National Inventory of Woodland and Trees

England

Regional Report for
West Midlands

Forestry Commission

Forestry Commission

Inventory Report

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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 West 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 West 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 With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees*.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 West 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 West 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 West Midlands Region was divided into 1 km x 1 km squares. A random sample of the 1 km^2 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 km^2 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 West Midlands Region is 98 474 hectares. This represents 7.6% of the land area (Table 1).
- Broadleaved woodland is the dominant forest type representing 61.7% of all woodland. Conifer woodland represents 21.5%, Mixed woodland 9.2% and Open Space within woodlands 5.6% (Table 2).
- The main conifer is pine covering 9 079 hectares or 35% of all conifer species. The main broadleaved species is oak covering 18 712 hectares or 29% of all broadleaved species species (Table 3).
- 13 863 hectares or 16% of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 71 129 hectares or 84% of woodland is in Other ownerships (Table 6).
- There are 5 579 woods over 2 hectares within West Midlands Region with a mean wood area of 15.4 hectares (Table 7a). There are a total of 35 327 woods from 0.1 – <2.0 hectares with a mean wood area of 0.4 hectares (Table 14).
- There are 17.7 million live trees and 286.2 thousand dead trees outside woodland in West Midlands Region (Tables 17 and 18).
- Woodland land cover increased by over 16 400 hectares from 6.1% to 7.4% of the land area between 1980 and 1997 (Table 23).
- The area of Broadleaves increased by 43% between 1980 and 1997, with the relative proportion of Broadleaves to Conifers increasing from 61% to 71% (Table 24).

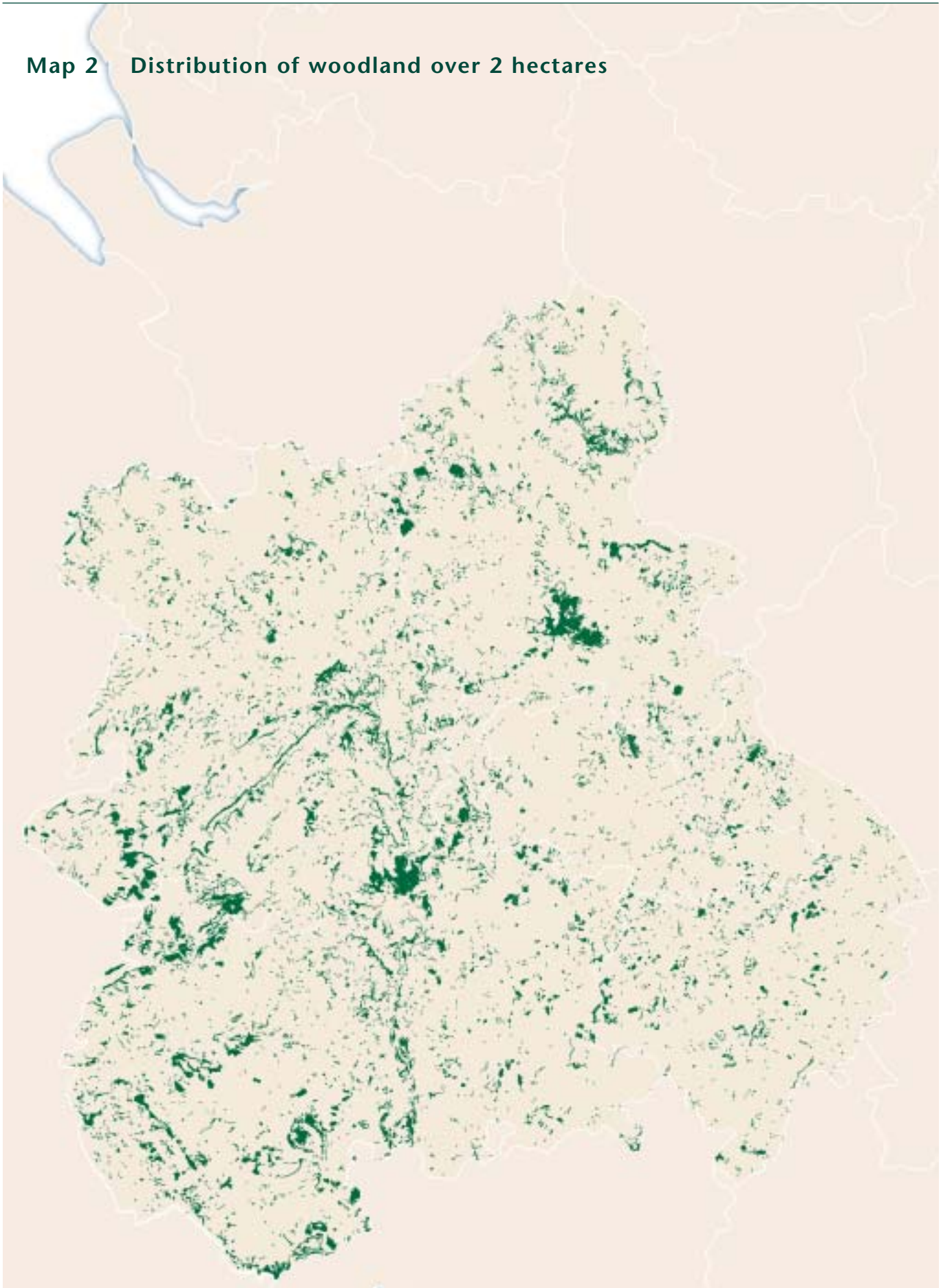
INVENTORY REPORTS

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 West Midlands Region). Country and county reports for Wales, and Country and region reports for Scotland are also available.

Map 1 Regional and county boundaries

Reference Date 31 March 1997

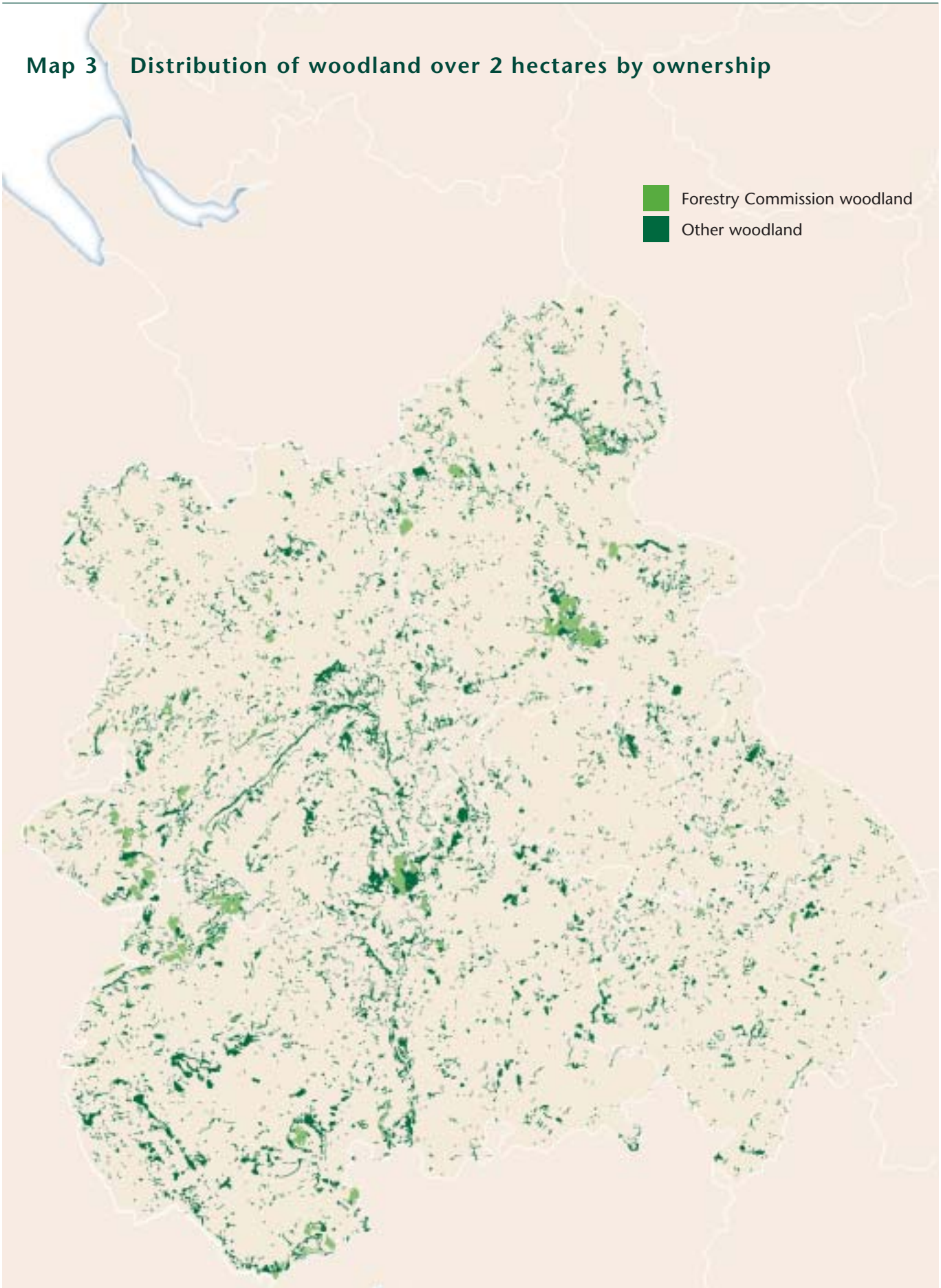
Map 2 Distribution of woodland over 2 hectares



