National Inventory of Woodland and Trees

of Woodland and Trees

England

County Report for

Tyne and Wear

Forestry Commission

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Enquiries regarding this report should be directed to:

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ACKNOWLEDGEMENTS

INTRODUCTION

This report presents the results for Tyne and Wear 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 With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees.*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, 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 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:

-         2.0ha - <100ha   : every fifth wood
-         100ha - <500ha   : two woods in five
-         500ha 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 have 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 England was stratified into coastal and inland 1 km x 1 km squares and a random sample of 1 km² 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 km² was then divided into 16 parts, and two of these were selected at random for field data collection. Data was collected on Small Woodlands (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 Tyne & Wear is 2892 hectares. This represents 5.4% of the land area. (Table 1)

- Broadleaved woodland is the dominant forest type representing 60.7 % of all woodland. Conifer woodland represents 27.2 %, Mixed woodland 10.7 % and Open Space within woodlands 1.4 %. (Table 2)

- The main conifer species is pine covering 434 hectares or 44 % of all conifer species. The main broadleaved species is oak covering 176 hectares or 15 % of all broadleaved species. (Table 3)

- 689 hectares or 26 % of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 2007 hectares or 74 % of woodland is in Other ownership. (Table 6)

- There are a total of 214 woods over 2 ha within Tyne & Wear with a mean wood area of 12.6 hectares. (Table 7a) There are a total of 131 woods from 0.1 - <2.0 hectares with a mean wood area of 1.5 hectares. (Table 14)

- There are 1.4 thousand live trees outside woodland in Tyne & Wear. (Table 15)

- Woodland land cover increased by over 1202 hectares from 3.1 % to 5.4 % of the land area between 1980 and 1999. (Table 19)

- The area of broadleaves increased by 111 % between 1980 and 1999, with the relative proportion of broadleaves to conifers increasing from 53 % to 66 %. (Table 20)

INVENTORY REPORTS

As well as this report for Tyne and Wear, reports are available for the other counties in the region as shown on the map opposite. Also available are region and county reports for England as well as a report for the country as a whole. Wales and Scotland are also covered by reports.

Map 1 Regional and county boundaries

Northumberland

North East Region

Tyne & Wear

North West Region

Durham

Cleveland

Yorkshire & the Humber Region
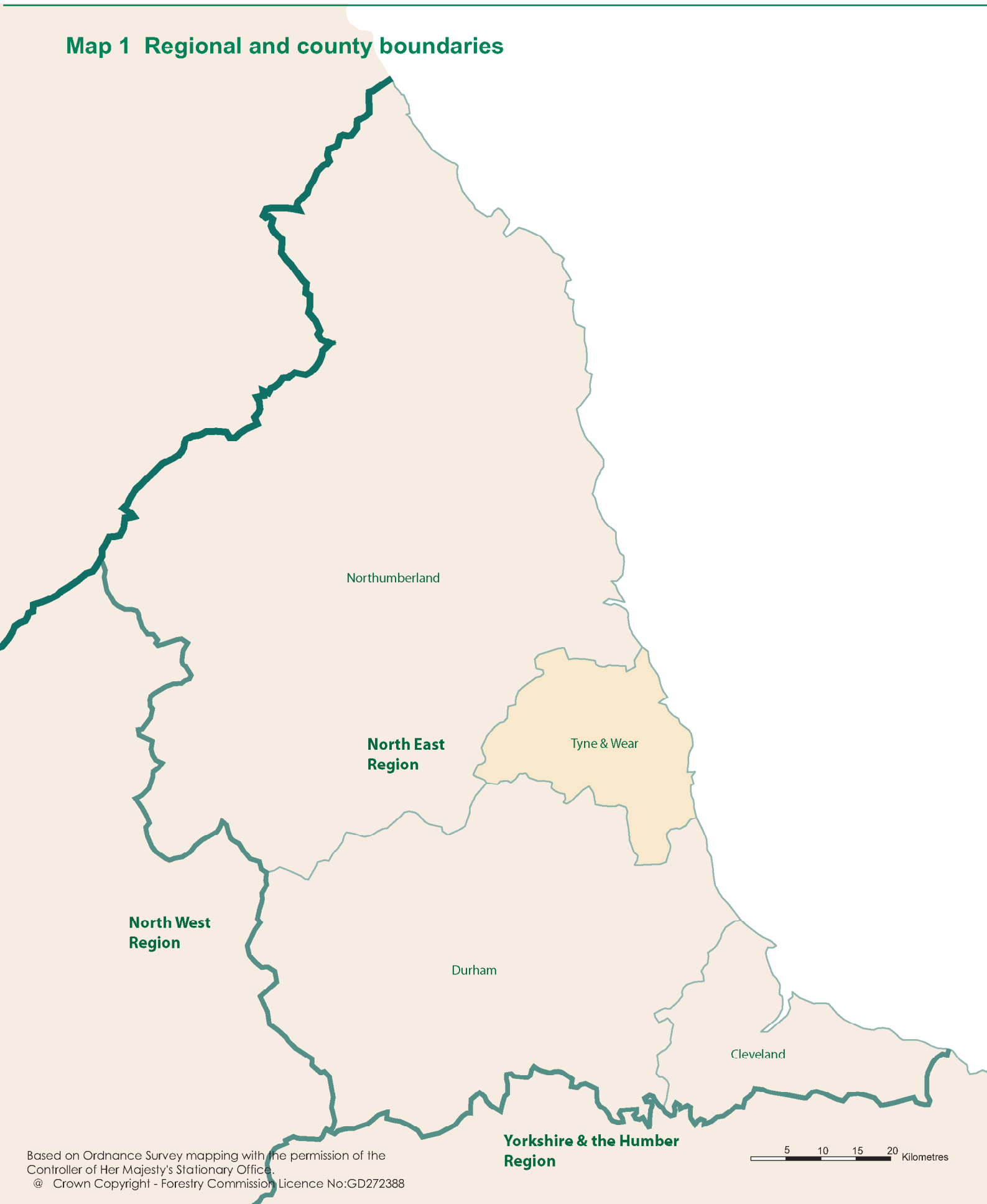
5   10   15   20   Kilometres
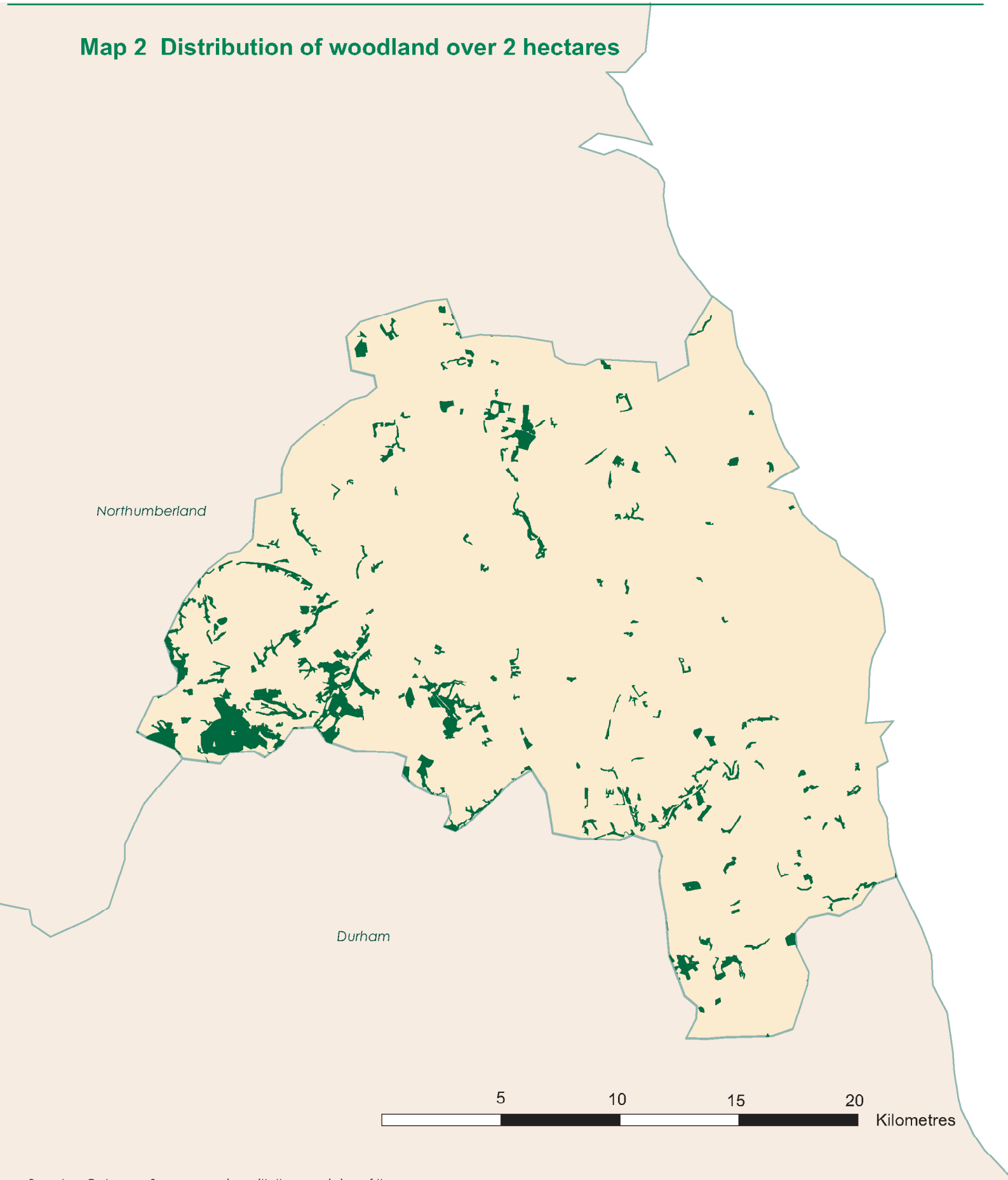
Based on Ordnance Survey mapping with the permission of the
Controller of Her Majesty's Stationary Office.
@   Crown Copyright - Forestry Commission Licence No:GD272388

