National Forest Inventory

Republic of Ireland

Forest Service

THE DEPARTMENT OF AGRICULTURE, FISHERIES & FOOD
AN ROINN TALMHAÍOCHTA, IASCAIGH AGUS BIA

Results








National Forest Inventory
Republic of Ireland - Results

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Covering the National Forest Inventory, 2004 to 2006

FOREWORD

As the Minister responsible for forestry in the Department of Agriculture, Fisheries and Food, I am delighted to present the National Forestry Inventory Results.

The National Forestry Inventory was undertaken by my Department to address information needs on the composition of our forests, in relation to species, timber volumes and biodiversity.

The inventory involved a detailed field survey of Ireland's forests to assess the extent, composition and condition of the entire national forest estate, both public and private. The inventory, the first of its type to be carried out at national level in this State, began in November 2004 and was completed on schedule in November 2006. Data processing and analysis have since been completed to allow for this publication in December 2007.

The completion of this survey will enable Ireland to fulfil national and international reporting obligations and to monitor the sustainable development of the forest resource in Ireland. Data from the NFI will be used to estimate carbon stocks through the calculation of forest biomass figures in Irish forests and greenhouse gas emissions associated with land use change.

This important publication, along with the NFI Methodology and the Proceedings of the NFI Conference documents, are the result of many long hours of work by Forest Service staff and all those who engaged in the consultation process. I had the opportunity to see the inventory teams in action in forests in my own home county of Meath, and I know the NFI results were subjected to a thorough assessment before publication.

I would like to thank the many forest owners country wide for allowing access to their lands during the course of the NFI data collection. Over 2,100 plots were visited as part of the data collection process, with 1,742 permanent forest inventory plots being established. These plots now represent a bank of baseline data against which future growth and change can be assessed. We have taken an important first step here and I commend all involved.

Mary Wallace, TD
Minister of State

The Forest Service of the Department of Agriculture, Fisheries and Food is Ireland's national forest authority. It is responsible for the forestry sector, the administration of forestry grant schemes, forest protection, the control of felling and the promotion and support of forest research. The Forest Service promotes Sustainable Forest Management as a central principle of Irish forest policy, whereby forests are managed to provide economic, social and environmental benefits on a sustainable basis for both current and future generations.

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The Forest Service would like to express its appreciation to all those involved in the completion of the NFI. Sincere thanks are due to all landowners for allowing and facilitating access to their lands during the course of the NFI data collection.

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ABSTRACT

The information gathered in the National Forest Inventory (NFI) encompasses the traditional parameters, such as the area and species composition of the national forest estate and the growing stock (m^3), as well as, for the first time in Ireland, information with regard to biodiversity, health and vitality, carbon content and soil type, for the entire forest estate. Data such as on minor tree species and natural regeneration are also included.

A picture emerges of an estate with an extent that has reached 10% of the total land area, with spruce as the predominant species but with a wide variety of forest types present. The forest estate area is classified into three forest ownership categories: public (57%), private (grant aided) (30%) and private (other) (13%).

Wicklow is the county with the highest percentage of forest cover (18%), while Cork has the largest forest area (77,700 ha). The NFI results indicate that the national forest estate is an important sink for carbon, at 321 million tonnes. The total growing stock is 70 million m^3, mostly consisting of spruce and pine species. There is, however, also a significant quantity of growing stock present in older broadleaf stands in native or semi-natural woodlands.

The estate consists primarily of managed forest, established on cultivated soil, but interventions such as thinning and pruning are not as widely carried out as might have been anticipated. The estate is subject to a wide range of management constraints, most of them of an environmental nature.

There is an important biodiversity resource within Irish forests, with many non-tree plant species and lichens frequent across the forest estate. Deadwood is present in 45% of the forest estate, with the total resource exceeding 5.6 million m^3. There are significant proportions of open areas and areas with natural regeneration present, the latter particularly so in the older private forest estate. Overall, the estate appears healthy with low levels of damage.

The inventory data indicate that afforestation of peatland has become less important, as the afforestation programme is now concentrated on wet mineral soils. Although forests are already largely located at lower altitudes, there appears to be a further trend away from afforesting land at higher elevations.

Table of Contents

TABLE OF FIGURES

CHAPTER 1
INTRODUCTION

1.1 OVERVIEW

Background

At the end of the 19th century, the area of forest cover in Ireland was estimated to be approximately 69,000 hectares (ha), or circa 1% of the national land area. During the first 75 years of the 20th century, afforestation in Ireland was almost exclusively the responsibility of the State, and by 1985 forest cover had increased to approximately 420,000 ha. The mid 1980s saw a significant increase in private forest development, with the introduction of EU-funded grant schemes aimed at encouraging private land owners, mainly farmers, to become involved in forestry. As a result, the area of the national forest estate in Ireland has now increased to approximately 700,000 ha. Of this, circa 57% is in public ownership and 43% in private ownership.

Despite this increase in the amount of forest cover in Ireland, the State did not produce inventory information of the entire national forest estate. Coillte Teoranta (the Irish Forestry Board) owns 56% of the forest estate and maintains a detailed inventory of its forests, while private estate managers also produce inventories. However, a comprehensive and standardised inventory of the entire private forest estate has not been available. This lack of information on the composition of our forests, in relation to species, timber volumes, increment and biodiversity, has been an impediment to the sustainable management and utilisation of the national forest resource.

NFI

The purpose of the NFI was to record and assess the current extent, state and composition of Ireland's forest resource, both public and private, in a timely, accurate and reproducible manner.

In 2007 the Forest Service of the Department of Agriculture, Fisheries and Food completed the first statistical NFI in Ireland. This inventory involved a detailed field survey of Ireland's forests. Ireland's NFI is based on a randomised systematic grid sample design. As a result of a pilot study in Co. Wexford, a grid density of 2 km x 2 km was found to provide the frequency of plots needed to achieve a national estimate of growing stock with a precision of ±5%, at the 95% confidence level. This grid density equated to 17,423 potential plot locations nationally, each representing approximately 400 ha. Each circular NFI permanent sample plot measures 25.24 metres (m) in diameter, equating to 500 m^2.

The underlying technology used in the NFI consisted of an integrated system of hardware and software (Field-Map™) developed by the Institute of Forest Ecosystem Research Ltd. (IFER), Czech Republic. It allowed for the preparation of a NFI database, background maps, and plot generation. This in turn allowed for the creation of projects for field teams, which facilitated the field data collection process.

To carry out the data collection work, the Forest Service recruited professional foresters, with six foresters working in the field at any one time. Due to staff turnover, twelve field staff were employed during the course of the project. Training, field team support, validation and other quality control procedures were undertaken by two staff to ensure data quality and the smooth running of field operations.

The field data collection began in November 2004 and was completed in November 2006. In total, 1,742 forest plots were established throughout the country, with the number of plots in each county relative

to the size of the county and the level of forest cover. Within each sample plot, a variety of primary attributes were assessed, from the tree top to the soil underneath. For example, information was collected on: tree growth and development, the diversity of plant species and soil type.

Following the completion of the field data collection work, primary data pre-processing and data analysis were carried out. During data pre-processing, the validity of the data was checked and data values were amended where necessary. Secondary variables, such as volume, were also calculated. Data analysis involved the production of statistics which describe components of the national forest estate, e.g. volume of standing deadwood per hectare by ownership. Data analysis and the generation of results were undertaken by the Forest Service, in close collaboration with the IFER, and were completed in June 2007.

1.2 Technology for data processing

The Field-Map™ system has been designed for the whole NFI process, starting with the preparation of the data collection database, through to the field data collection and on to comprehensive data processing.

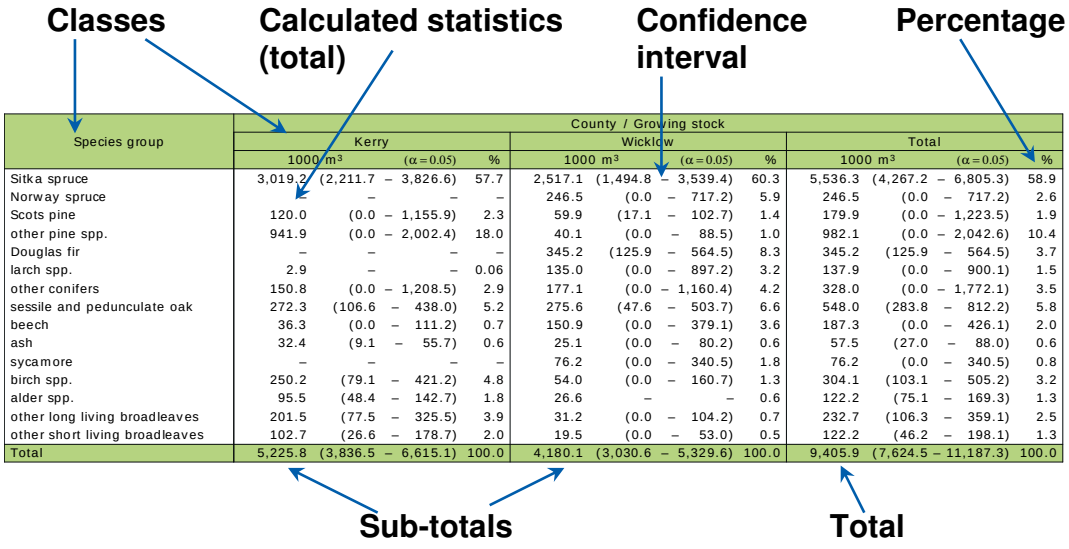
The data was stored directly into a computer database in the field. During the field data collection the data were automatically checked and verified. Without any intermediate steps, the field data could be processed. All the data processing was done using the original field database without conversion. During the data processing the secondary attributes were added to the database, but the database retained its original format which can easily be used for the next cycle of a repeat inventory.

A comprehensive set of data processing procedures, i.e. calculation of secondary attributes and statistical data processing, is incorporated in the Field-Map Inventory Analyst software. The software facilitates the step-by-step calculation of secondary attributes. The statistical data processing tasks are formulated and easily implemented.

1.3 Presentation of results

In this document, the main results from the NFI are presented. Approximately 150 statistical outputs that describe aspects of the national forest estate are included. Forest attributes (e.g. ownership) are used to classify evaluated variables (e.g. area) through the calculation of statistics (e.g. totals and/or means).

The analysis software (Field Map Inventory Analyst) produces standardised tables and charts for reporting purposes (Figure 1). As errors are associated with all forms of sampling, the tables detail the calculated statistics with associated confidence intervals ($\mathbf{a}$=0.05). The confidence interval quantifies the uncertainty in measurement by specifying the range of values within which the true value for the whole population lies. As a 95% confidence interval is used for the NFI analyses, there is a 95% probability that the true value for the population lies within the range of values. Only sampling error is included in the confidence interval, modelling errors (e.g. for volume estimates) are not incorporated in the confidence intervals. Sub-totals are provided where a variable is classified by more than one attribute. The proportion of the variable in each classifier class is also included. Interpretation of the results is aided by the use of charts and graphs.



Species group	County / Growing stock								
	Kerry			Wicklow			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	3,019.2	(2,211.7 – 3,826.6)	57.7	2,517.1	(1,494.8 – 3,539.4)	60.3	5,536.3	(4,267.2 – 6,805.3)	58.9
Norway spruce	–	–	–	246.5	(0.0 – 717.2)	5.9	246.5	(0.0 – 717.2)	2.6
Scots pine	120.0	(0.0 – 1,155.9)	2.3	59.9	(17.1 – 102.7)	1.4	179.9	(0.0 – 1,223.5)	1.9
other pine spp.	941.9	(0.0 – 2,002.4)	18.0	40.1	(0.0 – 88.5)	1.0	982.1	(0.0 – 2,042.6)	10.4
Douglas fir	–	–	–	345.2	(125.9 – 564.5)	8.3	345.2	(125.9 – 564.5)	3.7
larch spp.	2.9	–	0.06	135.0	(0.0 – 897.2)	3.2	137.9	(0.0 – 900.1)	1.5
other conifers	150.8	(0.0 – 1,208.5)	2.9	177.1	(0.0 – 1,160.4)	4.2	328.0	(0.0 – 1,772.1)	3.5
sessile and pedunculate oak	272.3	(106.6 – 438.0)	5.2	275.6	(47.6 – 503.7)	6.6	548.0	(283.8 – 812.2)	5.8
beech	36.3	(0.0 – 111.2)	0.7	150.9	(0.0 – 379.1)	3.6	187.3	(0.0 – 426.1)	2.0
ash	32.4	(9.1 – 55.7)	0.6	25.1	(0.0 – 80.2)	0.6	57.5	(27.0 – 88.0)	0.6
sycamore	–	–	–	76.2	(0.0 – 340.5)	1.8	76.2	(0.0 – 340.5)	0.8
birch spp.	250.2	(79.1 – 421.2)	4.8	54.0	(0.0 – 160.7)	1.3	304.1	(103.1 – 505.2)	3.2
alder spp.	95.5	(48.4 – 142.7)	1.8	26.6	–	0.6	122.2	(75.1 – 169.3)	1.3
other long living broadleaves	201.5	(77.5 – 325.5)	3.9	31.2	(0.0 – 104.2)	0.7	232.7	(106.3 – 359.1)	2.5
other short living broadleaves	102.7	(26.6 – 178.7)	2.0	19.5	(0.0 – 53.0)	0.5	122.2	(46.2 – 198.1)	1.3
Total	5,225.8	(3,836.5 – 6,615.1)	100.0	4,180.1	(3,030.6 – 5,329.6)	100.0	9,405.9	(7,624.5 – 11,187.3)	100.0

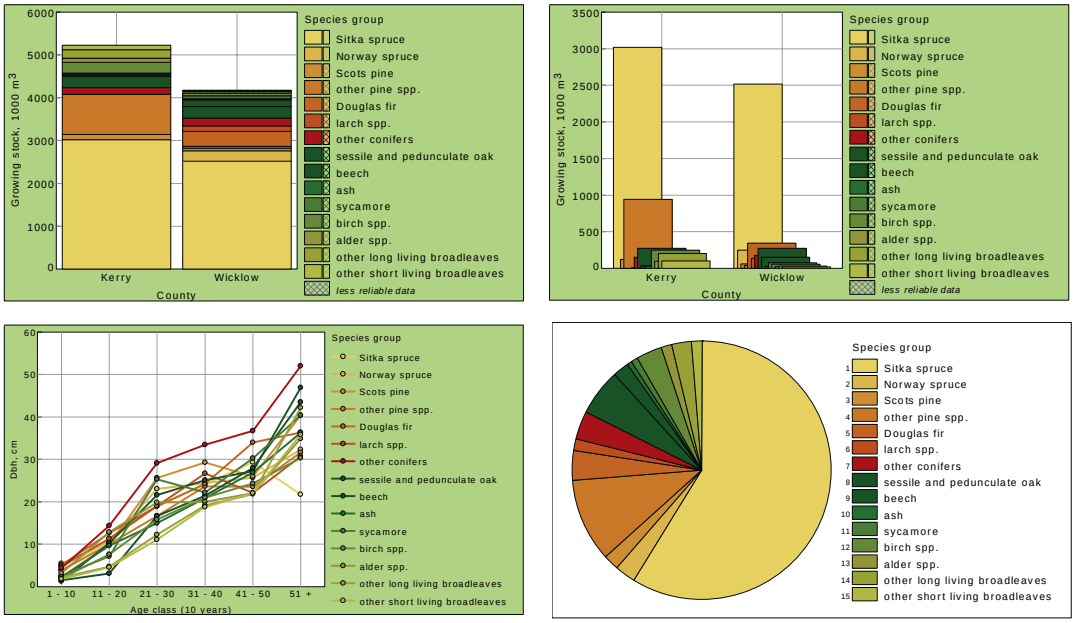


Figure 1. Example of standardised outputs.

The analysis of eleven important forest variables is included. Each variable is presented in a separate chapter, which includes a range of statistical outputs describing the variable. For each statistical output, the attributes used for classification are defined. A brief methodology, which describes how the analysis was carried out, is also included with each analysis. The variables are commonly classified by ownership and by county. The twelve evaluated variables are:

1. Area
2. Species
3. Tree description
4. Forest structure
5. Growing stock
6. Deadwood
7. Carbon
8. Health and vitality
9. Regeneration
10. Vegetation and lichens
11. Site

1.4 Other NFI Publications

To gain a full understanding of the results presented in this document, the *NFI – Republic of Ireland - Methodology* document should be reviewed first, and should also be referred to during the course of the interpretation of this Results document.

At the NFI conference in Portlaoise on July 11th, 2007, five papers were presented. These presentations summarise the inception, implementation, analysis, results and applications of the NFI. The compilation of these papers in the *NFI - Republic of Ireland - Proceedings of the NFI Conference* has produced a useful reference document.

CHAPTER 2
AREA

For the first time, through a NFI, the areas of forest and also of other forest related land-use types in the Republic of Ireland are placed in context with non-forest land-use types and are given statistical limits. Previous best estimates that forest land cover has reached 10% of the total land area are confirmed. The addition of the area of other land with trees on it, such as small woodlots, hedgerows, individual trees and non-forest scrub, raises this figure to 14%.

Bare land within forest ownership boundaries covers 0.5% of the total land area. The majority of this permanently unplanted non-forest land is publicly owned and remains unplanted owing to constraints such as poor fertility or landscape sensitivity. Forest open areas which are integral to the forest, such as roads and ridelines, make up 1% of the total land area, or 10% of forest land. This high proportion indicates that the forest estate comprises not just homogenous closed stands, but incorporates many ride lines, setbacks and other open areas integral to the forest, and illustrates an important aspect of diversity in the national forest estate.

On a county basis, Wicklow carries the highest percentage of forest cover (18%), though the NFI shows that this is lower than had previously been estimated by the Forest Service (21%). This percentage forest cover is just above that set as the national objective for forest cover at 17%. Cork, as the largest county, not surprisingly has the greatest area of forest, at 70,890 ha of stocked forest land and 6,810 ha of forest open area.

Private ownership (43%), while still lower than public ownership, is rapidly overtaking the latter, and should make up the majority of the national estate within one decade, if the afforestation programme continues. It is already dominant in eight counties.

The age structure of the estate is strongly skewed to the 1-to-20 year age classes, due mainly to large-scale afforestation in the last two decades. Nearly two-thirds of the forests in the estate are 20 years old or less.

The management of the majority (52%) of the national estate is strongly constrained, mainly by environmental considerations and regulations.

Another feature which distinguishes the forest estate is its relatively low elevation, with 90% of the area occurring below 300 m. Only 3% of the forest area in the 1-to-10 year age class is located at altitudes of 300 m or higher, indicating that the most recent afforestation has taken place at lower altitudes.

2.1 TOTAL AREA

2.1.1 Total area of Ireland by land-use type

Definition
Land-use type
Categorises land-use into one of 25 classes.

Methodology
The entire land base of Ireland is represented by 17,423 NFI plots, each one representing approximately 400 ha. Land-use types were assigned to each NFI plot during a photo interpretation exercise using colour aerial photographs that were obtained during a 2000 and 2004 flight programme. Plots classified as forest became the focus of the ground survey. This land-use classification is very important as it forms the basis by which future land-use change may be monitored.

Land-use type	Area		
	1000 ha	($\alpha = 0.05$)	%
Forest	697.73	(666.65 – 728.81)	10.0
Hedgerow	272.36	(252.30 – 292.43)	3.9
Other Woodland	49.27	(40.59 – 57.94)	0.7
Bareland within Forest Ownership Boundary	38.05	(30.42 – 45.68)	0.5
Deforestation	6.01	(2.97 – 9.05)	0.09
Individual Tree	5.61	(2.67 – 8.54)	0.08
Scrub	88.12	(76.55 – 99.69)	1.3
Grassland	3,757.02	(3,705.37 – 3,808.66)	53.9
Cropland	379.31	(355.81 – 402.80)	5.4
Bog and Heath	890.79	(856.21 – 925.37)	12.8
Cutover Peat (Domestic)	96.53	(84.43 – 108.63)	1.4
Cutover Peat (Industrial)	68.89	(58.65 – 79.14)	1.0
Bare Rock	75.70	(64.97 – 86.43)	1.1
Bare Soil	17.22	(12.08 – 22.36)	0.2
Stone Wall	2.80	(0.73 – 4.88)	0.04
Quarry	7.61	(4.19 – 11.03)	0.1
Road - Paved	84.91	(73.55 – 96.27)	1.2
Built Land (Rural)	111.75	(98.74 – 124.76)	1.6
Built Land (Urban)	63.28	(53.46 – 73.11)	0.9
Green Space (Rural)	57.28	(47.93 – 66.63)	0.8
Green Space (Urban)	23.63	(17.61 – 29.65)	0.3
Track - Unpaved Access Route	17.62	(12.42 – 22.82)	0.3
Other	1.60	(0.03 – 3.17)	0.02
Water Body	140.19	(125.65 – 154.73)	2.0
Coastal Complex	20.43	(14.83 – 26.03)	0.3
Sea	2.40	(0.48 – 4.33)	0.03
Total	6,976.11		100.0

2.1.2 Total area of Ireland by land-use category

Definition
Land-use category
Classification of forest land into, Forest and Forest Open Area.

Definition
Forest (stocked forest area)
Land with a minimum area of 0.1 ha, a minimum width of 20 m, trees higher than 5 m and a canopy cover of more than 20% within the forest boundary, or trees able to reach these thresholds *in situ*.

Definition
Forest open area
Forest open area is a non-stocked forest area (>400 m^2) enclosed within the forest boundary. These areas are integral to the composition of Irish forests and can be readily verified by ground check. The maximum size of a forest open area is 2 ha, with areas greater than this classified as non-forest.

Methodology
NFI plots classified as forest during a photo interpretation exercise were verified by ground check and classified into land-use classes: Forest and Forest Open Area.

Land-use category	Area		
	1000 ha	($\alpha = 0.05$)	%
forest	625.75	(596.25 – 655.24)	9.0
forest open area	72.10	(61.62 – 82.57)	1.0
non-forest	6,278.27	(6,247.32 – 6,309.22)	90.0
Total	6,976.11		100.0

2.1.3 Total area of Ireland by county and land-use category

Methodology

The total land area of Ireland is classified by county and land-use category.

Land-use category	County / Area									
	Carlow				Cavan					
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%		
forest	6.40	(3.37	– 9.43)	7.1	13.65	(9.22	– 18.08)	7.1		
forest open area	1.20	(0.00	– 2.55)	1.3	2.01	(0.26	– 3.76)	1.0		
non-forest	82.02	(78.75	– 85.30)	91.6	177.88	(173.17	– 182.60)	91.9		
Total	89.63			100.0	193.54			100.0		
Land-use category	County / Area									
	Clare				Cork					
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%		
forest	43.44	(35.82	– 51.06)	13.6	70.89	(60.95	– 80.83)	9.5		
forest open area	7.24	(3.93	– 10.55)	2.3	6.81	(3.59	– 10.03)	0.9		
non-forest	269.09	(260.97	– 277.21)	84.1	668.87	(658.52	– 679.22)	89.6		
Total	319.77			100.0	746.57			100.0		
Land-use category	County / Area									
	Donegal				Dublin					
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%		
forest	52.29	(43.76	– 60.82)	10.8	4.41	(1.86	– 6.96)	4.8		
forest open area	4.86	(2.12	– 7.60)	1.0	1.20	(0.00	– 2.56)	1.3		
non-forest	428.46	(419.60	– 437.33)	88.2	86.96	(84.10	– 89.81)	93.9		
Total	485.62			100.0	92.57			100.0		
Land-use category	County / Area									
	Galway				Kerry					
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%		
forest	54.62	(45.89	– 63.36)	8.9	41.30	(33.72	– 48.89)	8.7		
forest open area	3.59	(1.25	– 5.93)	0.6	7.55	(4.18	– 10.91)	1.6		
non-forest	554.22	(545.23	– 563.20)	90.5	426.15	(417.97	– 434.33)	89.7		
Total	612.43			100.0	475.00			100.0		
Land-use category	County / Area									
	Kildare				Kilkenny					
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%		
forest	9.20	(5.54	– 12.86)	5.4	16.18	(11.36	– 21.00)	7.8		
forest open area	1.20	(0.00	– 2.55)	0.7	1.21	(0.00	– 2.58)	0.6		
non-forest	159.14	(155.26	– 163.02)	93.9	188.94	(183.96	– 193.92)	91.6		
Total	169.54			100.0	206.34			100.0		
Land-use category	County / Area									
	Laois				Leitrim					
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%		
forest	22.85	(17.32	– 28.38)	13.3	20.57	(15.35	– 25.79)	12.9		
forest open area	2.41	(0.49	– 4.32)	1.4	3.56	(1.26	– 5.86)	2.2		
non-forest	146.74	(140.97	– 152.51)	85.3	134.88	(129.30	– 140.46)	84.9		
Total	172.00			100.0	159.01			100.0		
Land-use category	County / Area									
	Limerick				Longford					
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%		
forest	20.35	(14.98	– 25.72)	7.6	7.97	(4.60	– 11.33)	7.3		
forest open area	2.39	(0.49	– 4.30)	0.9	0.40	(0.00	– 1.18)	0.4		
non-forest	245.81	(240.16	– 251.46)	91.5	100.77	(97.32	– 104.21)	92.3		
Total	268.56			100.0	109.13			100.0		

Land-use category	County / Area					
	Louth			Mayo		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
forest	2.02	(0.27 – 3.78)	2.5	46.11	(38.04 – 54.19)	8.2
forest open area	0.40	(0.00 – 1.20)	0.5	5.21	(2.39 – 8.03)	0.9
non-forest	80.13	(78.21 – 82.05)	97.0	508.44	(499.96 – 516.91)	90.9
Total	82.56		100.0	559.76		100.0

Land-use category	County / Area					
	Meath			Monaghan		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
forest	9.71	(5.90 – 13.51)	4.1	5.61	(2.73 – 8.50)	4.3
forest open area	1.62	(0.04 – 3.20)	0.7	0.80	(0.00 – 1.91)	0.6
non-forest	222.88	(218.78 – 226.98)	95.2	123.13	(120.06 – 126.20)	95.1
Total	234.21		100.0	129.54		100.0

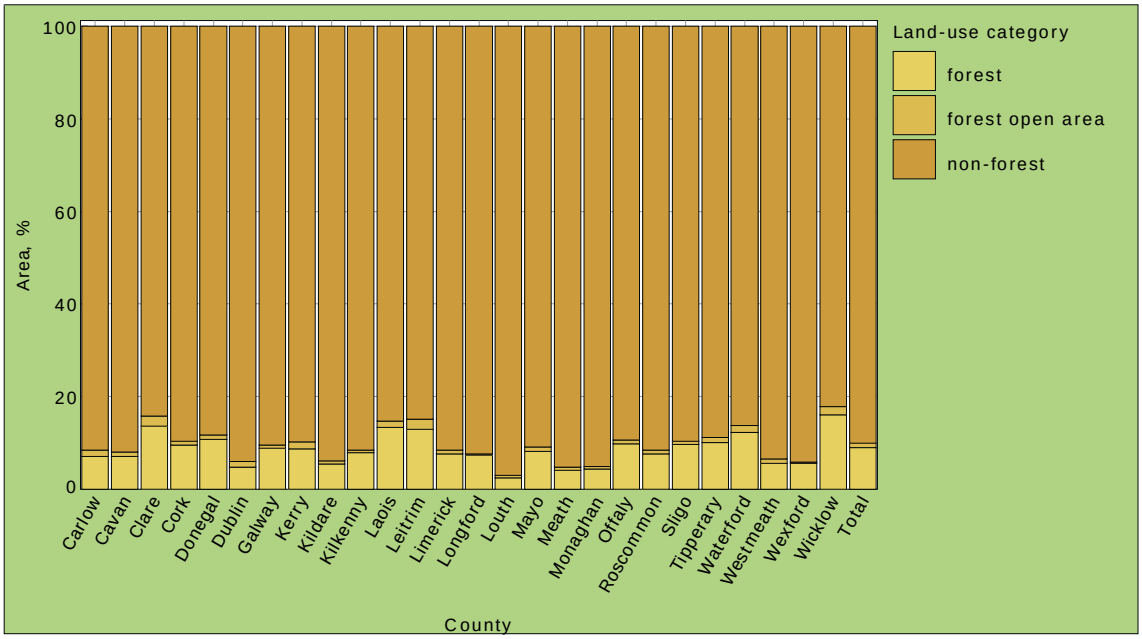
Land-use category	County / Area					
	Offaly			Roscommon		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
forest	19.69	(14.45 – 24.93)	9.8	19.41	(14.13 – 24.70)	7.6
forest open area	1.61	(0.04 – 3.18)	0.8	2.02	(0.26 – 3.79)	0.8
non-forest	178.81	(173.38 – 184.23)	89.4	233.36	(227.84 – 238.89)	91.6
Total	200.10		100.0	254.80		100.0

Land-use category	County / Area					
	Sligo			Tipperary		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
forest	17.81	(12.86 – 22.76)	9.7	42.67	(34.99 – 50.34)	10.0
forest open area	1.19	(0.00 – 2.53)	0.6	4.78	(2.09 – 7.48)	1.1
non-forest	164.67	(159.57 – 169.76)	89.7	378.01	(369.97 – 386.04)	88.9
Total	183.67		100.0	425.46		100.0

Land-use category	County / Area					
	Waterford			Westmeath		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
forest	22.52	(16.99 – 28.06)	12.3	10.37	(6.50 – 14.25)	5.6
forest open area	2.82	(0.74 – 4.89)	1.5	1.60	(0.04 – 3.16)	0.9
non-forest	158.47	(152.66 – 164.29)	86.2	171.98	(167.83 – 176.13)	93.5
Total	183.81		100.0	183.95		100.0

Land-use category	County / Area					
	Wexford			Wicklow		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
forest	13.04	(8.71 – 17.37)	5.5	32.64	(26.12 – 39.15)	16.1
forest open area	0.79	(0.00 – 1.88)	0.3	3.63	(1.28 – 5.98)	1.8
non-forest	222.06	(217.61 – 226.51)	94.2	166.40	(159.61 – 173.20)	82.1
Total	235.89		100.0	202.66		100.0

Land-use category	County / Area		
	Total		
	1000 ha	(α = 0.05)	%
forest	625.75	(596.25 – 655.24)	9.0
forest open area	72.10	(61.62 – 82.57)	1.0
non-forest	6,278.27	(6,247.32 – 6,309.22)	90.0
Total	6,976.11		100.0

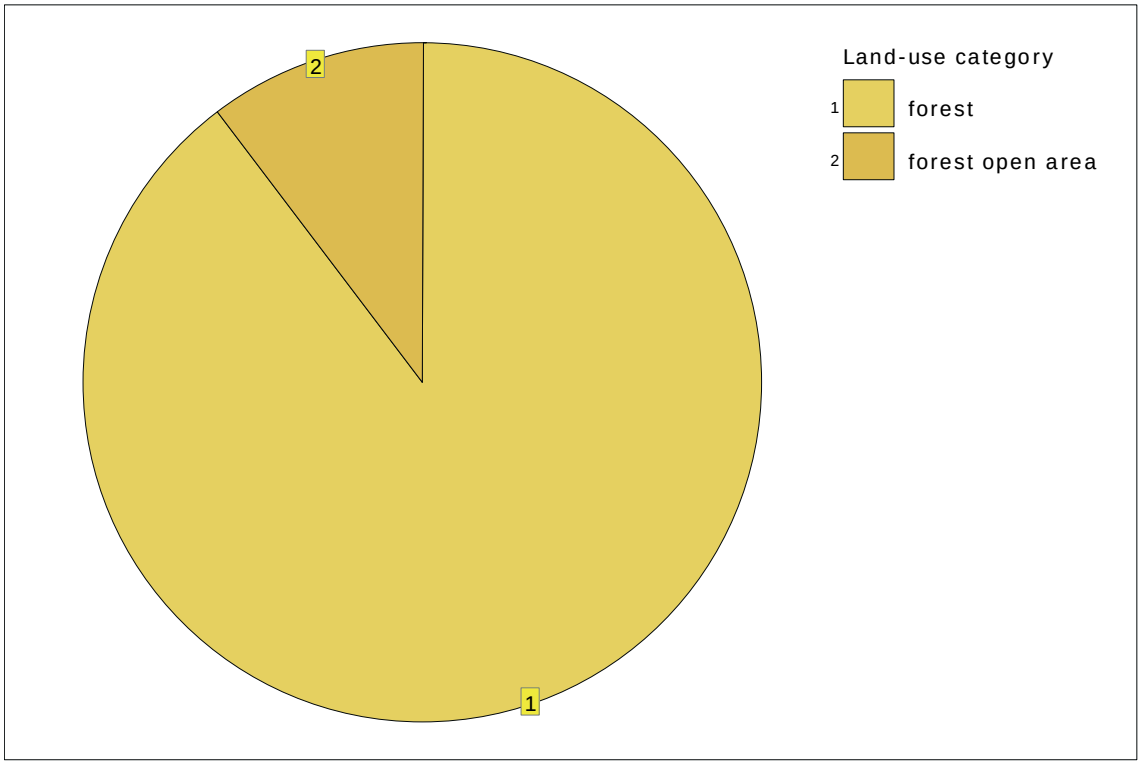


2.1.4 Total forest area of Ireland by land-use category

Methodology

The total forest area is classified by land-use category.

Land-use category	Area		
	1000 ha	($\alpha = 0.05$)	%
forest	625.75	(596.25 – 655.24)	89.7
forest open area	72.10	(61.62 – 82.57)	10.3
Total	697.84	(666.89 – 728.79)	100.0



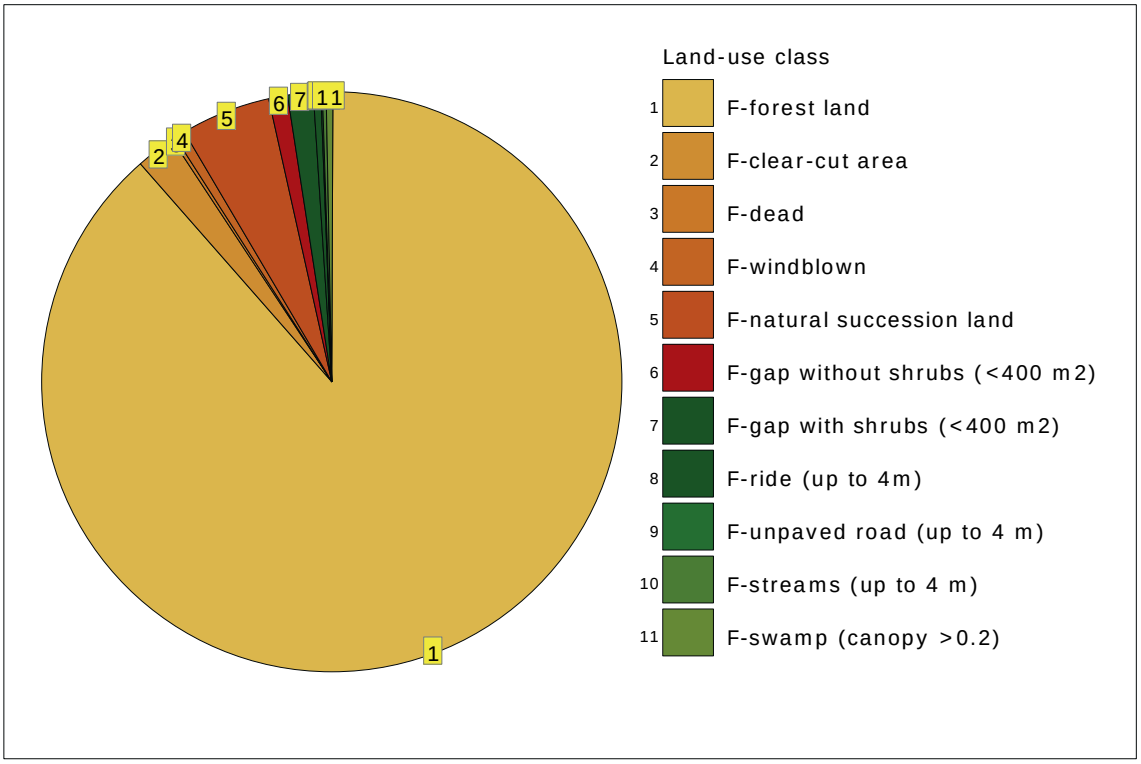
2.2 LAND-USE CLASS

Definition
Land-use class
The sub-categorisation of land-use category (i.e. Forest and Forest Open Area) which describes the forest estate in more specific terms.

2.2.1 Total stocked forest area by land-use class

Methodology
The total area in land-use category Forest is classified by land-use class.

Land-use class	Area		
	1000 ha	(α = 0.05)	%
F-forest land	554.05	(544.22 – 563.89)	88.5
F-clear-cut area	13.62	(9.09 – 18.16)	2.2
F-dead	1.21	(0.00 – 2.58)	0.2
F-windblown	3.60	(1.26 – 5.95)	0.6
F-natural succession land	31.21	(24.50 – 37.92)	5.0
F-gap without shrubs (<400 m2)	6.42	(3.30 – 9.54)	1.0
F-gap with shrubs (<400 m2)	8.81	(5.20 – 12.43)	1.4
F-ride (up to 4m)	2.81	(0.73 – 4.88)	0.4
F-unpaved road (up to 4 m)	0.40	(0.00 – 1.19)	0.06
F-streams (up to 4 m)	1.21	(0.00 – 2.57)	0.2
F-swamp (canopy >0.2)	2.41	(0.48 – 4.34)	0.4
Total	625.75		100.0

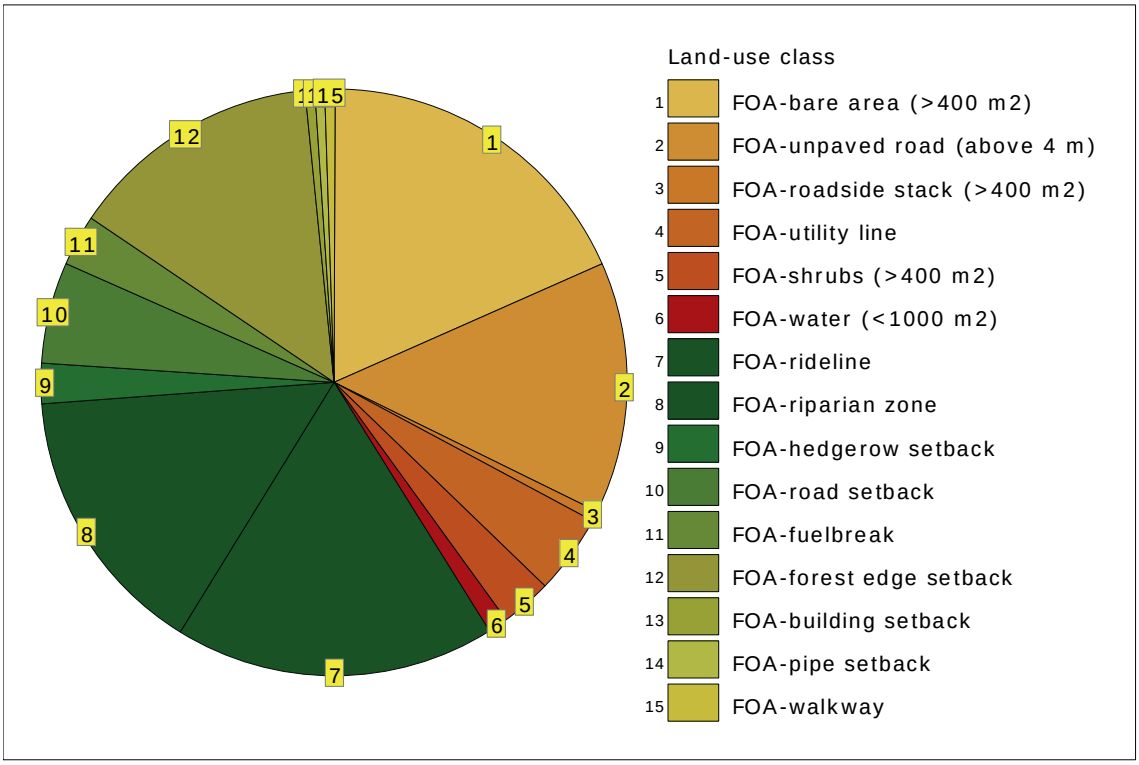


2.2.2 Total forest open area by land-use class

Methodology

The total area in land-use category Forest Open Area (FOA) is classified by land-use class.

Land-use class	Area		
	1000 ha	(α = 0.05)	%
FOA-bare area (>400 m2)	13.21	(8.71 – 17.71)	18.1
FOA-unpaved road (above 4 m)	10.02	(6.10 – 13.95)	13.9
FOA-roadside stack (>400 m2)	0.40	(0.00 – 1.19)	0.6
FOA-utility line	3.21	(0.99 – 5.44)	4.5
FOA-shrubs (>400 m2)	2.01	(0.25 – 3.77)	2.8
FOA-water (<1000 m2)	0.80	(0.00 – 1.91)	1.1
FOA-rideline	12.80	(8.37 – 17.23)	17.8
FOA-riparian zone	10.82	(6.74 – 14.89)	15.0
FOA-hedgerow setback	1.60	(0.03 – 3.18)	2.2
FOA-road setback	4.00	(1.52 – 6.49)	5.6
FOA-fuelbreak	2.00	(0.25 – 3.75)	2.8
FOA-forest edge setback	10.01	(6.09 – 13.94)	13.9
FOA-building setback	0.40	(0.00 – 1.18)	0.6
FOA-pipe setback	0.40	(0.00 – 1.17)	0.5
FOA-walkway	0.40	(0.00 – 1.19)	0.6
Total	72.10	(61.62 – 82.57)	100.0



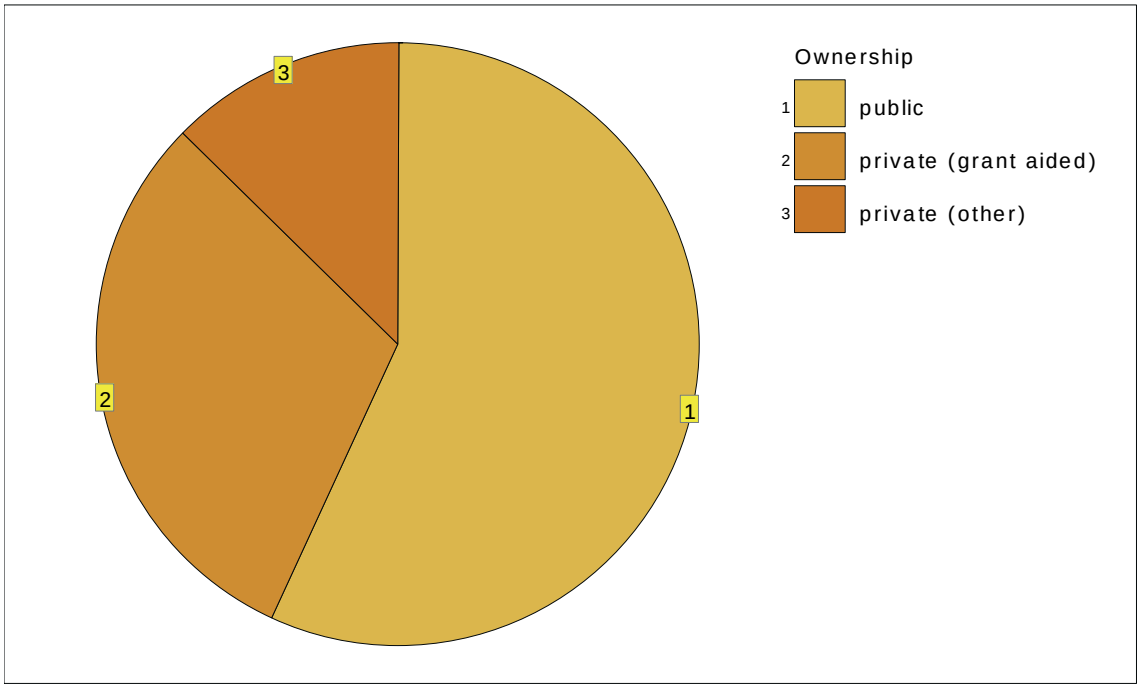
2.3 FOREST OWNERSHIP

2.3.1 Total forest area by ownership

Definition
Ownership Specifies forest ownership. 1. **Public**: all state owned forests 2. **Private (grant aided)**: private afforested land which was in receipt of either grant and/or premium since 1980. 3. **Private (other)**: private non grant aided plantations or naturally regenerated forests.

Methodology
The total forest area (i.e. Forest and Forest Open Area) is classified by ownership.

Ownership	Area		
	1000 ha	(α=0.05)	%
public	397.46	(381.49 – 413.44)	57.0
private (grant aided)	212.20	(197.39 – 227.01)	30.4
private (other)	88.18	(77.45 – 98.91)	12.6
Total	697.84		100.0



2.3.2 Total stocked forest area by county and ownership.

Methodology

The total stocked forest area is classified by county and ownership.

Ownership	County / Area					
	Carlow			Cavan		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
public	4.40	(2.77 – 6.03)	68.7	8.83	(6.52 – 11.15)	64.7
private (grant aided)	1.20	(0.00 – 2.58)	18.8	4.02	(1.81 – 6.22)	29.4
private (other)	0.80	(0.00 – 1.97)	12.5	0.80	(0.00 – 1.94)	5.9
Total	6.40		100.0	13.65		100.0

Ownership	County / Area					
	Clare			Cork		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
public	22.52	(18.36 – 26.69)	51.9	43.26	(38.15 – 48.36)	61.0
private (grant aided)	14.08	(10.18 – 17.98)	32.4	18.02	(13.46 – 22.58)	25.4
private (other)	6.84	(3.80 – 9.87)	15.7	9.61	(6.03 – 13.20)	13.6
Total	43.44		100.0	70.89		100.0

Ownership	County / Area					
	Donegal			Dublin		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
public	33.24	(28.88 – 37.60)	63.5	2.40	(0.86 – 3.95)	54.5
private (grant aided)	15.00	(10.90 – 19.10)	28.7	0.80	(0.00 – 2.00)	18.2
private (other)	4.05	(1.63 – 6.48)	7.8	1.20	(0.00 – 2.59)	27.3
Total	52.29		100.0	4.41		100.0

Ownership	County / Area					
	Galway			Kerry		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
public	37.48	(33.22 – 41.74)	68.6	17.47	(13.48 – 21.47)	42.3
private (grant aided)	12.36	(8.52 – 16.20)	22.6	19.86	(15.82 – 23.90)	48.1
private (other)	4.78	(2.19 – 7.38)	8.8	3.97	(1.59 – 6.35)	9.6
Total	54.62		100.0	41.30		100.0

Ownership	County / Area					
	Kildare			Kilkenny		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
public	4.40	(2.37 – 6.43)	47.9	9.31	(6.71 – 11.90)	57.5
private (grant aided)	1.20	(0.00 – 2.57)	13.0	4.85	(2.45 – 7.26)	30.0
private (other)	3.60	(1.61 – 5.58)	39.1	2.02	(0.29 – 3.76)	12.5
Total	9.20		100.0	16.18		100.0

Ownership	County / Area					
	Laois			Leitrim		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
public	16.84	(14.14 – 19.53)	73.7	12.66	(9.84 – 15.47)	61.6
private (grant aided)	3.61	(1.38 – 5.84)	15.8	5.54	(2.97 – 8.10)	26.9
private (other)	2.41	(0.53 – 4.28)	10.5	2.37	(0.52 – 4.22)	11.5
Total	22.85		100.0	20.57		100.0

Ownership	County / Area					
	Limerick			Longford		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
public	9.98	(7.08 – 12.87)	49.0	1.99	(0.34 – 3.65)	25.0
private (grant aided)	9.98	(7.08 – 12.87)	49.0	3.98	(2.07 – 5.90)	50.0
private (other)	0.40	(0.00 – 1.20)	2.0	1.99	(0.34 – 3.65)	25.0
Total	20.35		100.0	7.97		100.0

Ownership	County / Area					
	Louth			Mayo		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
public	1.21	(0.00 – 2.59)	60.0	26.06	(21.82 – 30.31)	56.5
private (grant aided)	–	–	–	16.04	(11.96 – 20.12)	34.8
private (other)	0.81	(0.00 – 2.19)	40.0	4.01	(1.60 – 6.42)	8.7
Total	2.02		100.0	46.11		100.0

Ownership	County / Area					
	Meath			Monaghan		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
public	3.24	(1.26 – 5.21)	33.3	2.81	(1.13 – 4.49)	50.0
private (grant aided)	4.45	(2.36 – 6.54)	45.9	0.80	(0.00 – 1.98)	14.3
private (other)	2.02	(0.32 – 3.72)	20.8	2.01	(0.39 – 3.62)	35.7
Total	9.71		100.0	5.61		100.0

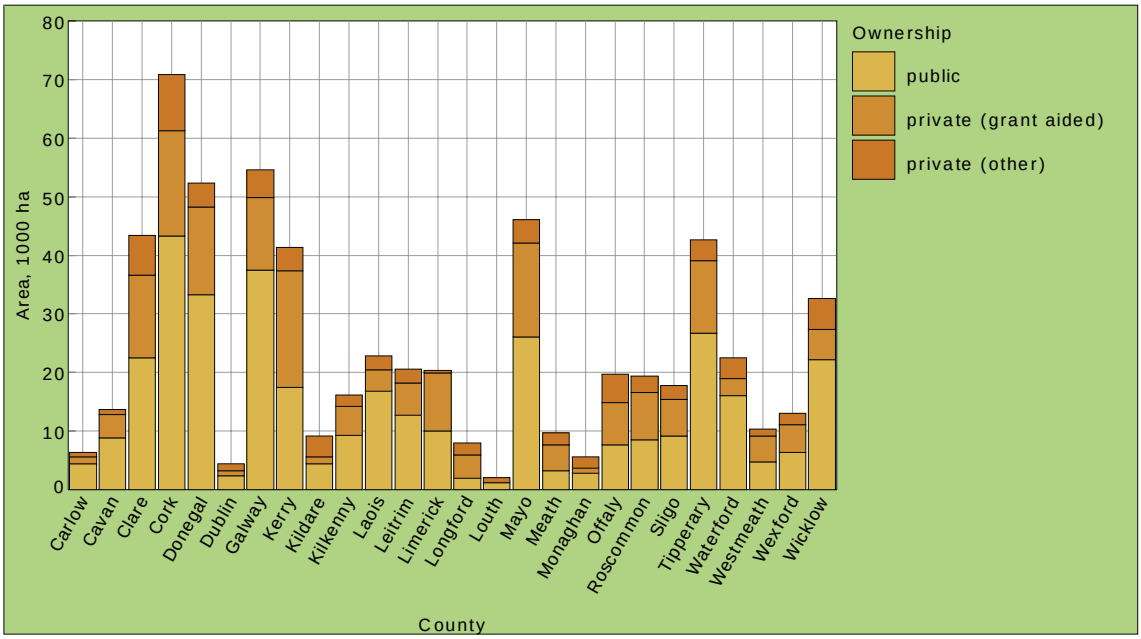
Ownership	County / Area					
	Offaly			Roscommon		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
public	7.63	(4.85 – 10.42)	38.8	8.49	(5.66 – 11.32)	43.7
private (grant aided)	7.23	(4.48 – 9.99)	36.7	8.09	(5.28 – 10.90)	41.7
private (other)	4.82	(2.36 – 7.28)	24.5	2.83	(0.82 – 4.84)	14.6
Total	19.69		100.0	19.41		100.0

Ownership	County / Area					
	Sligo			Tipperary		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
public	9.10	(6.40 – 11.81)	51.1	26.72	(22.74 – 30.69)	62.6
private (grant aided)	6.33	(3.74 – 8.93)	35.6	12.36	(8.63 – 16.09)	29.0
private (other)	2.38	(0.53 – 4.22)	13.3	3.59	(1.31 – 5.87)	8.4
Total	17.81		100.0	42.67		100.0

Ownership	County / Area					
	Waterford			Westmeath		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
public	16.09	(13.34 – 18.84)	71.4	4.79	(2.66 – 6.92)	46.2
private (grant aided)	2.82	(0.80 – 4.83)	12.5	4.39	(2.28 – 6.50)	42.3
private (other)	3.62	(1.38 – 5.86)	16.1	1.20	(0.00 – 2.56)	11.5
Total	22.52		100.0	10.37		100.0

Ownership	County / Area					
	Wexford			Wicklow		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
public	6.32	(3.97 – 8.67)	48.4	22.16	(18.76 – 25.56)	68.0
private (grant aided)	4.74	(2.48 – 7.00)	36.4	5.24	(2.57 – 7.91)	16.0
private (other)	1.98	(0.29 – 3.66)	15.2	5.24	(2.57 – 7.91)	16.0
Total	13.04		100.0	32.64		100.0

Ownership	County / Area		
	Total		
	1000 ha	(α = 0.05)	%
public	359.41	(344.28 – 374.54)	57.4
private (grant aided)	186.99	(173.02 – 200.95)	29.9
private (other)	79.35	(69.10 – 89.60)	12.7
Total	625.75		100.0



2.3.3 Total stocked forest area by ownership and age class (10 yr)

Definition

Temporarily unstocked

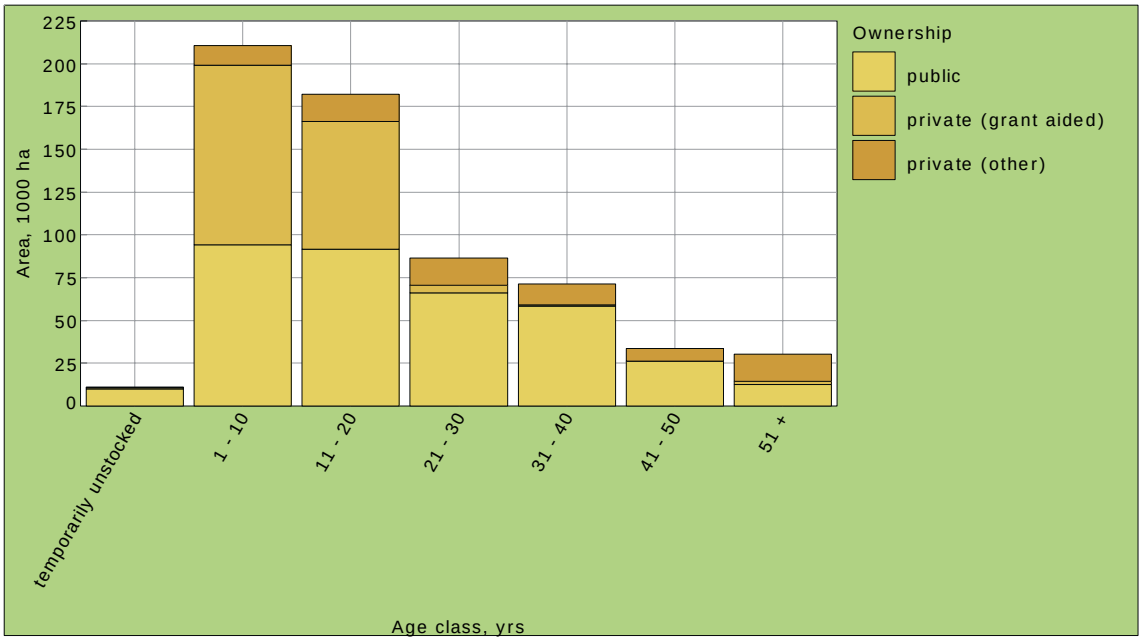
Temporarily unstocked areas had no trees present on the date of assessment but are included in the land-use category Forest. These areas include areas which have been clearfelled and not yet replanted.

Methodology

The total stocked forest area is classified by ownership and age-class (10 yr).

