Woodland in Ayrshire: 2011 profile and future softwood availability forecast

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Summary

This report is a digest of the published 2011 NFI forecast reports for Ayrshire.

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Approach

The approach taken in the derivation and to be used in the interpretation of these results is described in the full suite of 2011 forecast reports which can be found at www.forestry.gov.uk/forecast.

Standing volume and stocked area of Scots pine, Corsican pine and lodgepole pine may be susceptible to Dothistroma needle blight. Standing volume and stocked area of larches may be susceptible to Phytophthora. Please refer to the *Interpreting NFI timber volume forecasts* report for a full discussion of how Dothistroma needle blight and Phytophthora may influence the scheduling of production within the UK.

Results

The results presented are those for Ayrshire. This comprises the area covered by the three Ayrshire Councils:

- North Ayrshire;
- East Ayrshire; and
- South Ayrshire.

In the following tables, estimates and forecasts for the Forestry Commission estate are derived from information recorded in the Forestry Commission's sub-compartment database, while those for the Private sector are derived from results of the National Forest Inventory field survey. This survey is using a statistically designed sample of all British woodlands and the estimates and forecasts derived from this survey are subject to sampling error. This is expressed in the tables in the form of relative standard errors (*SE%*) which shows the size of the sampling error as a proportion of the value of the estimate or forecast. High relative standard errors attached to these estimates and forecasts indicate low accuracy and reliability of the estimated values, which should consequently be viewed with caution. Relative standard errors cannot be calculated for estimates with zero values and are therefore not quoted (indicated with -) in the tables. See the main forecast reports for further information.

2011 stocked area and standing volume

Refer to the *Standing timber volume in coniferous trees in Britain* and *NFI preliminary estimates of quantities of broadleaved species in British Woodlands with special focus on ash* reports for a description of the underlying methodologies and interpretation, also for the Scotland and GB context. See the glossaries in the same reports for definitions of technical terms used, including that of stocked area (which is different to woodland area) and standing volume.

In Tables 1-6, the figures for the Forestry Commission are based on harvesting regimes derived from Forestry Commission felling and thinning plans as of 31 March 2011. The Private sector information for these tables is based on a regime that has no harvesting.

Table 1 Stocked area by principal species at 31 March 2011

Principal species	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
Ayrshire				
All conifers	**23.9**	**15.8**	***9***	**39.8**
Sitka spruce	21.0	13.5	*11*	**34.4**
Scots pine	0.2	0.4	*48*	**0.6**
Corsican pine	0.0	0.0	-	**0.0**
Norway spruce	0.2	0.3	*66*	**0.5**
Larches	1.0	0.8	*40*	**1.9**
Douglas fir	0.0	0.0	-	**0.0**
Lodgepole pine	1.5	0.6	*73*	**2.1**
Other conifers	0.1	0.1	*111*	**0.2**
All broadleaves	**0.9**	**9.5**	***12***	**10.4**
Oak	0.0	1.3	*47*	**1.3**
Beech	0.0	0.8	*44*	**0.8**
Sycamore	0.0	1.0	*42*	**1.0**
Ash	0.0	1.0	*43*	**1.0**
Birch	0.0	2.0	*33*	**2.0**
Sweet chestnut	0.0	0.0	-	**0.0**
Hazel	0.0	0.4	*87*	**0.4**
Hawthorn	0.0	2.0	*44*	**2.0**
Alder	0.0	0.1	*42*	**0.2**
Willow	0.0	0.5	*38*	**0.5**
Other broadleaves	0.8	0.5	*47*	**1.3**
All species	**24.8**	**25.4**	***6***	**50.2**