Reference Date 31 March 1999

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Map 2 Distribution of woodland over 2 hectares

Northumberland

Durham

5   10   15   20

Kilometres

Map 3 Distribution of woodland over 2 hectares by ownership

Forestry Commission woodland
Other woodland

Northumberland

Durham

5   10   15   20

Kilometres

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

Legend:
- Broadleaves
- Conifer
- Mixed
- Felled
- Young trees & shrubs
- Ground prepared for planting (none present)
- Coppice (none present)

Northumberland

Durham

5   10   15   20

Kilometres

Reference Date 31 March 1999

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 Tyne and Wear.

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)	% of Woodland area
2.00 and over	2,696	93.2
0.25 - < 2.00	196	6.8
0.10 - < 0.25	0	0.0
Total area of woodland	**2,892**	**100.0**
% Woodland land cover	**5.4**	

1.   Area of Tyne and Wear, including inland water, 54,033 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	Percentage of
	2.0 and over	0.1 - <2.0	(ha)	total area
Coniter	592	196	788	27.2
Broadleaved	1,756	0	1,756	60.7
Mixed	308	0	308	10.7
Coppiced	0	0	0	0.0
Copp-w-standards	0	0	0	0.0
Windblow	0	0	0	0.0
Felled	0	0	0	0.0
Open Space	40	0	40	1.4
Total	**2696**	**196**	**2,892**	**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	Percentage of total area	
	2.0 and over	0.1 -<2.0	(ha)	Category*	Species**
Pine	398	36	434	44.3	15.2
Sitka spruce	23	79	102	10.4	3.6
Larch	284	33	317	32.4	11.1
Other conifers	0	0	0	0.0	0.0
Mixed conifers	78	46	124	12.7	4.3
Total conifers	**785**	**194**	**979**	**100.0**	**34.3**
Oak	276	0	276	14.7	9.7
Beech	264	0	264	14.1	9.3
Sycamore	619	0	619	33.0	21.7
Ash	168	0	168	9.0	5.9
Birch	224	3	227	12.1	8.0
Elm	7	0	7	0.4	0.2
Other broadleaves	266	0	266	14.2	9.3
Mixed broadleaves	49	0	49	2.6	1.7
Total broadleaves	**1,871**	**3**	**1,874**	**100.0**	**65.7**
Total all species*	**2,656**	**196**	**2,853**		**100.0**

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

***Excludes the 40ha of Coppice. Felled and Open space areas which were included in Table 2

1.   The standard errors of the area estimates for woodland of 2 ha and over
          for the most common species or species groups are as follows

            Conifers   18%
            Broadleaves   10%
            Pine   27%
            Larch   34%
            Sycamore   20%

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	0	0	0	0
Narrow Linear Features	0	0	0	0
Individual Trees	1,400	1,400	1	3
Total		1,400		3

1. Land area used to calculate tree density 54,033ha 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   -
    Narrow Linear Features   -
    Individual Trees   93%

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	0	0	0
Narrow Linear Features	0	0	0
Total		0	0

1. **In Tyne and Wear the field data did not record any trees occurring in these feature types.**

2. 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 sample plots was reduced as the sampled woodland increase in size, the general aim being to sample 1% of the 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	689	26
Other	2,007	74
Total area of woodland	**2,696**	**100**

1.   Woodland area from aerial photographic interpretation map updated to 31 March 1999

2.   See Glossary for definitions of ownership types

Woodland area by ownership

■ Forestry Commission
■ Other ownership
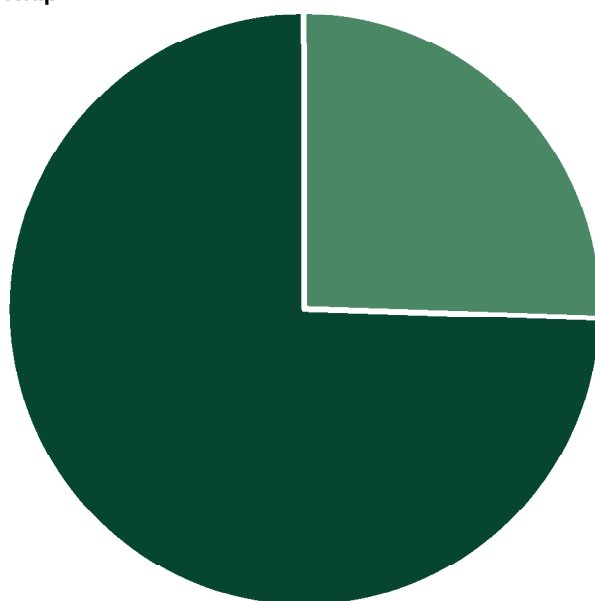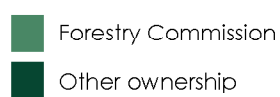
Table 7a Size class distribution of woodland

Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	164	733	27	4.5
10 - <20	29	402	15	13.8
20 - <50	13	414	15	31.9
50 - <100	5	377	14	75.5
<100	211	1,926	71	9.1
100 - <500	3	770	29	256.7
500 and >	0	0	0	0.0
All woods	214	2,696	100	12.6

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	4	19	1	4.6
	O	187	781	29	4.2
10 - <20	FC	2	27	1	13.4
	O	29	401	15	13.8
20 - <50	FC	1	20	1	20.2
	O	16	506	19	31.6
50 - <100	FC	2	152	6	75.8
	O	4	318	12	79.5
<100	FC	9	217	8	24.1
	O	236	2,007	74	8.5
100 - <500	FC	2	470	17	234.9
	O	0	0	0	0.0
500 and >	FC	0	0	0	0.0
	O	0	0	0	0.0
Total	FC	11	687	25	62.5
	O	236	2,007	74	8.5

1.   Table 7a and 7b are based solely on the digital woodland map. The other MWS tables are derived from the field sample data

2.   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 occasionaly 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	446	64.7	146	7.3	592	22.0
Broadleaved	167	24.2	1,589	79.2	1,756	65.1
Mixed	61	8.9	246	12.3	308	11.4
Coppice	0	0.0	0	0.0	0	0.0
Copp-w-Stds	0	0.0	0	0.0	0	0.0
Windblow	0	0.0	0	0.0	0	0.0
Felled	0	0.0	0	0.0	0	0.0
Open Space	15	2.2	25	1.2	40	1.5
Total	689	100.0	2,007	100.0	2,696	100.0

Area of woodland by forest type

- Conifer
- Broadleaves
- Mixed
- Coppice
- Coppice-w-standards
- Felled
- Open Space
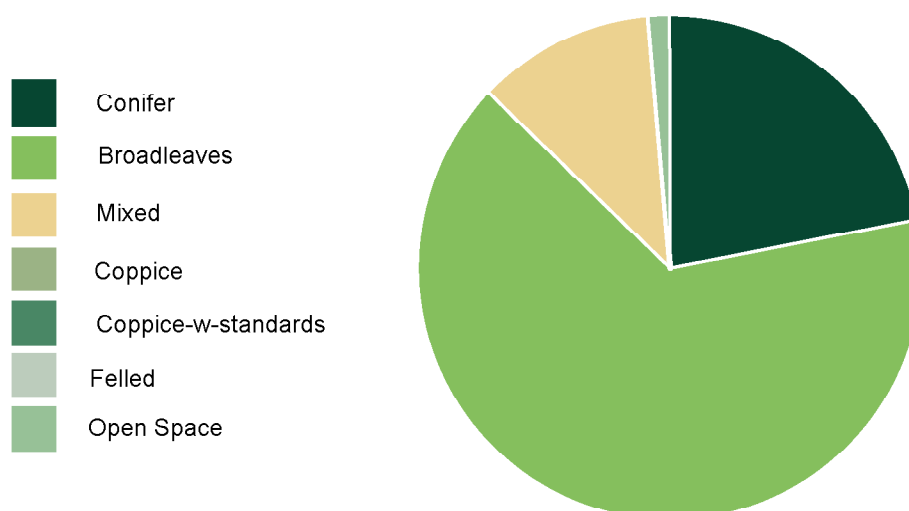
Table 9a Area of High Forest by principal species and ownership