Age class, yrs	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
1 - 10	94.38	(84.00 – 104.75)	26.3	104.80	(93.61 – 115.99)	56.0
11 - 20	91.59	(81.22 – 101.96)	25.5	74.51	(64.67 – 84.35)	39.9
21 - 30	66.13	(57.12 – 75.15)	18.4	4.43	(2.03 – 6.82)	2.4
31 - 40	58.38	(49.70 – 67.06)	16.2	0.75	(0.00 – 1.59)	0.4
41 - 50	26.21	(20.37 – 32.06)	7.3	0.06	(0.00 – 0.15)	0.03
51 +	12.70	(9.00 – 16.39)	3.5	1.62	(0.43 – 2.81)	0.9
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Age class, yrs	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
1 - 10	11.23	(8.17 – 14.29)	14.2	210.41	(196.75 – 224.06)	33.7
11 - 20	16.20	(12.22 – 20.17)	20.3	182.30	(169.14 – 195.45)	29.1
21 - 30	16.02	(11.97 – 20.06)	20.2	86.58	(76.71 – 96.45)	13.8
31 - 40	12.15	(8.53 – 15.77)	15.3	71.29	(62.03 – 80.54)	11.4
41 - 50	7.44	(4.81 – 10.07)	9.4	33.72	(27.40 – 40.04)	5.4
51 +	15.92	(11.90 – 19.95)	20.1	30.24	(24.81 – 35.66)	4.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



2.4 MANAGEMENT CONSTRAINTS

2.4.1 Total stocked forest area by ownership and management constraint

Definition

Management constraints

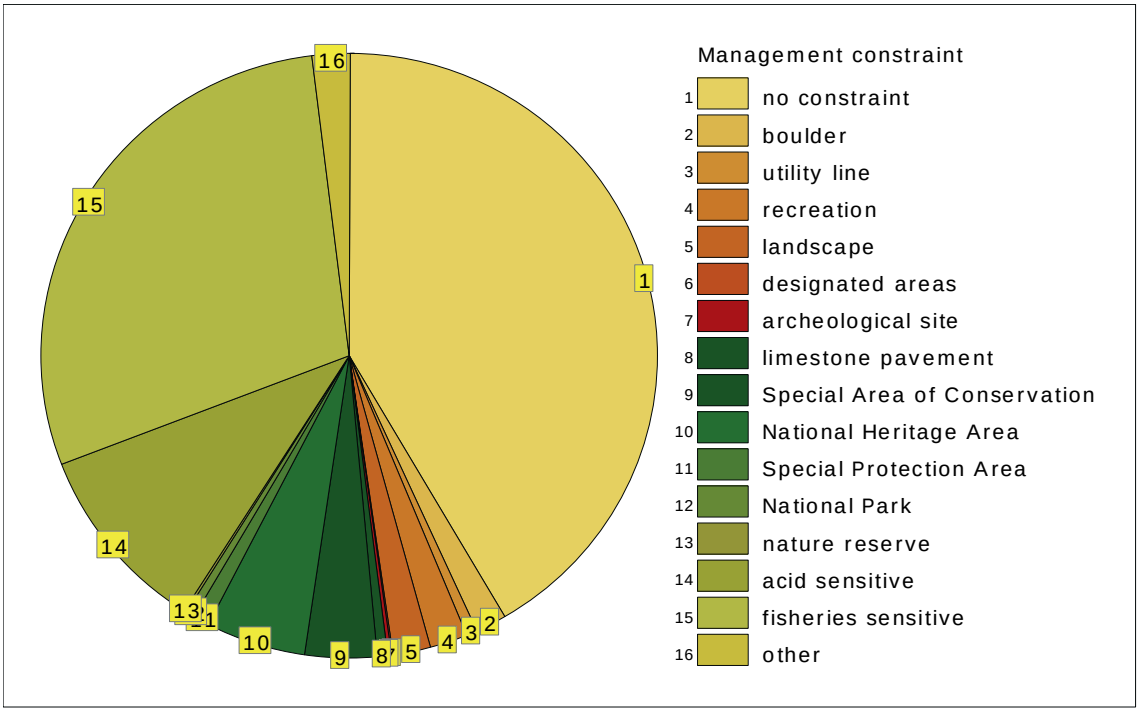
Constraints that have a bearing on forest management.

Methodology

The total stocked forest area is classified by ownership and management constraint. As more than one constraint can be present in an area, the sub-total areas and total area for the ownership categories are not presented.

Management constraint	Ownership / Area					
	public			private (grant aided)		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
no constraint	174.95	(161.81 – 188.09)	39.1	115.32	(103.65 – 126.99)	53.6
boulder	5.99	(2.98 – 8.99)	1.3	4.00	(1.52 – 6.48)	1.9
utility line	1.21	(0.00 – 2.58)	0.3	2.40	(0.49 – 4.31)	1.1
recreation	8.43	(4.86 – 12.01)	1.9	0.40	(0.00 – 1.20)	0.2
landscape	6.40	(3.29 – 9.50)	1.4	1.59	(0.03 – 3.16)	0.7
designated areas	–	–	–	–	–	–
archeological site	1.20	(0.00 – 2.57)	0.3	0.40	(0.00 – 1.19)	0.2
limestone pavement	0.80	(0.00 – 1.91)	0.2	–	–	–
Special Area of Conservation	10.79	(6.79 – 14.80)	2.4	3.59	(1.26 – 5.91)	1.7
National Heritage Area	20.81	(15.29 – 26.34)	4.7	6.39	(3.28 – 9.49)	3.0
Special Protection Area	4.80	(2.13 – 7.48)	1.1	–	–	–
National Park	2.80	(0.75 – 4.85)	0.6	–	–	–
nature reserve	1.21	(0.00 – 2.57)	0.3	–	–	–
acid sensitive	51.75	(44.02 – 59.47)	11.6	20.05	(14.74 – 25.35)	9.3
fisheries sensitive	151.23	(139.53 – 162.93)	33.9	57.64	(49.11 – 66.18)	26.8
other	4.02	(1.53 – 6.50)	0.9	3.20	(1.00 – 5.40)	1.5

Management constraint	Ownership / Area					
	private (other)			Total		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
no constraint	34.85	(27.82 – 41.88)	28.9	325.12	(311.67 – 338.57)	41.4
boulder	2.80	(0.73 – 4.87)	2.3	12.79	(8.41 – 17.17)	1.6
utility line	0.80	(0.00 – 1.94)	0.7	4.41	(1.81 – 7.00)	0.6
recreation	6.79	(3.59 – 10.00)	5.7	15.62	(10.80 – 20.45)	2.0
landscape	7.59	(4.21 – 10.97)	6.3	15.58	(10.81 – 20.35)	2.0
designated areas	0.40	(0.00 – 1.21)	0.3	0.40	(0.00 – 1.21)	0.05
archeological site	–	–	–	1.60	(0.03 – 3.17)	0.2
limestone pavement	3.62	(1.29 – 5.94)	3.0	4.41	(1.84 – 6.99)	0.6
Special Area of Conservation	15.24	(10.46 – 20.02)	12.7	29.62	(23.11 – 36.12)	3.8
National Heritage Area	13.61	(9.11 – 18.12)	11.3	40.81	(33.18 – 48.44)	5.2
Special Protection Area	1.99	(0.25 – 3.73)	1.7	6.79	(3.62 – 9.96)	0.9
National Park	0.79	(0.00 – 1.90)	0.7	3.59	(1.29 – 5.89)	0.5
nature reserve	–	–	–	1.21	(0.00 – 2.57)	0.2
acid sensitive	7.24	(3.97 – 10.50)	6.0	79.03	(70.22 – 87.84)	10.1
fisheries sensitive	16.07	(11.26 – 20.89)	13.4	224.95	(213.50 – 236.39)	28.8
other	8.42	(4.88 – 11.96)	7.0	15.63	(10.85 – 20.42)	2.0



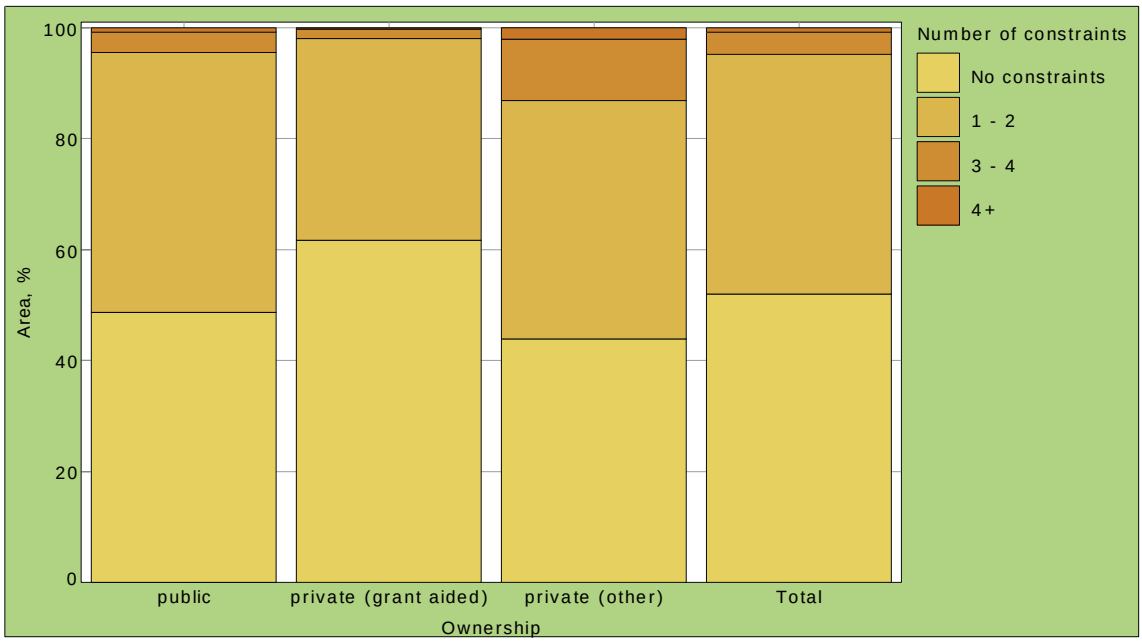
2.4.2 Total stocked forest area by ownership and number of management constraints

Methodology

The total stocked forest area is classified by ownership and number of management constraints.

Number of constraints	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
No constraints	174.95	(161.81 – 188.09)	48.6	115.32	(103.65 – 126.99)	61.7
1 - 2	168.45	(155.59 – 181.32)	46.9	68.06	(58.69 – 77.44)	36.4
3 - 4	13.20	(8.84 – 17.56)	3.7	3.20	(0.99 – 5.41)	1.7
4+	2.81	(0.75 – 4.86)	0.8	0.40	(0.00 – 1.18)	0.2
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Number of constraints	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
No constraints	34.85	(27.82 – 41.88)	43.9	325.12	(311.67 – 338.57)	52.0
1 - 2	34.08	(27.04 – 41.12)	43.0	270.60	(256.84 – 284.36)	43.2
3 - 4	8.82	(5.16 – 12.49)	11.1	25.22	(19.28 – 31.17)	4.0
4+	1.59	(0.04 – 3.15)	2.0	4.80	(2.13 – 7.46)	0.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



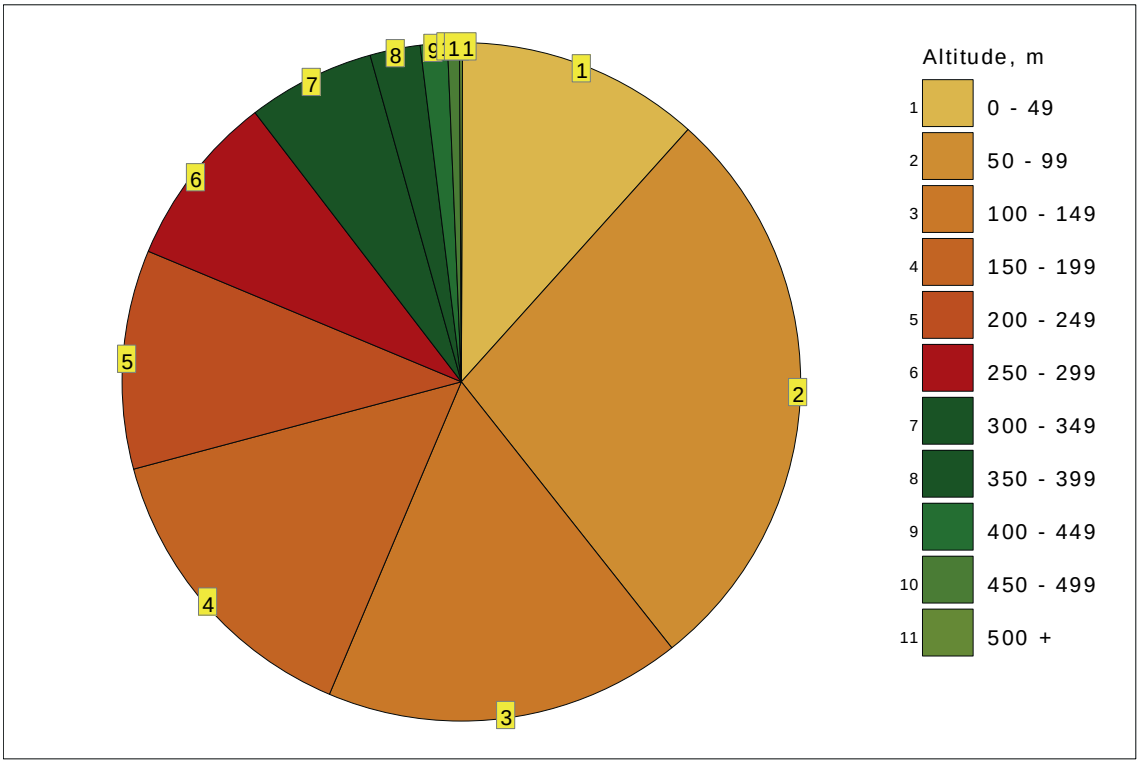
2.5 ALTITUDE

2.5.1 Total stocked forest area by altitude

Definition
Altitude
Height (m) above sea level.

Methodology
The total stocked forest area is classified by altitude.

Altitude, m	Area		
	1000 ha	($\alpha = 0.05$)	%
0 - 49	72.46	(62.77 – 82.15)	11.6
50 - 99	173.79	(161.36 – 186.23)	27.6
100 - 149	106.96	(95.36 – 118.55)	17.1
150 - 199	90.60	(79.85 – 101.36)	14.5
200 - 249	64.98	(55.63 – 74.33)	10.4
250 - 299	51.68	(43.29 – 60.06)	8.3
300 - 349	38.05	(30.73 – 45.36)	6.1
350 - 399	14.79	(10.15 – 19.44)	2.4
400 - 449	8.02	(4.60 – 11.44)	1.3
450 - 499	3.61	(1.28 – 5.95)	0.6
500 +	0.80	(0.00 – 1.96)	0.1
Total	625.75		100.0



2.5.2 Total stocked forest area by county and altitude

Methodology

The total stocked forest area is classified by county and altitude.

Altitude, m	County / Area											
	Carlow				Cavan				Clare			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	–	–		–	1.20	(0.00	– 2.58)	8.8	10.06	(6.54	– 13.57)	23.1
50 - 99	1.20	(0.00	– 2.58)	18.8	4.02	(1.81	– 6.22)	29.4	8.85	(5.49	– 12.21)	20.4
100 - 149	1.20	(0.00	– 2.58)	18.8	2.81	(0.85	– 4.77)	20.6	10.06	(6.54	– 13.57)	23.1
150 - 199	0.40	(0.00	– 1.25)	6.2	2.01	(0.29	– 3.72)	14.7	5.63	(2.83	– 8.43)	13.0
200 - 249	1.60	(0.08	– 3.13)	25.0	2.01	(0.29	– 3.72)	14.7	4.02	(1.61	– 6.44)	9.3
250 - 299	1.20	(0.00	– 2.58)	18.8	0.80	(0.00	– 1.94)	5.9	3.22	(1.04	– 5.40)	7.4
300 - 349	0.40	(0.00	– 1.25)	6.2	0.80	(0.00	– 1.94)	5.9	1.21	(0.00	– 2.58)	2.8
350 - 399	–	–		–	–	–		–	0.40	(0.00	– 1.20)	0.9
400 - 449	–	–		–	–	–		–	–	–		–
450 - 499	0.40	(0.00	– 1.25)	6.2	–	–		–	–	–		–
500 +	–	–		–	–	–		–	–	–		–
Total	6.40			100.0	13.65			100.0	43.44			100.0

Altitude, m	County / Area											
	Cork				Donegal				Dublin			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	6.41	(3.41	– 9.41)	9.0	5.27	(2.54	– 8.00)	10.1	0.80	(0.00	– 2.00)	18.1
50 - 99	9.21	(5.69	– 12.73)	13.0	6.49	(3.50	– 9.47)	12.4	–	–		–
100 - 149	8.81	(5.36	– 12.27)	12.4	10.13	(6.55	– 13.71)	19.4	0.40	(0.00	– 1.29)	9.1
150 - 199	10.01	(6.37	– 13.66)	14.1	13.78	(9.79	– 17.77)	26.3	0.40	(0.00	– 1.29)	9.1
200 - 249	10.41	(6.71	– 14.12)	14.7	10.94	(7.26	– 14.63)	20.9	–	–		–
250 - 299	10.81	(7.05	– 14.58)	15.4	3.24	(1.06	– 5.43)	6.2	0.40	(0.00	– 1.29)	9.1
300 - 349	10.01	(6.37	– 13.66)	14.1	2.43	(0.52	– 4.34)	4.7	–	–		–
350 - 399	4.01	(1.59	– 6.42)	5.6	–	–		–	0.80	(0.00	– 2.00)	18.2
400 - 449	0.80	(0.00	– 1.91)	1.1	–	–		–	0.80	(0.00	– 2.00)	18.2
450 - 499	0.40	(0.00	– 1.19)	0.6	–	–		–	0.40	(0.00	– 1.29)	9.1
500 +	–	–		–	–	–		–	0.40	(0.00	– 1.29)	9.1
Total	70.89			100.0	52.29			100.0	4.41			100.0

Altitude, m	County / Area											
	Galway				Kerry				Kildare			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	10.37	(6.77	– 13.97)	19.0	7.15	(4.09	– 10.21)	17.3	–	–		–
50 - 99	24.32	(19.76	– 28.88)	44.5	7.15	(4.09	– 10.21)	17.3	9.20			100.0
100 - 149	7.97	(4.73	– 11.22)	14.6	6.35	(3.44	– 9.27)	15.4	–	–		–
150 - 199	7.97	(4.73	– 11.22)	14.6	7.55	(4.42	– 10.67)	18.3	–	–		–
200 - 249	1.59	(0.05	– 3.14)	2.9	5.96	(3.12	– 8.80)	14.4	–	–		–
250 - 299	1.59	(0.05	– 3.14)	2.9	3.18	(1.02	– 5.33)	7.7	–	–		–
300 - 349	0.80	(0.00	– 1.90)	1.5	1.99	(0.26	– 3.71)	4.8	–	–		–
350 - 399	–	–		–	0.79	(0.00	– 1.90)	1.9	–	–		–
400 - 449	–	–		–	1.19	(0.00	– 2.54)	2.9	–	–		–
450 - 499	–	–		–	–	–		–	–	–		–
500 +	–	–		–	–	–		–	–	–		–
Total	54.62			100.0	41.30			100.0	9.20			100.0

Altitude, m	County / Area											
	Kilkenny				Laois				Leitrim			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	0.40	(0.00	– 1.22)	2.5	–	–		–	1.58	(0.04	– 3.12)	7.7
50 - 99	3.24	(1.14	– 5.33)	20.0	5.21	(2.64	– 7.78)	22.8	5.54	(2.97	– 8.10)	27.0
100 - 149	2.02	(0.29	– 3.76)	12.5	3.61	(1.38	– 5.84)	15.8	3.96	(1.67	– 6.24)	19.2
150 - 199	3.24	(1.14	– 5.33)	20.0	2.41	(0.53	– 4.28)	10.5	1.98	(0.27	– 3.68)	9.6
200 - 249	1.62	(0.05	– 3.19)	10.0	3.61	(1.38	– 5.84)	15.8	2.77	(0.79	– 4.74)	13.5
250 - 299	4.45	(2.11	– 6.79)	27.5	4.01	(1.68	– 6.34)	17.5	3.56	(1.37	– 5.75)	17.3
300 - 349	1.21	(0.00	– 2.59)	7.5	2.00	(0.27	– 3.74)	8.8	0.40	(0.00	– 1.19)	1.9
350 - 399	–	–		–	0.80	(0.00	– 1.93)	3.5	0.79	(0.00	– 1.90)	3.8
400 - 449	–	–		–	1.20	(0.00	– 2.57)	5.3	–	–		–
450 - 499	–	–		–	–	–		–	–	–		–
500 +	–	–		–	–	–		–	–	–		–
Total	16.18			100.0	22.85			100.0	20.57			100.0

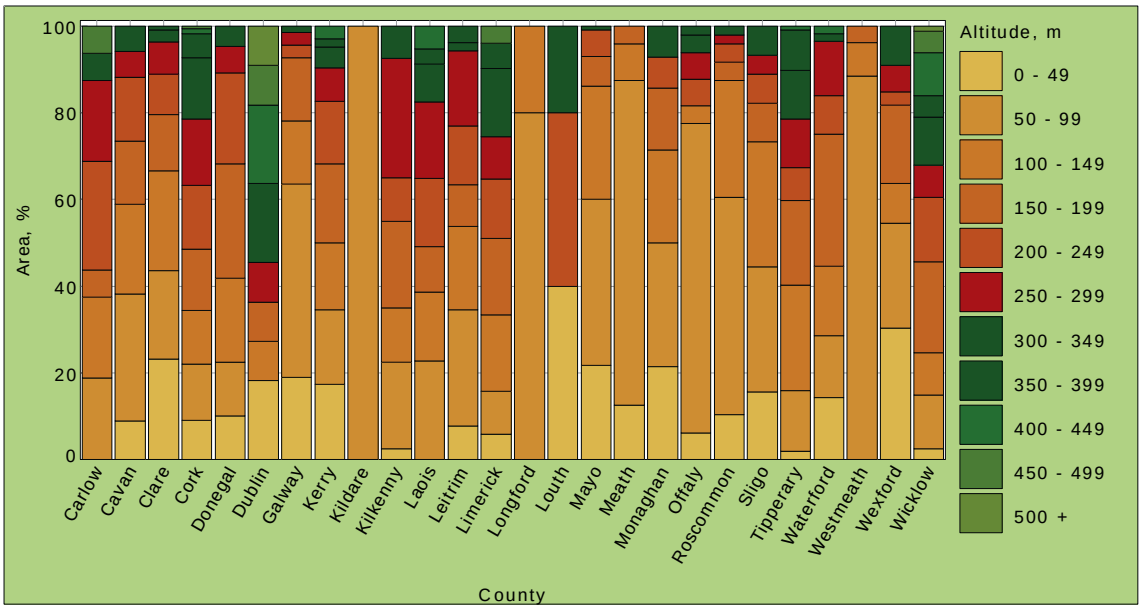
Altitude, m	County / Area											
	Limerick				Longford				Louth			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	1.20	(0.00	– 2.56)	5.9	–	–	–	–	0.81	(0.00	– 2.19)	40.0
50 - 99	2.00	(0.27	– 3.72)	9.8	6.37	(4.84	– 7.90)	80.0	–	–	–	–
100 - 149	3.59	(1.39	– 5.80)	17.7	1.59	(0.06	– 3.12)	20.0	–	–	–	–
150 - 199	3.59	(1.39	– 5.80)	17.6	–	–	–	–	–	–	–	–
200 - 249	2.79	(0.80	– 4.78)	13.7	–	–	–	–	0.81	(0.00	– 2.19)	40.0
250 - 299	2.00	(0.27	– 3.72)	9.8	–	–	–	–	–	–	–	–
300 - 349	3.19	(1.09	– 5.30)	15.7	–	–	–	–	0.40	(0.00	– 1.53)	20.0
350 - 399	1.20	(0.00	– 2.56)	5.9	–	–	–	–	–	–	–	–
400 - 449	–	–	–	–	–	–	–	–	–	–	–	–
450 - 499	0.80	(0.00	– 1.92)	3.9	–	–	–	–	–	–	–	–
500 +	–	–	–	–	–	–	–	–	–	–	–	–
Total	20.35			100.0	7.97			100.0	2.02			100.0

Altitude, m	County / Area											
	Mayo				Meath				Monaghan			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	10.02	(6.49	– 13.55)	21.7	1.21	(0.00	– 2.60)	12.5	1.20	(0.00	– 2.58)	21.4
50 - 99	17.64	(13.48	– 21.80)	38.2	7.28	(5.47	– 9.09)	75.0	1.60	(0.08	– 3.12)	28.7
100 - 149	12.03	(8.27	– 15.79)	26.1	0.81	(0.00	– 1.97)	8.3	1.20	(0.00	– 2.58)	21.4
150 - 199	3.21	(1.03	– 5.39)	7.0	0.40	(0.00	– 1.24)	4.2	0.80	(0.00	– 1.98)	14.3
200 - 249	2.81	(0.76	– 4.85)	6.1	–	–	–	–	0.40	(0.00	– 1.27)	7.1
250 - 299	–	–	–	–	–	–	–	–	–	–	–	–
300 - 349	0.40	(0.00	– 1.20)	0.9	–	–	–	–	0.40	(0.00	– 1.27)	7.1
350 - 399	–	–	–	–	–	–	–	–	–	–	–	–
400 - 449	–	–	–	–	–	–	–	–	–	–	–	–
450 - 499	–	–	–	–	–	–	–	–	–	–	–	–
500 +	–	–	–	–	–	–	–	–	–	–	–	–
Total	46.11			100.0	9.71			100.0	5.61			100.0

Altitude, m	County / Area											
	Offaly				Roscommon				Sligo			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	1.21	(0.00	– 2.58)	6.1	2.02	(0.28	– 3.76)	10.4	2.77	(0.81	– 4.73)	15.6
50 - 99	14.06	(11.48	– 16.65)	71.5	9.71	(6.86	– 12.56)	49.9	5.15	(2.69	– 7.60)	28.8
100 - 149	0.80	(0.00	– 1.94)	4.1	5.26	(2.72	– 7.79)	27.1	5.15	(2.69	– 7.60)	28.9
150 - 199	–	–	–	–	0.81	(0.00	– 1.95)	4.2	1.58	(0.04	– 3.12)	8.9
200 - 249	1.21	(0.00	– 2.58)	6.1	0.81	(0.00	– 1.95)	4.2	1.19	(0.00	– 2.54)	6.7
250 - 299	1.21	(0.00	– 2.58)	6.1	0.40	(0.00	– 1.22)	2.1	0.79	(0.00	– 1.91)	4.4
300 - 349	0.80	(0.00	– 1.94)	4.1	0.40	(0.00	– 1.22)	2.1	1.19	(0.00	– 2.54)	6.7
350 - 399	0.40	(0.00	– 1.21)	2.0	–	–	–	–	–	–	–	–
400 - 449	–	–	–	–	–	–	–	–	–	–	–	–
450 - 499	–	–	–	–	–	–	–	–	–	–	–	–
500 +	–	–	–	–	–	–	–	–	–	–	–	–
Total	19.69			100.0	19.41			100.0	17.81			100.0

Altitude, m	County / Area											
	Tipperary				Waterford				Westmeath			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	0.80	(0.00	– 1.91)	1.9	3.22	(1.09	– 5.35)	14.3	–	–	–	–
50 - 99	5.98	(3.13	– 8.84)	14.0	3.22	(1.09	– 5.35)	14.3	9.18	(7.81	– 10.54)	88.5
100 - 149	10.37	(6.84	– 13.89)	24.4	3.62	(1.38	– 5.86)	16.1	0.80	(0.00	– 1.94)	7.7
150 - 199	8.37	(5.11	– 11.64)	19.6	6.84	(4.04	– 9.64)	30.3	0.40	(0.00	– 1.22)	3.8
200 - 249	3.19	(1.03	– 5.35)	7.5	2.01	(0.27	– 3.75)	8.9	–	–	–	–
250 - 299	4.78	(2.19	– 7.38)	11.2	2.82	(0.80	– 4.83)	12.5	–	–	–	–
300 - 349	4.78	(2.19	– 7.38)	11.2	0.40	(0.00	– 1.21)	1.8	–	–	–	–
350 - 399	3.99	(1.59	– 6.38)	9.3	–	–	–	–	–	–	–	–
400 - 449	0.40	(0.00	– 1.19)	0.9	0.40	(0.00	– 1.21)	1.8	–	–	–	–
450 - 499	–	–	–	–	–	–	–	–	–	–	–	–
500 +	–	–	–	–	–	–	–	–	–	–	–	–
Total	42.67			100.0	22.52			100.0	10.37			100.0

Altitude, m	County / Area								
	Wexford			Wicklow			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	3.95	(1.79 – 6.11)	30.3	0.81	(0.00 – 1.93)	2.5	72.46	(62.77 – 82.15)	11.6
50 - 99	3.16	(1.15 – 5.17)	24.2	4.03	(1.64 – 6.42)	12.3	173.79	(161.36 – 186.23)	27.6
100 - 149	1.19	(0.00 – 2.54)	9.1	3.22	(1.05 – 5.39)	9.9	106.96	(95.36 – 118.55)	17.1
150 - 199	2.37	(0.56 – 4.18)	18.2	6.85	(3.89 – 9.81)	21.1	90.60	(79.85 – 101.36)	14.5
200 - 249	0.40	(0.00 – 1.20)	3.0	4.83	(2.25 – 7.42)	14.8	64.98	(55.63 – 74.33)	10.4
250 - 299	0.79	(0.00 – 1.91)	6.1	2.42	(0.51 – 4.32)	7.4	51.68	(43.29 – 60.06)	8.3
300 - 349	1.19	(0.00 – 2.54)	9.1	3.63	(1.34 – 5.91)	11.1	38.05	(30.73 – 45.36)	6.1
350 - 399	–	–	–	1.61	(0.04 – 3.19)	4.9	14.79	(10.15 – 19.44)	2.4
400 - 449	–	–	–	3.22	(1.05 – 5.39)	9.9	8.02	(4.60 – 11.44)	1.3
450 - 499	–	–	–	1.61	(0.04 – 3.19)	4.9	3.61	(1.28 – 5.95)	0.6
500 +	–	–	–	0.40	(0.00 – 1.21)	1.2	0.80	(0.00 – 1.96)	0.1
Total	13.04		100.0	32.64		100.0	625.75		100.0



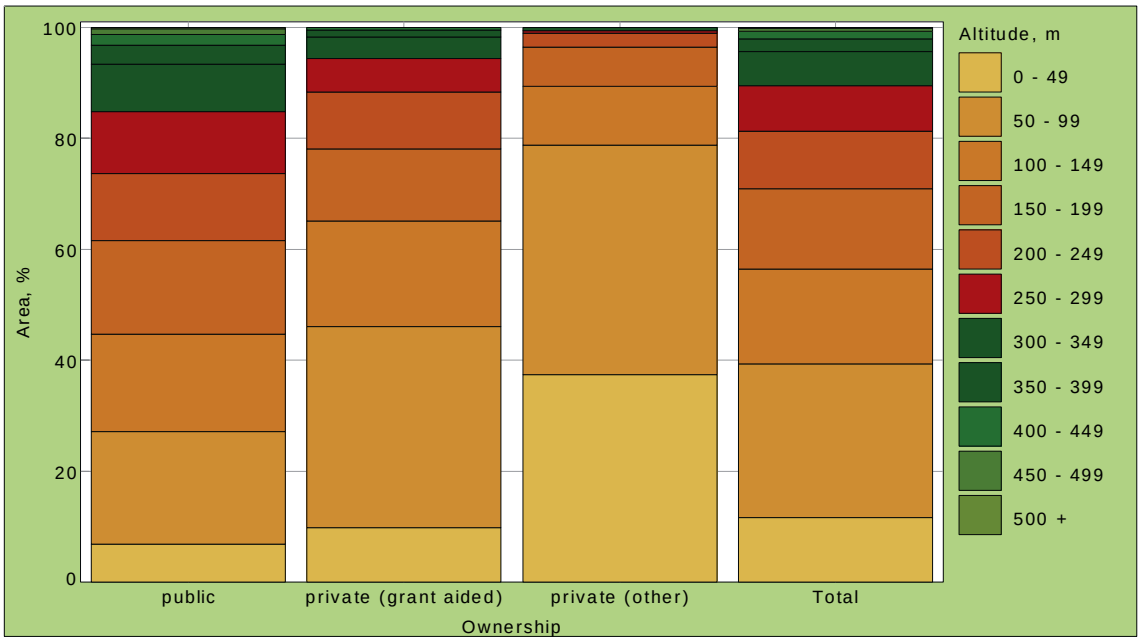
2.5.3 Total stocked forest area by ownership and altitude

Methodology

The total stocked forest area is classified by ownership and altitude.

Altitude, m	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	24.40	(18.47 – 30.33)	6.8	18.39	(13.21 – 23.57)	9.8
50 - 99	73.27	(63.69 – 82.85)	20.5	67.67	(58.37 – 76.98)	36.1
100 - 149	62.92	(53.65 – 72.19)	17.5	35.62	(28.50 – 42.75)	19.1
150 - 199	60.55	(51.49 – 69.61)	16.8	24.44	(18.50 – 30.38)	13.1
200 - 249	43.76	(35.92 – 51.60)	12.2	19.22	(13.90 – 24.53)	10.3
250 - 299	40.04	(32.53 – 47.55)	11.1	11.23	(7.16 – 15.30)	6.0
300 - 349	30.84	(24.18 – 37.50)	8.6	7.20	(3.92 – 10.49)	3.9
350 - 399	11.99	(7.78 – 16.20)	3.3	2.40	(0.49 – 4.31)	1.3
400 - 449	7.22	(3.98 – 10.45)	2.0	0.80	(0.00 – 1.92)	0.4
450 - 499	3.61	(1.28 – 5.95)	1.0	–	–	–
500 +	0.80	(0.00 – 1.96)	0.2	–	–	–
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Altitude, m	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	29.67	(23.15 – 36.18)	37.4	72.46	(62.77 – 82.15)	11.6
50 - 99	32.85	(26.11 – 39.59)	41.4	173.79	(161.36 – 186.23)	27.6
100 - 149	8.41	(4.83 – 11.99)	10.6	106.96	(95.36 – 118.55)	17.1
150 - 199	5.61	(2.72 – 8.51)	7.1	90.60	(79.85 – 101.36)	14.5
200 - 249	2.00	(0.25 – 3.75)	2.5	64.98	(55.63 – 74.33)	10.4
250 - 299	0.40	(0.00 – 1.21)	0.5	51.68	(43.29 – 60.06)	8.3
300 - 349	–	–	–	38.05	(30.73 – 45.36)	6.1
350 - 399	0.40	(0.00 – 1.21)	0.5	14.79	(10.15 – 19.44)	2.4
400 - 449	–	–	–	8.02	(4.60 – 11.44)	1.3
450 - 499	–	–	–	3.61	(1.28 – 5.95)	0.6
500 +	–	–	–	0.80	(0.00 – 1.96)	0.1
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



2.5.4 Total stocked afforested area by age class (10 yr) and altitude.

Definition

Stocked afforested area

Includes only the stocked forest area that had a rotation type of afforestation.

Methodology

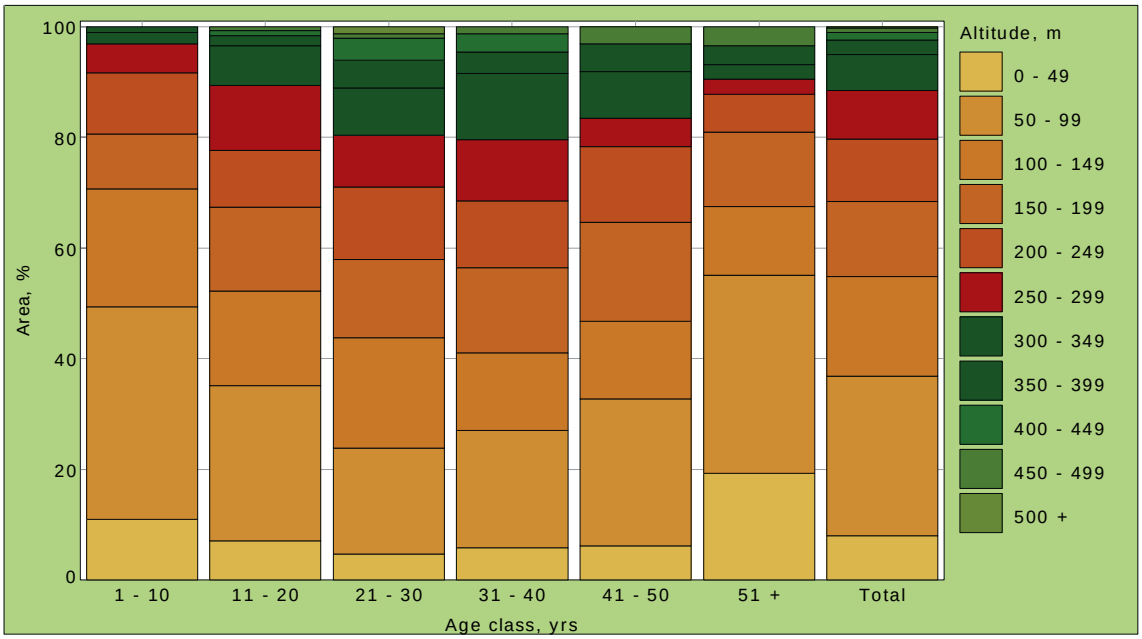
The total stocked afforested area is classified by age-class (10 yr) and altitude. As this output concerns only those areas with a rotation type of afforestation, the total stocked forest area is reduced when compared with the area in the previous analysis.

Altitude, m	Age class, yrs / Area					
	1 - 10			11 - 20		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	13.17	(8.94 – 17.39)	11.0	9.10	(5.63 – 12.57)	7.1
50 - 99	45.98	(38.31 – 53.64)	38.4	36.05	(29.26 – 42.85)	28.0
100 - 149	25.49	(19.53 – 31.45)	21.3	22.07	(16.47 – 27.66)	17.2
150 - 199	11.87	(7.83 – 15.91)	9.9	19.38	(14.17 – 24.58)	15.1
200 - 249	13.30	(8.89 – 17.71)	11.1	13.17	(8.77 – 17.58)	10.2
250 - 299	6.21	(3.25 – 9.17)	5.2	15.20	(10.53 – 19.88)	11.8
300 - 349	2.48	(0.57 – 4.40)	2.1	9.19	(5.51 – 12.87)	7.1
350 - 399	1.23	(0.00 – 2.59)	1.0	2.39	(0.54 – 4.24)	1.9
400 - 449	–	–	–	1.12	(0.00 – 2.40)	0.9
450 - 499	–	–	–	0.89	(0.00 – 2.01)	0.7
500 +	–	–	–	–	–	–
Total	119.72	(108.07 – 131.37)	100.0	128.56	(116.49 – 140.63)	100.0

Altitude, m	Age class, yrs / Area					
	21 - 30			31 - 40		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	3.02	(1.04 – 4.99)	4.7	3.43	(1.26 – 5.60)	5.9
50 - 99	12.37	(8.36 – 16.39)	19.2	12.33	(8.24 – 16.42)	21.1
100 - 149	12.89	(8.69 – 17.09)	19.9	8.18	(4.83 – 11.53)	14.0
150 - 199	9.12	(5.54 – 12.70)	14.1	9.03	(5.44 – 12.63)	15.5
200 - 249	8.45	(4.94 – 11.96)	13.1	7.04	(3.83 – 10.26)	12.1
250 - 299	6.08	(3.11 – 9.05)	9.4	6.44	(3.38 – 9.50)	11.0
300 - 349	5.48	(2.66 – 8.29)	8.5	7.02	(3.83 – 10.22)	12.0
350 - 399	3.29	(1.09 – 5.49)	5.1	2.28	(0.45 – 4.10)	3.9
400 - 449	2.55	(0.63 – 4.48)	4.0	1.94	(0.24 – 3.63)	3.3
450 - 499	0.51	(0.00 – 1.34)	0.8	0.70	(0.00 – 1.67)	1.2
500 +	0.80	(0.00 – 1.96)	1.2	–	–	–
Total	64.56	(55.58 – 73.53)	100.0	58.39	(49.67 – 67.11)	100.0

Altitude, m	Age class, yrs / Area					
	41 - 50			51 +		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	1.46	(0.08 – 2.84)	6.1	2.27	(0.59 – 3.95)	19.3
50 - 99	6.31	(3.42 – 9.20)	26.7	4.23	(2.04 – 6.41)	35.9
100 - 149	3.30	(1.22 – 5.38)	13.9	1.47	(0.20 – 2.74)	12.4
150 - 199	4.25	(1.84 – 6.66)	17.9	1.58	(0.26 – 2.91)	13.4
200 - 249	3.24	(1.02 – 5.46)	13.7	0.80	(0.00 – 1.91)	6.8
250 - 299	1.23	(0.00 – 2.55)	5.2	0.33	(0.00 – 1.00)	2.8
300 - 349	1.99	(0.25 – 3.73)	8.4	0.31	(0.00 – 0.91)	2.6
350 - 399	1.20	(0.00 – 2.55)	5.1	0.40	(0.00 – 1.21)	3.4
400 - 449	–	–	–	–	–	–
450 - 499	0.72	(0.00 – 1.74)	3.0	0.40	(0.00 – 1.29)	3.4
500 +	–	–	–	–	–	–
Total	23.71	(18.07 – 29.35)	100.0	11.79	(8.11 – 15.47)	100.0

Altitude, m	Age class, yrs / Area		
	Total		
	1000 ha	(α = 0.05)	%
0 - 49	32.44	(25.80 – 39.08)	8.0
50 - 99	117.27	(106.18 – 128.37)	28.8
100 - 149	73.40	(63.60 – 83.19)	18.0
150 - 199	55.23	(46.59 – 63.87)	13.6
200 - 249	46.01	(38.02 – 54.00)	11.3
250 - 299	35.50	(28.43 – 42.56)	8.7
300 - 349	26.46	(20.29 – 32.63)	6.5
350 - 399	10.78	(6.81 – 14.76)	2.7
400 - 449	5.61	(2.71 – 8.52)	1.4
450 - 499	3.21	(1.01 – 5.41)	0.8
500 +	0.80	(0.00 – 1.96)	0.2
Total	406.72	(392.49 – 420.95)	100.0



CHAPTER 3
SPECIES

In this chapter, the species composition within the forest estate is analysed. Nearly one quarter of the forest estate area contains broadleaf tree species. Both public and private (grant aided) forests comprise similar proportions of conifers and broadleaves, 80-85 % conifer to 15-20% broadleaf. The proportions in the private (other) forests are unchanged from those determined by an inventory of private woodlands in 1973 (Purcell, 1973[1]), 80% broadleaf to 20% conifer.

An interesting finding is the relatively high proportion of native broadleaf tree species occupying 22% of total stocked forest area. Not unexpectedly, native species especially comprise a major proportion (74%) of the private (other) forests.

A feature of the NFI is that it enumerates the full range of species, 53 in all. Not surprisingly, the confidence bands on area estimates for minor species are wide. Sitka spruce dominates the estate, occupying 52% of total forest area, with other conifers at 23% and broadleaves making up the rest. Birch is more common in Kildare and Westmeath, which is related to midland bog colonisation. Public and private (grant aided) forests are quite similar in composition, suggesting that common priorities apply. Private (other) forests are distinctive, indicating different origins and management objectives.

Altitude statistics identify the limited range of species suitable to higher elevations. Only Sitka spruce, 'other pines', larch, birch, oak and a small area of other broadleaves are to be found at elevations over 300 m.

The number of tree species per unit area is higher than expected. Less than 45% of stands are identified as monocultures, with 25% consisting of at least three species. From a tree species diversity viewpoint, it is important to note that 5% of forest stands contain five or more tree species.

Most forests stands (occupying 75% of the total forest area) are even-aged. The proportion of conifer to broadleaf tree species across the age class distribution is similar, with the exception of the 51+ age class where mature broadleaves predominate. The oldest forest stands consist mainly of oak and Scots pine.

[1] Purcell, T. 1979. Inventory of private woodlands, 1973. Department of Fisheries and Forestry, Forest and Wildlife Service.

3.1 TREE ATTRIBUTE STATISTICS

Definition

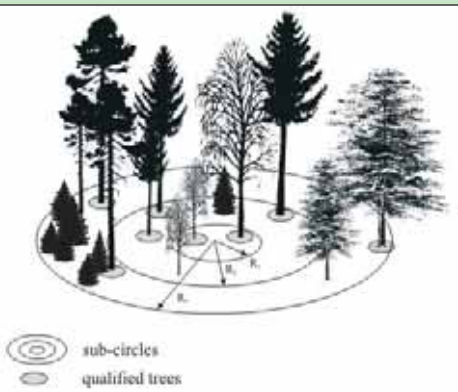
Representative area

Statistical sample-based inventory usually does not relate tree attributes to area. In order to enable area related calculations, such as the determination of species composition, a procedure for the calculation of the so-called representative area of a tree is used. The area of an inventory plot was distributed among the trees proportionately to their size. Larger trees were allocated larger areas. The sum of representative areas within the plot was equal to the area of the plot.

Definition

Concentric circles

Since the NFI used concentric circles, it is necessary to weight tree data by the respective concentric circles, as no consistent tree data of trees of all dimensions was collected over the whole inventory plot. This means that for area calculations it was assumed that the density of trees of smaller dimensions in the full inventory plot was the same as it was observed in the inner sub-plot(s).



	R_1	R_2	R_3
Sub-circle radius (m)	3	7	12,62
Sub-circle area (m^2)	28,3	153,9	500
Treshold diameter (mm)	70	120	200

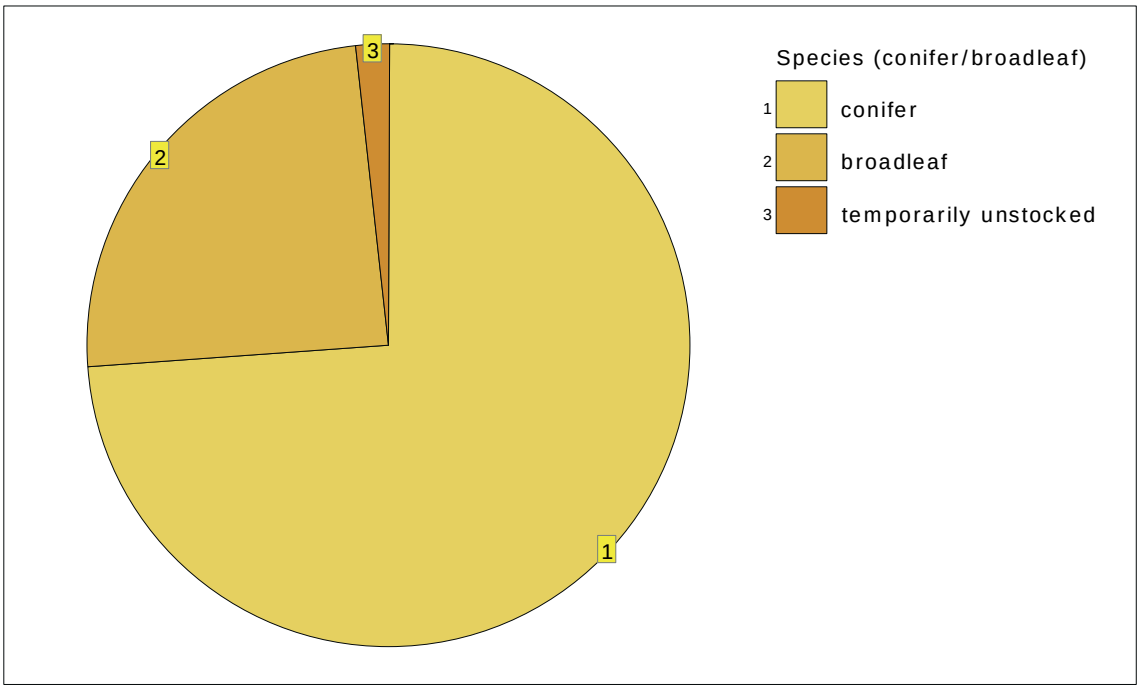
3.2 CONIFER/BROADLEAF

Definition
Conifer/broadleaf
Reclassification of tree species into broad species types: conifer and broadleaf.

3.2.1 Total stocked forest area by species type (conifer/broadleaf)

Methodology
The total stocked forest area is classified by species type (conifer/broadleaf).

Species (conifer/broadleaf)	Area		
	1000 ha	($\alpha = 0.05$)	%
conifer	462.58	(450.57 – 474.59)	73.9
broadleaf	151.95	(140.34 – 163.55)	24.3
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0



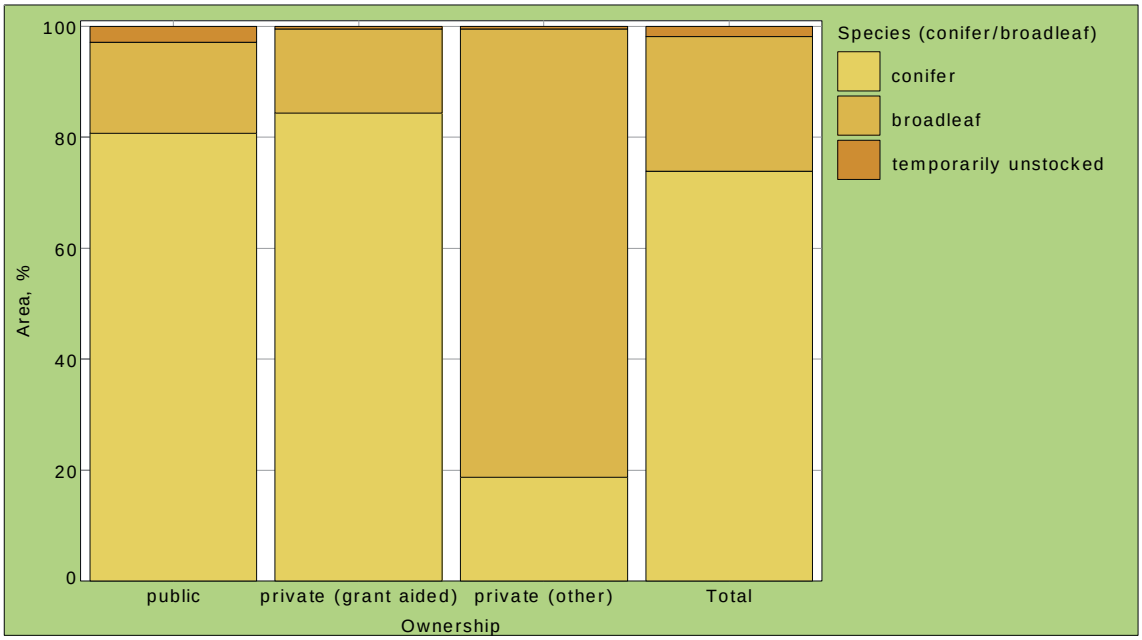
3.2.2 Total stocked forest area by ownership and species type (conifer/broadleaf)

Methodology

The total stocked forest area is classified by ownership and species type (conifer/broadleaf).

Species (conifer/broadleaf)	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	290.02	(275.66 – 304.38)	80.7	157.71	(144.72 – 170.69)	84.4
broadleaf	59.37	(51.87 – 66.87)	16.5	28.47	(22.68 – 34.26)	15.2
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Species (conifer/broadleaf)	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	14.85	(10.60 – 19.10)	18.7	462.58	(450.57 – 474.59)	73.9
broadleaf	64.10	(54.93 – 73.27)	80.8	151.95	(140.34 – 163.55)	24.3
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



3.2.3 Total stocked forest area by county and species type (conifer/broadleaf)

Methodology

The total stocked forest area is classified by county and species type (conifer/broadleaf).

Species (conifer/broadleaf)	County / Area					
	Carlow			Cavan		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	4.78	(3.52 – 6.04)	74.7	8.39	(6.26 – 10.51)	61.5
broadleaf	1.22	(0.15 – 2.30)	19.1	4.87	(2.78 – 6.95)	35.6
temporarily unstocked	0.40	(0.00 – 1.25)	6.2	0.40	(0.00 – 1.22)	2.9
Total	6.40		100.0	13.65		100.0

Species (conifer/broadleaf)	County / Area					
	Clare			Cork		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	32.51	(29.10 – 35.92)	74.9	55.25	(51.36 – 59.14)	77.9
broadleaf	10.53	(7.17 – 13.89)	24.2	14.04	(10.34 – 17.74)	19.8
temporarily unstocked	0.40	(0.00 – 1.20)	0.9	1.60	(0.05 – 3.16)	2.3
Total	43.44		100.0	70.89		100.0
Species (conifer/broadleaf)	County / Area					
	Donegal			Dublin		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	42.18	(38.94 – 45.42)	80.6	2.81	(1.31 – 4.30)	63.6
broadleaf	9.30	(6.19 – 12.42)	17.8	1.20	(0.00 – 2.59)	27.3
temporarily unstocked	0.81	(0.00 – 1.93)	1.6	0.40	(0.00 – 1.29)	9.1
Total	52.29		100.0	4.41		100.0
Species (conifer/broadleaf)	County / Area					
	Galway			Kerry		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	42.70	(39.64 – 45.76)	78.2	31.17	(27.82 – 34.51)	75.5
broadleaf	11.52	(8.52 – 14.52)	21.1	9.34	(6.10 – 12.59)	22.6
temporarily unstocked	0.40	(0.00 – 1.18)	0.7	0.79	(0.00 – 1.90)	1.9
Total	54.62		100.0	41.30		100.0
Species (conifer/broadleaf)	County / Area					
	Kildare			Kilkenny		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	3.54	(1.84 – 5.24)	38.5	11.55	(9.39 – 13.70)	71.3
broadleaf	5.66	(3.96 – 7.35)	61.5	4.64	(2.48 – 6.79)	28.7
temporarily unstocked	–	–	–	–	–	–
Total	9.20		100.0	16.18		100.0
Species (conifer/broadleaf)	County / Area					
	Laois			Leitrim		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	16.66	(14.43 – 18.90)	72.9	16.25	(14.22 – 18.28)	79.0
broadleaf	5.79	(3.63 – 7.95)	25.3	4.32	(2.29 – 6.35)	21.0
temporarily unstocked	0.40	(0.00 – 1.20)	1.8	–	–	–
Total	22.85		100.0	20.57		100.0
Species (conifer/broadleaf)	County / Area					
	Limerick			Longford		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	16.89	(14.99 – 18.79)	82.9	5.64	(4.35 – 6.94)	70.8
broadleaf	3.07	(1.29 – 4.85)	15.1	2.32	(1.03 – 3.62)	29.2
temporarily unstocked	0.40	(0.00 – 1.20)	2.0	–	–	–
Total	20.35		100.0	7.97		100.0
Species (conifer/broadleaf)	County / Area					
	Louth			Mayo		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	1.21	(0.00 – 2.59)	60.0	37.26	(34.30 – 40.22)	80.8
broadleaf	0.81	(0.00 – 2.19)	40.0	7.25	(4.58 – 9.92)	15.7
temporarily unstocked	–	–	–	1.60	(0.04 – 3.17)	3.5
Total	2.02		100.0	46.11		100.0
Species (conifer/broadleaf)	County / Area					
	Meath			Monaghan		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	4.06	(2.18 – 5.95)	41.9	3.02	(1.52 – 4.53)	53.9
broadleaf	5.64	(3.76 – 7.53)	58.1	2.59	(1.08 – 4.10)	46.1
temporarily unstocked	–	–	–	–	–	–
Total	9.71		100.0	5.61		100.0

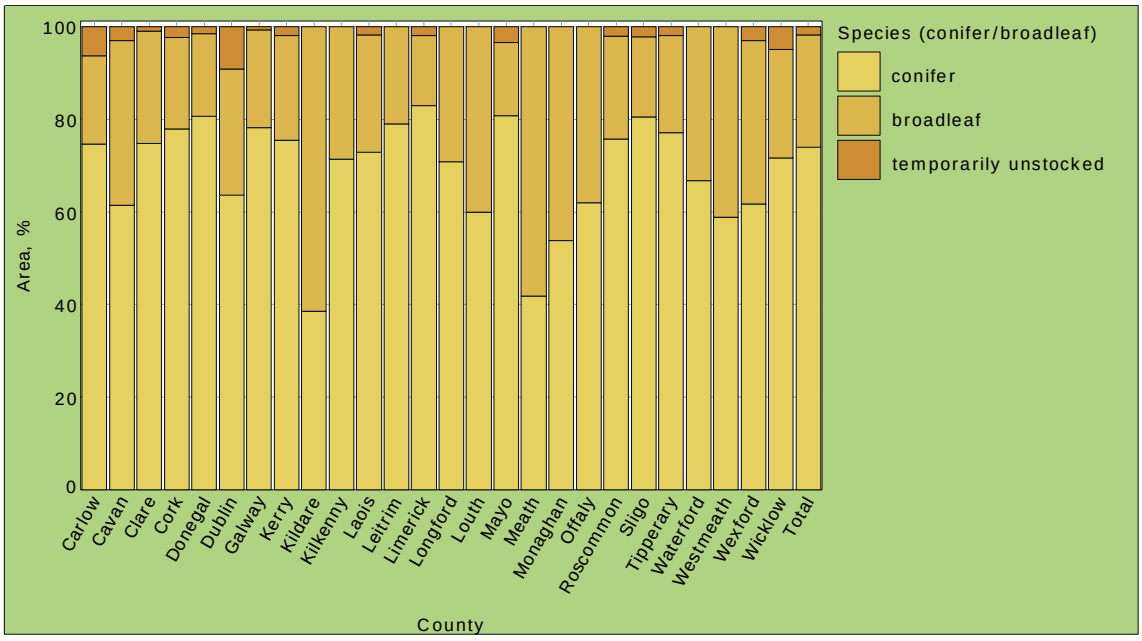
Species (conifer/broadleaf)	County / Area					
	Offaly			Roscommon		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	12.20	(9.82 – 14.59)	62.0	14.70	(12.65 – 16.75)	75.7
broadleaf	7.49	(5.10 – 9.87)	38.0	4.31	(2.35 – 6.27)	22.2
temporarily unstocked	–	–	–	0.40	(0.00 – 1.22)	2.1
Total	19.69		100.0	19.41		100.0

Species (conifer/broadleaf)	County / Area					
	Sligo			Tipperary		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	14.33	(12.37 – 16.29)	80.5	32.88	(29.70 – 36.07)	77.0
broadleaf	3.08	(1.23 – 4.94)	17.3	8.99	(5.92 – 12.06)	21.1
temporarily unstocked	0.40	(0.00 – 1.19)	2.2	0.80	(0.00 – 1.91)	1.9
Total	17.81		100.0	42.67		100.0

Species (conifer/broadleaf)	County / Area					
	Waterford			Westmeath		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	15.05	(12.47 – 17.63)	66.8	6.10	(4.19 – 8.01)	58.8
broadleaf	7.48	(4.89 – 10.06)	33.2	4.28	(2.37 – 6.19)	41.2
temporarily unstocked	–	–	–	–	–	–
Total	22.52		100.0	10.37		100.0

Species (conifer/broadleaf)	County / Area					
	Wexford			Wicklow		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	8.05	(6.03 – 10.06)	61.7	23.41	(20.47 – 26.34)	71.8
broadleaf	4.60	(2.63 – 6.57)	35.3	7.62	(4.91 – 10.33)	23.3
temporarily unstocked	0.40	(0.00 – 1.20)	3.0	1.61	(0.04 – 3.19)	4.9
Total	13.04		100.0	32.64		100.0

Species (conifer/broadleaf)	County / Area		
	Total		
	1000 ha	(α=0.05)	%
conifer	462.58	(450.57 – 474.59)	73.9
broadleaf	151.95	(140.34 – 163.55)	24.3
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0



3.3 Native/non-native

Definition

Native/non-native

Reclassification of tree species into broad species types: native and non-native.

