the digital map enable the identification of woodlands according to their ownerships; Forestry Commission or Other. The entries in Table 7b cannot be added to derive Table 7a as some woods may consist of both Forestry Commission and Other ownership(s).

For example, the Forestry Commission may own most of a large wood with some parts in Other ownership(s). In Table 7a the whole area would be treated as one wood and the area allocated to one size category. In Table 7b each of the ownership units would be allocated to the size category for that unit. Dividing woods by ownership can occasionally generate part-woods of less than 2 hectares.

Table 8 Area of woodland by forest type and ownership

Forest type	Forestry Commission		Other		All ownerships	
	ha	%	ha	%	ha	%
Conifer	7 631	44.7	4 944	9	12 575	18.0
Broadleaved	5 746	33.7	36 038	68	41 784	59.9
Mixed	2 211	13.0	6 465	12	8 677	12.4
Coppice	5	0.0	50	0	55	0.1
Copp-w-stds	0	0.0	112	0	112	0.2
Windblow	3	0.0	19	0	22	0.0
Felled	327	1.9	209	0	536	0.8
Open Space	1 145	6.7	4 803	9	5 948	8.5
Total	17 069	100	52 640	100	69 709	100.0

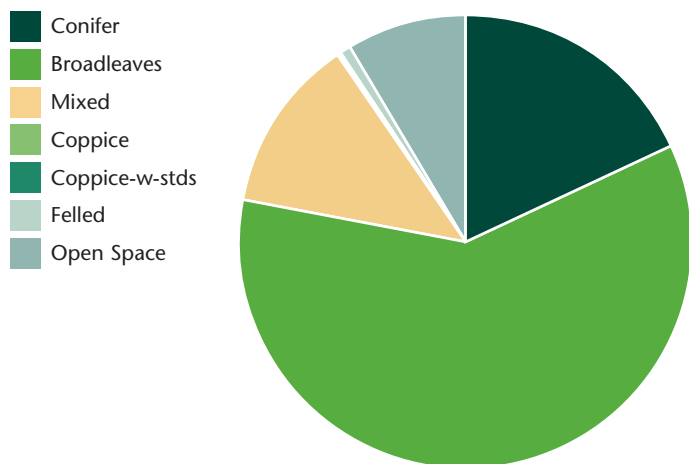
Area of woodland by forest type

Table 9a Area of High Forest by principal species and ownership

Species	Forestry Commission			Other			All ownerships		
	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %
Scots pine	2 331	27	15	2 945	36	6	5 275	31	8
Corsican pine	4 393	51	28	1 169	14	2	5 562	33	9
Lodgepole pine	478	5	3	23	0	0	501	3	1
Sitka spruce	207	2	1	39	0	0	246	1	0
Norway spruce	641	7	4	1 231	15	3	1 872	11	3
European larch	5	0	0	666	8	1	671	4	1
Japanese/hybrid larch	233	3	1	1 254	15	3	1 487	9	2
Douglas fir	17	0	0	131	2	0	148	1	0
Other conifers	367	4	2	602	7	1	969	6	2
Mixed conifers	23	0	0	164	2	0	187	1	0
Total conifers	8 695	100	56	8 225	100	17	16 920	100	27
Oak	2 979	43	19	9 927	25	21	12 906	28	20
Beech	198	3	1	2 357	6	5	2 555	6	4
Sycamore	377	5	2	4 852	12	10	5 229	11	8
Ash	1 346	20	9	10 438	27	22	11 784	26	19
Birch	988	14	6	3 769	10	8	4 756	10	8
Poplar	101	1	1	1 127	3	2	1 228	3	2
Sweet chestnut	113	2	1	293	1	1	407	1	1
Elm	9	0	0	355	1	1	364	1	1
Other broadleaves	544	8	3	4 394	11	9	4 938	11	8
Mixed broadleaves	242	4	2	1 728	4	4	1 970	4	3
Total broadleaves	6 897	100	44	39 241	100	83	46 138	100	73
Total – all species	15 592		100	47 466		100	63 058		100
Felled	327			209			536		
Total High Forest	15 919			47 675			63 594		

*cat : species percentage of Conifer or Broadleaved in the ownership category.

†spp : percentage of all species in the ownership category.

1. In addition to the areas shown there are 5 948 hectares of other areas integral to the woodland not stocked with tree species.
2. The standard errors of the all ownerships area estimates for the most common species or species groups are as follows:

Conifers	4%
Broadleaves	2%
Corsican pine	9%
Oak	4%
Ash	5%
3. Mixtures: where possible the species in mixtures have been separately recorded. Where this has not been possible they were described as 'Mixed conifers' or 'Mixed broadleaves'.
4. Confidence Intervals: where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).

Area of High Forest by principal species and ownership

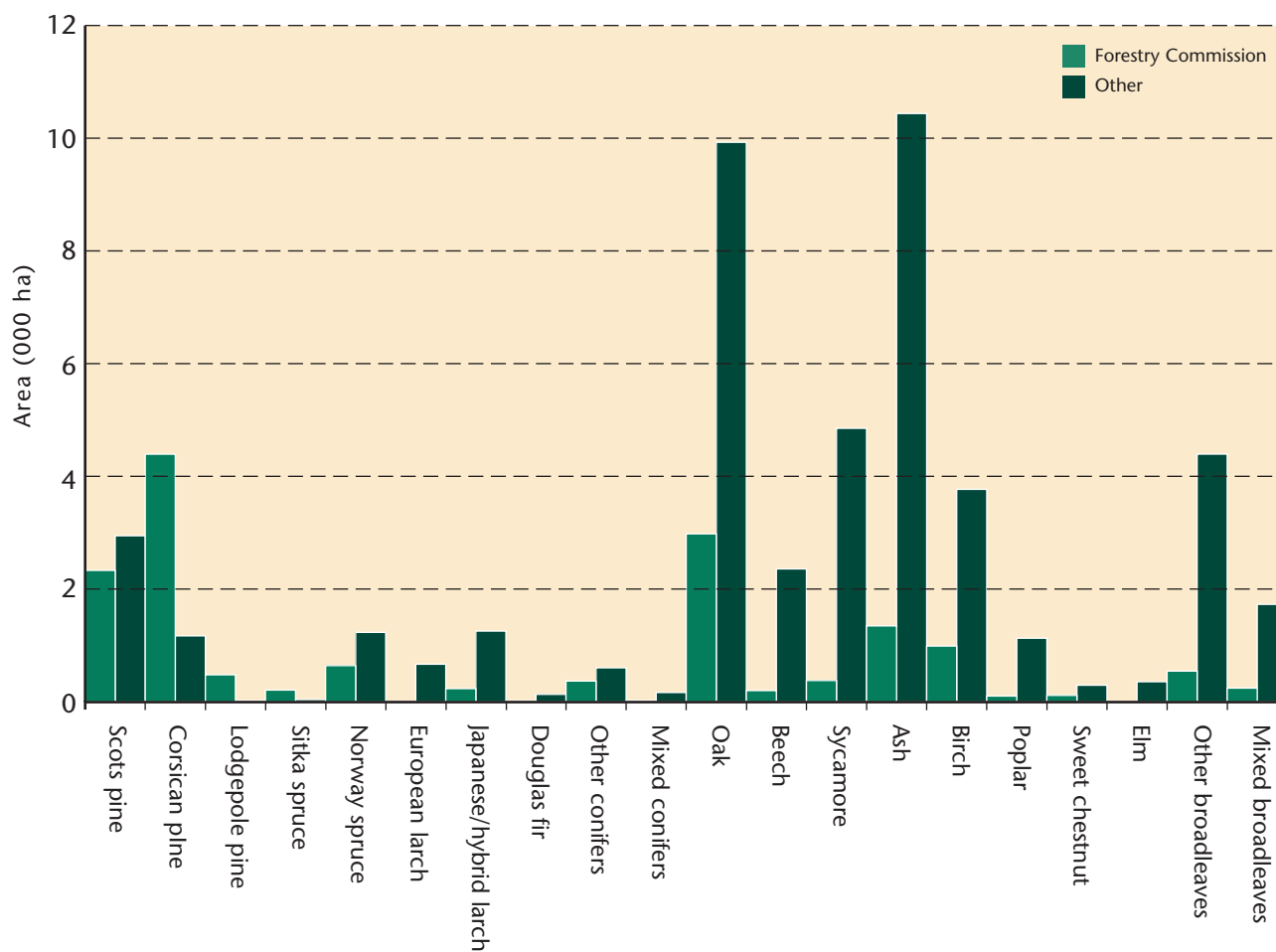


Table 9b Area of High Forest by principal species, ownership and category

Species	Forestry Commission			Other			All ownerships		
	cat. 1	cat. 2	Total (ha)	cat. 1	cat. 2	Total (ha)	cat. 1	cat. 2	Total (ha)
Scots pine	2 255	75	2 331	2 810	135	2 945	5 065	210	5 275
Corsican pine	4 393	0	4 393	1 151	19	1 169	5 543	19	5 562
Lodgepole pine	401	76	478	23	0	23	424	76	501
Sitka spruce	207	0	207	37	2	39	244	2	246
Norway spruce	629	12	641	1 200	30	1 231	1 829	43	1 872
European larch	5	0	5	648	18	666	653	18	671
Japanese/hybrid larch	233	0	233	1 240	14	1 254	1 473	14	1 487
Douglas fir	17	0	17	131	0	131	148	0	148
Other conifers	354	12	367	467	135	602	821	148	969
Mixed conifers	15	8	23	126	38	164	141	47	187
Total conifers	8 510	185	8 695	7 833	392	8 225	16 343	577	16 920
Oak	2 791	188	2 979	7 525	2 402	9 927	10 316	2 591	12 906
Beech	175	23	198	1 933	424	2 357	2 109	446	2 555
Sycamore	286	92	377	3 747	1 105	4 852	4 033	1 196	5 229
Ash	1 262	84	1 346	8 720	1 718	10 438	9 982	1 802	11 784
Birch	406	582	988	1 100	2 668	3 769	1 506	3 250	4 756
Poplar	101	0	101	1 067	60	1 127	1 168	60	1 228
Sweet chestnut	59	54	113	165	128	293	225	182	407
Elm	5	4	9	97	258	355	102	262	364
Other broadleaves	432	112	544	991	3 404	4 394	1 423	3 515	4 938
Mixed broadleaves	177	65	242	1 013	716	1 728	1 190	781	1 970
Total broadleaves	5 694	1 203	6 897	26 358	12 883	39 241	32 052	14 086	46 138
Total – all species	14 203	1 388	15 592	34 191	13 275	47 466	48 395	14 663	63 058