Species	Forestry Commission			Other			All ownerships		
	area (ha)	cat* %	spp** %	area (ha)	cat* %	spp** %	area (ha)	cat* %	spp** %
Scots pine	43	8	6	168	62	8	211	27	8
Corsican pine	171	33	25	0	0	0	171	22	6
Lodgepole pine	2	0	0	15	6	1	16	2	1
Sitka spruce	12	2	2	11	4	1	23	3	1
Norway spruce	32	6	5	0	0	0	32	4	1
European larch	13	3	2	15	6	1	28	4	1
Jap/Hybrid larch	194	38	29	62	23	3	256	33	10
Douglas fir	18	4	3	0	0	0	18	2	1
Other conifers	28	5	4	0	0	0	28	4	1
Mixed conifers	0	0	0	0	0	0	0	0	0
Total conifers	**514**	**100**	**76**	**270**	**100**	**14**	**785**	**100**	**30**
Oak	18	11	3	257	15	13	276	15	10
Beech	73	46	11	191	11	10	264	14	10
Sycamore	12	8	2	607	35	31	619	33	23
Ash	0	0	0	168	10	8	168	9	6
Birch	7	4	1	216	13	11	224	12	8
Poplar	0	0	0	60	4	3	60	3	2
Sweet chestnut	0	0	0	7	0	0	7	0	0
Elm	0	0	0	7	0	0	7	0	0
Other broadleaves	0	0	0	199	12	10	199	11	7
Mixed broadleaves	49	31	7	0	0	0	49	3	2
Total broadleaves	**160**	**99**	**24**	**1,711**	**100**	**86**	**1,871**	**100**	**70**
Total - all species	**674**		**100**	**1,982**		**100**	**2,656**		**100**
Felled	**0**			**0**			**0**		
Total High Forest	**674**			**1,982**			**2,656**		

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

Reference Date: 31 March 1999

1.   In addition to the areas shown there are 40ha 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	18%
Broadleaves	10%
Scots pine	37%
Oak	28%
Sycamore	20%

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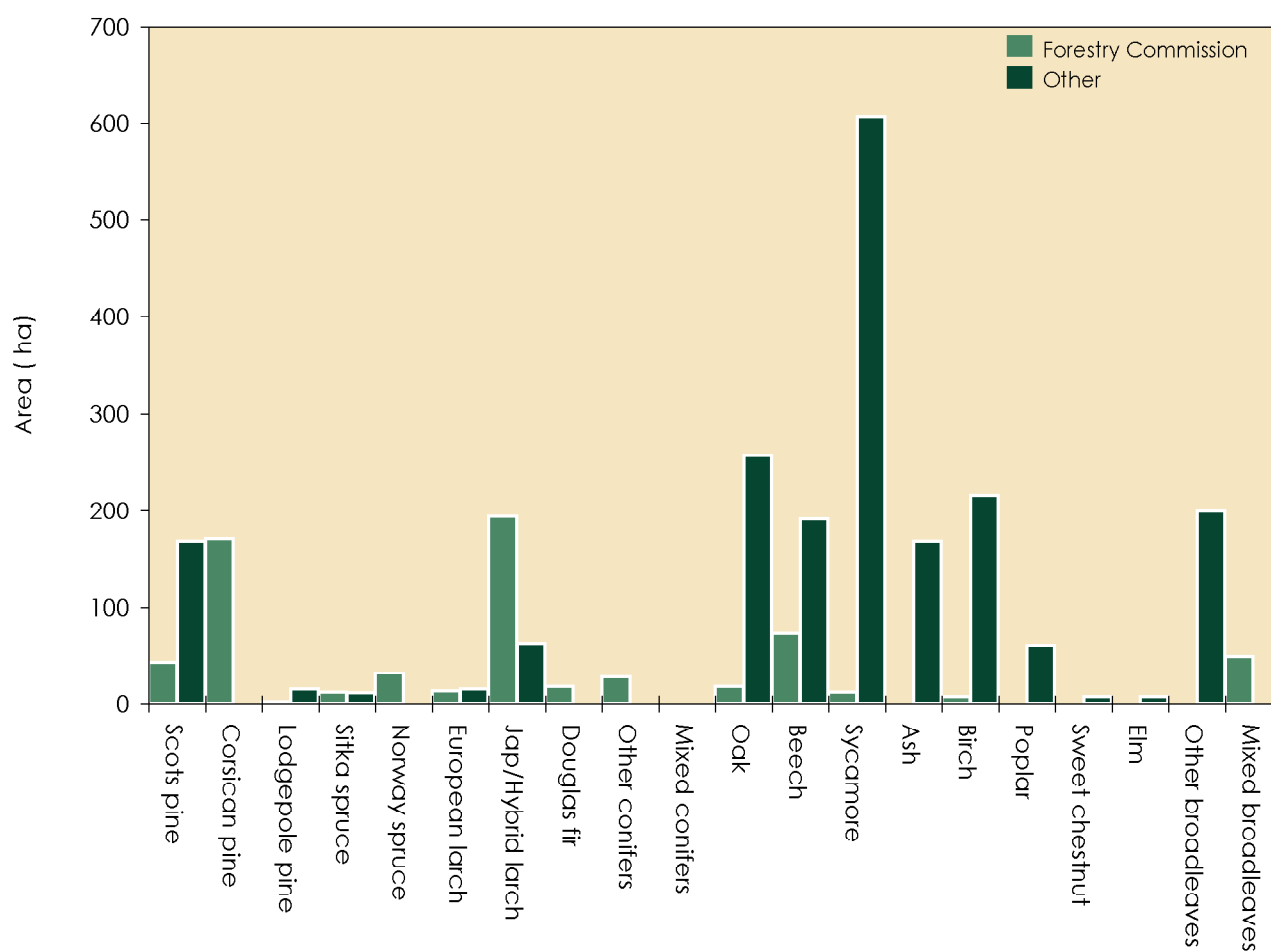
Table 9b Area of High Forest by principal species,ownership and category

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	43	0	43	168	0	168	211	0	211
Corsican pine	171	0	171	0	0	0	171	0	171
Lodgepole pine	2	0	2	15	0	15	16	0	16
Sitka spruce	12	0	12	11	0	11	23	0	23
Norway spruce	32	0	32	0	0	0	32	0	32
European larch	13	0	13	15	0	15	28	0	28
Jap/Hybrid larch	194	0	194	62	0	62	256	0	256
Douglas fir	18	0	18	0	0	0	18	0	18
Other conifers	28	0	28	0	0	0	28	0	28
Mixed conifers	0	0	0	0	0	0	0	0	0
Total conifers	**514**	**0**	**514**	**270**	**0**	**270**	**785**	**0**	**785**
Oak	15	3	18	200	57	257	215	60	276
Beech	73	0	73	160	31	191	233	31	264
Sycamore	12	0	12	450	157	607	462	157	619
Ash	0	0	0	88	80	168	88	80	168
Birch	7	0	7	144	72	216	151	72	224
Poplar	0	0	0	35	25	60	35	25	60
Sweet chestnut	0	0	0	0	7	7	0	7	7
Elm	0	0	0	0	7	7	0	7	7
Other broadleaves	0	0	0	81	118	199	81	118	199
Mixed broadleaves	49	0	49	0	0	0	49	0	49
Total broadleaves	**157**	**3**	**160**	**1,157**	**554**	**1,711**	**1,314**	**557**	**1,871**
Total - all species	**671**	**3**	**674**	**1,427**	**554**	**1,982**	**2,099**	**557**	**2,656**

