National Inventory of Woodland and Trees

Great Britain

Forestry Commission

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Inventory Report

National Inventory of Woodland and Trees

Great Britain

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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 Great Britain 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 Cameron.

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 Great Britain 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 With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees*.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 England and Wales, Woodland Surveys derived a digital map of all woodland showing Interpreted Forest Types from 1:25 000 scale aerial photography. While in Scotland the main survey was based on the Land Cover of Scotland (LCS) 1988 project*, which used 1:25 000 scale aerial photography to create a land cover map. The Forestry Commission extracted the woodland components of this dataset to provide the basis for a digital woodland map showing Interpreted Forest Types. The map was then updated to 1995 for new planting within Woodland Grant Schemes and the Forest Enterprise. The map then provided the basis for sampling.

This 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 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

*The Land Cover of Scotland 1988 (LCS88) Final Report

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 Great Britain was stratified into coastal and inland 1 km x 1 km squares and a random sample of 1 km^2 plots were 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

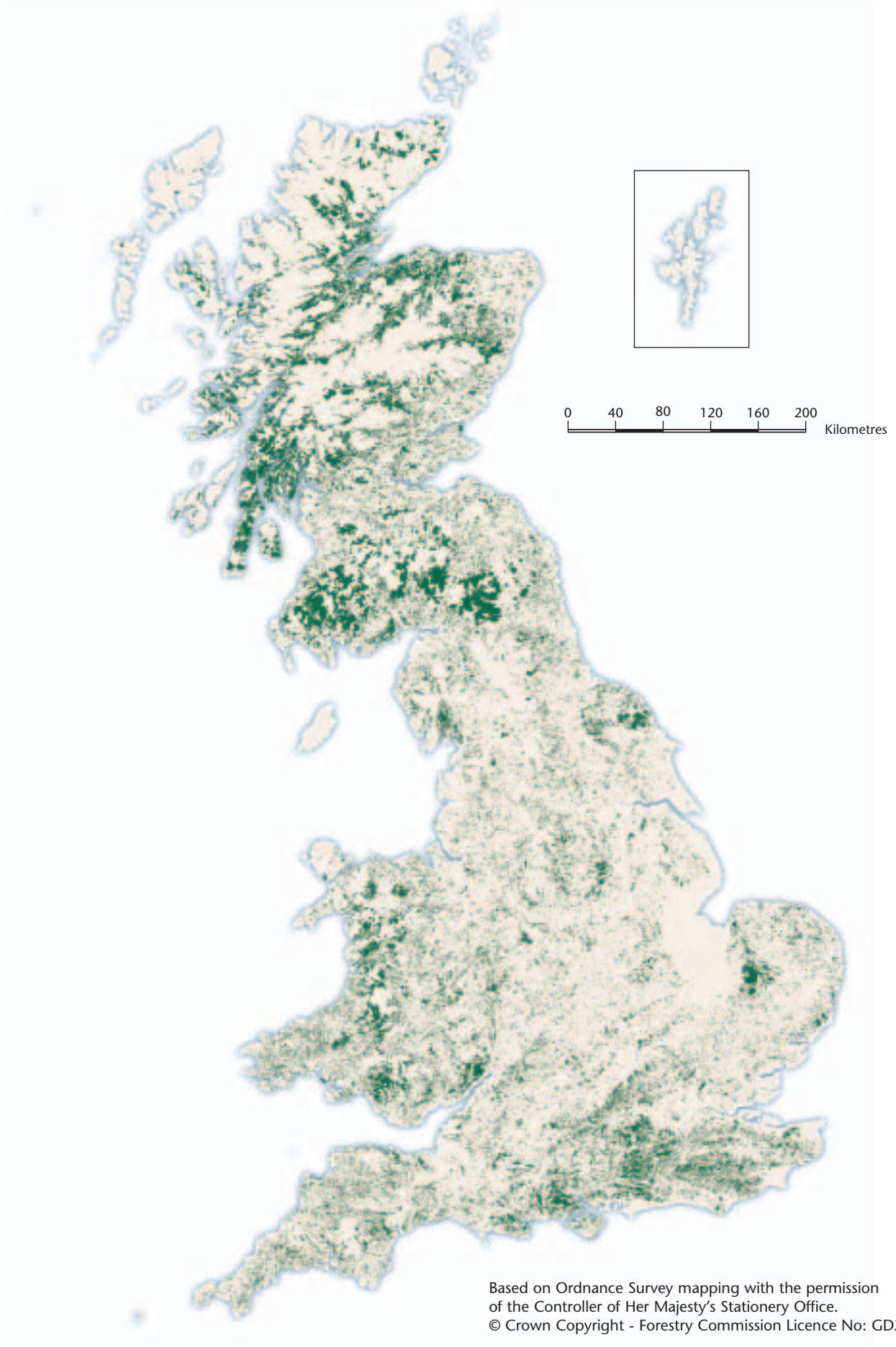
- The total area of woodland of 0.1 hectares and over in Great Britain is 2 665 125 hectares. This represents 11.6% of the land area (Table 1).
- Conifer woodland is the dominant forest type representing 49.0% of all woodland. Broadleaved woodland represents 32.1%, Mixed woodland 7.9% and Open Space within woodlands 8.1% (Table 2).
- The main conifer species is Sitka spruce covering 691 918 hectares or 49.2% of all conifer species. The main broadleaved species is oak covering 222 697 hectares or 22.9% of all broadleaved species species (Table 3).
- 880 827 hectares or 35% of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 1 663 805 hectares or 65% of woodland is in Other ownerships (Table 6).
- There are a total 82 829 woods over 2 hectares within Great Britain with a mean wood area of 30.9 hectares (Table 7a). There are a total of 254 706 woods from 0.1– <2.0 hectares with a mean wood area of 0.47 hectares (Table 14).
- There are 123 million live trees outside woodland in Great Britain (Table 17).
- Woodland land cover increased by over 543 300 hectares from 9.2% to 11.6% of the land area between 1980 and 1998 (Table 23b).
- The area of Broadleaves increased by 34% between 1980 and 1998, with the relative proportion of Broadleaves to Conifers increasing from 35% to 39% (Table 24).

INVENTORY REPORTS

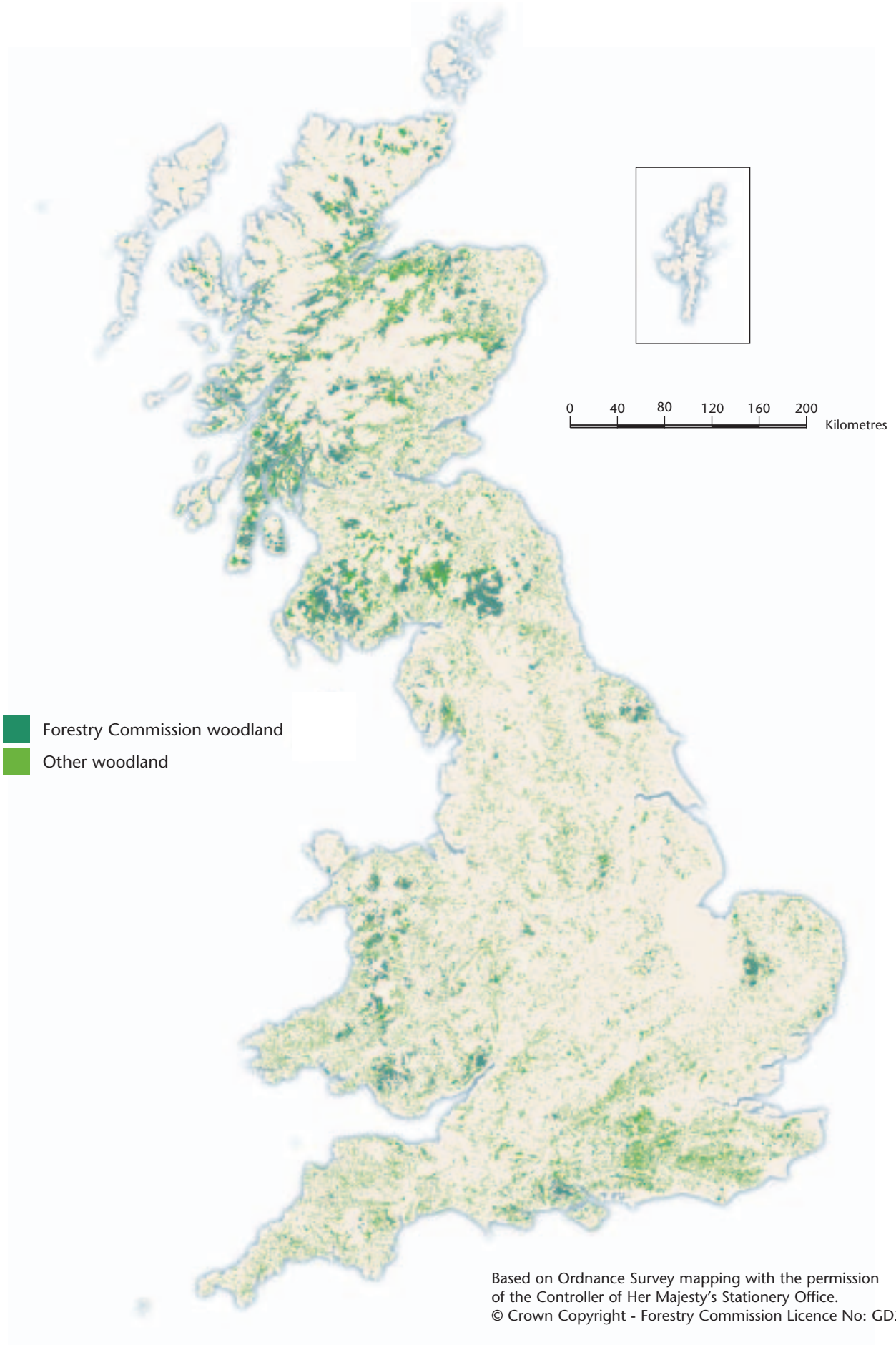
In addition to this Report for Great Britain, results are available by country, region and county, as applicable, as shown in the map opposite. All Inventory Reports can be viewed/downloaded from: www.forestry.gov.uk/inventory.

Map 1 Regional and county boundaries

Map 2 Distribution of woodland over 2 hectares



Map 3 Distribution of woodland over 2 hectares by ownership



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

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 Great Britain.

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	2 544 631	95.5
0.25 – < 2.00	107 075	4.0
0.10 – < 0.25	13 419	0.5
Total area of woodland	**2 665 125**	**100.0**
% Woodland land cover	**11.6**	

1. Area of Great Britain, including inland water, 22 933 252 ha based on digital boundaries used in the 1991 Census of Population.

2. The recorded area of new woodland planted in Great Britain from the national (i.e. Scotland, England and Wales) inventory reference dates to 31 March 2001 was approximately 85 000 ha. Assuming that woodland losses over the same period were minimal, then the total woodland area at 31 March 2001 was approximately 2 750 500 ha, giving a total land cover of 12.0%.