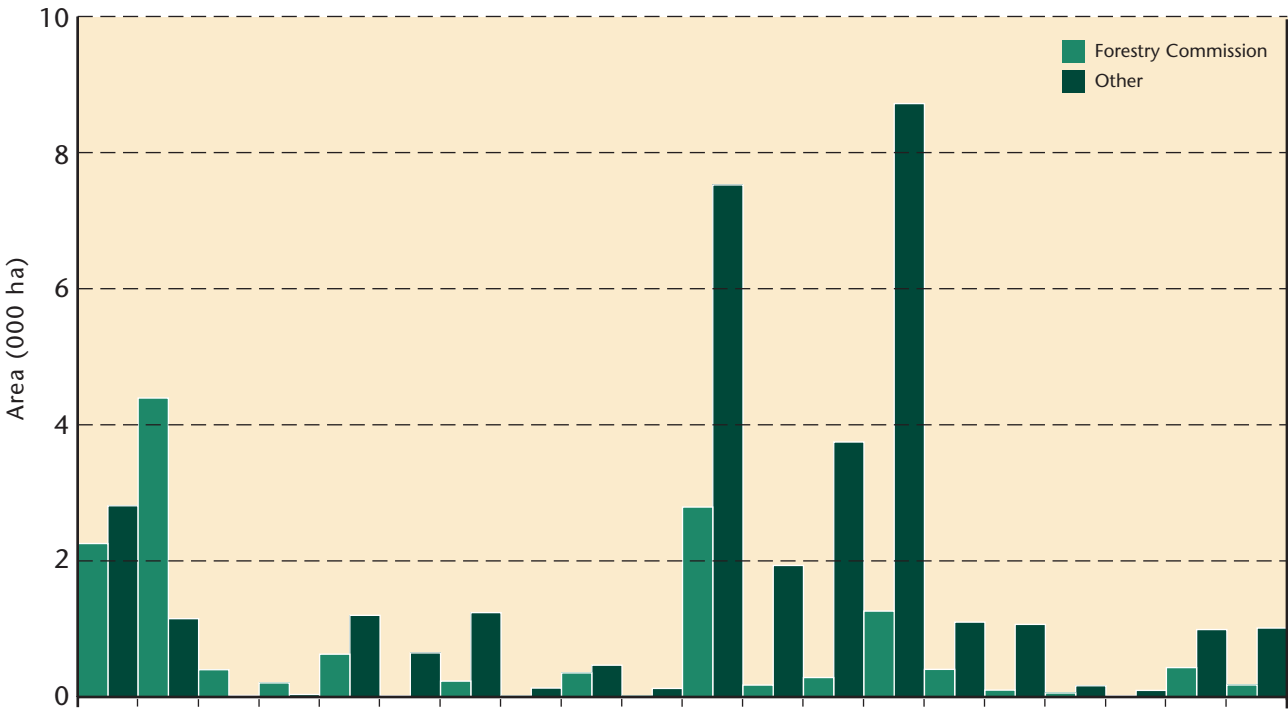
1. The standard errors of the All ownerships area estimates for the most common species or species groups (in all woodland types) are as follows:

	Category 1*	Category 2*	Total High Forest
Conifers	4%	23%	4%
Broadleaves	3%	4%	2%
Corsican pine	9%	-	9%
Oak	5%	10%	4%
Ash	5%	13%	5%

*See Glossary for Category 1 and Category 2 descriptions.

2. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).
3. Where possible the species in mixtures have been separately recorded. Where this has not been possible they were described as 'Mixed conifers' or 'Mixed broadleaves'.

High Forest Category 1 - Area by principal species and ownership



High Forest Category 2 - Area by principal species and ownership

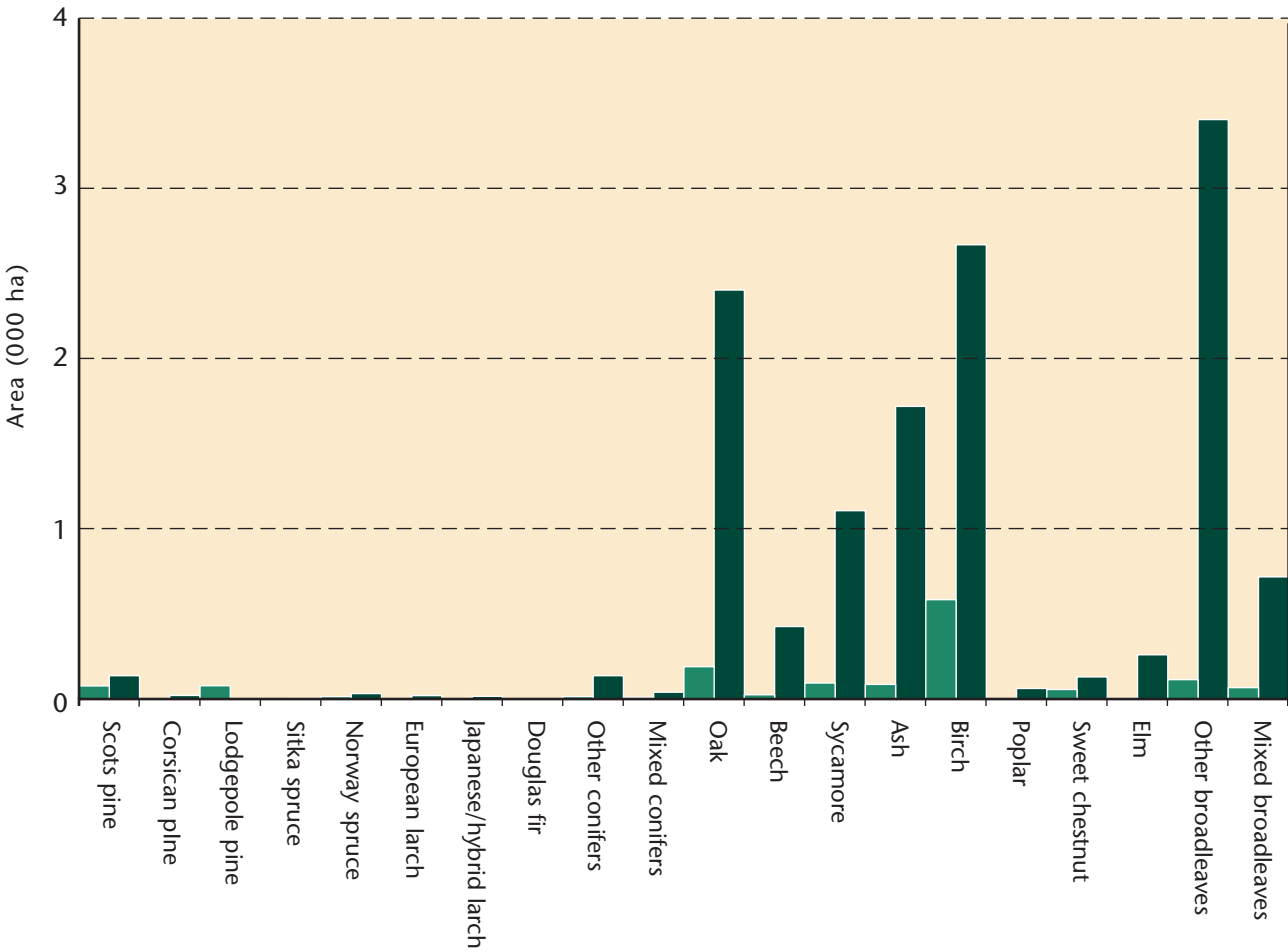
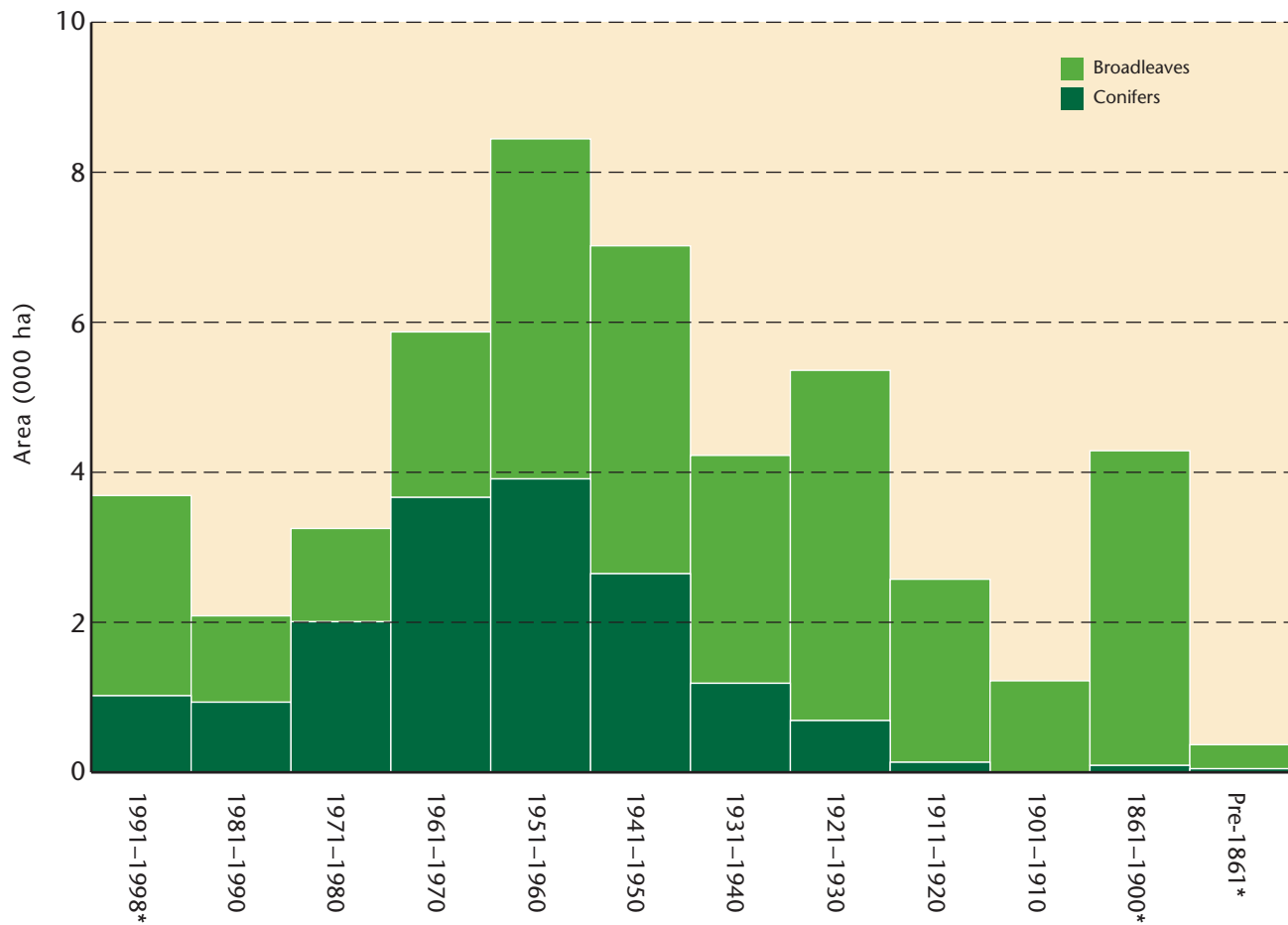