Table 2 Stocked area by age class at 31 March 2011

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
Conifers				
0-10	3.0	1.4	*54*	**4.4**
11-20	3.1	4.7	*23*	**7.8**
21-40	14.1	8.1	*20*	**22.2**
41-60	3.6	1.6	*46*	**5.2**
61-80	0.1	0.0	-	**0.1**
81-100	0.0	0.0	-	**0.0**
100+	0.0	0.0	-	**0.0**
Total	**23.9**	**15.8**	***9***	**39.8**
Broadleaves				
0-10	0.4	1.0	*46*	**1.4**
11-20	0.3	1.4	*34*	**1.7**
21-40	0.2	4.6	*24*	**4.9**
41-60	0.0	1.8	*34*	**1.8**
61-80	0.0	0.0	*88*	**0.0**
81-100	0.0	0.6	*93*	**0.6**
100+	0.0	0.0	-	**0.0**
Total	**0.9**	**9.5**	***12***	**10.4**
All species				
0-10	3.4	2.4	*36*	**5.8**
11-20	3.4	6.1	*20*	**9.5**
21-40	14.3	12.7	*15*	**27.1**
41-60	3.6	3.5	*30*	**7.1**
61-80	0.1	0.0	*88*	**0.1**
81-100	0.0	0.6	*93*	**0.6**
100+	0.0	0.0	-	**0.0**
Total	**24.8**	**25.4**	***6***	**50.2**

Table 3 Stocked area by mean stand dbh class at 31 March 2011

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
Conifers				
0-7	4.1	2.1	*41*	**6.3**
7-10	1.3	2.7	*27*	**4.0**
10-15	6.3	1.9	*43*	**8.2**
15-20	8.9	5.7	*21*	**14.6**
20-30	3.2	2.6	*32*	**5.8**
30-40	0.1	0.4	*62*	**0.5**
40-60	0.0	0.1	*107*	**0.1**
60-80	0.0	0.3	*111*	**0.3**
80+	0.0	0.0	-	**0.0**
Total	**23.9**	**15.8**	***9***	**39.8**
Broadleaves				
0-7	0.4	1.3	*36*	**1.7**
7-10	0.4	3.7	*28*	**4.2**
10-15	0.0	0.9	*36*	**0.9**
15-20	0.0	0.5	*77*	**0.5**
20-30	0.0	0.7	*48*	**0.7**
30-40	0.0	0.6	*58*	**0.6**
40-60	0.0	1.2	*52*	**1.2**
60-80	0.0	0.6	*69*	**0.6**
80+	0.0	0.0	-	**0.0**
Total	**0.9**	**9.5**	***12***	**10.4**
All species				
0-7	4.5	3.5	*28*	**8.0**
7-10	1.7	6.5	*19*	**8.2**
10-15	6.3	2.8	*31*	**9.1**
15-20	8.9	6.1	*20*	**15.1**
20-30	3.2	3.2	*28*	**6.4**
30-40	0.1	1.0	*43*	**1.2**
40-60	0.0	1.3	*48*	**1.3**
60-80	0.0	0.9	*58*	**0.9**
80+	0.0	0.0	-	**0.0**
Total	**24.8**	**25.4**	***6***	**50.2**

Table 4 Standing volume by principal species at 31 March 2011

Principal species	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
Ayrshire				
All conifers	**4,290**	**3,851**	***14***	**8,140**
Sitka spruce	3,972	3,174	*18*	**7,147**
Scots pine	3	213	*65*	**216**
Corsican pine	0	0	-	**0**
Norway spruce	29	80	*70*	**109**
Larches	107	193	*62*	**300**
Douglas fir	1	0	-	**1**
Lodgepole pine	167	158	*76*	**325**
Other conifers	9	22	*111*	**32**
All broadleaves	**14**	**2,051**	***38***	**2,065**
Oak	0	1,004	*51*	**1,004**
Beech	0	277	*47*	**278**
Sycamore	0	238	*62*	**238**
Ash	0	286	*82*	**286**
Birch	0	92	*66*	**93**
Sweet chestnut	0	0	-	**0**
Hazel	0	14	*102*	**14**
Hawthorn	0	71	*42*	**71**
Alder	2	4	*101*	**6**
Willow	0	15	*55*	**15**
Other broadleaves	12	50	*46*	**61**
All species	**4,304**	**5,902**	***16***	**10,206**