0 10 20 30 40 Kilometres

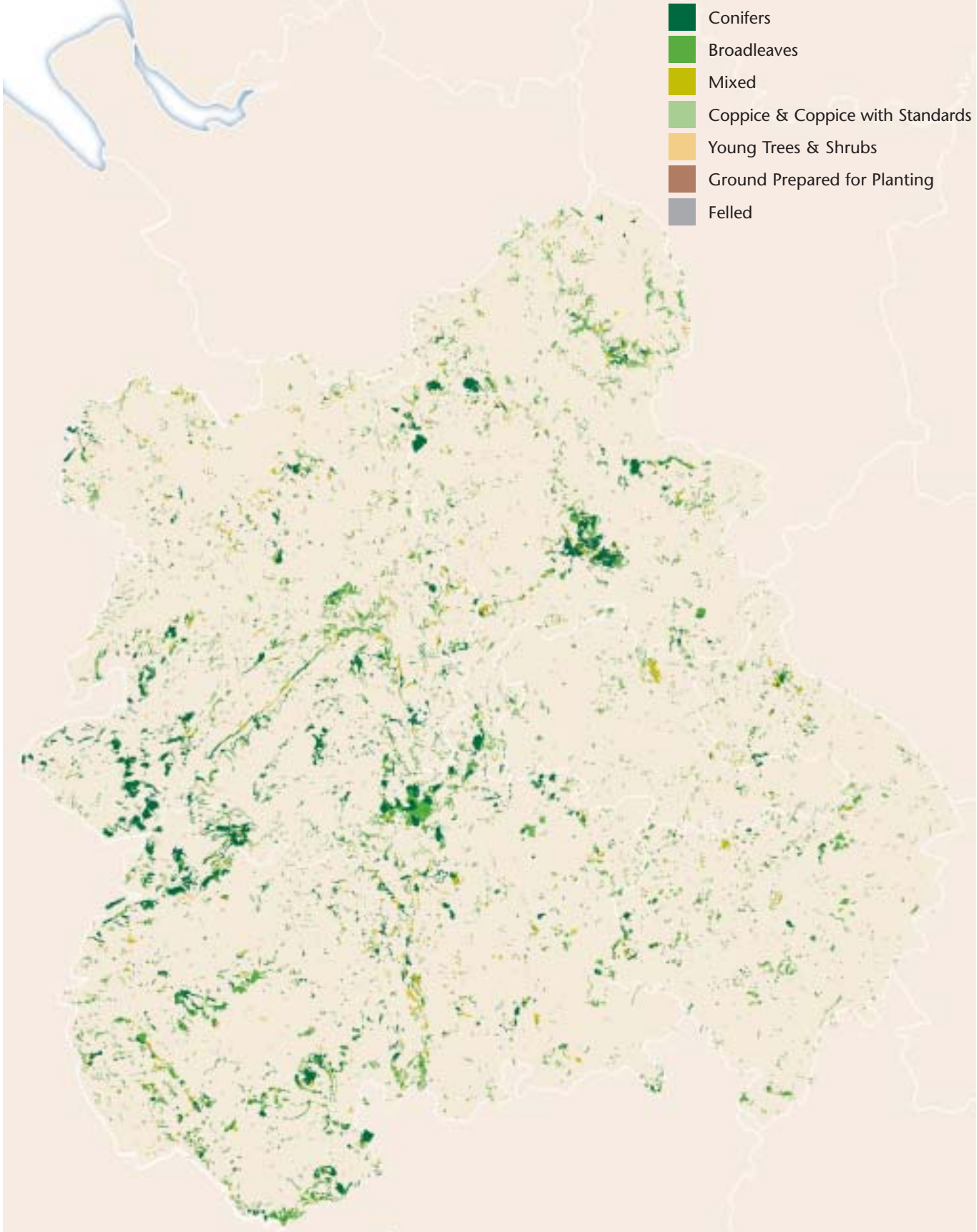
Reference Date 31 March 1997

Map 3 Distribution of woodland over 2 hectares by ownership



Reference Date 31 March 1997

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



Reference Date 31 March 1997

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 West 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	84 992	86.3
0.25 – < 2.00	11 115	11.3
0.10 – < 0.25	2 367	2.4
Total area of woodland	**98 474**	**100.0**
% Woodland land cover	**7.6**	

1. Area of West Midlands Region, including inland water, 1 300 385 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	20 866	342	21 208	21.5
Broadleaved	48 051	12 738	60 789	61.7
Mixed	8 917	166	9 083	9.2
Coppiced	598	0	598	0.6
Copp-w-Standards	482	0	482	0.5
Windblow	0	0	0	0.0
Felled	809	0	809	0.8
Open Space	5 269	236	5 505	5.6
Total	**84 992**	**13 482**	**98 474**	**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	8 952	127	9 079	35.1	10.0
Sitka spruce	1 882	0	1 882	7.3	2.1
Larch	5 689	0	5 689	22.0	6.2
Other conifers	8 555	264	8 819	34.1	9.7
Mixed conifers	364	0	364	1.4	0.4
Total conifers	**25 441**	**391**	**25 832**	**100.0**	**28.4**
Oak	16 991	1 721	18 712	28.7	20.5
Beech	3 309	723	4 032	6.2	4.4
Sycamore	3 175	877	4 052	6.2	4.4
Ash	10 979	1 394	12 373	19.0	13.6
Birch	5 429	118	5 547	8.5	6.1
Elm	336	98	434	0.7	0.5
Other broadleaves	8 848	5 674	14 522	22.3	15.9
Mixed broadleaves	3 327	2 251	5 578	8.5	6.1
Total broadleaves	**52 393**	**12 856**	**65 249**	**100.0**	**71.6**
Total all species†	**77 834**	**13 246**	**91 081**		**100.0**

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

† Excludes the 7 394 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	4%
Broadleaves	5%
Pine	8%
Oak	5%
Ash	6%

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	594 800	4 096 200	7	315
Narrow Linear Features	301 600	12 764 700	42	982
Individual Trees	860 900	860 900	1	66
Total		**17 721 800**		**1 363**

1. Land area used to calculate tree density 1 300 385 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	13%
Narrow Linear Features	10%
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	7 931	1 063	82
Narrow Linear Features	301 600	22 259	1 712
Total		**23 322**	**1 793**

1. Land area used to calculate feature density 1 300 385 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	36%
Narrow Linear Features	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.

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.

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	13 863	16
Other	71 129	84
Total area of woodland	**84 992**	**100**

1. Woodland area from aerial photographic interpretation map updated to 31 March 1997.

2. See Glossary for definitions of ownership types.

Woodland area by ownership

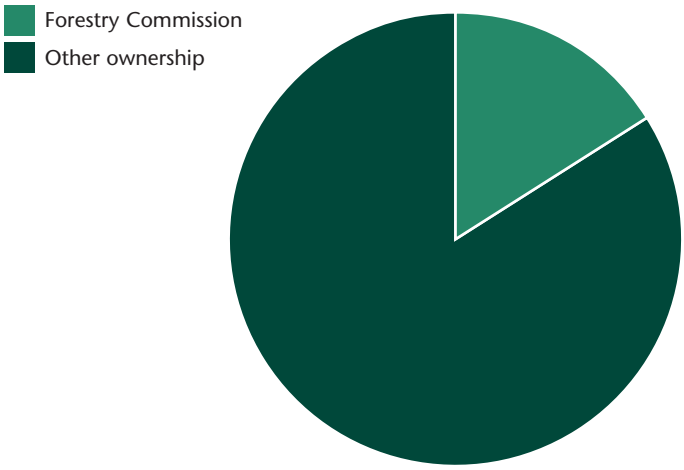


Table 7a Size class distribution of woodland

Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	4 147	17 999	21	4.3
10 – <20	678	9 409	11	13.9
20 – <50	455	14 220	17	31.3
50 – <100	183	12 813	15	70.0
<100	5 463	54 441	63	10.0
100 – <500	106	21 149	25	199.5
500 and >	10	10 362	12	1 036.2
All woods	**5 579**	**85 951**	**100**	**15.4**

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	37	186	0	5.0
	O	4 415	18 676	22	4.2
10 – <20	FC	22	328	0	14.9
	O	701	9 733	11	13.9
20 – <50	FC	40	1 364	2	34.1
	O	458	14 202	17	31.0
50 – <100	FC	32	2 359	3	73.7
	O	171	11 894	14	69.6
<100	FC	131	4 235	5	32.3
	O	5 745	54 506	63	9.5
100 – <500	FC	29	5 539	6	191.0
	O	77	14 023	16	182.1
500 and >	FC	5	4 088	5	817.6
	O	6	3 560	4	593.3
Total	**FC**	**165**	**13 863**	**16**	**84.0**
	O	**5 828**	**72 088**	**84**	**12.4**

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 959 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	7 987	57.6	12 879	18.1	20 866	24.6
Broadleaved	3 657	26.4	44 394	62.4	48 051	56.5
Mixed	1 078	7.8	7 839	11.0	8 917	10.5
Coppice*	75	0.5	523	0.7	598	0.7
Copp-w-stds	0	0.0	482	0.7	482	0.6
Windblow	0	0.0	0	0.0	0	0.0
Felled	463	3.3	346	0.5	809	1.0
Open Space	603	4.3	4 667	6.6	5 269	6.2
Total	**13 863**	**100.0**	**71 129**	**100.0**	**84 992**	**100.0**

*West Midlands Region has 33 ha Short Rotation Coppice

Area of woodland by forest type

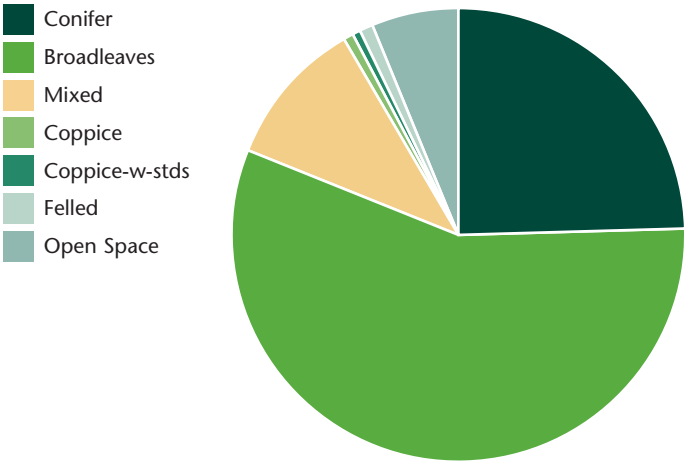


Table 9a Area of High Forest by principal species and ownership

Species	Forestry Commission			Other			All ownerships		
	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %
Scots pine	2 224	26	17	3 196	19	5	5 420	21	7
Corsican pine	1 543	18	12	1 532	9	2	3 075	12	4
Lodgepole pine	90	1	1	366	2	1	457	2	1
Sitka spruce	495	6	4	1 387	8	2	1 882	7	2
Norway spruce	433	5	3	2 396	14	4	2 828	11	4
European larch	186	2	1	1 700	10	3	1 886	7	2
Japanese/hybrid larch	1 150	14	9	2 653	16	4	3 803	15	5
Douglas fir	1 594	19	13	2 034	12	3	3 628	14	5
Other conifers	771	9	6	1 328	8	2	2 099	8	3
Mixed conifers	13	0	0	351	2	1	364	1	0
Total conifers	**8 500**	**100**	**67**	**16 941**	**100**	**26**	**25 441**	**100**	**33**
Oak	1 449	34	11	15 542	32	24	16 991	32	22
Beech	1 166	28	9	2 143	4	3	3 309	6	4
Sycamore	153	4	1	3 022	6	5	3 175	6	4
Ash	264	6	2	10 715	22	16	10 979	21	14
Birch	575	14	5	4 854	10	7	5 429	10	7
Poplar	4	0	0	2 055	4	3	2 059	4	3
Sweet chestnut	114	3	1	647	1	1	760	1	1
Elm	0	0	0	336	1	1	336	1	0
Other broadleaves	252	6	2	5 777	12	9	6 029	12	8
Mixed broadleaves	246	6	2	3 081	6	5	3 327	6	4
Total broadleaves	**4 222**	**100**	**33**	**48 171**	**100**	**74**	**52 393**	**100**	**67**
Total – all species	**12 722**		**100**	**65 112**		**100**	**77 834**		**100**
Felled	**463**			**346**			**809**		
Total High Forest	**13 185**			**65 458**			**78 643**		

*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 5 269 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%
Scots pine	10%
Oak	4%
Ash	6%