Table 10a High Forest Category 1 - Area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991 -1998	1981 -1990	1971 -1980	1961 -1970	1951 -1960	1941 -1950	1931 -1940	1921 -1930	1911 -1920	1901 -1910	1861 -1900	pre - 1861	
Scots pine	149	212	489	753	1 467	1 366	358	213	56	0	0	0	5 065
Corsican pine	362	355	782	1 176	1 413	552	550	321	4	0	28	0	5 543
Lodgepole pine	5	23	77	298	21	0	0	0	0	0	0	0	424
Sitka spruce	115	14	113	2	0	0	0	0	0	0	0	0	244
Norway spruce	179	179	251	692	352	156	12	0	8	0	0	0	1 829
European larch	17	0	83	62	174	132	107	43	17	0	19	0	653
Japanese/hybrid larch	123	128	52	384	254	313	138	81	0	0	0	0	1 473
Douglas fir	19	0	0	4	43	72	0	0	10	0	0	0	148
Other conifers	40	20	162	275	182	16	5	3	25	0	45	48	821
Mixed conifers	12	3	0	18	5	40	17	28	14	3	0	0	141
Total conifers	1 021	935	2 008	3 665	3 912	2 648	1 187	690	134	3	92	48	16 343
Oak	861	296	184	569	920	951	595	1 320	1 066	521	2 838	194	10 316
Beech	39	55	65	168	411	194	152	347	102	155	308	113	2 109
Sycamore	111	95	219	250	564	1 123	599	623	164	113	171	0	4 033
Ash	526	277	322	450	1 809	1 043	1 439	1 986	1 075	351	705	0	9 982
Birch	167	96	24	106	293	547	125	123	0	25	0	0	1 506
Poplar	189	153	115	351	145	164	47	4	0	0	0	0	1 168
Sweet chestnut	23	7	37	0	5	15	9	70	25	0	34	0	225
Elm	14	2	11	31	20	17	0	0	0	0	6	0	102
Other broadleaves	299	23	171	217	272	182	31	112	0	42	58	13	1 423
Mixed broadleaves	440	146	96	64	93	135	41	83	8	9	75	0	1 190
Total broadleaves	2 669	1 151	1 243	2 206	4 533	4 371	3 038	4 669	2 440	1 217	4 195	320	32 052
Total – all species	3 691	2 086	3 251	5 871	8 444	7 018	4 225	5 359	2 574	1 220	4 287	368	48 395

*Age determined from records where these were available. Where records were not available or were clearly inaccurate age-class was assigned by reference to similar crops of known age in the locality.

High Forest Category 1 - Area by planting year class



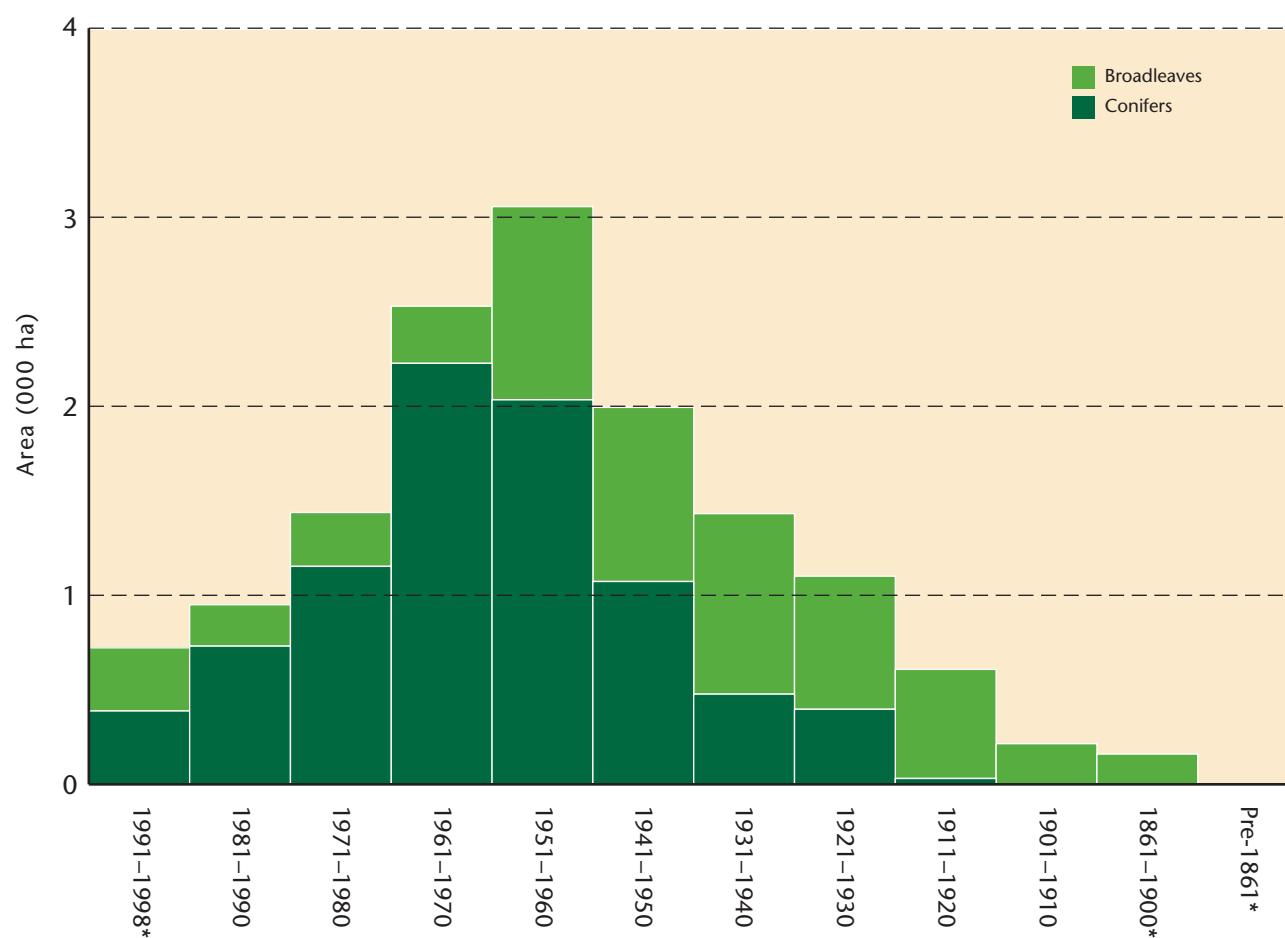
*Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

Table 10b High Forest Category 1 - Forestry Commission: area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991 -1998	1981 -1990	1971 -1980	1961 -1970	1951 -1960	1941 -1950	1931 -1940	1921 -1930	1911 -1920	1901 -1910	1861 -1900	pre - 1861	
Scots pine	33	194	134	318	794	574	86	92	31	0	0	0	2 255
Corsican pine	251	305	736	1 046	961	442	347	305	0	0	0	0	4 393
Lodgepole pine	0	10	77	292	21	0	0	0	0	0	0	0	401
Sitka spruce	81	14	113	0	0	0	0	0	0	0	0	0	207
Norway spruce	23	112	88	280	85	42	0	0	0	0	0	0	629
European larch	0	0	0	0	0	0	5	0	0	0	0	0	5
Japanese/hybrid larch	0	97	0	26	76	0	34	0	0	0	0	0	233
Douglas fir	0	0	0	4	13	0	0	0	0	0	0	0	17
Other conifers	0	0	4	247	83	16	5	0	0	0	0	0	354
Mixed conifers	0	0	0	15	0	0	0	0	0	0	0	0	15
Total conifers	388	731	1 153	2 227	2 034	1 073	477	397	31	0	0	0	8 510
Oak	118	89	83	90	452	426	331	388	543	126	145	0	2 791
Beech	0	4	13	33	5	29	59	26	0	0	5	0	175
Sycamore	0	0	9	5	92	49	72	0	0	59	0	0	286
Ash	7	47	45	66	232	112	463	275	9	5	0	0	1 262
Birch	55	70	9	22	78	122	25	0	0	25	0	0	406
Poplar	93	0	0	0	8	0	0	0	0	0	0	0	101
Sweet chestnut	0	0	15	0	5	15	0	0	25	0	0	0	59
Elm	0	0	5	0	0	0	0	0	0	0	0	0	5
Other broadleaves	5	0	84	48	132	155	0	10	0	0	0	0	432
Mixed broadleaves	56	9	22	38	18	14	5	5	0	0	10	0	177
Total broadleaves	334	219	285	302	1 022	921	955	704	577	215	160	0	5 694
Total – all species	722	950	1 438	2 529	3 056	1 993	1 432	1 101	608	215	160	0	14 203

*Age determined from records where these were available. Where records were not available or were clearly inaccurate age-class was assigned by reference to similar crops of known age in the locality.