Table 5 Standing volume by age class at 31 March 2011

Age class (years)	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
Conifers				
0-10	0	0	-	**0**
11-20	73	275	*39*	**348**
21-40	2,972	2,657	*22*	**5,629**
41-60	1,208	918	*54*	**2,126**
61-80	35	0	-	**35**
81-100	2	0	-	**2**
100+	0	0	-	**0**
Total	**4,290**	**3,851**	***14***	**8,140**
Broadleaves				
0-10	0	0	*64*	**0**
11-20	2	15	*42*	**17**
21-40	8	800	*34*	**808**
41-60	1	834	*54*	**835**
61-80	1	11	*90*	**12**
81-100	0	390	*93*	**390**
100+	3	0	-	**3**
Total	**14**	**2,051**	***38***	**2,065**
All species				
0-10	0	0	*66*	**0**
11-20	75	290	*38*	**365**
21-40	2,980	3,456	*19*	**6,436**
41-60	1,209	1,754	*39*	**2,962**
61-80	35	11	*90*	**46**
81-100	2	390	*93*	**392**
100+	3	0	-	**3**
Total	**4,304**	**5,902**	***16***	**10,206**

Table 6 Standing volume by mean stand dbh class at 31 March 2011

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
Conifers				
0-7	0	5	*70*	**5**
7-10	25	90	*28*	**114**
10-15	617	187	*40*	**804**
15-20	2,359	1,948	*25*	**4,306**
20-30	1,251	1,352	*38*	**2,603**
30-40	33	101	*74*	**134**
40-60	5	57	*109*	**62**
60-80	0	112	*111*	**112**
80+	0	0	-	**0**
Total	**4,290**	**3,851**	***14***	**8,140**
Broadleaves				
0-7	0	3	*82*	**3**
7-10	8	108	*30*	**117**
10-15	3	78	*31*	**81**
15-20	1	81	*73*	**82**
20-30	0	184	*52*	**184**
30-40	2	413	*62*	**415**
40-60	0	631	*56*	**631**
60-80	0	552	*81*	**552**
80+	0	0	-	**0**
Total	**14**	**2,051**	***38***	**2,065**
All species				
0-7	0	8	*53*	**8**
7-10	33	199	*20*	**232**
10-15	620	266	*29*	**885**
15-20	2,360	2,029	*24*	**4,389**
20-30	1,251	1,533	*34*	**2,785**
30-40	35	514	*52*	**549**
40-60	5	689	*52*	**693**
60-80	0	665	*70*	**665**
80+	0	0	-	**0**
Total	**4,304**	**5,902**	***16***	**10,206**

25-year forecast of softwood timber availability

Refer to the *25-year forecast of softwood timber availability* report for a description of the underlying methodology and interpretation, and also for the Scotland and GB context.

In Tables 7-10 the figures for the Forestry Commission are based on harvesting regimes derived from Forestry Commission felling and thinning plans as of 31 March 2011. The Private sector information for these tables is based on a scenario which assumes felling at age of maximum mean annual increment with moderate wind risk measures. Like-for-like restocking assumptions have been made.