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

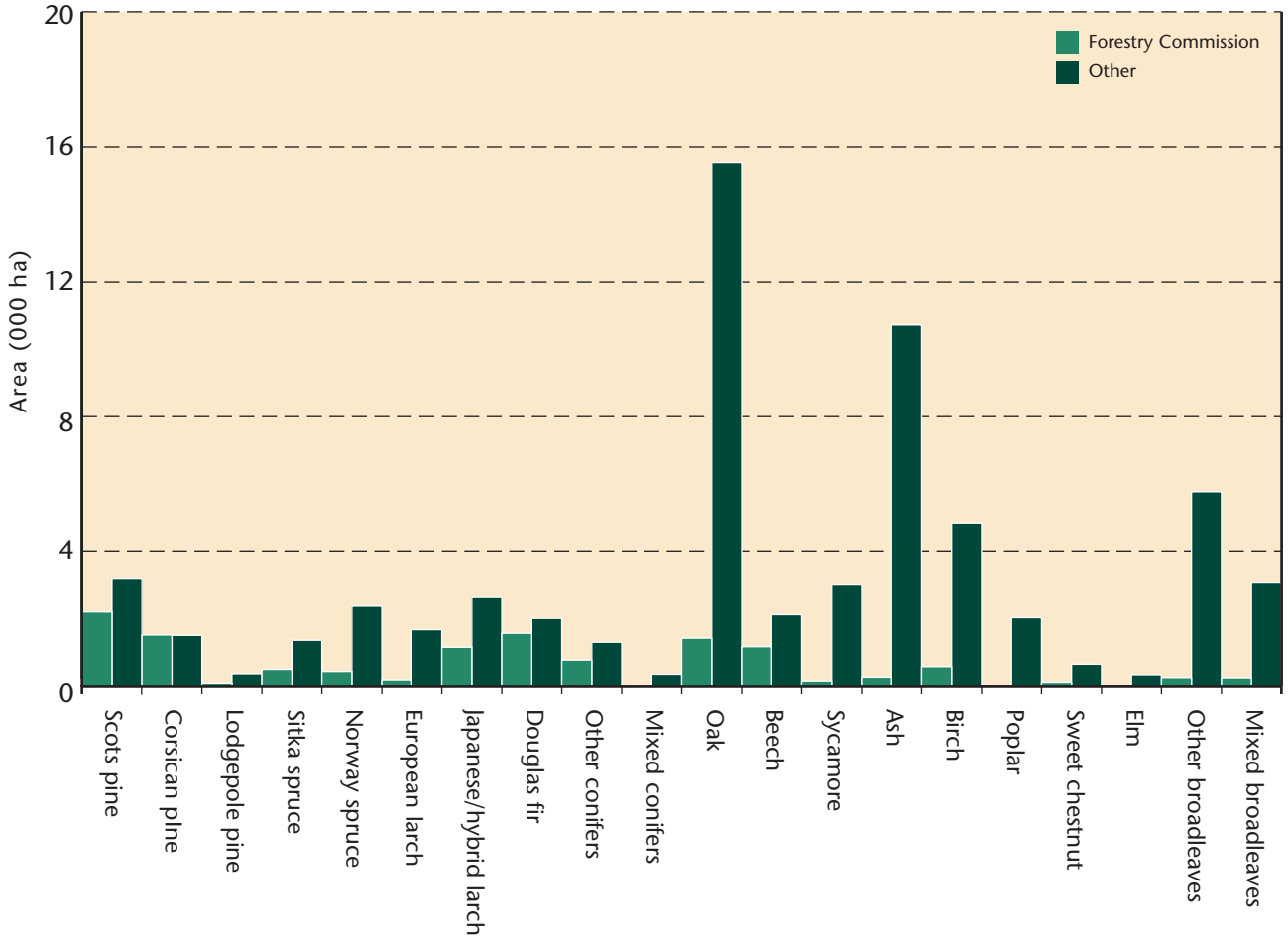


Table 9b Area of High Forest by principal species, ownership and category

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	2 224	0	2 224	2 958	238	3 196	5 182	238	5 420
Corsican pine	1 543	0	1 543	1 506	27	1 532	3 048	27	3 075
Lodgepole pine	90	0	90	366	0	366	457	0	457
Sitka spruce	495	0	495	1 361	26	1 387	1 856	26	1 882
Norway spruce	433	0	433	2 384	12	2 396	2 816	12	2 828
European larch	186	0	186	1 637	63	1 700	1 823	63	1 886
Japanese/hybrid larch	1 150	0	1 150	2 639	14	2 653	3 789	14	3 803
Douglas fir	1 594	0	1 594	2 008	26	2 034	3 602	26	3 628
Other conifers	771	0	771	1 111	217	1 328	1 882	217	2 099
Mixed conifers	13	0	13	323	27	351	336	27	364
Total conifers	**8 500**	**0**	**8 500**	**16 293**	**648**	**16 941**	**24 793**	**648**	**25 441**
Oak	1 114	335	1 449	11 511	4 031	15 542	12 625	4 367	16 991
Beech	1 162	4	1 166	1 643	500	2 143	2 805	504	3 309
Sycamore	120	33	153	2 194	828	3 022	2 314	862	3 175
Ash	176	88	264	8 238	2 477	10 715	8 413	2 565	10 979
Birch	231	344	575	1 578	3 275	4 854	1 809	3 619	5 429
Poplar	4	0	4	1 803	251	2 055	1 807	251	2 059
Sweet chestnut	114	0	114	300	347	647	414	347	760
Elm	0	0	0	6	329	336	6	329	336
Other broadleaves	125	126	252	1 360	4 416	5 777	1 486	4 543	6 029
Mixed broadleaves	179	66	246	1 456	1 625	3 081	1 635	1 692	3 327
Total broadleaves	**3 225**	**998**	**4 222**	**30 089**	**18 081**	**48 171**	**33 314**	**19 079**	**52 393**
Total – all species	**11 725**	**998**	**12 722**	**46 382**	**18 730**	**65 112**	**58 107**	**19 727**	**77 834**

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:

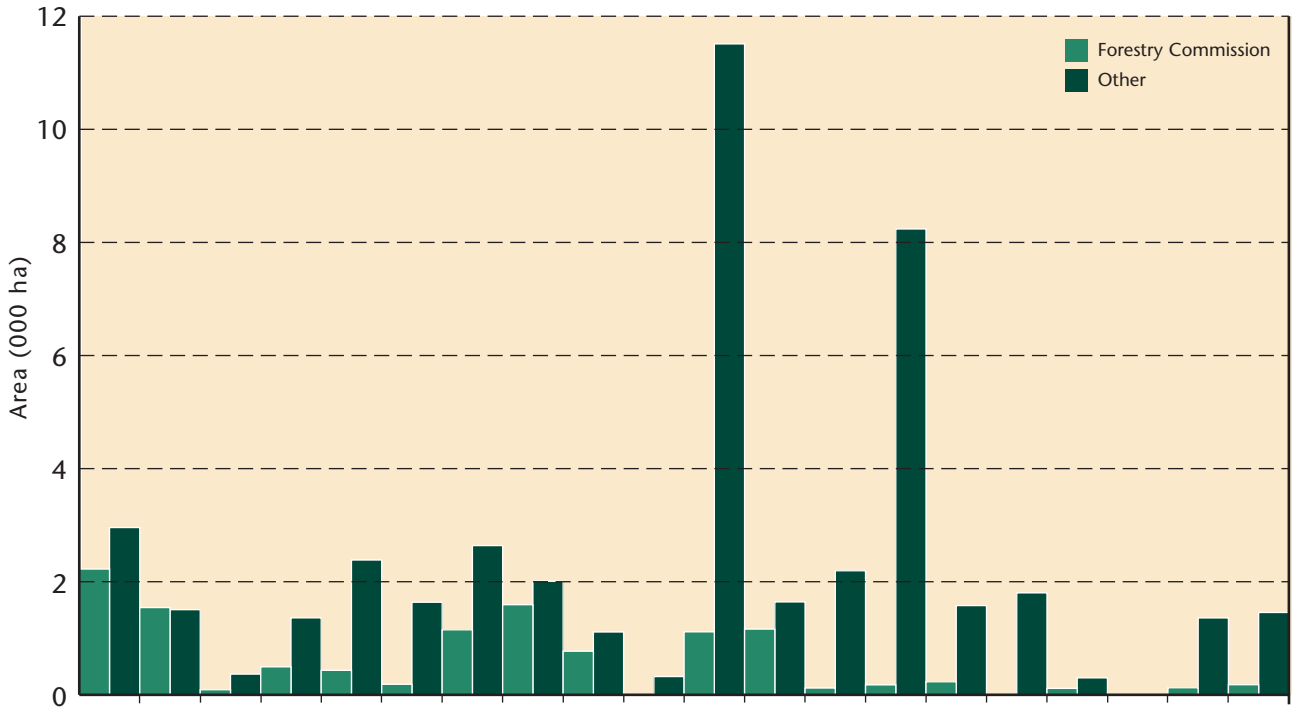
	Category 1*	Category 2*	Total High Forest
Conifers	4%	18%	4%
Broadleaves	3%	3%	2%
Scots pine	10%	30%	10%
Oak	6%	8%	4%
Ash	7%	11%	6%