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	18%	-	18%	
Broadleaves	12%	17%	10%	
Scots pine	36%	-	37%	
Oak	35%	44%	28%	*See Glossary for Category 1
Sycamore	23%	41%	20%	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 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
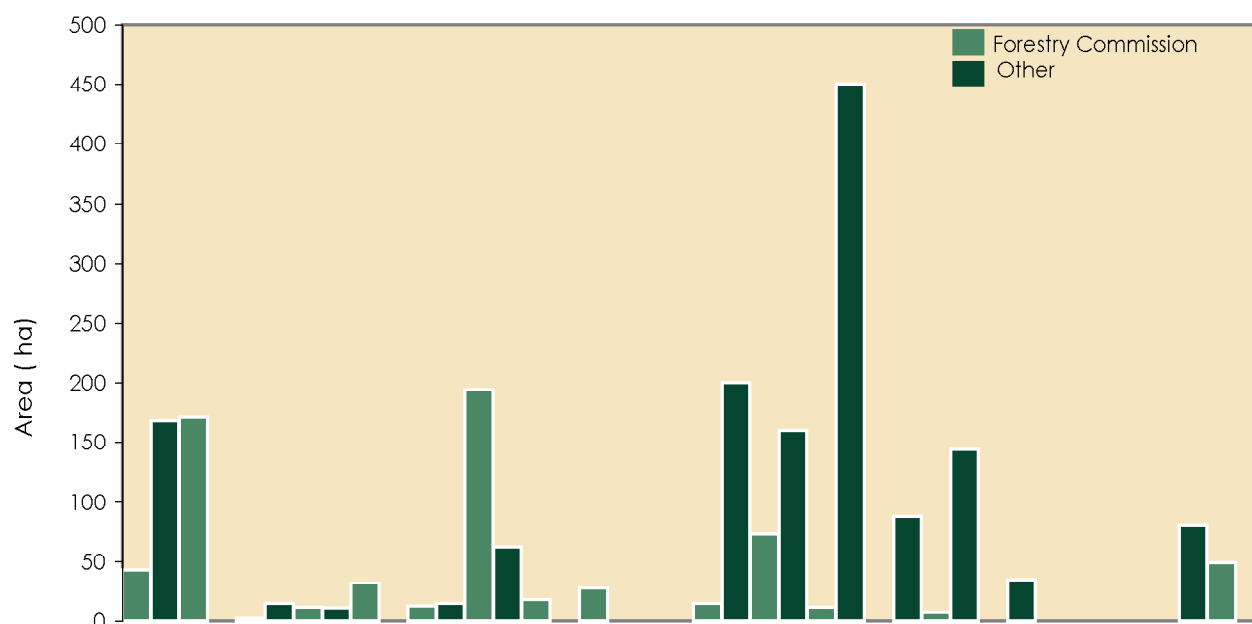
High Forest Category 2 - Area by principal species and ownership
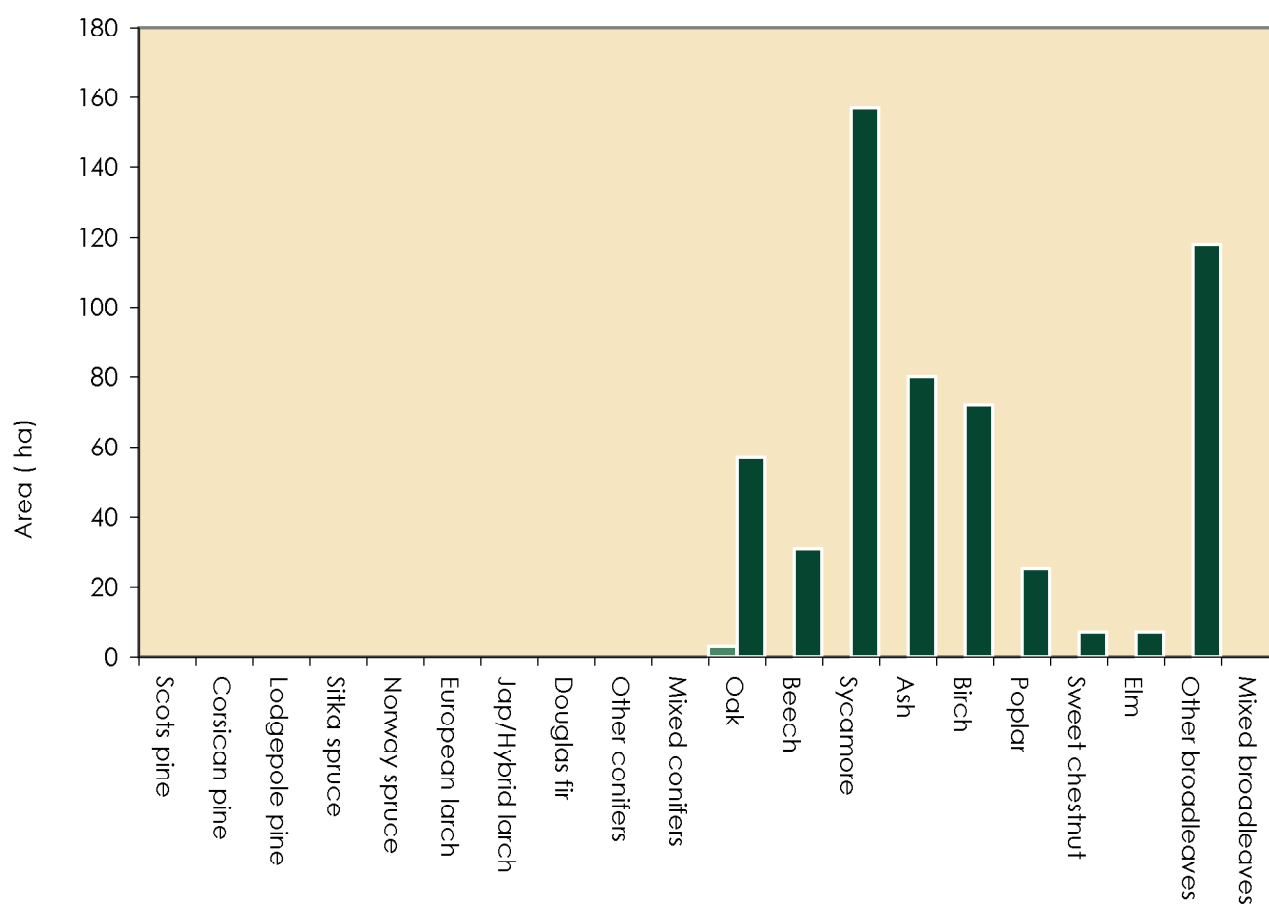
Table 10a High Forest Category 1 - Area by principal species and planting year class

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	25	18	58	79	0	0	29	0	0	0	0	0	211
Corsican pine	0	6	116	0	0	49	0	0	0	0	0	0	171
Lodgepole pine	0	0	15	2	0	0	0	0	0	0	0	0	16
Sitka spruce	7	0	0	4	0	0	12	0	0	0	0	0	23
Norway spruce	12	0	0	0	0	20	0	0	0	0	0	0	32
European larch	0	0	0	15	0	13	0	0	0	0	0	0	28
Jap/Hybrid larch	0	0	67	23	4	118	44	0	0	0	0	0	256
Douglas fir	0	0	18	0	0	0	0	0	0	0	0	0	18
Other conifers	0	0	3	24	0	0	0	0	0	1	0	0	28
Mixed conifers	0	0	0	0	0	0	0	0	0	0	0	0	0
Total conifers	**45**	**25**	**278**	**147**	**4**	**201**	**85**	**0**	**0**	**1**	**0**	**0**	**785**
Oak	58	12	0	4	18	65	3	12	0	0	43	0	215
Beech	0	8	15	0	37	7	0	2	34	0	83	47	233
Sycamore	15	0	36	44	63	99	22	65	0	4	115	0	462
Ash	51	0	18	0	0	0	4	8	0	0	0	7	88
Birch	29	19	15	4	63	18	3	0	0	0	0	0	151
Poplar	0	0	8	27	0	0	0	0	0	0	0	0	35
Sweet chestnut	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	59	8	15	0	0	0	0	0	0	0	0	0	81
Mixed broadleaves	0	0	18	0	12	0	18	0	0	0	0	0	49
Total broadleaves	**211**	**48**	**125**	**79**	**193**	**189**	**50**	**88**	**34**	**4**	**241**	**54**	**1,314**
Total - all species	**256**	**73**	**403**	**225**	**197**	**389**	**135**	**88**	**34**	**4**	**241**	**54**	**2,099**

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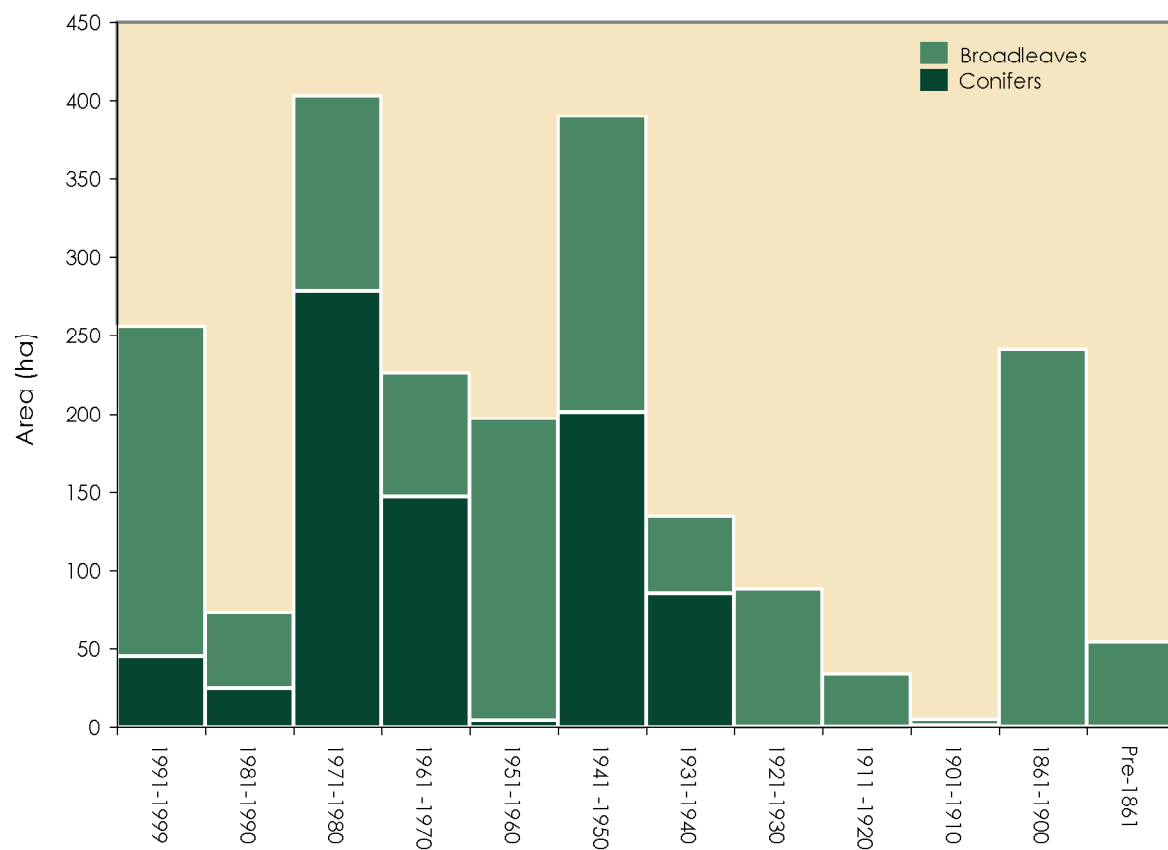
1. Most of the planting year classes cover 10 years, 1991-1999 is 9 years, and the classes prior to 1901 are 40 years or more.