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	1 286 986	19 066	1 306 052	49.0
Broadleaved	771 733	82 692	854 425	32.1
Mixed	196 006	15 048	211 054	7.9
Coppiced	12 717	0	12 717	0.5
Copp-w-Standards	10 809	531	11 340	0.4
Windblow	5 507	0	5 507	0.2
Felled	47 040	325	47 365	1.8
Open Space	213 835	2 830	216 665	8.1
Total	**2 544 631**	**120 494**	**2 665 125**	**100**

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	398 864	9 018	407 882	29.0	17.2
Sitka spruce	683 656	8 262	691 918	49.2	29.1
Larch	130 162	3 566	133 728	9.5	5.6
Other conifers	150 639	3 789	154 428	11.0	6.5
Mixed conifers	16 188	1 457	17 645	1.3	0.7
Total conifers	**1 379 510**	**26 094**	**1 405 604**	**100.0**	**59.1**
Oak	206 154	16 543	222 697	22.9	9.4
Beech	76 551	6 430	82 981	8.5	3.5
Sycamore	61 357	5 237	66 594	6.9	2.8
Ash	119 232	9 913	129 145	13.3	5.4
Birch	155 355	4 637	159 992	16.5	6.7
Elm	3 743	1 407	5 150	0.5	0.2
Other broadleaves	119 133	25 511	144 644	14.9	6.1
Mixed broadleaves	139 196	21 031	160 227	16.5	6.7
Total broadleaves	**880 722**	**90 712**	**971 434**	**100.0**	**40.9**
Total all species†	**2 260 232**	**116 804**	**2 377 036**		**100.0**

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

† Excludes the 288 087 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	0%
Broadleaves	0%
Pine	1%
Sitka spruce	1%
Oak	1%

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	5 420 100	36 168 100	7	158
Narrow Linear Features	1 577 000	77 548 800	49	338
Individual Trees	9 411 000	9 411 000	1	41
Total		**123 127 900**		**537**

1. Land area used to calculate tree density 22 933 252 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	4%
Narrow Linear Features	5%
Individual Trees	3%

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	55 932	7 652	33
Narrow Linear Features	1 577 000	120 974	528
Total		**128 626**	**561**

1. Land area used to calculate feature density 22 933 252 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	16%
Narrow Linear Features	4%

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	880 827	35
Other	1 663 805	65
Total area of woodland	**2 544 631**	**100**

1. Woodland area from aerial photographic interpretation map updated to 31 March 1995–98.

2. See Glossary for definitions of ownership types.

Woodland area by ownership

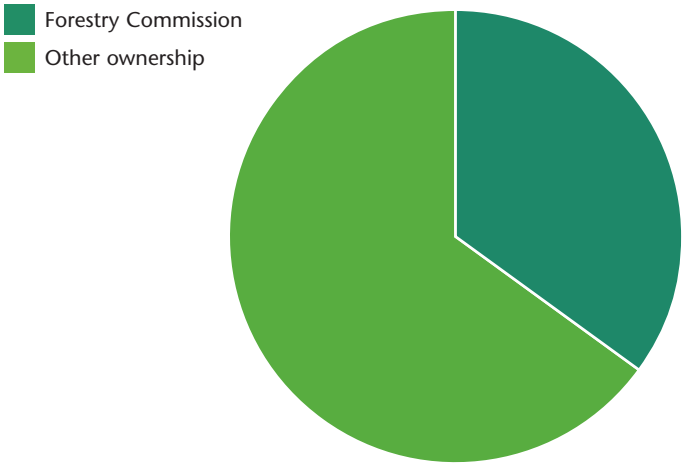


Table 7a Size class distribution of woodland

Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	59 120	260 579	10	4.4
10 – <20	10 630	148 060	6	13.9
20 – <50	7 335	227 078	9	31.0
50 – <100	2 789	193 652	8	69.4
<100	79 874	829 369	32	10.4
100 – <500	2 352	477 110	19	202.9
500 and >	603	1 250 001	49	2073.0
All woods	**82 829**	**2 556 481**	**100**	**30.9**

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	1 013	4 256	0	4.2
	O	65 485	275 687	11	4.2
10 – <20	FC	449	6 603	0	14.7
	O	11 056	153 966	6	13.9
20 – <50	FC	727	23 858	1	32.8
	O	7 518	232 394	9	30.9
50 – <100	FC	524	37 206	1	71.0
	O	2 725	188 746	7	69.3
<100	FC	2 713	71 923	3	26.5
	O	86 784	850 793	33	9.8
100 – <500	FC	780	171 389	7	219.7
	O	2 060	407 315	16	197.7
500 and >	FC	343	638 963	25	1 862.9
	O	339	416 098	16	1 227.4
Total	**FC**	**3 836**	**882 275**	**35**	**230.0**
	O	**89 183**	**1 674 207**	**65**	**18.8**

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 Table 7a is 11 851 hectares more than that recorded in Table 6. 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	659 850	74.9	627 137	37.7	1 286 986	50.6
Broadleaved	72 875	8.3	698 859	42.0	771 733	30.3
Mixed	39 403	4.5	156 603	9.4	196 006	7.7
Coppice	1 086	0.1	11 630	0.7	12 717	0.5
Copp-w-stds	92	0.0	10 716	0.6	10 809	0.4
Windblow	3 668	0.4	1 839	0.1	5 507	0.2
Felled	28 487	3.2	18 553	1.1	47 040	1.8
Open Space	75 364	8.6	138 472	8.3	213 835	8.4
Total	**880 827**	**100.0**	**1 663 805**	**100.0**	**2 544 631**	**100.0**

Area of woodland by forest type

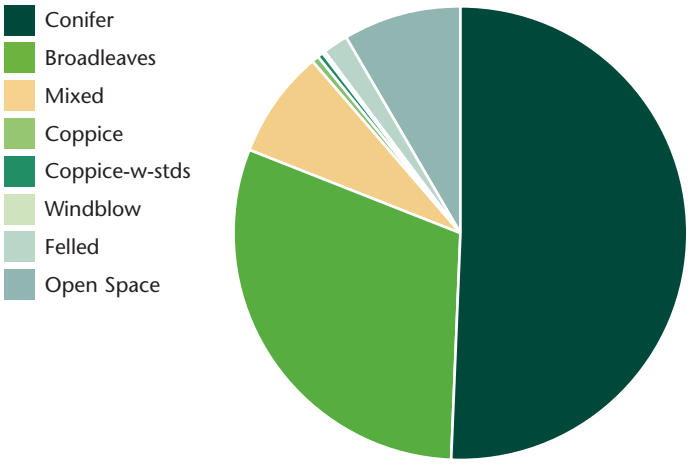


Table 9a Area of High Forest by principal species and ownership

Species	Forestry Commission			Other			All ownerships		
	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %
Scots pine	73 421	11	9	146 017	21	10	219 438	16	10
Corsican pine	30 575	4	4	14 774	2	1	45 350	3	2
Lodgepole pine	79 916	12	10	54 160	8	4	134 076	10	6
Sitka spruce	375 963	55	48	307 692	44	21	683 656	50	30
Norway spruce	34 211	5	4	41 996	6	3	76 206	6	3
European larch	6 241	1	1	16 244	2	1	22 485	2	1
Japanese/hybrid larch	48 737	7	6	58 940	8	4	107 677	8	5
Douglas fir	19 019	3	2	26 204	4	2	45 224	3	2
Other conifers	11 125	2	1	18 087	3	1	29 209	2	1
Mixed conifers	3 111	0	0	13 077	2	1	16 188	1	1
Total conifers	**682 319**	**100**	**88**	**697 191**	**100**	**47**	**1 379 510**	**100**	**61**
Oak	22 777	24	3	183 377	23	12	206 154	23	9
Beech	15 782	17	2	60 770	8	4	76 551	9	3
Sycamore	2 402	3	0	58 954	7	4	61 357	7	3
Ash	6 640	7	1	112 592	14	8	119 232	14	5
Birch	24 904	27	3	130 451	17	9	155 355	18	7
Poplar	759	1	0	9 660	1	1	10 418	1	0
Sweet chestnut	1 278	1	0	9 522	1	1	10 800	1	0
Elm	79	0	0	3 664	0	0	3 743	0	0
Other broadleaves	6 257	7	1	91 658	12	6	97 915	11	4
Mixed broadleaves	12 598	13	2	126 598	16	9	139 196	16	6
Total broadleaves	**93 478**	**100**	**12**	**787 244**	**100**	**53**	**880 722**	**100**	**39**
Total – all species	**775 796**		**100**	**1 484 436**		**100**	**2 260 232**		**100**
Felled	**28 487**			**18 553**			**47 040**		
Total High Forest	**804 284**			**1 502 989**			**2 307 272**		

*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 213 835 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	0%
Broadleaves	0%
Scots pine	2%
Sitka spruce	1%
Oak	1%