Native tree species include:

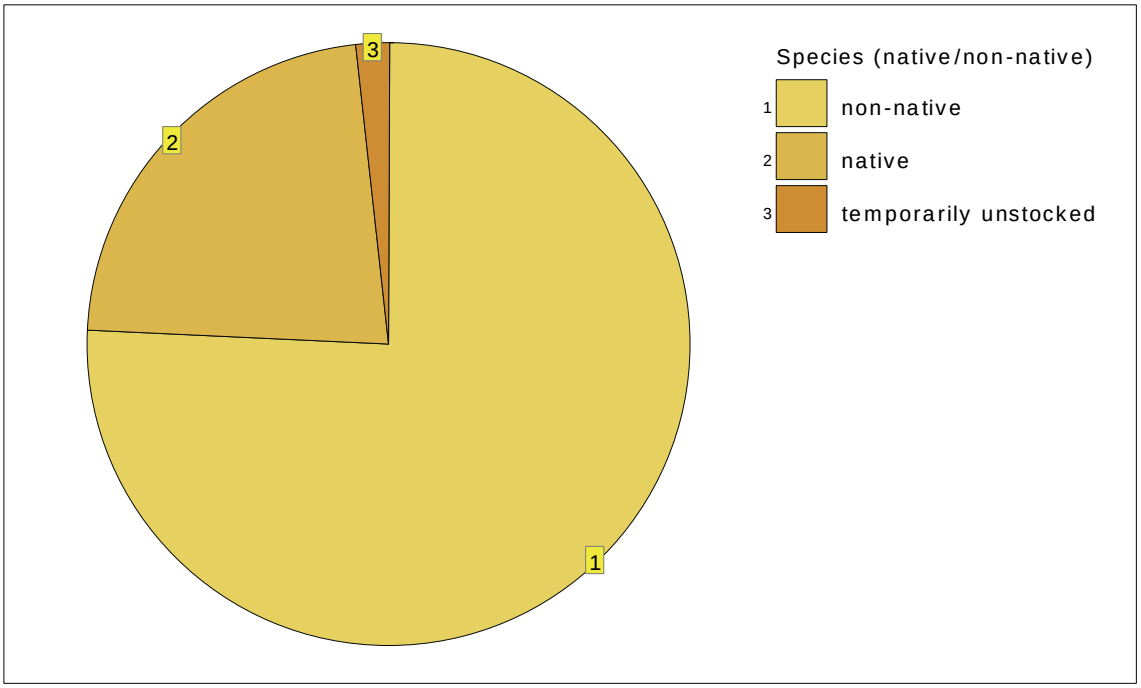
Common Name	Botanical Name	Common Name	Botanical Name
Alder	*Alnus glutinosa*	Crab apple	*Malus sylvestris*
Silver birch	*Betula pendula*	Aspen	*Populus tremula*
Downy birch	*Betula pubescens*	Wild cherry	*Prunus avium*
Ash	*Fraxinus excelsior*	Eared willow	*Salix aurita*
Sessile Oak	*Quercus petrea*	Goat willow	*Salix cinerea*
Pedunculate Oak	*Quercus robur*	Rusty willow	*Salix cinerea ssp. Oleifolia*
Scots pine	*Pinus sylvestris*	Rowan	*Sorbus aucuparia*
Hazel	*Corylus avellana*	Yew	*Taxus baccata*
Holly	*Ilex aquifolium*		

3.3.1 Total stocked forest area by species type (native/non-native)

Methodology

Tree species are reclassified into broad species types (native/non-native). The total stocked forest area is classified by species type (native/non-native).

Species (native/non-native)	Area		
	1000 ha	($\alpha = 0.05$)	%
non-native	474.20	(462.71 – 485.70)	75.8
native	140.33	(129.29 – 151.36)	22.4
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0



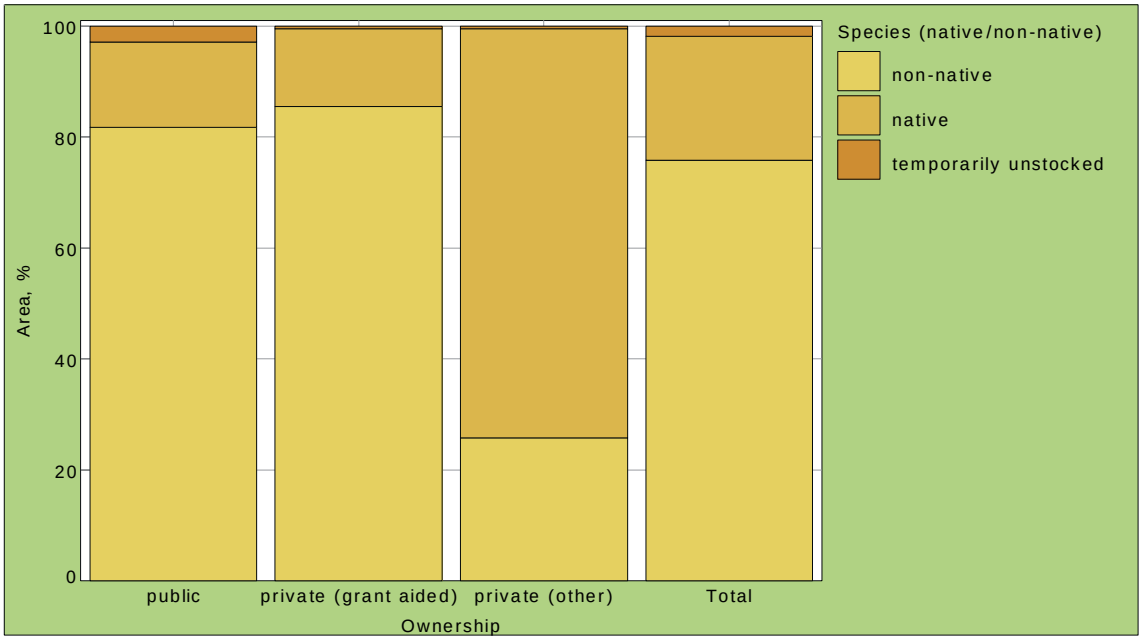
3.3.2 Total stocked forest area by ownership and species type (native/non-native)

Methodology

Total stocked forest area is classified by ownership and species type (native/non-native).

Species (native/non-native)	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	293.89	(279.53 – 308.25)	81.8	159.89	(146.89 – 172.89)	85.5
native	55.50	(48.39 – 62.61)	15.4	26.29	(20.81 – 31.76)	14.1
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Species (native/non-native)	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	20.42	(15.53 – 25.30)	25.7	474.20	(462.71 – 485.70)	75.8
native	58.54	(49.89 – 67.19)	73.8	140.33	(129.29 – 151.36)	22.4
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



3.3.3 Total stocked forest area by county and species type (native/non-native)

Methodology

The total stocked forest area is classified by county and species type (native/non-native).

Species (native/non-native)	County / Area							
	Carlow				Cavan			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
non-native	5.31	(4.24	– 6.37)	82.8	8.93	(6.90	– 10.96)	65.4
native	0.70	(0.00	– 1.46)	10.9	4.32	(2.35	– 6.30)	31.7
temporarily unstocked	0.40	(0.00	– 1.25)	6.3	0.40	(0.00	– 1.22)	2.9
Total	6.40			100.0	13.65			100.0
Species (native/non-native)	County / Area							
	Clare				Cork			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
non-native	33.30	(30.00	– 36.59)	76.7	57.61	(54.04	– 61.18)	81.2
native	9.74	(6.50	– 12.99)	22.4	11.68	(8.34	– 15.02)	16.5
temporarily unstocked	0.40	(0.00	– 1.20)	0.9	1.60	(0.05	– 3.16)	2.3
Total	43.44			100.0	70.89			100.0
Species (native/non-native)	County / Area							
	Donegal				Dublin			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
non-native	42.72	(39.59	– 45.86)	81.7	3.57	(2.39	– 4.76)	81.1
native	8.76	(5.76	– 11.76)	16.7	0.43	(0.00	– 1.32)	9.8
temporarily unstocked	0.81	(0.00	– 1.93)	1.6	0.40	(0.00	– 1.29)	9.1
Total	52.29			100.0	4.41			100.0
Species (native/non-native)	County / Area							
	Galway				Kerry			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
non-native	42.87	(39.84	– 45.91)	78.5	31.61	(28.34	– 34.89)	76.6
native	11.35	(8.38	– 14.33)	20.8	8.90	(5.73	– 12.06)	21.5
temporarily unstocked	0.40	(0.00	– 1.18)	0.7	0.79	(0.00	– 1.90)	1.9
Total	54.62			100.0	41.30			100.0
Species (native/non-native)	County / Area							
	Kildare				Kilkenny			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
non-native	3.47	(1.93	– 5.02)	37.8	11.56	(9.42	– 13.70)	71.4
native	5.72	(4.18	– 7.27)	62.2	4.62	(2.48	– 6.76)	28.6
temporarily unstocked	–	–	–	–	–	–	–	–
Total	9.20			100.0	16.18			100.0
Species (native/non-native)	County / Area							
	Laois				Leitrim			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
non-native	17.19	(15.13	– 19.24)	75.2	15.99	(13.87	– 18.11)	77.7
native	5.26	(3.29	– 7.23)	23.0	4.58	(2.46	– 6.69)	22.3
temporarily unstocked	0.40	(0.00	– 1.20)	1.8	–	–	–	–
Total	22.85			100.0	20.57			100.0
Species (native/non-native)	County / Area							
	Limerick				Longford			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
non-native	16.98	(15.15	– 18.81)	83.4	4.58	(3.04	– 6.13)	57.6
native	2.97	(1.27	– 4.67)	14.6	3.38	(1.84	– 4.93)	42.4
temporarily unstocked	0.40	(0.00	– 1.20)	2.0	–	–	–	–
Total	20.35			100.0	7.97			100.0

Species (native/non-native)	County / Area					
	Louth			Mayo		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	1.50	(0.55 – 2.45)	74.2	37.37	(34.47 – 40.28)	81.0
native	0.52	(0.00 – 1.47)	25.8	7.13	(4.53 – 9.74)	15.5
temporarily unstocked	–	–	–	1.60	(0.04 – 3.17)	3.5
Total	2.02		100.0	46.11		100.0

Species (native/non-native)	County / Area					
	Meath			Monaghan		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	5.71	(3.96 – 7.46)	58.8	3.38	(1.92 – 4.83)	60.2
native	4.00	(2.25 – 5.75)	41.2	2.24	(0.78 – 3.69)	39.8
temporarily unstocked	–	–	–	–	–	–
Total	9.71		100.0	5.61		100.0

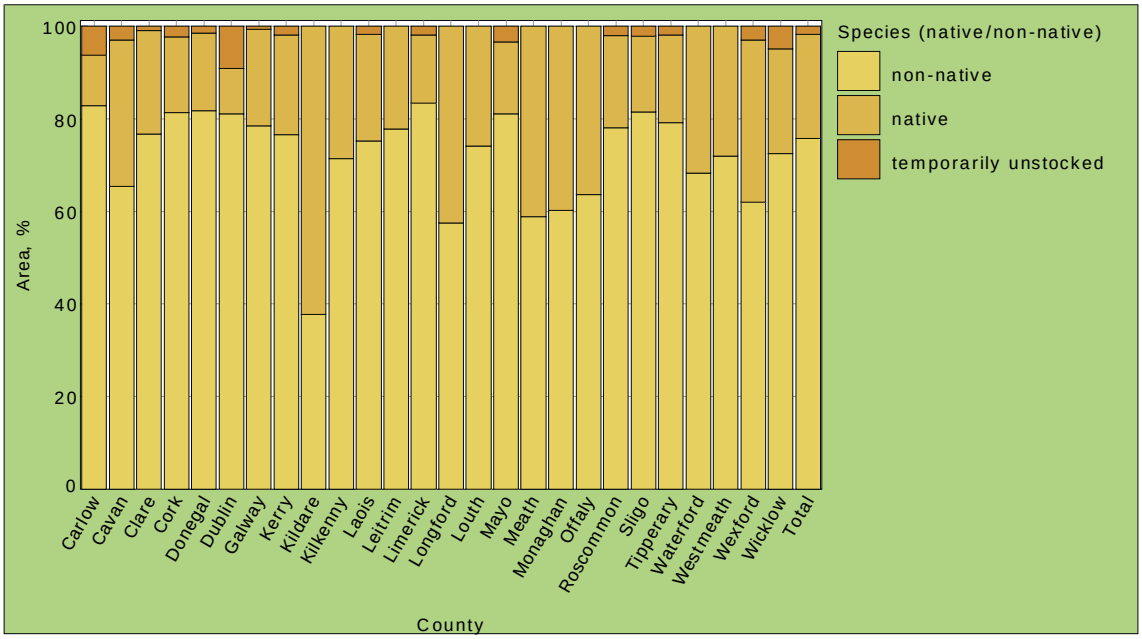
Species (native/non-native)	County / Area					
	Offaly			Roscommon		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	12.53	(10.13 – 14.94)	63.7	15.16	(13.21 – 17.10)	78.1
native	7.15	(4.75 – 9.56)	36.3	3.85	(2.01 – 5.69)	19.8
temporarily unstocked	–	–	–	0.40	(0.00 – 1.22)	2.1
Total	19.69		100.0	19.41		100.0

Species (native/non-native)	County / Area					
	Sligo			Tipperary		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	14.51	(12.62 – 16.39)	81.5	33.75	(30.79 – 36.71)	79.1
native	2.91	(1.14 – 4.68)	16.3	8.12	(5.29 – 10.95)	19.0
temporarily unstocked	0.40	(0.00 – 1.19)	2.2	0.80	(0.00 – 1.91)	1.9
Total	17.81		100.0	42.67		100.0

Species (native/non-native)	County / Area					
	Waterford			Westmeath		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	15.38	(12.96 – 17.80)	68.3	7.46	(5.84 – 9.07)	71.9
native	7.15	(4.73 – 9.56)	31.7	2.92	(1.30 – 4.53)	28.1
temporarily unstocked	–	–	–	–	–	–
Total	22.52		100.0	10.37		100.0

Species (native/non-native)	County / Area					
	Wexford			Wicklow		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
non-native	8.08	(6.10 – 10.06)	62.0	23.67	(20.86 – 26.48)	72.6
native	4.56	(2.63 – 6.49)	35.0	7.36	(4.79 – 9.93)	22.5
temporarily unstocked	0.40	(0.00 – 1.20)	3.0	1.61	(0.04 – 3.19)	4.9
Total	13.04		100.0	32.64		100.0

Species (native/non-native)	County / Area		
	Total		
	1000 ha	(α=0.05)	%
non-native	474.20	(462.71 – 485.70)	75.8
native	140.33	(129.29 – 151.36)	22.4
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0


Species (native/non-native)
non-native
native
temporarily unstocked
Area, %
100
80
60
40
20
0
Carlow
Cavan
Clare
Cork
Donegal
Dublin
Galway
Kerry
Kildare
Kilkenny
Laois
Leitrim
Limerick
Longford
Louth
Mayo
Meath
Monaghan
Offaly
Roscommon
Sligo
Tipperary
Waterford
Westmeath
Wexford
Wicklow
Total
County

3.4 INDIVIDUAL TREE SPECIES COMPOSITION

3.4.1 Total stocked forest area by species

Methodology

The total stocked forest area is classified by individual tree species.

Species	Area		
	1000 ha	(α=0.05)	%
sitka spruce	327.83	(314.45 – 341.21)	52.3
Norway spruce	25.96	(20.72 – 31.20)	4.1
lodgepole pine v SC	46.41	(39.21 – 53.61)	7.4
lodgepole pine v. NC	12.69	(9.43 – 15.95)	2.0
lodgepole pine v. lulu	1.73	(0.50 – 2.96)	0.3
lodgepole pine v. inland	2.29	(0.61 – 3.96)	0.4
Austrian pine v. maritima	0.26	(0.00 – 0.78)	0.04
Monterey pine	0.23	(0.00 – 0.65)	0.04
Scots pine	7.34	(4.76 – 9.92)	1.2
Douglas fir	10.20	(6.84 – 13.56)	1.6
Japanese larch	21.51	(16.85 – 26.17)	3.4
European larch	0.53	(0.10 – 0.96)	0.08
other larches	0.92	(0.00 – 1.92)	0.1
noble fir	2.60	(0.90 – 4.30)	0.4
grand fir	0.54	(0.04 – 1.03)	0.09
silver fir	0.27	(0.00 – 0.76)	0.04
western hemlock	0.54	(0.00 – 1.26)	0.09
Lawson cypress	0.41	(0.00 – 0.90)	0.07
coast redwood	0.03	(0.00 – 0.10)	0.005
cedar of Lebanon	0.22	(0.00 – 0.67)	0.04
yew	0.04	(0.00 – 0.13)	0.007
western redcedar	0.03	(0.00 – 0.08)	0.005
pedunculate oak	7.34	(4.86 – 9.81)	1.2
sessile oak	7.30	(4.79 – 9.81)	1.2
Turkey oak	0.15	(0.00 – 0.40)	0.02
beech	8.71	(6.11 – 11.32)	1.4
ash	19.20	(15.10 – 23.30)	3.1
downy birch	15.49	(11.90 – 19.09)	2.5
silver birch	14.20	(10.83 – 17.57)	2.3
alder	11.50	(8.16 – 14.83)	1.8
sycamore	8.06	(5.24 – 10.87)	1.3
maple	0.16	(0.00 – 0.34)	0.03
field maple	0.01	(0.00 – 0.02)	0.001
goat willow	14.26	(10.85 – 17.67)	2.3
other willows	17.96	(14.32 – 21.60)	2.9
hazel	13.24	(9.54 – 16.94)	2.1
holly	7.11	(5.14 – 9.08)	1.1
horse chestnut	0.25	(0.00 – 0.65)	0.04
large-leaved lime	0.23	(0.00 – 0.57)	0.04
small-leaved lime	0.18	(0.00 – 0.59)	0.03
sweet chestnut	0.20	(0.00 – 0.47)	0.03
hornbeam	0.50	(0.00 – 1.27)	0.08
mountain ash	4.80	(3.05 – 6.56)	0.8
whitebeam	0.05	(0.00 – 0.14)	0.007
black poplar	0.35	(0.00 – 1.11)	0.06
white poplar	0.01	(0.00 – 0.03)	0.001
aspen	0.06	(0.00 – 0.15)	0.009
notofagus sp.	0.14	(0.00 – 0.42)	0.02
Strawberry tree	0.16	(0.00 – 0.39)	0.03
crab apple	0.05	(0.00 – 0.14)	0.008
wych elm	0.01	(0.00 – 0.02)	0.0008
cherry	0.24	(0.00 – 0.55)	0.04
blackthorn	0.03	(0.00 – 0.08)	0.004
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0

3.5 Species group composition

Definition
Species group
Classification of less common tree species into groups of species on the basis of similarity in growth rate and form.

Methodology

For most NFI statistical outputs, it was more convenient to work with the species groups than with individual species. The data would not have been sufficiently representative if processed by species. The species group composition is outlined below.

Species	Species group
Sitka spruce	Sitka spruce
Norway spruce	Norway spruce
Scots pine	Scots pine
lodgepole pine v. inland	other pine spp.
lodgepole pine v. lulu	
lodgepole pine v. NC	
lodgepole pine v SC	
Austrian pine v. maritima	
Monterey pine	
Douglas fir	Douglas fir
European larch	larch spp.
Japanese larch	
other larches	
silver fir	other conifers
grand fir	
noble fir	
cedar of Lebanon	
Lawson cypress	
coast redwood	
yew	
western redcedar	
western hemlock	
sessile oak	sessile and pedunculate oak
pedunculate oak	
beech	beech
ash	ash
sycamore	sycamore

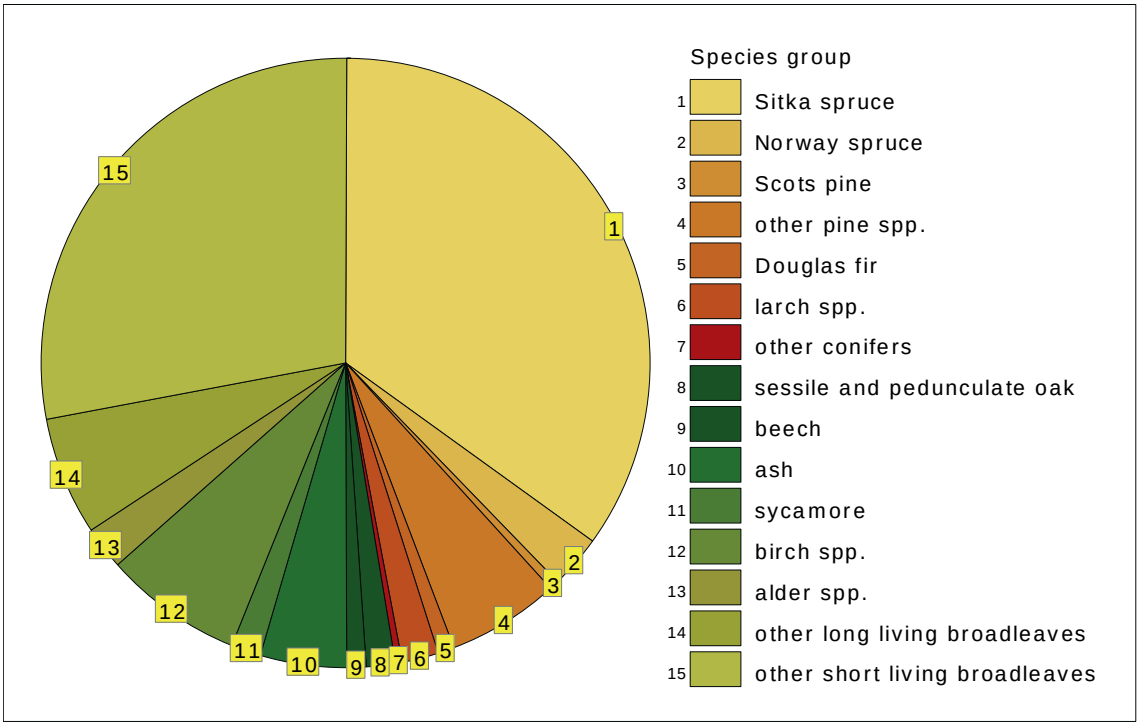
Species	Species group
silver birch	birch spp.
downy birch	
alder	alder spp.
field maple	other long living broadleaves
maple	
horse chestnut	
Strawberry tree	
hornbeam	
sweet chestnut	
holly	
notofagus sp.	
white poplar	
black poplar	
Turkey oak	
pin oak	
whitebeam	
small-leaved lime	
large-leaved lime	
wych elm	
crab apple	other short living broadleaves
aspen	
cherry	
blackthorn	
goat willow	
other willows	
mountain ash	
hazel	

3.5.1 Total number of trees by species group

Methodology

The total number of trees is classified by species group.

Species group	Number of trees		
	1000 trees	($\alpha = 0.05$)	%
Sitka spruce	849,528.42	(802,135.75 – 896,921.10)	34.9
Norway spruce	68,300.31	(52,183.11 – 84,417.51)	2.8
Scots pine	11,734.95	(6,696.99 – 16,772.92)	0.5
other pine spp.	145,712.36	(125,237.17 – 166,187.56)	6.0
Douglas fir	21,457.15	(13,565.76 – 29,348.54)	0.9
larch spp.	47,374.91	(36,637.82 – 58,112.01)	1.9
other conifers	8,603.06	(1,790.44 – 15,415.68)	0.4
sessile and pedunculate oak	37,764.61	(21,094.98 – 54,434.23)	1.6
beech	25,351.08	(1,151.58 – 49,550.58)	1.0
ash	110,908.54	(76,526.48 – 145,290.59)	4.6
sycamore	38,521.67	(22,230.73 – 54,812.61)	1.6
birch spp.	180,462.08	(134,849.62 – 226,074.55)	7.4
alder spp.	54,689.91	(23,664.45 – 85,715.36)	2.2
other long living broadleaves	152,184.30	(105,981.03 – 198,387.56)	6.3
other short living broadleaves	678,389.47	(557,747.79 – 799,031.14)	27.9
Total	2,430,982.82	(2,275,185.26 – 2,586,780.39)	100.0

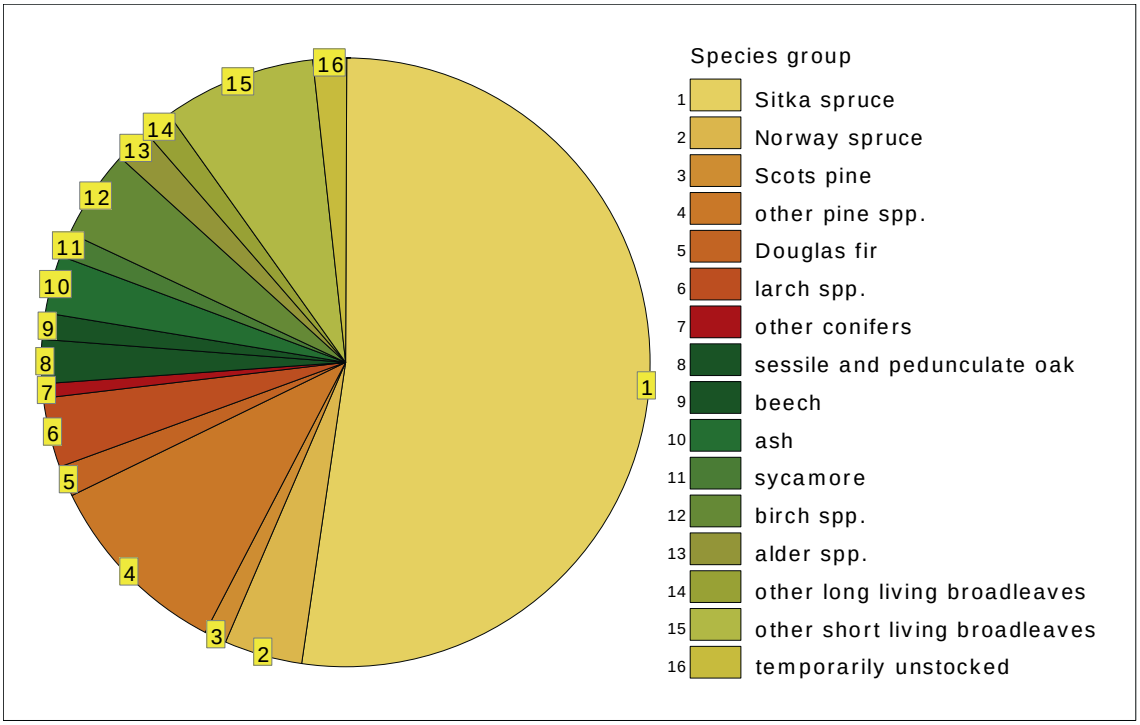


3.5.2 Total stocked forest area by species group

Methodology

The total stocked forest area is classified by species group.

Species group	Area		
	1000 ha	($\alpha = 0.05$)	%
Sitka spruce	327.83	(314.45 – 341.21)	52.5
Norway spruce	25.96	(20.72 – 31.20)	4.1
Scots pine	7.34	(4.76 – 9.92)	1.2
other pine spp.	63.61	(55.79 – 71.42)	10.2
Douglas fir	10.20	(6.84 – 13.56)	1.6
larch spp.	22.96	(18.17 – 27.74)	3.7
other conifers	4.68	(2.60 – 6.77)	0.7
sessile and pedunculate oak	14.63	(11.11 – 18.15)	2.3
beech	8.71	(6.11 – 11.32)	1.4
ash	19.16	(15.07 – 23.26)	3.1
sycamore	8.06	(5.24 – 10.87)	1.3
birch spp.	29.70	(24.86 – 34.53)	4.7
alder spp.	11.50	(8.16 – 14.83)	1.8
other long living broadleaves	9.55	(7.07 – 12.02)	1.5
other short living broadleaves	50.64	(44.30 – 56.98)	8.1
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0



3.5.3 Total stocked forest area by county and species group

Methodology

The total stocked forest area is classified by county and species group.

Species group	County / Area							
	Carlow				Cavan			
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%
Sitka spruce	3.45	(1.90	– 5.01)	53.9	6.75	(4.62	– 8.87)	49.4
Norway spruce	0.06	(0.00	– 0.20)	1.0	0.81	(0.00	– 1.63)	5.9
Scots pine	0.01	(0.00	– 0.04)	0.2	–	–	–	–
other pine spp.	0.06	(0.00	– 0.20)	1.0	0.52	(0.00	– 1.25)	3.8
Douglas fir	0.62	(0.00	– 1.56)	9.6	–	–	–	–
larch spp.	0.31	(0.00	– 0.77)	4.8	0.31	(0.00	– 0.80)	2.3
other conifers	0.26	(0.00	– 0.71)	4.1	–	–	–	–
sessile and pedunculate oak	–	–	–	–	0.38	(0.00	– 0.99)	2.8
beech	–	–	–	–	–	–	–	–
ash	0.38	(0.00	– 1.10)	5.9	0.69	(0.00	– 1.59)	5.1
sycamore	0.04	(0.00	– 0.14)	0.7	0.54	(0.00	– 1.37)	4.0
birch spp.	0.01	(0.00	– 0.03)	0.2	0.94	(0.02	– 1.85)	6.9
alder spp.	–	–	–	–	0.52	(0.00	– 1.27)	3.8
other long living broadleaves	0.50	(0.00	– 1.27)	7.8	0.14	(0.00	– 0.36)	1.0
other short living broadleaves	0.29	(0.00	– 0.64)	4.6	1.66	(0.29	– 3.02)	12.1
temporarily unstocked	0.40	(0.00	– 1.25)	6.2	0.40	(0.00	– 1.22)	2.9
Total	6.40			100.0	13.65			100.0

Species group	County / Area							
	Clare				Cork			
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%
Sitka spruce	26.85	(23.04	– 30.67)	61.8	45.81	(41.50	– 50.12)	64.6
Norway spruce	0.54	(0.00	– 1.37)	1.3	0.52	(0.00	– 1.28)	0.7
Scots pine	0.08	(0.00	– 0.24)	0.2	0.45	(0.00	– 0.99)	0.6
other pine spp.	3.48	(1.45	– 5.50)	8.0	4.30	(2.48	– 6.12)	6.1
Douglas fir	–	–	–	–	1.13	(0.04	– 2.21)	1.6
larch spp.	1.51	(0.17	– 2.85)	3.5	2.45	(0.96	– 3.94)	3.5
other conifers	0.05	(0.00	– 0.14)	0.1	0.60	(0.00	– 1.45)	0.8
sessile and pedunculate oak	0.12	(0.00	– 0.24)	0.3	1.20	(0.39	– 2.00)	1.7
beech	0.64	(0.00	– 1.39)	1.5	1.36	(0.16	– 2.56)	1.9
ash	2.48	(0.94	– 4.02)	5.7	1.13	(0.13	– 2.14)	1.6
sycamore	0.22	(0.00	– 0.56)	0.5	1.42	(0.08	– 2.77)	2.0
birch spp.	1.18	(0.02	– 2.35)	2.7	2.14	(0.90	– 3.37)	3.0
alder spp.	0.58	(0.00	– 1.39)	1.3	2.33	(0.82	– 3.85)	3.3
other long living broadleaves	0.27	(0.00	– 0.54)	0.6	1.11	(0.38	– 1.85)	1.6
other short living broadleaves	5.03	(2.78	– 7.29)	11.6	3.34	(1.90	– 4.78)	4.7
temporarily unstocked	0.40	(0.00	– 1.20)	0.9	1.60	(0.05	– 3.16)	2.3
Total	43.44			100.0	70.89			100.0

Species group	County / Area							
	Donegal				Dublin			
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%
Sitka spruce	31.55	(27.75	– 35.36)	60.3	1.74	(0.39	– 3.09)	39.4
Norway spruce	0.15	(0.00	– 0.46)	0.3	–	–	–	–
Scots pine	0.01	(0.00	– 0.02)	0.01	–	–	–	–
other pine spp.	8.69	(5.91	– 11.46)	16.6	0.89	(0.00	– 1.86)	20.3
Douglas fir	–	–	–	–	–	–	–	–
larch spp.	1.41	(0.26	– 2.56)	2.7	0.12	(0.00	– 0.38)	2.6
other conifers	0.37	(0.00	– 0.97)	0.7	0.06	(0.00	– 0.19)	1.3
sessile and pedunculate oak	0.48	(0.00	– 1.26)	0.9	0.40	(0.00	– 1.29)	9.1
beech	0.43	(0.00	– 0.92)	0.8	–	–	–	–
ash	0.37	(0.00	– 0.74)	0.7	0.03	(0.00	– 0.10)	0.7
sycamore	0.12	(0.00	– 0.35)	0.2	0.37	(0.00	– 1.19)	8.4
birch spp.	1.65	(0.49	– 2.82)	3.2	–	–	–	–
alder spp.	0.89	(0.00	– 1.85)	1.7	–	–	–	–
other long living broadleaves	0.40	(0.00	– 0.84)	0.8	0.40	(0.00	– 1.29)	9.1
other short living broadleaves	4.96	(3.03	– 6.89)	9.5	–	–	–	–
temporarily unstocked	0.81	(0.00	– 1.93)	1.6	0.40	(0.00	– 1.29)	9.1
Total	52.29			100.0	4.41			100.0

Species group	County / Area					
	Galway			Kerry		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	28.35	(24.43 – 32.27)	52.0	26.67	(23.11 – 30.22)	64.6
Norway spruce	1.61	(0.27 – 2.95)	2.9	0.02	(0.00 – 0.05)	0.04
Scots pine	0.57	(0.00 – 1.37)	1.1	0.30	(0.00 – 0.80)	0.7
other pine spp.	11.14	(7.78 – 14.51)	20.4	3.41	(1.54 – 5.28)	8.3
Douglas fir	0.13	(0.00 – 0.28)	0.2	–	–	–
larch spp.	0.83	(0.14 – 1.52)	1.5	0.38	(0.00 – 0.89)	0.9
other conifers	0.06	(0.00 – 0.18)	0.1	0.39	(0.00 – 1.03)	0.9
sessile and pedunculate oak	0.83	(0.00 – 1.80)	1.5	1.44	(0.43 – 2.46)	3.5
beech	0.52	(0.03 – 1.02)	1.0	0.27	(0.00 – 0.67)	0.7
ash	1.12	(0.12 – 2.11)	2.0	0.35	(0.05 – 0.66)	0.9
sycamore	0.22	(0.00 – 0.45)	0.4	0.40	(0.00 – 1.19)	1.0
birch spp.	2.55	(1.19 – 3.90)	4.7	2.49	(1.02 – 3.95)	6.0
alder spp.	0.55	(0.00 – 1.15)	1.0	0.80	(0.00 – 1.63)	1.9
other long living broadleaves	0.38	(0.03 – 0.72)	0.7	2.02	(0.93 – 3.12)	4.9
other short living broadleaves	5.36	(3.40 – 7.32)	9.8	1.56	(0.41 – 2.72)	3.8
temporarily unstocked	0.40	(0.00 – 1.18)	0.7	0.79	(0.00 – 1.90)	1.9
Total	54.62		100.0	41.30		100.0

Species group	County / Area					
	Kildare			Kilkenny		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	0.99	(0.00 – 2.12)	10.8	8.22	(5.81 – 10.63)	50.7
Norway spruce	1.12	(0.19 – 2.06)	12.2	1.07	(0.00 – 2.22)	6.6
Scots pine	0.75	(0.00 – 1.70)	8.2	0.19	(0.00 – 0.52)	1.2
other pine spp.	0.36	(0.00 – 1.11)	3.9	0.77	(0.00 – 1.75)	4.8
Douglas fir	0.02	(0.00 – 0.06)	0.2	0.60	(0.00 – 1.46)	3.7
larch spp.	0.11	(0.00 – 0.32)	1.2	0.59	(0.00 – 1.45)	3.6
other conifers	0.18	(0.00 – 0.56)	2.0	0.11	(0.00 – 0.25)	0.7
sessile and pedunculate oak	0.52	(0.00 – 1.35)	5.7	0.88	(0.03 – 1.73)	5.5
beech	0.30	(0.02 – 0.58)	3.3	0.10	(0.00 – 0.21)	0.6
ash	0.99	(0.20 – 1.79)	10.8	0.68	(0.00 – 1.36)	4.2
sycamore	0.35	(0.00 – 0.85)	3.8	0.04	(0.00 – 0.11)	0.2
birch spp.	1.83	(0.62 – 3.05)	19.9	0.91	(0.01 – 1.80)	5.6
alder spp.	0.11	(0.00 – 0.35)	1.2	0.14	(0.00 – 0.43)	0.9
other long living broadleaves	0.04	(0.00 – 0.12)	0.4	0.27	(0.00 – 0.60)	1.7
other short living broadleaves	1.50	(0.33 – 2.68)	16.4	1.62	(0.49 – 2.76)	10.0
temporarily unstocked	–	–	–	–	–	–
Total	9.20		100.0	16.18		100.0

Species group	County / Area					
	Laois			Leitrim		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	10.75	(8.00 – 13.51)	46.9	13.29	(10.96 – 15.63)	64.7
Norway spruce	2.06	(0.50 – 3.62)	9.0	–	–	–
Scots pine	0.27	(0.00 – 0.68)	1.2	0.27	(0.00 – 0.79)	1.3
other pine spp.	1.78	(0.29 – 3.27)	7.8	0.90	(0.00 – 1.92)	4.4
Douglas fir	0.61	(0.00 – 1.37)	2.7	–	–	–
larch spp.	0.93	(0.00 – 2.00)	4.1	1.41	(0.37 – 2.45)	6.9
other conifers	0.27	(0.00 – 0.76)	1.2	0.37	(0.00 – 1.11)	1.8
sessile and pedunculate oak	0.57	(0.00 – 1.13)	2.5	0.03	(0.00 – 0.08)	0.1
beech	0.58	(0.10 – 1.07)	2.5	–	–	–
ash	0.91	(0.15 – 1.68)	4.0	0.19	(0.00 – 0.54)	0.9
sycamore	0.21	(0.00 – 0.48)	0.9	0.01	(0.00 – 0.02)	0.02
birch spp.	0.96	(0.29 – 1.64)	4.2	1.85	(0.51 – 3.20)	9.0
alder spp.	0.02	(0.00 – 0.05)	0.07	0.08	(0.00 – 0.24)	0.4
other long living broadleaves	0.07	(0.00 – 0.17)	0.3	0.11	(0.00 – 0.27)	0.5
other short living broadleaves	2.46	(1.08 – 3.85)	10.8	2.05	(0.89 – 3.22)	10.0
temporarily unstocked	0.40	(0.00 – 1.20)	1.8	–	–	–
Total	22.85		100.0	20.57		100.0

Species group	County / Area					
	Limerick			Longford		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	13.49	(11.03 – 15.95)	66.4	1.76	(0.26 – 3.27)	22.2
Norway spruce	0.40	(0.00 – 1.20)	2.0	2.08	(0.70 – 3.46)	26.2
Scots pine	0.05	(0.00 – 0.15)	0.2	1.12	(0.00 – 2.35)	14.1
other pine spp.	1.80	(0.22 – 3.39)	8.9	–	–	–
Douglas fir	0.66	(0.00 – 1.61)	3.2	–	–	–
larch spp.	0.33	(0.05 – 0.62)	1.6	0.68	(0.00 – 1.67)	8.5
other conifers	0.15	(0.00 – 0.36)	0.7	–	–	–
sessile and pedunculate oak	0.01	(0.00 – 0.02)	0.03	0.12	(0.00 – 0.38)	1.5
beech	0.02	(0.00 – 0.07)	0.1	–	–	–
ash	0.80	(0.00 – 1.89)	3.9	0.33	(0.00 – 0.80)	4.1
sycamore	0.02	(0.00 – 0.07)	0.1	0.02	(0.00 – 0.07)	0.3
birch spp.	0.21	(0.00 – 0.48)	1.0	0.90	(0.00 – 1.88)	11.3
alder spp.	1.14	(0.04 – 2.24)	5.6	0.58	(0.00 – 1.48)	7.3
other long living broadleaves	0.10	(0.00 – 0.29)	0.5	0.04	(0.00 – 0.13)	0.5
other short living broadleaves	0.77	(0.00 – 1.62)	3.8	0.32	(0.00 – 0.82)	4.0
temporarily unstocked	0.40	(0.00 – 1.20)	2.0	–	–	–
Total	20.35		100.0	7.97		100.0

Species group	County / Area					
	Louth			Mayo		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	0.40	(0.00 – 1.53)	20.1	18.98	(15.50 – 22.46)	41.2
Norway spruce	–	–	–	0.28	(0.00 – 0.84)	0.6
Scots pine	–	–	–	0.12	(0.00 – 0.32)	0.3
other pine spp.	0.40	(0.00 – 1.53)	20.0	16.04	(12.43 – 19.65)	34.8
Douglas fir	–	–	–	–	–	–
larch spp.	0.40	(0.00 – 1.53)	20.0	1.83	(0.53 – 3.14)	4.0
other conifers	–	–	–	–	–	–
sessile and pedunculate oak	–	–	–	0.47	(0.00 – 1.00)	1.0
beech	0.20	(0.00 – 0.65)	10.0	0.00	(0.00 – 0.00)	0.002
ash	0.33	(0.00 – 1.23)	16.4	0.84	(0.00 – 1.75)	1.8
sycamore	0.03	(0.00 – 0.12)	1.5	0.24	(0.00 – 0.51)	0.5
birch spp.	–	–	–	1.22	(0.19 – 2.25)	2.6
alder spp.	–	–	–	0.06	(0.00 – 0.16)	0.1
other long living broadleaves	0.23	(0.00 – 0.88)	11.5	0.29	(0.00 – 0.58)	0.6
other short living broadleaves	0.01	(0.00 – 0.04)	0.5	4.14	(2.44 – 5.84)	9.0
temporarily unstocked	–	–	–	1.60	(0.04 – 3.17)	3.5
Total	2.02		100.0	46.11		100.0

Species group	County / Area					
	Meath			Monaghan		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	0.85	(0.00 – 2.00)	8.7	1.96	(0.48 – 3.44)	34.9
Norway spruce	1.99	(0.41 – 3.57)	20.5	0.10	(0.00 – 0.32)	1.8
Scots pine	0.15	(0.00 – 0.39)	1.6	0.01	(0.00 – 0.04)	0.2
other pine spp.	0.26	(0.00 – 0.81)	2.7	0.27	(0.00 – 0.82)	4.9
Douglas fir	–	–	–	–	–	–
larch spp.	0.81	(0.00 – 1.97)	8.3	0.68	(0.00 – 1.69)	12.1
other conifers	–	–	–	–	–	–
sessile and pedunculate oak	1.35	(0.21 – 2.48)	13.9	0.29	(0.00 – 0.91)	5.1
beech	1.09	(0.03 – 2.15)	11.2	0.02	(0.00 – 0.05)	0.3
ash	1.11	(0.00 – 2.32)	11.5	0.28	(0.00 – 0.59)	4.9
sycamore	0.54	(0.00 – 1.27)	5.6	–	–	–
birch spp.	0.42	(0.00 – 0.91)	4.3	0.57	(0.00 – 1.32)	10.1
alder spp.	0.40	(0.00 – 1.24)	4.2	0.03	(0.00 – 0.09)	0.5
other long living broadleaves	0.17	(0.00 – 0.51)	1.7	0.35	(0.00 – 1.11)	6.3
other short living broadleaves	0.56	(0.00 – 1.29)	5.8	1.06	(0.00 – 2.14)	18.9
temporarily unstocked	–	–	–	–	–	–
Total	9.71		100.0	5.61		100.0

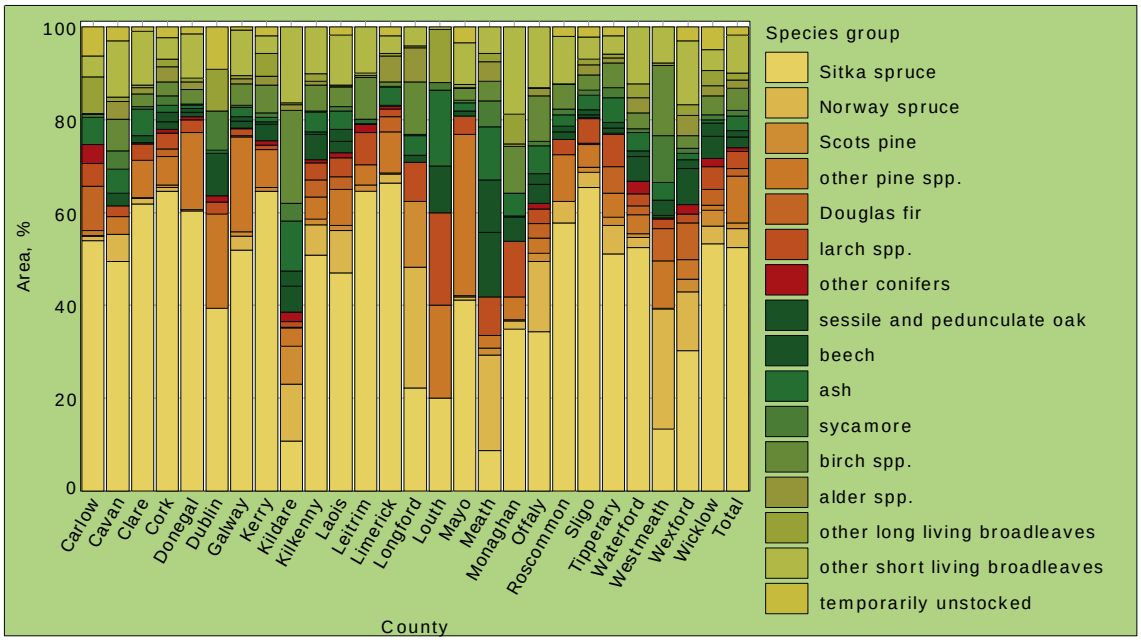
Species group	County / Area					
	Offaly			Roscommon		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	6.76	(4.22 – 9.31)	34.4	11.20	(8.88 – 13.52)	57.8
Norway spruce	2.98	(1.05 – 4.90)	15.1	0.91	(0.00 – 1.90)	4.7
Scots pine	0.34	(0.00 – 1.00)	1.7	–	–	–
other pine spp.	0.64	(0.00 – 1.45)	3.3	1.96	(0.48 – 3.44)	10.1
Douglas fir	0.62	(0.00 – 1.46)	3.1	–	–	–
larch spp.	0.63	(0.00 – 1.52)	3.2	0.62	(0.00 – 1.47)	3.2
other conifers	0.23	(0.00 – 0.67)	1.2	–	–	–
sessile and pedunculate oak	0.81	(0.00 – 1.74)	4.1	0.33	(0.00 – 0.91)	1.7
beech	0.45	(0.00 – 1.26)	2.3	0.22	(0.00 – 0.51)	1.1
ash	1.17	(0.13 – 2.21)	6.0	0.49	(0.03 – 0.95)	2.5
sycamore	0.19	(0.00 – 0.55)	0.9	0.23	(0.00 – 0.68)	1.2
birch spp.	1.94	(0.59 – 3.29)	9.9	1.04	(0.17 – 1.90)	5.3
alder spp.	0.31	(0.00 – 0.91)	1.6	–	–	–
other long living broadleaves	0.04	(0.00 – 0.11)	0.2	0.02	(0.00 – 0.05)	0.1
other short living broadleaves	2.57	(1.09 – 4.05)	13.0	1.98	(0.72 – 3.25)	10.2
temporarily unstocked	–	–	–	0.40	(0.00 – 1.22)	2.1
Total	19.69		100.0	19.41		100.0

Species group	County / Area					
	Sligo			Tipperary		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	11.65	(9.35 – 13.95)	65.5	21.82	(17.99 – 25.64)	51.1
Norway spruce	0.59	(0.00 – 1.48)	3.3	2.58	(0.81 – 4.35)	6.0
Scots pine	0.19	(0.00 – 0.58)	1.1	0.77	(0.14 – 1.40)	1.8
other pine spp.	0.87	(0.02 – 1.72)	4.9	2.20	(0.56 – 3.84)	5.1
Douglas fir	0.05	(0.00 – 0.14)	0.3	2.45	(0.64 – 4.25)	5.7
larch spp.	0.94	(0.00 – 1.94)	5.3	3.00	(1.14 – 4.85)	7.0
other conifers	0.04	(0.00 – 0.12)	0.2	0.07	(0.00 – 0.18)	0.2
sessile and pedunculate oak	0.10	(0.00 – 0.32)	0.6	0.47	(0.04 – 0.91)	1.1
beech	0.18	(0.00 – 0.43)	1.0	0.54	(0.00 – 1.20)	1.3
ash	0.58	(0.00 – 1.39)	3.2	2.23	(0.75 – 3.71)	5.2
sycamore	0.18	(0.00 – 0.55)	1.0	0.96	(0.00 – 2.10)	2.3
birch spp.	0.59	(0.00 – 1.24)	3.3	2.25	(0.73 – 3.76)	5.3
alder spp.	0.40	(0.00 – 1.19)	2.2	0.50	(0.00 – 1.18)	1.2
other long living broadleaves	0.21	(0.00 – 0.60)	1.2	0.34	(0.01 – 0.67)	0.8
other short living broadleaves	0.84	(0.14 – 1.54)	4.7	1.69	(0.56 – 2.83)	4.0
temporarily unstocked	0.40	(0.00 – 1.19)	2.2	0.80	(0.00 – 1.91)	1.9
Total	17.81		100.0	42.67		100.0

Species group	County / Area					
	Waterford			Westmeath		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	11.80	(9.05 – 14.55)	52.4	1.39	(0.07 – 2.70)	13.4
Norway spruce	0.52	(0.00 – 1.35)	2.3	2.68	(1.08 – 4.28)	25.9
Scots pine	0.16	(0.00 – 0.40)	0.7	0.02	(0.00 – 0.06)	0.2
other pine spp.	0.92	(0.00 – 2.06)	4.1	1.06	(0.00 – 2.25)	10.2
Douglas fir	0.45	(0.00 – 1.02)	2.0	0.71	(0.00 – 1.73)	6.9
larch spp.	0.59	(0.00 – 1.30)	2.6	0.22	(0.00 – 0.68)	2.1
other conifers	0.62	(0.00 – 1.49)	2.7	0.02	(0.00 – 0.05)	0.1
sessile and pedunculate oak	1.19	(0.04 – 2.33)	5.3	0.07	(0.00 – 0.21)	0.6
beech	0.28	(0.00 – 0.59)	1.3	0.33	(0.00 – 1.01)	3.2
ash	0.87	(0.00 – 1.88)	3.9	0.39	(0.00 – 0.96)	3.8
sycamore	0.19	(0.00 – 0.41)	0.8	1.05	(0.00 – 2.22)	10.1
birch spp.	0.77	(0.25 – 1.29)	3.4	1.57	(0.34 – 2.81)	15.2
alder spp.	0.73	(0.00 – 1.51)	3.2	0.06	(0.00 – 0.17)	0.5
other long living broadleaves	0.68	(0.00 – 1.42)	3.0	–	–	–
other short living broadleaves	2.77	(1.12 – 4.42)	12.3	0.81	(0.07 – 1.55)	7.8
temporarily unstocked	–	–	–	–	–	–
Total	22.52		100.0	10.37		100.0

Species group	County / Area					
	Wexford			Wicklow		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	3.94	(2.08 – 5.81)	30.2	17.38	(13.91 – 20.85)	53.4
Norway spruce	1.65	(0.17 – 3.13)	12.7	1.23	(0.10 – 2.37)	3.8
Scots pine	0.36	(0.00 – 1.05)	2.7	1.14	(0.00 – 2.28)	3.5
other pine spp.	0.54	(0.00 – 1.37)	4.2	0.33	(0.00 – 0.78)	1.0
Douglas fir	1.04	(0.00 – 2.22)	8.0	1.12	(0.19 – 2.05)	3.4
larch spp.	0.25	(0.00 – 0.58)	1.9	1.62	(0.26 – 2.97)	5.0
other conifers	0.26	(0.00 – 0.65)	2.0	0.59	(0.00 – 1.38)	1.8
sessile and pedunculate oak	1.02	(0.00 – 2.14)	7.8	1.55	(0.53 – 2.57)	4.7
beech	0.24	(0.00 – 0.65)	1.9	0.93	(0.00 – 1.89)	2.8
ash	0.18	(0.00 – 0.45)	1.4	0.23	(0.00 – 0.62)	0.7
sycamore	0.13	(0.00 – 0.31)	1.0	0.33	(0.00 – 0.85)	1.0
birch spp.	0.36	(0.00 – 0.89)	2.8	1.35	(0.52 – 2.18)	4.1
alder spp.	0.57	(0.03 – 1.11)	4.4	0.70	(0.00 – 1.61)	2.2
other long living broadleaves	0.30	(0.00 – 0.63)	2.3	1.05	(0.06 – 2.04)	3.2
other short living broadleaves	1.78	(0.33 – 3.24)	13.7	1.48	(0.28 – 2.67)	4.5
temporarily unstocked	0.40	(0.00 – 1.20)	3.0	1.61	(0.04 – 3.19)	4.9
Total	13.04		100.0	32.64		100.0

Species group	County / Area		
	Total		
	1000 ha	(α=0.05)	%
Sitka spruce	327.83	(314.45 – 341.21)	52.5
Norway spruce	25.96	(20.72 – 31.20)	4.1
Scots pine	7.34	(4.76 – 9.92)	1.2
other pine spp.	63.61	(55.79 – 71.42)	10.2
Douglas fir	10.20	(6.84 – 13.56)	1.6
larch spp.	22.96	(18.17 – 27.74)	3.7
other conifers	4.68	(2.60 – 6.77)	0.7
sessile and pedunculate oak	14.63	(11.11 – 18.15)	2.3
beech	8.71	(6.11 – 11.32)	1.4
ash	19.16	(15.07 – 23.26)	3.1
sycamore	8.06	(5.24 – 10.87)	1.3
birch spp.	29.70	(24.86 – 34.53)	4.7
alder spp.	11.50	(8.16 – 14.83)	1.8
other long living broadleaves	9.55	(7.07 – 12.02)	1.5
other short living broadleaves	50.64	(44.30 – 56.98)	8.1
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0



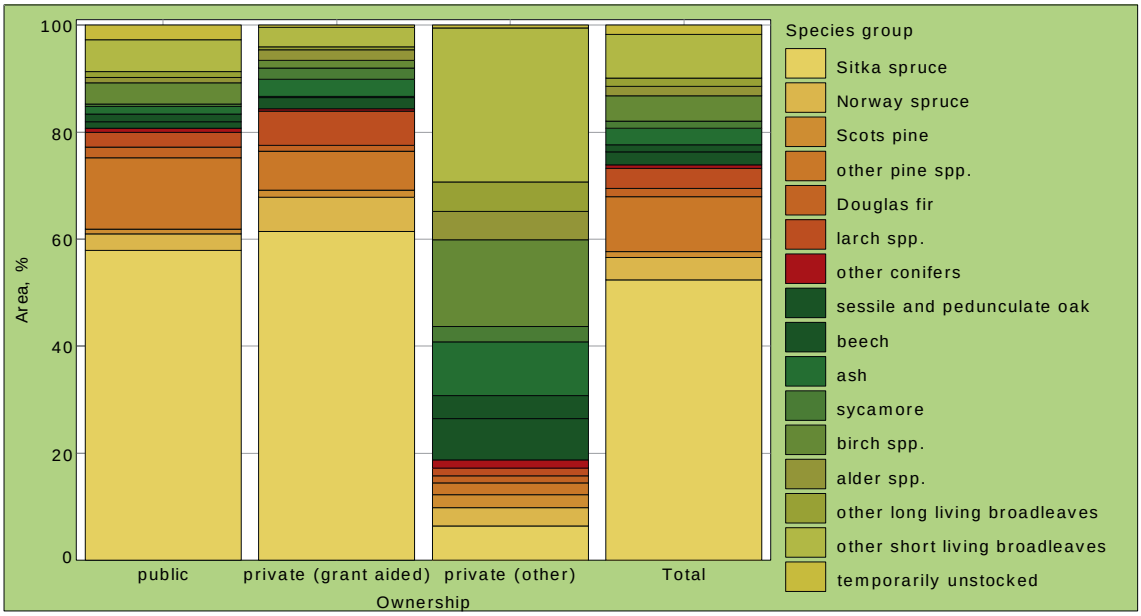
3.5.4 Total stocked forest area by ownership and species group

Methodology

The total stocked forest area is classified by ownership and species group.