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

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	0	0	18	24	0	0	0	0	0	0	0	0	43
Corsican pine	0	6	116	0	0	49	0	0	0	0	0	0	171
Lodgepole pine	0	0	0	2	0	0	0	0	0	0	0	0	2
Sitka spruce	0	0	0	0	0	0	12	0	0	0	0	0	12
Norway spruce	12	0	0	0	0	20	0	0	0	0	0	0	32
European larch	0	0	0	0	0	13	0	0	0	0	0	0	13
Jap/Hybrid larch	0	0	67	4	4	118	0	0	0	0	0	0	194
Douglas fir	0	0	18	0	0	0	0	0	0	0	0	0	18
Other conifers	0	0	3	24	0	0	0	0	0	1	0	0	28
Mixed conifers	0	0	0	0	0	0	0	0	0	0	0	0	0
Total conifers	**12**	**6**	**224**	**55**	**4**	**201**	**12**	**0**	**0**	**1**	**0**	**0**	**514**
Oak	0	0	0	0	0	0	3	12	0	0	0	0	15
Beech	0	0	0	0	37	0	0	2	34	0	0	0	73
Sycamore	0	0	0	0	12	0	0	0	0	0	0	0	12
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Birch	0	0	0	0	4	0	3	0	0	0	0	0	7
Poplar	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
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed broadleaves	0	0	18	0	12	0	18	0	0	0	0	0	49
Total broadleaves	**0**	**0**	**18**	**0**	**66**	**0**	**24**	**15**	**34**	**0**	**0**	**0**	**157**
Total - all species	**12**	**6**	**242**	**55**	**69**	**201**	**37**	**15**	**34**	**1**	**0**	**0**	**671**

*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.

Reference Date: 31 March 1999

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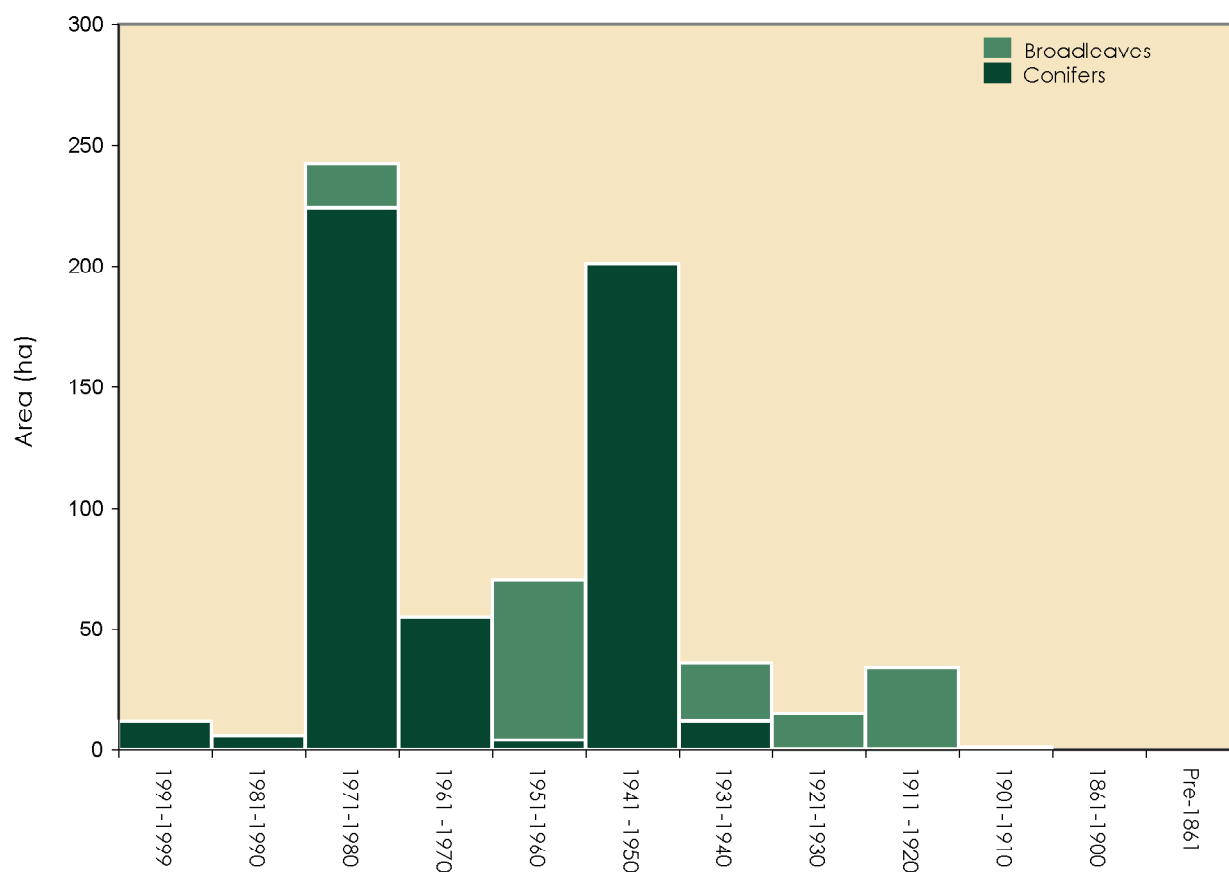

1. Most of the planting year classes cover 10 years, 1991-1999 is 9 years, and the classes prior to 1901 are 40 years or more.

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

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	25	18	40	55	0	0	29	0	0	0	0	0	168
Corsican pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Lodgepole pine	0	0	15	0	0	0	0	0	0	0	0	0	15
Sitka spruce	7	0	0	4	0	0	0	0	0	0	0	0	11
Norway spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
European larch	0	0	0	15	0	0	0	0	0	0	0	0	15
Jap/Hybrid larch	0	0	0	18	0	0	44	0	0	0	0	0	62
Douglas fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Other conifers	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed conifers	0	0	0	0	0	0	0	0	0	0	0	0	0
Total conifers	**32**	**18**	**55**	**92**	**0**	**0**	**73**	**0**	**0**	**0**	**0**	**0**	**270**
Oak	58	12	0	4	18	65	0	0	0	0	43	0	200
Beech	0	8	15	0	0	7	0	0	0	0	83	47	160
Sycamore	15	0	36	44	51	99	22	65	0	4	115	0	450
Ash	51	0	18	0	0	0	4	8	0	0	0	7	88
Birch	29	19	15	4	59	18	0	0	0	0	0	0	144
Poplar	0	0	8	27	0	0	0	0	0	0	0	0	35
Sweet chestnut	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	59	8	15	0	0	0	0	0	0	0	0	0	81
Mixed broadleaves	0	0	0	0	0	0	0	0	0	0	0	0	0
Total broadleaves	**211**	**48**	**106**	**79**	**128**	**189**	**25**	**73**	**0**	**4**	**241**	**54**	**1,157**
Total - all species	**243**	**66**	**161**	**170**	**128**	**189**	**99**	**73**	**0**	**4**	**241**	**54**	**1,427**

*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.