High Forest Category 1 - Forestry Commission: area by planting year class



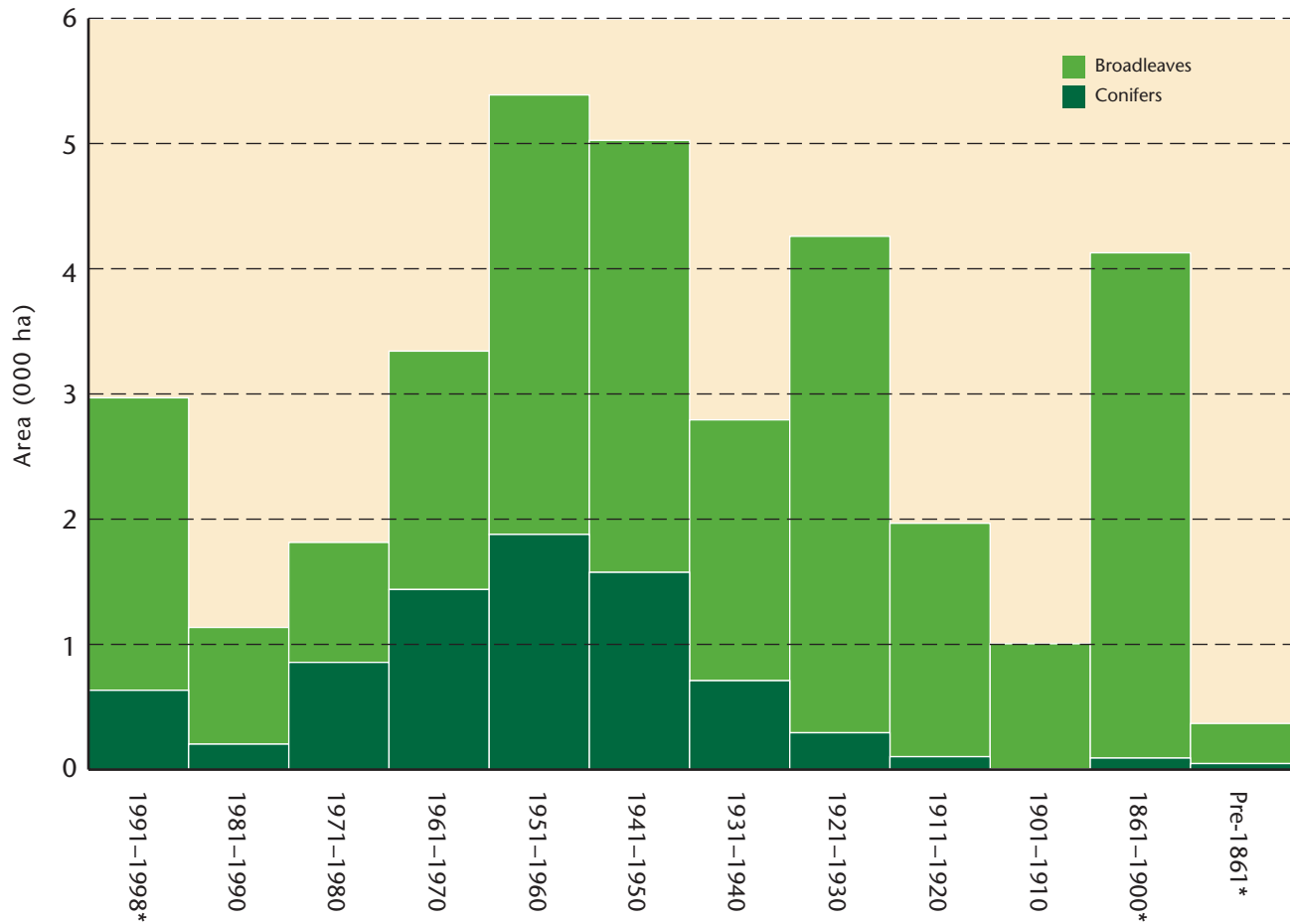
*Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

Table 10c High Forest Category 1 - Other ownership: area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991 -1998	1981 -1990	1971 -1980	1961 -1970	1951 -1960	1941 -1950	1931 -1940	1921 -1930	1911 -1920	1901 -1910	1861 -1900	pre - 1861	
Scots pine	116	19	355	435	672	793	272	122	25	0	0	0	2 810
Corsican pine	111	51	45	130	453	111	203	16	4	0	28	0	1 151
Lodgepole pine	5	13	0	5	0	0	0	0	0	0	0	0	23
Sitka spruce	34	0	0	2	0	0	0	0	0	0	0	0	37
Norway spruce	155	68	163	413	267	115	12	0	8	0	0	0	1 200
European larch	17	0	83	62	174	132	102	43	17	0	19	0	648
Japanese/hybrid larch	123	30	52	358	177	313	104	81	0	0	0	0	1 240
Douglas fir	19	0	0	0	30	72	0	0	10	0	0	0	131
Other conifers	40	20	157	29	99	0	0	3	25	0	45	48	467
Mixed conifers	12	3	0	3	5	40	17	28	14	3	0	0	126
Total conifers	633	203	856	1 438	1 878	1 575	710	294	103	3	92	48	7 833
Oak	742	207	101	479	468	525	265	932	523	395	2 693	194	7 525
Beech	39	51	52	134	406	165	93	321	102	155	303	113	1 933
Sycamore	111	95	210	245	472	1 075	526	623	164	55	171	0	3 747
Ash	519	230	277	384	1 577	931	975	1 711	1 066	345	705	0	8 720
Birch	112	26	14	84	215	425	100	123	0	0	0	0	1 100
Poplar	96	153	115	351	137	164	47	4	0	0	0	0	1 067
Sweet chestnut	23	7	23	0	0	0	9	70	0	0	34	0	165
Elm	14	2	6	31	20	17	0	0	0	0	6	0	97
Other broadleaves	295	23	87	169	139	27	31	103	0	42	58	13	991
Mixed broadleaves	384	137	74	26	75	121	36	78	8	9	66	0	1 013
Total broadleaves	2 336	932	958	1 904	3 510	3 450	2 083	3 965	1 864	1 002	4 035	320	26 358
Total – all species	2 969	1 135	1 813	3 342	5 388	5 025	2 794	4 259	1 966	1 005	4 127	368	34 191

*Age determined from records where these were available. Where records were not available or were clearly inaccurate age-class was assigned by reference to similar crops of known age in the locality.

High Forest Category 1 - Other ownership: area by planting year class

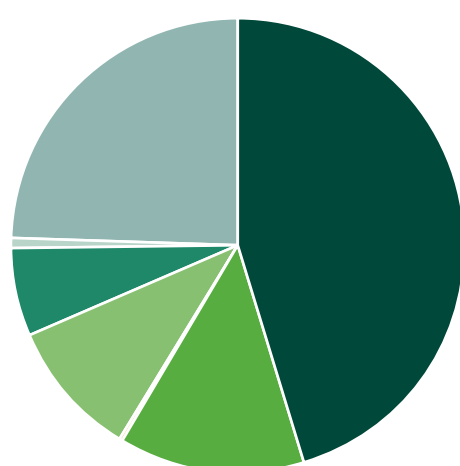


*Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

Table 11 High Forest: principal species by planting year class

Planting year class	First	%	Second	%	Third	%
1991–1998	Oak	21	Mixed broadleaves	15	Ash	13
1981–1990	Birch	13	Corsican pine	13	Oak	11
1971–1980	Corsican pine	19	Ash	13	Scots pine	12
1961–1970	Corsican pine	15	Birch	13	Scots pine	10
1951–1960	Ash	18	Scots pine	14	Corsican pine	14
1941–1950	Sycamore	15	Scots pine	15	Ash	14
1931–1940	Ash	31	Oak	14	Sycamore	12
1921–1930	Ash	33	Oak	26	Sycamore	11
1911–1920	Oak	42	Ash	37	Sycamore	8
1901–1910	Oak	41	Ash	34	Beech	10
1861–1900	Oak	58	Ash	17	Beech	6
Pre-1861	Oak	46	Beech	41	Other conifers	5
All years	Oak	20	Ash	19	Corsican pine	9

1. Principal species as a percentage of area in the planting year class.

Ownership type by area

Personal
Business
Forestry or timber business
Charity
Local Authority
Other public
Forestry Commission

Table 12 Ownership type* by area and percentage

Ownership type	Area (ha)	%
Personal	31 569	45.3
Business	9 212	13.2
Forestry or timber business	160	0.2
Charity	6 821	9.8
Local Authority	4 378	6.3
Other public (not FC)	499	0.7
Forestry Commission	17 069	24.5
Community ownership or common land	0	0.0
Unidentified	0	0.0
Total	69 709	100.0

*This table is produced from data contributed on a voluntary basis by owners or their representatives.

RESULTS FROM THE SURVEY OF SMALL WOODLAND AND TREES (SSWT)

Survey method

The land area of East Midlands Region was stratified into coastal and inland 1 km x 1 km squares. A random sample of the 1 km² plots was then selected, representing around 1% of the land area. 1:25 000 scale aerial photos were then used to identify features in each sample square. Each 1 km² was then divided into 16 parts, and two of these were selected at random for field data collection. Data was collected on Small Woods (0.10 – <2.00 ha), Linear Features, Groups and Individual Trees. The survey did not collect information from areas of developed land of 2 hectares or more.

Table 13:	Summary of information from the Survey of Small Woodland and Trees
Table 14:	Woodland area by feature type and woodland size
Table 15:	Woodland area by forest type, woodland size and feature type
Table 16:	Woodland area by species and feature type
Table 17:	Numbers of live trees outside woodland by species and feature type
Table 18:	Numbers of dead trees outside woodland by species and feature type
Table 19:	Numbers of live Individual Trees by species and height band
Table 20:	Numbers of live trees in Groups by species and height band
Table 21:	Numbers of live trees in Narrow Linear Features by species and height band
Table 22:	Numbers of Groups by group size

Note: The figures in many of the tables may not add due to rounding.

Table 13 Summary of information from the Survey of Small Woodland and Trees

Feature type	Number of features	Total	Unit
Small Woods	17 289	8 573	Area (ha)
Wide Linear Features	7 504	1 589	Area (ha)
Wide Linear Features	7 504	721	Length (km)
Narrow Linear Features	262 800	17 245	Length (km)
Narrow Linear Features	262 800	9 690 200	Number of Trees
Groups	681 200	3 822 600	Number of Trees
Individual Trees	1 300 700	1 300 700	Number of Trees

1. See Glossary for definitions of feature types.

Table 14 Woodland area by feature type and woodland size

Feature type	Woodland size (ha)		Total area (ha)	Number of features	Mean size (ha)
	0.1 – <0.25	0.25 – <2.0			
Small Woods	956	7 617	8 573	17 289	0.50
Wide Linear Features	859	730	1 589	7 504	0.21
Total	1 815	8 347	10 162	24 793	0.41

1. The standard errors of the total area estimates for these feature types are:

Small Woods 32%
Wide Linear Features 50%

2. See Glossary for definitions of feature types.

Table 15 Woodland area by forest type, woodland size and feature type

Forest type	Woodland size class (ha)						Total area (ha) SW + WLF
	0.1 – <0.25 SW*		0.25 – <2.0 SW		0.1 – <2.0 WLF		
Conifer	203	0	915	0	1 119	0	1 119
Broadleaved	702	859	6 092	669	6 794	1 528	8 321
Mixed	0	0	102	0	102	0	102
Coppiced	0	0	0	0	0	0	0
Copp-w-stds	0	0	0	0	0	0	0
Windblow	0	0	0	0	0	0	0
Felled	0	0	0	0	0	0	0
Open Space	51	0	508	61	559	61	620
Total	956	859	7 617	730	8 573	1 589	10 162

*SW - Small Woods, †WLF - Wide Linear Features.