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

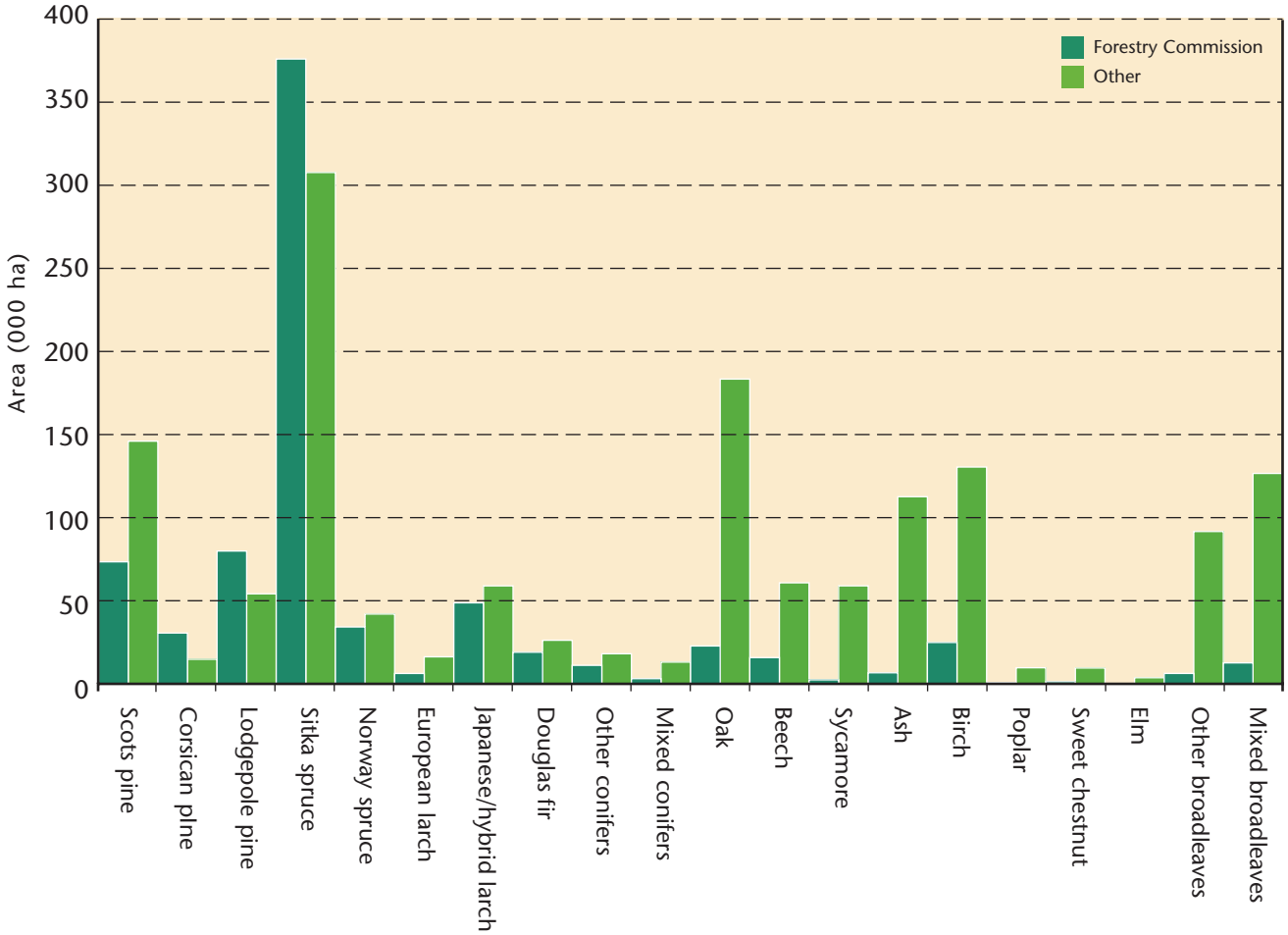


Table 9b Area of High Forest by principal species, ownership and category

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	70 656	2 766	73 421	138 098	7 918	146 017	208 754	10 684	219 438
Corsican pine	30 288	287	30 575	14 589	187	14 774	44 878	473	45 350
Lodgepole pine	66 475	13 441	79 916	45 854	8 306	54 160	112 329	21 747	134 076
Sitka spruce	363 100	12 863	375 963	299 148	8 546	307 692	662 247	21 409	683 656
Norway spruce	32 805	1 405	34 211	40 949	1 046	41 996	73 754	2 452	76 206
European larch	5 956	286	6 241	15 487	757	16 244	21 443	1 043	22 485
Japanese/hybrid larch	47 253	1 483	48 737	56 988	1 953	58 940	104 240	3 436	107 677
Douglas fir	18 871	147	19 019	25 953	250	26 204	44 825	398	45 224
Other conifers	10 466	656	11 125	15 236	2 850	18 087	25 703	3 507	29 209
Mixed conifers	2 802	309	3 111	11 366	1 710	13 077	14 168	2 020	16 188
Total conifers	**648 674**	**33 643**	**682 319**	**663 667**	**33 523**	**697 191**	**1 312 342**	**67 168**	**1 379 510**
Oak	16 546	6 231	22 777	126 944	56 434	183 377	143 490	62 665	206 154
Beech	14 293	1 488	15 782	49 197	11 572	60 770	63 490	13 061	76 551
Sycamore	1 727	676	2 402	43 637	15 317	58 954	45 364	15 994	61 357
Ash	5 155	1 485	6 640	87 544	25 049	112 592	92 698	26 534	119 232
Birch	9 924	14 980	24 904	51 132	79 319	130 451	61 056	94 299	155 355
Poplar	654	105	759	8 850	809	9 660	9 504	914	10 418
Sweet chestnut	809	469	1 278	7 153	2 368	9 522	7 962	2 838	10 800
Elm	62	17	79	1 602	2 062	3 664	1 663	2 080	3 743
Other broadleaves	2 186	4 071	6 257	33 312	58 345	91 658	35 499	62 416	97 915
Mixed broadleaves	4 429	8 169	12 598	72 022	54 575	126 598	76 451	62 745	139 196
Total broadleaves	**55 783**	**37 694**	**93 478**	**481 396**	**305 849**	**787 244**	**537 178**	**343 545**	**880 722**
Total – all species	**704 457**	**71 339**	**775 796**	**1 145 064**	**339 373**	**1 484 436**	**1 849 520**	**410 712**	**2 260 232**

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:

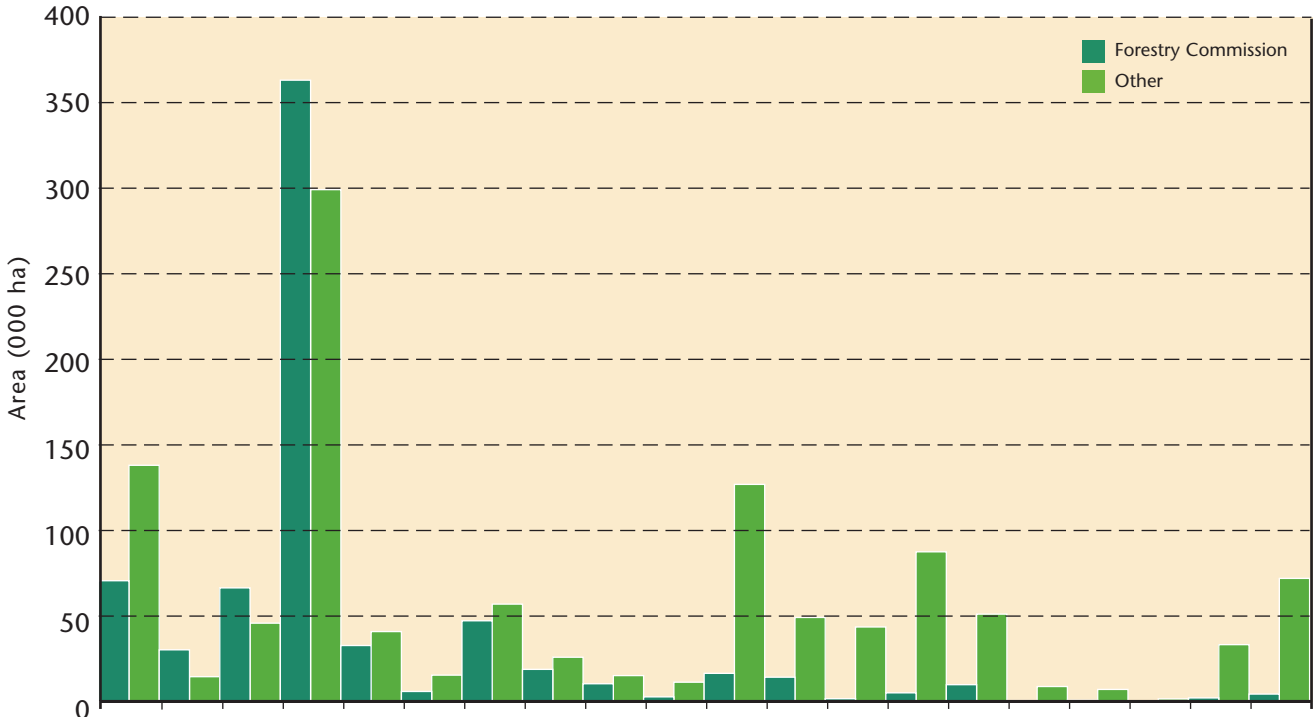
	Category 1*	Category 2*	Total High Forest
Conifers	0%	3%	0%
Broadleaves	1%	1%	0%
Scots pine	2%	6%	2%
Sitka spruce	1%	5%	1%
Oak	2%	2%	1%

*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

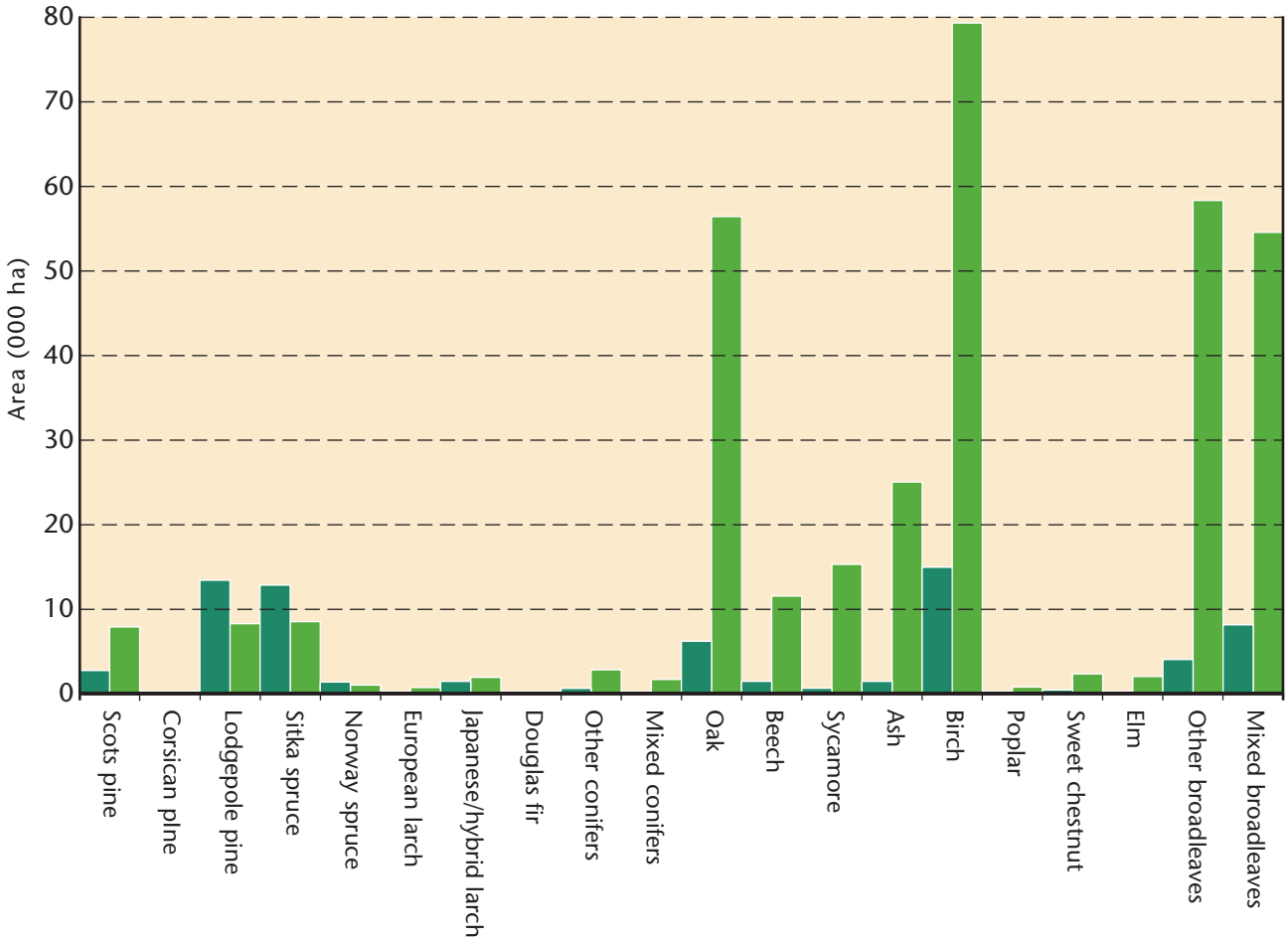
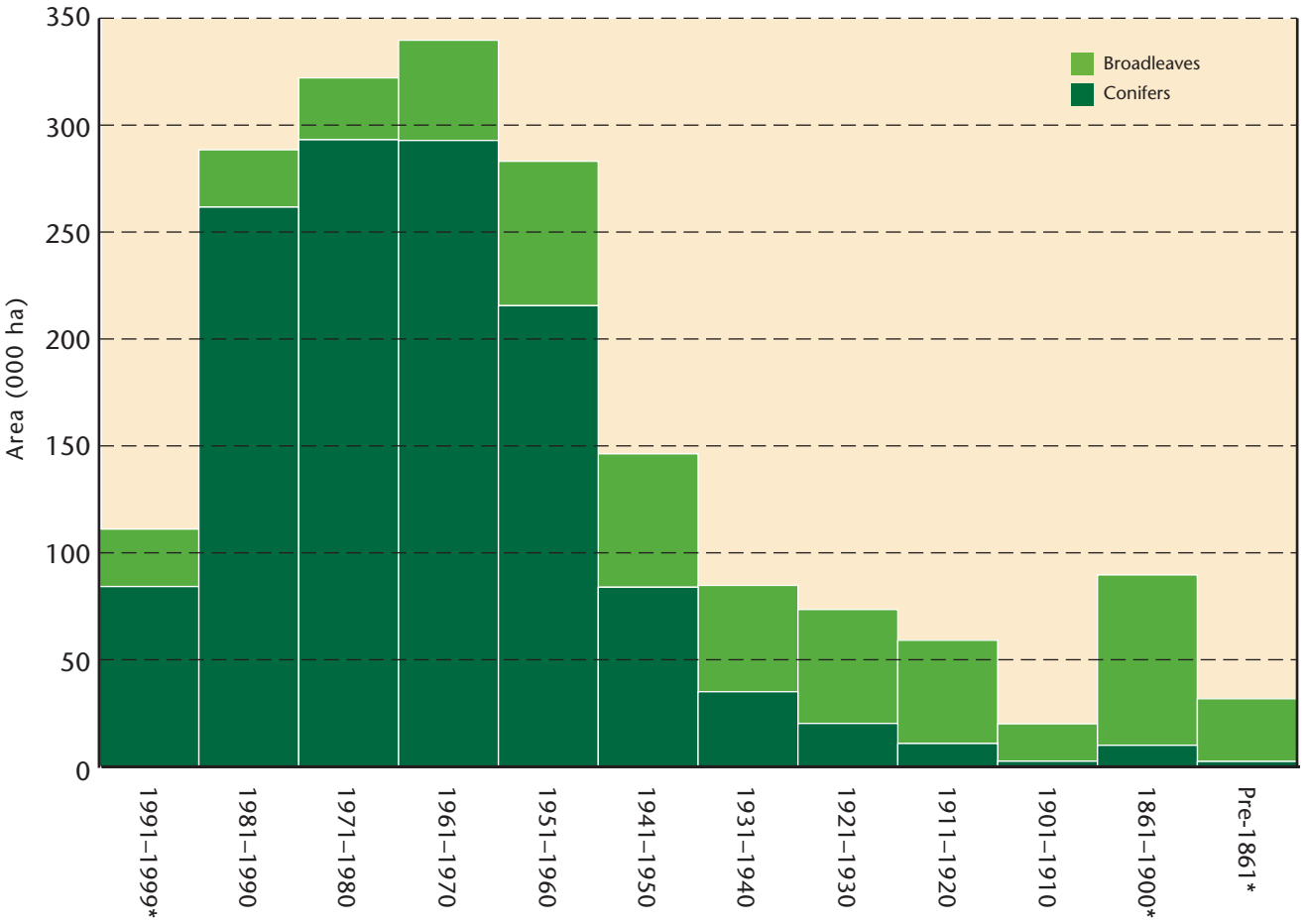


