# NATIONAL INVENTORY OF WOODLAND AND TREES

# WALES

# **County Report for**

### DYFED



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#### Glossary

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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 Dyfed was carried out by Graham Bull, Woodland Survey Officer, and Woodland GIS Officers Chris Brown, Robert Beck and Esther Whitton. Data processing and analysis was 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 Dyfed 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 With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the National Inventory of Woodland and Trees.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 Wales, 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 Wales was stratified into coastal and inland 1 km x 1 km squares and a random sample of 1 km<sup>2</sup> 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<sup>2</sup> 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 Dyfed is 77,815 hectares. This represents 13.5% of the land area. (Table 1)
- Broadleaved woodland is the dominant forest type representing 45.2 % of all woodland. Conifer woodland represents 41.3 %, Mixed woodland 6.7 % and Open Space within woodlands 3.9 %. (Table 2)
- The main conifer species is Sitka spruce covering 18,889 hectares or 53.7 % of all conifer species. The main broadleaved species is oak covering 11,385 hectares or 30.4 % of all broadleaved species. (Table 3)
- 27,277 hectares or 37 % of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 46,209 hectares or 63 % of woodland is in Other ownership. (Table 6)
- There are a total of 3,245 woods over 2 ha within Dyfed with a mean wood area of 22.8 hectares. (Table 7a) There are a total of 5,784 woods from 0.1 - <2.0 hectares with a mean wood area of 0.75 hectares. (Table 14)</li>
- There are 5.4 million live trees outside woodland in Dyfed. (Table 15)
- Woodland land cover increased by over 17,300 hectares from 10.4 % to 13.4 % of the land area between 1980 and 1997. (Table 19)
- The area of broadleaves increased by 123% between 1980 and 1997, with the relative proportion of broadleaves to conifers increasing from 30 % to 51 %. (Table 20)

#### **INVENTORY REPORTS**

As well as this report for Dyfed, reports are available for the other counties in Wales as shown on the map opposite as well as a report for the country as a whole. England and Scotland are also covered by reports. Inventory reports can also be viewed or downloaded from the website at www.forestry.gov.uk/inventory.

### Map 1 County boundaries





Reference Date 31 March 1997





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### 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 Dyfed.

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



Woodland size (ha)	Woodland area (ha)	% of Woodland area
2.00 and over	73,486	94.4
0.25 - < 2.00	3,969	5.1
0.10 - < 0.25	360	0.5
Total area of woodland	77,815	100.0
% Woodland land cover	13.5	

1. Area of Dyfed, including inland water, 576,575 ha based on digital boundaries used in the 1991 Census of Population

Table 2	Woodland	area by forest typ	e and woodland size
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Forest type	Woodland size (ha)		Total area	Percentage of
	2.0 and over	0.1 - <2.0	(ha)	total area
Conifer	32,170	0	32,170	41.3
Broadleaved	31,071	4,100	35,171	45.2
Mixed	5,042	179	5,221	6.7
Coppiced	0	0	0	0.0
Copp-w-standards	0	0	0	0.0
Windblow	48	0	48	0.1
Felled	2,192	0	2,192	2.8
Open Space	2,964	50	3,014	3.9
Total	73,486	4,329	77,815	100

1. See Glossary for definitions of forest types.

 Table 3
 Woodland area by principal species and woodland size

pecies/Groups Woodland size (ha)		Total area	Percentage	Percentage of total area	
	2.0 and over	0.1 -<2.0	(ha)	Category*	Species**
Pine	3,221	0	3,221	9.2	4.4
Sitka spruce	18,889	0	18,889	53.7	26.0
Larch	5,423	0	5,423	15.4	7.5
Other conifers	7,485	0	7,485	21.3	10.3
Mixed conifers	77	99	176	0.5	0.2
Total conifers	35,095	99	35,194	100.0	48.5
Oak	10,294	1,091	11,385	30.4	15.7
Beech	1,151	992	2,143	5.7	3.0
Sycamore	2,524	298	2,822	7.5	3.9
Ash	7,396	140	7,536	20.1	10.4
Birch	2,342	744	3,086	8.2	4.3
Elm	79	0	79	0.2	0.1
Other broadleaves	6,716	835	7,551	20.2	10.4
Mixed broadleaves	2,735	79	2,814	7.5	3.9
Total broadleaves	33,236	4,179	37,415	100.0	51.5
Total all species***	68,331	4,279	72,610		100.0