1. See Glossary for definitions of forest type and feature type.

Table 16 Woodland area by species and feature type

Species	Feature type		Total area (ha)	Percent of total area	
	Small Wood	Wide Linear Feature		Category	Species
Pine	457	0	457	37.5	4.8
Spruce	661	0	661	54.2	6.9
Larch	0	0	0	0.0	0.0
Cypress	0	0	0	0.0	0.0
Other conifers	0	0	0	0.0	0.0
Mixed conifers	102	0	102	8.4	1.1
Total conifers	1 220	0	1 220	100.0	12.8
Oak	763	174	937	11.3	9.8
Beech	81	0	81	1.0	0.8
Sycamore	712	0	712	8.6	7.5
Ash	2 095	32	2 127	25.6	22.3
Birch	51	0	51	0.6	0.5
Poplar	0	0	0	0.0	0.0
Sweet chestnut	0	0	0	0.0	0.0
Horse chestnut	51	0	51	0.6	0.5
Alder	214	0	214	2.6	2.2
Lime	51	0	51	0.6	0.5
Elm	102	0	102	1.2	1.1
Willow	834	0	834	10.0	8.7
Other broadleaves	417	371	788	9.5	8.3
Mixed broadleaves	1 424	950	2 374	28.5	24.9
Total broadleaves	6 795	1 528	8 321	100.0	87.2
Total – all species	8 014	1 528	9 541		100.0

1. Percentages:

Category: species percentage of conifer or broadleaved
 Species: percentage of all species

2. The standard errors of the total area estimates for the most common species/groups are:

Spruce 100%
 Oak 64%
 Ash 49%
 Willow 43%

3. See Glossary for definitions of feature types.

Table 17 Numbers of live trees outside woodland by species and feature type (000s trees)

Species	Feature type				Total live trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	4.8	0.0	22.2	65.1	92.1	12.3	0.6
Spruce	1.6	1.6	2.4	17.7	23.3	3.1	0.2
Larch	1.6	0.0	4.1	14.7	20.4	2.7	0.1
Cypress	11.1	0.0	52.6	462.1	525.8	69.9	3.5
Other conifers	2.4	4.0	26.3	57.5	90.2	12.0	0.6
Total conifers	21.5	5.6	107.6	617.2	751.8	100.0	5.1
Oak	121.8	40.2	191.4	433.4	786.8	5.6	5.3
Beech	12.0	3.4	40.6	193.6	249.6	1.8	1.7
Sycamore	81.7	20.6	168.5	448.6	719.4	5.1	4.9
Ash	256.2	25.6	501.8	934.2	1 717.8	12.2	11.6
Birch	26.2	15.2	180.6	294.9	516.9	3.7	3.5
Poplar	7.9	1.6	44.6	173.7	227.8	1.6	1.5
Sweet chestnut	0.8	2.4	2.4	6.7	12.3	0.1	0.1
Horse chestnut	16.0	20.3	30.4	47.6	114.3	0.8	0.8
Alder	4.8	6.4	67.9	70.1	149.2	1.1	1.0
Lime	24.6	3.2	12.7	101.4	141.9	1.0	1.0
Elm	21.7	0.9	160.1	387.8	570.5	4.1	3.9
Willow	45.1	15.8	260.7	584.0	905.6	6.4	6.1
Other broadleaves	267.9	231.3	2 053.3	5 397.0	7 949.5	56.5	53.7
Total broadleaves	886.7	386.9	3 714.9	9 073.0	14 061.6	100.0	94.9
Total – all species	908.2	392.5	3 822.6	9 690.2	14 813.5		100.0

1. Percentages:

Category: species percentage of conifer or broadleaved
 Species: percentage of all species

2. The standard errors of the total tree number estimates for these feature types are:

Individual Trees 10%
 Groups 12%
 Narrow Linear Features 13%

3. See Glossary for definitions of feature types.

Table 18 Numbers of dead trees outside woodland by species and feature type (000s of trees)

Species	Feature type				Total dead trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	0.0	0.0	0.0	3.6	3.6	85.7	2.8
Spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Larch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other conifers	0.0	0.0	0.0	0.6	0.6	14.3	0.5
Total conifers	0.0	0.0	0.0	4.3	4.2	100.0	3.3
Oak	4.1	0.0	4.8	5.9	14.8	12.0	11.6
Beech	0.0	0.8	0.0	1.3	2.1	1.7	1.6
Sycamore	0.0	0.8	0.0	1.2	2.0	1.6	1.6
Ash	4.8	0.0	4.0	5.1	13.9	11.2	10.9
Birch	0.0	0.0	2.4	13.3	15.7	12.7	12.3
Poplar	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweet chestnut	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Horse chestnut	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alder	0.0	0.0	2.4	1.9	4.3	3.5	3.4
Lime	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elm	1.6	0.0	11.3	12.4	25.3	20.5	19.8
Willow	0.0	0.0	0.0	1.8	1.8	1.5	1.4
Other broadleaves	2.2	3.4	21.5	16.6	43.7	35.4	34.2
Total broadleaves	12.7	5.0	46.5	59.4	123.6	100.0	96.6
Total – all species	12.7	5.0	46.5	63.7	127.9		100.0

1. See Glossary for definitions of feature types.

Table 19 Numbers of live Individual Trees by species and height band (000s trees)

Species	Height band (m)				Total live trees
	2-5	5-15	15-20	>20	
Pine	0.8	4.0	0.0	0.0	4.8
Spruce	3.2	0.0	0.0	0.0	3.2
Larch	1.6	0.0	0.0	0.0	1.6
Cypress	8.0	2.4	0.8	0.0	11.2
Other conifers	0.8	3.3	1.6	0.8	6.5
Total conifers	14.4	9.7	2.4	0.8	27.3
Oak	42.5	85.5	29.2	4.9	162.1
Beech	6.5	4.9	2.4	1.6	15.4
Sycamore	39.9	57.5	4.9	0.0	102.3
Ash	70.1	174.0	34.5	3.2	281.8
Birch	11.1	29.5	0.8	0.0	41.4
Poplar	4.0	4.0	1.6	0.0	9.6
Sweet chestnut	0.8	1.6	0.8	0.0	3.2
Horse chestnut	21.8	12.0	2.5	0.0	36.3
Alder	7.2	4.0	0.0	0.0	11.2
Lime	11.2	7.1	9.5	0.0	27.8
Elm	11.4	11.3	0.0	0.0	22.7
Willow	32.0	26.5	0.8	1.6	60.9
Other broadleaves	394.2	103.4	0.8	0.8	499.2
Total broadleaves	652.7	521.3	87.8	12.1	1 273.9
Total – all species	666.9	530.9	90.1	12.9	13.1

Table 20 Numbers of live trees in Groups by species and height band (000s trees)

Species	Height band (m)				Total live trees
	2-5	5-15	15-20	>20	
Pine	5.6	15.9	0.8	0.0	22.3
Spruce	1.6	0.8	0.0	0.0	2.4
Larch	0.8	3.2	0.0	0.0	4.0
Cypress	27.1	25.5	0.0	0.0	52.6
Other conifers	1.6	19.8	2.4	2.5	26.3
Total conifers	36.7	65.2	3.2	2.5	107.6
Oak	60.3	94.6	26.8	9.8	191.5
Beech	5.7	23.5	9.8	1.6	40.6
Sycamore	46.4	95.8	25.4	0.8	168.4
Ash	185.0	287.0	25.8	4.0	501.8
Birch	58.0	122.6	0.0	0.0	180.6
Poplar	7.1	30.3	7.2	0.0	44.6
Sweet chestnut	0.0	1.6	0.8	0.0	2.4
Horse chestnut	4.1	23.8	0.8	1.6	30.3
Alder	14.5	51.0	2.4	0.0	67.9
Lime	3.1	7.2	0.8	1.6	12.7
Elm	94.5	65.6	0.0	0.0	160.1
Willow	103.7	155.4	1.6	0.0	260.7
Other broadleaves	1 489.9	562.6	0.0	0.8	2 053.3
Total broadleaves	2 072.3	1 521.0	101.4	20.2	3 714.9
Total – all species	2 109.0	1 586.2	104.6	22.7	3 822.6

Table 21 Numbers of live trees in Narrow Linear Features by species and height band (000s trees)

Species	Height band (m)				Total live trees
	2-5	5-15	15-20	>20	
Pine	3.2	52.5	8.1	1.3	65.1
Spruce	10.9	6.8	0.0	0.0	17.7
Larch	1.9	12.2	0.6	0.0	14.7
Cypress	92.4	369.6	0.0	0.0	462.0
Other conifers	18.7	36.3	1.2	1.3	57.5
Total conifers	127.1	477.4	9.9	2.6	617.2
Oak	87.8	305.7	33.2	6.7	433.4
Beech	12.8	32.9	107.7	40.1	193.5
Sycamore	116.0	295.5	33.5	3.6	448.6
Ash	247.4	628.5	53.4	4.9	934.2
Birch	123.4	168.5	3.0	0.0	294.9
Poplar	1.1	86.5	86.0	0.0	173.6
Sweet chestnut	1.2	5.5	0.0	0.0	6.7
Horse chestnut	18.5	26.6	2.4	0.0	47.5
Alder	24.3	44.6	1.2	0.0	70.1
Lime	41.0	44.6	12.6	3.2	101.4
Elm	240.7	145.9	1.2	0.0	387.8
Willow	171.3	409.7	2.9	0.0	583.9
Other broadleaves	3 647.0	1 750.0	0.0	0.0	5 397.0
Total broadleaves	4 732.5	3 944.5	337.1	58.5	9 073.0
Total – all species	4 859.6	4 421.9	347.0	61.1	9 690.2

Table 22 Number of Groups by group size

Number of trees per Group*	Number of Groups (000s)
2	123
3-5	277
6-10	145
11-20	92
21-50	34
51-100	9
>100	2
Total	681

*The size of the Group is determined by the total number of trees, live plus dead.