Table 10a High Forest Category 1 - Area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991 –1999	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	7 885	12 471	18 571	44 685	56 146	28 500	12 647	11 072	6 808	1 969	6 239	1 758	208 754
Corsican pine	7 274	6 271	7 444	9 547	7 644	2 709	2 258	1 141	275	20	278	16	44 878
Lodgepole pine	2 949	27 642	38 104	30 101	12 291	764	129	102	0	0	144	104	112 329
Sitka spruce	51 577	186 190	193 431	141 941	62 884	19 251	5 371	1 307	78	36	180	0	662 247
Norway spruce	2 916	3 995	9 202	21 822	19 774	9 849	3 940	1 444	447	53	310	0	73 754
European larch	298	984	1 911	3 297	4 765	3 987	2 824	1 485	1 027	123	709	36	21 443
Japanese/hybrid larch	5 275	13 938	14 015	20 098	32 108	11 971	4 556	1 328	670	74	209	0	104 240
Douglas fir	4 533	6 410	5 178	11 036	10 973	2 989	1 730	989	476	70	416	26	44 825
Other conifers	791	2 572	3 786	7 857	5 805	1 713	952	585	596	62	645	338	25 703
Mixed conifers	723	1 187	1 525	2 447	3 161	2 164	624	749	452	143	851	145	14 168
Total conifers	**84 221**	**261 657**	**293 163**	**292 832**	**215 552**	**83 898**	**35 032**	**20 206**	**10 830**	**2 550**	**9 980**	**2 422**	**1 312 342**
Oak	6 013	3 761	2 518	3 590	8 253	10 375	10 382	14 493	18 626	8 411	41 863	15 206	143 490
Beech	1 067	1 128	2 066	6 114	8 942	6 143	4 982	6 239	6 029	2 309	12 272	6 197	63 490
Sycamore	1 051	1 806	4 019	5 024	8 091	7 493	5 456	4 602	2 414	664	4 377	368	45 364
Ash	3 717	3 359	4 453	9 236	13 866	12 927	12 732	11 778	7 628	2 398	9 276	1 331	92 698
Birch	4 826	7 383	7 090	11 006	13 045	8 894	3 889	2 435	884	212	1 250	143	61 056
Poplar	724	1 024	1 057	2 147	2 466	1 390	273	224	123	0	75	0	9 504
Sweet chestnut	680	578	431	677	806	1 097	942	883	402	157	997	313	7 962
Elm	98	235	339	244	225	239	80	54	16	10	122	0	1 663
Other broadleaves	2 485	2 895	3 507	4 031	6 577	5 862	3 576	2 400	1 194	427	1 903	633	35 499
Mixed broadleaves	6 216	4 628	3 473	4 808	5 276	7 972	7 408	10 163	10 949	2 870	7 552	5 137	76 451
Total broadleaves	**26 879**	**26 801**	**28 948**	**46 877**	**67 548**	**62 395**	**49 719**	**53 274**	**48 265**	**17 457**	**79 685**	**29 330**	**537 178**
Total – all species	**111 100**	**288 457**	**322 110**	**339 709**	**283 100**	**146 293**	**84 752**	**73 480**	**59 096**	**20 007**	**89 666**	**31 752**	**1 849 520**

*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



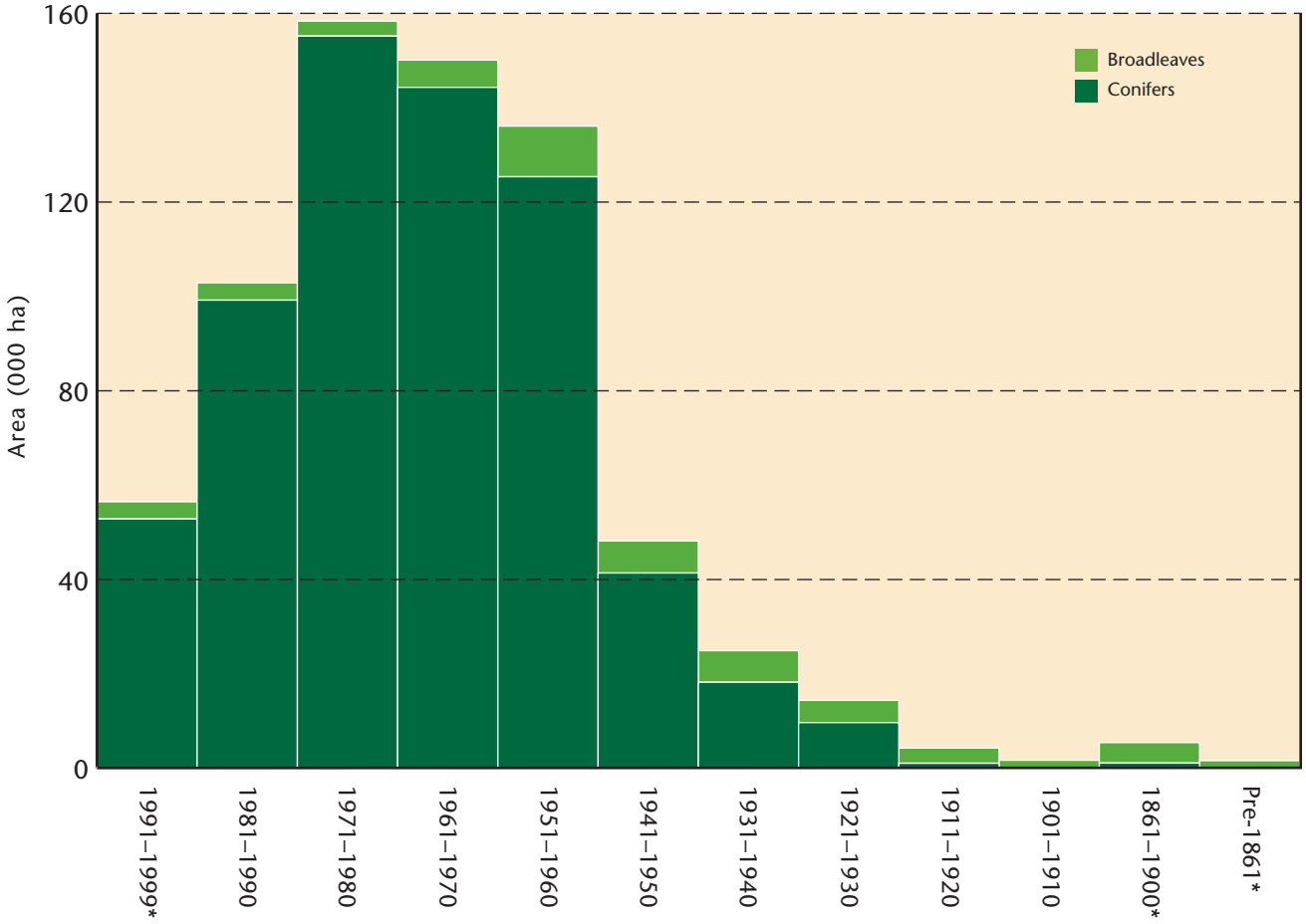
*Most of the planting year classes cover 10 years, 1991–1999 is 9 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 –1999	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	3 048	3 798	3 887	13 087	25 248	10 363	5 072	4 673	653	92	670	64	70 656
Corsican pine	6 108	4 956	4 540	5 497	5 275	1 460	1 561	797	66	6	20	0	30 288
Lodgepole pine	1 357	10 589	24 054	20 585	9 258	305	123	102	0	0	0	104	66 475
Sitka spruce	35 858	69 257	110 497	80 433	47 312	14 494	4 193	1 021	5	0	31	0	363 100
Norway spruce	1 460	953	1 980	7 064	10 171	6 867	3 155	1 049	18	0	89	0	32 805
European larch	15	159	271	1 005	1 277	806	1 405	645	185	10	163	15	5 956
Japanese/hybrid larch	2 688	5 384	5 604	8 095	18 297	5 099	1 584	461	43	0	0	0	47 253
Douglas fir	1 780	2 870	2 682	4 467	4 607	1 051	717	650	5	0	43	0	18 871
Other conifers	481	1 087	1 222	3 488	2 971	590	291	182	95	1	59	2	10 466
Mixed conifers	52	157	437	594	950	349	139	97	0	0	28	0	2 802
Total conifers	**52 845**	**99 210**	**155 174**	**144 317**	**125 365**	**41 381**	**18 236**	**9 677**	**1 070**	**108**	**1 105**	**185**	**648 674**
Oak	727	355	374	609	1 640	1 698	2 130	2 005	2 102	1 050	2 921	935	16 546
Beech	185	144	314	1 946	4 131	2 300	2 322	974	543	344	717	371	14 293
Sycamore	16	52	121	297	567	235	271	76	4	59	28	0	1 727
Ash	187	316	338	585	1 147	536	1 037	675	97	44	190	0	5 155
Birch	1 500	2 103	1 192	1 614	1 697	823	396	308	88	25	173	5	9 924
Poplar	148	0	14	17	184	112	49	47	63	0	22	0	654
Sweet chestnut	34	40	53	43	186	157	87	78	62	5	64	0	809
Elm	0	0	5	0	40	8	0	0	0	10	0	0	62
Other broadleaves	243	95	307	321	480	262	156	210	5	43	70	0	2 186
Mixed broadleaves	595	576	464	338	656	661	243	355	248	13	159	121	4 429
Total broadleaves	**3 636**	**3 681**	**3 177**	**5 771**	**10 729**	**6 789**	**6 690**	**4 728**	**3 211**	**1 594**	**4 342**	**1 432**	**55 783**
Total – all species	**56 480**	**102 891**	**158 352**	**150 090**	**136 094**	**48 172**	**24 927**	**14 406**	**4 281**	**1 701**	**5 446**	**1 617**	**704 457**