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

\*\*Species/group percentage of all species

\*\*\*Excludes the 5,206ha 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	2%
Broadleaves	2%
Sitka spruce	4%
Oak	6%
Ash	5%

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	242,600	1,526,900	6	265
Narrow Linear Features	86,500	3,581,000	41	621
Individual Trees	279,400	279,400	1	48
Total		5,387,300		934

1. Land area used to calculate tree density 576,575ha 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	15%
Narrow Linear Features	24%
Individual Trees	15%

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	823	66	11		
Narrow Linear Features	86,500	6,846	1,187		
Total		6,912	1,199		

1. Land area used to calculate tree density 576,575ha 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	99%
Narrow Linear Features	25%

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 type .

### 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	27,277	37
Other	46,209	63
Total area of woodland	73,486	100

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

2. See Glossary for definitions of ownership types

#### Woodland area by ownership





Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	1,990	8,870	12	4.4
10 - <20	408	5,601	8	13.7
20 - <50	330	10,409	14	31.5
50 - <100	415	6,826	9	16.4
<100	3,143	31,706	43	10.1
100 - <500	86	16,711	23	194.3
500 and >	16	25,453	34	1,590.8
All woods	3,245	73,870	100	22.8

	Table 7a	Size class	distribution	of wo	odland
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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	38	218	0	5.7
	0	2,409	9,897	13	4.1
10 - <20	FC	37	542	1	14.6
	0	413	5,669	8	13.7
20 - <50	FC	49	1,508	2	30.8
	0	330	10,402	14	31.5
50 - <100	FC	20	1,455	2	72.8
	0	90	6,219	8	69.1
<100	FC	144	3,723	5	25.8
	0	3,242	32,188	44	9.9
100 - <500	FC	30	6,316	9	210.5
	0	59	11,156	15	189.1
500 and >	FC	14	17,238	23	1,231.3
	0	4	3,250	4	812.5
Total	FC	188	27,277	37	145.1
	0	3,305	46,594	63	14.1

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 total area in Tables 7a and 7b is 384 hectares more than 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.

Forest type	Forestry C	ry Commission Other			All ownerships		
	ha	%	ha	%	ha	%	
Conifer	20,658	75.7	11,512	24.9	32,170	43.8	
Broadleaved	1,920	7.0	29,150	63.1	31,071	42.3	
Mixed	2,193	8.0	2,849	6.2	5,042	6.9	
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	48	0.1	48	0.1	
Felled	1,412	5.2	780	1.7	2,192	3.0	
Open Space	1,094	4.0	1,870	4.0	2,964	4.0	
Total	27,277	100.0	46,209	100.0	73,486	100.0	

Table 8 Area of woodland by forest type and ownership

#### Area of woodland by forest type





Species	Forestry Commission			Other			All ownerships		
	area	cat*	spp**	area	cat*	spp**	area	cat*	spp**
	(ha)	%	%	(ha)	%	%	(ha)	%	%
Scots pine	376	2	2	185	1	0	562	2	1
Corsican pine	1,190	5	5	62	0	0	1,251	4	2
Lodgepole pine	1,027	5	4	380	3	1	1,408	4	2
Sitka spruce	12,612	57	51	6,277	48	14	18,889	54	28
Norway spruce	1,938	9	8	703	5	2	2,641	8	4
European larch	0	0	0	82	1	0	82	0	0
Jap/Hybrid larch	2,445	11	10	2,896	22	7	5,341	15	8
Douglas fir	2,033	9	8	1,664	13	4	3,697	11	5
Other conifers	503	2	2	645	5	1	1,147	3	2
Mixed conifers	13	0	0	64	0	0	77	0	0
Total conifers	22,136	100	89	12,959	100	30	35,095	100	51
Oak	786	30	3	9,509	31	22	10,294	31	15
Beech	235	9	1	915	3	2	1,151	3	2
Sycamore	53	2	0	2,471	8	6	2,524	8	4
Ash	145	6	1	7,251	24	17	7,396	22	11
Birch	488	19	2	1,854	6	4	2,342	7	3
Poplar	0	0	0	244	1	1	244	1	0
Sweet chestnut	31	1	0	4	0	0	36	0	0
Elm	0	0	0	79	0	0	79	0	0
Other broadleaves	503	19	2	5,933	19	14	6,436	19	9
Mixed broadleaves	394	15	2	2,341	8	5	2,735	8	4
Total broadleaves	2,635	100	11	30,601	100	70	33,236	100	49
Total - all species	24,771		100	43,559		100	68,331		100
Felled	1,412			780			2,192		
Total High Forest	26,183			44,339			70,522		