*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

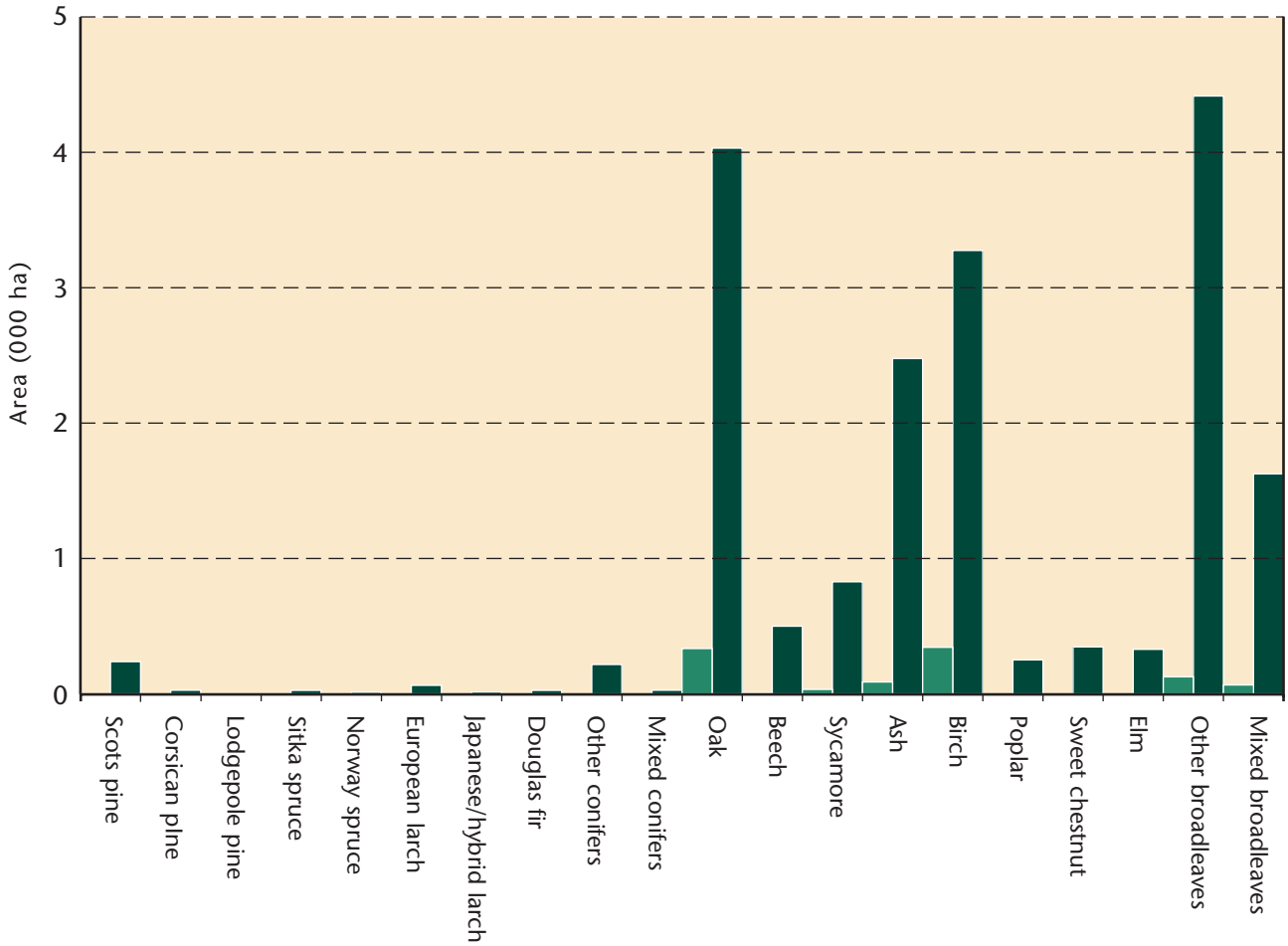
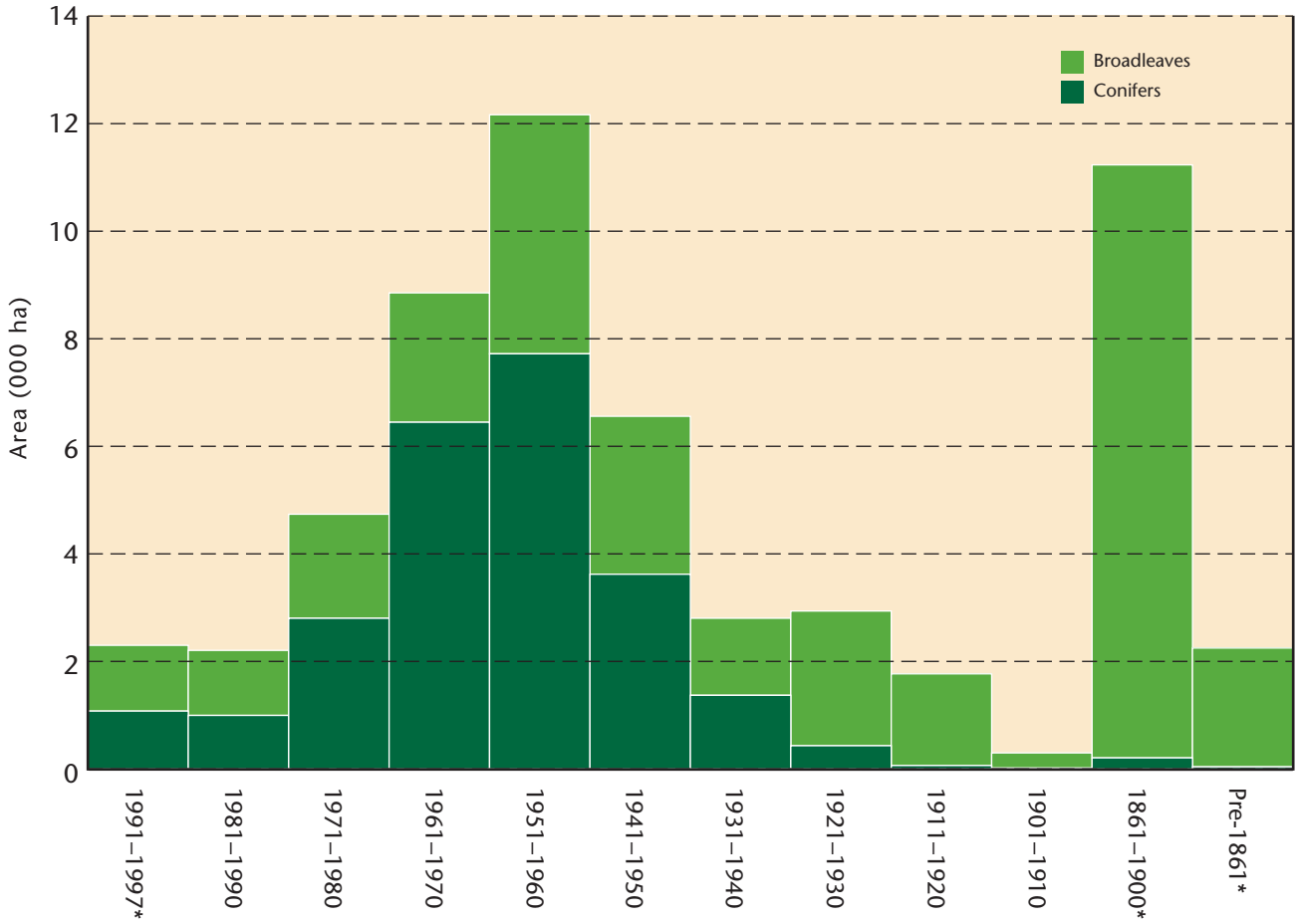


Table 10a High Forest Category 1 - Area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991 –1997	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	45	137	567	871	1 980	1 026	343	164	14	12	23	0	5 182
Corsican pine	156	160	398	972	852	350	55	38	21	5	24	16	3 048
Lodgepole pine	0	0	166	139	73	79	0	0	0	0	0	0	457
Sitka spruce	199	63	189	455	495	343	88	24	0	0	0	0	1 856
Norway spruce	133	130	271	1 282	873	90	26	11	0	0	0	0	2 816
European larch	0	7	216	190	353	467	419	130	14	0	27	0	1 823
Japanese/hybrid larch	355	161	167	411	1 443	850	294	32	0	0	78	0	3 789
Douglas fir	150	252	535	1 360	962	198	133	0	5	0	8	0	3 602
Other conifers	15	75	242	699	614	178	4	22	9	0	0	24	1 882
Mixed conifers	24	11	53	67	74	42	8	11	0	0	46	0	336
Total conifers	**1 076**	**996**	**2 802**	**6 447**	**7 720**	**3 621**	**1 370**	**432**	**64**	**17**	**206**	**40**	**24 793**
Oak	335	153	203	221	624	591	446	709	601	57	6 695	1 989	12 625
Beech	0	19	86	184	874	323	105	310	21	81	699	102	2 805
Sycamore	0	52	152	170	539	392	267	354	162	0	226	0	2 314
Ash	257	245	392	831	1 075	1 079	454	646	806	143	2 419	66	8 413
Birch	44	137	455	279	374	210	78	162	19	0	50	0	1 809
Poplar	254	334	194	360	529	29	18	77	0	0	11	0	1 807
Sweet chestnut	0	36	8	59	117	22	17	18	0	0	114	23	414
Elm	0	6	0	0	0	0	0	0	0	0	0	0	6
Other broadleaves	21	92	340	186	222	154	37	22	36	0	362	14	1 486
Mixed broadleaves	312	134	104	116	90	136	11	206	59	0	452	16	1 635
Total broadleaves	**1 223**	**1 209**	**1 935**	**2 406**	**4 445**	**2 937**	**1 433**	**2 505**	**1 705**	**281**	**11 027**	**2 209**	**33 314**
Total – all species	**2 299**	**2 206**	**4 738**	**8 853**	**12 164**	**6 558**	**2 803**	**2 936**	**1 769**	**299**	**11 233**	**2 250**	**58 107**