*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



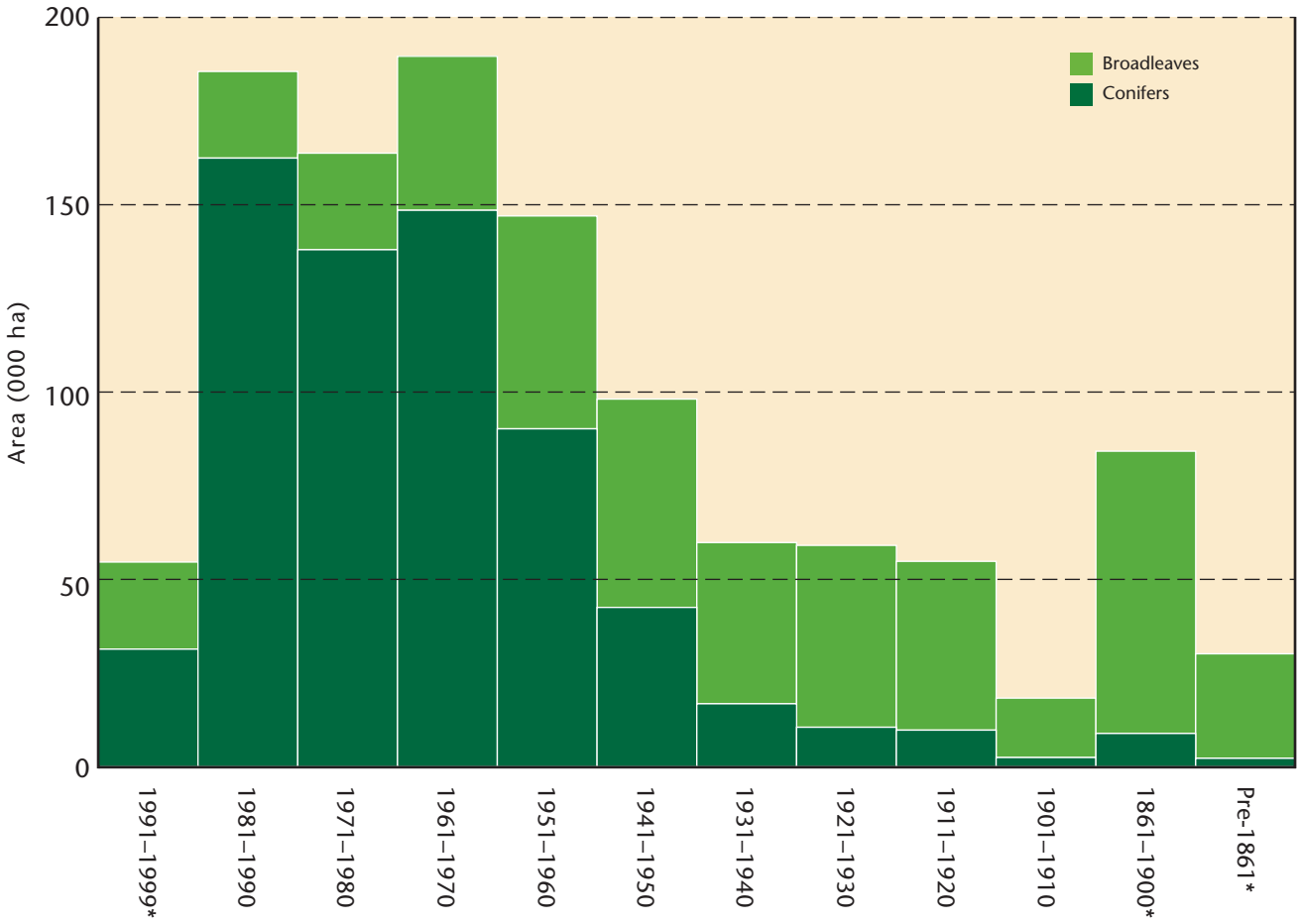
*Most of the planting year classes cover 10 years, 1991–1999 is 9 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 –1999	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	4 838	8 673	14 683	31 598	30 898	18 139	7 575	6 398	6 154	1 878	5 568	1 694	138 098
Corsican pine	1 167	1 314	2 904	4 050	2 369	1 246	698	344	208	14	258	16	14 589
Lodgepole pine	1 592	17 053	14 051	9 516	3 033	459	6	0	0	0	144	0	45 854
Sitka spruce	15 719	116 934	82 935	61 507	15 571	4 758	1 180	287	73	36	149	0	299 148
Norway spruce	1 454	3 041	7 223	14 758	9 604	2 984	785	396	429	53	221	0	40 949
European larch	283	824	1 639	2 291	3 488	3 182	1 418	840	842	113	545	21	15 487
Japanese/hybrid larch	2 588	8 555	8 410	12 003	13 811	6 872	2 971	868	627	74	209	0	56 988
Douglas fir	2 752	3 540	2 495	6 569	6 367	1 937	1 013	341	471	70	373	26	25 953
Other conifers	310	1 484	2 563	4 368	2 836	1 123	664	403	502	61	587	336	15 236
Mixed conifers	672	1 030	1 086	1 852	2 210	1 816	485	652	452	143	823	145	11 366
Total conifers	**31 377**	**162 447**	**137 989**	**148 514**	**90 187**	**42 517**	**16 796**	**10 528**	**9 760**	**2 442**	**8 875**	**2 237**	**663 667**
Oak	5 285	3 408	2 143	2 981	6 613	8 677	8 251	12 489	16 523	7 361	38 941	14 271	126 944
Beech	882	983	1 752	4 167	4 811	3 843	2 660	5 263	5 487	1 966	11 554	5 826	49 197
Sycamore	1 036	1 755	3 899	4 726	7 522	7 258	5 185	4 525	2 410	605	4 349	368	43 637
Ash	3 531	3 042	4 114	8 651	12 719	12 390	11 695	11 103	7 531	2 354	9 086	1 331	87 544
Birch	3 325	5 279	5 898	9 392	11 347	8 072	3 494	2 126	797	186	1 077	139	51 132
Poplar	576	1 024	1 044	2 130	2 283	1 277	225	177	61	0	53	0	8 850
Sweet chestnut	646	538	377	633	619	940	855	805	340	152	933	313	7 153
Elm	98	235	334	244	186	232	80	54	16	0	122	0	1 602
Other broadleaves	2 243	2 800	3 200	3 709	6 098	5 602	3 420	2 190	1 189	384	1 833	633	33 312
Mixed broadleaves	5 621	4 050	3 010	4 470	4 618	7 313	7 165	9 807	10 701	2 857	7 393	5 016	72 022
Total broadleaves	**23 243**	**23 120**	**25 770**	**41 106**	**56 820**	**55 605**	**43 029**	**48 545**	**45 054**	**15 864**	**75 343**	**27 896**	**481 396**
Total – all species	**54 620**	**185 565**	**163 759**	**189 620**	**147 006**	**98 122**	**59 824**	**59 073**	**54 814**	**18 306**	**84 220**	**30 134**	**1 145 064**

*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, 1991–1999 is 9 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	%
1991–1999	Sitka spruce	43	Mixed broadleaves	9	Scots pine	6
1981–1990	Sitka spruce	61	Lodgepole pine	10	Japanese/hybrid larch	4
1971–1980	Sitka spruce	55	Lodgepole pine	13	Scots pine	5
1961–1970	Sitka spruce	37	Scots pine	12	Lodgepole pine	10
1951–1960	Sitka spruce	20	Scots pine	17	Japanese/hybrid larch	10
1941–1950	Scots pine	14	Birch	13	Sitka spruce	10
1931–1940	Oak	14	Ash	13	Birch	12
1921–1930	Oak	19	Ash	14	Mixed broadleaves	14
1911–1920	Oak	30	Mixed broadleaves	17	Ash	12
1901–1910	Oak	39	Mixed broadleaves	16	Ash	11
1861–1900	Oak	46	Beech	11	Ash	10
Pre-1861	Oak	47	Beech	18	Mixed broadleaves	14
All years	**Sitka spruce**	**30**	**Scots pine**	**10**	**Oak**	**9**

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

Ownership type by area

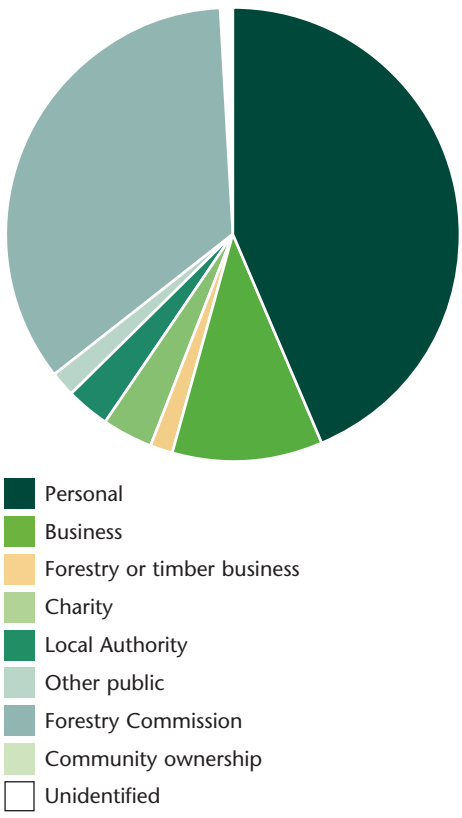


Table 12 Ownership type* by area and percentage

Ownership type	Area (ha)	%
Personal	1 109 779	43.6
Business	273 424	10.7
Forestry or timber business	40 956	1.6
Charity	90 397	3.6
Local Authority	79 835	3.1
Other public (not FC)	45 310	1.8
Forestry Commission	882 151	34.7
Community ownership or common land	4 711	0.2
Unidentified	18 068	0.7
Total	**2 544 631**	**100.0**