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

 $\ensuremath{^*\text{cat}}$  : 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 2,964ha 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	2%
Broadleaves	2%
Sitka spruce	4%
Oak	6%
Ash	5%

- 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



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	363	13	376	135	50	185	498	64	562
Corsican pine	1,131	58	1,190	62	0	62	1,193	58	1,251
Lodgepole pine	655	373	1,027	276	104	380	930	477	1,408
Sitka spruce	10,398	2,214	12,612	5,111	1,166	6,277	15,509	3,380	18,889
Norway spruce	1,780	157	1,938	694	10	703	2,474	167	2,641
European larch	0	0	0	82	0	82	82	0	82
Jap/Hybrid larch	2,356	89	2,445	2,539	357	2,896	4,895	446	5,341
Douglas fir	1,993	40	2,033	1,559	105	1,664	3,552	145	3,697
Other conifers	435	67	503	591	53	645	1,027	121	1,147
Mixed conifers	9	4	13	42	22	64	51	27	77
Total conifers	19,120	3,016	22,136	11,091	1,868	12,959	30,211	4,884	35,095
Oak	310	476	786	2,632	6,877	9,509	2,942	7,353	10,294
Beech	84	151	235	399	517	915	483	668	1,151
Sycamore	0	53	53	623	1,848	2,471	623	1,901	2,524
Ash	41	104	145	2,604	4,647	7,251	2,645	4,751	7,396
Birch	20	468	488	307	1,547	1,854	327	2,015	2,342
Poplar	0	0	0	223	21	244	223	21	244
Sweet chestnut	31	0	31	0	4	4	31	4	36
Elm	0	0	0	0	79	79	0	79	79
Other broadleaves	13	490	503	264	5,669	5,933	277	6,159	6,436
Mixed broadleaves	145	250	394	564	1,777	2,341	708	2,027	2,735
Total broadleaves	644	1,991	2,635	7,615	22,985	30,601	8,259	24,977	33,236
Total - all species	19,764	5,007	24,771	18,706	24,853	43,559	38,470	29,860	68,331

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

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	2%	9%	2%	
Broadleaves	6%	3%	2%	
Sitka spruce	5%	11%	4%	
Oak	12%	7%	6%	*See Glossary for Category 1
Ash	11%	6%	5%	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



Species	Planting year class*								Total (ha)				
	1991- 1997	1981- 1990	1971- 1980	1961 - 1970	1951- 1960	1941 - 1950	1931- 1940	1921- 1930	1911 - 1920	1901- 1910	1861- 1900	Pre- 1861	
Scots pine	202	0	0	12	99	71	99	9	7	0	0	0	498
Corsican pine	224	45	0	314	255	58	296	0	0	0	0	0	1,193
Lodgepole pine	4	22	15	197	532	160	0	0	0	0	0	0	930
Sitka spruce	2,118	2,303	2,506	5,714	2,024	507	332	5	0	0	0	0	15,509
Norway spruce	149	108	362	629	914	200	108	0	0	4	0	0	2,474
European larch	0	0	0	5	53	12	12	0	0	0	0	0	82
Jap/Hybrid larch	570	552	371	632	1,777	581	410	0	0	0	0	0	4,895
Douglas fir	980	608	253	307	1,080	189	134	0	0	0	0	0	3,552
Other conifers	53	36	39	218	455	87	137	0	0	0	0	0	1,027
Mixed conifers	20	0	0	5	5	10	11	0	0	0	0	0	51
Total conifers	4,321	3,675	3,545	8,035	7,196	1,875	1,539	14	7	4	0	0	30,211
Oak	184	0	0	48	60	383	889	456	572	50	195	104	2,942
Beech	0	0	0	6	63	4	108	4	4	11	35	247	483
Sycamore	82	4	17	112	86	98	120	33	0	0	60	11	623
Ash	134	11	25	186	302	221	753	313	160	9	527	5	2,645
Birch	48	0	0	32	7	128	66	46	0	0	0	0	327
Poplar	70	121	0	0	32	0	0	0	0	0	0	0	223
Sweet chestnut	0	0	31	0	0	0	0	0	0	0	0	0	31
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	102	0	29	0	45	0	96	0	0	0	6	0	277
Mixed broadleaves	38	31	102	0	201	20	241	32	12	0	32	0	708
Total broadleaves	657	168	204	385	795	854	2,272	884	748	69	856	368	8,259
Total - all species	4,978	3,842	3,749	8,419	7,991	2,729	3,811	898	755	74	856	368	38,470