Table 7 25-year forecast of softwood availability broken down by time period and principal species

Principal species	2012-16			2017-21			2022-26			2027-31			2032-36		
	FC	Private sector		FC	Private sector		FC	Private sector		FC	Private sector		FC	Private sector	
	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)		*SE%*	volume (000m^3 obs)		*SE%*
Ayrshire															
All conifers	**298**	**119**	***56***	**242**	**216**	***46***	**241**	**364**	***36***	**207**	**352**	***32***	**239**	**216**	**49**
Sitka spruce	274	82	*77*	225	203	*49*	232	351	*38*	200	312	*35*	229	170	*60*
Scots pine	0	5	*63*	0	5	*63*	0	5	*64*	0	16	*68*	0	4	*70*
Corsican pine	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
Norway spruce	2	3	*96*	2	4	*79*	0	4	*81*	1	3	*96*	1	3	*96*
Larches	6	26	*91*	4	1	*55*	3	1	*52*	5	18	*83*	7	11	*71*
Douglas fir	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
Lodgepole pine	16	3	*106*	10	3	*106*	5	3	*106*	2	3	*106*	2	16	*93*
Other conifers	0	0	-	0	0	-	1	0	-	0	0	-	0	11	*111*

Table 8 25-year forecast of softwood availability broken down by time period and size class

Top diameter class (cm)	2012-16					2017-21				
	FC		Private sector			FC		Private sector		
	volume (000 m^3 obs)	% spruce	volume (000 m^3 obs)	*SE%*	% spruce	volume (000 m^3 obs)	% spruce	volume (000 m^3 obs)	*SE%*	% spruce
Ayrshire										
Total	**298**	**93**	**119**	***56***	**71**	**242**	**94**	**216**	***46***	**96**
7-14	85	87	19	*40*	80	57	88	28	*31*	92
14-16	37	91	10	*48*	79	28	92	13	*39*	93
16-18	38	93	10	*51*	76	29	93	16	*43*	94
18-24	92	95	35	*65*	76	79	96	77	*52*	97
24-34	41	97	32	*70*	66	44	98	69	*55*	98
34-44	4	97	9	*61*	53	6	99	7	*58*	95
44-54	1	100	2	*63*	23	0	100	3	*87*	93
54+	0	100	2	*87*	76	0	100	2	*87*	95

Table 8 (cont'd) 25-year forecast of softwood availability broken down by time period and size class

Top diameter class (cm)	2022-26					2027-31				
	FC		Private sector			FC		Private sector		
	volume (000 m^3 obs)	% spruce	volume (000 m^3 obs)	*SE%*	% spruce	volume (000 m^3 obs)	% spruce	volume (000 m^3 obs)	*SE%*	% spruce
Ayrshire										
Total	**241**	**96**	**364**	***36***	**98**	**207**	**97**	**352**	***32***	**89**
7-14	52	93	56	*36*	97	37	94	36	*34*	82
14-16	26	95	32	*37*	98	20	96	22	*35*	89
16-18	29	96	41	*37*	98	22	96	27	*35*	89
18-24	79	97	139	*36*	98	68	97	115	*37*	92
24-34	47	99	86	*39*	98	49	98	102	*37*	92
34-44	7	100	7	*54*	93	9	99	20	*42*	84
44-54	1	100	1	*67*	67	2	100	6	*71*	66
54+	0	100	2	*99*	88	0	100	23	*98*	88

Top diameter class (cm)	2032-36				
	FC		Private sector		
	volume (000 m^3 obs)	% spruce	volume (000 m^3 obs)	*SE%*	% spruce
Ayrshire					
Total	**239**	**96**	**216**	***49***	**80**
7-14	46	93	28	*64*	80
14-16	24	94	15	*62*	81
16-18	27	95	17	*58*	81
18-24	77	97	62	*48*	82
24-34	51	98	68	*59*	83
34-44	10	99	20	*71*	79
44-54	2	99	4	*68*	47
54+	1	98	1	*88*	0

Volume not in the forecast

The following stands, volumes and areas have not been included in the main forecast results. Due to their specific nature they are treated as 'special cases' and are assessed separately. Dependent on the perspective taken on their nature, the likelihood of these stands being harvested or not can be assessed and a view taken as to whether or not these volumes should be added to the figures already quoted in the main forecasts in terms of a total assessment of standing volume, increment and production.