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

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

Survey method

The land area of Great Britain was stratified into coastal and inland 1 km x 1 km squares, a random sample of 1 km^2 plots were 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 square 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	198 774	100 098	Area (ha)
Wide Linear Features	55 932	20 395	Area (ha)
Wide Linear Features	55 932	7 652	Length (km)
Narrow Linear Features	1 577 000	120 974	Length (km)
Narrow Linear Features	1 577 000	77 548 800	Number of live trees
Groups	5 420 100	36 168 100	Number of live trees
Individual Trees	9 411 000	9 411 000	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	10 146	89 952	100 098	198 774	0.50
Wide Linear Features	3 273	17 123	20 396	55 932	0.36
Total	**13 419**	**107 075**	**120 494**	**254 706**	**0.47**

1. 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	1 418	312	15 321	2 015	16 739	2 327	19 066
Broadleaved	7 294	2 503	61 776	11 119	69 070	13 622	82 692
Mixed	1 256	458	9 809	3 525	11 065	3 983	15 048
Coppiced	0	0	0	0	0	0	0
Copp-w-stds	0	0	531	0	531	0	531
Windblow	0	0	0	0	0	0	0
Felled	0	0	325	0	325	0	325
Open Space	178	0	2 189	463	2 367	463	2 830
Total	**10 146**	**3 273**	**89 952**	**17 122**	**100 098**	**20 395**	**120 494**

*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	6 909	2 239	9 143	35.0	7.8
Spruce	9 716	1 386	11 108	42.6	9.5
Larch	2 660	958	3 616	13.9	3.1
Cypress	323	0	323	1.2	0.3
Other conifers	1 755	148	1 905	7.3	1.6
Total conifers	**21 364**	**4 732**	**26 096**	**100**	**22.3**
Oak	14 719	1 823	16 542	18.2	14.2
Beech	5 211	1 219	6 430	7.1	5.5
Sycamore	4 259	978	5 237	5.8	4.5
Ash	7 890	2 022	9 912	10.9	8.5
Birch	4 010	591	4 601	5.1	3.9
Poplar	1 864	195	2 059	2.3	1.8
Sweet chestnut	1 327	17	1 344	1.5	1.2
Horse chestnut	76	0	76	0.1	0.1
Alder	3 409	675	4 084	4.5	3.5
Lime	137	0	137	0.2	0.1
Elm	872	535	1 407	1.6	1.2
Willow	3 513	1 314	4 827	5.3	4.1
Other broadleaves	10 712	2 275	12 987	14.3	11.1
Mixed broadleaves	17 514	3 517	21 031	23.2	18.0
Total broadleaves	**75 513**	**15 162**	**90 712**	**100**	**77.7**
Total – all species	**96 875**	**19 894**	**116 807**		**100.0**

*Areas above exclude the 3 686 ha of Coppiced, Felled and Open Space areas which were included in Table 15.

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	28%
Oak	15%
Other broadleaves	19%
Mixed broadleaves	16%

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	53.6	107.0	782.5	1 601.2	2 544.3	31.9	2.1
Spruce	30.7	77.2	1 004.1	1 489.0	2 601.0	32.6	2.1
Larch	18.6	42.3	259.0	319.4	639.3	8.0	0.5
Cypress	35.8	13.7	330.8	1 327.5	1 707.8	21.4	1.4
Other conifers	21.1	40.0	203.8	220.0	484.9	6.1	0.4
Total conifers	**159.7**	**280.3**	**2 580.1**	**4 957.2**	**7 977.3**	**100.0**	**6.5**
Oak	1 296.7	431.6	2 326.3	4 763.8	8 818.4	7.7	7.2
Beech	174.7	64.7	779.7	2 392.6	3 411.7	3.0	2.8
Sycamore	358.9	157.6	2 021.9	3 456.5	5 994.9	5.2	4.9
Ash	1 263.5	239.0	3 656.2	6 629.5	11 788.2	10.2	9.6
Birch	167.9	475.7	2 598.3	2 848.3	6 090.2	5.3	4.9
Poplar	46.6	16.6	370.4	1 041.6	1 475.2	1.3	1.2
Sweet chestnut	10.8	10.0	16.7	49.4	86.8	0.1	0.1
Horse chestnut	64.6	39.2	100.1	269.1	473.0	0.4	0.4
Alder	95.7	75.6	1 141.0	3 073.0	4 385.3	3.8	3.6
Lime	62.6	28.3	109.7	286.2	486.8	0.4	0.4
Elm	113.1	22.6	1 472.3	3 746.1	5 354.1	4.6	4.3
Willow	267.7	229.2	3 809.5	5 549.2	9 855.6	8.6	8.0
Other broadleaves	1 811.0	1 447.0	15 185.5	38 486.5	56 930.0	49.4	46.2
Total broadleaves	**5 733.6**	**3 237.2**	**33 587.6**	**72 591.8**	**115 150.2**	**100.0**	**93.5**
Total – all species	**5 894.3**	**3 516.9**	**36 348.1**	**77 548.8**	**123 127.8**		**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	3%
Groups	4%
Narrow Linear Features	5%

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	0.8	6.5	22.6	37.8	67.7	42.3	3.3
Spruce	0.0	6.3	10.4	42.1	58.8	36.8	2.8
Larch	1.5	7.0	8.0	9.9	26.4	16.5	1.3
Cypress	0.0	0.8	3.4	2.3	6.5	4.1	0.3
Other conifers	0.0	0.0	0.0	0.6	0.6	0.4	0.0
Total conifers	**2.3**	**20.6**	**44.3**	**92.8**	**160.0**	**100.0**	**7.7**
Oak	20.4	9.2	27.5	30.6	87.7	4.6	4.2
Beech	3.2	1.6	5.5	15.8	26.1	1.4	1.3
Sycamore	0.0	0.8	3.2	4.3	8.3	0.4	0.4
Ash	11.9	4.2	15.9	45.8	77.8	4.1	3.8
Birch	8.0	10.4	45.3	42.1	105.8	5.5	5.1
Poplar	0.0	0.9	0.8	0.7	2.4	0.1	0.1
Sweet chestnut	0.8	0.0	0.0	0.0	0.8	0.0	0.0
Horse chestnut	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alder	4.0	2.4	22.2	42.2	70.8	3.7	3.4
Lime	5.6	0.8	0.0	0.0	6.4	0.3	0.3
Elm	45.9	7.1	230.2	824.1	1 107.3	57.9	53.4
Willow	0.0	0.8	15.9	29.9	46.6	2.4	2.2
Other broadleaves	26.2	31.2	151.6	164.8	373.8	19.5	18.0
Total broadleaves	**126.0**	**69.4**	**518.0**	**1 200.2**	**1 913.8**	**100.0**	**92.3**
Total – all species	**133.2**	**90.0**	**562.3**	**1 293.0**	**2 073.8**		**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	45.0	86.4	27.7	4.0	163.1
Spruce	37.9	53.7	13.4	0.8	105.8
Larch	17.5	37.3	5.4	0.8	61.0
Cypress	29.7	19.1	0.8	0.0	49.6
Other conifers	24.0	22.5	9.7	4.9	61.1
Total conifers	**154.1**	**219.0**	**57.0**	**10.5**	**440.6**
Oak	265.4	887.2	496.2	79.7	1 728.5
Beech	72.8	102.7	50.4	13.5	239.4
Sycamore	171.5	277.4	63.6	4.0	516.5
Ash	340.6	861.6	272.5	27.9	1 502.6
Birch	277.3	350.1	15.9	0.0	643.3
Poplar	12.0	39.0	6.4	5.7	63.1
Sweet chestnut	8.8	7.1	4.0	1.6	21.5
Horse chestnut	62.2	32.7	8.8	0.0	103.7
Alder	65.5	101.0	4.7	0.0	171.2
Lime	34.2	29.3	18.9	8.4	90.8
Elm	66.3	63.9	4.8	0.8	135.8
Willow	310.6	161.3	20.9	4.1	496.9
Other broadleaves	2 566.6	669.3	16.4	5.8	3 258.1
Total broadleaves	**4 253.8**	**3 582.6**	**983.5**	**151.5**	**8 971.4**
Total – all species	**4 407.9**	**3 800.8**	**1 040.5**	**162.0**	**9 412.0**

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	128.5	492.9	124.1	37.0	782.6
Spruce	487.3	382.8	131.6	2.4	1 004.1
Larch	68.8	165.1	24.3	0.8	259.0
Cypress	143.0	172.6	13.5	1.6	330.8
Other conifers	67.8	99.1	24.7	12.2	203.8
Total conifers	**895.4**	**1 312.5**	**318.2**	**54.0**	**2 580.2**
Oak	382.7	1 433.5	450.1	63.4	2 329.7
Beech	169.2	402.4	151.5	57.7	780.9
Sycamore	396.1	1 356.6	252.8	19.6	2 025.1
Ash	973.6	2 227.6	432.8	28.5	3 662.5
Birch	1 099.8	1 464.8	34.7	4.0	2 603.3
Poplar	56.4	245.8	60.1	8.8	371.1
Sweet chestnut	6.4	4.8	5.5	0.0	16.7
Horse chestnut	12.3	67.8	16.8	3.2	100.1
Alder	278.5	803.9	58.9	1.6	1 143.0
Lime	31.9	49.5	22.4	6.2	110.0
Elm	521.6	937.8	13.5	2.4	1 475.3
Willow	2 108.1	1 635.7	63.4	10.5	3 817.7
Other broadleaves	11 554.9	3 550.6	41.2	6.5	15 153.2
Total broadleaves	**17 591.6**	**14 180.9**	**1 603.7**	**212.4**	**33 588.1**
Total – all species	**18 487.0**	**15 493.4**	**1 921.9**	**266.4**	**36 168.1**

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	481.3	930.7	167.4	21.9	1 601.2
Spruce	568.2	878.9	40.0	2.1	1 489.1
Larch	180.4	113.6	25.4	0.0	319.4
Cypress	453.7	815.5	39.1	19.4	1 327.6
Other conifers	65.7	120.0	24.5	9.8	220.0
Total conifers	**1 749.3**	**2 858.7**	**296.4**	**53.2**	**4 957.4**
Oak	843.1	0.0	0.0	0.0	843.1
Beech	494.7	0.0	0.0	0.0	494.7
Sycamore	1 050.6	0.0	0.0	0.0	1 050.6
Ash	1 285.3	0.0	0.0	0.0	1 285.3
Birch	1 181.4	0.0	0.0	0.0	1 181.4
Poplar	68.0	0.0	0.0	0.0	68.0
Sweet chestnut	8.4	0.0	0.0	0.0	8.4
Horse chestnut	42.6	0.0	0.0	0.0	42.6
Alder	472.2	0.0	0.0	0.0	472.2
Lime	100.6	0.0	0.0	0.0	100.6
Elm	1 862.0	0.0	0.0	0.0	1 862.0
Willow	1 934.2	0.0	0.0	0.0	1 934.2
Other broadleaves	27 715.5	0.0	0.0	0.0	27 715.5
Total broadleaves	**37 058.5**	**0.0**	**0.0**	**0.0**	**37 058.5**
Total – all species	**38 807.8**	**2 858.7**	**296.4**	**53.2**	**42 016.1**

Table 22 Number of Groups by group size

Number of trees per Group*	Number of Groups (000s)
2	929
3–5	1 950
6–10	1 141
11–20	812
21–50	439
51–100	106
>100	22
Total	**5 400**

*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 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 23a:	Comparison of woodland area between 1980 Census and 1998 Inventory (based on 1980 methodology)
Table 23b:	Comparison of woodland area between 1980 Census and 1998 Inventory (based on 1998 methodology)
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 (1870–2000)
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 23a Comparison of woodland area between 1980 Census and 1998 Inventory (based on 1980 methodology)

Woodland size (ha)	1980 Census woodland area		1998 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	1 998 642	94.8	2 544 631	95.7	27
0.25 – <2.0	109 755	5.2	107 075	4.0	-2
Total	**2 108 397**		**2 658 775**		**26**
% Woodland land cover	**9.4**		**11.9**		

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. The 1998 figures will therefore not match those in the previous sections of the report.
3. Land area used to calculate woodland cover percent, 22 376 918 hectares, i.e. Great Britain minus the Western and Northern Isles, was based on the 1991 Census of Population digital boundaries.
4. The land area used in the 1980 Cenus was 22 441 592 hectares (Ordnance Survey data).