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

\*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, 1991-1997 is 7 years, and the classes prior to 1901 are 40 years or more.

Species	Planting year class*								Total (ha)				
	1991- 1997	1981- 1990	1971- 1980	1961 - 1970	1951- 1960	1941 - 1950	1931- 1940	1921- 1930	1911 - 1920	1901- 1910	1861- 1900	Pre- 1861	
Scots pine	198	0	0	0	0	71	94	0	0	0	0	0	363
Corsican pine	224	45	0	314	193	58	296	0	0	0	0	0	1,131
Lodgepole pine	0	22	0	121	511	0	0	0	0	0	0	0	655
Sitka spruce	1,801	2,008	1,296	3,436	1,017	507	332	0	0	0	0	0	10,398
Norway spruce	85	103	286	329	673	196	108	0	0	0	0	0	1,780
European larch	0	0	0	0	0	0	0	0	0	0	0	0	0
Jap/Hybrid larch	348	440	121	36	1,018	384	9	0	0	0	0	0	2,356
Douglas fir	686	583	36	39	514	136	0	0	0	0	0	0	1,993
Other conifers	53	36	9	63	161	0	112	0	0	0	0	0	435
Mixed conifers	9	0	0	0	0	0	0	0	0	0	0	0	9
Total conifers	3,405	3,237	1,749	4,337	4,089	1,352	952	0	0	0	0	0	19,120
Oak	36	0	0	0	17	72	156	22	6	0	0	0	310
Beech	0	0	0	6	56	0	22	0	0	0	0	0	84
Sycamore	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	41	0	0	0	0	0	41
Birch	0	0	0	0	0	0	20	0	0	0	0	0	20
Poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Sweet chestnut	0	0	31	0	0	0	0	0	0	0	0	0	31
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	0	0	0	13	0	0	0	0	0	0	0	13
Mixed broadleaves	8	27	81	0	4	0	24	0	0	0	0	0	145
Total broadleaves	44	27	112	6	90	72	264	22	6	0	0	0	644
Total - all species	3,449	3,264	1,861	4,344	4,179	1,424	1,216	22	6	0	0	0	19,764

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

\*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

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

Species	Planting year class*								Total (ha)				
	1991- 1997	1981- 1990	1971- 1980	1961 - 1970	1951- 1960	1941 - 1950	1931- 1940	1921- 1930	1911 - 1920	1901- 1910	1861- 1900	Pre- 1861	
Scots pine	4	0	0	12	99	0	4	9	7	0	0	0	135
Corsican pine	0	0	0	0	62	0	0	0	0	0	0	0	62
Lodgepole pine	4	0	15	76	21	160	0	0	0	0	0	0	276
Sitka spruce	316	295	1,209	2,278	1,007	0	0	5	0	0	0	0	5,111
Norway spruce	64	4	76	300	241	4	0	0	0	4	0	0	694
European larch	0	0	0	5	53	12	12	0	0	0	0	0	82
Jap/Hybrid larch	223	112	250	597	760	197	401	0	0	0	0	0	2,539
Douglas fir	294	26	217	269	566	53	134	0	0	0	0	0	1,559
Other conifers	0	0	30	155	293	87	25	0	0	0	0	0	591
Mixed conifers	11	0	0	5	5	10	11	0	0	0	0	0	42
Total conifers	916	438	1,796	3,697	3,107	523	587	14	7	4	0	0	11,091
Oak	148	0	0	48	43	311	733	434	566	50	195	104	2,632
Beech	0	0	0	0	7	4	85	4	4	11	35	247	399
Sycamore	82	4	17	112	86	98	120	33	0	0	60	11	623
Ash	134	11	25	186	302	221	712	313	160	9	527	5	2,604
Birch	48	0	0	32	7	128	46	46	0	0	0	0	307
Poplar	70	121	0	0	32	0	0	0	0	0	0	0	223
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	102	0	29	0	32	0	96	0	0	0	6	0	264
Mixed broadleaves	30	4	21	0	196	20	216	32	12	0	32	0	564
Total broadleaves	613	141	92	378	705	782	2,009	862	742	69	856	368	7,615
Total - all species	1,529	579	1,888	4,076	3,812	1,305	2,596	876	749	74	856	368	18,706