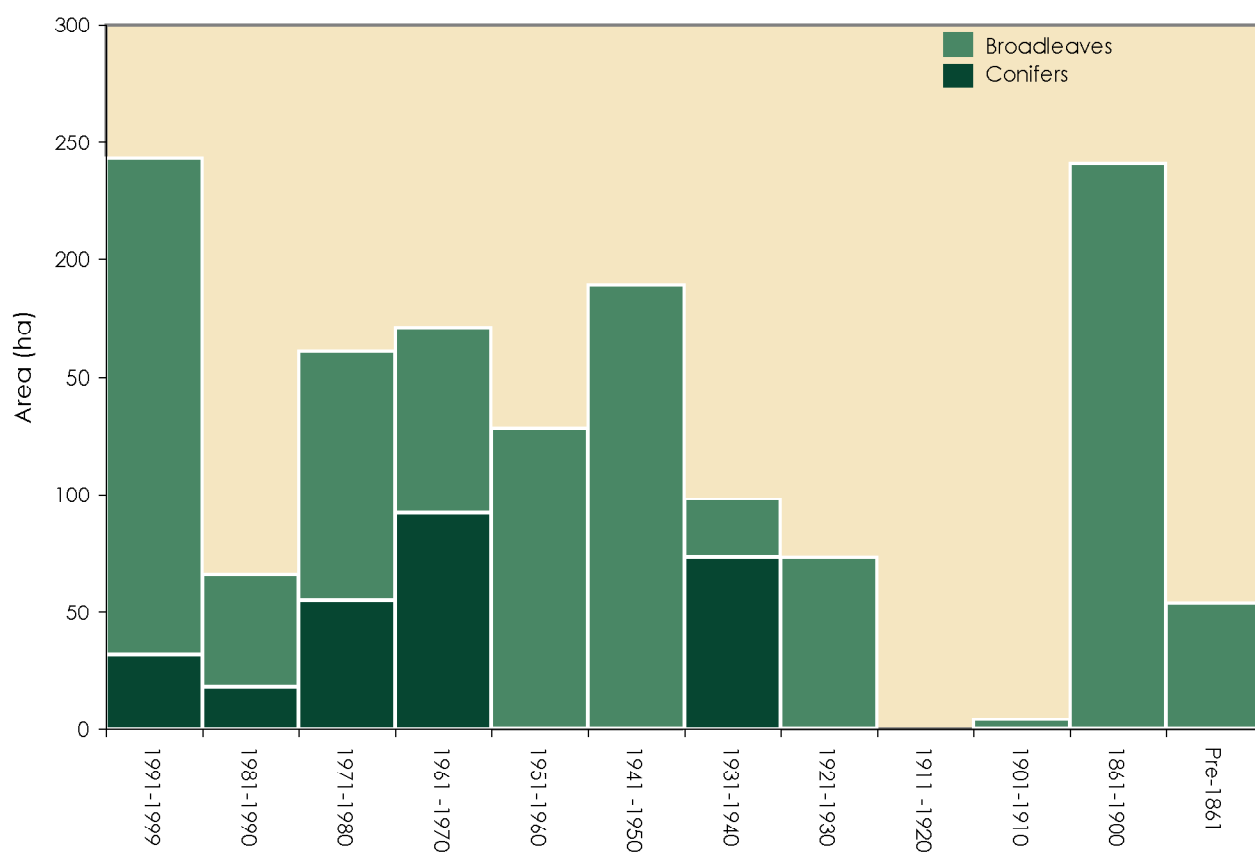**High Forest Category 1 - Other Ownership: area by planting year class**

1. 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	%
1991-99	Other broadleaves	22	Oak	22	Ash	19
1981-90	Other broadleaves	37	Birch	27	Scots pine	13
1971-80	Corsican pine	28	Jap/Hybrid larch	16	Scots pine	14
1961-70	Scots pine	31	Sycamore	17	Other broadleaves	11
1951-60	Sycamore	38	Birch	27	Beech	18
1941-50	Jap/Hybrid larch	25	Sycamore	21	Oak / Birch	14
1931-40	Jap/Hybrid larch	30	Scots pine	20	Sycamore	19
1921-30	Sycamore	74	Oak	14	Ash	9
1911-20	Beech	40	Oak	26	Ash	21
1901-10	Ash	62	Other broadleaves	24	Sycamore	14
1861-1900	Sycamore	52	Beech	22	Oak	18
Pre 1861	Beech	55	Poplars	18	Sycamore	13
All years	**Sycamore**	**23**	**Oak**	**10**	**Beech**	**10**

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

Table 12 Ownership type* by area and percentage

Ownership type	Area (ha)	%
Personal	564	20.9
Business	246	9.1
Forestry or timber business	0	0.0
Charity	0	0.0
Local Authority	1,161	43.0
Other public (not FC)	37	1.4
Forestry Commission	689	25.5
Community ownership or common land	0	0.0
Unidentified	0	0.0
Total	**2,696**	**100.0**

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

Ownership type by area

- Personal
- Businesss
- Forestry or timber business
- Charity
- Local Authority
- Other public
- Forestry Commission
- Community ownership
- Unidentified
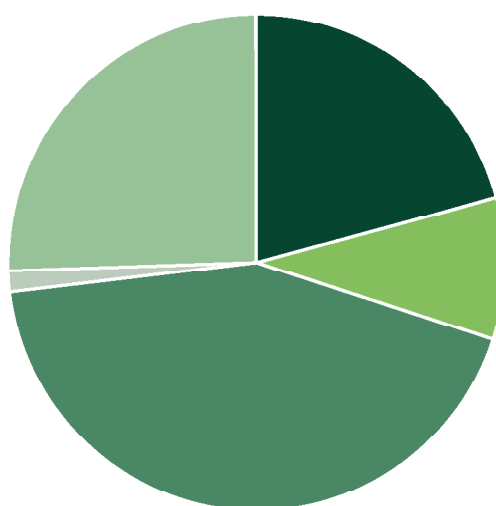
RESULTS FROM THE SURVEY OF SMALL WOODLAND AND TREES (SSWT)

Survey Method

The land area of England 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 Woodlands (0.10 - <2.00 ha), Linear Features, Groups and Individual Trees. The survey did not collect information from areas of developed land of 2 hectares or more.

Table 13:   Summary of information from the Survey of Small Woodland and Trees
Table 14:   Woodland area by feature type and woodland size
Table 15:   Numbers of live trees outside woodland by species and feature type
Table 16 :   Numbers of dead trees outside woodland by species and feature type
Table 17:   Numbers of live trees outside woodland by species and height band
Table 18:   Numbers of Groups by group size

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

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

Feature type	Number of features	Total	Unit
Small Woods	131	196	Area (ha)
Wide Linear Features	0	0	Area (ha)
Wide Linear Features	0	0	Length (Km)
Narrow Linear Features	0	0	Length (Km)
Narrow Linear Features	0	0	Number of live trees
Groups	0	0	Number of live trees
Individual Trees	1,400	1,400	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	Number of	Mean size
	0.1 - <0.25	0.25 - <2.0	(ha)	features	(ha)
Small Woods	0	196	196	131	1.50
Wide Linear Features	0	0	0	0	0.00
Total	0	196	196	131	1.50

1.   See Glossary for definitions of feature types.

Table 15 Numbers of live trees outside woodland by species and feature type (000's trees)

Species	Feature type				Total live trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Larch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other conifers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total conifers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Oak	0.7	0.0	0.0	0.0	0.7	50.0	50.0
Beech	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sycamore	0.7	0.0	0.0	0.0	0.7	50.0	50.0
Ash	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0
Lime	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elm	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Willow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadleaves	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total broadleaves	**1.4**	**0.0**	**0.0**	**0.0**	**1.4**	**100.0**	**100.0**
Total - all species	**1.4**	**0.0**	**0.0**	**0.0**	**1.4**		**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   93%
   Groups   -
   Narrow Linear Features   -

3. See Glossary for definitions of feature types.

Table 16 Numbers of dead trees outside woodland by species and feature type (000's trees)

Species	Feature type				Total dead trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Larch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other conifers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total conifers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Oak	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beech	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sycamore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ash	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0
Lime	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elm	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Willow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadleaves	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total broadleaves	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total - all species	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**		**0.0**

In Tyne and Wear the field data did not record any trees occurring in these feature types

1.   See Glossary for definitions of feature types.

Table 17 Numbers of live trees outside woodland by species and height band (000's trees)

Species	Height band (m)				Total live trees
	2-5	5-15	15-20	>20	
Pine	0.0	0.0	0.0	0.0	0.0
Spruce	0.0	0.0	0.0	0.0	0.0
Larch	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0
Other conifers	0.0	0.0	0.0	0.0	0.0
Total conifers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Oak	0.0	0.7	0.0	0.0	0.7
Beech	0.0	0.0	0.0	0.0	0.0
Sycamore	0.0	0.7	0.0	0.0	0.7
Ash	0.0	0.0	0.0	0.0	0.0
Birch	0.0	0.0	0.0	0.0	0.0
Poplar	0.0	0.0	0.0	0.0	0.0
Sweet chestnut	0.0	0.0	0.0	0.0	0.0
Horse chestnut	0.0	0.0	0.0	0.0	0.0
Alder	0.0	0.0	0.0	0.0	0.0
Lime	0.0	0.0	0.0	0.0	0.0
Elm	0.0	0.0	0.0	0.0	0.0
Willow	0.0	0.0	0.0	0.0	0.0
Other broadleaves	0.0	0.0	0.0	0.0	0.0
Total broadleaves	**0.0**	**1.4**	**0.0**	**0.0**	**1.4**
Total - all species	**0.0**	**1.4**	**0.0**	**0.0**	**1.4**

Table 18 Number of Groups by group size

Number of trees per Group*	Number of Groups (000's)
2	0
3-5	0
6-10	0
11-20	0
21-50	0
51-100	0
>100	0
Total	**0**

In Tyne and Wear the field data did not record any trees occurring in these feature types.

*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 1999 Inventory were undertaken using very different sampling methods.

Inventory practice and technology have moved on since the 1980 Census; this has led to changes in sampling methodology, scope and woodland definitions. For example, the Main Woodland Survey used the digital woodland map, created from aerial photos 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 19:	Comparison of woodland area between 1980 Census and 1999 Inventory
Table 20:	Comparison of High Forest area by species between 1980 Census and 1999 Inventory
Chart:	Comparison of High Forest area by species between 1980 Census and 1999 Inventory
Table 21:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1999 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1999 Inventory
Table 22:	Comparison of numbers of live trees outside woodland between 1980 Census and 1999 Inventory
Table 23:	Comparison of density of non-woodland features between 1980 Census and 1999 Inventory

Woodland cover

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

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

Table 19 Comparison of woodland area between 1980 Census and 1999 Inventory

Woodland size (ha)	1980 Census woodland area		1999 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	1,557	92.1	2,696	93.2	73
0.25 - <2.0	133	7.9	196	6.8	47
Total	1,690		2,892		71
% Woodland land cover	3.1		5.4		

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

2.   The above figures from the 1999 Inventory exclude
        woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census.
        The 1999 figures above will therefore not match those in the previous sections of the report.