Table 23b Comparison of woodland area between 1980 Census and 1998 Inventory (based on 1998 methodology)

Woodland size (ha)	1980 Census woodland area	1998 Inventory woodland area	Change (%)
	(ha)	(ha)	(%)
Total	**2 113 472**	**2 665 125**	**26**
% Woodland land cover	**9.2**	**11.6**	

1. The 1980 figures above include estimates for woodland 0.1 and <0.25 hectares and woodland area in the Western and Northern Isles.
2. The land area used to calculate woodland cover percent, 22 933 252 hectares, is the total Great Britain area based on the 1991 Census Population digital boundaries.

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	219 746	219 438	0
Corsican pine	44 146	45 350	3
Lodgepole pine	114 865	134 076	17
Sitka spruce	479 447	683 656	43
Norway spuce	107 567	76 206	-29
European larch	37 219	22 485	-40
Japanese/hybrid larch	102 659	107 677	5
Douglas fir	44 142	45 224	2
Other conifers	29 568	29 209	-1
Mixed conifers	31 884	16 188	-49
Total conifers	**1 211 242**	**1 379 509**	**14**
Oak	177 607	206 154	16
Beech	69 853	76 551	10
Sycamore	48 141	61 357	27
Ash	72 503	119 232	64
Birch	120 696	155 355	29
Poplar	12 707	10 418	-18
Sweet chestnut	9 487	10 800	14
Elm	8 761	3 743	-57
Other broadleaves	76 252	97 915	28
Mixed broadleaves	60 545	139 196	130
Total broadleaves	**656 551**	**880 721**	**34**
Total – all species	**1 867 793**	**2 260 230**	**21**
Felled	**36 622**	**47 040**	**28**
Total High Forest	**1 904 416**	**2 307 270**	**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 8.1% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 8.1%.

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

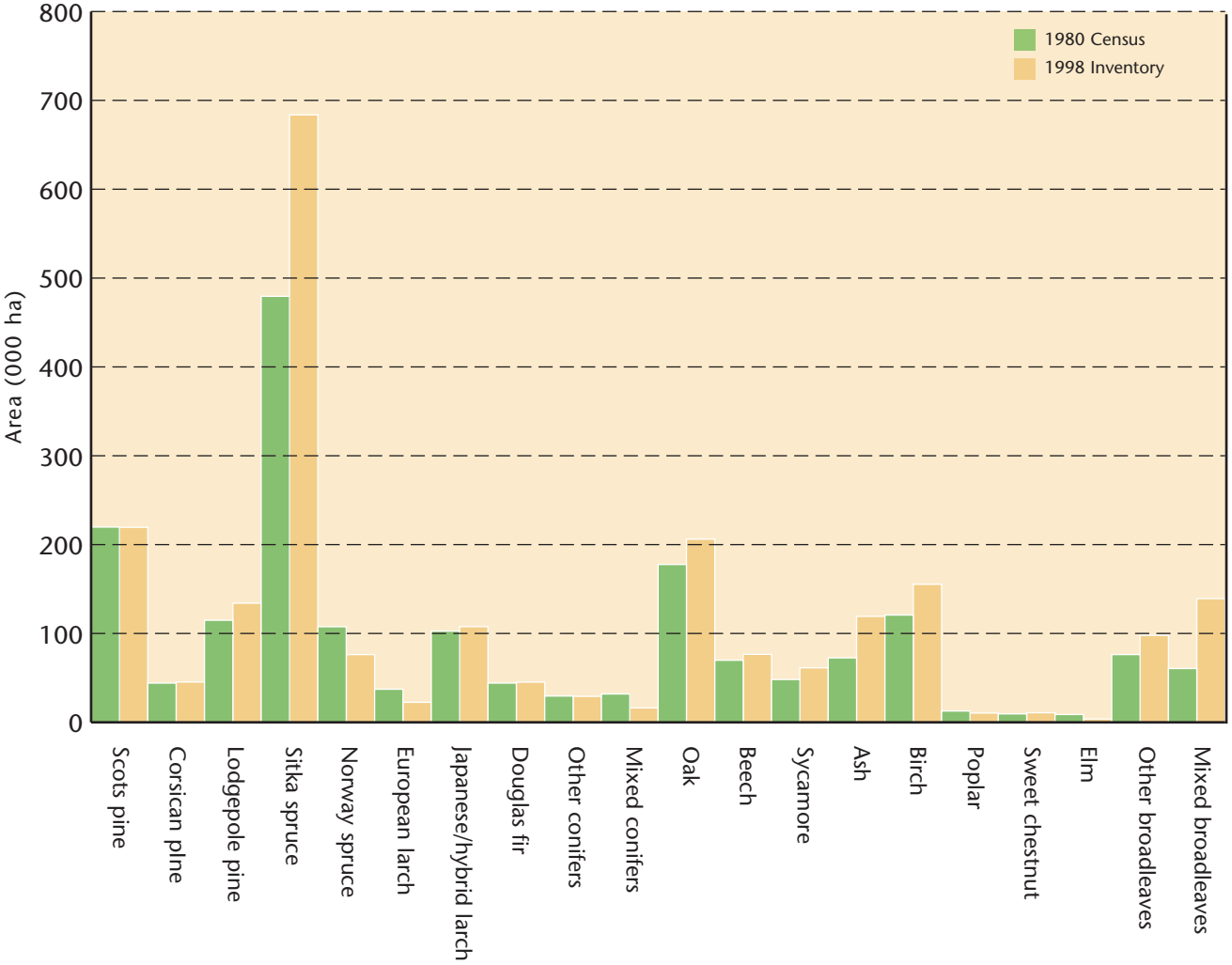


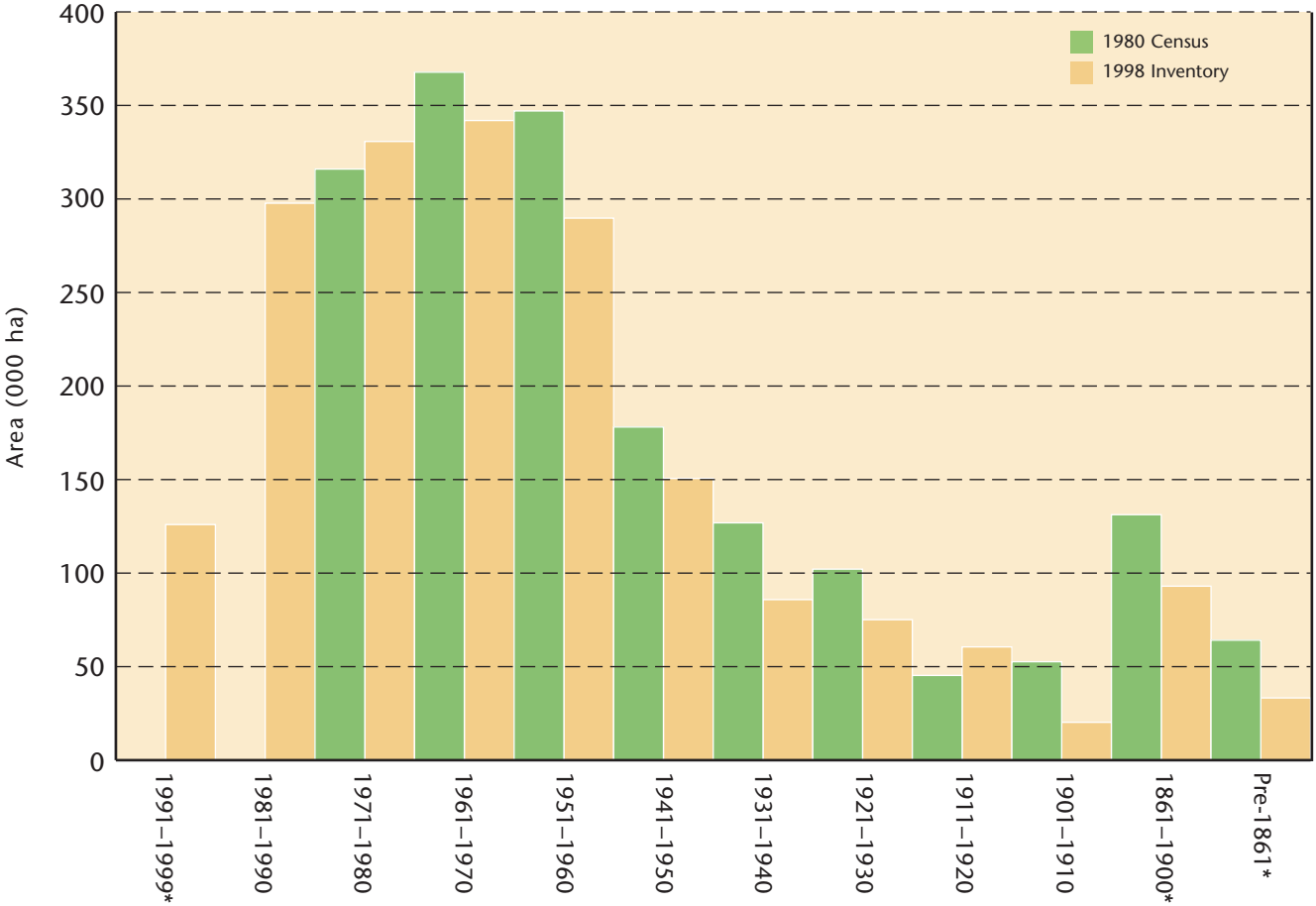
Table 25 Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory

Planting year class	1980 Census woodland area (ha)	1998 Inventory woodland area (ha)	Change (%)
1991–1999	0	125 951	-*
1981–1990	0	297 728	-*
1971–1980	315 981	330 733	5
1961–1970	367 772	341 931	-7
1951–1960	347 053	289 753	-17
1941–1950	178 090	150 611	-15
1931–1940	126 863	85 832	-32
1921–1930	102 119	75 105	-26
1911–1920	45 306	60 552	34
1901–1910	52 621	20 246	-62
1861–1900	131 222	93 014	-29
Pre-1861	64 141	33 263	-48
Total: all years	**1 731 168**	**1 904 719**	**10**