COMPARISON OF RESULTS WITH THE 1980 CENSUS AND PREVIOUS SURVEYS

Survey method

The 1980 Census and 1998 Inventory were undertaken using very different sampling methods. Inventory practice and technology have moved on since the 1980 Census; this has led to changes in sampling methodology, scope and woodland definitions. For example, the Main Woodland Survey used the digital woodland map, created from aerial photographs as a basis for sampling whereas the 1980 Census relied only on the woodland shown on the 1:50 000 Ordnance Survey map. Also in contrast to the 1980 Census, the Survey of Small Woodland and Trees did not record information within developed land e.g. residential or industrial areas of 2 or more hectares.

Where possible adjustments have been made to both the 1980 Census and the Inventory to achieve the nearest available comparison. The apparent changes indicated in the following tables and charts should therefore be treated with caution, particularly where areas are small.

Table 23:	Comparison of woodland area between 1980 Census and 1998 Inventory
Table 24:	Comparison of High Forest area by species between 1980 Census and 1998 Inventory
Chart:	Comparison of High Forest area by species between 1980 Census and 1998 Inventory
Table 25:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory
Table 26:	Comparison of numbers of live trees outside woodland between 1980 Census and 1998 Inventory
Table 27:	Comparison of density of non-woodland features between 1980 Census and 1998 Inventory

Woodland Cover

Chart:	Change in woodland cover through time (1890–2000)
Map Series:	Woodland cover by county through time (1895–1998)

Note: The figures in many of the tables may not add due to rounding.

Table 23 Comparison of woodland area between 1980 Census and 1998 Inventory

Woodland size (ha)	1980 Census woodland area		1998 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	60 764	91.0	69 709	89.3	15
0.25 – <2.0	6 017	9.0	8 347	10.7	39
Total	66 781		78 056		17
% Woodland land cover	4.3		5.0		

1. Differences in sampling methodology may account for some of the apparent differences.
2. The above figures from the 1998 Inventory exclude woodland between 0.1 and <0.25 hectares, thereby matching the scope of the 1980 Census. These 1998 figures will therefore not match those in the previous sections of the report.
3. Land area used to calculate woodland cover percent (1998), 1 541 113 hectares, was based on the 1991 Census of Population digital boundaries.
4. Land area used to calculate woodland cover percent (1980), 1 542 056 hectares, (Ordnance Survey data)

Table 24 Comparison of High Forest area by species between 1980 Census and 1998 Inventory

Species	1980 Census woodland area (ha)	1998 Inventory woodland area (ha)	Change (%)
Scots pine	6 473	5 529	-15
Corsican pine	6 075	5 562	-8
Lodgepole pine	596	501	-16
Sitka spruce	284	246	-13
Norway spruce	2 923	2 533	-13
European larch	1 706	671	-61
Japanese/hybrid larch	974	1 487	53
Douglas fir	201	148	-26
Other conifers	913	969	6
Mixed conifers	1 501	289	-81
Total conifers	21 646	17 935	-17
Oak	7 858	13 669	74
Beech	2 327	2 555	10
Sycamore	3 896	5 941	52
Ash	7 036	13 777	96
Birch	5 062	4 807	-5
Poplar	898	1 228	37
Sweet chestnut	493	407	-17
Elm	808	466	-42
Other broadleaves	4 237	6 138	45
Mixed broadleaves	5 158	3 910	-24
Total broadleaves	37 773	52 898	40
Total – all species	59 418	70 833	19
Felled	1 427	536	-62
Total High Forest	60 846	71 369	17

1. Differences in sampling methodology may account for some of the apparent differences.
2. In the 1980 Census the areas assigned to species included any associated open space such as roads and rides. In the Inventory open spaces are separately identified and the overall proportion is 8.2% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 8.2%.
3. The above figures from the 1998 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1998 figures above will therefore not match those in the previous sections of the report.
4. The 1980 figures include scrub to enable comparison.

Comparison of High Forest area by species between 1980 Census and 1998 Inventory

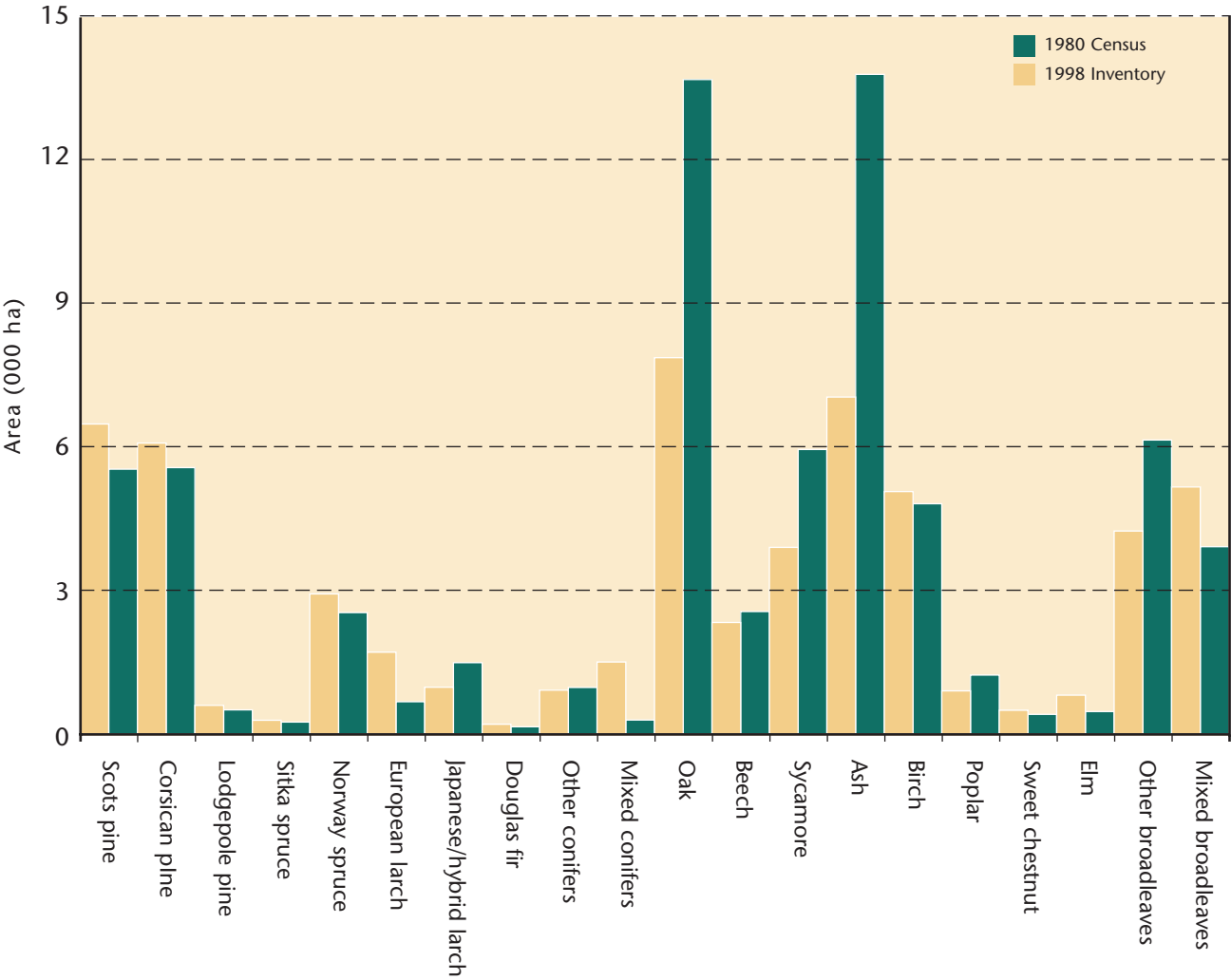


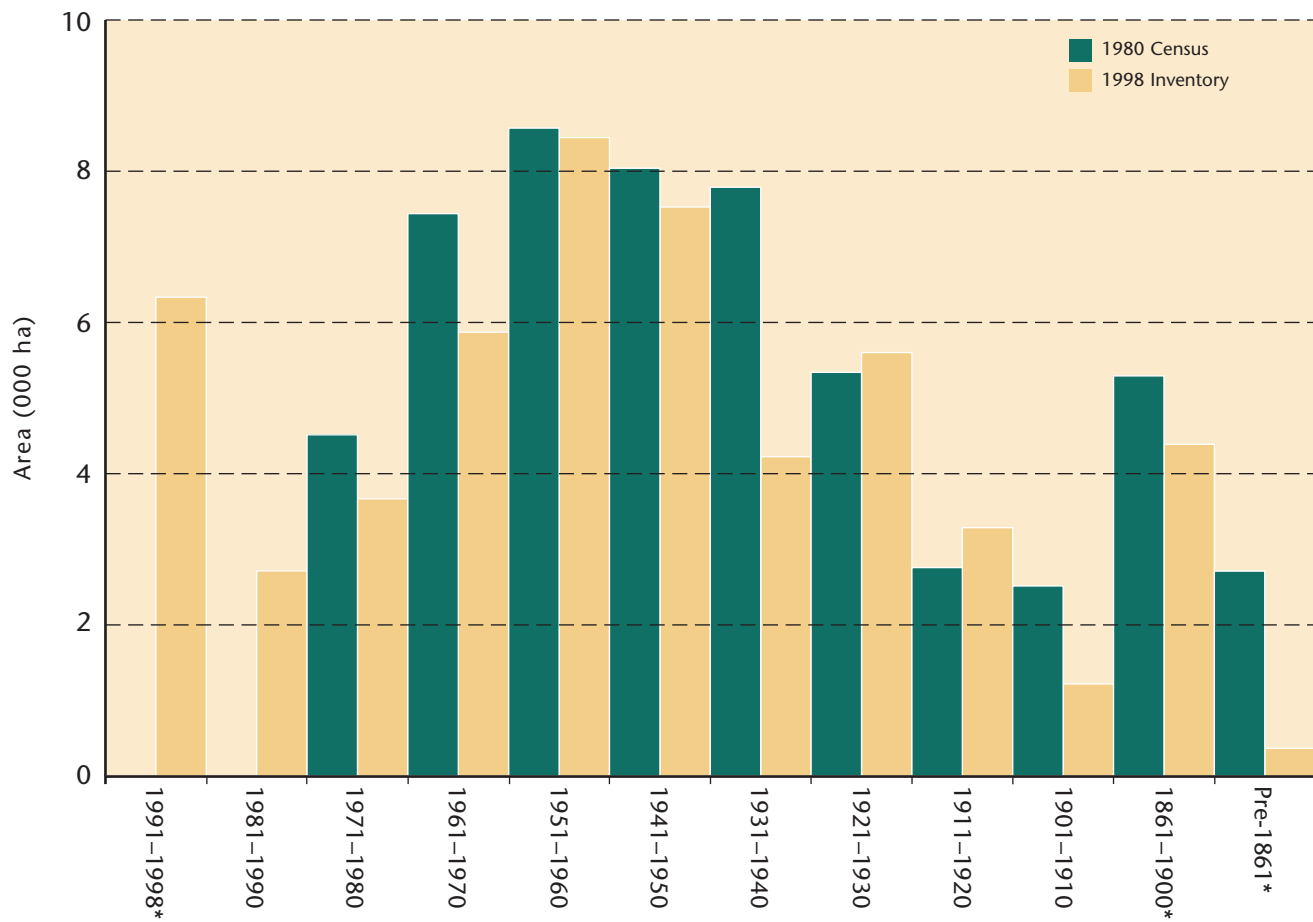
Table 25 Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory

Planting year class	1980 Census woodland area (ha)	1998 Inventory woodland area (ha)	Change (%)
1991–1998	-	6 334	.*
1981–1990	-	2 715	.*
1971–1980	4 514	3 668	-19
1961–1970	7 439	5 871	-21
1951–1960	8 570	8 445	-1
1941–1950	8 039	7 527	-6
1931–1940	7 788	4 225	-46
1921–1930	5 340	5 602	5
1911–1920	2 758	3 286	19
1901–1910	2 515	1 220	-51
1861–1900	5 293	4 389	-17
Pre-1861	2 711	368	-86
Total: all years	54 967	53 650	-2

*These classes cover the period since the 1980 Census therefore no comparison can be made.

1. The definition of the High Forest Category 1 in the Inventory does not fully coincide with High Forest as defined in the 1980 Census.

Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory



*Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

Table 26 Comparison of numbers of live trees outside woodland between 1980 Census and 1998 Inventory (000s trees)

Feature type	1980 Census	1998 Inventory	Change (%)
Boundary Tree	786	785	0
Middle Tree	832	219	-74
Total Individual Trees	1 618	1 003	-38
Groups	1 351	2 071	53
Linear Features	968	5 043	421
Total	3 937	8 116	106

1. The Survey of Small Woodland and Trees did not record information referring to tree features (i.e. Individual trees, Groups and Narrow Linear features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded; the 1998 Inventory figures have been adjusted accordingly. The 1998 figures above will therefore not match those in the previous sections of the report.
3. Changes stated in this table are indicative only. Even with adjustments to the 1998 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height and 1998 used 2 m height as minimum criteria for inclusion.
4. See Glossary for definitions of feature types.

Table 27 Comparison of density of non-woodland features between 1980 Census and 1998 Inventory

Feature type	1980 Census	1998 Inventory	Change (%)
Individual Trees (per km ²)	103.6	64.2	-38
Groups (per km ²)	16.7	28.1	68
Linear Features (m per km ²)	190.0	1 034.2	444

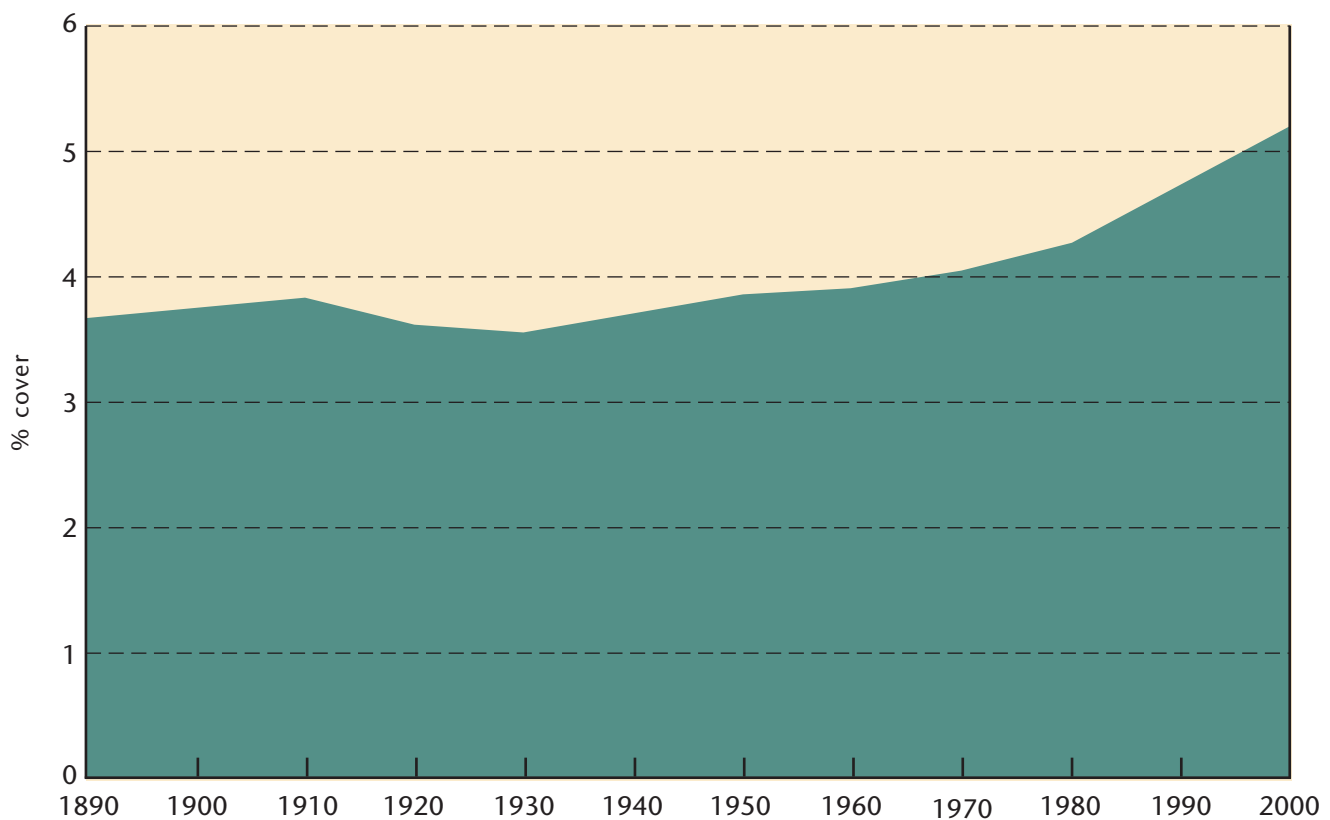
1. The Survey of Small Woodland and Trees did not record information referring to tree features (i.e. Individual trees, Groups and Narrow Linear features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded; the 1998 Inventory figures have been adjusted accordingly. The 1998 figures above will therefore not match those in the previous sections of the report.
3. Changes stated in this table are indicative only. Even with adjustments to the 1998 Inventory, the two surveys are not directly comparable - 1980 used 7 cm diameter at breast height and 1998 used 2 m height as minimum criteria for inclusion.
4. See Glossary for definitions of feature types.

WOODLAND COVER

Woodland area data is available from Ministry of Agriculture surveys since 1871, and from Forestry Commission national woodland inventories since 1924. The following chart and maps show the changes in woodland area through time.

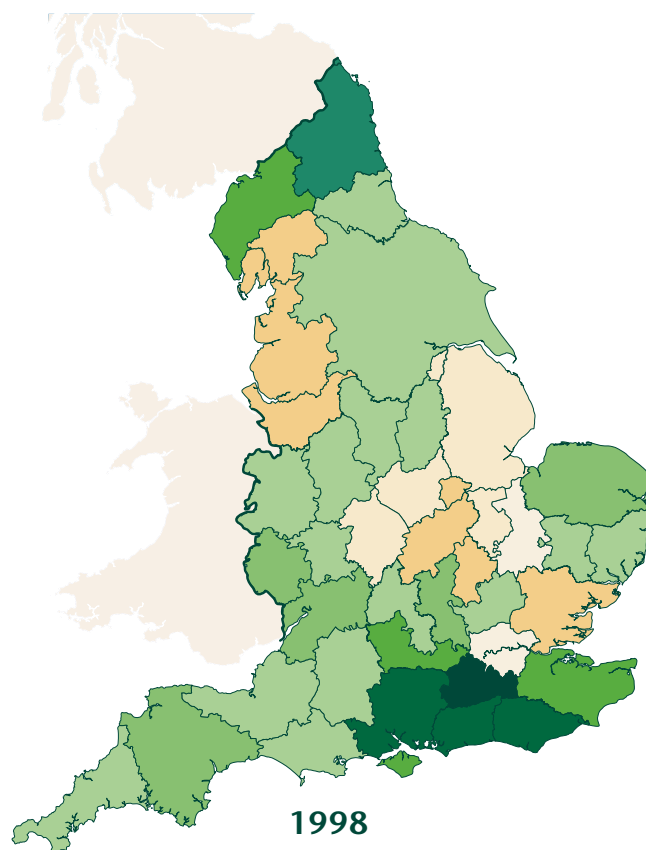
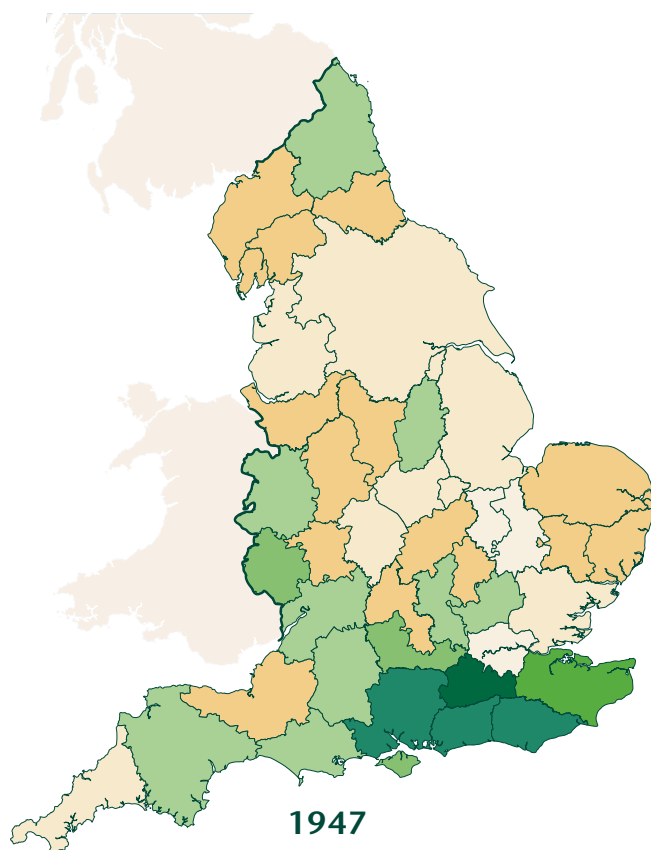
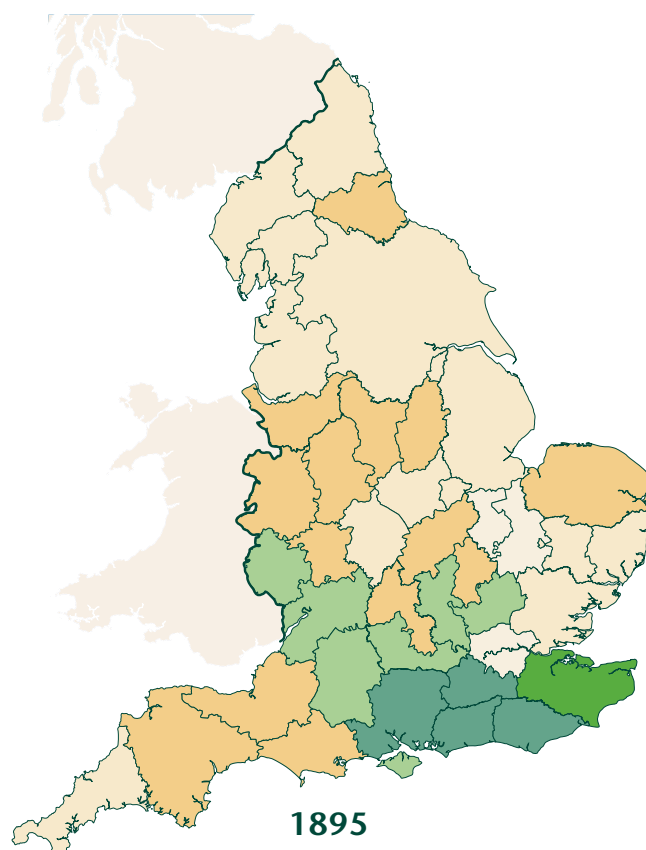
The maps use the old county structure of England, as reported on in 1895 and 1947. The data from these counties could not be re-analysed for different geographic areas. In contrast, the digital woodland map, which forms the basis of the current inventory, can be re-analysed for any geographic area.