3.   Land area used to calculate woodland cover percent (1999), 54,033 ha,
        was based on the 1991 Census of Population digital boundaries.

4.   Land area used to calculate woodland cover percent (1980), 54,005ha,

        (Ordnance Survey data)

Table 20 Comparison of High Forest area by species between 1980 Census and 1999 Inventory

Species	1980 Census woodland area (ha)	1999 Inventory woodland area (ha)	Change (%)
Scots pine	129	247	91
Corsican pine	228	171	-25
Lodgepole pine	16	16	1
Sitka spruce	24	102	331
Norway spuce	26	32	25
European larch	62	28	-55
Jap/Hybrid larch	189	289	53
Douglas fir	26	18	-30
Other conifers	50	28	-44
Mixed conifers	24	46	94
Total conifers	**773**	**977**	**26**
Oak	142	276	94
Beech	78	264	239
Sycamore	182	619	239
Ash	65	168	158
Birch	138	227	64
Poplar	11	60	453
Sweet chestnut	0	7	-
Elm	37	7	-81
Other broadleaves	77	199	159
Mixed broadleaves	157	49	-69
Total broadleaves	**887**	**1,876**	**111**
Total all species	**1,660**	**2,853**	**72**
Felled	**6**	**0**	**0**
Total High Forest	**1,666**	**2,853**	**71**

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 1.4% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 1.4%.

3. The above figures from the 1999 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census.
    The 1999 figures above will therefore not match those in the previous sections of the report.

4. The 1980 figures include scrub to enable comparison

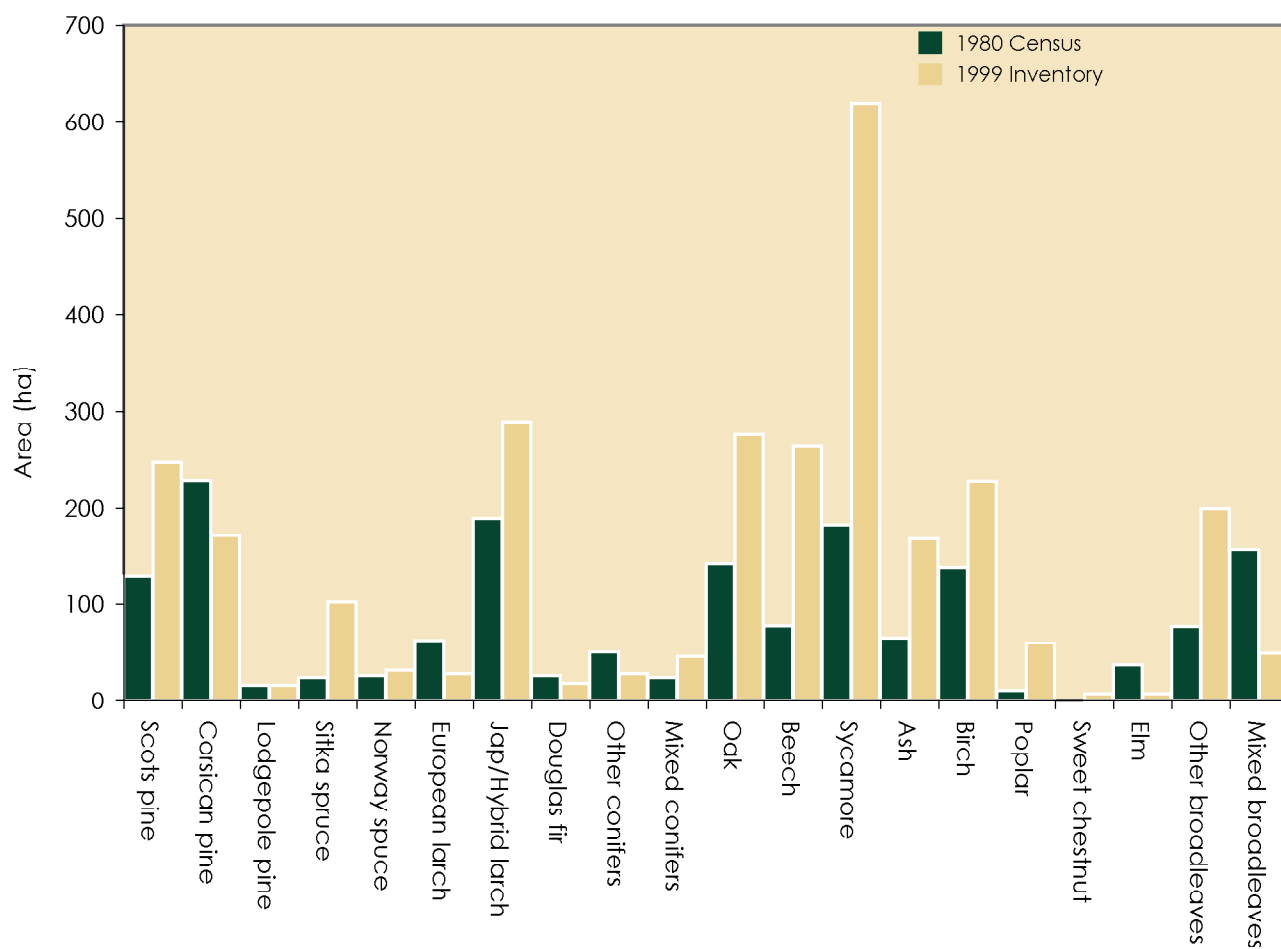**Comparison of High Forest area by species between 1980 Census and 1999 Inventory**

Table 21 Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1999 Inventory

Planting year class	1980 Census woodland area (ha)	1999 Inventory woodland area (ha)	Change (%)
1991-1999	0	256	see note
1981-1990	0	152	see note
1971-1980	130	403	210
1961-1970	234	229	-2
1951-1960	248	312	26
1941-1950	271	390	44
1931-1940	67	135	101
1921-1930	186	173	-7
1911-1920	63	34	-46
1901-1910	58	5	-91
1861-1900	301	241	-20
Pre 1861	5	54	995
Total all years	**1,564**	**2,384**	**52**

1.   The first two classes, 1991-1999 and 1981-1990, cover the period since the 1980 Census and no comparison is therefore available.

2.   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 1999 Inventory
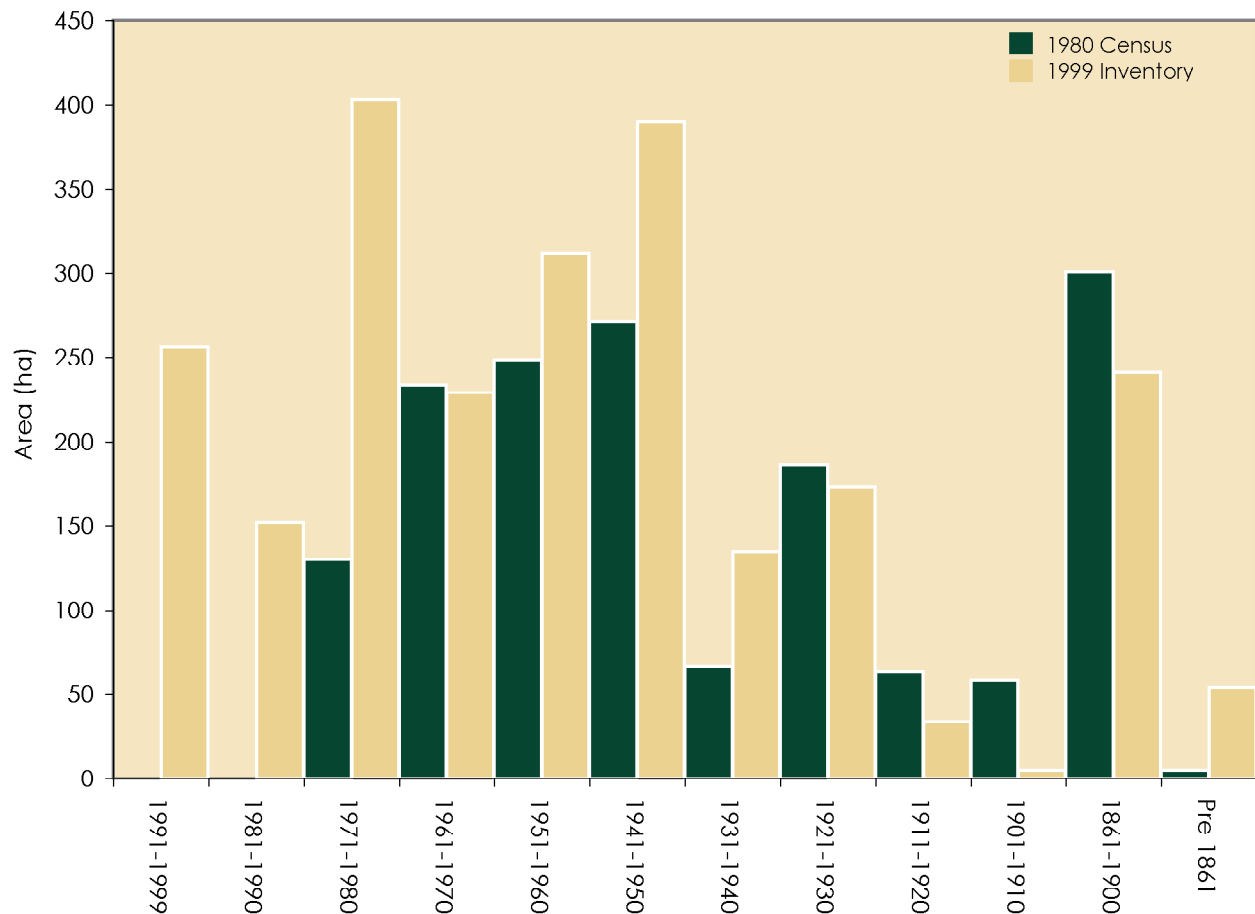
Table 22 Comparison of numbers of live trees outside woodland
between 1980 Census and 1999 Inventory (000's)

Tables 22 and 23 have been excluded from this report. The Survey of Small Woodland and trees does not
record information referring to tree features (I.e. Individual trees, Groups and Narrow Linear Features) within
developed land. In this respect the survey differs markedly from the 1980 Census. Tyne and Wear included
a substantial proportion of developed land making comparison inappropriate.