*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



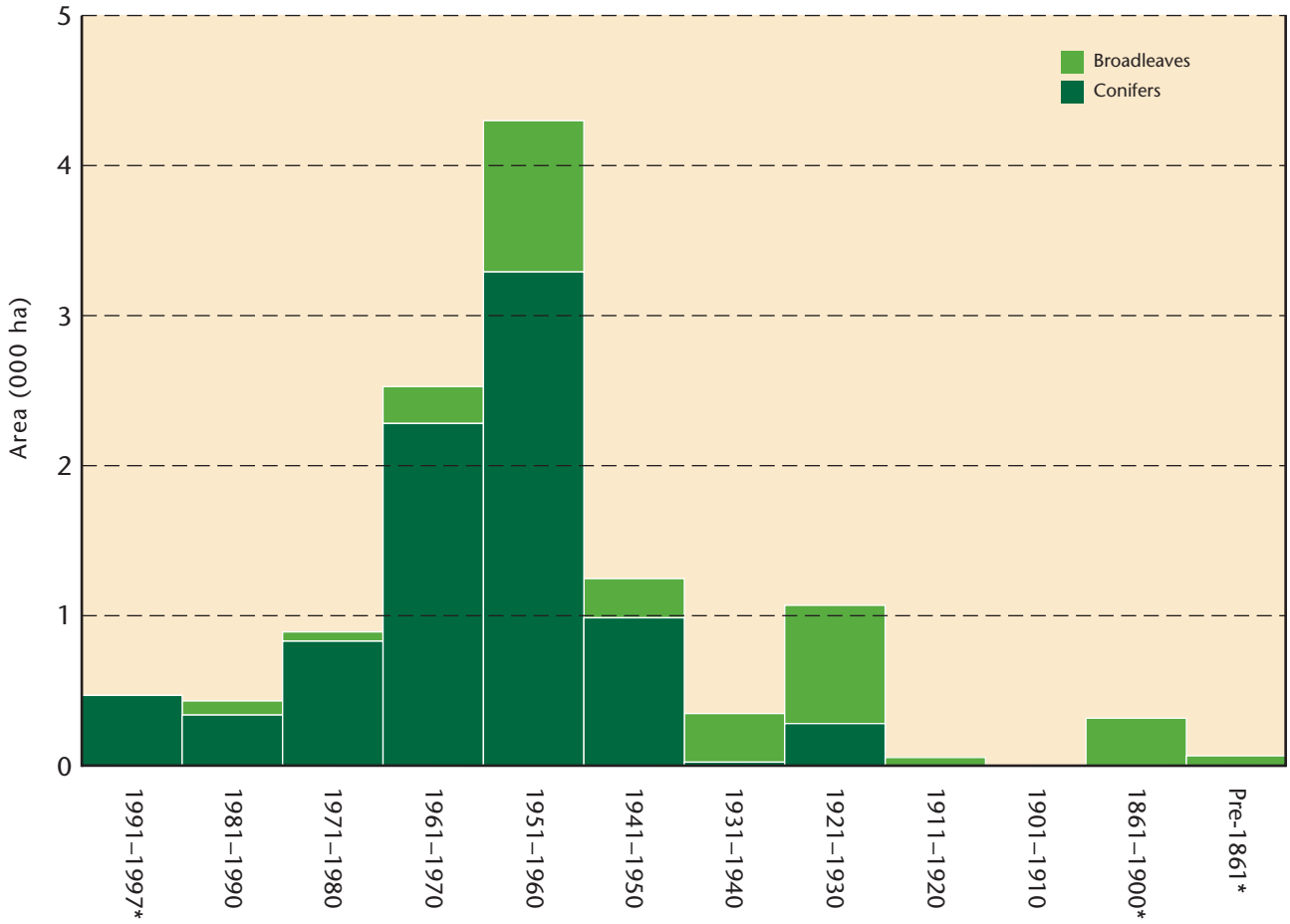
*Most of the planting year classes cover 10 years, 1991–1997 is 7 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 –1997	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	0	0	76	425	1 261	317	4	141	0	0	0	0	2 224
Corsican pine	66	73	186	438	615	144	0	20	0	0	0	0	1 543
Lodgepole pine	0	0	0	65	25	0	0	0	0	0	0	0	90
Sitka spruce	186	63	0	7	0	224	0	15	0	0	0	0	495
Norway spruce	0	0	64	192	169	8	0	0	0	0	0	0	433
European larch	0	0	12	16	27	6	20	105	0	0	0	0	186
Japanese/hybrid larch	176	8	16	123	538	288	0	0	0	0	0	0	1 150
Douglas fir	40	128	368	765	293	0	0	0	0	0	0	0	1 594
Other conifers	0	65	107	249	349	0	0	0	0	0	0	0	771
Mixed conifers	0	0	0	0	13	0	0	0	0	0	0	0	13
Total conifers	**469**	**338**	**830**	**2 281**	**3 291**	**986**	**24**	**281**	**0**	**0**	**0**	**0**	**8 500**
Oak	0	16	8	44	110	53	252	307	40	4	255	24	1 114
Beech	0	0	7	115	548	101	72	265	0	0	21	34	1 162
Sycamore	0	0	35	0	0	19	0	66	0	0	0	0	120
Ash	0	0	4	13	96	36	0	12	15	0	0	0	176
Birch	0	62	0	54	71	0	0	44	0	0	0	0	231
Poplar	0	0	0	4	0	0	0	0	0	0	0	0	4
Sweet chestnut	0	0	0	0	77	0	0	7	0	0	29	0	114
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	0	0	0	102	5	0	18	0	0	0	0	125
Mixed broadleaves	0	16	7	17	4	47	0	68	0	0	12	8	179
Total broadleaves	**0**	**94**	**62**	**246**	**1 008**	**261**	**324**	**788**	**55**	**4**	**317**	**66**	**3 225**
Total – all species	**469**	**432**	**892**	**2 527**	**4 298**	**1 247**	**348**	**1 070**	**55**	**4**	**317**	**66**	**11 725**

*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



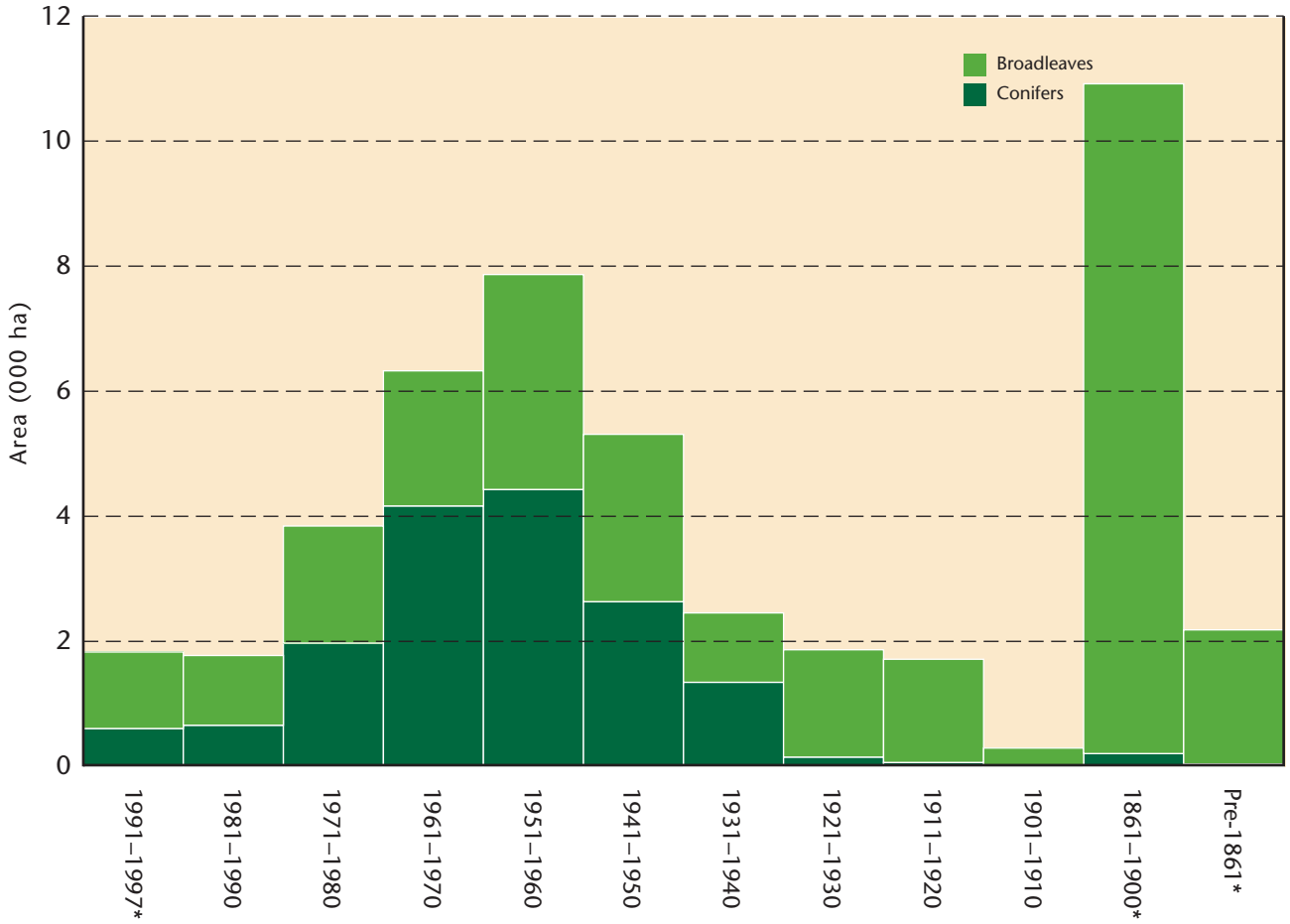
*Most of the planting year classes cover 10 years, 1991–1997 is 7 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 –1997	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	45	137	491	446	719	709	339	23	14	12	23	0	2 958
Corsican pine	90	87	212	534	237	206	55	18	21	5	24	16	1 506
Lodgepole pine	0	0	166	73	48	79	0	0	0	0	0	0	366
Sitka spruce	12	0	189	447	495	120	88	9	0	0	0	0	1 361
Norway spruce	133	130	207	1 091	704	82	26	11	0	0	0	0	2 384
European larch	0	7	204	174	326	461	399	24	14	0	27	0	1 637
Japanese/hybrid larch	179	153	151	288	905	562	294	32	0	0	78	0	2 639
Douglas fir	110	124	167	596	669	198	133	0	5	0	8	0	2 008
Other conifers	15	10	134	450	265	178	4	22	9	0	0	24	1 111
Mixed conifers	24	11	53	67	61	42	8	11	0	0	46	0	323
Total conifers	**607**	**659**	**1 972**	**4 166**	**4 429**	**2 635**	**1 346**	**150**	**64**	**17**	**206**	**40**	**16 293**
Oak	335	137	195	178	514	538	194	402	561	53	6 440	1 965	11 511
Beech	0	19	79	69	326	222	33	46	21	81	678	68	1 643
Sycamore	0	52	117	170	539	373	267	288	162	0	226	0	2 194
Ash	257	245	388	818	980	1 043	454	634	791	143	2 419	66	8 238
Birch	44	75	455	225	303	210	78	118	19	0	50	0	1 578
Poplar	254	334	194	356	529	29	18	77	0	0	11	0	1 803
Sweet chestnut	0	36	8	59	40	22	17	11	0	0	84	23	300
Elm	0	6	0	0	0	0	0	0	0	0	0	0	6
Other broadleaves	21	92	340	186	120	149	37	4	36	0	362	14	1 360
Mixed broadleaves	312	118	97	98	86	90	11	137	59	0	440	8	1 456
Total broadleaves	**1 223**	**1 115**	**1 873**	**2 160**	**3 437**	**2 676**	**1 109**	**1 716**	**1 650**	**277**	**10 710**	**2 144**	**30 089**
Total – all species	**1 830**	**1 774**	**3 846**	**6 325**	**7 866**	**5 311**	**2 455**	**1 867**	**1 714**	**295**	**10 916**	**2 184**	**46 382**

*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, 1991–1997 is 7 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	%
1991–1997	Japanese/hybrid larch	15	Oak	14	Mixed broadleaves	13
1981–1990	Birch	10	Mixed broadleaves	10	Douglas fir	9
1971–1980	Birch	11	Other broadleaves	11	Scots pine	10
1961–1970	Douglas fir	12	Norway spruce	12	Corsican pine	9
1951–1960	Scots pine	14	Japanese/hybrid larch	10	Ash	9
1941–1950	Ash	15	Scots pine	12	Other broadleaves	11
1931–1940	Ash	18	Oak	13	Birch	12
1921–1930	Oak	25	Ash	22	Sycamore	11
1911–1920	Oak	31	Ash	30	Other broadleaves	15
1901–1910	Oak	36	Ash	33	Beech	16
1861–1900	Oak	56	Ash	20	Other broadleaves	7
Pre-1861	Oak	78	Beech	6	Other broadleaves	3
All years	**Oak**	**22**	**Ash**	**14**	**Other broadleaves**	**8**

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

Ownership type by area

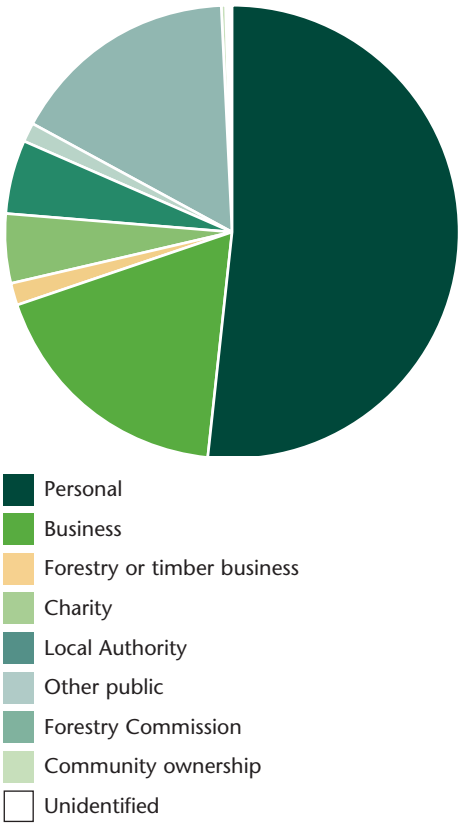


Table 12 Ownership type* by area and percentage

Ownership type	Area (ha)	%
Personal	43 950	51.7
Business	15 362	18.1
Forestry or timber business	1 340	1.6
Charity	4 197	4.9
Local Authority	4 471	5.3
Other public (not FC)	1 161	1.4
Forestry Commission	13 863	16.3
Community ownership or common land	261	0.3
Unidentified	387	0.5
Total	**84 992**	**100**

*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 West Midlands Region was divided into 1 km x 1 km squares. A random sample of the 1 km^2 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 km^2 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.