Species group	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	207.88	(194.58 – 221.19)	57.6	114.85	(103.83 – 125.87)	61.6
Norway spruce	11.24	(7.85 – 14.63)	3.1	12.00	(8.10 – 15.90)	6.4
Scots pine	3.08	(1.47 – 4.69)	0.9	2.37	(0.74 – 4.01)	1.3
other pine spp.	48.15	(40.95 – 55.34)	13.4	13.74	(10.12 – 17.35)	7.3
Douglas fir	7.15	(4.35 – 9.95)	2.0	1.95	(0.30 – 3.60)	1.0
larch spp.	9.90	(6.57 – 13.23)	2.8	11.97	(8.55 – 15.38)	6.4
other conifers	2.62	(1.04 – 4.20)	0.7	0.84	(0.00 – 1.76)	0.4
sessile and pedunculate oak	4.51	(2.75 – 6.26)	1.3	4.00	(1.82 – 6.18)	2.1
beech	4.89	(2.81 – 6.97)	1.4	0.41	(0.00 – 1.20)	0.2
ash	5.30	(3.25 – 7.35)	1.5	5.89	(3.23 – 8.54)	3.1
sycamore	1.78	(0.69 – 2.88)	0.5	3.97	(1.75 – 6.20)	2.1
birch spp.	14.29	(11.13 – 17.45)	4.0	2.58	(1.10 – 4.06)	1.4
alder spp.	3.40	(1.77 – 5.02)	0.9	3.87	(1.78 – 5.97)	2.1
other long living broadleaves	4.14	(2.53 – 5.75)	1.2	1.04	(0.20 – 1.88)	0.6
other short living broadleaves	21.06	(17.28 – 24.85)	5.9	6.70	(4.43 – 8.96)	3.6
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Species group	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	5.09	(2.66 – 7.53)	6.4	327.83	(314.45 – 341.21)	52.5
Norway spruce	2.72	(0.99 – 4.46)	3.4	25.96	(20.72 – 31.20)	4.1
Scots pine	1.89	(0.58 – 3.19)	2.4	7.34	(4.76 – 9.92)	1.2
other pine spp.	1.73	(0.22 – 3.23)	2.2	63.61	(55.79 – 71.42)	10.2
Douglas fir	1.11	(0.14 – 2.07)	1.4	10.20	(6.84 – 13.56)	1.6
larch spp.	1.09	(0.21 – 1.97)	1.4	22.96	(18.17 – 27.74)	3.7
other conifers	1.22	(0.23 – 2.22)	1.5	4.68	(2.60 – 6.77)	0.7
sessile and pedunculate oak	6.13	(3.87 – 8.38)	7.7	14.63	(11.11 – 18.15)	2.3
beech	3.41	(1.98 – 4.83)	4.3	8.71	(6.11 – 11.32)	1.4
ash	7.97	(5.49 – 10.45)	10.0	19.16	(15.07 – 23.26)	3.1
sycamore	2.30	(0.91 – 3.69)	2.9	8.06	(5.24 – 10.87)	1.3
birch spp.	12.83	(9.27 – 16.38)	16.2	29.70	(24.86 – 34.53)	4.7
alder spp.	4.23	(2.15 – 6.30)	5.3	11.50	(8.16 – 14.83)	1.8
other long living broadleaves	4.37	(2.62 – 6.12)	5.5	9.55	(7.07 – 12.02)	1.5
other short living broadleaves	22.88	(17.89 – 27.87)	28.9	50.64	(44.30 – 56.98)	8.1
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



3.5.5 Total stocked forest area by species group and altitude

Methodology

The total stocked forest area is classified by species group and altitude.

Altitude, m	Species group / Area								
	Sitka spruce			Norway spruce			Scots pine		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	19.06	(14.23 – 23.89)	5.8	1.59	(0.35 – 2.82)	6.1	1.20	(0.18 – 2.23)	16.4
50 - 99	66.35	(57.85 – 74.85)	20.3	14.71	(10.85 – 18.57)	56.7	3.92	(2.02 – 5.81)	53.3
100 - 149	50.15	(42.37 – 57.93)	15.3	5.96	(3.21 – 8.70)	22.9	1.45	(0.22 – 2.68)	19.7
150 - 199	54.64	(46.45 – 62.82)	16.7	2.64	(0.76 – 4.52)	10.2	0.37	(0.00 – 1.08)	5.0
200 - 249	47.90	(40.03 – 55.77)	14.6	0.67	(0.00 – 1.60)	2.6	0.11	(0.00 – 0.32)	1.5
250 - 299	39.74	(32.55 – 46.93)	12.1	0.40	(0.00 – 1.16)	1.5	0.07	(0.00 – 0.18)	1.0
300 - 349	28.99	(22.70 – 35.28)	8.8	–	–	–	0.22	(0.00 – 0.66)	3.1
350 - 399	11.65	(7.62 – 15.68)	3.6	–	–	–	–	–	–
400 - 449	5.53	(2.71 – 8.36)	1.7	–	–	–	–	–	–
450 - 499	3.01	(0.92 – 5.11)	0.9	–	–	–	–	–	–
500 +	0.80	(0.00 – 1.96)	0.2	–	–	–	–	–	–
Total	327.83	(314.45 – 341.21)	100.0	25.96	(20.72 – 31.20)	100.0	7.34	(4.76 – 9.92)	100.0

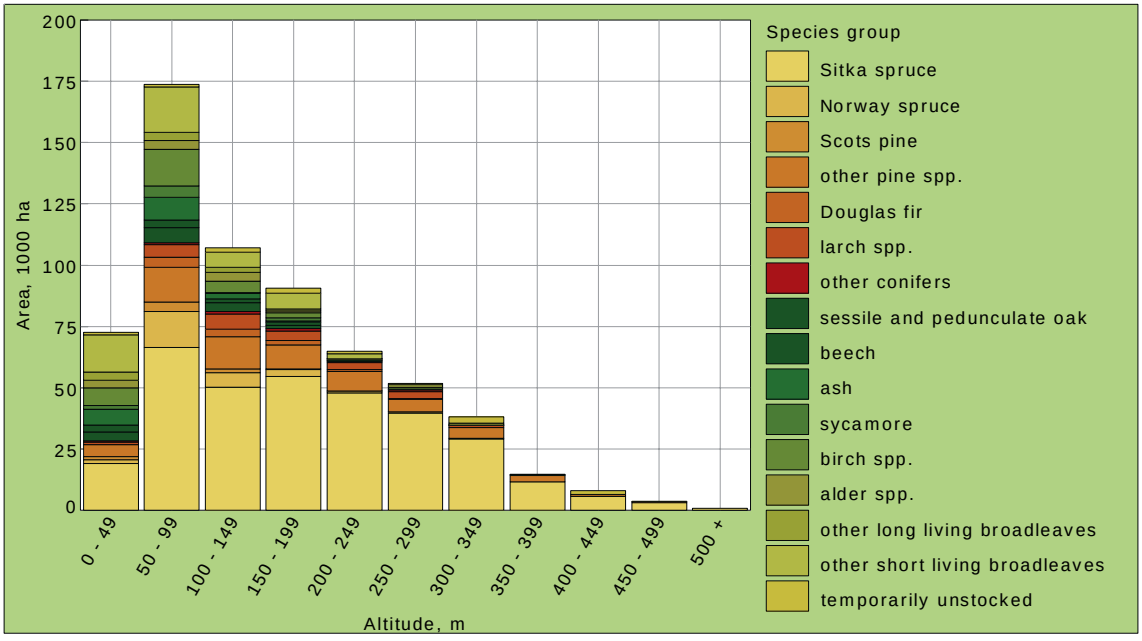
Altitude, m	Species group / Area								
	other pine spp.			Douglas fir			larch spp.		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	4.90	(2.51 – 7.28)	7.7	0.06	(0.00 – 0.17)	0.6	1.07	(0.19 – 1.95)	4.7
50 - 99	14.05	(10.07 – 18.03)	22.1	4.20	(2.07 – 6.33)	41.0	5.21	(3.07 – 7.34)	22.7
100 - 149	13.34	(9.36 – 17.33)	21.0	2.97	(1.10 – 4.83)	29.1	6.07	(3.43 – 8.71)	26.4
150 - 199	9.83	(6.46 – 13.21)	15.5	1.84	(0.38 – 3.31)	18.1	3.89	(1.80 – 5.97)	16.9
200 - 249	8.02	(4.97 – 11.07)	12.6	0.74	(0.00 – 1.63)	7.3	2.88	(1.14 – 4.62)	12.5
250 - 299	5.08	(2.63 – 7.53)	8.0	0.40	(0.00 – 1.20)	3.9	2.65	(0.98 – 4.33)	11.6
300 - 349	4.47	(2.19 – 6.75)	7.0	–	–	–	1.04	(0.00 – 2.18)	4.5
350 - 399	2.57	(0.79 – 4.34)	4.0	–	–	–	0.16	(0.00 – 0.46)	0.7
400 - 449	0.89	(0.00 – 1.95)	1.4	–	–	–	–	–	–
450 - 499	0.46	(0.00 – 1.37)	0.7	–	–	–	–	–	–
500 +	–	–	–	–	–	–	–	–	–
Total	63.61	(55.79 – 71.42)	100.0	10.20	(6.84 – 13.56)	100.0	22.96	(18.17 – 27.74)	100.0

Altitude, m	Species group / Area								
	other conifers			sessile and pedunculate oak			beech		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	0.55	(0.00 – 1.22)	11.8	3.37	(1.69 – 5.04)	23.0	2.86	(1.27 – 4.46)	32.8
50 - 99	0.76	(0.08 – 1.43)	16.2	6.01	(3.64 – 8.37)	41.1	3.12	(1.71 – 4.53)	35.8
100 - 149	1.14	(0.20 – 2.09)	24.5	3.66	(1.84 – 5.48)	25.0	1.46	(0.28 – 2.64)	16.7
150 - 199	0.95	(0.00 – 2.00)	20.3	1.28	(0.31 – 2.25)	8.7	1.22	(0.17 – 2.27)	14.0
200 - 249	0.39	(0.00 – 0.91)	8.2	0.22	(0.00 – 0.65)	1.5	0.06	(0.00 – 0.17)	0.7
250 - 299	0.89	(0.00 – 2.01)	19.0	0.06	(0.00 – 0.19)	0.4	–	–	–
300 - 349	–	–	–	0.02	(0.00 – 0.05)	0.1	–	–	–
350 - 399	–	–	–	0.02	(0.00 – 0.07)	0.2	–	–	–
400 - 449	–	–	–	–	–	–	–	–	–
450 - 499	–	–	–	–	–	–	–	–	–
500 +	–	–	–	–	–	–	–	–	–
Total	4.68	(2.60 – 6.77)	100.0	14.63	(11.11 – 18.15)	100.0	8.71	(6.11 – 11.32)	100.0

Altitude, m	Species group / Area								
	ash			sycamore			birch spp.		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 49	6.49	(4.10 – 8.87)	33.8	1.54	(0.51 – 2.56)	19.1	7.28	(4.63 – 9.94)	24.5
50 - 99	9.42	(6.50 – 12.33)	49.2	4.68	(2.43 – 6.92)	58.0	14.73	(11.28 – 18.18)	49.7
100 - 149	2.24	(0.79 – 3.70)	11.7	0.40	(0.00 – 0.84)	4.9	4.55	(2.69 – 6.41)	15.3
150 - 199	0.44	(0.05 – 0.83)	2.3	1.38	(0.02 – 2.75)	17.2	2.14	(0.96 – 3.31)	7.2
200 - 249	0.57	(0.00 – 1.44)	3.0	–	–	–	0.22	(0.00 – 0.43)	0.7
250 - 299	0.00	(0.00 – 0.02)	0.03	0.06	(0.00 – 0.19)	0.8	0.73	(0.00 – 1.59)	2.4
300 - 349	–	–	–	–	–	–	0.06	(0.00 – 0.17)	0.2
350 - 399	–	–	–	–	–	–	–	–	–
400 - 449	–	–	–	–	–	–	–	–	–
450 - 499	–	–	–	–	–	–	–	–	–
500 +	–	–	–	–	–	–	–	–	–
Total	19.16	(15.07 – 23.26)	100.0	8.06	(5.24 – 10.87)	100.0	29.70	(24.86 – 34.53)	100.0

Altitude, m	Species group / Area											
	alder spp.				other long living broadleaves				other short living broadleaves			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
0 - 49	3.13	(1.50	– 4.76)	27.3	3.36	(1.81	– 4.91)	35.2	15.20	(11.25	– 19.14)	30.0
50 - 99	3.65	(1.74	– 5.55)	31.7	3.34	(1.87	– 4.80)	35.0	18.49	(14.60	– 22.37)	36.5
100 - 149	3.62	(1.58	– 5.66)	31.5	2.04	(0.86	– 3.23)	21.4	6.30	(4.08	– 8.52)	12.4
150 - 199	0.84	(0.00	– 1.70)	7.3	0.77	(0.11	– 1.43)	8.0	6.37	(4.08	– 8.67)	12.6
200 - 249	0.08	(0.00	– 0.24)	0.7	0.03	(0.00	– 0.10)	0.3	1.89	(0.57	– 3.21)	3.7
250 - 299	0.17	(0.00	– 0.53)	1.5	0.01	(0.00	– 0.02)	0.05	1.01	(0.22	– 1.80)	2.0
300 - 349	–	–	–	–	0.00	(0.00	– 0.00)	0.01	0.84	(0.00	– 1.73)	1.7
350 - 399	–	–	–	–	–	–	–	–	0.40	(0.00	– 1.21)	0.8
400 - 449	–	–	–	–	–	–	–	–	–	–	–	–
450 - 499	–	–	–	–	–	–	–	–	0.13	(0.00	– 0.42)	0.3
500 +	–	–	–	–	–	–	–	–	–	–	–	–
Total	11.50	(8.16	– 14.83)	100.0	9.55	(7.07	– 12.02)	100.0	50.64	(44.30	– 56.98)	100.0

Altitude, m	Species group / Area						
	temporarily unstocked				Total		
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)	%
0 - 49	0.81	(0.00	– 1.92)	7.2	72.46	(62.77 – 82.15)	11.6
50 - 99	1.20	(0.00	– 2.55)	10.7	173.79	(161.36 – 186.23)	27.6
100 - 149	1.60	(0.03	– 3.17)	14.3	106.96	(95.36 – 118.55)	17.1
150 - 199	2.00	(0.25	– 3.75)	17.8	90.60	(79.85 – 101.36)	14.5
200 - 249	1.21	(0.00	– 2.58)	10.8	64.98	(55.63 – 74.33)	10.4
250 - 299	0.40	(0.00	– 1.19)	3.6	51.68	(43.29 – 60.06)	8.3
300 - 349	2.40	(0.48	– 4.32)	21.3	38.05	(30.73 – 45.36)	6.1
350 - 399	–	–	–	–	14.79	(10.15 – 19.44)	2.4
400 - 449	1.60	(0.01	– 3.19)	14.3	8.02	(4.60 – 11.44)	1.3
450 - 499	–	–	–	–	3.61	(1.28 – 5.95)	0.6
500 +	–	–	–	–	0.80	(0.00 – 1.96)	0.1
Total	11.22	(7.09	– 15.35)	100.0	625.75		100.0



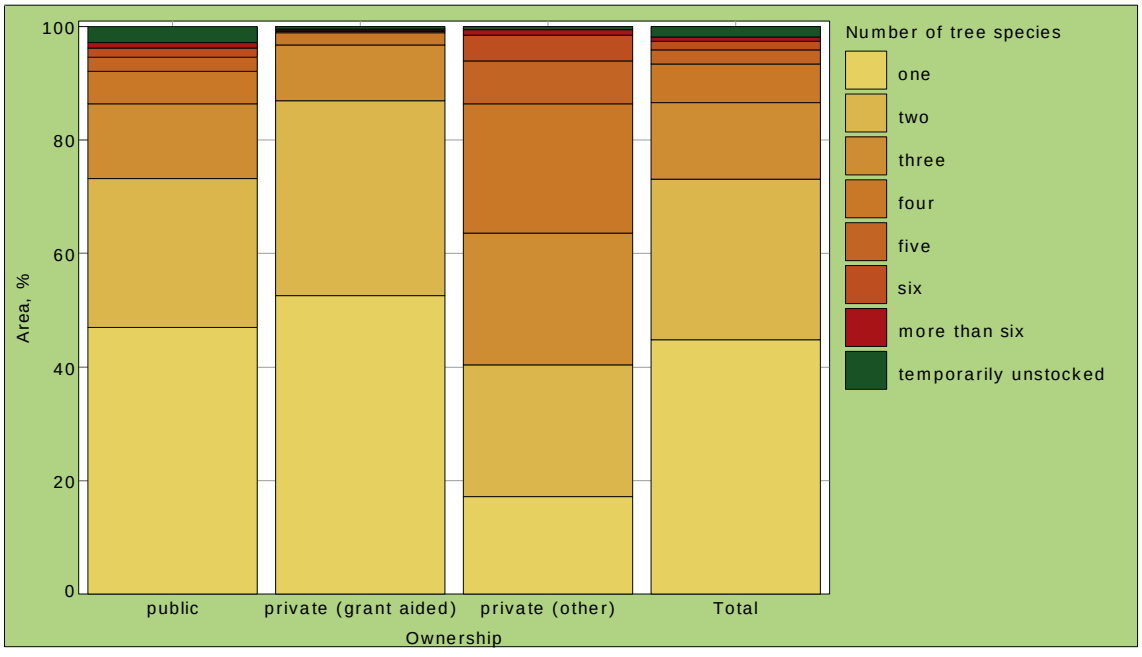
3.5.6 Total stocked forest area by ownership and number of tree species

Methodology

The total stocked forest area is classified by ownership and number of tree species present in the stands.

Number of tree species	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
one	168.75	(155.15 – 182.35)	46.9	98.44	(87.33 – 109.55)	52.7
two	94.55	(83.47 – 105.64)	26.3	64.09	(54.69 – 73.48)	34.3
three	47.23	(39.07 – 55.40)	13.1	18.46	(13.24 – 23.68)	9.9
four	20.41	(14.90 – 25.93)	5.7	4.00	(1.53 – 6.47)	2.1
five	9.20	(5.46 – 12.95)	2.6	0.40	(0.00 – 1.22)	0.2
six	5.63	(2.69 – 8.57)	1.6	0.40	(0.00 – 1.19)	0.2
more than six	3.61	(1.26 – 5.96)	1.0	0.40	(0.00 – 1.19)	0.2
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Number of tree species	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
one	13.60	(9.09 – 18.10)	17.1	280.79	(265.45 – 296.12)	44.9
two	18.46	(13.28 – 23.64)	23.3	177.10	(163.19 – 191.01)	28.3
three	18.46	(13.23 – 23.69)	23.3	84.15	(73.57 – 94.73)	13.4
four	18.04	(12.88 – 23.20)	22.7	42.45	(34.65 – 50.25)	6.8
five	5.99	(2.97 – 9.01)	7.6	15.60	(10.76 – 20.44)	2.5
six	3.61	(1.26 – 5.96)	4.5	9.64	(5.80 – 13.47)	1.5
more than six	0.81	(0.00 – 1.93)	1.0	4.81	(2.10 – 7.53)	0.8
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



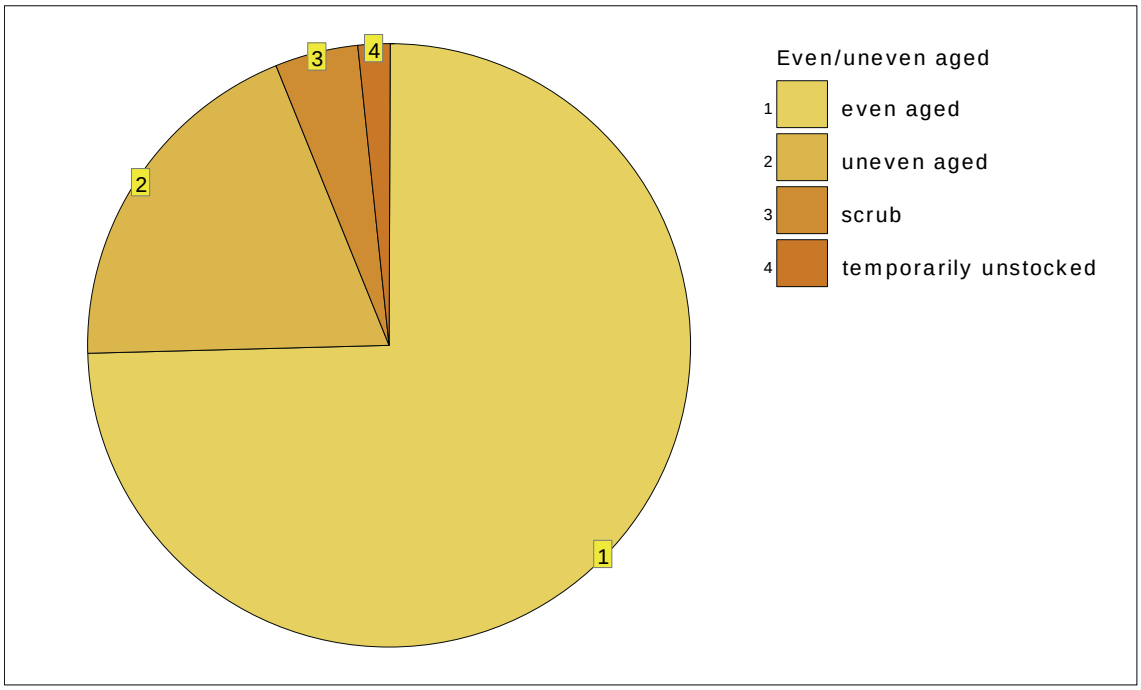
3.6 AGE STRUCTURE

3.6.1 Total stocked forest area by even/uneven aged

Definition
Even/uneven aged Uniformity of the age of the tree species in a stand. 1. **Even aged**: At least 81% of the canopy is made up of trees that have an age difference of 4 years or less. 2. **Uneven aged**: At least 20% of the canopy is made up of trees that have an age difference of 5 years or more. 3. **Scrub**: No assessment of uniformity in age for forest type scrub.

Methodology
The total stocked forest area is classified by even/uneven aged.

Even/uneven aged	Area		
	1000 ha	($\alpha = 0.05$)	%
even aged	466.98	(453.56 – 480.39)	74.7
uneven aged	120.32	(108.18 – 132.45)	19.2
scrub	27.63	(21.28 – 33.98)	4.4
temporarily unstocked	10.82	(6.77 – 14.88)	1.7
Total	625.75		100.0



3.6.2 Total stocked forest area by county and even/uneven aged

Methodology

The total stocked forest area is classified by county and even/uneven aged.

Even/uneven aged	County / Area					
	Carlow			Cavan		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even aged	4.80	(3.28 – 6.33)	75.0	8.83	(6.52 – 11.15)	64.8
uneven aged	1.20	(0.00 – 2.58)	18.8	2.41	(0.57 – 4.25)	17.6
scrub	–	–	–	2.01	(0.29 – 3.72)	14.7
temporarily unstocked	0.40	(0.00 – 1.25)	6.2	0.40	(0.00 – 1.22)	2.9
Total	6.40		100.0	13.65		100.0

Even/uneven aged	County / Area					
	Clare			Cork		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even aged	32.58	(28.97 – 36.19)	75.0	58.88	(54.95 – 62.81)	83.0
uneven aged	8.04	(4.81 – 11.28)	18.5	8.41	(5.02 – 11.80)	11.9
scrub	2.41	(0.50 – 4.32)	5.6	2.00	(0.27 – 3.74)	2.8
temporarily unstocked	0.40	(0.00 – 1.20)	0.9	1.60	(0.05 – 3.16)	2.3
Total	43.44		100.0	70.89		100.0

Even/uneven aged	County / Area					
	Donegal			Dublin		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even aged	34.86	(30.59 – 39.13)	66.6	2.81	(1.31 – 4.30)	63.6
uneven aged	15.00	(10.90 – 19.10)	28.7	1.20	(0.00 – 2.59)	27.3
scrub	1.62	(0.05 – 3.19)	3.1	–	–	–
temporarily unstocked	0.81	(0.00 – 1.93)	1.6	0.40	(0.00 – 1.29)	9.1
Total	52.29		100.0	4.41		100.0

Even/uneven aged	County / Area					
	Galway			Kerry		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even aged	43.86	(40.21 – 47.51)	80.3	29.79	(26.16 – 33.41)	72.1
uneven aged	7.58	(4.40 – 10.75)	13.9	8.34	(5.10 – 11.58)	20.2
scrub	2.79	(0.77 – 4.81)	5.1	2.38	(0.50 – 4.27)	5.8
temporarily unstocked	0.40	(0.00 – 1.18)	0.7	0.79	(0.00 – 1.90)	1.9
Total	54.62		100.0	41.30		100.0

Even/uneven aged	County / Area					
	Kildare			Kilkenny		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even aged	4.80	(2.77 – 6.83)	52.2	11.33	(8.93 – 13.73)	70.0
uneven aged	3.20	(1.26 – 5.14)	34.8	4.45	(2.11 – 6.79)	27.5
scrub	1.20	(0.00 – 2.57)	13.0	0.40	(0.00 – 1.22)	2.5
temporarily unstocked	–	–	–	–	–	–
Total	9.20		100.0	16.18		100.0

Even/uneven aged	County / Area					
	Laois			Leitrim		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even aged	17.64	(15.07 – 20.21)	77.2	15.82	(13.38 – 18.26)	76.9
uneven aged	4.01	(1.68 – 6.34)	17.5	4.35	(1.99 – 6.71)	21.2
scrub	0.80	(0.00 – 1.93)	3.5	0.40	(0.00 – 1.19)	1.9
temporarily unstocked	0.40	(0.00 – 1.20)	1.8	–	–	–
Total	22.85		100.0	20.57		100.0

Even/uneven aged	County / Area					
	Limerick			Longford		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
even aged	18.36	(16.64 – 20.08)	90.2	4.38	(2.48 – 6.28)	55.0
uneven aged	1.60	(0.04 – 3.15)	7.8	2.39	(0.64 – 4.14)	30.0
scrub	–	–	–	1.19	(0.00 – 2.56)	15.0
temporarily unstocked	0.40	(0.00 – 1.20)	2.0	–	–	–
Total	20.35		100.0	7.97		100.0

Even/uneven aged	County / Area					
	Louth			Mayo		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
even aged	1.21	(0.00 – 2.59)	60.0	31.68	(27.71 – 35.65)	68.6
uneven aged	0.81	(0.00 – 2.19)	40.0	12.43	(8.63 – 16.23)	27.0
scrub	–	–	–	0.40	(0.00 – 1.20)	0.9
temporarily unstocked	–	–	–	1.60	(0.04 – 3.17)	3.5
Total	2.02		100.0	46.11		100.0

Even/uneven aged	County / Area					
	Meath			Monaghan		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
even aged	6.07	(4.04 – 8.10)	62.5	3.61	(2.00 – 5.22)	64.3
uneven aged	3.64	(1.61 – 5.67)	37.5	1.20	(0.00 – 2.58)	21.4
scrub	–	–	–	0.80	(0.00 – 1.98)	14.3
temporarily unstocked	–	–	–	–	–	–
Total	9.71		100.0	5.61		100.0

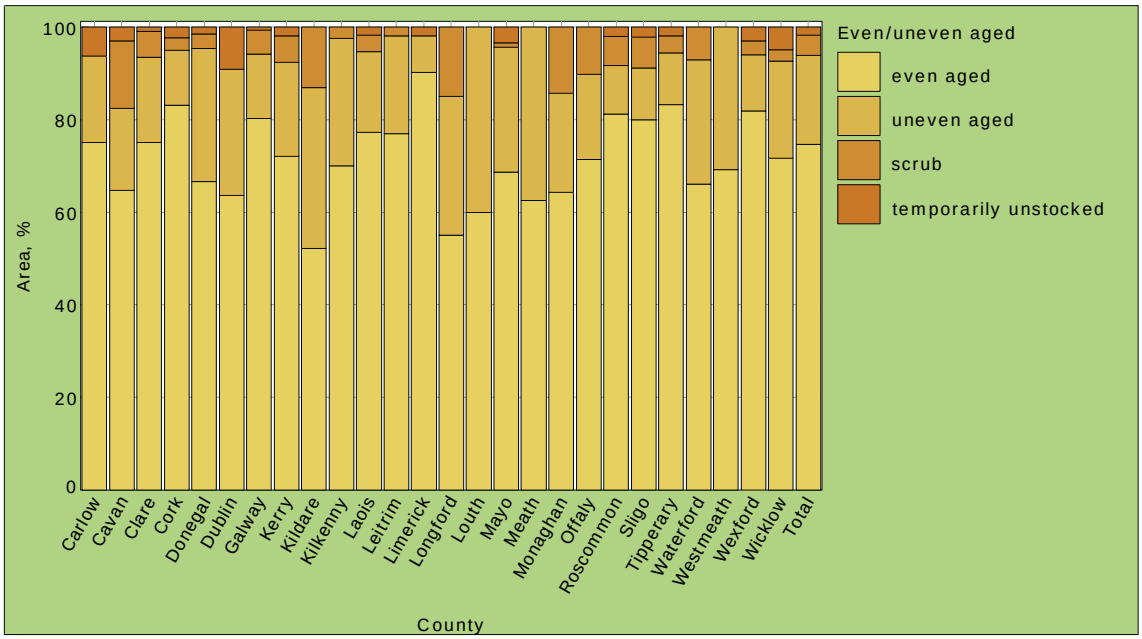
Even/uneven aged	County / Area					
	Offaly			Roscommon		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
even aged	14.06	(11.48 – 16.65)	71.4	15.77	(13.55 – 18.00)	81.2
uneven aged	3.62	(1.40 – 5.83)	18.4	2.02	(0.28 – 3.76)	10.4
scrub	2.01	(0.28 – 3.74)	10.2	1.21	(0.00 – 2.59)	6.3
temporarily unstocked	–	–	–	0.40	(0.00 – 1.22)	2.1
Total	19.69		100.0	19.41		100.0

Even/uneven aged	County / Area					
	Sligo			Tipperary		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
even aged	14.25	(12.08 – 16.42)	80.0	35.49	(32.41 – 38.56)	83.2
uneven aged	1.98	(0.28 – 3.68)	11.1	4.78	(2.19 – 7.38)	11.2
scrub	1.19	(0.00 – 2.54)	6.7	1.59	(0.03 – 3.16)	3.7
temporarily unstocked	0.40	(0.00 – 1.19)	2.2	0.80	(0.00 – 1.91)	1.9
Total	17.81		100.0	42.67		100.0

Even/uneven aged	County / Area					
	Waterford			Westmeath		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
even aged	14.88	(12.00 – 17.77)	66.1	7.18	(5.21 – 9.16)	69.2
uneven aged	6.03	(3.34 – 8.73)	26.8	3.19	(1.22 – 5.16)	30.8
scrub	1.61	(0.04 – 3.18)	7.1	–	–	–
temporarily unstocked	–	–	–	–	–	–
Total	22.52		100.0	10.37		100.0

Even/uneven aged	County / Area					
	Wexford			Wicklow		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
even aged	10.67	(8.86 – 12.48)	81.9	23.37	(20.09 – 26.65)	71.6
uneven aged	1.58	(0.05 – 3.11)	12.1	6.85	(3.89 – 9.81)	21.0
scrub	0.40	(0.00 – 1.20)	3.0	0.81	(0.00 – 1.93)	2.5
temporarily unstocked	0.40	(0.00 – 1.20)	3.0	1.61	(0.04 – 3.19)	4.9
Total	13.04		100.0	32.64		100.0

Even/uneven aged	County / Area		
	Total		
	1000 ha	(α = 0.05)	%
even aged	466.98	(453.56 – 480.39)	74.6
uneven aged	120.32	(108.18 – 132.45)	19.2
scrub	27.23	(20.93 – 33.54)	4.4
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0



3.6.3 Total stocked forest area by age class (10 yr) and species type (broadleaf/conifer)

Methodology

The total stocked forest area is classified by age class (10 yr) and species type (broadleaf/conifer).

Species (conifer/broadleaf)	Age class, yrs / Area					
	temp unstocked			1 - 10		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
conifer	–	–	–	155.77	(143.05 – 168.49)	74.0
broadleaf	–	–	–	54.64	(47.94 – 61.34)	26.0
temporarily unstocked	11.22	(7.09 – 15.35)	100.0	–	–	–
Total	11.22	(7.09 – 15.35)	100.0	210.41	(196.75 – 224.06)	100.0

Species (conifer/broadleaf)	Age class, yrs / Area					
	11 - 20			21 - 30		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
conifer	151.08	(138.50 – 163.65)	82.9	66.55	(57.49 – 75.61)	76.9
broadleaf	31.22	(26.19 – 36.24)	17.1	20.03	(15.94 – 24.12)	23.1
temporarily unstocked	–	–	–	–	–	–
Total	182.30	(169.14 – 195.45)	100.0	86.58	(76.71 – 96.45)	100.0

Species (conifer/broadleaf)	Age class, yrs / Area					
	31 - 40			41 - 50		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	58.55	(49.88 – 67.21)	82.1	22.98	(17.51 – 28.46)	68.2
broadleaf	12.74	(9.41 – 16.07)	17.9	10.74	(7.69 – 13.79)	31.8
temporarily unstocked	–	–	–	–	–	–
Total	71.29	(62.03 – 80.54)	100.0	33.72	(27.40 – 40.04)	100.0

Species (conifer/broadleaf)	Age class, yrs / Area					
	51 - 60			61 - 70		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	3.66	(1.56 – 5.76)	37.4	2.14	(0.60 – 3.68)	38.3
broadleaf	6.13	(3.78 – 8.47)	62.6	3.46	(1.94 – 4.98)	61.7
temporarily unstocked	–	–	–	–	–	–
Total	9.78	(6.63 – 12.94)	100.0	5.60	(3.30 – 7.90)	100.0

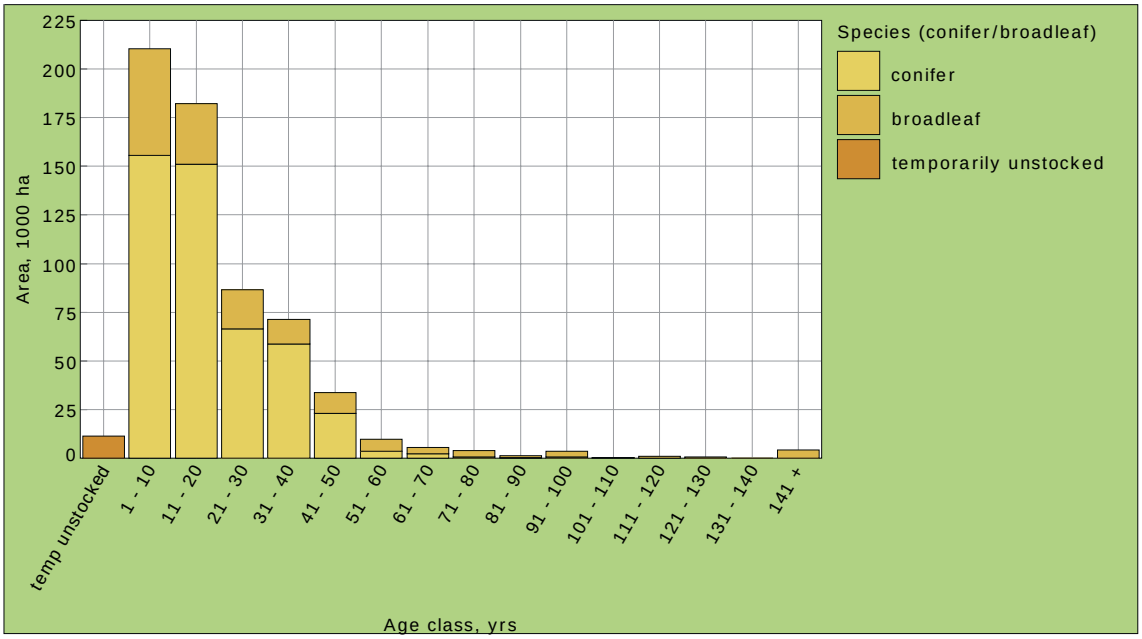
Species (conifer/broadleaf)	Age class, yrs / Area					
	71 - 80			81 - 90		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	0.66	(0.00 – 1.44)	17.1	0.34	(0.00 – 0.70)	26.8
broadleaf	3.21	(1.70 – 4.72)	82.9	0.93	(0.18 – 1.68)	73.2
temporarily unstocked	–	–	–	–	–	–
Total	3.87	(2.15 – 5.58)	100.0	1.27	(0.38 – 2.17)	100.0

Species (conifer/broadleaf)	Age class, yrs / Area					
	91 - 100			101 - 110		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	0.77	(0.00 – 1.75)	22.1	–	–	–
broadleaf	2.73	(1.25 – 4.21)	77.9	0.19	(0.00 – 0.42)	100.0
temporarily unstocked	–	–	–	–	–	–
Total	3.50	(1.67 – 5.33)	100.0	0.19	(0.00 – 0.42)	100.0

Species (conifer/broadleaf)	Age class, yrs / Area					
	111 - 120			121 - 130		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	–	–	–	0.04	(0.00 – 0.11)	5.1
broadleaf	0.96	(0.23 – 1.69)	100.0	0.70	(0.00 – 1.49)	94.9
temporarily unstocked	–	–	–	–	–	–
Total	0.96	(0.23 – 1.69)	100.0	0.74	(0.00 – 1.53)	100.0

Species (conifer/broadleaf)	Age class, yrs / Area					
	131 - 140			141 +		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
conifer	–	–	–	0.04	(0.00 – 0.13)	1.0
broadleaf	0.07	(0.00 – 0.21)	100.0	4.21	(2.17 – 6.24)	99.0
temporarily unstocked	–	–	–	–	–	–
Total	0.07	(0.00 – 0.21)	100.0	4.25	(2.20 – 6.30)	100.0

Species (conifer/broadleaf)	Age class, yrs / Area		
	Total		
	1000 ha	(α=0.05)	%
conifer	462.58	(450.57 – 474.59)	73.9
broadleaf	151.95	(140.34 – 163.55)	24.3
temporarily unstocked	11.22	(7.09 – 15.35)	1.8
Total	625.75		100.0



3.6.4 Total stocked forest area by age class (10 yr) and species group

Methodology

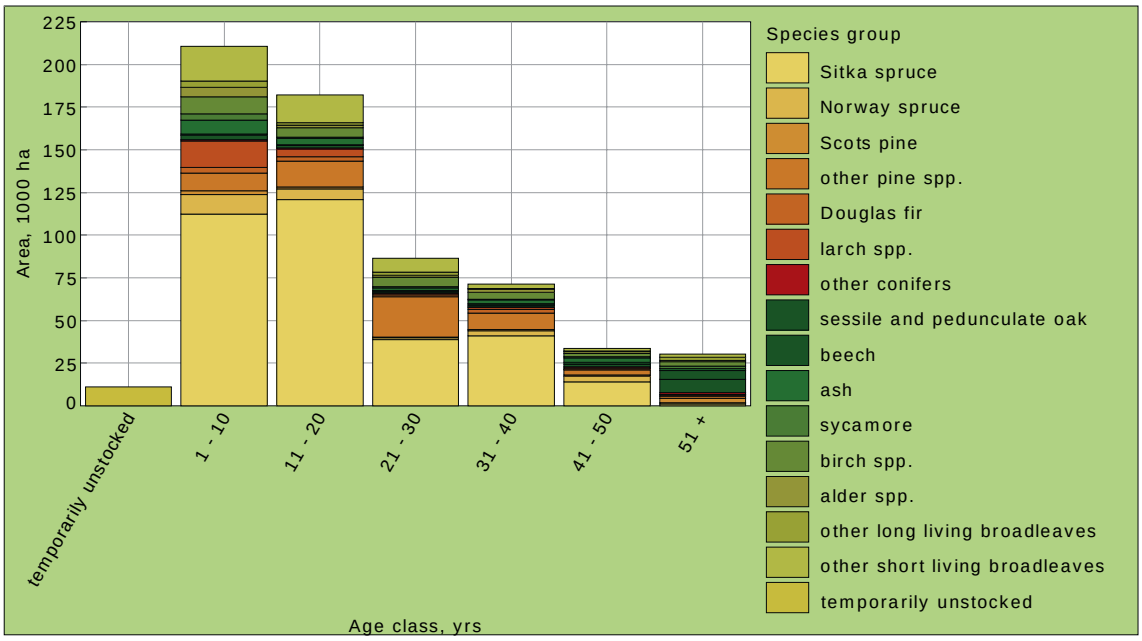
The total stocked forest area is classified by age class (10 yr) and species group.

Species group	Age class, yrs / Area						
	temporarily unstocked				1 - 10		
	1000 ha		(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	–	–	–	–	112.14	(101.22 – 123.06)	53.3
Norway spruce	–	–	–	–	11.55	(7.91 – 15.19)	5.5
Scots pine	–	–	–	–	2.22	(0.65 – 3.79)	1.1
other pine spp.	–	–	–	–	10.59	(7.40 – 13.77)	5.0
Douglas fir	–	–	–	–	3.08	(1.07 – 5.10)	1.5
larch spp.	–	–	–	–	15.68	(11.63 – 19.73)	7.5
other conifers	–	–	–	–	0.51	(0.00 – 1.30)	0.2
sessile and pedunculate oak	–	–	–	–	2.72	(1.10 – 4.35)	1.3
beech	–	–	–	–	0.68	(0.00 – 1.53)	0.3
ash	–	–	–	–	8.09	(5.22 – 10.97)	3.8
sycamore	–	–	–	–	3.74	(1.73 – 5.75)	1.8
birch spp.	–	–	–	–	10.07	(7.39 – 12.75)	4.8
alder spp.	–	–	–	–	5.52	(3.10 – 7.94)	2.6
other long living broadleaves	–	–	–	–	3.58	(2.23 – 4.93)	1.7
other short living broadleaves	–	–	–	–	20.23	(16.62 – 23.83)	9.6
temporarily unstocked	11.22	(7.09 – 15.35)		100.0	–	–	–
Total	11.22	(7.09 – 15.35)		100.0	210.41	(196.75 – 224.06)	100.0

Species group	Age class, yrs / Area					
	11 - 20			21 - 30		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	120.90	(109.57 – 132.24)	66.2	38.68	(31.76 – 45.60)	44.6
Norway spruce	6.19	(3.46 – 8.92)	3.4	1.24	(0.01 – 2.48)	1.4
Scots pine	1.11	(0.17 – 2.05)	0.6	0.19	(0.00 – 0.38)	0.2
other pine spp.	15.25	(11.42 – 19.09)	8.4	23.81	(18.27 – 29.34)	27.5
Douglas fir	2.48	(0.87 – 4.09)	1.4	1.21	(0.06 – 2.36)	1.4
larch spp.	4.39	(2.19 – 6.59)	2.4	0.76	(0.18 – 1.35)	0.9
other conifers	0.75	(0.00 – 1.64)	0.4	0.66	(0.00 – 1.34)	0.8
sessile and pedunculate oak	1.57	(0.17 – 2.97)	0.9	0.54	(0.00 – 1.33)	0.6
beech	0.34	(0.00 – 0.69)	0.2	0.67	(0.30 – 1.04)	0.8
ash	3.62	(2.01 – 5.23)	2.0	1.43	(0.71 – 2.15)	1.7
sycamore	0.97	(0.00 – 2.01)	0.5	0.68	(0.00 – 1.56)	0.8
birch spp.	5.45	(3.57 – 7.32)	3.0	5.46	(3.60 – 7.32)	6.3
alder spp.	1.47	(0.51 – 2.43)	0.8	1.27	(0.22 – 2.32)	1.5
other long living broadleaves	1.47	(0.76 – 2.17)	0.8	1.73	(0.80 – 2.66)	2.0
other short living broadleaves	16.34	(12.69 – 20.00)	9.0	8.24	(5.65 – 10.84)	9.5
temporarily unstocked	–	–	–	–	–	–
Total	182.30	(169.14 – 195.45)	100.0	86.58	(76.71 – 96.45)	100.0

Species group	Age class, yrs / Area					
	31 - 40			41 - 50		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	40.93	(33.66 – 48.20)	57.5	14.15	(9.83 – 18.47)	41.9
Norway spruce	2.95	(1.12 – 4.78)	4.1	3.25	(1.41 – 5.10)	9.7
Scots pine	0.64	(0.03 – 1.25)	0.9	0.61	(0.00 – 1.25)	1.8
other pine spp.	9.78	(6.40 – 13.17)	13.7	3.11	(1.38 – 4.83)	9.2
Douglas fir	2.35	(0.77 – 3.94)	3.3	0.40	(0.00 – 1.04)	1.2
larch spp.	1.00	(0.01 – 1.99)	1.4	0.50	(0.00 – 1.03)	1.5
other conifers	0.89	(0.00 – 1.87)	1.2	0.96	(0.15 – 1.76)	2.8
sessile and pedunculate oak	0.46	(0.12 – 0.80)	0.6	1.45	(0.38 – 2.51)	4.3
beech	0.83	(0.28 – 1.38)	1.2	1.11	(0.40 – 1.83)	3.3
ash	2.27	(0.97 – 3.58)	3.2	2.43	(1.27 – 3.60)	7.2
sycamore	0.51	(0.00 – 1.06)	0.7	0.71	(0.00 – 1.53)	2.1
birch spp.	4.06	(2.27 – 5.84)	5.7	2.08	(0.78 – 3.38)	6.2
alder spp.	1.81	(0.72 – 2.90)	2.5	0.85	(0.02 – 1.67)	2.5
other long living broadleaves	0.33	(0.13 – 0.54)	0.5	0.71	(0.19 – 1.22)	2.1
other short living broadleaves	2.47	(1.25 – 3.69)	3.5	1.41	(0.39 – 2.43)	4.2
temporarily unstocked	–	–	–	–	–	–
Total	71.29	(62.03 – 80.54)	100.0	33.72	(27.40 – 40.04)	100.0

Species group	Age class, yrs / Area					
	51 +			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
Sitka spruce	1.02	(0.00 – 2.15)	3.4	327.83	(314.45 – 341.21)	52.5
Norway spruce	0.77	(0.00 – 1.59)	2.6	25.96	(20.72 – 31.20)	4.1
Scots pine	2.57	(1.09 – 4.04)	8.5	7.34	(4.76 – 9.92)	1.2
other pine spp.	1.07	(0.00 – 2.23)	3.5	63.61	(55.79 – 71.42)	10.2
Douglas fir	0.68	(0.07 – 1.29)	2.2	10.20	(6.84 – 13.56)	1.6
larch spp.	0.62	(0.00 – 1.35)	2.1	22.96	(18.17 – 27.74)	3.7
other conifers	0.92	(0.00 – 1.84)	3.0	4.68	(2.60 – 6.77)	0.7
sessile and pedunculate oak	7.90	(5.58 – 10.22)	26.2	14.63	(11.11 – 18.15)	2.3
beech	5.07	(3.09 – 7.06)	16.8	8.71	(6.11 – 11.32)	1.4
ash	1.31	(0.66 – 1.96)	4.3	19.16	(15.07 – 23.26)	3.1
sycamore	1.45	(0.55 – 2.34)	4.8	8.06	(5.24 – 10.87)	1.3
birch spp.	2.58	(1.15 – 4.01)	8.5	29.70	(24.86 – 34.53)	4.7
alder spp.	0.58	(0.11 – 1.05)	1.9	11.50	(8.16 – 14.83)	1.8
other long living broadleaves	1.73	(0.62 – 2.85)	5.7	9.55	(7.07 – 12.02)	1.5
other short living broadleaves	1.95	(0.77 – 3.14)	6.5	50.64	(44.30 – 56.98)	8.1
temporarily unstocked	–	–	–	11.22	(7.09 – 15.35)	1.8
Total	30.24	(24.81 – 35.66)	100.0	625.75		100.0


Area, 1000 ha
225
200
175
150
125
100
75
50
25
0
temporarily unstocked
1 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 +
Age class, yrs
Species group
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Douglas fir
larch spp.
other conifers
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves
temporarily unstocked

CHAPTER 4
TREE DESCRIPTION

In this chapter, tree diameter at breast height (dbh), height and age are assessed. The analysis of tree development within the national forest estate is also presented.

Sitka spruce trees in the oldest age-class (51+) have smaller dbhs and heights than those of other conifer species groups. In fact, higher dbh and height values are recorded for Sitka spruce in the 41-50 year age class than in the older 51+ age class. This could indicate that the most vigorous stands are being felled before trees reach the older age class, leaving mainly less productive stands in the 51+ category.

Douglas fir, and 'other conifer' trees, reach the largest diameters and heights, while the older broadleaf trees also reach substantial diameters. When height and dimension class are combined, Sitka spruce shows average vigour among the conifers. On an ownership basis, the oldest trees are found in the private (other) forests, across the range of species and dimension classes.

Overall, conifers are regular in crown development, while broadleaves are more variable. The numbers of dominant trees by species group are consistent at around 0.5% of the number of trees in the stands, except for oak and beech where dominant trees make up ca. 2% of the number of trees. As the majority (90%) of trees occur within the top canopy layer, this indicates a low level of structural diversity in the forest estate, which is a reflection of the even-aged nature of most Irish forests.

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4.1 Diameter at breast height (dbh)

Definition
Diameter at breast height (dbh)
Diameter of a tree at 1.3 m above ground level.

4.1.1 Mean tree dbh by species group and age class (10 yr) (ht ≥130 cm)

Methodology
Weighted mean tree dbh is classified by species group and age class. All trees with a minimum height of 130 cm were included in the analysis.
The evaluated variable, dbh, is weighted by representative area.

Age class, yrs	Species group / Dbh			
	Sitka spruce		Norway spruce	
	cm	(α=0.05)	cm	(α=0.05)
1 - 10	4.0	(3.6 – 4.4)	5.5	(0.0 – 11.5)
11 - 20	10.9	(10.5 – 11.4)	10.5	(9.4 – 11.7)
21 - 30	19.0	(17.9 – 20.1)	23.1	– –
31 - 40	24.1	(22.8 – 25.4)	24.4	(23.4 – 25.5)
41 - 50	29.4	(27.7 – 31.0)	25.7	(23.9 – 27.5)
51 +	21.8	(0.0 – 55.0)	32.3	(30.0 – 34.6)
All	13.1	(12.5 – 13.8)	14.0	(11.3 – 16.6)

Age class, yrs	Species group / Dbh			
	Scots pine		other pine spp.	
	cm	(α=0.05)	cm	(α=0.05)
1 - 10	2.4	(0.9 – 3.9)	3.8	(3.3 – 4.2)
11 - 20	9.9	– –	10.1	(8.5 – 11.6)
21 - 30	25.6	– –	16.7	(15.6 – 17.7)
31 - 40	29.3	(27.3 – 31.3)	23.7	(22.7 – 24.7)
41 - 50	26.0	– –	23.6	(0.0 – 57.2)
51 +	40.4	(31.2 – 49.6)	31.6	– –
All	27.0	(21.5 – 32.5)	14.6	(13.5 – 15.7)

Age class, yrs	Species group / Dbh			
	Douglas fir		larch spp.	
	cm	(α=0.05)	cm	(α=0.05)
1 - 10	5.1	(3.8 – 6.3)	4.8	(3.7 – 5.8)
11 - 20	12.6	(9.6 – 15.7)	11.4	(8.5 – 14.2)
21 - 30	18.9	– –	19.0	(15.5 – 22.5)
31 - 40	24.2	(20.8 – 27.6)	26.7	(17.7 – 35.6)
41 - 50	34.0	– –	22.1	(18.2 – 26.1)
51 +	36.3	(30.6 – 42.1)	30.7	– –
All	21.9	(16.7 – 27.1)	11.2	(9.5 – 13.0)

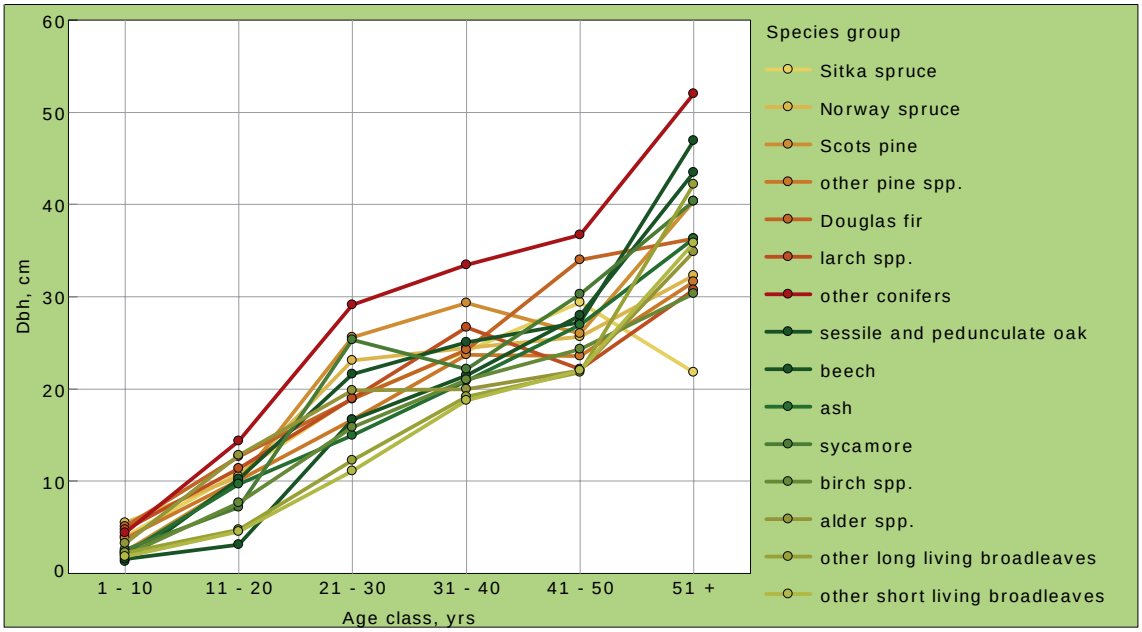
Age class, yrs	Species group / Dbh			
	other conifers		sessile and pedunculate oak	
	cm	(α=0.05)	cm	(α=0.05)
1 - 10	4.4	(4.2 – 4.6)	1.3	(1.0 – 1.6)
11 - 20	14.4	(13.2 – 15.5)	10.2	(9.5 – 10.9)
21 - 30	29.1	– –	21.6	(0.0 – 47.1)
31 - 40	33.4	(29.1 – 37.7)	25.1	(6.3 – 43.8)
41 - 50	36.7	(35.2 – 38.3)	27.2	(25.4 – 28.9)
51 +	52.0	– –	46.9	(41.4 – 52.5)
All	33.7	(20.1 – 47.3)	34.6	(29.2 – 40.1)

Age class, yrs	Species group / Dbh			
	beech		ash	
	cm	(α = 0.05)	cm	(α = 0.05)
1 - 10	1.6	– –	2.2	(1.8 – 2.6)
11 - 20	3.1	(1.8 – 4.4)	9.7	(7.8 – 11.6)
21 - 30	16.6	(14.8 – 18.5)	15.0	(13.1 – 16.8)
31 - 40	21.4	(19.1 – 23.8)	20.9	(19.8 – 22.0)
41 - 50	28.0	(21.2 – 34.8)	26.9	(25.2 – 28.7)
51 +	43.5	(37.9 – 49.0)	36.3	(0.0 – 79.9)
All	32.6	(29.2 – 36.0)	14.5	(12.2 – 16.8)

Age class, yrs	Species group / Dbh			
	sycamore		birch spp.	
	cm	(α = 0.05)	cm	(α = 0.05)
1 - 10	2.6	(1.2 – 4.0)	2.0	(1.7 – 2.3)
11 - 20	7.2	(5.4 – 9.0)	7.6	(5.9 – 9.4)
21 - 30	25.3	– –	15.8	(14.4 – 17.3)
31 - 40	22.2	(13.1 – 31.2)	21.0	(19.7 – 22.3)
41 - 50	30.3	(28.9 – 31.6)	24.3	(21.4 – 27.3)
51 +	40.4	(35.0 – 45.8)	30.3	(26.8 – 33.8)
All	23.1	(19.6 – 26.6)	13.2	(11.7 – 14.7)

Age class, yrs	Species group / Dbh			
	alder spp.		other long living broadleaves	
	cm	(α = 0.05)	cm	(α = 0.05)
1 - 10	3.2	(2.3 – 4.2)	2.2	(1.6 – 2.8)
11 - 20	12.8	(0.0 – 25.7)	4.7	(3.5 – 5.9)
21 - 30	19.9	(7.0 – 32.8)	12.2	(9.3 – 15.2)
31 - 40	20.0	(17.4 – 22.6)	19.1	(14.0 – 24.3)
41 - 50	22.0	(0.0 – 47.6)	21.8	(19.3 – 24.3)
51 +	34.9	(30.2 – 39.6)	42.2	(39.9 – 44.5)
All	13.7	(11.9 – 15.5)	18.0	(11.2 – 24.7)

Age class, yrs	Species group / Dbh			
	other short living broadleaves		All	
	cm	(α = 0.05)	cm	(α = 0.05)
1 - 10	1.8	(1.6 – 2.1)	3.7	(3.5 – 4.0)
11 - 20	4.5	(3.8 – 5.3)	10.1	(9.8 – 10.5)
21 - 30	11.1	(7.3 – 14.9)	17.3	(16.6 – 18.0)
31 - 40	18.8	(16.1 – 21.4)	23.3	(22.5 – 24.0)
41 - 50	22.0	(20.2 – 23.9)	26.5	(24.4 – 28.5)
51 +	35.8	(29.1 – 42.6)	41.0	(38.1 – 43.9)
All	7.9	(6.9 – 9.0)	14.0	(13.4 – 14.6)

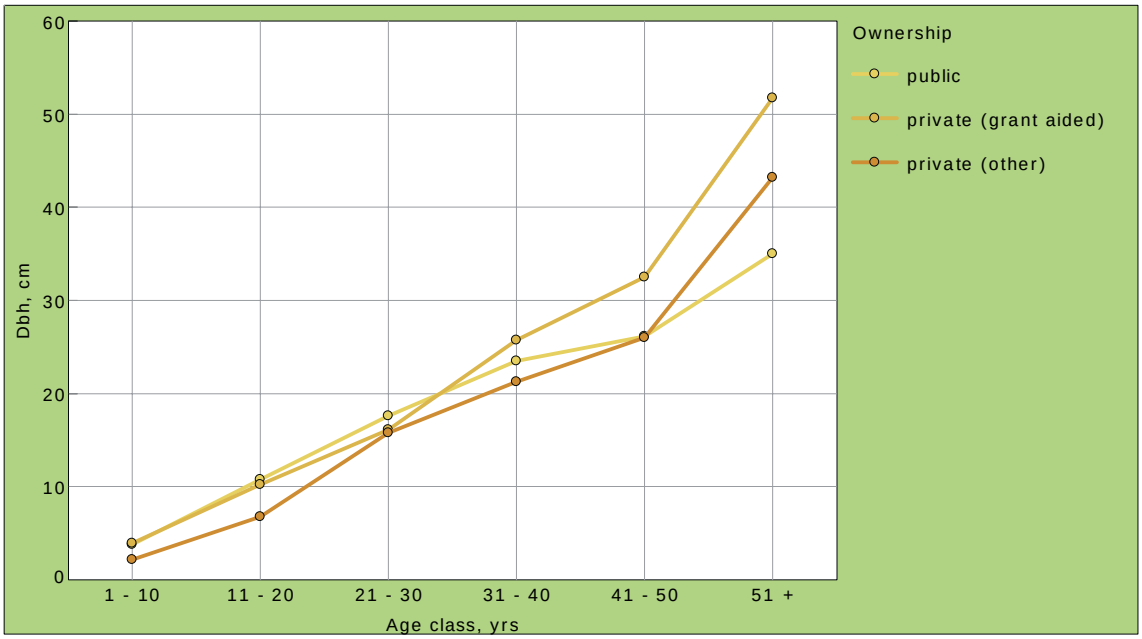


4.1.2 Mean tree dbh by ownership and age class (10 yr) (ht ≥130 cm)

Methodology

Weighted mean tree dbh is classified by ownership and age class (10 yr). All trees with a minimum height of 130 cm were included in the analysis.
The evaluated variable, dbh, is weighted by representative area.