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

\*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, 1991-1997 is 7 years, and the classes prior to 1901 are 40 years or more.

Planting year class	First	%	Second	%	Third	%
1991-97	Sitka spruce	40	Douglas fir	18	Jap/Hybrid larch	11
1981-90	Sitka spruce	54	Douglas fir	14	Jap/Hybrid larch	13
1971-80	Sitka spruce	60	Mixed broadleaves	8	Norway spruce	6
1961-70	Sitka spruce	58	Other broadleaves	8	Jap/Hybrid larch	7
1951-60	Sitka spruce	19	Other broadleaves	16	Jap/Hybrid larch	15
1941-50	Other broadleaves	26	Oak	18	Ash	13
1931-40	Oak	27	Ash	21	Mixed broadleaves	10
1921-30	Ash	37	Oak	36	Other broadleaves	8
1911-20	Oak	57	Ash	27	Birch	4
1901-10	Oak	71	Ash	10	Beech	10
1861-1900	Oak	57	Ash	30	Sycamore	6
Pre 1861	Beech	51	Oak	31	Other broadleaves	15
All years	Sitka spruce	28	Oak	15	Ash	11

Table 11 High Forest : principal species by planting year class

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	28,112	38.3
Business	12,339	16.8
Forestry or timber business	552	0.8
Charity	3,317	4.5
Local Authority	501	0.7
Other public (not FC)	721	1.0
Forestry Commission	27,277	37.1
Community ownership or common land	175	0.2
Unidentified	493	0.7
Total	73,487	100.0

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

#### Ownership type by area





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

#### **Survey Method**

The land area of Wales was stratified into coastal and inland 1 km x 1 km squares and a random sample of 1 km<sup>2</sup> 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<sup>2</sup> 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 TreesTable 14:Woodland area by feature type and woodland sizeTable 15:Numbers of live trees outside woodland by species and feature typeTable 16:Numbers of dead trees outside woodland by species and feature typeTable 17:Numbers of live trees outside woodland by species and height bandTable 18:Numbers of Groups by group size

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



Feature type	Number of features	Total	Unit
Small Woods	4,961	4,197	Area (ha)
Wide Linear Features	823	132	Area (ha)
Wide Linear Features	823	66	Length (Km)
Narrow Linear Features	86,500	6,846	Length (Km)
Narrow Linear Features	86,500	3,581,000	Number of live trees
Groups	242,600	1,526,900	Number of live trees
Individual Trees	279,400	279,400	Number of live trees

#### Table 13 Summary of information from the Survey of Small Woodlands and 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	228	3,969	4,197	4,961	0.85
Wide Linear Features	132	0	132	823	0.16
Total	360	3,969	4,329	5,784	0.75