Table 23 Comparison of density of non-woodland features between 1980
Census and 1999 Inventory

Tables 22 and 23 have been excluded from this report. The Survey of Small Woodland and trees does not
record information referring to tree features (I.e. Individual trees, Groups and Narrow Linear Features) within
developed land. In this respect the survey differs markedly from the 1980 Census. Tyne and Wear included
a substantial proportion of developed land making comparison inappropriate.

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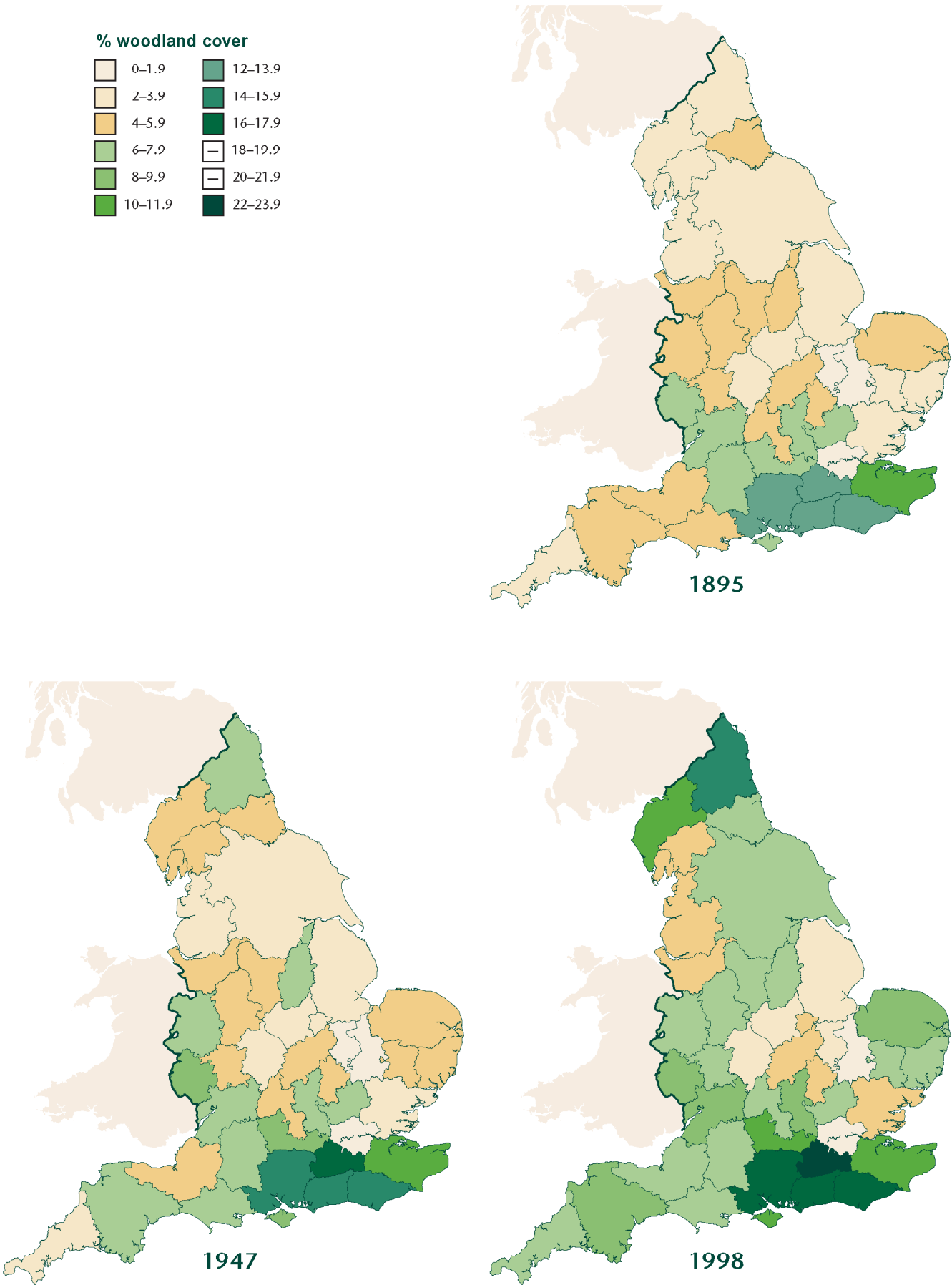
The maps use the old County structure data of England, as reported on in 1895 and 1947. The data from these counties could not be re-worked for different geographic areas. In contrast, the digital woodland map, which forms the basis of the current inventory, can be analysed for any geographic area.

Change in county woodland cover through time (1890 – 2000)
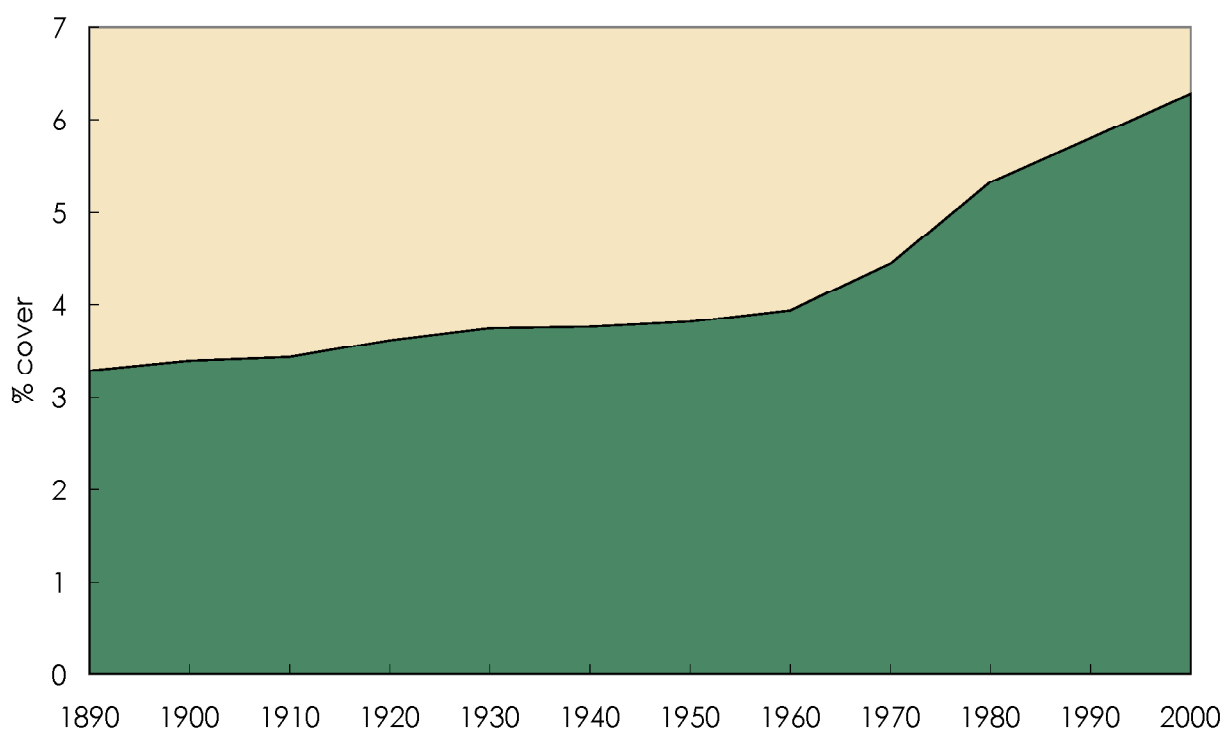
1.   Following local government reorganisation the boundaries of the county of the report have changed significantly since 1890 and therefore data from a wider geographic area have been used.

Map 5   Woodland Cover in England by County through time (1895–1998)

% woodland cover

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

1895

1947

1998

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 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 50m 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 50m, 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 1m 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.

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- **Forestry Commission**

  Land owned by or land 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 0.1ha.

- **Individual Tree**

  A tree the crown of which 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 any 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 50m wide or as narrow as a single line of trees. Two types of Linear Features 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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