Age class, yrs	Ownership / Dbh							
	public		private (grant aided)		private (other)		All	
	cm	(α = 0.05)	cm	(α = 0.05)	cm	(α = 0.05)	cm	(α = 0.05)
1 - 10	3.8	(3.0 – 4.6)	4.0	(3.5 – 4.4)	2.2	(1.8 – 2.5)	3.7	(3.5 – 4.0)
11 - 20	10.8	(10.2 – 11.4)	10.2	(9.6 – 10.9)	6.8	(6.0 – 7.6)	10.1	(9.8 – 10.5)
21 - 30	17.6	(16.9 – 18.4)	16.1	(9.6 – 22.7)	15.7	(14.3 – 17.2)	17.3	(16.6 – 18.0)
31 - 40	23.5	(22.6 – 24.5)	25.7	(17.7 – 33.7)	21.3	(19.8 – 22.8)	23.3	(22.5 – 24.0)
41 - 50	26.1	(22.2 – 30.1)	32.5	– –	26.0	(24.6 – 27.4)	26.5	(24.4 – 28.5)
51 +	35.0	(31.5 – 38.5)	51.8	(40.3 – 63.2)	43.2	(39.6 – 46.9)	41.0	(38.1 – 43.9)
All	15.4	(14.8 – 16.1)	8.0	(7.3 – 8.8)	20.4	(18.6 – 22.2)	14.0	(13.4 – 14.6)



4.2 HEIGHT

Definition
Height
The height of a tree is the vertical distance between the base of the tree and its tip.

4.2.1 Mean tree height by species group and age class (10 yr) (height ≥ 20 cm)

Definition
Mean tree height
The average tree height (m).

Methodology
Mean tree height is classified by species group and age class(10 yr). All trees with a minimum height of 20 cm were included in the analysis.

Age class, yrs	Species group / Height			
	Sitka spruce		Norway spruce	
	m	(α=0.05)	m	(α=0.05)
1 - 10	2.2	(2.0 – 2.4)	2.9	(2.6 – 3.3)
11 - 20	6.2	(5.9 – 6.5)	5.9	(5.1 – 6.7)
21 - 30	11.1	(10.4 – 11.8)	14.7	– –
31 - 40	15.2	(14.5 – 15.9)	16.0	(14.8 – 17.2)
41 - 50	17.6	(15.6 – 19.6)	16.1	(12.2 – 20.0)
51 +	14.1	(1.3 – 27.0)	19.3	(13.9 – 24.7)
All	7.2	(6.8 – 7.5)	7.2	(5.5 – 9.0)

Age class, yrs	Species group / Height			
	Scots pine		other pine spp.	
	m	(α=0.05)	m	(α=0.05)
1 - 10	1.3	(1.0 – 1.6)	1.9	(1.6 – 2.1)
11 - 20	5.5	– –	5.5	(4.8 – 6.1)
21 - 30	12.5	– –	9.4	(8.7 – 10.0)
31 - 40	14.7	(14.2 – 15.2)	12.9	(12.6 – 13.3)
41 - 50	14.7	– –	13.4	(6.4 – 20.4)
51 +	16.8	(14.3 – 19.3)	17.6	– –
All	11.0	(8.9 – 13.1)	7.3	(6.7 – 8.0)

Age class, yrs	Species group / Height			
	Douglas fir		larch spp.	
	m	(α=0.05)	m	(α=0.05)
1 - 10	3.6	(2.9 – 4.2)	2.6	(2.2 – 3.1)
11 - 20	8.8	(5.8 – 11.7)	6.6	(5.8 – 7.4)
21 - 30	14.2	– –	12.0	(11.0 – 13.0)
31 - 40	18.1	(15.1 – 21.0)	16.1	(8.2 – 24.0)
41 - 50	23.2	– –	15.0	(14.2 – 15.8)
51 +	19.5	(17.4 – 21.6)	18.4	– –
All	14.3	(10.9 – 17.8)	5.4	(4.5 – 6.3)

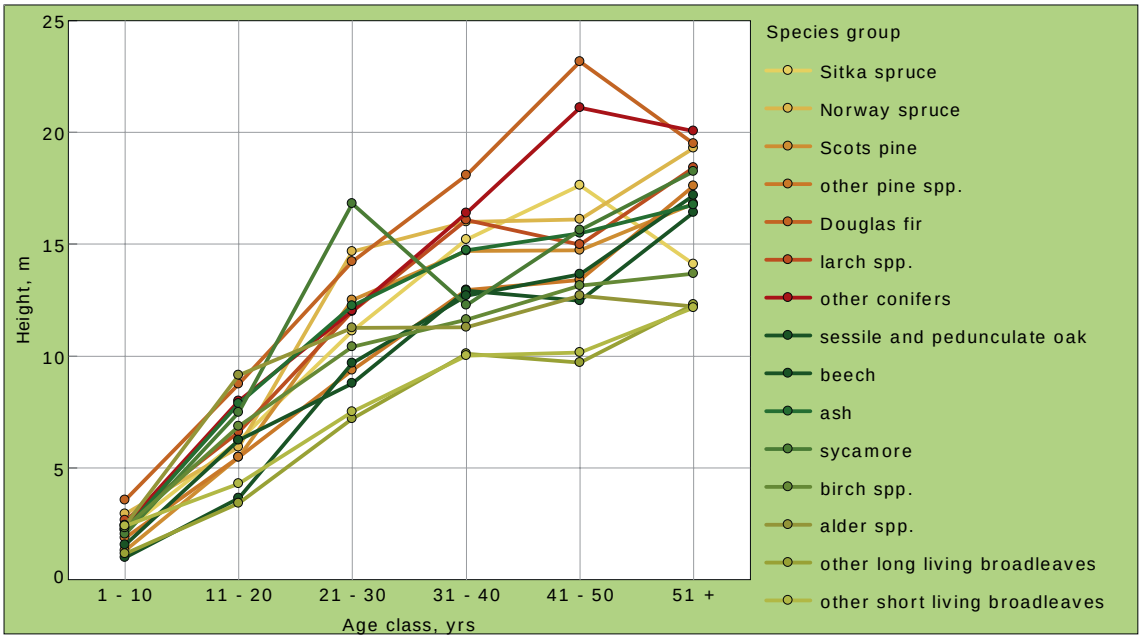
Age class, yrs	Species group / Height			
	other conifers		sessile and pedunculate oak	
	m	(α=0.05)	m	(α=0.05)
1 - 10	2.4	(2.3 – 2.6)	1.6	(1.4 – 1.8)
11 - 20	8.0	(5.8 – 10.2)	6.2	(5.7 – 6.8)
21 - 30	12.0	– –	8.8	(7.1 – 10.4)
31 - 40	16.4	(14.5 – 18.3)	12.9	(11.0 – 14.9)
41 - 50	21.1	(15.9 – 26.3)	12.5	(11.4 – 13.6)
51 +	20.1	– –	16.4	(15.7 – 17.2)
All	16.0	(11.1 – 21.0)	11.4	(10.2 – 12.7)

Age class, yrs	Species group / Height			
	beech		ash	
	m	(α = 0.05)	m	(α = 0.05)
1 - 10	1.0	(0.9 – 1.1)	2.2	(2.0 – 2.5)
11 - 20	3.6	(3.5 – 3.8)	7.9	(6.8 – 8.9)
21 - 30	9.7	(8.5 – 10.8)	12.3	(11.4 – 13.1)
31 - 40	12.7	(11.8 – 13.6)	14.7	(14.3 – 15.1)
41 - 50	13.7	(11.9 – 15.4)	15.5	(14.3 – 16.7)
51 +	17.2	(15.5 – 18.9)	16.7	(15.5 – 18.0)
All	11.1	(9.9 – 12.3)	7.2	(6.4 – 8.1)

Age class, yrs	Species group / Height			
	sycamore		birch spp.	
	m	(α = 0.05)	m	(α = 0.05)
1 - 10	2.0	(1.8 – 2.3)	2.3	(2.0 – 2.6)
11 - 20	7.5	(4.7 – 10.3)	6.9	(6.0 – 7.8)
21 - 30	16.8	– –	10.4	(9.7 – 11.2)
31 - 40	12.3	(10.4 – 14.2)	11.6	(11.2 – 12.1)
41 - 50	15.6	(14.4 – 16.9)	13.1	(12.5 – 13.8)
51 +	18.3	(8.5 – 28.0)	13.7	(12.9 – 14.5)
All	10.0	(8.7 – 11.3)	7.1	(6.5 – 7.7)

Age class, yrs	Species group / Height			
	alder spp.		other long living broadleaves	
	m	(α = 0.05)	m	(α = 0.05)
1 - 10	2.4	(2.0 – 2.8)	1.2	(1.0 – 1.4)
11 - 20	9.2	(7.3 – 11.0)	3.4	(2.7 – 4.2)
21 - 30	11.3	(9.5 – 13.1)	7.2	(6.8 – 7.6)
31 - 40	11.3	(10.3 – 12.2)	10.1	(7.5 – 12.7)
41 - 50	12.7	(0.0 – 25.4)	9.7	(8.3 – 11.1)
51 +	12.2	(10.7 – 13.8)	12.3	(11.7 – 13.0)
All	7.1	(6.3 – 7.9)	4.5	(3.7 – 5.3)

Age class, yrs	Species group / Height			
	other short living broadleaves		All	
	m	(α = 0.05)	m	(α = 0.05)
1 - 10	2.4	(2.2 – 2.6)	2.2	(2.1 – 2.3)
11 - 20	4.3	(3.9 – 4.7)	5.9	(5.7 – 6.2)
21 - 30	7.5	(6.7 – 8.3)	10.1	(9.7 – 10.5)
31 - 40	10.0	(9.5 – 10.5)	14.3	(13.9 – 14.8)
41 - 50	10.2	(6.8 – 13.5)	15.2	(14.5 – 15.9)
51 +	12.2	(11.7 – 12.6)	16.1	(15.4 – 16.9)
All	4.4	(4.1 – 4.8)	6.2	(6.0 – 6.5)



4.2.2 Mean tree height by species group and dimension class (height ≥20 cm)

Definition

Dimension class

Dimension class is used to describe trees with a dbh ≥7 cm in terms of dbh and the small trees in terms of height.

Methodology

Mean tree height is classified by species group and dimension class. All trees with a minimum height of 20 cm were included in the analysis.

Dimension class	Species group / Height			
	Sitka spruce		Norway spruce	
	m	(α = 0.05)	m	(α = 0.05)
0.2 m - 0.5 m ht	0.3	(0.3 – 0.4)	0.4	(0.4 – 0.5)
0.5 m - 1.3 m ht	0.8	(0.8 – 0.8)	0.9	(0.8 – 1.0)
1.3 m ht - 6.9 cm dbh	2.7	(2.6 – 2.8)	3.1	(2.5 – 3.6)
7 - 12 cm	6.2	(6.0 – 6.4)	6.4	(6.1 – 6.7)
12 - 17 cm	9.5	(9.3 – 9.7)	10.7	(9.7 – 11.8)
17 - 22 cm	12.9	(12.7 – 13.2)	14.0	(13.1 – 14.8)
22 - 27 cm	15.6	(15.2 – 15.9)	16.6	(16.0 – 17.2)
27 - 32 cm	17.9	(17.5 – 18.3)	18.2	(17.8 – 18.6)
32 - 37 cm	20.1	(19.5 – 20.7)	19.9	(18.5 – 21.3)
37 - 42 cm	21.3	(20.7 – 21.9)	20.3	(13.2 – 27.3)
42 - 47 cm	21.4	(19.8 – 23.0)	22.8	– –
>47 cm	23.5	(21.5 – 25.5)	22.9	– –
All	7.2	(6.8 – 7.5)	7.2	(5.5 – 9.0)

Dimension class	Species group / Height			
	Scots pine		other pine spp.	
	m	($\alpha = 0.05$)	m	($\alpha = 0.05$)
0.2 m - 0.5 m ht	0.3	– –	0.3	(0.3 – 0.4)
0.5 m - 1.3 m ht	0.8	(0.7 – 0.9)	0.9	(0.8 – 0.9)
1.3 m ht - 6.9 cm dbh	3.4	(3.0 – 3.7)	3.1	(2.9 – 3.3)
7 - 12 cm	4.9	(4.3 – 5.5)	6.8	(6.5 – 7.0)
12 - 17 cm	11.8	(6.3 – 17.3)	9.4	(9.1 – 9.7)
17 - 22 cm	13.8	(13.1 – 14.4)	11.4	(11.0 – 11.8)
22 - 27 cm	14.0	(13.0 – 15.1)	13.5	(13.1 – 13.8)
27 - 32 cm	15.7	(14.7 – 16.7)	15.6	(15.2 – 16.0)
32 - 37 cm	18.4	(14.3 – 22.4)	16.2	(14.5 – 17.9)
37 - 42 cm	18.0	(14.0 – 22.0)	16.3	(15.7 – 16.8)
42 - 47 cm	18.0	(11.4 – 24.6)	16.2	(14.1 – 18.4)
>47 cm	16.5	(12.7 – 20.3)	21.9	(17.6 – 26.2)
All	11.0	(8.9 – 13.1)	7.3	(6.7 – 8.0)

Dimension class	Species group / Height			
	Douglas fir		larch spp.	
	m	($\alpha = 0.05$)	m	($\alpha = 0.05$)
0.2 m - 0.5 m ht	–	– –	0.3	(0.2 – 0.4)
0.5 m - 1.3 m ht	–	– –	0.8	(0.8 – 0.9)
1.3 m ht - 6.9 cm dbh	4.0	(3.0 – 5.0)	2.9	(2.7 – 3.1)
7 - 12 cm	7.6	(7.3 – 7.9)	6.1	(5.8 – 6.3)
12 - 17 cm	12.1	(10.9 – 13.2)	9.2	(8.4 – 10.0)
17 - 22 cm	16.4	(15.3 – 17.5)	13.7	(12.5 – 14.8)
22 - 27 cm	17.8	(17.0 – 18.6)	16.5	(14.9 – 18.0)
27 - 32 cm	19.7	(18.8 – 20.7)	18.1	(13.3 – 23.0)
32 - 37 cm	23.3	(21.9 – 24.7)	20.2	– –
37 - 42 cm	24.2	(23.6 – 24.8)	22.4	(20.5 – 24.2)
42 - 47 cm	23.4	– –	23.4	– –
>47 cm	27.6	(26.3 – 29.0)	30.2	– –
All	14.3	(10.9 – 17.8)	5.4	(4.5 – 6.3)

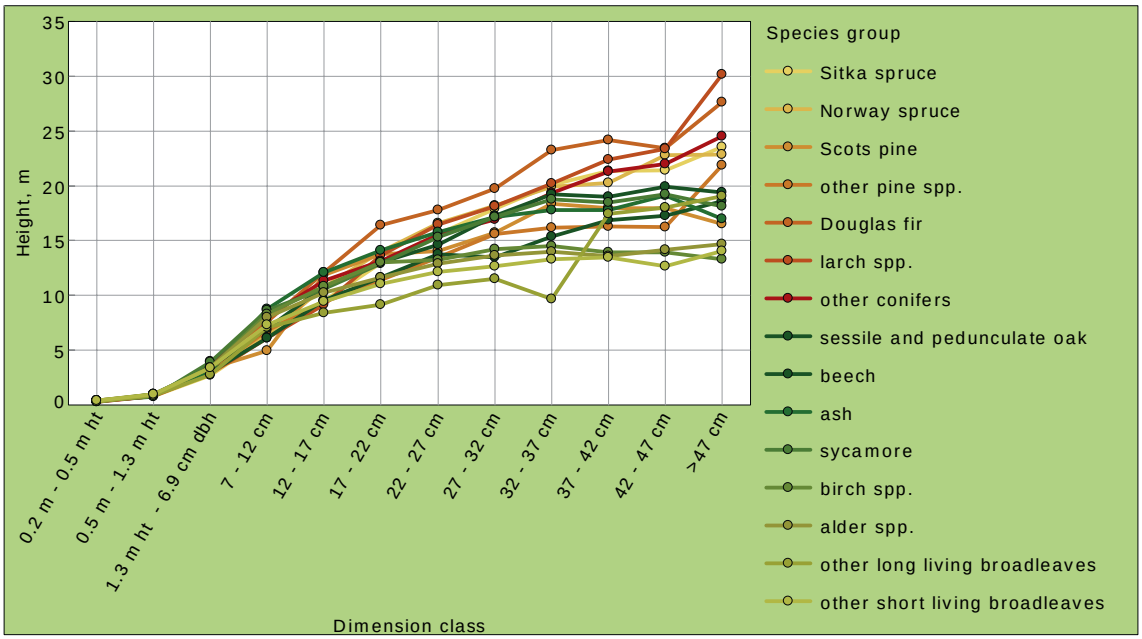
Dimension class	Species group / Height			
	other conifers		sessile and pedunculate oak	
	m	($\alpha = 0.05$)	m	($\alpha = 0.05$)
0.2 m - 0.5 m ht	0.3	– –	0.3	– –
0.5 m - 1.3 m ht	0.8	– –	1.0	(0.8 – 1.1)
1.3 m ht - 6.9 cm dbh	3.6	(3.5 – 3.8)	3.0	(2.6 – 3.4)
7 - 12 cm	8.1	(5.2 – 10.9)	6.1	(1.9 – 10.2)
12 - 17 cm	11.4	(10.1 – 12.6)	9.6	(8.9 – 10.2)
17 - 22 cm	13.1	(11.5 – 14.7)	11.6	(11.0 – 12.3)
22 - 27 cm	15.5	(14.3 – 16.8)	13.8	(12.8 – 14.7)
27 - 32 cm	16.9	(16.1 – 17.7)	13.4	(12.6 – 14.3)
32 - 37 cm	19.4	(15.3 – 23.4)	15.4	(13.9 – 16.8)
37 - 42 cm	21.3	(20.4 – 22.2)	16.9	(14.4 – 19.3)
42 - 47 cm	22.0	– –	17.3	(15.4 – 19.1)
>47 cm	24.5	(19.7 – 29.3)	18.6	(17.4 – 19.8)
All	16.0	(11.1 – 21.0)	11.4	(10.2 – 12.7)

Dimension class	Species group / Height			
	beech		ash	
	m	(α = 0.05)	m	(α = 0.05)
0.2 m - 0.5 m ht	0.3	– –	0.3	(0.3 – 0.4)
0.5 m - 1.3 m ht	1.0	(0.8 – 1.2)	0.9	(0.9 – 1.0)
1.3 m ht - 6.9 cm dbh	3.5	(0.0 – 7.6)	3.2	(2.8 – 3.5)
7 - 12 cm	7.0	(5.4 – 8.5)	8.7	(8.4 – 9.0)
12 - 17 cm	10.7	(9.3 – 12.2)	12.1	(11.4 – 12.7)
17 - 22 cm	13.0	(11.9 – 14.1)	14.1	(13.4 – 14.8)
22 - 27 cm	14.6	(14.1 – 15.2)	15.8	(15.0 – 16.5)
27 - 32 cm	17.3	(16.2 – 18.3)	17.2	(15.8 – 18.5)
32 - 37 cm	19.2	(17.8 – 20.7)	17.8	(16.9 – 18.7)
37 - 42 cm	19.0	(17.2 – 20.8)	17.8	(12.0 – 23.6)
42 - 47 cm	19.9	(16.1 – 23.8)	19.1	(17.2 – 21.0)
>47 cm	19.4	(19.0 – 19.9)	17.0	– –
All	11.1	(9.9 – 12.3)	7.2	(6.4 – 8.1)

Dimension class	Species group / Height			
	sycamore		birch spp.	
	m	(α = 0.05)	m	(α = 0.05)
0.2 m - 0.5 m ht	0.4	(0.4 – 0.5)	0.4	(0.4 – 0.4)
0.5 m - 1.3 m ht	0.8	(0.5 – 1.0)	0.9	(0.9 – 0.9)
1.3 m ht - 6.9 cm dbh	3.9	(2.1 – 5.8)	3.4	(2.8 – 3.9)
7 - 12 cm	8.6	(0.7 – 16.5)	8.3	(7.9 – 8.7)
12 - 17 cm	10.6	– –	10.8	(10.5 – 11.2)
17 - 22 cm	12.9	(12.0 – 13.8)	13.0	(12.5 – 13.5)
22 - 27 cm	15.3	(13.6 – 17.0)	13.2	(12.7 – 13.7)
27 - 32 cm	17.1	(16.3 – 18.0)	14.2	(13.4 – 15.1)
32 - 37 cm	18.8	(18.3 – 19.2)	14.5	(13.3 – 15.6)
37 - 42 cm	18.5	– –	13.9	(13.1 – 14.8)
42 - 47 cm	19.2	– –	13.9	(11.2 – 16.7)
>47 cm	18.1	(18.0 – 18.2)	13.3	(10.0 – 16.6)
All	10.0	(8.7 – 11.3)	7.1	(6.5 – 7.7)

Dimension class	Species group / Height			
	alder spp.		other long living broadleaves	
	m	(α = 0.05)	m	(α = 0.05)
0.2 m - 0.5 m ht	0.4	– –	0.3	(0.3 – 0.3)
0.5 m - 1.3 m ht	1.0	(0.9 – 1.0)	0.8	(0.8 – 0.9)
1.3 m ht - 6.9 cm dbh	3.4	(2.7 – 4.0)	2.8	(2.5 – 3.0)
7 - 12 cm	8.0	(6.9 – 9.1)	7.1	(6.3 – 7.8)
12 - 17 cm	10.2	(9.5 – 10.9)	8.4	(7.7 – 9.1)
17 - 22 cm	11.6	(11.0 – 12.2)	9.2	(8.8 – 9.5)
22 - 27 cm	12.9	(11.7 – 14.1)	10.9	(9.5 – 12.4)
27 - 32 cm	13.7	(13.2 – 14.2)	11.5	(0.0 – 37.5)
32 - 37 cm	14.0	(13.1 – 14.9)	9.7	(4.4 – 15.0)
37 - 42 cm	13.6	(12.4 – 14.7)	17.4	– –
42 - 47 cm	14.2	– –	18.0	– –
>47 cm	14.7	– –	19.0	– –
All	7.1	(6.3 – 7.9)	4.5	(3.7 – 5.3)

Dimension class	Species group / Height			
	other short living broadleaves		All	
	m	(α = 0.05)	m	(α = 0.05)
0.2 m - 0.5 m ht	0.4	(0.4 – 0.4)	0.4	(0.3 – 0.4)
0.5 m - 1.3 m ht	1.0	(0.9 – 1.0)	0.8	(0.8 – 0.8)
1.3 m ht - 6.9 cm dbh	3.4	(3.2 – 3.6)	2.9	(2.8 – 3.0)
7 - 12 cm	7.3	(7.1 – 7.5)	6.6	(6.4 – 6.7)
12 - 17 cm	9.4	(9.2 – 9.7)	9.6	(9.4 – 9.8)
17 - 22 cm	11.0	(10.6 – 11.5)	12.7	(12.5 – 12.9)
22 - 27 cm	12.2	(11.6 – 12.7)	15.0	(14.8 – 15.3)
27 - 32 cm	12.7	(12.3 – 13.0)	17.1	(16.8 – 17.4)
32 - 37 cm	13.3	(9.7 – 16.8)	18.5	(18.0 – 18.9)
37 - 42 cm	13.5	(12.9 – 14.1)	19.4	(18.9 – 20.0)
42 - 47 cm	12.7	– –	19.4	(18.7 – 20.2)
>47 cm	14.1	(13.1 – 15.0)	20.5	(19.7 – 21.3)
All	4.4	(4.1 – 4.8)	6.2	(6.0 – 6.5)



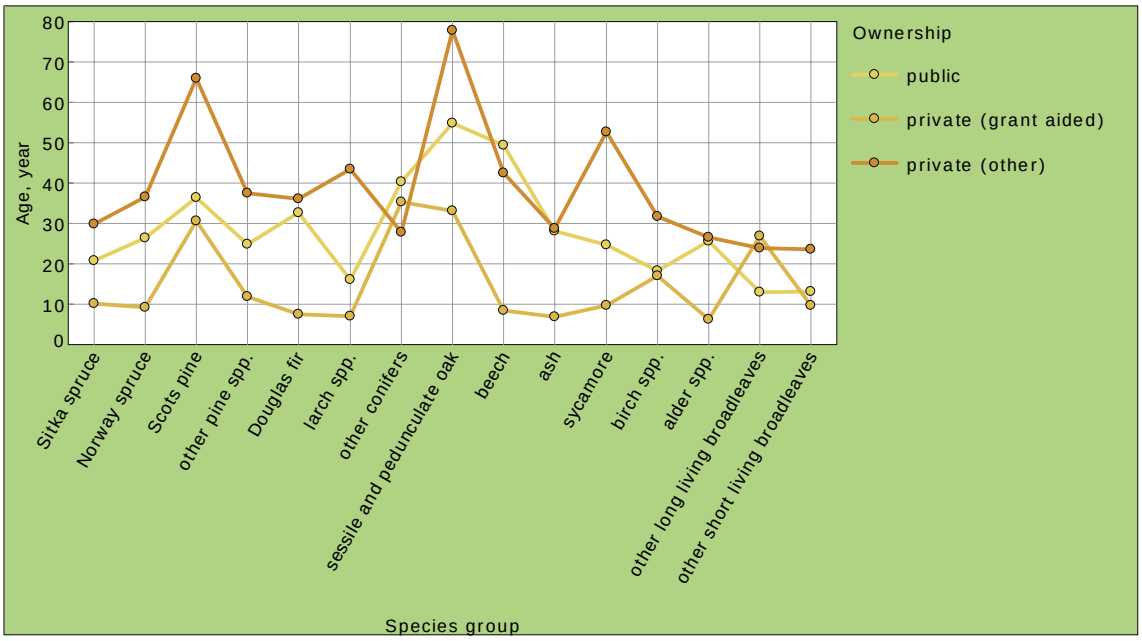
4.3 AGE

4.3.1 Mean tree age by ownership and species group (tree height ≥20 cm)

Methodology

Mean tree age is classified by ownership and species group. All trees with a minimum height of 20 cm were included in the analysis.

Species group	Ownership / Age			
	public	private (grant aided)	private (other)	All
	year (α = 0.05)	year (α = 0.05)	year (α = 0.05)	year (α = 0.05)
Sitka spruce	21 (20 – 22)	10 (10 – 11)	30 (28 – 32)	17 (16 – 18)
Norway spruce	26 (23 – 30)	9 (8 – 11)	37 (29 – 45)	17 (14 – 21)
Scots pine	36 (33 – 40)	31 (18 – 44)	66 (48 – 84)	38 (27 – 49)
other pine spp.	25 (22 – 28)	12 (10 – 13)	37 – –	22 (21 – 24)
Douglas fir	33 (27 – 39)	8 – –	36 (22 – 51)	31 (25 – 37)
larch spp.	16 (14 – 19)	7 (6 – 9)	43 (39 – 48)	12 (10 – 14)
other conifers	40 (26 – 55)	35 (0 – 187)	28 (21 – 34)	40 (25 – 55)
sessile and pedunculate oak	55 (49 – 61)	33 (17 – 49)	78 (64 – 91)	62 (48 – 76)
beech	49 (41 – 58)	8 – –	43 (32 – 53)	44 (39 – 49)
ash	28 (23 – 33)	7 (4 – 10)	29 (25 – 32)	20 (17 – 23)
sycamore	25 (13 – 36)	10 (8 – 11)	53 (43 – 62)	35 (28 – 41)
birch spp.	18 (14 – 22)	17 (12 – 22)	32 (28 – 36)	23 (21 – 26)
alder spp.	26 (22 – 30)	6 (5 – 8)	27 (17 – 36)	21 (18 – 24)
other long living broadleaves	13 (11 – 15)	27 (0 – 125)	24 (20 – 28)	23 (19 – 27)
other short living broadleaves	13 (11 – 15)	10 (8 – 12)	24 (20 – 27)	18 (16 – 20)
All	20 (19 – 21)	10 (9 – 10)	26 (23 – 29)	17 (17 – 18)



4.3.2 Mean tree age by species group and dimension class (tree height ≥20 cm)

Definition

Dimension class

Dimension class is used to describe trees with a dbh ≥7 cm in terms of dbh and the small trees in terms of height.

Methodology

Mean tree age is classified by species group and dimension class. All trees with a minimum height of 20 cm were included in the analysis.

Dimension class	Species group / Age			
	Sitka spruce		Norway spruce	
	year	(α = 0.05)	year	(α = 0.05)
0.2 m - 0.5 m ht	4	(3 – 5)	3	– –
0.5 m - 1.3 m ht	4	(4 – 5)	5	(0 – 17)
1.3 m ht - 6.9 cm dbh	10	(9 – 10)	9	(8 – 10)
7 - 12 cm	16	(15 – 17)	16	(14 – 18)
12 - 17 cm	20	(19 – 21)	27	(22 – 31)
17 - 22 cm	27	(26 – 28)	33	(30 – 36)
22 - 27 cm	31	(30 – 32)	37	(34 – 41)
27 - 32 cm	34	(33 – 35)	37	(23 – 51)
32 - 37 cm	36	(35 – 37)	42	(37 – 46)
37 - 42 cm	36	(35 – 38)	46	(41 – 51)
42 - 47 cm	35	(32 – 39)	52	– –
>47 cm	41	(39 – 42)	52	– –
All	17	(16 – 18)	17	(14 – 21)

Dimension class	Species group / Age			
	Scots pine		other pine spp.	
	year	(α = 0.05)	year	(α = 0.05)
0.2 m - 0.5 m ht	1	– –	6	(4 – 8)
0.5 m - 1.3 m ht	4	(2 – 5)	8	(7 – 10)
1.3 m ht - 6.9 cm dbh	10	(9 – 12)	13	(12 – 14)
7 - 12 cm	14	(14 – 15)	22	(20 – 24)
12 - 17 cm	32	(24 – 41)	27	(25 – 29)
17 - 22 cm	43	(39 – 47)	30	(28 – 32)
22 - 27 cm	42	(40 – 44)	33	(32 – 35)
27 - 32 cm	55	(50 – 61)	34	(33 – 36)
32 - 37 cm	62	(50 – 74)	38	(37 – 39)
37 - 42 cm	59	(54 – 63)	32	(29 – 36)
42 - 47 cm	74	(61 – 87)	38	(33 – 43)
>47 cm	77	(50 – 104)	52	(47 – 58)
All	38	(27 – 49)	22	(21 – 24)

Dimension class	Species group / Age			
	Douglas fir		larch spp.	
	year	(α = 0.05)	year	(α = 0.05)
0.2 m - 0.5 m ht	–	– –	2	– –
0.5 m - 1.3 m ht	–	– –	3	(3 – 4)
1.3 m ht - 6.9 cm dbh	10	(8 – 13)	7	(6 – 8)
7 - 12 cm	21	(19 – 23)	13	(12 – 15)
12 - 17 cm	27	(22 – 31)	18	(13 – 22)
17 - 22 cm	34	(24 – 44)	25	(14 – 37)
22 - 27 cm	43	(34 – 52)	33	(23 – 42)
27 - 32 cm	45	(43 – 47)	46	(27 – 65)
32 - 37 cm	42	(30 – 55)	48	– –
37 - 42 cm	43	(40 – 47)	49	– –
42 - 47 cm	47	– –	79	– –
>47 cm	55	(54 – 56)	69	– –
All	31	(25 – 37)	12	(10 – 14)

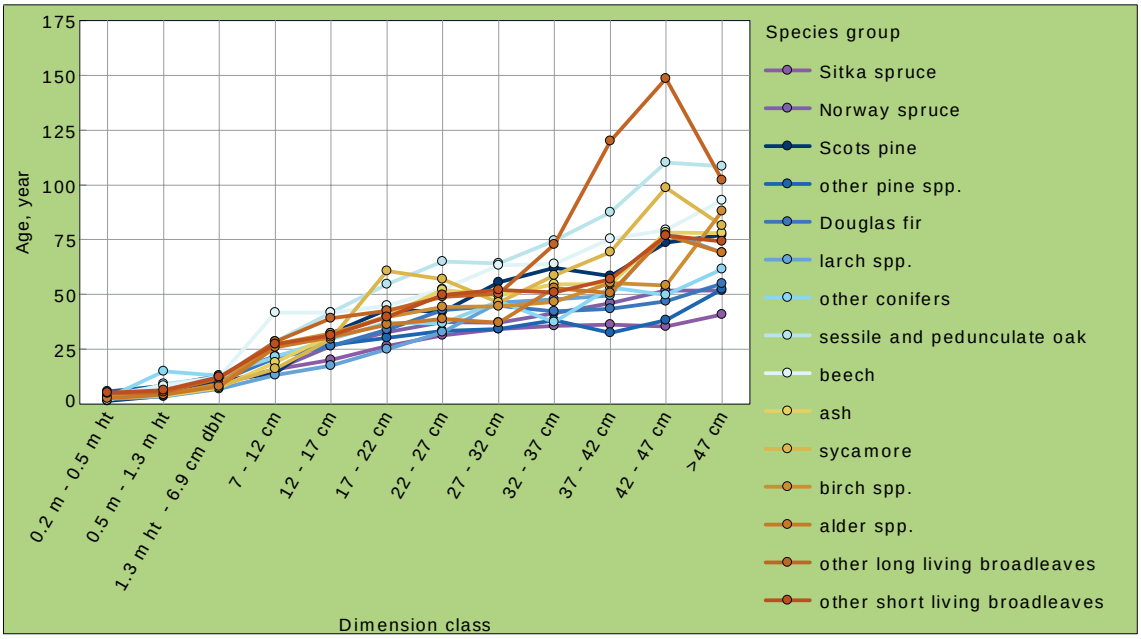
Dimension class	Species group / Age			
	other conifers		sessile and pedunculate oak	
	year	(α=0.05)	year	(α=0.05)
0.2 m - 0.5 m ht	3	– –	2	– –
0.5 m - 1.3 m ht	15	– –	9	(8 – 10)
1.3 m ht - 6.9 cm dbh	13	– –	12	(9 – 15)
7 - 12 cm	22	(1 – 42)	28	(19 – 37)
12 - 17 cm	30	(21 – 38)	42	(37 – 46)
17 - 22 cm	37	(31 – 43)	55	(38 – 71)
22 - 27 cm	37	(32 – 42)	65	(45 – 85)
27 - 32 cm	47	(0 – 118)	64	(56 – 72)
32 - 37 cm	38	(37 – 38)	75	(65 – 84)
37 - 42 cm	53	(48 – 58)	87	(27 – 148)
42 - 47 cm	50	– –	110	(91 – 130)
>47 cm	62	(60 – 63)	108	(99 – 118)
All	40	(25 – 55)	62	(48 – 76)

Dimension class	Species group / Age			
	beech		ash	
	year	(α=0.05)	year	(α=0.05)
0.2 m - 0.5 m ht	4	(0 – 25)	3	(3 – 3)
0.5 m - 1.3 m ht	8	(8 – 9)	4	(3 – 4)
1.3 m ht - 6.9 cm dbh	12	(10 – 14)	7	(6 – 8)
7 - 12 cm	42	(0 – 91)	19	(18 – 20)
12 - 17 cm	42	(35 – 48)	31	(28 – 35)
17 - 22 cm	45	(38 – 52)	40	(38 – 43)
22 - 27 cm	52	(43 – 61)	52	(49 – 55)
27 - 32 cm	63	(50 – 77)	49	(41 – 58)
32 - 37 cm	64	(56 – 72)	55	(32 – 77)
37 - 42 cm	75	(57 – 94)	55	(50 – 59)
42 - 47 cm	79	(67 – 91)	78	(70 – 86)
>47 cm	93	(78 – 108)	78	– –
All	44	(39 – 49)	20	(17 – 23)

Dimension class	Species group / Age			
	sycamore		birch spp.	
	year	(α=0.05)	year	(α=0.05)
0.2 m - 0.5 m ht	5	(0 – 11)	3	(2 – 5)
0.5 m - 1.3 m ht	5	(4 – 5)	4	(4 – 5)
1.3 m ht - 6.9 cm dbh	8	(5 – 11)	9	(8 – 10)
7 - 12 cm	16	(0 – 44)	27	(20 – 34)
12 - 17 cm	30	– –	32	(30 – 35)
17 - 22 cm	61	(58 – 64)	40	(36 – 43)
22 - 27 cm	57	(10 – 103)	44	(41 – 48)
27 - 32 cm	46	(0 – 118)	45	(41 – 49)
32 - 37 cm	59	(0 – 129)	47	(39 – 55)
37 - 42 cm	69	– –	55	(0 – 115)
42 - 47 cm	99	– –	54	(0 – 159)
>47 cm	82	(65 – 98)	88	(80 – 96)
All	35	(28 – 41)	23	(21 – 26)

Dimension class	Species group / Age			
	alder spp.		other long living broadleaves	
	year	(α=0.05)	year	(α=0.05)
0.2 m - 0.5 m ht	3	– –	5	(4 – 6)
0.5 m - 1.3 m ht	4	(3 – 6)	5	(4 – 6)
1.3 m ht - 6.9 cm dbh	8	(7 – 9)	12	(11 – 13)
7 - 12 cm	26	(0 – 57)	28	(25 – 32)
12 - 17 cm	31	(27 – 34)	39	(34 – 44)
17 - 22 cm	36	(34 – 39)	43	(38 – 47)
22 - 27 cm	39	(34 – 44)	49	(40 – 57)
27 - 32 cm	37	(33 – 41)	50	(35 – 66)
32 - 37 cm	53	(43 – 63)	73	(34 – 112)
37 - 42 cm	51	(34 – 67)	120	– –
42 - 47 cm	77	– –	149	– –
>47 cm	69	– –	102	– –
All	21	(18 – 24)	23	(19 – 27)

Dimension class	Species group / Age			
	other short living broadleaves		All	
	year	(α = 0.05)	year	(α = 0.05)
0.2 m - 0.5 m ht	5	(3 – 7)	4	(3 – 4)
0.5 m - 1.3 m ht	6	(5 – 8)	4	(4 – 5)
1.3 m ht - 6.9 cm dbh	12	(11 – 13)	10	(9 – 10)
7 - 12 cm	27	(0 – 59)	17	(17 – 18)
12 - 17 cm	31	(29 – 34)	23	(22 – 24)
17 - 22 cm	40	(36 – 43)	30	(29 – 31)
22 - 27 cm	50	(42 – 58)	36	(35 – 37)
27 - 32 cm	52	(48 – 56)	40	(38 – 41)
32 - 37 cm	51	(7 – 95)	44	(43 – 46)
37 - 42 cm	57	(48 – 66)	50	(47 – 53)
42 - 47 cm	77	– –	58	(53 – 63)
>47 cm	74	(49 – 99)	83	(76 – 89)
All	18	(16 – 20)	17	(17 – 18)



4.4 STAND DEVELOPMENT

4.4.1 Total number of trees by species group and crown shape (dbh ≥7 cm)

Definition

Crown shape

The distribution of the crown around the axis of the stem.

1. **Regular**: The distribution of the crown around the axis of the main stem is symmetrical.
2. **Slightly one-sided**: The distribution of the crown around the axis of the main stem is slightly one-sided.
3. **Strongly one-sided**: The distribution of the crown around the axis of the main stem is strongly one-sided.

Methodology

The total number of trees present in the forest estate is classified by species group and crown shape. All trees with a minimum dbh of 7 cm were included in the analysis.

Crown shape	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
regular	282,347	(269,252 – 295,442)	80.2	19,487	(14,147 – 24,826)	80.3
slightly one-sided	43,119	(40,034 – 46,203)	12.2	2,169	(1,551 – 2,786)	8.9
strongly one-sided	26,952	(24,786 – 29,118)	7.6	2,621	(791 – 4,451)	10.8
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Crown shape	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
regular	1,864	(1,658 – 2,070)	66.6	49,672	(44,884 – 54,459)	64.9
slightly one-sided	589	(452 – 725)	21.0	16,307	(14,477 – 18,136)	21.3
strongly one-sided	347	(322 – 372)	12.4	10,546	(9,104 – 11,987)	13.8
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Crown shape	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
regular	10,444	(7,733 – 13,156)	79.6	10,903	(8,384 – 13,421)	73.2
slightly one-sided	1,667	(1,264 – 2,069)	12.7	2,125	(1,840 – 2,410)	14.3
strongly one-sided	1,008	(14 – 2,002)	7.7	1,867	(1,580 – 2,154)	12.5
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

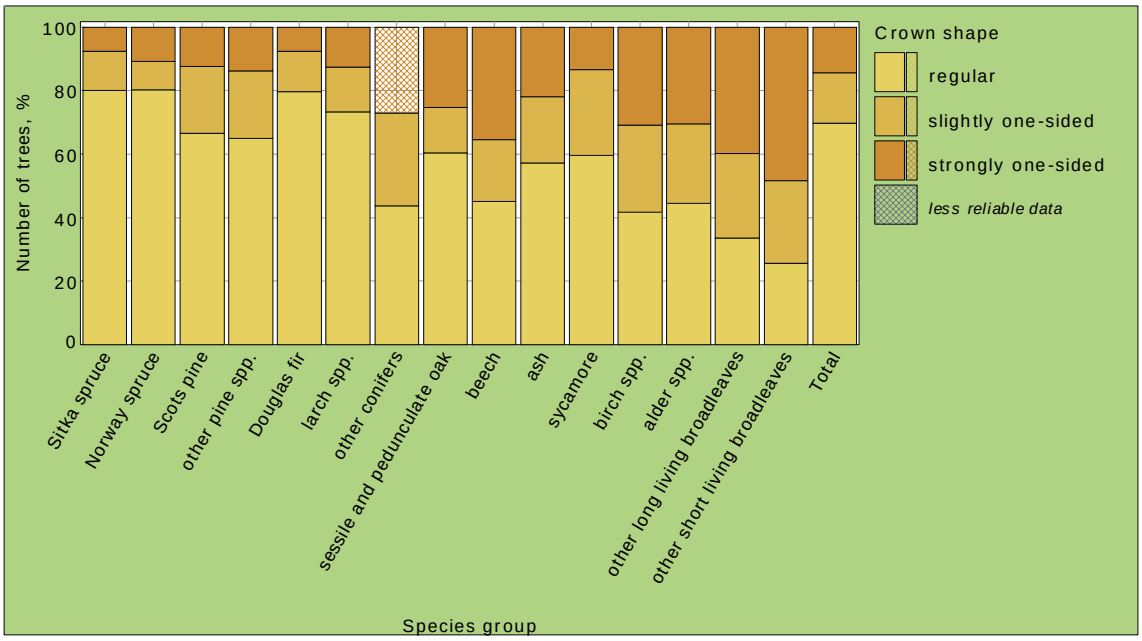
Crown shape	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
regular	2,096	(1,238 – 2,954)	43.8	3,846	(3,562 – 4,130)	60.3
slightly one-sided	1,392	(0 – 5,851)	29.1	918	(742 – 1,094)	14.4
strongly one-sided	1,299	– –	27.1	1,615	(1,192 – 2,038)	25.3
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Crown shape	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
regular	2,254	(1,866 – 2,641)	45.1	9,075	(7,016 – 11,134)	57.3
slightly one-sided	973	(723 – 1,224)	19.5	3,280	(2,512 – 4,047)	20.7
strongly one-sided	1,765	(714 – 2,817)	35.4	3,485	(3,105 – 3,865)	22.0
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Crown shape	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
regular	2,453	(637 – 4,268)	59.5	11,994	(9,609 – 14,379)	41.7
slightly one-sided	1,111	(1,033 – 1,188)	27.0	7,901	(6,582 – 9,221)	27.5
strongly one-sided	555	(0 – 1,681)	13.5	8,871	(7,179 – 10,562)	30.8
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Crown shape	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
regular	5,274	(3,190 – 7,357)	44.5	3,006	(2,494 – 3,519)	33.7
slightly one-sided	2,974	(1,090 – 4,857)	25.1	2,374	(520 – 4,228)	26.6
strongly one-sided	3,608	(3,249 – 3,966)	30.4	3,554	(0 – 7,221)	39.7
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

Crown shape	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
regular	10,055	(5,172 – 14,938)	25.6	424,770	(408,066 – 441,473)	69.8
slightly one-sided	10,228	(8,657 – 11,800)	26.0	97,126	(92,241 – 102,010)	15.9
strongly one-sided	19,020	(14,449 – 23,590)	48.4	87,112	(80,858 – 93,367)	14.3
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0



4.4.2 Total number of trees by species group and social status (Kraft) (dbh ≥7 cm)

Definition

Social status

Social status (Kraft) describes the relative position of the trees in terms of their vertical distribution and their inter-relationships.

1. **Dominant trees**: Trees with crowns extending above the general level of the crown cover and receiving full light from above and partly from the sides; larger than the average trees in the stand and with crowns well developed.
2. **Main co-dominant**: Trees with crowns present in the general level of the crown cover and receiving full light from above and partly from the sides; larger than the average trees in the stand and with crowns well developed but possibly somewhat crowded on the sides.
3. **Co-dominant trees**: Trees with crowns forming the general level of the crown cover and receiving full light from above but comparatively little from the sides; usually with medium-sized crowns more or less crowded on the sides.
4. **Sub-dominant trees**: Trees shorter than those in the three proceeding classes but with crowns extending into the crown cover formed by co-dominant and main co-dominant trees; receiving a little direct light from above but none from the sides; usually with small crowns considerably crowded on the sides.
5. **Suppressed trees**: Trees with crowns entirely below the general level of the crown cover, receiving no direct light either from above or from the sides.

Methodology

The total number of trees in the forest estate is classified by species group and social status (according to the Kraft classification). All trees with a minimum dbh of 7 cm were included in the analysis.

Social status	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
dominant tree	1,618	(1,204 – 2,032)	0.5	119	(17 – 221)	0.5
main co-dominant tree	247,608	(235,306 – 259,910)	70.3	18,085	(13,047 – 23,122)	74.5
co-dominant tree	80,125	(75,178 – 85,072)	22.7	4,510	(3,417 – 5,602)	18.6
subdominant tree	16,356	(14,486 – 18,225)	4.6	1,018	(359 – 1,676)	4.2
suppressed tree	5,636	(4,280 – 6,992)	1.6	546	– –	2.2
other storey	1,075	(685 – 1,466)	0.3	–	– –	–
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Social status	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
dominant tree	16	– –	0.6	487	(255 – 718)	0.6
main co-dominant tree	2,259	(1,799 – 2,720)	80.7	41,536	(37,699 – 45,373)	54.3
co-dominant tree	323	(220 – 426)	11.5	27,586	(24,478 – 30,695)	36.0
subdominant tree	201	– –	7.2	4,364	(3,747 – 4,980)	5.7
suppressed tree	–	– –	–	1,573	(1,175 – 1,971)	2.1
other storey	–	– –	–	978	(442 – 1,514)	1.3
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Social status	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
dominant tree	207	(138 – 276)	1.6	75	– –	0.5
main co-dominant tree	8,885	(6,910 – 10,860)	67.7	11,818	(8,739 – 14,897)	79.4
co-dominant tree	2,573	(762 – 4,383)	19.6	2,542	(1,987 – 3,096)	17.1
subdominant tree	1,015	– –	7.7	392	– –	2.6
suppressed tree	362	– –	2.8	52	– –	0.3
other storey	78	– –	0.6	16	– –	0.1
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

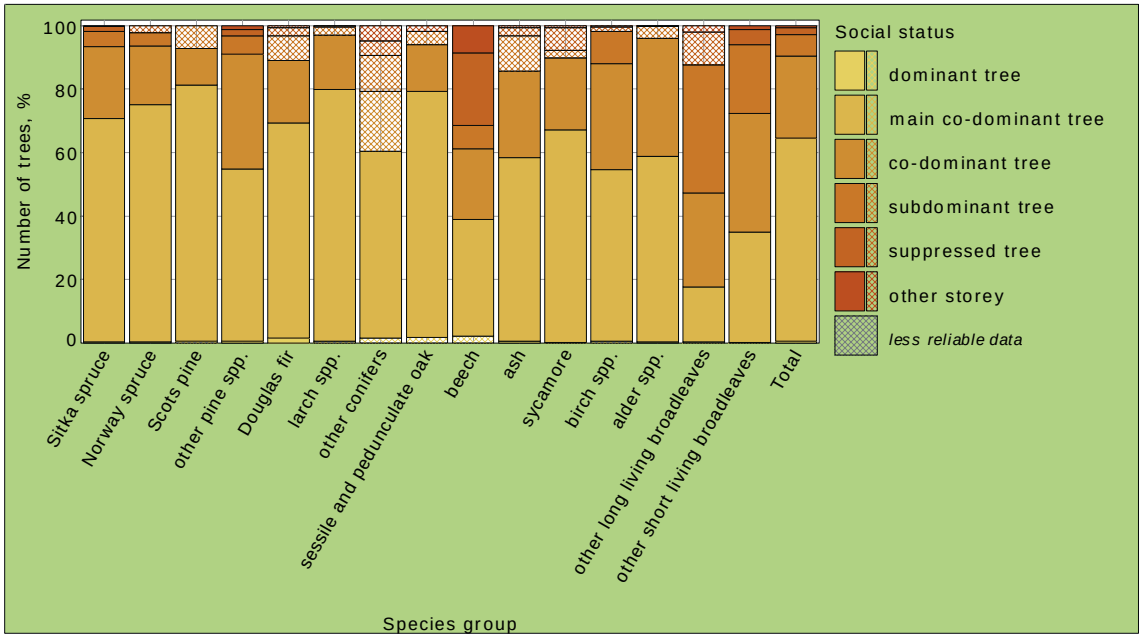
Social status	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
dominant tree	80	– –	1.7	108	– –	1.7
main co-dominant tree	2,814	(0 – 9,973)	58.8	4,948	(4,540 – 5,356)	77.6
co-dominant tree	899	– –	18.8	940	(181 – 1,699)	14.7
subdominant tree	547	– –	11.4	259	– –	4.1
suppressed tree	211	– –	4.4	8	– –	0.1
other storey	237	– –	4.9	116	– –	1.8
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Social status	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
dominant tree	108	– –	2.2	88	(0 – 292)	0.6
main co-dominant tree	1,835	(1,317 – 2,352)	36.7	9,159	(98 – 18,221)	57.8
co-dominant tree	1,107	(922 – 1,293)	22.2	4,312	(3,963 – 4,661)	27.2
subdominant tree	376	(0 – 1,150)	7.5	1,758	– –	11.1
suppressed tree	1,138	(0 – 2,942)	22.8	425	– –	2.7
other storey	428	(225 – 632)	8.6	98	– –	0.6
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Social status	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
dominant tree	8	– –	0.2	166	– –	0.6
main co-dominant tree	2,756	(944 – 4,568)	66.9	15,556	(12,693 – 18,419)	54.1
co-dominant tree	936	(0 – 2,267)	22.7	9,611	(7,224 – 11,999)	33.4
subdominant tree	94	– –	2.3	2,909	(0 – 8,580)	10.1
suppressed tree	292	– –	7.1	387	– –	1.3
other storey	32	– –	0.8	137	– –	0.5
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Social status	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	(α=0.05)	%	1000	(α=0.05)	%
dominant tree	48	(0 – 150)	0.4	32	– –	0.4
main co-dominant tree	6,919	(3,727 – 10,112)	58.4	1,542	(1,051 – 2,033)	17.3
co-dominant tree	4,415	(3,413 – 5,417)	37.2	2,645	(2,427 – 2,864)	29.6
subdominant tree	439	– –	3.7	3,615	(2,529 – 4,701)	40.3
suppressed tree	26	– –	0.2	907	– –	10.2
other storey	8	– –	0.07	194	– –	2.2
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

Social status	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	(α=0.05)	%	1000	(α=0.05)	%
dominant tree	68	– –	0.2	3,227	(2,895 – 3,558)	0.5
main co-dominant tree	13,660	(10,654 – 16,667)	34.8	389,381	(373,597 – 405,165)	64.0
co-dominant tree	14,684	(10,166 – 19,202)	37.3	157,208	(149,102 – 165,314)	25.8
subdominant tree	8,542	(3,034 – 14,051)	21.7	41,884	(36,514 – 47,254)	6.9
suppressed tree	1,818	(10 – 3,625)	4.6	13,380	(11,834 – 14,926)	2.2
other storey	531	(428 – 633)	1.4	3,928	(3,204 – 4,652)	0.6
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0


Number of trees, %
100
80
60
40
20
0
Social status
dominant tree
main co-dominant tree
co-dominant tree
subdominant tree
suppressed tree
other storey
less reliable data
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Douglas fir
larch spp.
other conifers
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves
Total
Species group

4.4.3 Total number of trees by species group and social status (IUFRO) (dbh ≥7 cm)

Definition

Social status (IUFRO)

Social status (IUFRO) describes the vertical differentiation of the trees within the plot relative to the highest stand layer.

1. **Top**: The height of the tree is at least two-thirds the height of the highest trees.
2. **Central**: The height of the tree is at least one-third the height of the highest trees.
3. **Bottom**: The height of the tree is lower than one third of the highest trees.