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	27 396	10 518	Area (ha)
Wide Linear Features	7 931	2 964	Area (ha)
Wide Linear Features	7 931	1 063	Length (km)
Narrow Linear Features	301 600	22 259	Length (km)
Narrow Linear Features	301 600	12 764 700	Number of live trees
Groups	594 800	4 096 200	Number of live trees
Individual Trees	860 900	860 900	Number of live 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	1 839	8 679	10 518	27 396	0.38
Wide Linear Features	528	2 436	2 964	7 931	0.37
Total	**2 367**	**11 115**	**13 482**	**35 327**	**0.38**

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

Small Woods	27%
Wide Linear Features	42%

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)
	0.1 – <0.25		0.25 – <2.0		0.1 – <2.0		
	SW*	WLF†	SW	WLF	SW	WLF	SW + WLF
Conifer	127	0	215	0	342	0	342
Broadleaved	1 497	528	8 317	2 396	9 814	2 924	12 738
Mixed	166	0	0	0	166	0	166
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	49	0	147	40	196	40	236
Total	**1 839**	**528**	**8 679**	**2 436**	**10 518**	**2 964**	**13 482**

*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	127	0	127	32.5	1.0
Spruce	264	0	264	67.5	2.0
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	0	0	0	0.0	0.0
Total conifers	**391**	**0**	**391**	**100.0**	**3.0**
Oak	1 477	243	1 720	13.4	13.0
Beech	0	723	723	5.6	5.5
Sycamore	773	104	877	6.8	6.6
Ash	978	416	1 394	10.8	10.5
Birch	0	118	118	0.9	0.9
Poplar	978	40	1 018	7.9	7.7
Sweet chestnut	0	0	0	0.0	0.0
Horse chestnut	0	0	0	0.0	0.0
Alder	469	168	637	5.0	4.8
Lime	0	0	0	0.0	0.0
Elm	98	0	98	0.8	0.7
Willow	49	43	92	0.7	0.7
Other broadleaves	2 965	961	3 926	30.5	29.6
Mixed broadleaves	2 143	108	2 251	17.5	17.0
Total broadleaves	**9 930**	**2 924**	**12 856**	**100.0**	**97.1**
Total – all species	**10 321**	**2 924**	**13 245**		**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:

Oak	37%
Ash	29%
Other broadleaves	34%

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					Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features	Total live trees	Category	Species
Pine	0.0	5.7	79.1	105.5	190.3	26.9	1.1
Spruce	0.0	0.8	290.5	33.7	325.0	45.9	1.8
Larch	0.8	0.0	7.4	4.8	13.0	1.8	0.1
Cypress	1.2	1.2	24.9	88.4	115.7	16.3	0.7
Other conifers	0.0	2.5	40.0	21.4	63.9	9.0	0.4
Total conifers	**2.0**	**10.2**	**441.9**	**253.8**	**707.9**	**100.0**	**4.0**
Oak	148.6	63.7	239.5	614.3	1 066.1	6.3	6.0
Beech	21.7	5.8	39.2	48.1	114.8	0.7	0.6
Sycamore	21.7	2.7	89.6	309.8	423.8	2.5	2.4
Ash	105.3	19.8	275.0	828.4	1 228.5	7.2	6.9
Birch	5.2	3.6	120.0	395.8	524.6	3.1	3.0
Poplar	4.2	0.0	15.1	125.2	144.5	0.8	0.8
Sweet chestnut	0.7	3.1	2.4	0.8	7.0	0.0	0.0
Horse chestnut	5.3	5.3	20.8	32.0	63.4	0.4	0.4
Alder	14.1	3.7	79.9	705.8	803.5	4.7	4.5
Lime	11.2	2.5	14.9	45.6	74.2	0.4	0.4
Elm	14.3	4.2	152.5	453.1	624.1	3.7	3.5
Willow	41.8	2.5	292.9	889.4	1 226.6	7.2	6.9
Other broadleaves	214.8	122.6	2 312.3	8 062.4	10 712.1	63.0	60.4
Total broadleaves	**609.0**	**239.4**	**3 654.3**	**12 510.9**	**17 013.2**	**100.0**	**96.0**
Total – all species	**611.4**	**249.2**	**4 096.2**	**12 764.7**	**17 721.8**		**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	13%
Narrow Linear Features	10%

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					Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features	Total dead trees	Category	Species
Pine	0.0	0.0	0.8	0.0	0.8	50.0	0.3
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	0.8	0.0	0.8	50.0	0.3
Other conifers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total conifers	**0.0**	**0.0**	**1.6**	**0.0**	**1.6**	**100.0**	**0.6**
Oak	1.7	2.4	0.0	3.3	7.4	2.6	2.6
Beech	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sycamore	0.0	0.0	0.0	0.8	0.8	0.3	0.3
Ash	1.6	0.0	0.0	1.6	3.2	1.1	1.1
Birch	0.0	0.0	3.3	0.0	3.3	1.2	1.2
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	1.6	6.4	8.0	2.8	2.8
Lime	5.6	0.0	0.0	0.0	5.6	2.0	2.0
Elm	4.9	0.8	36.7	168.9	211.3	74.2	73.8
Willow	0.0	0.0	0.8	4.1	4.9	1.7	1.7
Other broadleaves	2.7	4.6	15.0	17.8	40.1	14.1	14.0
Total broadleaves	**16.5**	**7.8**	**57.4**	**202.8**	**284.6**	**100.0**	**99.5**
Total – all species	**16.5**	**7.8**	**59.0**	**202.8**	**286.2**		**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	2.5	3.3	0.0	0.0	5.8
Spruce	0.0	0.8	0.0	0.0	0.8
Larch	0.0	0.8	0.0	0.0	0.8
Cypress	0.8	1.6	0.0	0.0	2.4
Other Conifers	0.8	0.8	0.0	0.8	2.4
Total conifers	**4.1**	**7.3**	**0.0**	**0.8**	**12.2**
Oak	20.4	122.1	68.2	1.6	212.3
Beech	20.1	4.9	2.5	0.0	27.5
Sycamore	4.9	12.2	6.4	0.8	24.3
Ash	27.6	66.2	26.4	5.0	125.2
Birch	4.8	4.1	0.0	0.0	8.9
Poplar	0.0	3.3	0.8	0.0	4.1
Sweet chestnut	0.8	1.5	0.8	0.8	3.9
Horse chestnut	3.2	6.5	0.8	0.0	10.5
Alder	7.3	10.6	0.0	0.0	17.9
Lime	10.5	0.7	1.7	0.8	13.7
Elm	7.2	11.4	0.0	0.0	18.6
Willow	22.6	19.2	2.5	0.0	44.3
Other broadleaves	243.8	81.0	7.5	5.0	337.3
Total broadleaves	**373.2**	**343.7**	**117.6**	**14.0**	**848.5**
Total – all species	**377.3**	**351.2**	**117.6**	**14.8**	**860.9**

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	18.6	50.9	8.1	1.6	79.2
Spruce	281.7	8.0	0.8	0.0	290.5
Larch	1.6	4.2	1.6	0.0	7.4
Cypress	5.6	18.5	0.8	0.0	24.9
Other conifers	10.6	20.6	8.8	0.0	40.0
Total conifers	**318.1**	**102.2**	**20.1**	**1.6**	**442.0**
Oak	34.6	178.4	25.8	0.8	239.6
Beech	13.6	8.1	17.5	0.0	39.2
Sycamore	20.8	67.3	1.6	0.0	89.7
Ash	78.7	162.2	33.4	0.8	275.1
Birch	19.2	99.2	1.6	0.0	120.0
Poplar	0.8	7.8	4.9	1.6	15.1
Sweet chestnut	0.0	0.8	1.6	0.0	2.4
Horse chestnut	3.2	10.4	6.4	0.8	20.8
Alder	17.5	62.4	0.0	0.0	79.9
Lime	0.8	6.6	7.5	0.0	14.9
Elm	72.5	80.0	0.0	0.0	152.5
Willow	143.3	144.9	4.0	0.8	293.0
Other broadleaves	1 729.2	566.6	12.5	4.1	2 312.4
Total broadleaves	**2 134.2**	**1 394.7**	**116.8**	**8.9**	**3 654.6**
Total – all species	**2 452.3**	**1 496.9**	**136.9**	**10.5**	**4 096.2**

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	6.1	96.9	2.6	0.0	105.6
Spruce	1.5	32.2	0.0	0.0	33.7
Larch	0.8	4.0	0.0	0.0	4.8
Cypress	20.9	64.3	3.2	0.0	88.4
Other conifers	0.0	11.7	8.8	0.8	21.3
Total conifers	**29.3**	**209.1**	**14.6**	**0.8**	**253.8**
Oak	149.7	400.4	64.2	0.0	614.3
Beech	41.8	5.6	0.8	0.0	48.2
Sycamore	66.1	233.6	10.1	0.0	309.8
Ash	232.8	521.2	74.5	0.0	828.5
Birch	245.1	150.0	0.8	0.0	395.9
Poplar	0.0	64.8	56.4	4.0	125.2
Sweet chestnut	0.0	0.8	0.0	0.0	0.8
Horse chestnut	9.6	16.8	5.7	0.0	32.1
Alder	132.1	553.1	20.5	0.0	705.7
Lime	40.1	3.3	2.3	0.0	45.7
Elm	252.2	201.0	0.0	0.0	453.2
Willow	412.7	442.7	34.1	0.0	889.5
Other broadleaves	6 030.9	2 016.2	8.5	6.9	8 062.5
Total broadleaves	**7 613.1**	**4 609.5**	**277.9**	**10.9**	**12 511.4**
Total – all species	**7 642.4**	**4 818.6**	**292.5**	**11.7**	**12 764.7**

Table 22 Number of Groups by group size

Number of trees per Group*	Number of Groups (000s)
2	107
3–5	223
6–10	125
11–20	84
21–50	42
51–100	9
>100	5
Total	**595**

*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 1997 Inventory were undertaken using very different sampling methods. Inventory practice and technology have moved on since the 1980 Census; this has lead 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 1997 Inventory
Table 24:	Comparison of High Forest area by species between 1980 Census and 1997 Inventory
Chart:	Comparison of High Forest area by species between 1980 Census and 1997 Inventory
Table 25:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory
Table 26:	Comparison of numbers of live trees outside woodland between 1980 Census and 1997 Inventory
Table 27:	Comparison of density of non-woodland features between 1980 Census and 1997 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 1997 Inventory

Woodland size (ha)	1980 Census woodland area		1997 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	72 105	90.5	84 992	88.4	18
0.25 – <2.0	7 573	9.5	11 115	11.6	47
Total	**79 678**		**96 107**		**21**
% Woodland land cover	**6.1**		**7.4**		

1. Differences in sampling methodology may account for some of the apparent differences.

2. The above figures from the 1997 Inventory exclude woodland between 0.1 and <0.25 hectares, thereby matching the scope of the 1980 Census. These 1997 figures will therefore not match those in the previous sections of the report.