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

1. The definition of 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, 1991–1999 is 9 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	8 014	5 048	-37
Middle tree	10 063	2 670	-73
Total Individual Trees	**18 077**	**7 717**	**-57**
Groups	32 644	19 665	-40
Linear Features	37 213	40 542	9
Total	**87 934**	**67 924**	**-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 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 1999 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)	232.7	98.1	-58
Groups (per km^2)	75.4	58.9	-22
Linear Features (m per km^2)	1 538.1	1 563.7	2

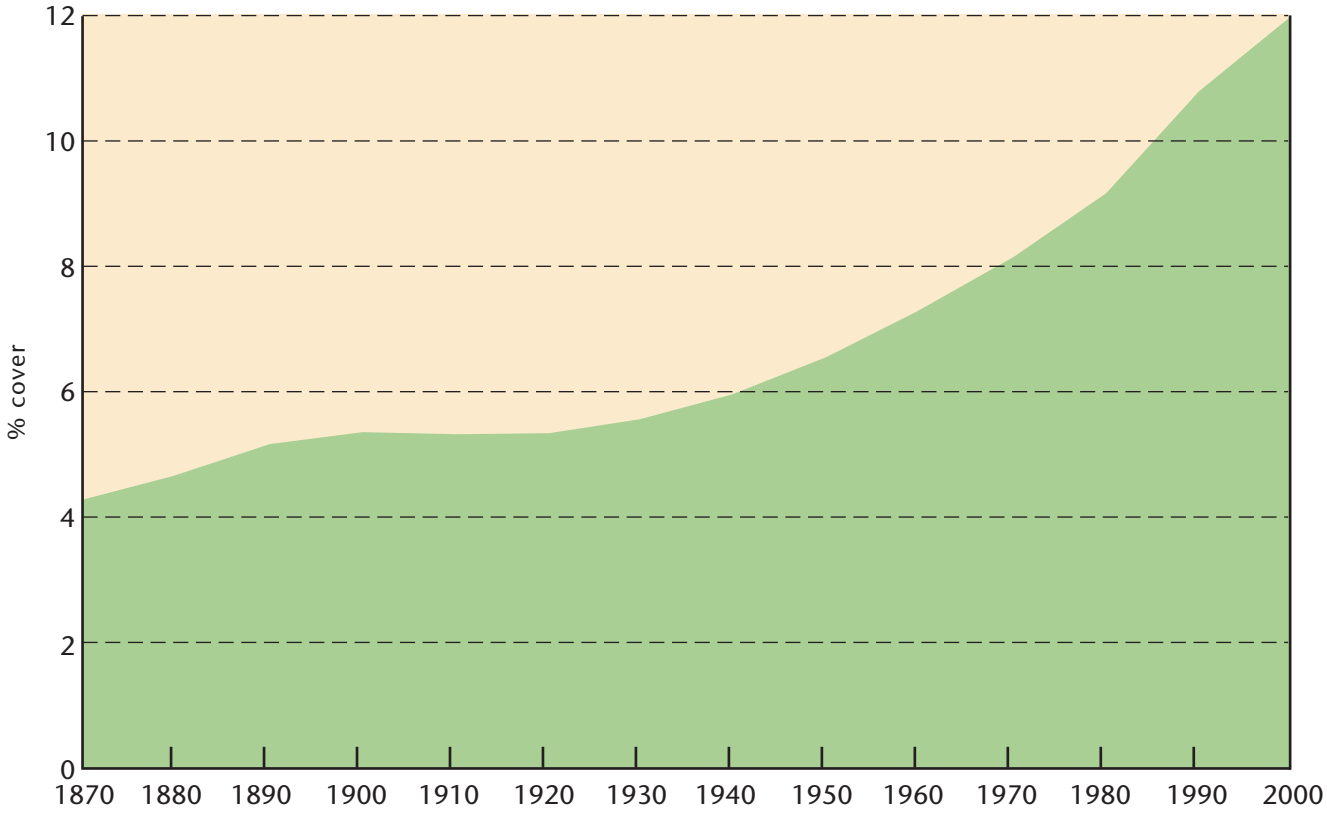
1. The Survey of Small Woodland and Trees did not record information referring to tree features (i.e. Individual trees, Groups and Narrow Linear features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded; the 1998 Inventory figures have been adjusted accordingly. The 1998 figures above will therefore not match those in the previous sections of the report.
3. Land area used to calculate density of features, 22 376 918 ha, i.e. Great Britain minus the Western and Northern Isles, was based on the 1991 Census of Population digital boundaries.
4. 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.
5. See Glossary for definitions of feature types.

WOODLAND COVER

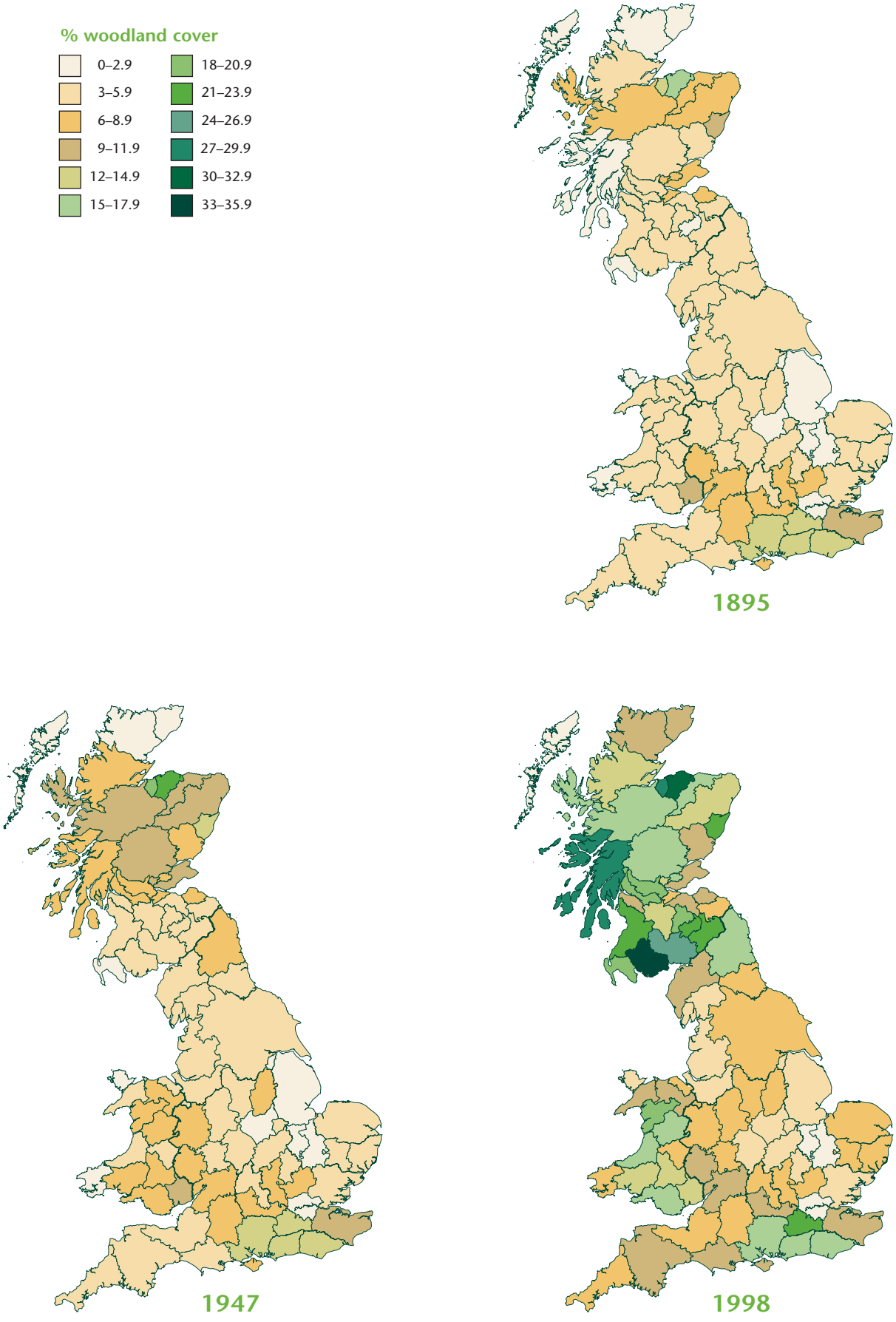
Woodland area data is available from Ministry of Agriculture surveys since 1871, and from Forestry Commission national woodland inventories since 1924. The following chart and maps show the changes in woodland area through time.

The maps use the old county structure of Great Britain, 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 (1870–2000)



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 and trees by country – excluding the Orkney and Shetland Islands which were not covered by this survey. Full reports of the results are available separately for each country by region or county.

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

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

APPENDIX 1

Summary of woodland area by country and woodland size

Country*	Woodland size (ha)**		Total area (ha)	Woodland cover (%)
	2.0 or more	0.1 – <2.0		
Scotland	1 252 774	28 698	1 281 472	16.4
England	1 021 822	75 063	1 096 885	8.4
Wales	270 035	16 734	286 769	13.8
Great Britain	**2 544 631**	**120 494**	**2 665 125**	**11.6**

*Areas of countries 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 country and forest type

Country	Forest type								Total
	Conifer	Broad-leaved	Mixed	Coppice	Coppice -w-stds	Wind-blow	Felled	Open Space	
Scotland	888 317	176 519	53 696	553	630	4 319	23 303	134 130	1 281 472
England	280 259	571 051	135 318	11 674	10 710	1 140	15 100	71 634	1 096 885
Wales	137 474	106 855	22 040	488	0	48	8 961	10 902	286 767
Total	**1 400 905**	**868 687**	**213 982**	**12 767**	**11 340**	**5 944**	**50 597**	**230 067**	**2 665 126**

1. See Glossary for definitions of forest types.

APPENDIX 3

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

Country*	Total number	Feature type			Total live trees	Tree density (per km^2)
		Groups	Narrow Linear Feature	Individual Trees		
Scotland	Features	1 349.1	233.0	2 216.8		
	Live trees	7 888.7	8 471.4	2 216.8	18 576.9	245
England	Features	3 299.2	1 172.8	6 276.8		
	Live trees	22 431.1	60 509.1	6 276.8	89 217.0	684
Wales	Features	772.0	171.3	917.4		
	Live trees	5 848.3	8 568.3	917.4	15 334.0	738
Total	**Features**	**5 420.3**	**1 577.1**	**9 411.0**		
	Live Trees	**36 168.1**	**77 548.8**	**9 411.0**	**123 127.9**	**1 626**

*Areas of countries used to derive tree density per km^2 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 country

Country*	Total number of features (000s)	Total length of features (km)	Density (m per km^2)
Scotland	253.4	18 079	239
England	1 207.0	95 979	736
Wales	172.1	14 567	702
Total	**1 632.5**	**128 625**	**561**

* Areas of countries used to derive length per km^2 based on digital boundaries used in 1991 Census of Population.

1. The Northern Isles were included in the Main Woodland Survey but not the Survey of Small Woods and Trees.

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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