1. See Glossary for definitions of feature types.

Species		Featur	e type			Percent of	total trees
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features	Total live trees	Category	Species
Pine	3.1	0.0	9.4	7.4	19.9	11.0	0.4
Spruce	1.2	1.2	44.0	100.5	146.9	81.1	2.7
Larch	0.0	0.0	0.8	2.5	3.3	1.8	0.1
Cypress	0.0	0.0	9.4	0.0	9.4	5.2	0.2
Other conifers	0.0	0.0	1.6	0.0	1.6	0.9	0.0
Total conifers	4.3	1.2	65.2	110.3	181.1	100.0	3.4
Oak	46.3	4.7	225.3	272.5	548.8	10.5	10.2
Beech	8.6	0.0	44.7	19.8	73.1	1.4	1.4
Sycamore	12.2	12.2	90.3	275.8	390.5	7.5	7.2
Ash	38.5	1.6	149.9	534.4	724.4	13.9	13.4
Birch	2.4	2.4	87.9	49.4	142.1	2.7	2.6
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	2.5	2.5	0.0	0.0
Alder	5.5	0.0	87.1	32.1	124.7	2.4	2.3
Lime	0.0	0.0	0.8	0.0	0.8	0.0	0.0
Elm	0.0	0.0	16.5	55.2	71.7	1.4	1.3
Willow	7.5	2.8	237.9	376.3	624.5	12.0	11.6
Other broadleaves	91.4	38.2	521.3	1,852.7	2,503.6	48.1	46.5
Total broadleaves	212.4	61.9	1,461.7	3,470.7	5,206.7	100.0	96.6
Total - all species	216.7	63.1	1,526.9	3,581.0	5,387.3		100.0

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

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	15%
Groups	15%
Narrow Linear Features	24%

3. See Glossary for definitions of feature types.

		Featur	e type			Percent c	of total trees	
Species	Boundary Trees	Middle Trees	Groups	Narrow Linear Features	Total dead trees	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	0.8	0.0	0.0	0.0	0.8	12.5	12.5	
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	0.8	0.0	0.0	0.8	1.6	25.0	25.0	
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	0.8	0.8	12.5	12.5	
Willow	0.0	0.0	0.0	0.8	0.8	12.5	12.5	
Other broadleaves	0.8	0.0	0.8	0.8	2.4	37.5	37.5	
Total broadleaves	2.4	0.0	0.8	3.3	6.4	100.0	100.0	
Total - all species	2.4	0.0	0.8	3.3	6.4		100.0	

1. See Glossary for definitions of feature types.

Species	Height band (m)				Total live trees
	2-5	5-15	15-20	>20	
Pine	0.0	10.5	9.5	0.0	20.0
Spruce	13.3	127.1	6.4	0.0	146.8
Larch	0.8	0.8	1.6	0.0	3.2
Cypress	0.0	9.4	0.0	0.0	9.4
Other conifers	0.0	1.6	0.0	0.0	1.6
Total conifers	14.1	149.4	17.5	0.0	181.0
Oak	44.7	401.5	98.8	3.9	548.9
Beech	6.3	55.6	11.2	0.0	73.1
Sycamore	78.6	299.7	12.2	0.0	390.5
Ash	111.1	515.9	96.6	0.8	724.4
Birch	31.0	110.2	0.8	0.0	142.0
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	2.5	0.0	0.0	2.5
Alder	10.3	113.6	0.8	0.0	124.7
Lime	0.0	0.8	0.0	0.0	0.8
Elm	66.8	4.9	0.0	0.0	71.7
Willow	466.9	154.2	1.6	1.6	624.3
Other broadleaves	2,191.5	311.1	0.8	0.0	2,503.4
Total broadleaves	3,007.2	1,970.0	222.8	6.3	5,206.3
Total - all species	3,021.4	2,119.3	240.3	6.3	5,387.3

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

#### Table 18 Number of Groups by group size

Number of trees per Group*	Number of Groups (000's)
2	38
3-5	93
6-10	50
11-20	38
21-50	16
51-100	6
>100	1
Total	243

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

### COMPARISON OF RESULTS WITH THE 1980 CENSUS AND PREVIOUS SURVEYS

#### **Survey Method**

The 1980 Census and 1997 Inventory were undertaken using very different sampling methods.