3. Land area used to calculate woodland cover percent (1997), 1 300 385 hectares, was based on the 1991 Census of Population digital boundaries.

4. Land area used to calculate woodland cover percent (1980), 1 301 273 hectares, (Ordnance Survey data)

Table 24 Comparison of High Forest area by species between 1980 Census and 1997 Inventory

Species	1980 Census woodland area (ha)	1997 Inventory woodland area (ha)	Change (%)
Scots pine	5 044	5 420	7
Corsican pine	2 816	3 075	9
Lodgepole pine	1 056	457	-57
Sitka spruce	1 561	1 882	21
Norway spruce	3 151	3 043	-3
European larch	2 627	1 886	-28
Japanese/hybrid larch	4 123	3 803	-8
Douglas fir	3 691	3 628	-2
Other conifers	1 503	2 099	40
Mixed conifers	2 739	364	-87
Total conifers	**28 312**	**25 657**	**-9**
Oak	14 824	18 328	24
Beech	2 192	4 032	84
Sycamore	2 594	3 831	48
Ash	5 588	12 252	119
Birch	6 733	5 509	-18
Poplar	1 553	3 037	96
Sweet chestnut	1 059	760	-28
Elm	104	336	224
Other broadleaves	4 114	9 834	139
Mixed broadleaves	5 327	5 186	-3
Total broadleaves	**44 087**	**63 105**	**43**
Total – all species	**72 399**	**88 762**	**23**
Felled	**1 644**	**809**	**-51**
Total High Forest	**74 043**	**89 571**	**21**

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 5.6% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 5.6%.

3. The above figures from the 1997 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1997 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 1997 Inventory

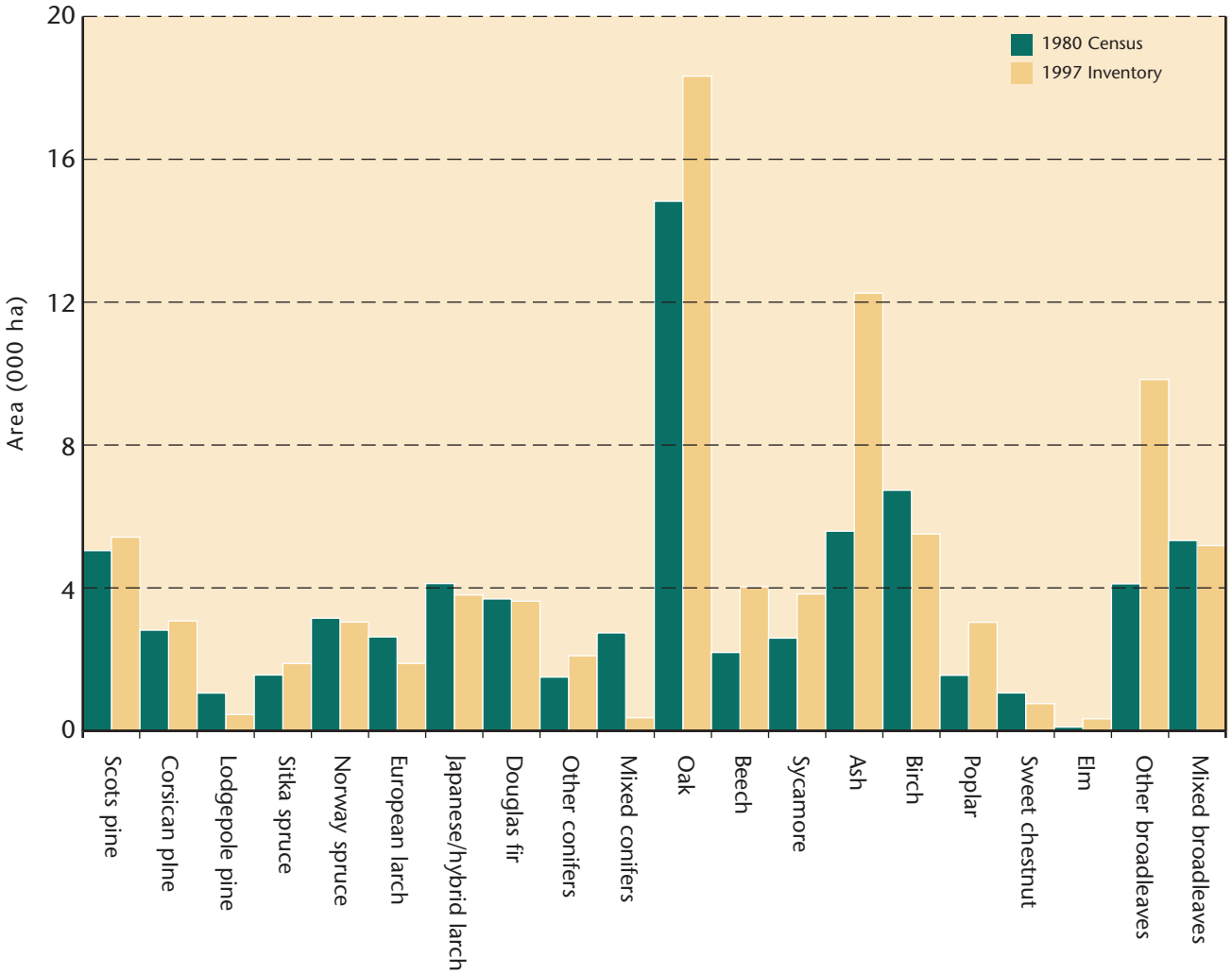


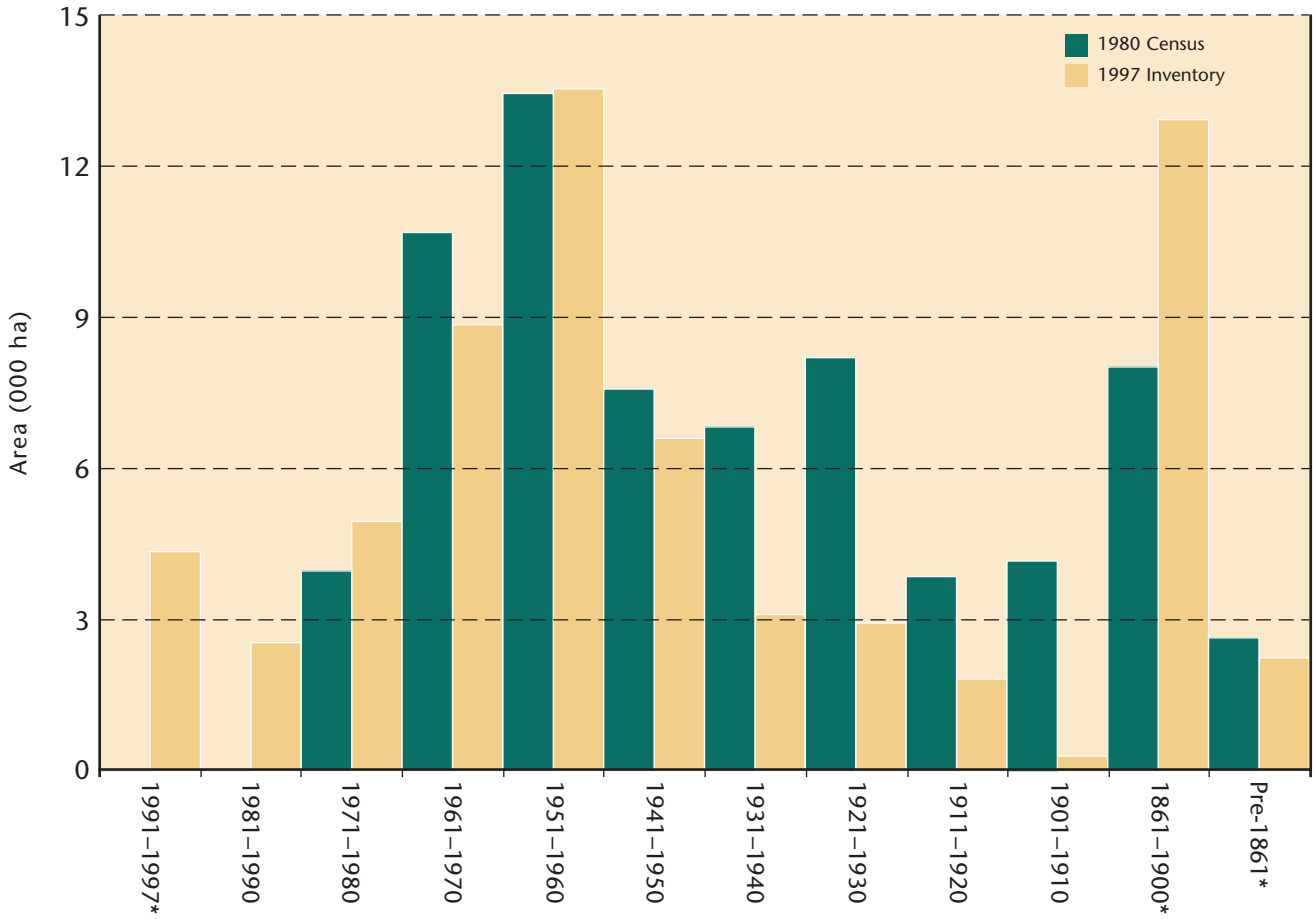
Table 25 Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory

Planting year class	1980 Census woodland area (ha)	1997 Inventory woodland area (ha)	Change (%)
1991–1997	-	4 354	-*
1981–1990	-	2 547	-*
1971–1980	3 970	4 952	25
1961–1970	10 684	8 853	-17
1951–1960	13 442	13 535	1
1941–1950	7 578	6 601	-13
1931–1940	6 827	3 106	-55
1921–1930	8 201	2 937	-64
1911–1920	3 858	1 828	-53
1901–1910	4 167	298	-93
1861–1900	8 017	12 924	61
Pre-1861	2 643	2 249	-15
Total: all years	**69 387**	**64 184**	**-7**

*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 1997 Inventory



*Most of the planting year classes cover 10 years, 1991–1997 is 7 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 1997 Inventory (000s trees)