Change in woodland cover through time (1890–2000)



Map 5 Woodland cover by county through time (1895–1998)**% woodland cover**

0-1.9	12-13.9
2-3.9	14-15.9
4-5.9	16-17.9
6-7.9	18-19.9
8-9.9	20-21.9
10-11.9	22-23.9



APPENDICES

The following tables summarise the results of the Main Woodland Survey and the Survey of Small Woodland and Trees by county in East Midlands Region. Full reports of the results are available separately.

- Appendix 1 Summary of woodland area by county and woodland size
- Appendix 2 Summary of woodland area by county and forest type
- Appendix 3 Summary of live trees outside woodland by county and feature type
- Appendix 4 Summary of number and length of Linear Features by county

Note: The figures in many of the tables may not add due to rounding.

APPENDIX 1

Summary of woodland area by county and woodland size

County*	Woodland size (ha) [†]		Total area (ha)	Woodland cover (%)
	2.0 or more	0.1 – <2.0		
Derbyshire	15 733	3 779	19 512	7.4
Leicestershire	8 094	1 566	9 660	3.8
Lincolnshire	17 557	1 346	18 903	3.2
Northamptonshire	12 383	2 114	14 497	6.1
Nottinghamshire	15 942	1 356	17 298	8.0
Total	69 709	10 162	79 871	5.1

*Areas of counties used to derive woodland cover % based on digital boundaries used in 1991 Census of Population.

[†]Area of woodland blocks of 2.0 ha and over derived from the Main Woodland Survey. Area of woodland blocks 0.1– < 2.0 ha derived from the Survey of Small Woodland and Trees.

APPENDIX 2

Summary of woodland area by county and forest type

County	Forest type								Total
	Conifer	Broad-leaved	Mixed	Coppice	Coppice-w-stds	Wind-blow	Felled	Open Space	
Derbyshire	3 125	13 353	1 777	21	0	19	0	1 218	19 512
Leicestershire	693	7 203	702	4	27	3	27	999	9 660
Lincolnshire	2 854	11 395	3 024	25	0	0	225	1 380	18 903
Northamptonshire	2 309	9 166	1 558	0	84	0	124	1 255	14 497
Nottinghamshire	4 714	8 988	1 717	5	0	0	159	1 716	17 298
Total	13 695	50 105	8 778	55	111	22	535	6 568	79 871

1. See Glossary for definitions of forest types.

APPENDIX 3

Summary of live trees outside woodland by county and feature type (000s trees and features)

County*	Total number	Feature type			Total live trees	Tree density (per km ²)
		Groups	Narrow Linear Feature	Individual Trees		
Derbyshire	Features	211.1	115.5	374.4		
	Live Trees	1 100.8	2 684.8	374.4	4 160.0	1583
Leicestershire	Features	84.9	42.0	195.9		
	Live Trees	392.6	1 465.1	195.9	2 053.6	805
Lincolnshire	Features	202.1	59.3	444.6		
	Live Trees	1 415.7	3 164.0	444.6	5 024.3	849
Northamptonshire	Features	35.4	8.5	64.2		
	Live Trees	205.0	383.1	64.2	652.3	276
Nottinghamshire	Features	147.7	37.6	221.4		
	Live Trees	708.4	1 993.2	221.4	2 923.0	1 353
Total	Features	681.2	262.9	1 300.5		
	Live Trees	3 822.5	9 690.2	1 300.5	14 813.2	948

*Areas of counties used to derive tree density per km² based on digital boundaries used in 1991 Census of Population.

1. See Glossary for definitions of feature types

APPENDIX 4

Summary of number and length of Linear Features by county

County*	Total number of features (000s)	Total length of features (km)	Density (m per km ²)
Derbyshire	119.1	6 515	2 479
Leicestershire	44.6	3 177	1 246
Lincolnshire	59.3	4 321	730
Northamptonshire	8.5	1 102	466
Nottinghamshire	38.9	2 850	1 320
Total	270.4	17 966.2	1 150

*Areas of counties used to derive length per km² based on digital boundaries used in 1991 Census of Population.

GLOSSARY

Woodland

In the United Kingdom woodland is defined as land with a minimum area of 0.1 ha under stands of trees with, or with the potential to achieve, tree crown cover of more than 20%. Areas of open space integral to the woodland are also included. Orchards and urban woodland between 0.1 and 2 ha are excluded. Intervening land-classes such as roads, rivers or pipelines are disregarded if less than 50 m in extent. 'Scrubby' vegetation is not included as a separate category but as Conifer, Broadleaved or Mixed tree types. There is additional information on the quality of woodland within the inventory database.

Woodland of 2 ha and over, and with a minimum width of 50 m, is included in the Main Woodland Survey; other woodland and trees are assessed in the Survey of Small Woodland and Trees.

Interpreted Forest Types

The woodland map derived from aerial photographs is differentiated into Interpreted Forest Types (IFTs) which are: Conifer, Broadleaved, Mixed, Coppice, Coppice-with-Standards, Shrubs, Young Trees, Ground Prepared for Planting and Felled. Note that forest types (see below) based on ground survey data are used for reporting purposes because they are more reliable.

High Forest

All woodland except stands managed as Coppice or Coppice-with-Standards with, or with the potential to achieve, a tree cover of more than 20%. Two categories of High Forest are recognised:

- **High Forest Category 1**

Stands which are, or could become, capable of producing wood of a size and quality suitable for sawlogs.

- **High Forest Category 2**

Stands of lower quality than High Forest Category 1.

Mixtures

Where possible the species in mixtures have been separately recorded. Where this has not been possible they were described as 'Mixed conifers' or 'Mixed broadleaves'.

Forest Types

- **Conifer**

Woodland containing more than 80% by area of coniferous species.

- **Broadleaved**

Woodland containing more than 80% by area of broadleaved species.

- **Mixed**

A combination of broadleaved and coniferous species where each category occupies at least 20% of the canopy (see note on Mixtures above).

- **Coppice**

Crops of marketable broadleaved species that have at least 2 stems per stool and are either being worked or are capable of being worked on rotation. With the exception of hazel coppice more than half the stems should be capable of producing 1 m timber lengths of good form.

- **Coppice with Standards**

Two-storey stands where the overstorey consists of at least 25 stems per ha that are older than the understorey of worked coppice by at least one coppice rotation.

- **Felled**

Woodland areas that have been felled or stands where the stocking has been reduced to less than 20% and where it is expected that these areas will be replanted.

- **Windblow**

Areas of blown woodland which remain uncleared and not regenerated.

- **Open Space**

Areas within a woodland that are not covered by trees, but are integral to the woodland, such as open areas, streamsides, deer glades, rides and forest roads.

Ownership types

- **Other ownership**

Woodland other than that owned by, or leased to, the Forestry Commission:

- **Personal**

types of private occupation, e.g. individuals, private family trusts and family partnerships.

- **Private forestry or timber business**

owned by wood processing industry. This category does not include forest management companies.

- **Other private business**

occupiers, e.g. companies, partnerships, syndicates and pension funds.

- **Local Authority**

region, county, district or other council.

- **Other public bodies (not FC)**

Government department/agency, nationalised industry, etc.

- **Charitable organisations**

organisations funded by voluntary public subscription, e.g. National Trust, churches and colleges.

- **Community ownership or common land**

the common property of all members of the community.

- **Forestry Commission**

Land owned by or leased to the Forestry Commission

Feature types

- **Small Wood**

A woodland with an area of 0.1 ha or over, but less than 2 ha.

- **Group**

A group containing two or more trees with an area less than 0.1 ha.

- **Individual Tree**

A tree with a crown that has no contact with any other tree crown, and which is at least 2m tall. Two types of Individual Tree are recognised:

- Boundary Tree (an Individual Tree on a boundary)

- Middle Tree (an Individual Tree not on a boundary)

- **Linear Feature**

A feature with a length of 25 m or more, and one which is at least four times as long as it is broad. It can be up to 50 m wide or as narrow as a single line of trees. Two types of Linear Feature are recognised:

- Narrow Linear Features (with a width of 16 m or less)

- Wide Linear Features (with a width greater than 16 m)

NOTES

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