Inventory practice and technology have moved on since the 1980 Census; this has 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 1997 Inventory
Table 20:	Comparison of High Forest area by species
	between 1980 Census and 1997 Inventory
Chart:	Comparison of High Forest area by species
	between 1980 Census and 1997 Inventory
Table 21:	Comparison of High Forest Category 1 area by planting year class
	between 1980 Census and 1997 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class
	between 1980 Census and 1997 Inventory
Table 22:	Comparison of numbers of live trees outside woodland
	between 1980 Census and 1997 Inventory
Table 23:	Comparison of density of non-woodland features
	between 1980 Census and 1997 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



Woodland size (ha)	1980 Census woodland area		1997 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	55,938	93.0	73,486	94.9	31
0.25 - <2.0	4,188	7.0	3,969	5.1	-5
Total	60,126		77,455		29
% Woodland land cover	10.4		13.4		

#### Table 19 Comparison of woodland area between 1980 Census and 1997 Inventory

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

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

- 3. Land area used to calculate woodland cover percent (1997), 576,575 ha, was based on the 1991 Census of Population digital boundaries.
- Land area used to calculate woodland cover percent (1980),576,577 ha, (Ordnance Survey data)

 Table 20
 Comparison of High Forest area by species between 1980 Census and 1997 Inventory

Species	1980 Census woodland area (ha)	1997 Inventory woodland area (ha)	Change (%)
Scots pine	579	562	-3
Corsican pine	996	1,251	26
Lodgepole pine	1,784	1,408	-21
Sitka spruce	20,652	18,889	-9
Norway spuce	4,184	2,641	-37
European larch	552	82	-85
Jap/Hybrid larch	5,452	5,341	-2
Douglas fir	3,178	3,697	16
Other conifers	1,549	1,147	-26
Mixed conifers	188	77	-59
Total conifers	39,114	35,095	-10
Oak	7,939	11,336	43
Beech	949	2,143	126
Sycamore	985	2,822	186
Ash	2,513	7,495	198
Birch	1,417	3,086	118
Poplar	68	244	258
Sweet chestnut	158	36	-77
Elm	94	79	-16
Other broadleaves	2,222	7,230	225
Mixed broadleaves	372	2,735	635
Total broadleaves	16,717	37,206	123
Total all species	55,831	72,301	29
Felled	564	2,192	288
Total High Forest	56,396	74,493	32

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 3.9% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 3.9%.

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

4. The 1980 figures include scrub to enable comparison



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

# Table 21 Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory

Planting year class	1980 Census woodland area (ha)	1997 Inventory woodland area (ha)	Change (%)
1991-1997	0	4,978	see note
1981-1990	0	3,843	see note
1971-1980	6,589	3,749	-43
1961-1970	12,202	8,420	-31
1951-1960	12,989	7,991	-38
1941-1950	10,129	2,729	-73
1931-1940	4,393	4,803	9
1921-1930	1,180	898	-24
1911-1920	3,065	755	-75
1901-1910	313	73	-77
1861-1900	1,030	856	-17
Pre 1861	1,366	368	-73
Total all years	53,257	39,463	-26

1. The first two classes, 1991-1997 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 1997 Inventory

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

# Table 22Comparison of numbers of live trees outside woodland<br/>between 1980 Census and 1997 Inventory (000's)

Feature type	1980 Census	1997 Inventory	Change (%)
Boundary Tree	620	155	-75
Middle Tree	87	30	-65
Total Individual Trees	707	185	-74
Groups	492	954	94
Linear Features	2,560	1,864	-27
Total	3,759	3,003	-20

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.

- In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded, the 1997 Inventory figures have been adjusted accordingly. The 1997 figures above will therefore not match those in the previous sections of the report.
- Changes stated in this table are indicative only. Even with adjustments to the 1997 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height, and 1997 used 2m height, as minimum criteria for inclusion.
- 4. See Glossary for definitions of feature type.

# Table 23Comparison of density of non-woodland features between 1980Census and 1997 Inventory

Feature type	1980 Census	1997 Inventory	Change (%)
Individual Trees (per sq km)	122.6	32.1	-74
Groups (per sq km)	16.8	31.3	86
Linear Features (m per sq km)	1,326.8	1,174.7	-11

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.

 In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded, the 1997 Inventory figures have been adjusted accordingly. The 1997 figures above will therefore not match those in the previous sections of the report.

- Changes stated in this table are indicative only. Even with adjustments to the 1997 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height, and 1997 used 2m height, as minimum criteria for inclusion.
- 4. See Glossary for definitions of feature type.

### 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 Wales, 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)



### Map 5 Woodland cover by county through time (1895–1998)









### 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.

#### • 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