Feature type	1980 Census	1997 Inventory	Change (%)
Boundary Tree	869	549	-37
Middle Tree	1 098	182	-83
Total Individual Trees	**1 967**	**732**	**-63**
Groups	2 044	2 160	6
Linear Features	3 423	6 238	82
Total	**7 434**	**9 129**	**23**

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 1997 Inventory figures have been adjusted accordingly. The 1997 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 1997 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height and 1997 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 1997 Inventory

Feature type	1980 Census	1997 Inventory	Change (%)
Individual Trees (per km^2)	151.2	56.3	-63
Groups (per km^2)	37.4	28.0	-25
Linear Features (m per km^2)	682.4	1 618.7	137

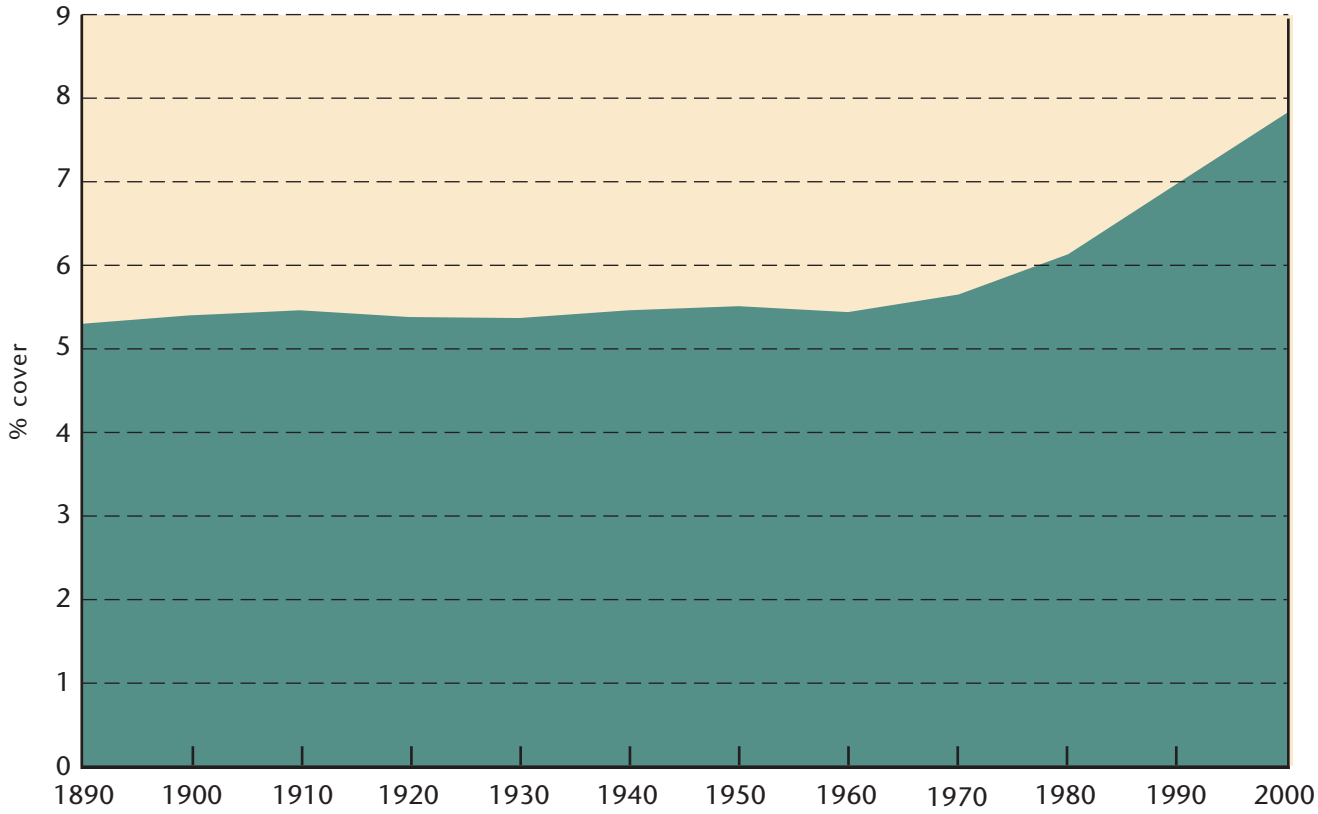
1. The Survey of Small Woodland and Trees did not record information referring to tree features (i.e. Individual trees, Groups and Narrow Linear features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded; the 1997 Inventory figures have been adjusted accordingly. The 1997 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 1997 Inventory, the two surveys are not directly comparable - 1980 used 7 cm diameter at breast height and 1997 used 2 m height as minimum criteria for inclusion.
4. See Glossary for definitions of feature types.

WOODLAND COVER

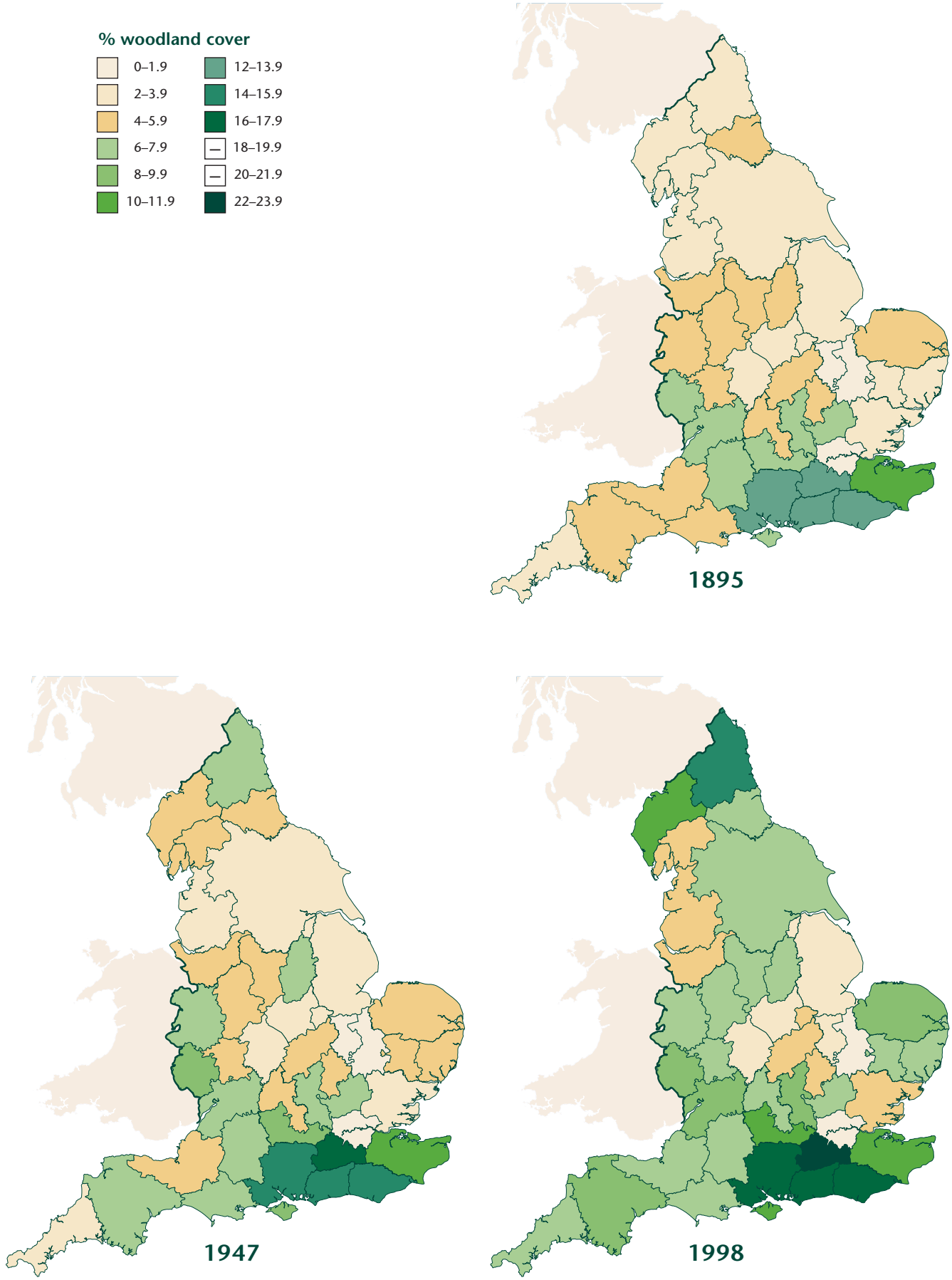
Woodland area data is available from Ministry of Agriculture surveys since 1871, and from Forestry Commission national woodland inventories since 1924. The following chart and maps show the changes in woodland area through time.

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)



APPENDICES

The following tables summarise the results of the Main Woodland Survey and the Survey of Small Woodland and Trees by county in West 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

County*	Woodland size (ha)†		Total area (ha)	Woodland cover (%)
	2.0 or more	0.1 – <2.0		
Hereford & Worcester	30 256	5 412	35 668	9.1
Shropshire	26 135	3 347	29 482	8.5
Staffordshire	18 261	2 914	21 175	7.8
Warwickshire	8 050	1 340	9 390	4.7
West Midlands	2 290	469	2 759	3.1
Total	**84 992**	**13 482**	**98 474**	**7.6**

*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	
Hereford & Worcester	6 009	22 688	3 959	598	391	0	352	1 671	35 668
Shropshire	8 583	17 020	2 563	0	91	0	83	1 142	29 482
Staffordshire	5 542	12 536	1 409	0	0	0	368	1 320	21 175
Warwickshire	952	6 263	982	0	0	0	6	1 186	9 390
West Midlands	123	2 281	169	0	0	0	0	187	2 759
Total	**21 209**	**60 788**	**9 082**	**598**	**482**	**0**	**809**	**5 506**	**98 474**

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 km²)
		Groups	Narrow Linear Feature	Individual Trees		
Hereford & Worcester	Features	200.4	115.7	252.8		
	Live Trees	1 464.0	3 860.7	252.8	5 577.5	1 422
Shropshire	Features	145.7	86.2	165.9		
	Live Trees	1 011.4	4 119.7	165.9	5 297.0	1 519
Staffordshire	Features	193.8	73.7	295.8		
	Live Trees	1 205.7	3 157.0	295.8	4 658.5	1 716
Warwickshire	Features	38.3	14.3	130.8		
	Live Trees	338.2	957.5	130.8	1 426.5	721
West Midlands	Features	16.5	11.7	15.8		
	Live Trees	76.9	669.8	15.8	762.5	848
Total	**Features**	**594.7**	**301.6**	**861.1**		
	Live Trees	**4 096.2**	**12 764.7**	**861.1**	**17 722.0**	**1 363**

*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 km²)
Hereford & Worcester	120.5	8 653	2 205
Shropshire	87.1	6 410	1 838
Staffordshire	76.0	5 433	2 001
Warwickshire	14.3	1 808	914
West Midlands	11.7	1 020	1 135
Total	**295.2**	**21 515**	**1 654**

*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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