Overdue timber

Overdue volume relates to that volume which is held within trees and stands that are currently beyond the fell age set by the harvesting scenario.

Table 9 Overdue volumes and areas

Principal species	FC	Private sector		FC	Private sector	
	volume (000 m^3 obs)		*SE%*	area (000 ha)		*SE%*
Ayrshire						
All conifers	**87**	**281**	***56***	**0.3**	**0.3**	***53***
Sitka spruce	73	49	*100*	0.3	0.1	*96*
Scots pine	0	0	-	0.0	0.0	-
Corsican pine	0	0	-	0.0	0.0	-
Norway spruce	4	0	-	0.0	0.0	-
Larches	4	50	*111*	0.0	0.1	*111*
Douglas fir	0	0	-	0.0	0.0	-
Lodgepole pine	5	0	-	0.0	0.0	-
Other conifers	0	179	*77*	0.0	0.1	*77*

Refer to the *25-year forecast of softwood timber availability* report for a description of the underlying methodology and interpretation of overdue volume and area.

Forestry Commission sales of land

Forestry Commission flag the year of any planned disposals within the sub-compartment database and these areas continue to contribute to the Forestry Commission forecast until the date of disposal. After that point these areas and any standing volume are removed from the FC forecast. Table 10 summarises the area and standing volume at the time of disposal as indicated within the sub-compartment database.

Table 10 Standing volume and stocked area of Forestry Commission land marked for disposal

FC	Conifers	Broadleaves	Conifers	Broadleaves
	volume (000 m^3 obs)		area (000 ha)	
Ayrshire				
Total			**0.6**	**0.0**
2012	42.5	0.0	0.1	0.0
2013	73.9	0.5	0.5	0.0
2014	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0

Refer to the *25-year forecast of softwood timber availability* report for a description of the underlying methodology and interpretation of standing volume and stocked area of land marked for disposal.

Currently clearfelled area

Mapped forest areas were identified as clearfelled by aerial photography and subsequently updated by satellite imagery. Areas of clearfell that were observed in the NFI field survey (2010 to 2011) are not included in these forecasts. The assumption is made that these areas are not replanted in the future. This assumption is conservative and is used because the NFI has no information on what was planted on these sites before felling and therefore the replanted crop on the ‘like-for-like’ replanting assumption that is applied for the rest of the forecast period cannot be determined. It is probable that a high proportion of this area will be replanted and will contribute to standing volume, increment, production, carbon sequestered and biomass. Assuming no replanting on these areas will create a small underestimate in most forecasts, especially in later years. There will be much less impact on the production forecast than on standing volume, biomass and carbon forecasts, as such stands, if replanted, would come to full maturity after the forecast period. However, with the increased harvesting without replanting associated with wind farms, open habitat restoration and the current low proportion of coniferous species that are being replanted in some areas, this conservative approach may be appropriate, and is consistent with the approach taken by all previous forecasts. Future forecasts will provide more options on how this land may be utilised in future.

Although Forestry Commission records are available providing information on the stand structure from the previous rotation, currently clearfelled land on the Forestry Commission estate has also been excluded from the forecast of softwood availability to give a consistent approach with the Private sector methodology.

NFI national reports and papers

The principal themes reported on for the 2011 woodland profile and future forecasts are:
GB 2011 preliminary estimates of broadleaved species
GB 2011 standing coniferous timber volume
UK 25-year forecast of softwood availability
GB 25-year forecast of coniferous standing volume and increment

Each theme has a series of associated reports, papers and data, tailored for different audiences and uses. All the documents and data can be found on the NFI website www.forestry.gov.uk/inventory.

Glossary

A glossary of terms is presented in the full suite of forecast reports which can be found at www.forestry.gov.uk/forecast.

Official Statistics

This is an Official Statistics publication. More information about Official Statistics and the UK Statistics Authority is available at www.statisticsauthority.gov.uk

National Forest Inventory Statistician: Alan Brewer