Methodology

The total number of trees in the forest estate is classified by species group and social status (according to the IUFRO classification). All trees with a minimum dbh of 7 cm were included in the analysis

IUFRO height	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
top layer	330,035	(315,747 – 344,322)	93.6	21,905	(16,610 – 27,199)	90.2
central layer	17,493	(14,360 – 20,626)	5.0	2,035	(1,699 – 2,372)	8.4
bottom layer	4,891	(3,041 – 6,740)	1.4	336	– –	1.4
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

IUFRO height	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
top layer	2,741	(2,332 – 3,150)	97.9	69,640	(64,087 – 75,193)	91.0
central layer	58	(0 – 161)	2.1	5,260	(4,065 – 6,456)	6.9
bottom layer	–	– –	–	1,624	(251 – 2,997)	2.1
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

IUFRO height	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
top layer	12,176	(9,795 – 14,557)	92.8	14,554	(11,873 – 17,235)	97.7
central layer	917	– –	7.0	236	– –	1.6
bottom layer	26	– –	0.2	104	– –	0.7
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

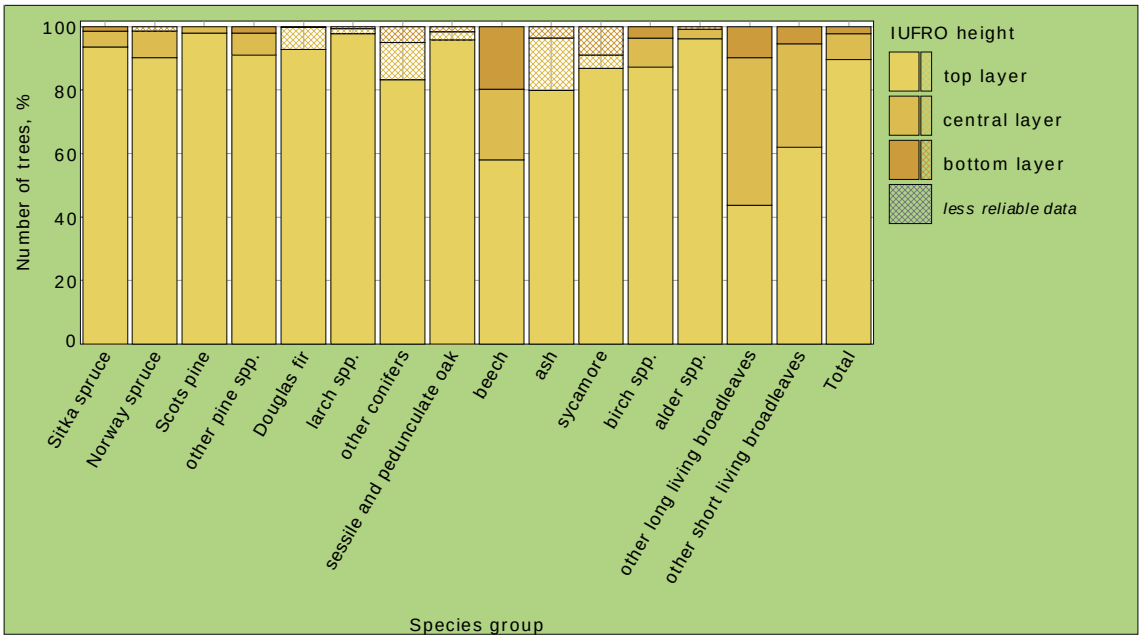
IUFRO height	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
top layer	3,988	(0 – 11,112)	83.3	6,109	(2,472 – 9,745)	95.7
central layer	556	– –	11.6	158	– –	2.5
bottom layer	243	– –	5.1	112	– –	1.8
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

IUFRO height	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
top layer	2,892	(2,121 – 3,664)	57.9	12,640	(9,930 – 15,350)	79.8
central layer	1,118	(0 – 2,990)	22.4	2,619	– –	16.5
bottom layer	982	(869 – 1,095)	19.7	581	– –	3.7
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

IUFRO height	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
top layer	3,574	(0 – 11,010)	86.8	25,076	(21,408 – 28,745)	87.2
central layer	174	– –	4.2	2,653	(1,793 – 3,512)	9.2
bottom layer	370	– –	9.0	1,038	(711 – 1,364)	3.6
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

IUFRO height	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
top layer	11,399	(5,912 – 16,887)	96.1	3,905	(3,383 – 4,427)	43.7
central layer	354	(25 – 684)	3.0	4,146	(0 – 11,570)	46.4
bottom layer	102	– –	0.9	883	(227 – 1,539)	9.9
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

IUFRO height	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
top layer	24,338	(19,955 – 28,721)	62.0	544,973	(525,966 – 563,980)	89.5
central layer	12,827	(7,093 – 18,561)	32.6	50,606	(43,877 – 57,335)	8.3
bottom layer	2,138	(301 – 3,975)	5.4	13,429	(11,749 – 15,109)	2.2
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0



4.4.4 Total number of trees by species group and slenderness ratio (dbh ≥7 cm)

Definition

Slenderness ratio

Ratio of tree height (m) to its dbh (cm).

Methodology

The total number of trees in the forest estate is classified by species group and slenderness ratio. All trees with a minimum dbh of 7 cm were included in the analysis.

Slenderness ratio	Species group / Number of trees							
	Sitka spruce				Norway spruce			
	1000	(α=0.05)		%	1000	(α=0.05)		%
0.00 - 0.20	–	–	–	–	–	–	–	–
0.21 - 0.40	1,769	(923 – 2,614)		0.5	–	–	–	–
0.41 - 0.60	122,142	(114,293 – 129,990)		34.7	8,229	(5,405 – 11,053)		33.9
0.61 - 0.80	157,567	(148,057 – 167,076)		44.6	12,327	(0 – 37,787)		50.8
0.81 - 1.00	52,034	(47,461 – 56,606)		14.8	3,422	(2,477 – 4,366)		14.1
1.01 - 1.20	15,398	(11,242 – 19,554)		4.4	298	–	–	1.2
1.21 - 1.40	3,200	(1,927 – 4,474)		0.9	–	–	–	–
1.41 - 1.60	309	–	–	0.09	–	–	–	–
>1.60	–	–	–	–	–	–	–	–
Total	352,418	(337,464 – 367,372)		100.0	24,276	(19,122 – 29,430)		100.0

Slenderness ratio	Species group / Number of trees							
	Scots pine				other pine spp.			
	1000	(α=0.05)		%	1000	(α=0.05)		%
0.00 - 0.20	8	–	–	0.3	–	–	–	–
0.21 - 0.40	200	(95 – 305)		7.2	382	(312 – 452)		0.5
0.41 - 0.60	1,157	(989 – 1,325)		41.3	26,501	(23,323 – 29,678)		34.6
0.61 - 0.80	1,257	(1,147 – 1,366)		44.9	37,969	(33,762 – 42,176)		49.7
0.81 - 1.00	152	(0 – 481)		5.4	9,355	(7,359 – 11,350)		12.2
1.01 - 1.20	26	–	–	0.9	2,292	(1,682 – 2,902)		3.0
1.21 - 1.40	–	–	–	–	26	–	–	0.03
1.41 - 1.60	–	–	–	–	–	–	–	–
>1.60	–	–	–	–	–	–	–	–
Total	2,799	(2,387 – 3,211)		100.0	76,524	(70,702 – 82,346)		100.0

Slenderness ratio	Species group / Number of trees							
	Douglas fir				larch spp.			
	1000	(α=0.05)		%	1000	(α=0.05)		%
0.00 - 0.20	–	–	–	–	–	–	–	–
0.21 - 0.40	8	–	–	0.06	8	–	–	0.05
0.41 - 0.60	1,897	(1,861 – 1,933)		14.5	4,219	(0 – 8,530)		28.3
0.61 - 0.80	5,393	(0 – 12,824)		41.0	8,451	(6,692 – 10,210)		56.8
0.81 - 1.00	4,512	(3,447 – 5,577)		34.4	1,507	(727 – 2,287)		10.1
1.01 - 1.20	1,153	(0 – 3,136)		8.8	569	(0 – 2,361)		3.8
1.21 - 1.40	156	–	–	1.2	141	–	–	0.9
1.41 - 1.60	–	–	–	–	–	–	–	–
>1.60	–	–	–	–	–	–	–	–
Total	13,119	(10,865 – 15,373)		100.0	14,895	(12,208 – 17,581)		100.0

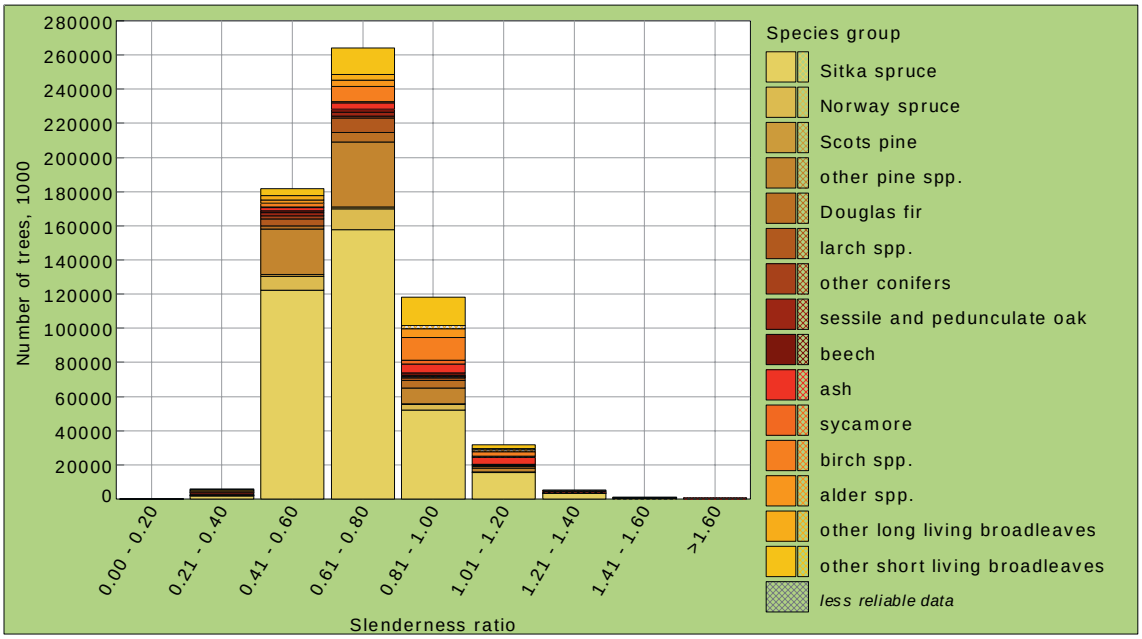
Slenderness ratio	Species group / Number of trees							
	other conifers				sessile and pedunculate oak			
	1000		(α=0.05)	%	1000		(α=0.05)	%
0.00 - 0.20	8	–	–	0.2	40	–	–	0.6
0.21 - 0.40	129	(23	– 235)	2.7	1,102	(811	– 1,394)	17.3
0.41 - 0.60	1,595	(0	– 4,807)	33.3	2,053	(1,798	– 2,307)	32.2
0.61 - 0.80	1,234	(0	– 4,091)	25.8	2,114	(1,643	– 2,585)	33.1
0.81 - 1.00	637	–	–	13.3	642	–	–	10.1
1.01 - 1.20	341	–	–	7.1	287	–	–	4.5
1.21 - 1.40	562	–	–	11.7	–	–	–	–
1.41 - 1.60	281	–	–	5.9	141	–	–	2.2
>1.60	–	–	–	–	–	–	–	–
Total	4,787	(0	– 12,230)	100.0	6,379	(2,742	– 10,015)	100.0

Slenderness ratio	Species group / Number of trees							
	beech				ash			
	1000		(α=0.05)	%	1000		(α=0.05)	%
0.00 - 0.20	–	–	–	–	–	–	–	–
0.21 - 0.40	321	(226	– 416)	6.4	106	(4	– 208)	0.7
0.41 - 0.60	1,184	(893	– 1,476)	23.7	1,562	(552	– 2,571)	9.9
0.61 - 0.80	1,878	(1,374	– 2,381)	37.7	3,842	(3,227	– 4,458)	24.3
0.81 - 1.00	1,488	(0	– 3,318)	29.8	5,214	(0	– 14,437)	32.8
1.01 - 1.20	95	–	–	1.9	3,957	(72	– 7,842)	25.0
1.21 - 1.40	26	–	–	0.5	449	–	–	2.8
1.41 - 1.60	–	–	–	–	142	–	–	0.9
>1.60	–	–	–	–	567	–	–	3.6
Total	4,992	(3,061	– 6,923)	100.0	15,840	(13,069	– 18,611)	100.0

Slenderness ratio	Species group / Number of trees							
	sycamore				birch spp.			
	1000		(α=0.05)	%	1000		(α=0.05)	%
0.00 - 0.20	–	–	–	–	16	–	–	0.06
0.21 - 0.40	120	(0	– 426)	2.9	489	(0	– 1,662)	1.7
0.41 - 0.60	410	(182	– 637)	9.9	2,318	(2,044	– 2,593)	8.1
0.61 - 0.80	857	(0	– 2,822)	20.8	8,656	(7,283	– 10,029)	30.1
0.81 - 1.00	2,138	(338	– 3,938)	52.0	13,588	(11,193	– 15,982)	47.1
1.01 - 1.20	593	–	–	14.4	2,691	(0	– 8,070)	9.4
1.21 - 1.40	–	–	–	–	698	–	–	2.4
1.41 - 1.60	–	–	–	–	311	–	–	1.1
>1.60	–	–	–	–	–	–	–	–
Total	4,118	(0	– 11,552)	100.0	28,767	(24,834	– 32,699)	100.0

Slenderness ratio	Species group / Number of trees							
	alder spp.				other long living broadleaves			
	1000		(α=0.05)	%	1000		(α=0.05)	%
0.00 - 0.20	8	–	–	0.07	40	–	–	0.4
0.21 - 0.40	146	(110	– 182)	1.2	589	(252	– 926)	6.6
0.41 - 0.60	1,892	(0	– 4,095)	16.0	2,376	(1,867	– 2,886)	26.6
0.61 - 0.80	3,731	(2,512	– 4,950)	31.5	3,276	(1,941	– 4,611)	36.7
0.81 - 1.00	5,099	(1,259	– 8,938)	42.9	1,659	–	–	18.6
1.01 - 1.20	980	–	–	8.3	994	–	–	11.1
1.21 - 1.40	–	–	–	–	–	–	–	–
1.41 - 1.60	–	–	–	–	–	–	–	–
>1.60	–	–	–	–	–	–	–	–
Total	11,855	(6,375	– 17,336)	100.0	8,934	(6,307	– 11,562)	100.0

Slenderness ratio	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	($\alpha = 0.05$)	%	1000	($\alpha = 0.05$)	%
0.00 - 0.20	32	– –	0.08	152	(114 – 190)	0.02
0.21 - 0.40	569	(509 – 629)	1.4	5,939	(5,018 – 6,860)	1.0
0.41 - 0.60	4,156	(3,281 – 5,031)	10.6	181,690	(172,484 – 190,895)	29.8
0.61 - 0.80	15,654	(11,350 – 19,959)	39.8	264,205	(251,191 – 277,219)	43.4
0.81 - 1.00	16,881	(12,319 – 21,443)	43.1	118,326	(110,051 – 126,601)	19.4
1.01 - 1.20	1,985	(760 – 3,209)	5.0	31,658	(27,330 – 35,986)	5.2
1.21 - 1.40	26	– –	0.07	5,286	(3,857 – 6,714)	0.9
1.41 - 1.60	–	– –	–	1,185	– –	0.2
>1.60	–	– –	–	567	– –	0.09
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0



CHAPTER 5
FOREST STRUCTURE

Confirming the findings in the previous chapter, the forest estate is predominantly single storied; somewhat less so in the private (other) forests where more natural regeneration under an overstorey is present. Nearly 80% of the forest estate is made up of stands with only one storey. The private (grant aided) forest estate is the least structurally diverse, with only one storey in 94% of the forest stands. The private (other) estate is the most diverse, with 40% of its stands having two storeys and 11% classified as multi-storied. Main and multi-storied, storey types, are well stocked while secondary and reserved stories are not.

Conifer high forest, at 62% of the total area, is the predominant forest type across the forest estate. Mixed high forest and broadleaf high forest are the next most common, representing 14% and 12% of the forest area, respectively. Scrub covers 4% (27,230 ha) of the total stocked forest estate. This area is similar to that found in the 1973 inventory of private woodlands (33,000 ha (Purcell, 1973)).

Nearly two-thirds (65%) of the stocked forest area is on the first rotation and 20% on a subsequent rotation. The remainder of the total stocked forest area is described as semi-natural (13%) and temporarily unstocked (2%).

Public forests are approaching a uniform growth stage distribution. As expected, the private (grant aided) forests are still predominantly in the younger growth stages, while the private (other) forests are in the older growth stages.

It is clear that, when juvenile forest is excluded, the area of thinned stands is less than half the total area in all categories of ownership. The reasons for this small proportion are likely varied, from site stability, access and price factors, to owner expertise and awareness. This low level of thinning activity will have an impact on forecasted timber supply. Pruning for quality is also much the exception, having been carried out on a little over 1% of the estate area, despite the fact that for all species the degree of branching is classified as medium to heavy.

5.1 STAND STOREY

Definition

Stand storey

The differentiation of the trees in a stand into distinct storey types.

1. **Main storey**: The main storey is comprised of trees, which are all largely even-aged, and these trees present a regular appearance with one canopy layer. Another storey may be present.
2. **Secondary storey**: The secondary storey is comprised of trees, which are largely even-aged, and these trees present a regular appearance of one canopy layer beneath the main storey. Another storey may be present.
3. **Reserved storey**: The reserved storey is the main storey in the forest for the purposes of providing amenity and shelter for game and forest management, and for natural regeneration. The numbers of trees are low and the canopy cover may not be uniform. Another storey may be present.
4. **Multi-storied**: The stand is irregular with no uniform differentiation in vertical structure, due to its regeneration from multiple disturbances, such as thinning, windblow or fire.

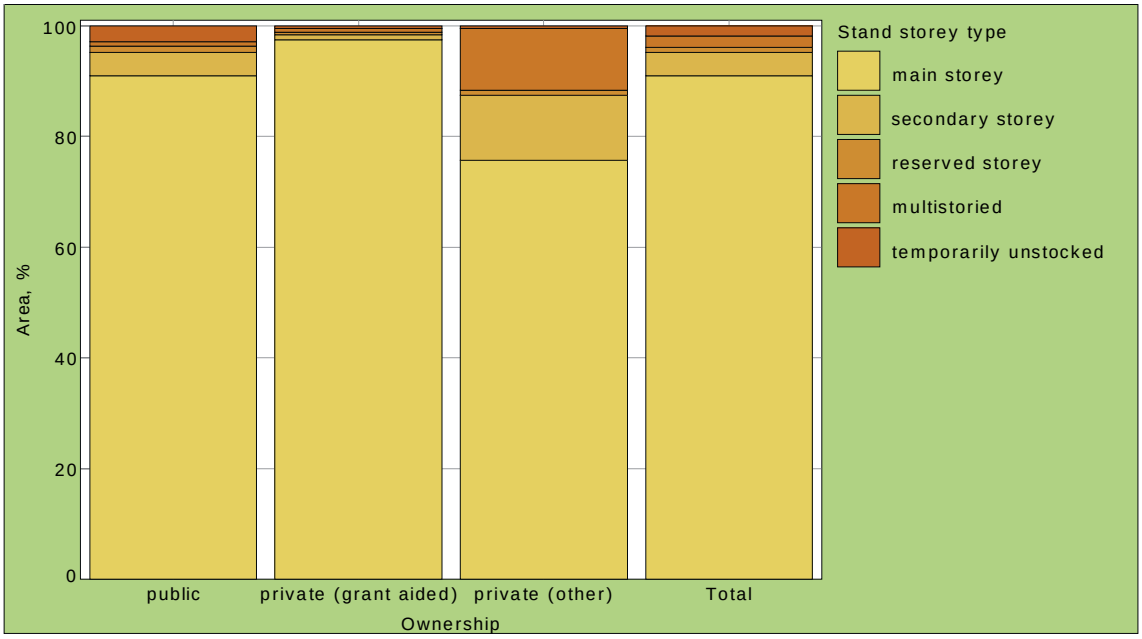
5.1.1 Total stocked forest area by ownership and stand storey type

Methodology

The total stocked forest area is classified by ownership and stand storey type.

Stand storey type	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
main storey	327.02	(312.23 – 341.81)	91.0	182.26	(168.46 – 196.05)	97.5
secondary storey	15.27	(12.16 – 18.38)	4.2	1.79	(0.60 – 2.97)	1.0
reserved storey	3.89	(1.96 – 5.81)	1.1	0.93	(0.26 – 1.61)	0.5
multistoried	3.21	(0.99 – 5.43)	0.9	1.20	(0.00 – 2.57)	0.6
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Stand storey type	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
main storey	60.11	(51.52 – 68.69)	75.8	569.38	(562.11 – 576.66)	91.0
secondary storey	9.28	(6.76 – 11.79)	11.7	26.34	(22.31 – 30.36)	4.2
reserved storey	0.75	(0.06 – 1.44)	0.9	5.57	(3.43 – 7.71)	0.9
multistoried	8.82	(5.17 – 12.48)	11.1	13.23	(8.80 – 17.67)	2.1
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



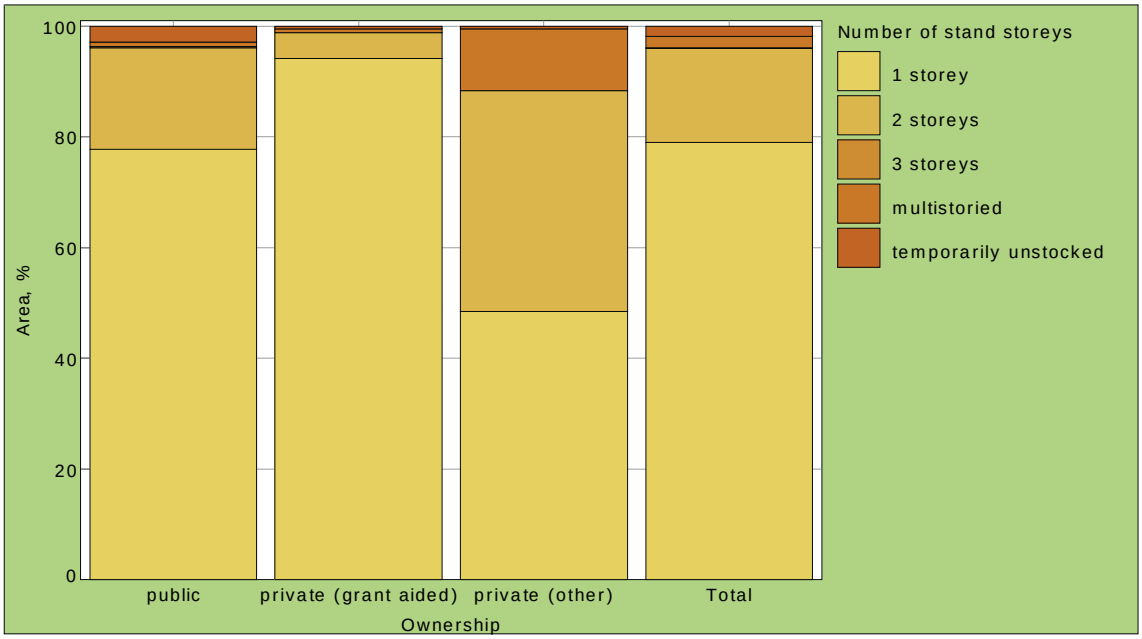
5.1.2 Total stocked forest area by ownership and number of stand storeys

Methodology

The total stocked forest area is classified by ownership and the number of stand storeys.

Number of stand storeys	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
1 storey	279.69	(264.50 – 294.88)	77.8	176.18	(162.47 – 189.90)	94.3
2 storeys	65.69	(56.17 – 75.20)	18.3	8.80	(5.14 – 12.45)	4.7
3 storeys	0.80	(0.00 – 1.92)	0.2	–	–	–
multistoried	3.21	(0.99 – 5.43)	0.9	1.20	(0.00 – 2.57)	0.6
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Number of stand storeys	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
1 storey	38.49	(31.16 – 45.82)	48.5	494.37	(481.77 – 506.97)	79.0
2 storeys	31.64	(24.84 – 38.44)	39.9	106.12	(94.55 – 117.70)	17.0
3 storeys	–	–	–	0.80	(0.00 – 1.92)	0.1
multistoried	8.82	(5.17 – 12.48)	11.1	13.23	(8.80 – 17.67)	2.1
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



5.1.3 Total stocked forest area by stand storey type and canopy cover

Definition

Canopy cover

The percentage of canopy cover occupied by trees belonging to a storey.

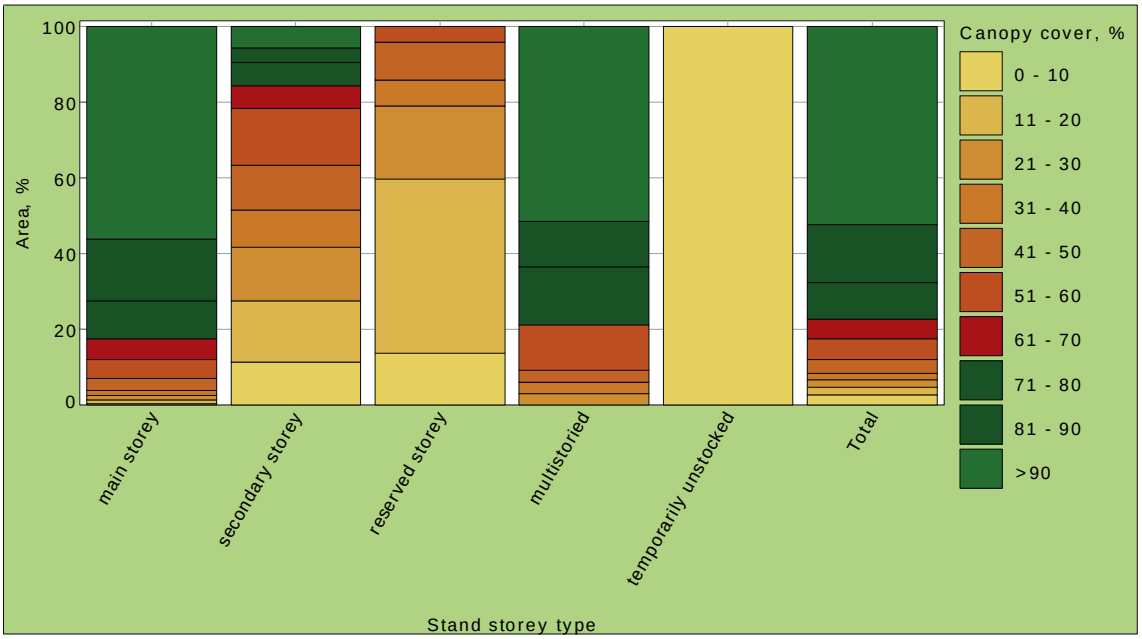
Methodology

The total stocked forest area is classified by stand storey type and canopy cover in the storey.

Canopy cover, %	Stand storey type / Area					
	main storey			secondary storey		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 10	1.98	(0.37 – 3.60)	0.3	3.00	(1.74 – 4.26)	11.4
11 - 20	5.92	(3.15 – 8.70)	1.0	4.26	(3.02 – 5.50)	16.1
21 - 30	6.47	(3.55 – 9.39)	1.1	3.70	(2.32 – 5.07)	14.0
31 - 40	7.26	(4.16 – 10.36)	1.3	2.60	(1.39 – 3.80)	9.9
41 - 50	18.66	(13.68 – 23.65)	3.3	3.13	(1.57 – 4.70)	11.9
51 - 60	28.47	(22.37 – 34.57)	5.0	3.96	(2.20 – 5.73)	15.0
61 - 70	30.94	(24.51 – 37.37)	5.4	1.58	(0.35 – 2.80)	6.0
71 - 80	56.82	(48.12 – 65.52)	10.0	1.63	(0.37 – 2.88)	6.2
81 - 90	93.30	(82.50 – 104.10)	16.4	0.99	(0.00 – 1.99)	3.8
>90	319.56	(304.94 – 334.18)	56.2	1.50	(0.14 – 2.86)	5.7
Total	569.38	(562.11 – 576.66)	100.0	26.34	(22.31 – 30.36)	100.0

Canopy cover, %	Stand storey type / Area					
	reserved storey			multistoried		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 10	0.76	(0.00 – 1.59)	13.7	–	–	–
11 - 20	2.57	(0.98 – 4.15)	46.0	–	–	–
21 - 30	1.07	(0.36 – 1.78)	19.2	0.40	(0.00 – 1.19)	3.0
31 - 40	0.38	(0.00 – 0.94)	6.8	0.40	(0.00 – 1.21)	3.0
41 - 50	0.56	(0.00 – 1.19)	10.0	0.41	(0.00 – 1.20)	3.1
51 - 60	0.24	(0.00 – 0.71)	4.3	1.61	(0.03 – 3.18)	12.1
61 - 70	–	–	–	–	–	–
71 - 80	–	–	–	2.01	(0.25 – 3.77)	15.2
81 - 90	–	–	–	1.60	(0.04 – 3.17)	12.1
>90	–	–	–	6.81	(3.61 – 10.01)	51.5
Total	5.57	(3.43 – 7.71)	100.0	13.23	(8.80 – 17.67)	100.0

Canopy cover, %	Stand storey type / Area					
	temporarily unstocked			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
0 - 10	11.22	(7.09 – 15.35)	100.0	16.96	(12.32 – 21.60)	2.7
11 - 20	–	–	–	12.75	(9.32 – 16.17)	2.0
21 - 30	–	–	–	11.63	(8.18 – 15.08)	1.9
31 - 40	–	–	–	10.64	(7.15 – 14.12)	1.7
41 - 50	–	–	–	22.76	(17.26 – 28.25)	3.6
51 - 60	–	–	–	34.28	(27.74 – 40.82)	5.5
61 - 70	–	–	–	32.51	(25.93 – 39.10)	5.2
71 - 80	–	–	–	60.45	(51.55 – 69.36)	9.7
81 - 90	–	–	–	95.89	(84.97 – 106.82)	15.3
>90	–	–	–	327.87	(313.31 – 342.44)	52.4
Total	11.22	(7.09 – 15.35)	100.0	625.75		100.0



5.2 Forest Type

5.2.1 Total stocked forest area by ownership and forest type

Definition

Forest type

A standardised system of nomenclature was adopted to classify forests based on the composition of tree canopy cover.

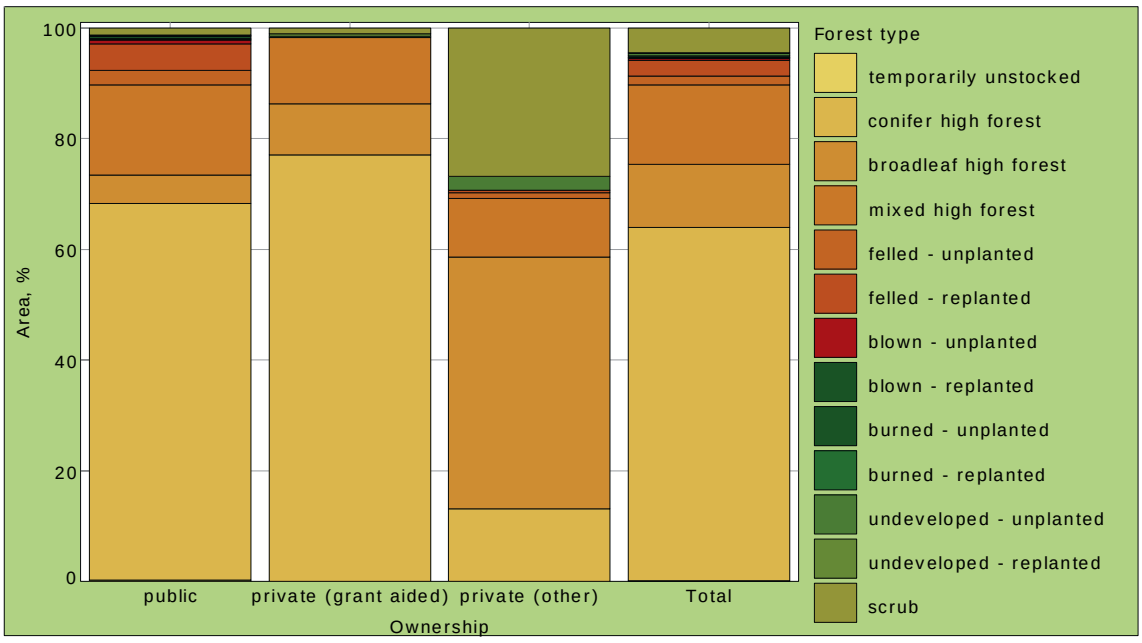
1. **Conifer high forest**: A forest where at least 81% of the canopy cover is composed of coniferous trees (CHF).
2. **Broadleaf high forest**: A forest where at least 81% of the canopy cover is composed of broadleaf trees (BHF).
3. **Mixed high forest**: A forest composed of broadleaved and conifer species, the minor category making up at least 20% of the canopy (MHF).
4. **Felled-unplanted**: Forest of which at least 81% of the canopy has been felled and which has not been replanted.
5. **Felled-replanted**: Forest of which at least 81% of the canopy has been felled and which has been replanted within the last two years.
6. **Blown-unplanted**: A forest where at least 81% of the canopy has been blown and which has not been replanted.
7. **Blown-replanted**: A forest where at least 81% of the canopy was blown and which has been replanted.
8. **Burned-unplanted**: A forest where at least 81% of the canopy has been burned and it has not been replanted.
9. **Burned-replanted**: A forest where at least 81% of the canopy has been burned and which has been replanted. Evidence of burnt trees/tall stumps must be present on site.
10. **Undeveloped**: An undeveloped conifer forest is one where at least 81% of the planted trees are unlikely to ever produce a pulpwood or high forest stand.
11. **Scrub**: Broadleaf forest, usually semi-natural broadleaf forest, which is unlikely ever to become a high forest. Depending on management, scrub can include species such as *Quercus, Salix, Corylus* and *Ilex*.

Methodology

The total stocked forest area is classified by ownership and forest type.

Forest type	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
temporarily unstocked	0.80	(0.00 – 1.91)	0.2	–	–	–
conifer high forest	244.82	(229.89 – 259.75)	68.2	144.14	(131.30 – 156.99)	77.1
broadleaf high forest	18.45	(13.24 – 23.66)	5.1	17.22	(12.18 – 22.25)	9.2
mixed high forest	58.49	(49.48 – 67.49)	16.3	22.42	(16.68 – 28.17)	12.0
felled - unplanted	9.61	(5.79 – 13.44)	2.7	–	–	–
felled - replanted	17.23	(12.19 – 22.27)	4.8	–	–	–
blown - unplanted	2.40	(0.48 – 4.31)	0.7	–	–	–
blown - replanted	0.41	(0.00 – 1.20)	0.1	–	–	–
burned - unplanted	0.80	(0.00 – 1.94)	0.2	–	–	–
burned - replanted	1.21	(0.00 – 2.57)	0.3	0.41	(0.00 – 1.20)	0.2
undeveloped - unplanted	0.40	(0.00 – 1.19)	0.1	–	–	–
undeveloped - replanted	0.40	(0.00 – 1.18)	0.1	0.79	(0.00 – 1.90)	0.4
scrub	4.40	(1.81 – 7.00)	1.2	2.00	(0.25 – 3.75)	1.1
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Forest type	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
temporarily unstocked	–	–	–	0.80	(0.00 – 1.91)	0.1
conifer high forest	10.43	(6.46 – 14.39)	13.1	399.39	(384.70 – 414.08)	63.7
broadleaf high forest	36.10	(28.90 – 43.30)	45.6	71.77	(62.03 – 81.50)	11.5
mixed high forest	8.40	(4.84 – 11.96)	10.6	89.31	(78.56 – 100.06)	14.3
felled - unplanted	0.80	(0.00 – 1.94)	1.0	10.42	(6.44 – 14.39)	1.7
felled - replanted	0.40	(0.00 – 1.18)	0.5	17.63	(12.53 – 22.73)	2.8
blown - unplanted	–	–	–	2.40	(0.48 – 4.31)	0.4
blown - replanted	–	–	–	0.41	(0.00 – 1.20)	0.06
burned - unplanted	–	–	–	0.80	(0.00 – 1.94)	0.1
burned - replanted	–	–	–	1.61	(0.04 – 3.19)	0.3
undeveloped - unplanted	2.00	(0.26 – 3.74)	2.5	2.39	(0.48 – 4.30)	0.4
undeveloped - replanted	–	–	–	1.19	(0.00 – 2.54)	0.2
scrub	21.22	(15.62 – 26.82)	26.7	27.63	(21.28 – 33.98)	4.4
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



5.2.2 Total stocked forest area by ownership and forest sub-type

Definition

Forest sub-type

Describes if one or more species occur.

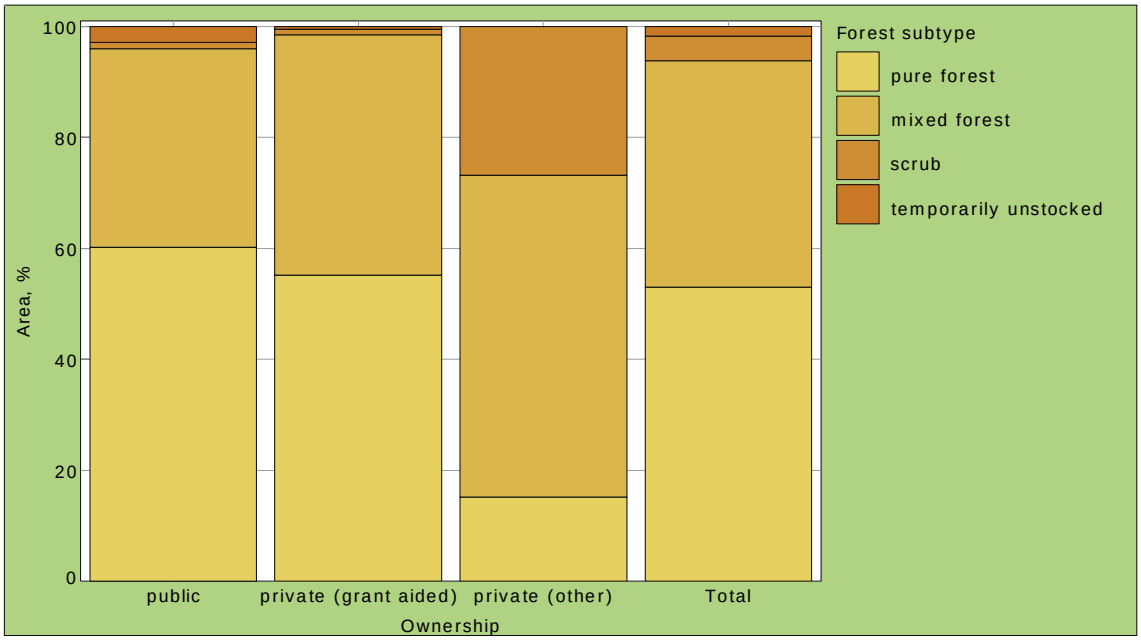
1. **Pure**: The dominant species occupies at least 81% of the canopy.
2. **Mixed**: The dominant species has a maximum of 80% canopy cover.
3. **Scrub**: No assessment of forest sub-type for forest type scrub.

Methodology

The total stocked forest area is classified by ownership and forest sub-type.

Forest subtype	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
pure forest	216.39	(201.78 – 230.99)	60.2	103.25	(91.90 – 114.60)	55.2
mixed forest	128.60	(116.10 – 141.10)	35.8	80.93	(70.61 – 91.25)	43.3
scrub	4.40	(1.81 – 7.00)	1.2	2.00	(0.25 – 3.75)	1.1
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Forest subtype	Ownership / Area					
	private (other)			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
pure forest	12.03	(7.78 – 16.28)	15.2	331.66	(316.31 – 347.02)	53.0
mixed forest	46.10	(38.02 – 54.18)	58.1	255.63	(240.47 – 270.79)	40.9
scrub	21.22	(15.62 – 26.82)	26.7	27.63	(21.28 – 33.98)	4.4
temporarily unstocked	–	–	–	10.82	(6.77 – 14.88)	1.7
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



5.3 ROTATION TYPE

Definition

Rotation type

Rotation type describes the land type on which the forest has been established.

1. **Afforestation**: Artificial establishment of forest plantations on land that, until then, was not classified as forest.
2. **Reforestation**: Establishment of a forest on temporarily unstocked lands that are considered forest. Generally identified by the presence of stumps and deadwood on the site.
3. **Semi-natural**: Forest land where greater than 80% of the trees regenerated naturally. Native and non-native tree species are included. It generally indicates natural succession type forests.

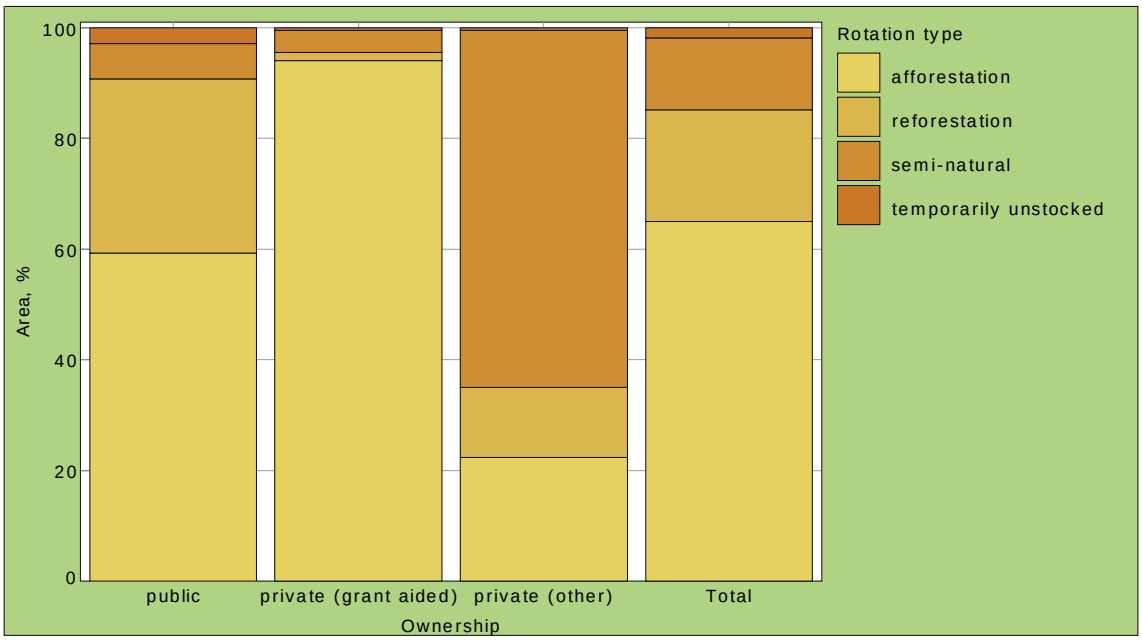
5.3.1 Total stocked forest area by ownership and rotation type

Methodology

The total stocked forest area is classified by ownership and rotation type.

Rotation type	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
afforestation	212.96	(198.59 – 227.32)	59.2	175.99	(162.31 – 189.66)	94.2
reforestation	113.43	(102.00 – 124.85)	31.6	2.66	(0.70 – 4.61)	1.4
semi-natural	23.01	(17.55 – 28.46)	6.4	7.53	(4.28 – 10.79)	4.0
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Rotation type	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
afforestation	17.78	(12.75 – 22.80)	22.4	406.72	(392.49 – 420.95)	65.0
reforestation	9.97	(6.25 – 13.70)	12.6	126.06	(114.18 – 137.94)	20.1
semi-natural	51.21	(42.84 – 59.57)	64.5	81.75	(71.69 – 91.81)	13.1
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



5.4 GROWTH STAGE

Definition
Growth stage Growth stage describes the development of the storey. 1. **Post establishment**: A recently established storey up to and including 4 years of age. 2. **Pre-thicket**: This covers storeys where the green branches are not yet touching, where the trees are older than 4 years and have a mean dbh of 30 mm. 3. **Thicket**: This covers storeys where the canopy has closed but the lower branches are mainly green. Mean dbh ranges from 31 to 70 mm. 4. **Small pole**: This covers storeys where the canopy has fully closed and the lower branches are dead. It may be unthinned and the mean dbh ranges from 71 to 140 mm. 5. **Pole**: This covers storeys where the mean dbh ranges from 141 to 200 mm. 6. **Incoming high forest**: These storeys may be thinned or unthinned and the mean dbh ranges from 201 to 300 mm. 7. **High forest**: These storeys may be thinned or unthinned and the mean dbh ranges from 301 to 400 mm. 8. **Overmature**: This includes storeys that have reached very large dimensions with trees in excess of 400 mm mean dbh. 9. **Uneven aged**: Multi-storied storeys are classified as uneven aged.

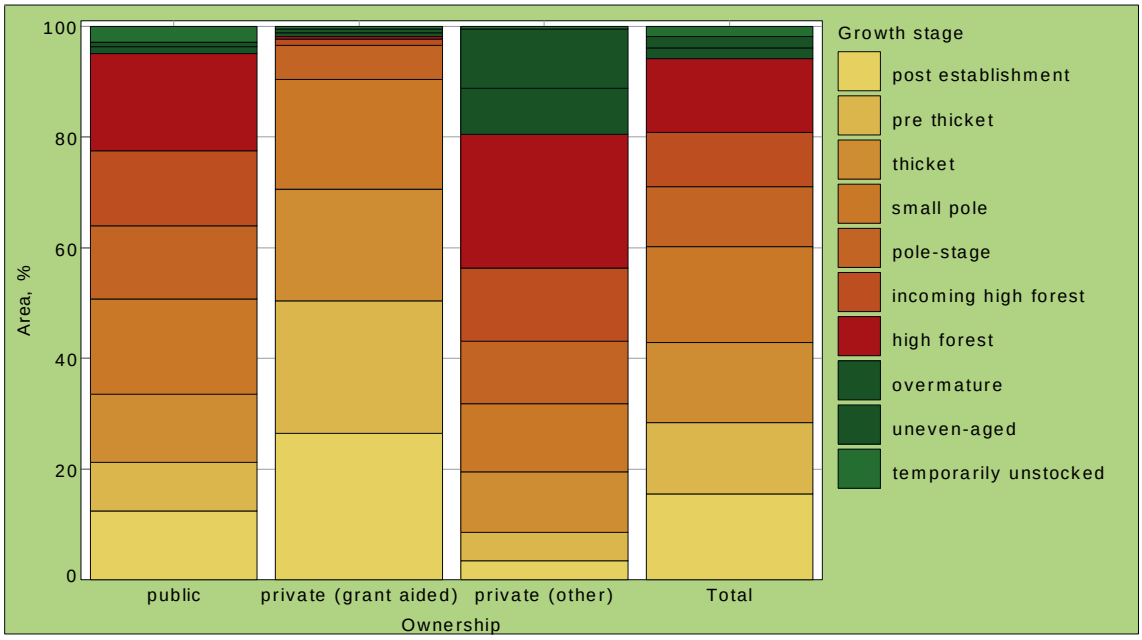
5.4.1 Total stocked forest area by ownership and growth stage

Methodology

The total stocked forest area is classified by ownership and growth stage.

Growth stage	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
post establishment	44.82	(36.98 – 52.66)	12.5	49.39	(41.12 – 57.66)	26.4
pre thicket	31.62	(25.07 – 38.17)	8.8	44.79	(36.97 – 52.62)	24.0
thicket	44.18	(36.46 – 51.90)	12.3	37.89	(30.57 – 45.22)	20.3
small pole	61.74	(52.62 – 70.86)	17.2	37.09	(29.85 – 44.32)	19.8
pole-stage	47.53	(39.65 – 55.42)	13.2	11.54	(7.40 – 15.68)	6.2
incoming high forest	48.83	(40.71 – 56.94)	13.6	2.05	(0.36 – 3.74)	1.1
high forest	63.28	(54.21 – 72.34)	17.5	0.91	(0.00 – 1.88)	0.5
overmature	4.19	(1.94 – 6.43)	1.2	1.32	(0.10 – 2.53)	0.7
uneven-aged	3.21	(0.99 – 5.43)	0.9	1.20	(0.00 – 2.57)	0.6
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Growth stage	Ownership / Area					
	private (other)			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
post establishment	2.71	(1.11 – 4.30)	3.4	96.92	(85.90 – 107.93)	15.5
pre thicket	4.11	(2.08 – 6.14)	5.2	80.53	(70.56 – 90.49)	12.9
thicket	8.68	(5.30 – 12.05)	10.9	90.75	(80.17 – 101.32)	14.5
small pole	9.72	(6.09 – 13.34)	12.2	108.54	(97.09 – 119.99)	17.3
pole-stage	8.97	(5.42 – 12.51)	11.3	68.04	(58.79 – 77.29)	10.9
incoming high forest	10.51	(6.71 – 14.30)	13.2	61.38	(52.45 – 70.31)	9.8
high forest	19.21	(14.10 – 24.32)	24.3	83.39	(73.37 – 93.42)	13.3
overmature	6.64	(3.81 – 9.47)	8.4	12.14	(8.35 – 15.93)	1.9
uneven-aged	8.42	(4.85 – 12.00)	10.6	12.84	(8.47 – 17.21)	2.1
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



5.5 THIN STATUS

Definition
Thin status Describes the progression of thinning operations. 1. **Juvenile forest**: This is a storey that has not reached the development stage for first thinning. 2. **Respacing/pre-commercial thinning**: The spacing of the storey has been altered prior to the first thin stage. Mainly associated with naturally regenerated stands. 3. **First thinning**: The storey has received a first thinning, generally identified by the presence of extraction racks, and stumps arising from selective thinning may be present. All stumps have the same state of decomposition. 4. **Second thinning**: The storey has received a second thinning, generally identified by the presence of extraction racks and stumps arising from selective thinning. The stumps are grouped into two different stages of decomposition. 5. **Subsequent thinning**: Any thinning post second thinning. Generally the storey is well opened up and the decomposition of the stumps is grouped into a number of different stages. 6. **No thinning**: No thinning has taken place in the storey.

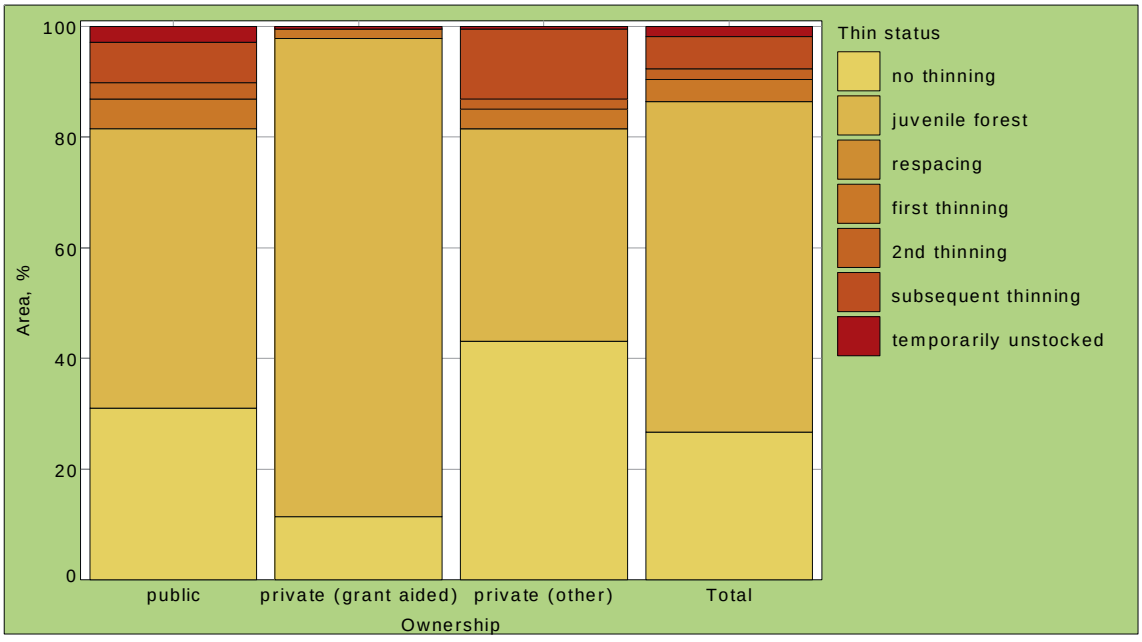
5.5.1 Total stocked forest area by ownership and thin status

Methodology

The total stocked forest area is classified by ownership and thin status.

Thin status	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
no thinning	111.38	(99.73 – 123.02)	31.0	21.38	(15.89 – 26.86)	11.4
juvenile forest	181.51	(167.75 – 195.26)	50.5	161.59	(148.29 – 174.88)	86.5
respacing	–	–	–	–	–	–
first thinning	19.53	(14.21 – 24.85)	5.4	3.19	(0.98 – 5.39)	1.7
2nd thinning	10.47	(6.61 – 14.33)	2.9	–	–	–
subsequent thinning	26.51	(20.58 – 32.43)	7.4	0.03	(0.00 – 0.08)	0.02
temporarily unstocked	10.02	(6.12 – 13.92)	2.8	0.81	(0.00 – 1.92)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Thin status	Ownership / Area					
	private (other)			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
no thinning	34.18	(27.37 – 40.99)	43.0	166.93	(153.53 – 180.34)	26.7
juvenile forest	30.55	(24.23 – 36.87)	38.5	373.65	(358.86 – 388.43)	59.7
respacing	0.01	(0.00 – 0.02)	0.01	0.01	(0.00 – 0.02)	0.001
first thinning	2.75	(0.76 – 4.74)	3.5	25.47	(19.43 – 31.51)	4.1
2nd thinning	1.42	(0.02 – 2.83)	1.8	11.90	(7.80 – 15.99)	1.9
subsequent thinning	10.04	(6.40 – 13.68)	12.7	36.57	(29.77 – 43.37)	5.8
temporarily unstocked	0.40	(0.00 – 1.20)	0.5	11.22	(7.09 – 15.35)	1.8
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



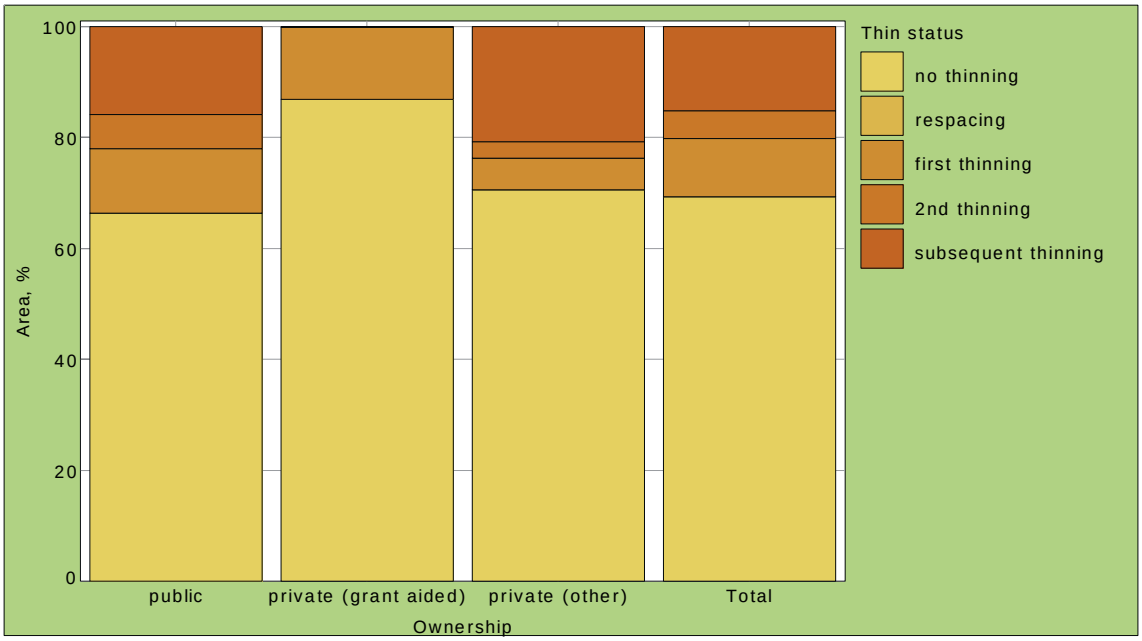
5.5.2 Total stocked forest area (excl. juvenile forest) by ownership and thin status

Methodology

The total stocked forest area, excluding juvenile and temporary unstocked areas, is classified by ownership and thin status.

Thin status	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
no thinning	111.38	(99.73 – 123.02)	66.4	21.38	(15.89 – 26.86)	86.9
respacing	–	–	–	–	–	–
first thinning	19.53	(14.21 – 24.85)	11.6	3.19	(0.98 – 5.39)	13.0
2nd thinning	10.47	(6.61 – 14.33)	6.2	–	–	–
subsequent thinning	26.51	(20.58 – 32.43)	15.8	0.03	(0.00 – 0.08)	0.1
Total	167.88	(154.34 – 181.43)	100.0	24.59	(18.71 – 30.48)	100.0

Thin status	Ownership / Area					
	private (other)			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
no thinning	34.18	(27.37 – 40.99)	70.7	166.93	(153.53 – 180.34)	69.3
respacing	0.01	(0.00 – 0.02)	0.02	0.01	(0.00 – 0.02)	0.003
first thinning	2.75	(0.76 – 4.74)	5.7	25.47	(19.43 – 31.51)	10.6
2nd thinning	1.42	(0.02 – 2.83)	2.9	11.90	(7.80 – 15.99)	4.9
subsequent thinning	10.04	(6.40 – 13.68)	20.7	36.57	(29.77 – 43.37)	15.2
Total	48.40	(40.40 – 56.41)	100.0	240.88	(226.20 – 255.57)	100.0



5.6 TIMBER QUALITY

Methodology

Only those trees with a dbh greater than 7 cm are included in the following three sub-sections. The total stocked forest area is therefore reduced.

The representative area of the trees is used in this analyses.

For example, each plot represents 400 ha nationally. However, as only a portion of trees in a stand are usually pruned, the whole 400 ha is not reported as been pruned. Tree representative area is used to apportion the area of the stand that has only pruned trees.

5.6.1 Total stocked forest area by species group and pruning status (dbh ≥7 cm)

Definition

Pruning

Pruning is the artificial removal of branches from the first six metres of a trees stem.

1. **Low pruned (up to 3 m)**: Branches have been artificially removed up to a height of 3 m.
2. **High pruned (more than 3 m)**: Branches have been artificially removed up to a height greater than 3 m.
3. **No pruning**: No pruning has been carried out.
4. **Undeterminable**: Difficult to determine if pruning has been carried out.
5. **Brashed**: Tree has been brashed to provide access. Normally occurs on one side of the tree in lines through the forest.

Methodology

The total stocked forest area is classified by species group and pruning status. All trees with a minimum dbh of 7 cm were included in the analysis

Pruning	Species group / Area									
	Sitka spruce				Norway spruce					
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%		
low pruned (up to 3 m)	0.69	(0.00	– 1.59)	0.4	0.44	(0.00	– 1.09)	2.8		
high pruned (more than 3 m)	0.28	(0.04	– 0.52)	0.1	0.53	(0.00	– 1.18)	3.4		
no pruning	193.00	(180.52	– 205.47)	98.9	14.77	(10.97	– 18.58)	93.6		
undeterminable	–	–	–	–	–	–	–	–		
brashed	1.21	(0.57	– 1.84)	0.6	0.03	(0.00	– 0.08)	0.2		
Total	195.18	(182.62	– 207.73)	100.0	15.77	(11.80	– 19.75)	100.0		

Pruning	Species group / Area									
	Scots pine				other pine spp.					
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%		
low pruned (up to 3 m)	–	–	–	–	0.09	(0.00	– 0.26)	0.2		
high pruned (more than 3 m)	0.72	(0.00	– 1.66)	14.5	–	–	–	–		
no pruning	4.25	(2.55	– 5.95)	85.1	45.74	(39.01	– 52.48)	99.3		
undeterminable	–	–	–	–	–	–	–	–		
brashed	0.02	(0.00	– 0.06)	0.4	0.23	(0.00	– 0.46)	0.5		
Total	5.00	(3.08	– 6.91)	100.0	46.06	(39.29	– 52.84)	100.0		

Pruning	Species group / Area									
	Douglas fir				larch spp.					
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%		
low pruned (up to 3 m)	0.06	(0.00	– 0.18)	0.7	0.10	(0.00	– 0.29)	1.0		
high pruned (more than 3 m)	0.21	(0.00	– 0.51)	2.5	0.03	(0.00	– 0.08)	0.3		
no pruning	8.10	(5.27	– 10.94)	96.8	9.60	(6.54	– 12.66)	97.6		
undeterminable	–	–	–	–	–	–	–	–		
brashed	–	–	–	–	0.11	(0.00	– 0.27)	1.1		
Total	8.37	(5.47	– 11.28)	100.0	9.84	(6.75	– 12.93)	100.0		

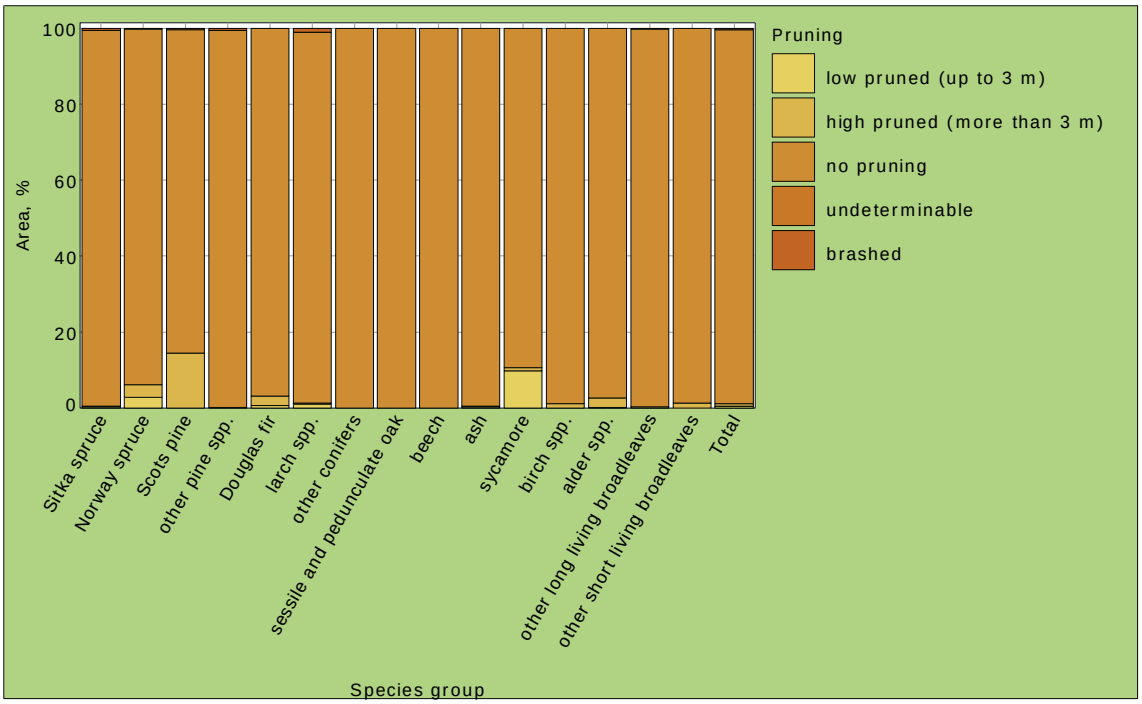
Pruning	Species group / Area							
	other conifers				sessile and pedunculate oak			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
low pruned (up to 3 m)	–	–	–	–	–	–	–	–
high pruned (more than 3 m)	–	–	–	–	–	–	–	–
no pruning	4.10	(2.20	– 6.00)	100.0	10.99	(8.16	– 13.82)	100.0
undeterminable	–	–	–	–	–	–	–	–
brashed	–	–	–	–	–	–	–	–
Total	4.10	(2.20	– 6.00)	100.0	10.99	(8.16	– 13.82)	100.0

Pruning	Species group / Area							
	beech				ash			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
low pruned (up to 3 m)	–	–	–	–	0.03	(0.00	– 0.10)	0.3
high pruned (more than 3 m)	–	–	–	–	0.02	(0.00	– 0.05)	0.2
no pruning	7.77	(5.42	– 10.12)	100.0	10.82	(8.03	– 13.60)	99.5
undeterminable	–	–	–	–	–	–	–	–
brashed	–	–	–	–	–	–	–	–
Total	7.77	(5.42	– 10.12)	100.0	10.87	(8.09	– 13.66)	100.0

Pruning	Species group / Area							
	sycamore				birch spp.			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
low pruned (up to 3 m)	0.43	(0.00	– 1.08)	9.8	–	–	–	–
high pruned (more than 3 m)	0.03	(0.00	– 0.10)	0.7	0.21	(0.00	– 0.65)	1.2
no pruning	3.87	(2.11	– 5.63)	89.5	17.23	(13.57	– 20.88)	98.8
undeterminable	–	–	–	–	–	–	–	–
brashed	–	–	–	–	–	–	–	–
Total	4.33	(2.42	– 6.23)	100.0	17.44	(13.77	– 21.11)	100.0

Pruning	Species group / Area							
	alder spp.				other long living broadleaves			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
low pruned (up to 3 m)	0.01	(0.00	– 0.05)	0.2	0.02	(0.00	– 0.05)	0.3
high pruned (more than 3 m)	0.16	(0.00	– 0.43)	2.5	–	–	–	–
no pruning	6.30	(4.08	– 8.51)	97.3	5.17	(3.45	– 6.89)	99.4
undeterminable	–	–	–	–	0.01	(0.00	– 0.04)	0.3
brashed	–	–	–	–	–	–	–	–
Total	6.47	(4.21	– 8.73)	100.0	5.20	(3.48	– 6.92)	100.0

Pruning	Species group / Area							
	other short living broadleaves				Total			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
low pruned (up to 3 m)	–	–	–	–	1.87	(0.46	– 3.28)	0.5
high pruned (more than 3 m)	0.21	(0.00	– 0.62)	1.3	2.41	(1.08	– 3.75)	0.7
no pruning	15.53	(12.23	– 18.83)	98.7	357.23	(344.32	– 370.14)	98.4
undeterminable	–	–	–	–	0.01	(0.00	– 0.04)	0.004
brashed	–	–	–	–	1.60	(0.87	– 2.32)	0.4
Total	15.74	(12.42	– 19.06)	100.0	363.12	(350.17	– 376.07)	100.0


Area, %
100
80
60
40
20
0
Pruning
low pruned (up to 3 m)
high pruned (more than 3 m)
no pruning
undeterminable
brashed
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Douglas fir
larch spp.
other conifers
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves
Total
Species group

5.6.2 Total stocked forest area by species group and branchiness (dbh ≥7 cm)

Definition

Branchiness

Branchiness describes the size and number of branches present on a tree.

1. **Light**: Small diameter branches or medium sized branches which occur infrequently. This may occur on trees that are growing at high densities or in stands where an understorey is present.
2. **Medium**: Branches are present in a quantity and size that is deemed not to be either light or heavy.
3. **Heavy**: Large diameter branches which occur frequently. Common where a tree has had an unrestricted growing space e.g. an edge tree.

Methodology

The total stocked forest area is classified by species group and branchiness. All trees with a minimum dbh of 7 cm were included in the analysis.

Branchiness	Species group / Area					
	Sitka spruce			Norway spruce		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
light	8.76	(5.89 – 11.63)	4.5	1.86	(0.56 – 3.16)	11.8
medium	163.01	(151.53 – 174.48)	83.5	11.46	(8.32 – 14.60)	72.6
heavy	23.13	(18.96 – 27.30)	11.9	1.92	(0.87 – 2.97)	12.2
high pruned	0.28	(0.04 – 0.52)	0.1	0.53	(0.00 – 1.18)	3.4
undeterminable	–	–	–	–	–	–
Total	195.18	(182.62 – 207.73)	100.0	15.77	(11.80 – 19.75)	100.0

Branchiness	Species group / Area					
	Scots pine			other pine spp.		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
light	1.23	(0.23 – 2.23)	24.6	2.65	(1.25 – 4.05)	5.8
medium	2.41	(1.23 – 3.59)	48.2	31.43	(26.20 – 36.66)	68.2
heavy	0.63	(0.19 – 1.08)	12.7	11.98	(9.00 – 14.95)	26.0
high pruned	0.72	(0.00 – 1.66)	14.5	–	–	–
undeterminable	–	–	–	–	–	–
Total	5.00	(3.08 – 6.91)	100.0	46.06	(39.29 – 52.84)	100.0

Branchiness	Species group / Area					
	Douglas fir			larch spp.		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
light	0.92	(0.13 – 1.71)	11.0	1.15	(0.00 – 2.32)	11.7
medium	6.43	(4.08 – 8.79)	76.8	8.14	(5.42 – 10.87)	82.8
heavy	0.81	(0.30 – 1.32)	9.7	0.51	(0.16 – 0.86)	5.2
high pruned	0.21	(0.00 – 0.51)	2.5	0.03	(0.00 – 0.08)	0.3
undeterminable	–	–	–	–	–	–
Total	8.37	(5.47 – 11.28)	100.0	9.84	(6.75 – 12.93)	100.0

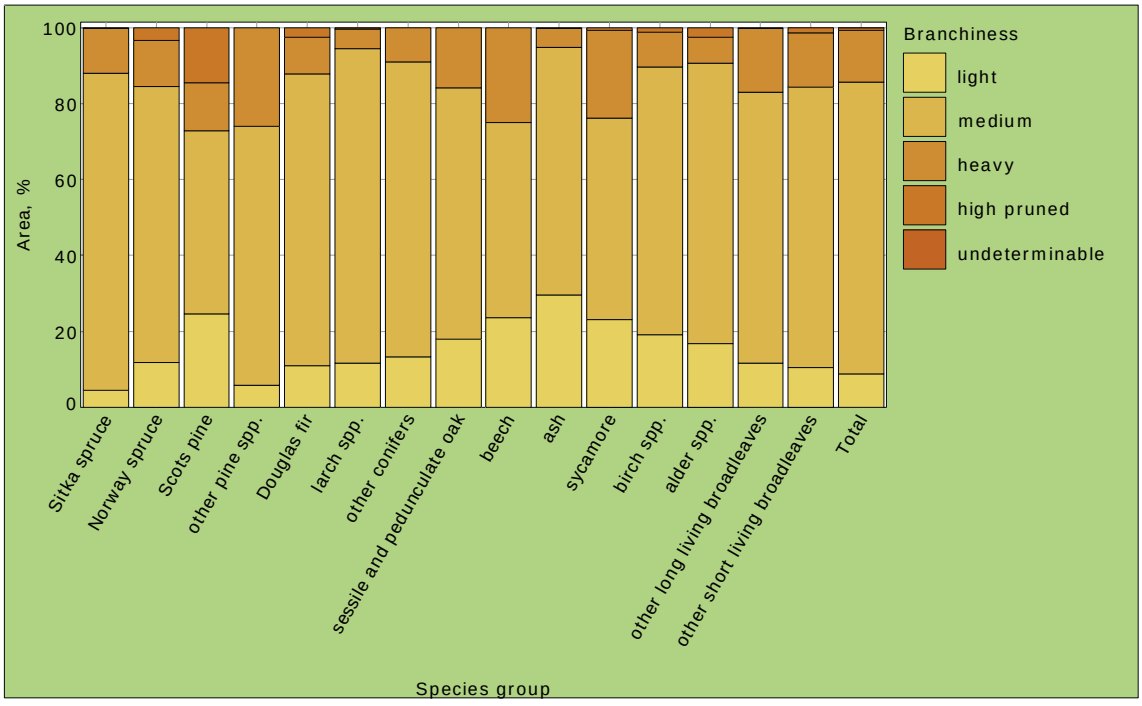
Branchiness	Species group / Area					
	other conifers			sessile and pedunculate oak		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
light	0.55	(0.03 – 1.07)	13.3	1.98	(0.78 – 3.18)	18.0
medium	3.18	(1.56 – 4.81)	77.6	7.27	(5.02 – 9.52)	66.2
heavy	0.37	(0.07 – 0.67)	9.1	1.74	(0.90 – 2.57)	15.8
high pruned	–	–	–	–	–	–
undeterminable	–	–	–	–	–	–
Total	4.10	(2.20 – 6.00)	100.0	10.99	(8.16 – 13.82)	100.0

Branchiness	Species group / Area											
	beech				ash							
	1000 ha		(α=0.05)		%	1000 ha		(α=0.05)		%		
light	1.83	(0.80	–	2.87)	23.6	3.22	(1.75	–	4.70)	29.6		
medium	4.00	(2.36	–	5.63)	51.5	7.09	(4.90	–	9.27)	65.2		
heavy	1.94	(0.86	–	3.01)	24.9	0.54	(0.05	–	1.04)	5.0		
high pruned	–	–	–	–	–	0.02	(0.00	–	0.05)	0.2		
undeterminable	–	–	–	–	–	–	–	–	–	–		
Total	7.77	(5.42	–	10.12)	100.0	10.87	(8.09	–	13.66)	100.0		

Branchiness	Species group / Area											
	sycamore					birch spp.						
	1000 ha		(α=0.05)		%	1000 ha		(α=0.05)		%		
light	1.00	(0.15	–	1.85)	23.0	3.35	(1.72	–	4.98)	19.2		
medium	2.30	(1.08	–	3.53)	53.3	12.28	(9.33	–	15.22)	70.4		
heavy	1.00	(0.00	–	2.12)	23.0	1.60	(0.58	–	2.63)	9.2		
high pruned	0.03	(0.00	–	0.10)	0.7	0.21	(0.00	–	0.65)	1.2		
undeterminable	–	–	–	–	–	–	–	–	–	–		
Total	4.33	(2.42	–	6.23)	100.0	17.44	(13.77	–	21.11)	100.0		

Branchiness	Species group / Area											
	alder spp.					other long living broadleaves						
	1000 ha		(α=0.05)		%	1000 ha		(α=0.05)		%		
light	1.09	(0.19	–	1.99)	16.9	0.61	(0.09	–	1.12)	11.6		
medium	4.78	(2.85	–	6.71)	73.8	3.71	(2.37	–	5.04)	71.3		
heavy	0.44	(0.06	–	0.82)	6.8	0.87	(0.32	–	1.42)	16.8		
high pruned	0.16	(0.00	–	0.43)	2.5	–	–	–	–	–		
undeterminable	–	–	–	–	–	0.01	(0.00	–	0.04)	0.3		
Total	6.47	(4.21	–	8.73)	100.0	5.20	(3.48	–	6.92)	100.0		

Branchiness	Species group / Area											
	other short living broadleaves					Total						
	1000 ha		(α=0.05)		%	1000 ha		(α=0.05)		%		
light	1.66	(0.81	–	2.50)	10.5	31.85	(26.48	–	37.22)	8.8		
medium	11.61	(8.92	–	14.30)	73.8	279.10	(266.73	–	291.47)	76.8		
heavy	2.26	(0.87	–	3.65)	14.4	49.74	(43.91	–	55.58)	13.7		
high pruned	0.21	(0.00	–	0.62)	1.3	2.41	(1.08	–	3.75)	0.7		
undeterminable	–	–	–	–	–	0.01	(0.00	–	0.04)	0.004		
Total	15.74	(12.42	–	19.06)	100.0	363.12	(350.17	–	376.07)	100.0		



5.6.3 Total stocked forest area by species group and presence of shaping

Definition

Shaping

Shaping is the removal of side branches and competing tree leaders in order to improve the quality of broadleaf tree form.

Methodology

The total stocked forest area (dbh ≥7 cm) is classified by species group and shaping. Only broadleaf species groups with trees having a minimum dbh of 7 cm were included in the analysis.

Shaping	Species group / Area					
	sessile and pedunculate oak			beech		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	0.02	(0.00 – 0.05)	0.1	–	–	–
absent	10.97	(8.14 – 13.80)	99.9	7.77	(5.42 – 10.12)	100.0
Total	10.99	(8.16 – 13.82)	100.0	7.77	(5.42 – 10.12)	100.0

Shaping	Species group / Area					
	ash			sycamore		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	1.22	(0.07 – 2.37)	11.2	0.43	(0.00 – 1.08)	9.8
absent	9.65	(7.10 – 12.20)	88.8	3.90	(2.14 – 5.67)	90.2
Total	10.87	(8.09 – 13.66)	100.0	4.33	(2.42 – 6.23)	100.0

Shaping	Species group / Area					
	birch spp.			alder spp.		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	0.04	(0.00 – 0.11)	0.2	0.03	(0.00 – 0.10)	0.5
absent	17.40	(13.74 – 21.07)	99.8	6.44	(4.18 – 8.69)	99.5
Total	17.44	(13.77 – 21.11)	100.0	6.47	(4.21 – 8.73)	100.0

Shaping	Species group / Area					
	other long living broadleaves			other short living broadleaves		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	0.04	(0.00 – 0.12)	0.8	0.02	(0.00 – 0.06)	0.1
absent	5.16	(3.45 – 6.87)	99.2	15.72	(12.40 – 19.04)	99.9
Total	5.20	(3.48 – 6.92)	100.0	15.74	(12.42 – 19.06)	100.0

Shaping	Species group / Area		
	Total		
	1000 ha	(α=0.05)	%
present	1.79	(0.45 – 3.14)	2.3
absent	77.01	(68.63 – 85.39)	97.7
Total	78.80	(70.31 – 87.29)	100.0


Area, %
100
80
60
40
20
0
Shaping
present
absent
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves
Total
Species group

CHAPTER 6
GROWING STOCK

Total growing stock is 70 million m^3, with 74% occurring in the public forest estate. Conifer/broadleaf growing stock distributions are quite similar for public and private (grant aided) forests, with approximately 90% classified as conifer growing stock in each ownership category. In private (other) forests, up to 84% of the total growing stock is from broadleaved species. Overall, broadleaves account for 16% of the total growing stock. In all ownership categories, most broadleaf growing stock is classified as native species.

As expected, Sitka spruce accounts for a high percentage of the total growing stock (61%). The pattern of the growing stock distribution by county broadly follows the statistics for the area of forest by county, with the highest percentage of broadleaf growing stock found in the midland counties.

The quality of the timber resource, from an industrial processing perspective, is assessed using potential log length. In general terms, only 5% of the total conifer growing stock is classified as consisting of trees from which no straight logs can be cut. This rises to 60% of the growing stock for the broadleaf tree species.

The mean growing stock per hectare for the national forest estate is 112 m^3 per hectare. Owing to the young age structure of the private (grant aided) forest estate, the growing stock per hectare is only 41 m^3.

6.1 OWNERSHIP

6.1.1 Total growing stock by ownership

Definition

Growing stock

Volume over bark of all living trees with a dbh greater than 7 cm.

Conifer

The British Forestry Commission (BFC) single tree volume equations (Matthews and Mackie, 2006[2]) were used to estimate standing volume for each tree on the plot with a minimum dbh of 7 cm. The growing stock of the stem is measured from ground to 7 cm top diameter overbark.

Broadleaf

The BFC single tree volume equations are used to estimate standing merchantable volume for each tree with a minimum dbh of 7 cm. The growing stock is measured from ground to timber height. Timber height concerns merchantable material only, and is the distance from the ground to the highest point on the main stem where the diameter is not less than 7 cm top diameter overbark (Matthews and Mackie, 2006). The spring of the crown is frequently the timber point, but the timber height may extend into the crown if there are merchantable lengths present.

Methodology

The total growing stock is classified by ownership.

Ownership	Growing stock		
	1000 m^3	($\alpha = 0.05$)	%
public	51,546.1	(48,399.4 – 54,692.7)	73.5
private (grant aided)	7,588.1	(6,767.1 – 8,409.1)	10.8
private (other)	10,975.2	(9,282.7 – 12,667.6)	15.7
Total	70,109.4	(66,398.6 – 73,820.2)	100.0

[2] Matthews, R. and Makie, E. 2006. *Forest Mensuration: a handbook for practitioners*. Forestry Commission, Edinburgh.

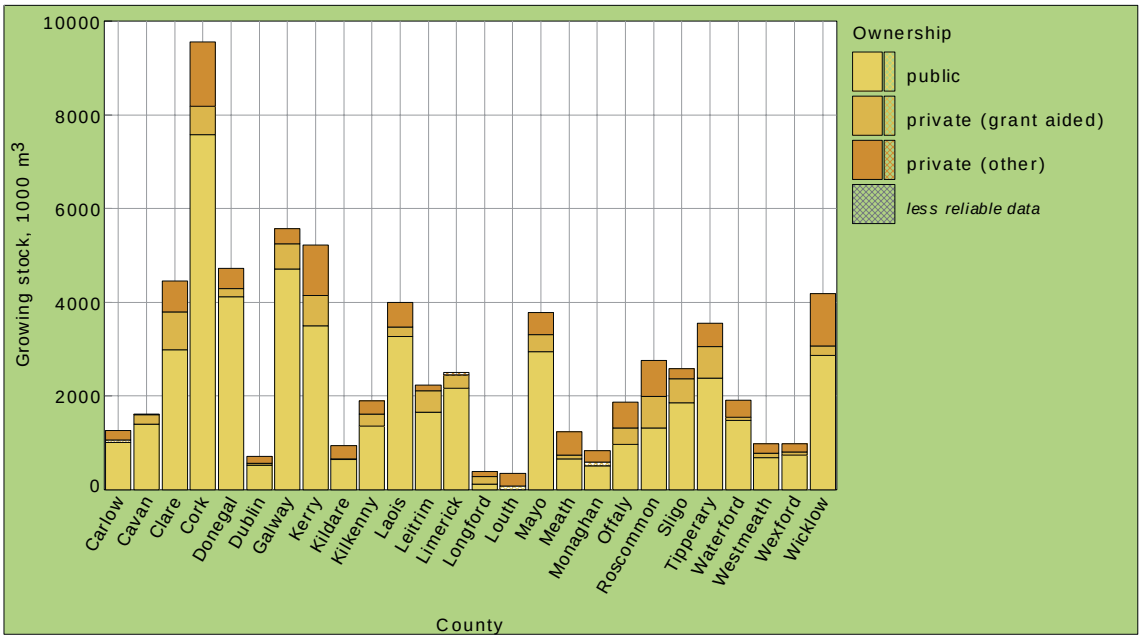
6.1.2 Total growing stock by ownership and county

Methodology

The total growing stock is classified by ownership and county.

County	Ownership / Growing stock					
	public			private (grant aided)		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Carlow	1,013.6	(296.2 – 1,731.0)	2.0	47.4	– –	0.6
Cavan	1,400.3	(825.0 – 1,975.7)	2.7	199.7	(0.0 – 628.0)	2.6
Clare	2,985.9	(2,247.3 – 3,724.4)	5.8	815.9	(530.2 – 1,101.6)	10.7
Cork	7,579.2	(6,368.1 – 8,790.3)	14.8	600.3	(352.7 – 847.9)	7.9
Donegal	4,125.0	(3,311.8 – 4,938.2)	8.0	170.3	(0.0 – 393.6)	2.2
Dublin	523.9	(0.0 – 1,093.1)	1.0	35.0	(0.0 – 182.3)	0.5
Galway	4,707.9	(3,847.0 – 5,568.7)	9.1	542.1	(367.3 – 717.0)	7.1
Kerry	3,503.7	(2,634.4 – 4,373.0)	6.8	647.1	(434.7 – 859.5)	8.5
Kildare	641.6	(361.3 – 921.8)	1.2	15.7	(0.0 – 77.6)	0.2
Kilkenny	1,353.6	(924.1 – 1,783.1)	2.6	257.2	(0.0 – 609.8)	3.4
Laois	3,264.3	(2,429.2 – 4,099.4)	6.3	209.3	(0.0 – 668.1)	2.8
Leitrim	1,656.2	(993.9 – 2,318.5)	3.2	460.1	(219.9 – 700.4)	6.1
Limerick	2,173.3	(1,382.1 – 2,964.5)	4.2	270.5	(114.7 – 426.2)	3.6
Longford	125.4	(0.0 – 286.9)	0.2	159.2	(13.2 – 305.3)	2.1
Louth	81.6	– –	0.2	–	– –	–
Mayo	2,947.3	(2,368.4 – 3,526.2)	5.7	361.9	(202.4 – 521.3)	4.8
Meath	654.1	(238.8 – 1,069.3)	1.3	85.0	(35.1 – 135.0)	1.1
Monaghan	510.8	(0.0 – 1,890.3)	1.0	76.0	– –	1.0
Offaly	962.7	(551.2 – 1,374.3)	1.9	357.9	(0.0 – 794.1)	4.7
Roscommon	1,323.8	(632.0 – 2,015.5)	2.6	673.6	(442.6 – 904.6)	8.9
Sligo	1,858.0	(1,128.2 – 2,587.8)	3.6	504.7	(307.6 – 701.7)	6.7
Tipperary	2,381.0	(1,826.2 – 2,935.8)	4.6	673.1	(191.4 – 1,154.7)	8.9
Waterford	1,482.4	(900.3 – 2,064.5)	2.9	61.9	(0.0 – 142.8)	0.8
Westmeath	686.0	(351.3 – 1,020.7)	1.3	95.2	(8.4 – 182.1)	1.3
Wexford	740.8	(404.5 – 1,077.2)	1.4	70.9	(0.0 – 156.2)	0.9
Wicklow	2,863.8	(1,830.1 – 3,897.5)	5.6	198.2	(123.6 – 272.7)	2.6
Total	51,546.1	(48,399.4 – 54,692.7)	100.0	7,588.1	(6,767.1 – 8,409.1)	100.0

County	Ownership / Growing stock					
	private (other)			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Carlow	200.4	(0.0 – 697.3)	1.8	1,261.4	(555.4 – 1,967.4)	1.8
Cavan	13.0	– –	0.1	1,613.0	(990.6 – 2,235.4)	2.3
Clare	647.0	(266.8 – 1,027.2)	5.9	4,448.8	(3,563.3 – 5,334.3)	6.3
Cork	1,382.7	(914.8 – 1,850.6)	12.6	9,562.2	(8,216.4 – 10,908.0)	13.5
Donegal	426.6	(205.7 – 647.4)	3.9	4,721.8	(3,867.1 – 5,576.6)	6.7
Dublin	154.7	(97.3 – 212.1)	1.4	713.5	(238.7 – 1,188.3)	1.0
Galway	315.8	(99.7 – 532.0)	2.9	5,565.8	(4,664.5 – 6,467.2)	7.9
Kerry	1,075.0	(0.0 – 2,302.3)	9.8	5,225.8	(3,836.5 – 6,615.1)	7.5
Kildare	289.5	(0.0 – 626.4)	2.6	946.8	(591.1 – 1,302.5)	1.4
Kilkenny	289.1	(0.0 – 580.7)	2.6	1,899.8	(1,375.2 – 2,424.4)	2.7
Laois	517.4	(0.0 – 1,077.2)	4.7	3,991.0	(3,062.4 – 4,919.6)	5.7
Leitrim	117.1	(47.4 – 186.8)	1.1	2,233.5	(1,515.1 – 2,951.9)	3.2
Limerick	63.9	– –	0.6	2,507.7	(1,699.6 – 3,315.8)	3.6
Longford	110.7	(0.0 – 344.6)	1.0	395.3	(193.3 – 597.2)	0.6
Louth	265.4	(0.0 – 1,915.7)	2.4	347.0	(0.0 – 932.8)	0.5
Mayo	472.6	(172.8 – 772.4)	4.3	3,781.8	(3,125.1 – 4,438.4)	5.4
Meath	500.3	(170.9 – 829.6)	4.6	1,239.4	(801.5 – 1,677.3)	1.8
Monaghan	242.3	(62.7 – 421.8)	2.2	829.0	(84.9 – 1,573.2)	1.2
Offaly	555.0	(188.8 – 921.1)	5.1	1,875.6	(1,329.3 – 2,422.0)	2.7
Roscommon	755.0	(104.6 – 1,405.4)	6.9	2,752.4	(1,830.8 – 3,674.1)	3.9
Sligo	220.8	(0.0 – 441.7)	2.0	2,583.4	(1,801.8 – 3,365.0)	3.7
Tipperary	495.9	(284.1 – 707.7)	4.5	3,550.0	(2,867.6 – 4,232.4)	5.1
Waterford	370.9	(189.2 – 552.6)	3.4	1,915.3	(1,321.1 – 2,509.5)	2.7
Westmeath	206.0	(0.0 – 619.7)	1.9	987.2	(562.9 – 1,411.6)	1.4
Wexford	170.1	(0.0 – 550.7)	1.5	981.8	(612.2 – 1,351.4)	1.4
Wicklow	1,118.1	(552.1 – 1,684.1)	10.2	4,180.1	(3,030.6 – 5,329.6)	6.0
Total	10,975.2	(9,282.7 – 12,667.6)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0



6.2 SPECIES

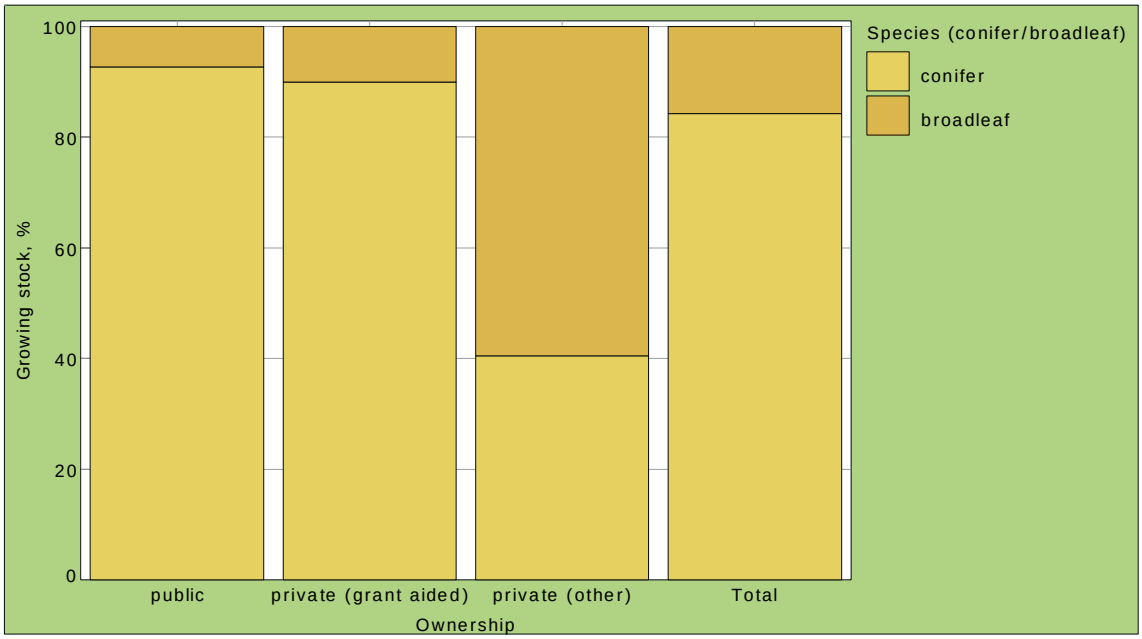
6.2.1 Total growing stock by ownership and species type (broadleaf/conifer)

Methodology

The total growing stock is classified by ownership and species type (broadleaf/conifer).

Species (conifer/broadleaf)	Ownership / Growing stock					
	public			private (grant aided)		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
conifer	47,791.0	(44,727.2 – 50,854.9)	92.7	6,824.7	(6,150.0 – 7,499.4)	89.9
broadleaf	3,755.0	(3,224.8 – 4,285.2)	7.3	763.4	(366.2 – 1,160.7)	10.1
Total	51,546.1	(48,399.4 – 54,692.7)	100.0	7,588.1	(6,767.1 – 8,409.1)	100.0

Species (conifer/broadleaf)	Ownership / Growing stock					
	private (other)			Total		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
conifer	4,448.9	(3,460.0 – 5,437.7)	40.5	59,064.6	(55,597.4 – 62,531.8)	84.2
broadleaf	6,526.3	(5,725.1 – 7,327.5)	59.5	11,044.8	(9,991.5 – 12,098.1)	15.8
Total	10,975.2	(9,282.7 – 12,667.6)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0



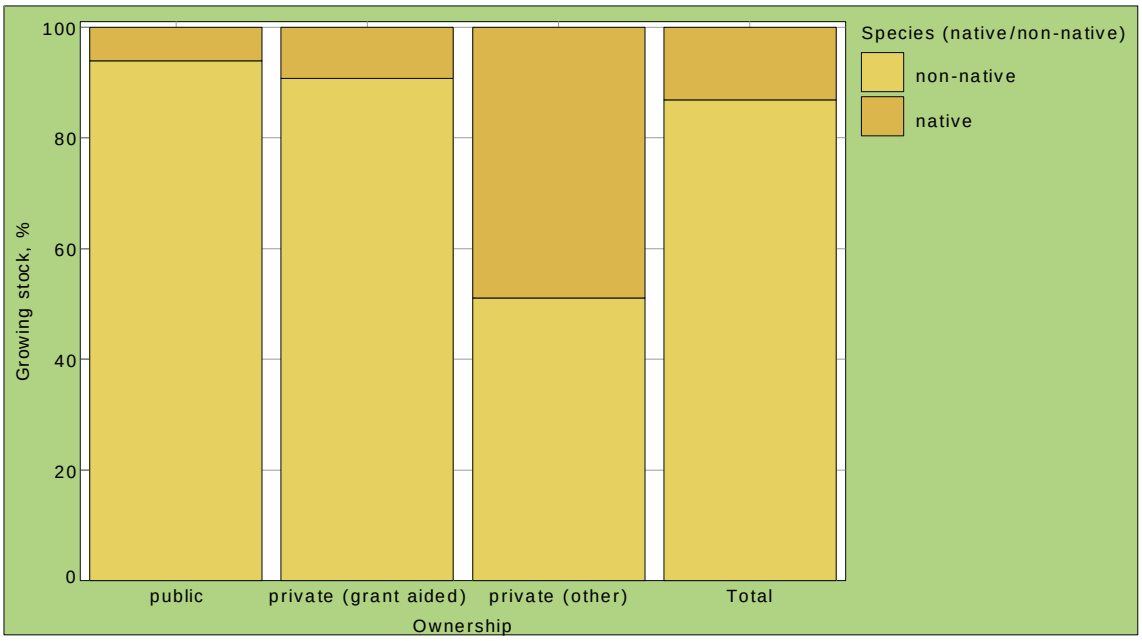
6.2.2 Total growing stock by ownership and species type (native/non-native)

Methodology

The total growing stock is classified by ownership and species type (native/non-native) .

Species (native/non-native)	Ownership / Growing stock					
	public			private (grant aided)		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
non-native	48,414.2	(45,336.4 – 51,491.9)	93.9	6,884.2	(6,194.9 – 7,573.5)	90.7
native	3,131.9	(2,677.7 – 3,586.2)	6.1	703.9	(444.6 – 963.2)	9.3
Total	51,546.1	(48,399.4 – 54,692.7)	100.0	7,588.1	(6,767.1 – 8,409.1)	100.0

Species (native/non-native)	Ownership / Growing stock					
	private (other)			Total		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
non-native	5,612.6	(4,037.2 – 7,187.9)	51.1	60,910.9	(57,412.5 – 64,409.4)	86.9
native	5,362.6	(4,693.0 – 6,032.2)	48.9	9,198.5	(8,355.4 – 10,041.5)	13.1
Total	10,975.2	(9,282.7 – 12,667.6)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0

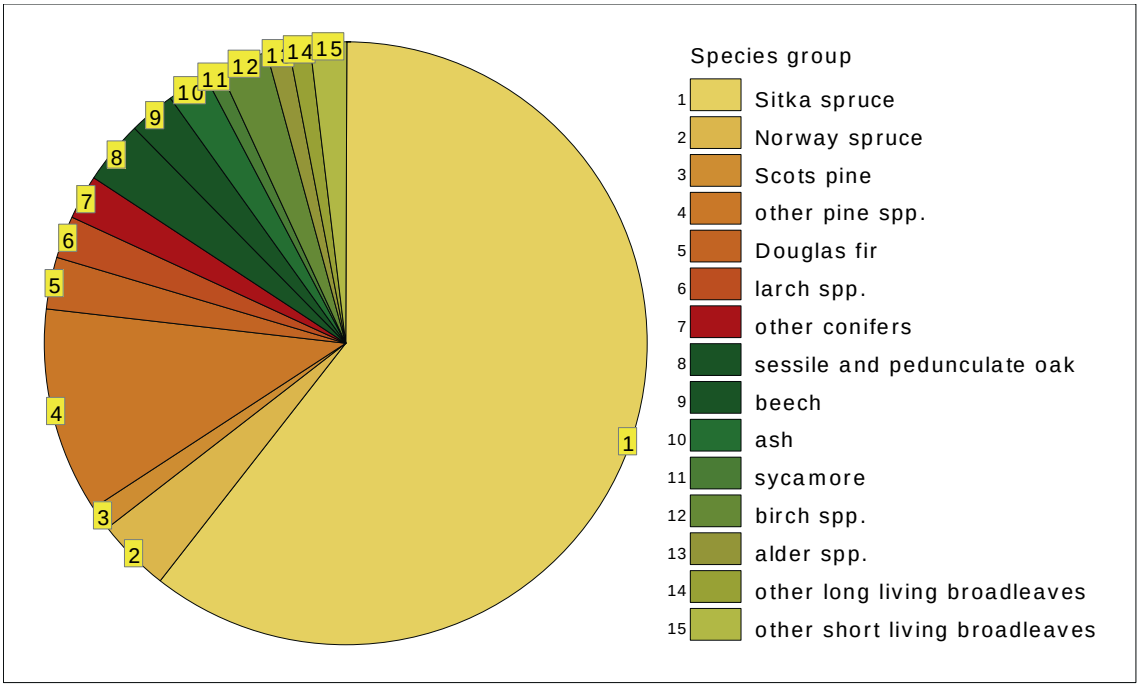


6.2.3 Total growing stock by species groups

Methodology

The total growing stock is classified by species group.

Species group	Growing stock		
	1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	42,512.6	(39,562.8 – 45,462.5)	60.6
Norway spruce	2,770.2	(2,179.5 – 3,361.0)	4.0
Scots pine	916.3	(591.2 – 1,241.4)	1.3
other pine spp.	7,703.9	(6,449.7 – 8,958.1)	11.0
Douglas fir	1,924.2	(1,566.1 – 2,282.3)	2.7
larch spp.	1,588.0	(877.8 – 2,298.2)	2.3
other conifers	1,649.4	(203.5 – 3,095.3)	2.4
sessile and pedunculate oak	2,385.0	(1,779.8 – 2,990.2)	3.4
beech	1,730.5	(1,183.3 – 2,277.8)	2.5
ash	1,502.3	(1,248.3 – 1,756.2)	2.1
sycamore	593.4	(185.4 – 1,001.3)	0.8
birch spp.	1,833.1	(1,563.3 – 2,102.8)	2.6
alder spp.	849.4	(664.5 – 1,034.3)	1.2
other long living broadleaves	778.3	(645.2 – 911.4)	1.1
other short living broadleaves	1,372.8	(1,147.2 – 1,598.5)	2.0
Total	70,109.4	(66,398.6 – 73,820.2)	100.0



6.2.4 Total growing stock by conifer species groups and dbh class

Methodology

The total growing stock for conifer species is classified by species group and dbh class.

Species group	DBH class	Growing stock		
		1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	20 cm +	24,328.4	(21,607.9 – 27,048.9)	
	12-19.9 cm	14,572.8	(13,463.4 – 15,682.3)	
	7-11.9 cm	3,611.4	(3,347.3 – 3,875.5)	
	All	42,512.6	(39,562.8 – 45,462.5)	71.9
Norway spruce	20 cm +	1,870.2	(1,319.4 – 2,421.0)	
	12-19.9 cm	589.1	(396.9 – 781.2)	
	7-11.9 cm	311.0	(217.7 – 404.3)	
	All	2,770.2	(2,179.5 – 3,361.0)	4.7
Scots pine	20 cm +	820.0	(495.4 – 1,144.5)	
	12-19.9 cm	81.0	(61.2 – 100.7)	
	7-11.9 cm	15.4	– –	
	All	916.3	(591.2 – 1,241.4)	1.6
other pine spp.	20 cm +	3,805.3	(2,637.9 – 4,972.6)	
	12-19.9 cm	3,251.5	(2,803.7 – 3,699.4)	
	7-11.9 cm	647.1	(547.9 – 746.2)	
	All	7,703.9	(6,449.7 – 8,958.1)	13.0
Douglas fir	20 cm +	1,250.1	(934.3 – 1,565.9)	
	12-19.9 cm	535.7	(376.4 – 695.0)	
	7-11.9 cm	138.4	(82.4 – 194.4)	
	All	1,924.2	(1,566.1 – 2,282.3)	3.3
larch spp.	20 cm +	988.5	(303.7 – 1,673.4)	
	12-19.9 cm	414.0	(230.4 – 597.7)	
	7-11.9 cm	185.4	(144.2 – 226.6)	
	All	1,588.0	(877.8 – 2,298.2)	2.7
other conifers	20 cm +	1,421.7	(453.0 – 2,390.4)	
	12-19.9 cm	187.0	(0.0 – 1,259.9)	
	7-11.9 cm	40.7	(6.2 – 75.2)	
	All	1,649.4	(203.5 – 3,095.3)	2.8
Total	20 cm +	34,484.1	(31,263.7 – 37,704.5)	
	12-19.9 cm	19,631.2	(18,384.2 – 20,878.2)	
	7-11.9 cm	4,949.3	(4,640.3 – 5,258.4)	
	All	59,064.6	(55,597.4 – 62,531.8)	100.0

6.2.5 Total growing stock by broadleaf species groups and dbh class

Methodology

The total growing stock for broadleaf species is classified by species group and dbh class.

Species group	DBH class	Growing stock		
		1000 m^3	(α=0.05)	%
sessile and pedunculate oak	20 cm +	2,245.9	(1,641.6 – 2,850.2)	
	12-19.9 cm	86.9	(67.2 – 106.5)	
	7-11.9 cm	52.2	(25.5 – 78.9)	
	All	2,385.0	(1,779.8 – 2,990.2)	21.6
beech	20 cm +	1,555.4	(1,010.2 – 2,100.5)	
	12-19.9 cm	155.4	(119.5 – 191.2)	
	7-11.9 cm	19.8	(0.0 – 51.8)	
	All	1,730.5	(1,183.3 – 2,277.8)	15.7
ash	20 cm +	909.9	(682.8 – 1,137.0)	
	12-19.9 cm	413.6	(317.3 – 509.8)	
	7-11.9 cm	178.8	(118.5 – 239.1)	
	All	1,502.3	(1,248.3 – 1,756.2)	13.6
sycamore	20 cm +	503.8	(192.3 – 815.3)	
	12-19.9 cm	30.7	– –	
	7-11.9 cm	58.9	(0.0 – 322.3)	
	All	593.4	(185.4 – 1,001.3)	5.4
birch spp.	20 cm +	850.5	(640.0 – 1,060.9)	
	12-19.9 cm	675.2	(527.5 – 823.0)	
	7-11.9 cm	307.3	(225.8 – 388.9)	
	All	1,833.1	(1,563.3 – 2,102.8)	16.6
alder spp.	20 cm +	398.1	(283.0 – 513.3)	
	12-19.9 cm	323.4	(244.8 – 402.0)	
	7-11.9 cm	127.9	(6.4 – 249.3)	
	All	849.4	(664.5 – 1,034.3)	7.7
other long living broadleaves	20 cm +	517.8	(402.9 – 632.8)	
	12-19.9 cm	186.7	(137.1 – 236.3)	
	7-11.9 cm	73.8	(28.6 – 119.0)	
	All	778.3	(645.2 – 911.4)	7.0
other short living broadleaves	20 cm +	504.5	(331.1 – 677.9)	
	12-19.9 cm	408.5	(331.9 – 485.1)	
	7-11.9 cm	459.8	(337.5 – 582.2)	
	All	1,372.8	(1,147.2 – 1,598.5)	12.4
Total	20 cm +	7,485.9	(6,479.6 – 8,492.2)	
	12-19.9 cm	2,280.3	(2,026.2 – 2,534.3)	
	7-11.9 cm	1,278.6	(1,099.0 – 1,458.2)	
	All	11,044.8	(9,991.5 – 12,098.1)	100.0

6.2.6 Total growing stock by county and species group

Methodology

The total growing stock is classified by county and species group.

Species group	County / Growing stock					
	Carlow			Cavan		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Sitka spruce	723.5	(70.9 – 1,376.2)	57.3	1,292.4	(717.3 – 1,867.5)	80.1
Norway spruce	29.6	– –	2.3	15.1	– –	0.9
Scots pine	8.3	– –	0.7	–	– –	–
other pine spp.	3.2	– –	0.3	96.4	– –	6.0
Douglas fir	66.5	– –	5.3	–	– –	–
larch spp.	165.2	(0.0 – 620.9)	13.1	19.1	– –	1.2
other conifers	140.0	– –	11.1	–	– –	–
sessile and pedunculate oak	–	– –	–	46.0	– –	2.9
beech	–	– –	–	–	– –	–
ash	53.6	(0.0 – 215.4)	4.2	27.8	(0.0 – 59.1)	1.7
sycamore	6.8	– –	0.5	14.3	(1.1 – 27.5)	0.9
birch spp.	3.3	– –	0.3	37.3	(0.0 – 99.6)	2.3
alder spp.	–	– –	–	39.7	(0.0 – 258.0)	2.5
other long living broadleaves	58.7	(0.0 – 189.8)	4.7	–	– –	–
other short living broadleaves	2.6	– –	0.2	24.9	(0.0 – 67.6)	1.5
Total	1,261.4	(555.4 – 1,967.4)	100.0	1,613.0	(990.6 – 2,235.4)	100.0

Species group	County / Growing stock					
	Clare			Cork		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Sitka spruce	3,002.4	(2,212.8 – 3,791.9)	67.6	7,016.1	(5,816.8 – 8,215.5)	73.4
Norway spruce	98.3	(0.0 – 643.8)	2.2	80.6	(0.0 – 399.8)	0.8
Scots pine	38.7	– –	0.9	63.9	(0.0 – 325.4)	0.7
other pine spp.	444.4	(230.2 – 658.5)	10.0	498.8	(315.2 – 682.4)	5.2
Douglas fir	–	– –	–	487.4	(182.2 – 792.6)	5.1
larch spp.	77.7	(0.0 – 483.1)	1.7	151.2	(0.0 – 403.7)	1.6
other conifers	19.9	– –	0.4	38.0	– –	0.4
sessile and pedunculate oak	29.3	(0.5 – 58.1)	0.7	269.4	(137.2 – 401.7)	2.8
beech	166.3	(0.0 – 357.9)	3.7	252.6	(0.0 – 509.2)	2.6
ash	208.5	(80.3 – 336.7)	4.7	83.7	(12.0 – 155.4)	0.9
sycamore	15.0	(0.0 – 31.6)	0.3	69.8	(0.0 – 343.1)	0.7
birch spp.	134.8	(51.0 – 218.6)	3.0	151.5	(90.6 – 212.3)	1.6
alder spp.	15.4	(3.3 – 27.5)	0.3	234.8	(0.0 – 538.6)	2.5
other long living broadleaves	11.2	(0.0 – 24.5)	0.3	69.0	(31.9 – 106.1)	0.7
other short living broadleaves	186.8	(114.1 – 259.6)	4.2	95.5	(37.6 – 153.3)	1.0
Total	4,448.8	(3,563.3 – 5,334.3)	100.0	9,562.2	(8,216.4 – 10,908.0)	100.0

Species group	County / Growing stock					
	Donegal			Dublin		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	3,049.0	(2,372.2 – 3,725.8)	64.6	297.9	(7.5 – 588.2)	41.7
Norway spruce	–	–	–	–	–	–
Scots pine	–	–	–	–	–	–
other pine spp.	818.5	(492.1 – 1,144.9)	17.3	199.7	(0.0 – 2,177.3)	28.0
Douglas fir	–	–	–	–	–	–
larch spp.	32.7	(17.3 – 48.1)	0.7	39.0	–	5.5
other conifers	228.4	(0.0 – 1,085.6)	4.8	22.2	–	3.1
sessile and pedunculate oak	72.8	–	1.5	45.8	–	6.4
beech	68.9	(0.0 – 158.2)	1.5	–	–	–
ash	57.9	(0.0 – 158.3)	1.2	–	–	–
sycamore	28.7	–	0.6	52.0	–	7.3
birch spp.	131.5	(71.8 – 191.1)	2.8	–	–	–
alder spp.	40.4	(0.0 – 229.3)	0.9	–	–	–
other long living broadleaves	34.7	(0.0 – 100.2)	0.7	56.9	–	8.0
other short living broadleaves	158.4	(95.4 – 221.4)	3.4	–	–	–
Total	4,721.8	(3,867.1 – 5,576.6)	100.0	713.5	(238.7 – 1,188.3)	100.0

Species group	County / Growing stock					
	Galway			Kerry		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	3,324.2	(2,525.5 – 4,122.8)	59.8	3,019.2	(2,211.7 – 3,826.6)	57.7
Norway spruce	149.4	(0.0 – 300.2)	2.7	–	–	–
Scots pine	123.9	(0.0 – 300.1)	2.2	120.0	(0.0 – 1,155.9)	2.3
other pine spp.	1,298.6	(1,027.9 – 1,569.2)	23.3	941.9	(0.0 – 2,002.4)	18.0
Douglas fir	40.8	(0.0 – 344.7)	0.7	–	–	–
larch spp.	136.8	(0.0 – 520.6)	2.5	2.9	–	0.06
other conifers	31.5	–	0.6	150.8	(0.0 – 1,208.5)	2.9
sessile and pedunculate oak	34.4	(0.0 – 79.9)	0.6	272.3	(106.6 – 438.0)	5.2
beech	108.1	(21.7 – 194.4)	1.9	36.3	(0.0 – 111.2)	0.7
ash	66.7	(18.7 – 114.7)	1.2	32.4	(9.1 – 55.7)	0.6
sycamore	24.5	(0.0 – 71.4)	0.4	–	–	–
birch spp.	125.8	(58.4 – 193.1)	2.3	250.2	(79.1 – 421.2)	4.8
alder spp.	62.1	(0.0 – 135.3)	1.1	95.5	(48.4 – 142.7)	1.8
other long living broadleaves	9.5	(0.0 – 71.1)	0.2	201.5	(77.5 – 325.5)	3.9
other short living broadleaves	29.7	(15.6 – 43.7)	0.5	102.7	(26.6 – 178.7)	2.0
Total	5,565.8	(4,664.5 – 6,467.2)	100.0	5,225.8	(3,836.5 – 6,615.1)	100.0

Species group	County / Growing stock					
	Kildare			Kilkenny		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	199.4	(0.0 – 508.5)	21.1	1,131.5	(711.7 – 1,551.4)	59.6
Norway spruce	260.6	(0.0 – 672.6)	27.7	83.4	(0.0 – 201.8)	4.4
Scots pine	44.6	–	4.7	38.6	(0.0 – 424.0)	2.0
other pine spp.	78.0	–	8.2	68.7	(0.0 – 157.8)	3.6
Douglas fir	2.9	–	0.3	162.7	(0.0 – 444.1)	8.6
larch spp.	21.8	(0.0 – 151.2)	2.3	21.0	–	1.1
other conifers	19.2	–	2.0	33.2	(0.0 – 107.2)	1.7
sessile and pedunculate oak	18.0	(0.0 – 56.0)	1.9	173.6	(0.0 – 487.4)	9.1
beech	46.1	(4.6 – 87.7)	4.9	14.6	(0.0 – 29.3)	0.8
ash	123.4	(0.0 – 280.4)	13.0	17.8	(0.0 – 70.9)	0.9
sycamore	24.0	(0.0 – 48.1)	2.5	1.9	–	0.1
birch spp.	85.5	(16.8 – 154.2)	9.0	88.5	(0.0 – 218.8)	4.7
alder spp.	16.5	–	1.7	7.7	–	0.4
other long living broadleaves	–	–	–	2.0	–	0.1
other short living broadleaves	6.9	–	0.7	54.5	(0.0 – 206.4)	2.9
Total	946.8	(591.1 – 1,302.5)	100.0	1,899.8	(1,375.2 – 2,424.4)	100.0

Species group	County / Growing stock					
	Laois			Leitrim		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	2,233.9	(1,582.4 – 2,885.3)	56.0	1,563.7	(1,116.1 – 2,011.3)	70.1
Norway spruce	488.0	(116.8 – 859.2)	12.2	–	–	–
Scots pine	42.6	(0.0 – 532.6)	1.1	50.7	(0.0 – 330.4)	2.3
other pine spp.	162.5	(45.5 – 279.4)	4.1	126.1	(0.0 – 631.5)	5.6
Douglas fir	97.4	(0.0 – 612.8)	2.4	–	–	–
larch spp.	250.7	(0.0 – 1,113.4)	6.3	13.7	(0.0 – 36.0)	0.6
other conifers	219.1	(0.0 – 2,850.8)	5.5	284.2	–	12.7
sessile and pedunculate oak	127.2	(0.0 – 364.5)	3.2	3.6	–	0.2
beech	105.5	(49.8 – 161.2)	2.6	–	–	–
ash	126.6	(12.4 – 240.7)	3.2	16.0	(0.0 – 97.8)	0.7
sycamore	11.4	–	0.3	–	–	–
birch spp.	67.8	(0.0 – 189.0)	1.7	114.4	(50.9 – 177.8)	5.1
alder spp.	1.6	–	0.04	14.1	–	0.6
other long living broadleaves	–	–	–	1.5	–	0.07
other short living broadleaves	56.8	(0.0 – 145.3)	1.4	45.4	(0.0 – 144.6)	2.0
Total	3,991.0	(3,062.4 – 4,919.6)	100.0	2,233.5	(1,515.1 – 2,951.9)	100.0

Species group	County / Growing stock					
	Limerick			Longford		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	2,107.8	(1,299.5 – 2,916.0)	84.1	116.2	(0.0 – 322.6)	29.4
Norway spruce	–	–	–	124.6	(42.9 – 206.4)	31.6
Scots pine	2.9	–	0.1	26.6	(0.0 – 73.8)	6.7
other pine spp.	166.0	(74.7 – 257.4)	6.6	–	–	–
Douglas fir	64.7	–	2.6	–	–	–
larch spp.	–	–	–	47.9	–	12.1
other conifers	28.7	–	1.1	–	–	–
sessile and pedunculate oak	2.0	–	0.08	–	–	–
beech	7.9	–	0.3	–	–	–
ash	6.1	–	0.2	31.3	(0.0 – 107.0)	7.9
sycamore	2.6	–	0.1	6.8	–	1.7
birch spp.	7.3	–	0.3	2.3	–	0.6
alder spp.	68.6	(0.0 – 266.3)	2.7	20.4	–	5.2
other long living broadleaves	26.4	–	1.1	4.7	–	1.2
other short living broadleaves	16.6	–	0.7	14.3	–	3.6
Total	2,507.7	(1,699.6 – 3,315.8)	100.0	395.3	(193.3 – 597.2)	100.0

Species group	County / Growing stock					
	Louth			Mayo		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	–	–	–	1,346.2	(866.8 – 1,825.5)	35.6
Norway spruce	–	–	–	15.4	–	0.4
Scots pine	–	–	–	47.7	(0.0 – 382.6)	1.3
other pine spp.	81.6	–	23.5	1,917.5	(1,543.6 – 2,291.4)	50.7
Douglas fir	–	–	–	–	–	–
larch spp.	–	–	–	29.3	(0.0 – 158.7)	0.8
other conifers	–	–	–	–	–	–
sessile and pedunculate oak	–	–	–	136.2	(0.0 – 492.4)	3.6
beech	154.2	(0.0 – 1,884.5)	44.5	–	–	–
ash	49.0	(0.0 – 527.2)	14.1	69.7	(0.0 – 152.2)	1.8
sycamore	5.7	–	1.6	39.7	(0.0 – 122.6)	1.0
birch spp.	–	–	–	88.7	(0.0 – 359.3)	2.3
alder spp.	–	–	–	5.9	–	0.2
other long living broadleaves	55.2	–	15.9	13.7	(0.0 – 40.1)	0.4
other short living broadleaves	1.3	–	0.4	71.9	(0.5 – 143.2)	1.9
Total	347.0	(0.0 – 932.7)	100.0	3,781.8	(3,125.1 – 4,438.4)	100.0

Species group	County / Growing stock					
	Meath			Monaghan		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	357.5	(0.0 – 1,081.5)	28.7	523.5	(0.0 – 1,540.2)	63.2
Norway spruce	97.4	(0.0 – 483.6)	7.9	25.9	– –	3.1
Scots pine	2.8	– –	0.2	4.4	– –	0.5
other pine spp.	75.1	– –	6.1	46.2	(0.0 – 266.4)	5.6
Douglas fir	–	– –	–	–	– –	–
larch spp.	28.4	– –	2.3	17.0	– –	2.1
other conifers	–	– –	–	–	– –	–
sessile and pedunculate oak	304.9	(0.0 – 628.4)	24.6	–	– –	–
beech	203.6	(41.5 – 365.7)	16.4	2.4	– –	0.3
ash	47.9	(0.0 – 138.8)	3.9	19.8	(0.0 – 45.5)	2.4
sycamore	49.1	(16.9 – 81.3)	4.0	–	– –	–
birch spp.	12.2	(0.0 – 119.4)	1.0	75.7	(0.0 – 438.5)	9.1
alder spp.	–	– –	–	2.6	– –	0.3
other long living broadleaves	43.3	– –	3.5	55.8	– –	6.7
other short living broadleaves	17.0	(0.0 – 55.3)	1.4	55.6	(0.0 – 311.5)	6.7
Total	1,239.4	(801.5 – 1,677.3)	100.0	829.0	(84.9 – 1,573.2)	100.0

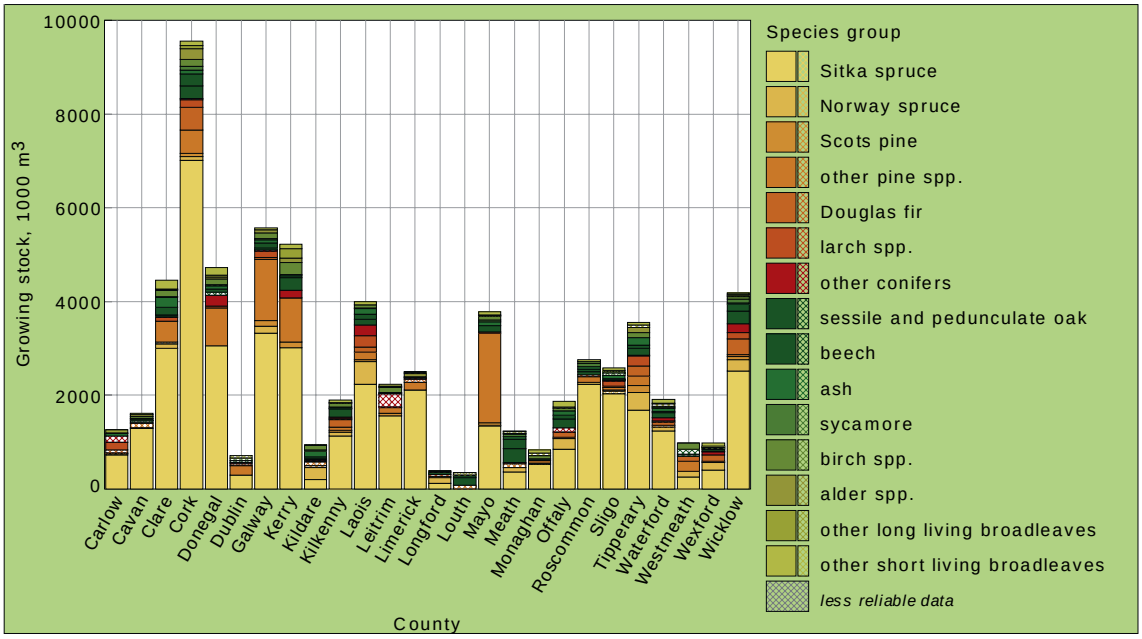
Species group	County / Growing stock					
	Offaly			Roscommon		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	849.0	(421.2 – 1,276.7)	45.3	2,230.6	(1,367.5 – 3,093.8)	81.0
Norway spruce	229.9	(0.0 – 519.8)	12.3	46.8	(21.7 – 71.9)	1.7
Scots pine	4.2	(0.0 – 23.7)	0.2	–	– –	–
other pine spp.	15.3	(0.0 – 34.0)	0.8	123.7	(0.0 – 373.2)	4.5
Douglas fir	117.2	(111.3 – 123.2)	6.3	–	– –	–
larch spp.	2.0	– –	0.1	40.0	– –	1.5
other conifers	94.1	– –	5.0	–	– –	–
sessile and pedunculate oak	188.2	(0.0 – 818.0)	10.0	62.7	(0.0 – 309.3)	2.3
beech	81.3	(0.0 – 286.0)	4.3	53.0	(0.0 – 197.7)	1.9
ash	84.8	(0.0 – 212.6)	4.5	51.7	(19.2 – 84.2)	1.9
sycamore	1.4	– –	0.07	74.9	(0.0 – 927.1)	2.7
birch spp.	54.8	(7.5 – 102.0)	2.9	37.0	(0.0 – 82.8)	1.3
alder spp.	25.0	– –	1.3	–	– –	–
other long living broadleaves	–	– –	–	2.3	– –	0.08
other short living broadleaves	128.5	(0.0 – 301.9)	6.9	29.7	(0.0 – 123.1)	1.1
Total	1,875.6	(1,329.3 – 2,422.0)	100.0	2,752.4	(1,830.8 – 3,674.1)	100.0

Species group	County / Growing stock					
	Sligo			Tipperary		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Sitka spruce	2,032.4	(1,278.8 – 2,786.0)	78.7	1,688.0	(1,173.5 – 2,202.4)	47.6
Norway spruce	49.5	– –	1.9	367.0	(63.1 – 670.8)	10.3
Scots pine	33.2	– –	1.3	158.9	(82.5 – 235.4)	4.5
other pine spp.	56.5	(8.4 – 104.6)	2.2	192.0	(45.4 – 338.6)	5.4
Douglas fir	19.3	– –	0.7	217.5	(0.0 – 618.6)	6.1
larch spp.	111.5	(0.0 – 318.7)	4.3	212.2	(32.3 – 392.0)	6.0
other conifers	10.1	– –	0.4	14.0	– –	0.4
sessile and pedunculate oak	15.2	– –	0.6	148.2	(0.0 – 296.9)	4.2
beech	30.3	(0.0 – 61.6)	1.2	75.2	(0.0 – 186.8)	2.1
ash	64.6	(0.0 – 166.2)	2.5	163.0	(48.1 – 277.9)	4.6
sycamore	58.7	– –	2.3	–	– –	–
birch spp.	35.8	(0.0 – 105.2)	1.4	107.8	(19.6 – 196.1)	3.0
alder spp.	3.4	– –	0.1	96.1	(5.9 – 186.3)	2.7
other long living broadleaves	12.8	– –	0.5	65.8	– –	1.9
other short living broadleaves	50.0	(0.0 – 128.4)	1.9	44.2	(2.9 – 85.6)	1.2
Total	2,583.4	(1,801.8 – 3,365.0)	100.0	3,550.0	(2,867.6 – 4,232.4)	100.0

Species group	County / Growing stock					
	Waterford			Westmeath		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	1,239.2	(693.7 – 1,784.7)	64.6	249.8	(49.5 – 450.2)	25.3
Norway spruce	75.9	(0.0 – 188.6)	4.0	127.5	(54.3 – 200.7)	12.9
Scots pine	38.4	– –	2.0	5.9	– –	0.6
other pine spp.	1.9	– –	0.1	213.1	(0.0 – 579.1)	21.6
Douglas fir	70.6	(0.0 – 181.9)	3.7	103.9	(0.0 – 241.7)	10.5
larch spp.	32.7	– –	1.7	–	– –	–
other conifers	65.0	(0.0 – 164.1)	3.4	4.7	– –	0.5
sessile and pedunculate oak	108.2	(0.0 – 275.7)	5.6	37.8	– –	3.8
beech	18.5	(0.0 – 50.3)	1.0	110.3	– –	11.2
ash	69.3	(0.0 – 365.9)	3.6	–	– –	–
sycamore	10.0	– –	0.5	–	– –	–
birch spp.	33.7	(0.0 – 123.5)	1.8	130.1	(15.1 – 245.0)	13.2
alder spp.	53.0	– –	2.8	–	– –	–
other long living broadleaves	9.7	– –	0.5	–	– –	–
other short living broadleaves	89.1	(22.8 – 155.4)	4.7	4.2	– –	0.4
Total	1,915.3	(1,321.1 – 2,509.5)	100.0	987.2	(562.9 – 1,411.6)	100.0

Species group	County / Growing stock					
	Wexford			Wicklow		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	402.2	(301.1 – 503.3)	41.0	2,517.1	(1,494.8 – 3,539.4)	60.3
Norway spruce	158.7	(0.0 – 494.3)	16.2	246.5	(0.0 – 717.2)	5.9
Scots pine	–	– –	–	59.9	(17.1 – 102.7)	1.4
other pine spp.	37.9	(0.0 – 85.5)	3.9	40.1	(0.0 – 88.5)	1.0
Douglas fir	128.0	(0.0 – 308.8)	13.0	345.2	(125.9 – 564.5)	8.3
larch spp.	–	– –	–	135.0	(0.0 – 897.2)	3.2
other conifers	69.1	(0.0 – 819.7)	7.0	177.1	(0.0 – 1,160.4)	4.2
sessile and pedunculate oak	13.5	(0.0 – 39.5)	1.4	275.6	(47.6 – 503.7)	6.6
beech	44.4	(0.0 – 415.6)	4.5	150.9	(0.0 – 379.1)	3.6
ash	5.8	(0.0 – 35.0)	0.6	25.1	(0.0 – 80.2)	0.6
sycamore	19.8	– –	2.0	76.2	(0.0 – 340.5)	1.8
birch spp.	3.3	– –	0.3	54.0	(0.0 – 160.7)	1.3
alder spp.	19.8	(0.0 – 67.9)	2.0	26.6	– –	0.6
other long living broadleaves	12.4	– –	1.3	31.2	(0.0 – 104.2)	0.7
other short living broadleaves	66.8	(0.0 – 197.9)	6.8	19.5	(0.0 – 53.0)	0.5
Total	981.8	(612.2 – 1,351.4)	100.0	4,180.1	(3,030.6 – 5,329.6)	100.0

Species group	County / Growing stock		
	Total		
	1000 m³	(α = 0.05)	%
Sitka spruce	42,512.6	(39,562.8 – 45,462.5)	60.6
Norway spruce	2,770.2	(2,179.5 – 3,361.0)	4.0
Scots pine	916.3	(591.2 – 1,241.4)	1.3
other pine spp.	7,703.9	(6,449.7 – 8,958.1)	11.0
Douglas fir	1,924.2	(1,566.1 – 2,282.3)	2.7
larch spp.	1,588.0	(877.8 – 2,298.2)	2.3
other conifers	1,649.4	(203.5 – 3,095.3)	2.4
sessile and pedunculate oak	2,385.0	(1,779.8 – 2,990.2)	3.4
beech	1,730.5	(1,183.3 – 2,277.8)	2.5
ash	1,502.3	(1,248.3 – 1,756.2)	2.1
sycamore	593.4	(185.4 – 1,001.3)	0.8
birch spp.	1,833.1	(1,563.3 – 2,102.8)	2.6
alder spp.	849.4	(664.5 – 1,034.3)	1.2
other long living broadleaves	778.3	(645.2 – 911.4)	1.1
other short living broadleaves	1,372.8	(1,147.2 – 1,598.5)	2.0
Total	70,109.4	(66,398.6 – 73,820.2)	100.0



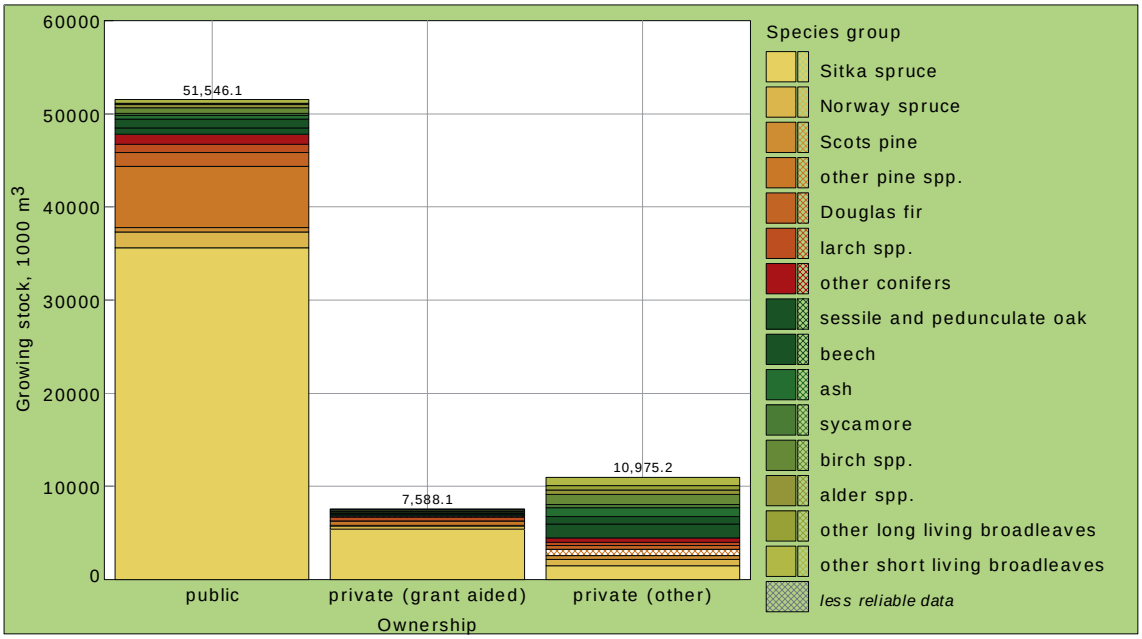
6.2.7 Total growing stock by ownership and species group

Methodology

The otal growing stock is classified by ownership and species group.

Species group	Ownership / Growing stock					
	public			private (grant aided)		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	35,604.0	(32,855.2 – 38,352.8)	68.9	5,405.7	(4,804.1 – 6,007.2)	71.2
Norway spruce	1,712.2	(1,278.2 – 2,146.3)	3.3	363.9	(290.9 – 436.8)	4.8
Scots pine	501.5	(266.4 – 736.7)	1.0	45.8	– –	0.6
other pine spp.	6,544.2	(5,760.9 – 7,327.5)	12.7	469.1	(101.7 – 836.6)	6.2
Douglas fir	1,474.2	(1,163.2 – 1,785.1)	2.9	39.8	– –	0.5
larch spp.	894.8	(239.8 – 1,549.9)	1.7	384.3	(156.7 – 611.9)	5.1
other conifers	1,060.1	(0.0 – 2,393.1)	2.1	116.2	– –	1.5
sessile and pedunculate oak	716.9	(415.9 – 1,017.9)	1.4	145.3	(0.0 – 365.4)	1.9
beech	904.7	(604.3 – 1,205.1)	1.8	–	– –	–
ash	459.0	(282.4 – 635.5)	0.9	135.2	(59.4 – 211.0)	1.8
sycamore	181.2	(69.6 – 292.8)	0.4	44.6	(38.8 – 50.3)	0.6
birch spp.	602.9	(461.2 – 744.6)	1.2	140.6	(0.0 – 547.7)	1.9
alder spp.	311.3	(134.1 – 488.5)	0.6	109.9	(0.0 – 333.5)	1.4
other long living broadleaves	161.6	(98.6 – 224.6)	0.3	100.7	(0.0 – 320.0)	1.3
other short living broadleaves	417.3	(284.0 – 550.7)	0.8	87.3	(0.0 – 213.2)	1.2
Total	51,546.1	(48,399.4 – 54,692.7)	100.0	7,588.1	(6,767.1 – 8,409.1)	100.0

Species group	Ownership / Growing stock					
	private (other)			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Sitka spruce	1,503.0	(697.9 – 2,308.0)	13.7	42,512.6	(39,562.8 – 45,462.5)	60.6
Norway spruce	694.1	(0.0 – 2,580.2)	6.3	2,770.2	(2,179.5 – 3,361.0)	4.0
Scots pine	369.0	(246.1 – 491.9)	3.4	916.3	(591.2 – 1,241.4)	1.3
other pine spp.	690.5	– –	6.3	7,703.9	(6,449.7 – 8,958.1)	11.0
Douglas fir	410.2	(177.9 – 642.5)	3.7	1,924.2	(1,566.1 – 2,282.3)	2.7
larch spp.	308.9	(0.0 – 1,076.1)	2.8	1,588.0	(877.8 – 2,298.2)	2.3
other conifers	473.1	(0.0 – 3,284.9)	4.3	1,649.4	(203.5 – 3,095.3)	2.4
sessile and pedunculate oak	1,522.8	(1,085.8 – 1,959.8)	14.0	2,385.0	(1,779.8 – 2,990.2)	3.4
beech	825.8	(260.4 – 1,391.2)	7.5	1,730.5	(1,183.3 – 2,277.8)	2.5
ash	908.1	(701.4 – 1,114.8)	8.3	1,502.3	(1,248.3 – 1,756.2)	2.1
sycamore	367.6	(72.3 – 662.9)	3.3	593.4	(185.4 – 1,001.3)	0.8
birch spp.	1,089.6	(591.3 – 1,587.9)	9.9	1,833.1	(1,563.3 – 2,102.8)	2.6
alder spp.	428.2	(347.9 – 508.5)	3.9	849.4	(664.5 – 1,034.3)	1.2
other long living broadleaves	516.0	(316.8 – 715.2)	4.7	778.3	(645.2 – 911.4)	1.1
other short living broadleaves	868.2	(599.4 – 1,136.9)	7.9	1,372.8	(1,147.2 – 1,598.5)	2.0
Total	10,975.2	(9,282.7 – 12,667.6)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0



6.2.8 Total growing stock by species group and altitude

Methodology

The total growing stock is classified by species group and altitude.

Altitude, m	Species group / Volume					
	Sitka spruce			Norway spruce		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
0 - 49	1,956.0	(1,083.2 – 2,828.8)	4.6	329.6	(0.0 – 892.2)	11.9
50 - 99	7,299.2	(6,241.0 – 8,357.3)	17.2	1,454.1	(1,091.8 – 1,816.4)	52.5
100 - 149	5,662.5	(4,606.4 – 6,718.6)	13.3	515.5	(324.8 – 706.2)	18.6
150 - 199	6,028.4	(5,075.0 – 6,981.8)	14.2	249.3	(0.0 – 556.6)	9.0
200 - 249	6,178.8	(5,355.6 – 7,001.9)	14.5	189.5	– –	6.8
250 - 299	6,255.5	(5,007.8 – 7,503.2)	14.7	32.3	– –	1.2
300 - 349	5,217.9	(4,125.9 – 6,309.8)	12.3	–	– –	–
350 - 399	2,055.0	(1,662.1 – 2,447.8)	4.8	–	– –	–
400 - 449	1,236.0	(751.6 – 1,720.4)	2.9	–	– –	–
450 - 499	493.1	(0.0 – 1,600.1)	1.2	–	– –	–
500 +	130.3	– –	0.3	–	– –	–
Total	42,512.6	(39,562.8 – 45,462.5)	100.0	2,770.2	(2,179.5 – 3,361.0)	100.0

Altitude, m	Species group / Volume					
	Scots pine			other pine spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
0 - 49	329.8	(0.0 – 756.0)	36.0	843.0	(0.0 – 6,713.8)	10.9
50 - 99	441.1	(332.6 – 549.6)	48.2	1,574.9	(1,191.2 – 1,958.6)	20.4
100 - 149	110.2	(0.0 – 226.8)	12.0	1,790.5	(1,370.3 – 2,210.7)	23.3
150 - 199	8.6	– –	0.9	1,163.1	(947.0 – 1,379.2)	15.1
200 - 249	18.8	– –	2.0	952.3	(473.1 – 1,431.4)	12.4
250 - 299	7.0	– –	0.8	474.6	(285.4 – 663.8)	6.2
300 - 349	0.8	– –	0.08	587.7	(410.7 – 764.6)	7.6
350 - 399	–	– –	–	194.5	(96.5 – 292.4)	2.5
400 - 449	–	– –	–	108.2	(107.2 – 109.2)	1.4
450 - 499	–	– –	–	15.1	– –	0.2
500 +	–	– –	–	–	– –	–
Total	916.3	(591.2 – 1,241.4)	100.0	7,703.9	(6,449.7 – 8,958.1)	100.0

Altitude, m	Species group / Volume					
	Douglas fir			larch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
0 - 49	29.7	– –	1.5	61.0	– –	3.8
50 - 99	1,054.8	(730.2 – 1,379.4)	54.9	444.9	(172.9 – 716.9)	28.1
100 - 149	369.5	(0.0 – 842.7)	19.2	254.5	(0.0 – 743.6)	16.0
150 - 199	271.6	(0.0 – 566.9)	14.1	255.7	(0.0 – 1,014.7)	16.1
200 - 249	121.3	– –	6.3	203.7	(171.7 – 235.7)	12.8
250 - 299	77.2	– –	4.0	245.7	(240.4 – 250.9)	15.5
300 - 349	–	– –	–	116.0	– –	7.3
350 - 399	–	– –	–	6.5	– –	0.4
400 - 449	–	– –	–	–	– –	–
450 - 499	–	– –	–	–	– –	–
500 +	–	– –	–	–	– –	–
Total	1,924.2	(1,566.1 – 2,282.3)	100.0	1,588.0	(877.8 – 2,298.2)	100.0

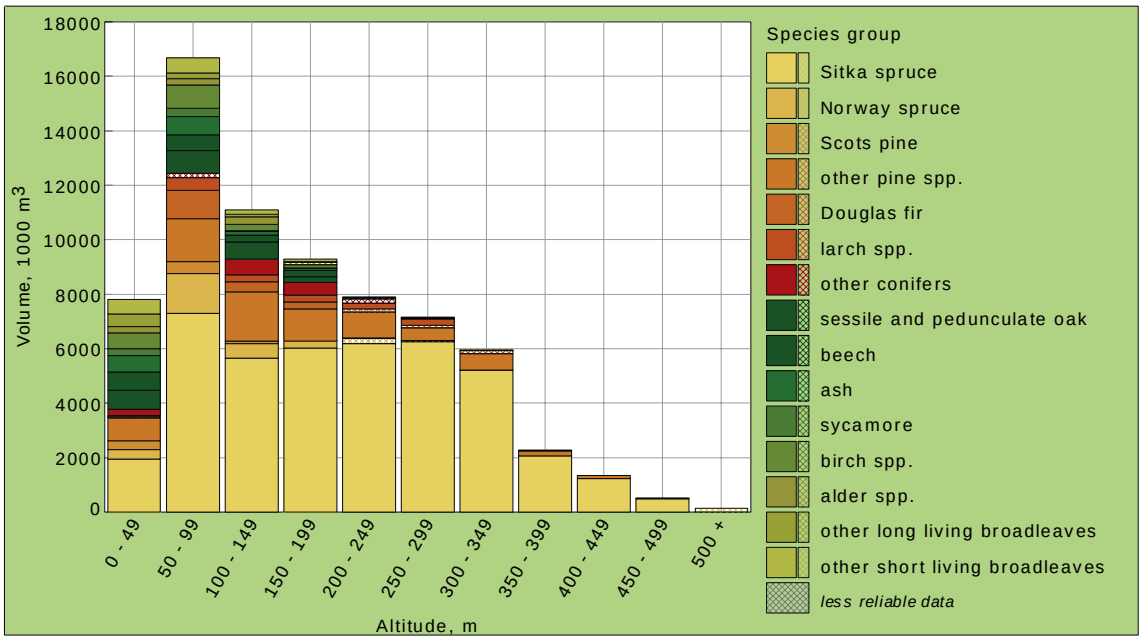
Altitude, m	Species group / Volume					
	other conifers			sessile and pedunculate oak		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
0 - 49	228.8	(0.0 – 1,286.5)	13.9	703.0	(280.1 – 1,125.8)	29.5
50 - 99	175.6	– –	10.6	825.5	(28.6 – 1,622.5)	34.7
100 - 149	586.7	(261.0 – 912.5)	35.5	628.5	(360.1 – 896.8)	26.4
150 - 199	458.1	(388.4 – 527.8)	27.8	215.6	(0.0 – 836.9)	9.0
200 - 249	174.5	– –	10.6	1.9	– –	0.08
250 - 299	25.6	– –	1.6	5.3	– –	0.2
300 - 349	–	– –	–	1.6	– –	0.07
350 - 399	–	– –	–	3.5	– –	0.1
400 - 449	–	– –	–	–	– –	–
450 - 499	–	– –	–	–	– –	–
500 +	–	– –	–	–	– –	–
Total	1,649.4	(203.5 – 3,095.3)	100.0	2,385.0	(1,779.8 – 2,990.2)	100.0

Altitude, m	Species group / Volume					
	beech			ash		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
0 - 49	661.2	(80.4 – 1,242.0)	38.2	609.7	(428.1 – 791.4)	40.6
50 - 99	578.1	(384.5 – 771.6)	33.4	683.3	(425.0 – 941.5)	45.5
100 - 149	257.6	(3.4 – 511.8)	14.9	140.6	(0.0 – 408.3)	9.4
150 - 199	226.9	(0.0 – 512.8)	13.1	57.6	(0.0 – 453.8)	3.8
200 - 249	6.8	– –	0.4	9.6	– –	0.6
250 - 299	–	– –	–	1.4	– –	0.1
300 - 349	–	– –	–	–	– –	–
350 - 399	–	– –	–	–	– –	–
400 - 449	–	– –	–	–	– –	–
450 - 499	–	– –	–	–	– –	–
500 +	–	– –	–	–	– –	–
Total	1,730.5	(1,183.3 – 2,277.8)	100.0	1,502.3	(1,248.3 – 1,756.2)	100.0

Altitude, m	Species group / Volume					
	sycamore			birch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
0 - 49	251.6	(101.4 – 401.7)	42.4	570.1	(292.3 – 847.9)	31.1
50 - 99	292.8	(0.0 – 1,155.0)	49.4	858.0	(663.2 – 1,052.9)	46.9
100 - 149	5.9	– –	1.0	251.1	(99.9 – 402.3)	13.7
150 - 199	38.2	– –	6.4	118.9	(0.0 – 256.7)	6.5
200 - 249	–	– –	–	13.4	– –	0.7
250 - 299	4.9	– –	0.8	15.0	– –	0.8
300 - 349	–	– –	–	6.4	– –	0.3
350 - 399	–	– –	–	–	– –	–
400 - 449	–	– –	–	–	– –	–
450 - 499	–	– –	–	–	– –	–
500 +	–	– –	–	–	– –	–
Total	593.4	(185.4 – 1,001.3)	100.0	1,833.1	(1,563.3 – 2,102.8)	100.0

Altitude, m	Species group / Volume					
	alder spp.			other long living broadleaves		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
0 - 49	244.0	(145.1 – 342.8)	28.7	452.5	(305.9 – 599.0)	58.2
50 - 99	228.7	(196.8 – 260.6)	26.9	215.1	(57.0 – 373.2)	27.6
100 - 149	277.6	(171.4 – 383.8)	32.7	80.9	(34.3 – 127.4)	10.4
150 - 199	85.0	– –	10.0	29.8	– –	3.8
200 - 249	14.1	– –	1.7	–	– –	–
250 - 299	–	– –	–	–	– –	–
300 - 349	–	– –	–	–	– –	–
350 - 399	–	– –	–	–	– –	–
400 - 449	–	– –	–	–	– –	–
450 - 499	–	– –	–	–	– –	–
500 +	–	– –	–	–	– –	–
Total	849.4	(664.5 – 1,034.3)	100.0	778.3	(645.2 – 911.4)	100.0

Altitude, m	Species group / Volume					
	other short living broadleaves			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
0 - 49	541.4	(360.0 – 722.8)	39.4	7,811.4	(6,290.9 – 9,332.0)	11.1
50 - 99	544.7	(392.0 – 697.4)	39.6	16,670.7	(15,153.3 – 18,188.2)	23.9
100 - 149	165.8	(77.3 – 254.4)	12.1	11,097.6	(9,692.2 – 12,503.1)	15.8
150 - 199	80.2	(19.9 – 140.6)	5.8	9,287.2	(7,900.5 – 10,673.8)	13.2
200 - 249	9.2	(0.0 – 32.4)	0.7	7,893.8	(6,873.7 – 8,914.0)	11.3
250 - 299	4.1	– –	0.3	7,148.7	(5,854.0 – 8,443.4)	10.2
300 - 349	15.8	– –	1.2	5,946.2	(4,869.6 – 7,022.8)	8.5
350 - 399	10.7	– –	0.8	2,270.1	(1,822.8 – 2,717.4)	3.2
400 - 449	–	– –	–	1,344.2	(725.9 – 1,962.5)	1.9
450 - 499	0.8	– –	0.06	509.0	(0.0 – 1,616.0)	0.7
500 +	–	– –	–	130.3	(110.8 – 149.7)	0.2
Total	1,372.8	(1,147.2 – 1,598.5)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0



6.2.9 Total growing stock by species group and thin status

Methodology

The total growing stock is classified by species group and thin status.

Thin status	Species group / Growing stock					
	Sitka spruce			Norway spruce		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no thinning	22,437.3	(20,449.7 – 24,424.8)	52.8	998.5	(440.4 – 1,556.5)	36.0
juvenile forest	6,097.5	(5,597.4 – 6,597.5)	14.3	399.7	(309.8 – 489.6)	14.4
respacing	–	–	–	–	–	–
first thinning	6,092.2	(4,657.2 – 7,527.3)	14.3	165.2	(0.0 – 1,286.3)	6.0
2nd thinning	2,462.9	(1,962.9 – 2,962.9)	5.8	307.9	(0.0 – 740.3)	11.1
subsequent thinning	5,422.7	(4,587.2 – 6,258.2)	12.8	899.0	(427.4 – 1,370.6)	32.5
Total	42,512.6	(39,562.8 – 45,462.5)	100.0	2,770.2	(2,179.5 – 3,361.0)	100.0

Thin status	Species group / Growing stock					
	Scots pine			other pine spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no thinning	241.1	(66.8 – 415.5)	26.3	5,505.3	(4,884.1 – 6,126.4)	71.4
juvenile forest	130.1	(53.4 – 206.8)	14.2	945.4	(742.2 – 1,148.6)	12.3
respacing	–	–	–	–	–	–
first thinning	21.1	–	2.3	378.4	(288.6 – 468.2)	4.9
2nd thinning	93.8	–	10.2	105.3	(0.0 – 316.1)	1.4
subsequent thinning	430.2	(330.7 – 529.6)	47.0	769.5	(0.0 – 2,752.4)	10.0
Total	916.3	(591.2 – 1,241.4)	100.0	7,703.9	(6,449.7 – 8,958.1)	100.0

Thin status	Species group / Growing stock					
	Douglas fir			larch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no thinning	907.6	(593.9 – 1,221.2)	47.1	440.5	(105.4 – 775.6)	27.7
juvenile forest	163.0	(0.0 – 343.7)	8.5	296.8	(252.1 – 341.4)	18.7
respacing	–	–	–	–	–	–
first thinning	206.1	–	10.7	361.0	(0.0 – 1,134.0)	22.7
2nd thinning	159.4	–	8.3	–	–	–
subsequent thinning	488.1	(64.7 – 911.6)	25.4	489.8	(0.0 – 3,065.8)	30.9
Total	1,924.2	(1,566.1 – 2,282.3)	100.0	1,588.0	(877.8 – 2,298.2)	100.0

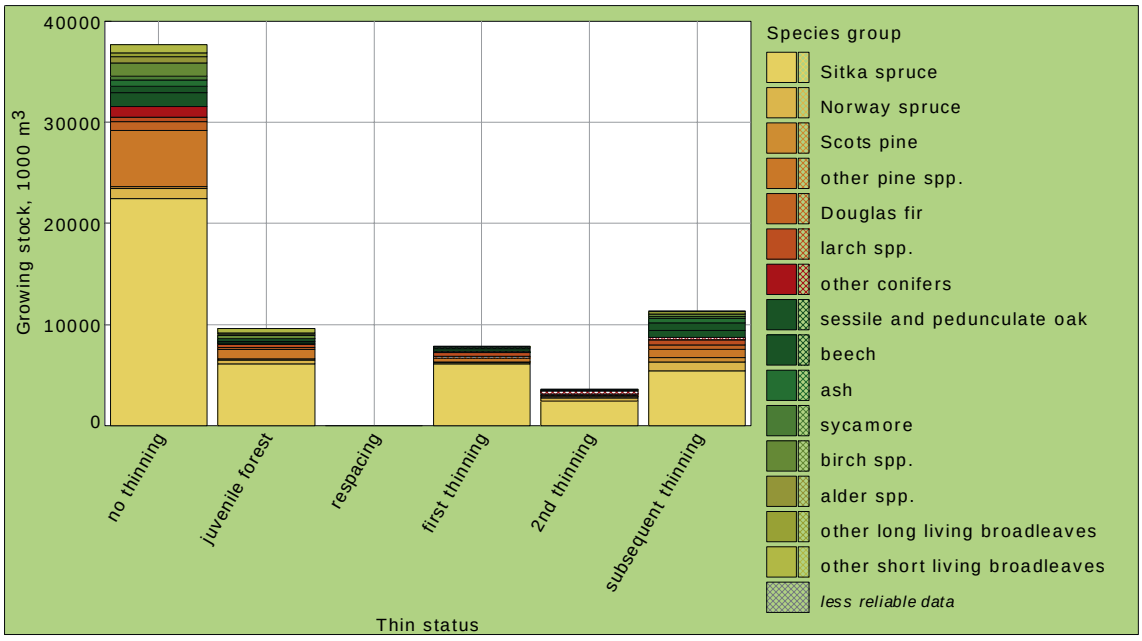
Thin status	Species group / Growing stock					
	other conifers			sessile and pedunculate oak		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no thinning	1,032.4	(346.6 – 1,718.2)	62.5	1,395.4	(831.1 – 1,959.7)	58.5
juvenile forest	48.9	(0.0 – 142.1)	3.0	195.6	(0.0 – 975.6)	8.2
respacing	–	–	–	–	–	–
first thinning	44.0	–	2.7	100.1	–	4.2
2nd thinning	289.8	–	17.6	–	–	–
subsequent thinning	234.3	–	14.2	693.9	(194.1 – 1,193.7)	29.1
Total	1,649.4	(203.5 – 3,095.3)	100.0	2,385.0	(1,779.8 – 2,990.2)	100.0

Thin status	Species group / Growing stock					
	beech			ash		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no thinning	612.9	(453.2 – 772.6)	35.4	648.0	(477.9 – 818.1)	43.1
juvenile forest	58.1	–	3.4	256.7	(141.6 – 371.8)	17.1
respacing	–	–	–	–	–	–
first thinning	275.3	(0.0 – 659.4)	15.9	130.6	–	8.7
2nd thinning	44.4	–	2.6	27.4	–	1.8
subsequent thinning	739.8	(385.9 – 1,093.8)	42.7	439.5	(251.9 – 627.1)	29.3
Total	1,730.5	(1,183.3 – 2,277.8)	100.0	1,502.3	(1,248.3 – 1,756.2)	100.0

Thin status	Species group / Growing stock							
	sycamore				birch spp.			
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%
no thinning	328.0	(261.9	– 394.2)	55.3	1,308.1	(1,053.8	– 1,562.5)	71.4
juvenile forest	34.1	(0.0	– 72.4)	5.8	294.0	(201.1	– 386.9)	16.0
respacing	–	–	–	–	–	–	–	–
first thinning	28.6	(0.0	– 105.7)	4.8	7.4	–	–	0.4
2nd thinning	9.6	–	–	1.6	5.9	–	–	0.3
subsequent thinning	193.0	(0.0	– 545.6)	32.5	217.6	(0.0	– 468.8)	11.9
Total	593.4	(185.4	– 1,001.3)	100.0	1,833.1	(1,563.3	– 2,102.8)	100.0

Thin status	Species group / Growing stock							
	alder spp.				other long living broadleaves			
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%
no thinning	631.3	(533.6	– 728.9)	74.4	412.2	(341.8	– 482.5)	52.9
juvenile forest	98.4	–	–	11.6	144.6	(47.7	– 241.5)	18.6
respacing	–	–	–	–	1.5	–	–	0.2
first thinning	16.5	–	–	1.9	–	–	–	–
2nd thinning	75.0	–	–	8.8	–	–	–	–
subsequent thinning	28.2	(0.0	– 76.6)	3.3	220.1	(0.0	– 448.1)	28.3
Total	849.4	(664.5	– 1,034.3)	100.0	778.3	(645.2	– 911.4)	100.0

Thin status	Species group / Growing stock							
	other short living broadleaves				Total			
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%
no thinning	807.5	(587.6	– 1,027.4)	58.8	37,706.0	(35,299.1	– 40,112.8)	53.8
juvenile forest	434.6	(258.9	– 610.2)	31.7	9,597.5	(8,896.6	– 10,298.3)	13.7
respacing	–	–	–	–	1.5	–	–	0.002
first thinning	30.3	–	–	2.2	7,856.8	(6,509.7	– 9,204.0)	11.2
2nd thinning	10.1	–	–	0.7	3,591.5	(2,866.0	– 4,317.1)	5.1
subsequent thinning	90.4	(72.7	– 108.1)	6.6	11,356.1	(9,616.1	– 13,096.1)	16.2
Total	1,372.8	(1,147.2	– 1,598.5)	100.0	70,109.4	(66,398.6	– 73,820.2)	100.0



6.2.10 Total growing stock by species group and growth stage

Methodology

The total growing stock is classified by species group and growth stage.

Growth stage	Species group / Growing stock							
	Sitka spruce				Norway spruce			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	21.1	–	–	0.05	–	–	–	–
pre thicket	57.8	(39.1	– 76.5)	0.1	8.9	–	–	0.3
thicket	1,816.0	(1,551.0	– 2,081.1)	4.3	128.6	(12.5	– 244.6)	4.6
small pole	6,421.7	(5,805.9	– 7,037.5)	15.1	396.2	(244.9	– 547.5)	14.3
pole-stage	8,387.0	(7,525.5	– 9,248.5)	19.7	822.7	(49.8	– 1,595.5)	29.7
incoming high forest	9,517.8	(8,247.3	– 10,788.4)	22.4	477.5	(171.5	– 783.6)	17.2
high forest	16,235.4	(14,448.7	– 18,022.1)	38.2	936.4	(644.6	– 1,228.2)	33.9
overmature	33.8	–	–	0.08	–	–	–	–
uneven-aged	22.0	–	–	0.05	–	–	–	–
Total	42,512.6	(39,562.8	– 45,462.5)	100.0	2,770.2	(2,179.5	– 3,361.0)	100.0

Growth stage	Species group / Growing stock							
	Scots pine				other pine spp.			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	1.6	–	–	0.2	–	–	–	–
pre thicket	31.6	–	–	3.4	6.2	(4.0	– 8.4)	0.08
thicket	11.8	–	–	1.3	90.3	(65.2	– 115.5)	1.2
small pole	44.5	–	–	4.9	697.0	(552.3	– 841.7)	9.0
pole-stage	98.5	–	–	10.8	1,812.5	(1,482.1	– 2,142.8)	23.5
incoming high forest	142.7	–	–	15.6	2,491.0	(2,159.7	– 2,822.4)	32.3
high forest	297.4	(0.0	– 1,197.5)	32.3	2,520.8	(1,400.7	– 3,641.0)	32.7
overmature	191.2	(41.9	– 340.5)	20.9	43.4	–	–	0.6
uneven-aged	97.1	–	–	10.6	42.5	–	–	0.6
Total	916.3	(591.2	– 1,241.4)	100.0	7,703.9	(6,449.7	– 8,958.1)	100.0

Growth stage	Species group / Growing stock							
	Douglas fir				larch spp.			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	–	–	–	–	–	–	–	–
pre thicket	2.0	–	–	0.1	2.1	–	–	0.1
thicket	81.3	(0.0	– 247.4)	4.2	63.2	(0.0	– 126.7)	4.0
small pole	148.1	(81.9	– 214.2)	7.7	273.3	(206.2	– 340.5)	17.2
pole-stage	289.6	(0.0	– 1,368.0)	15.1	283.1	(0.0	– 744.5)	17.8
incoming high forest	626.2	–	–	32.5	314.9	(0.0	– 784.8)	19.8
high forest	677.1	(371.9	– 982.2)	35.2	568.6	(130.8	– 1,006.4)	35.9
overmature	97.6	–	–	5.1	72.0	–	–	4.5
uneven-aged	2.3	–	–	0.1	10.9	–	–	0.7
Total	1,924.2	(1,566.1	– 2,282.3)	100.0	1,588.0	(877.8	– 2,298.2)	100.0

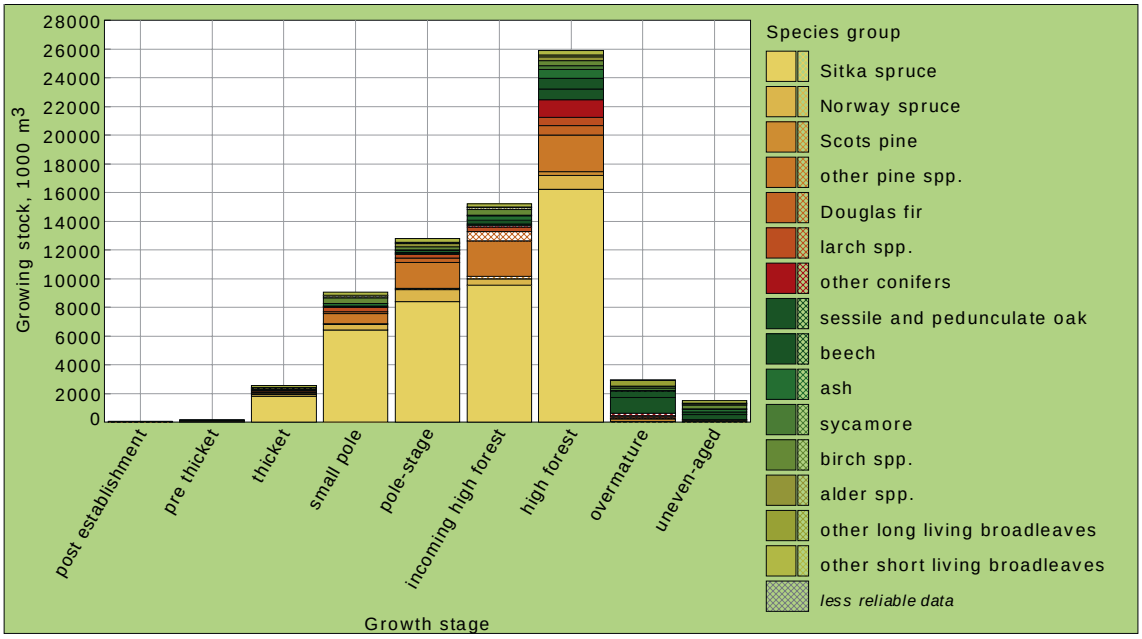
Growth stage	Species group / Growing stock							
	other conifers				sessile and pedunculate oak			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	–	–	–	–	1.9	–	–	0.08
pre thicket	–	–	–	–	–	–	–	–
thicket	14.7	–	–	0.9	33.5	–	–	1.4
small pole	41.5	–	–	2.5	50.1	–	–	2.1
pole-stage	26.6	–	–	1.6	22.3	(9.1	– 35.6)	0.9
incoming high forest	146.3	–	–	8.9	104.4	(0.0	– 612.1)	4.4
high forest	1,241.8	(0.0	– 3,713.8)	75.3	733.8	(414.1	– 1,053.5)	30.8
overmature	171.5	–	–	10.4	1,091.7	(464.6	– 1,718.7)	45.7
uneven-aged	7.2	–	–	0.4	347.3	(0.0	– 706.0)	14.6
Total	1,649.4	(203.5	– 3,095.3)	100.0	2,385.0	(1,779.8	– 2,990.2)	100.0

Growth stage	Species group / Growing stock							
	beech				ash			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	1.9	–	–	0.1	–	–	–	–
pre thicket	19.8	–	–	1.1	1.1	–	–	0.07
thicket	7.0	–	–	0.4	50.5	(0.0	– 206.8)	3.4
small pole	2.2	–	–	0.1	174.6	(0.0	– 458.4)	11.6
pole-stage	70.6	(0.0	– 142.3)	4.1	149.7	(0.0	– 316.1)	10.0
incoming high forest	230.8	(0.0	– 931.6)	13.3	312.9	(137.1	– 488.7)	20.8
high forest	764.9	(440.2	– 1,089.7)	44.3	585.7	(422.1	– 749.2)	38.9
overmature	450.2	(259.8	– 640.6)	26.0	61.5	–	–	4.1
uneven-aged	183.0	(0.0	– 888.1)	10.6	166.3	(0.0	– 453.4)	11.1
Total	1,730.5	(1,183.3	– 2,277.8)	100.0	1,502.3	(1,248.3	– 1,756.2)	100.0

Growth stage	Species group / Growing stock							
	sycamore				birch spp.			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	–	–	–	–	–	–	–	–
pre thicket	1.9	–	–	0.3	1.1	–	–	0.06
thicket	37.4	–	–	6.3	40.5	–	–	2.2
small pole	36.4	–	–	6.1	379.8	(257.0	– 502.6)	20.7
pole-stage	21.9	–	–	3.7	229.5	(118.6	– 340.3)	12.5
incoming high forest	39.2	–	–	6.6	427.8	(273.2	– 582.4)	23.4
high forest	260.2	(70.1	– 450.3)	43.9	351.7	(229.4	– 474.0)	19.2
overmature	141.2	(75.7	– 206.8)	23.8	136.3	(57.1	– 215.5)	7.4
uneven-aged	55.2	(0.0	– 206.1)	9.3	266.5	(0.0	– 665.6)	14.5
Total	593.4	(185.4	– 1,001.3)	100.0	1,833.1	(1,563.3	– 2,102.8)	100.0

Growth stage	Species group / Growing stock							
	alder spp.				other long living broadleaves			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	–	–	–	–	3.2	–	–	0.4
pre thicket	7.7	–	–	0.9	2.8	–	–	0.4
thicket	38.8	–	–	4.6	17.6	–	–	2.3
small pole	110.9	–	–	13.1	44.0	–	–	5.6
pole-stage	208.5	(121.8	– 295.1)	24.5	101.4	–	–	13.0
incoming high forest	118.2	–	–	13.9	37.3	–	–	4.8
high forest	298.7	(161.7	– 435.6)	35.2	120.7	(0.0	– 255.7)	15.5
overmature	13.1	–	–	1.5	391.1	(260.1	– 522.1)	50.3
uneven-aged	53.5	(0.0	– 178.1)	6.3	60.1	(42.3	– 77.9)	7.7
Total	849.4	(664.5	– 1,034.3)	100.0	778.3	(645.2	– 911.4)	100.0

Growth stage	Species group / Growing stock							
	other short living broadleaves				Total			
	1000 m³		(α=0.05)	%	1000 m³		(α=0.05)	%
post establishment	19.5	–	–	1.4	49.4	(0.0	– 153.6)	0.07
pre thicket	8.5	–	–	0.6	151.5	(64.3	– 238.7)	0.2
thicket	109.4	(39.3	– 179.4)	8.0	2,540.6	(2,240.5	– 2,840.6)	3.6
small pole	219.1	(102.7	– 335.5)	16.0	9,039.3	(8,360.7	– 9,717.9)	12.9
pole-stage	272.8	(232.7	– 313.0)	19.9	12,796.6	(11,595.7	– 13,997.6)	18.3
incoming high forest	236.9	(154.0	– 319.8)	17.3	15,223.9	(13,741.7	– 16,706.2)	21.7
high forest	284.7	(195.5	– 373.9)	20.6	25,877.8	(23,542.2	– 28,213.3)	36.9
overmature	42.4	(37.6	– 47.1)	3.1	2,936.9	(2,294.8	– 3,578.9)	4.2
uneven-aged	179.6	(94.5	– 264.6)	13.1	1,493.5	(1,204.4	– 1,782.5)	2.1
Total	1,372.8	(1,147.2	– 1,598.5)	100.0	70,109.4	(66,398.6	– 73,820.2)	100.0



6.2.11 Total growing stock by species group and rotation type

Methodology

The total volume stock is classified by species group and rotation type.

Rotation type	Species group / Growing stock					
	Sitka spruce			Norway spruce		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	37,409.7	(34,614.6 – 40,204.8)	88.0	2,254.1	(1,595.6 – 2,912.5)	81.4
reforestation	4,257.1	(3,486.0 – 5,028.2)	10.0	455.2	(216.5 – 693.9)	16.4
semi-natural	845.8	(0.0 – 1,939.1)	2.0	61.0	– –	2.2
Total	42,512.6	(39,562.8 – 45,462.5)	100.0	2,770.2	(2,179.5 – 3,361.0)	100.0

Rotation type	Species group / Growing stock					
	Scots pine			other pine spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	525.5	(332.4 – 718.5)	57.3	6,997.0	(6,187.8 – 7,806.3)	90.8
reforestation	205.2	(0.0 – 466.7)	22.4	706.8	(524.0 – 889.7)	9.2
semi-natural	185.6	(46.0 – 325.2)	20.3	–	– –	–
Total	916.3	(591.2 – 1,241.4)	100.0	7,703.9	(6,449.7 – 8,958.1)	100.0

Rotation type	Species group / Growing stock					
	Douglas fir			larch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	1,327.0	(924.0 – 1,730.0)	69.0	1,257.7	(581.7 – 1,933.6)	79.2
reforestation	450.0	(0.0 – 1,217.5)	23.4	248.4	(116.3 – 380.5)	15.6
semi-natural	147.2	– –	7.6	81.9	– –	5.2
Total	1,924.2	(1,566.1 – 2,282.3)	100.0	1,588.0	(877.8 – 2,298.2)	100.0

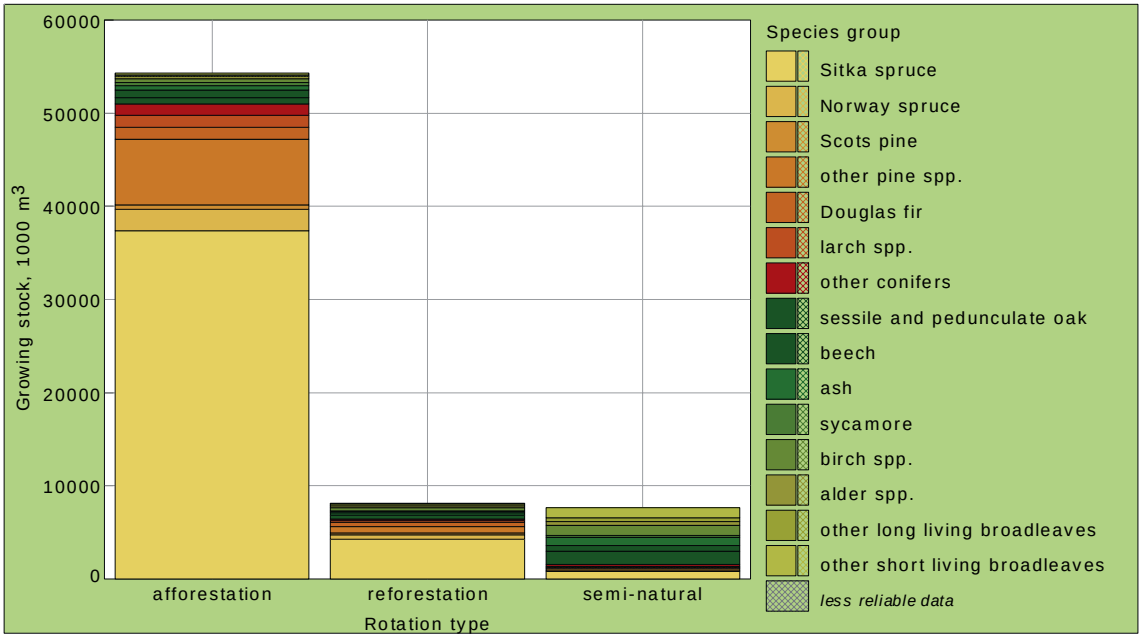
Rotation type	Species group / Growing stock					
	other conifers			sessile and pedunculate oak		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	1,244.2	(0.0 – 3,981.7)	75.4	623.4	(0.0 – 2,330.6)	26.1
reforestation	138.6	(39.6 – 237.6)	8.4	388.1	(191.5 – 584.7)	16.3
semi-natural	266.6	(0.0 – 1,328.3)	16.2	1,373.4	(787.5 – 1,959.4)	57.6
Total	1,649.4	(203.5 – 3,095.3)	100.0	2,385.0	(1,779.8 – 2,990.2)	100.0

Rotation type	Species group / Growing stock					
	beech			ash		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	815.8	(569.7 – 1,061.8)	47.2	529.8	(189.4 – 870.2)	35.3
reforestation	275.7	(0.0 – 604.2)	15.9	134.0	(40.1 – 227.9)	8.9
semi-natural	639.1	(350.6 – 927.6)	36.9	838.5	(633.8 – 1,043.2)	55.8
Total	1,730.5	(1,183.3 – 2,277.8)	100.0	1,502.3	(1,248.3 – 1,756.2)	100.0

Rotation type	Species group / Growing stock					
	sycamore			birch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	308.7	(0.0 – 1,100.5)	52.0	388.0	(249.9 – 526.2)	21.2
reforestation	35.0	– –	5.9	355.9	(147.4 – 564.4)	19.4
semi-natural	249.7	(160.9 – 338.4)	42.1	1,089.1	(619.0 – 1,559.2)	59.4
Total	593.4	(185.4 – 1,001.3)	100.0	1,833.1	(1,563.3 – 2,102.8)	100.0

Rotation type	Species group / Growing stock					
	alder spp.			other long living broadleaves		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	294.6	(45.6 – 543.7)	34.7	164.1	– –	21.1
reforestation	186.6	(11.8 – 361.4)	22.0	218.4	(171.3 – 265.5)	28.1
semi-natural	368.2	(289.2 – 447.1)	43.3	395.8	(257.1 – 534.5)	50.8
Total	849.4	(664.5 – 1,034.3)	100.0	778.3	(645.2 – 911.4)	100.0

Rotation type	Species group / Growing stock					
	other short living broadleaves			Total		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
afforestation	195.2	(78.7 – 311.7)	14.2	54,334.8	(51,150.6 – 57,519.0)	77.5
reforestation	97.9	(49.6 – 146.2)	7.1	8,153.0	(6,667.1 – 9,639.0)	11.6
semi-natural	1,079.7	(852.0 – 1,307.4)	78.7	7,621.6	(6,682.6 – 8,560.6)	10.9
Total	1,372.8	(1,147.2 – 1,598.5)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0



6.3 STEM STRAIGHTNESS

6.3.1 Total growing stock by species group and potential log length

Definition

Potential log length

Describes a tree's stem straightness in terms of straight log lengths.

1. **No straight logs**: There are no straight logs present.
2. **One 2 m log**: A log with a minimum length of 2 m.
3. **Two 2 m logs**: Two logs with a minimum length of 2 m.
4. **One 2-3 m log**: A log with a minimum length of 2 m and maximum length of 3 m.
5. **One 3 m and one 2 m log**: One log 3 m in length and one log 2 m in length.
6. **One 4-5 m log**: A log with a minimum length of 4m and maximum length of 5 m.
7. **Log greater than or equal to 5 m**: A log with a minimum length of 5 m.

Methodology

The total growing stock is classified by species group and potential log length.

Potential log length (first 6m)	Species group / Growing stock					
	Sitka spruce			Norway spruce		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
no straight logs	1,491.4	(0.0 – 3,940.3)	3.5	69.9	(45.1 – 94.7)	2.5
one 2 m log	1,604.8	(1,445.0 – 1,764.6)	3.8	85.4	(0.0 – 175.6)	3.1
two 2 m logs	1,434.1	(1,247.6 – 1,620.5)	3.4	45.7	(19.0 – 72.4)	1.6
one 2 m less than 3 m log	1,605.7	(1,440.1 – 1,771.3)	3.8	80.9	(0.0 – 188.4)	2.9
one 3 m and one 2 m log	2,070.4	(1,863.3 – 2,277.5)	4.9	53.2	(40.6 – 65.8)	1.9
one 4 m less than 5 m log	2,106.4	(1,905.5 – 2,307.4)	5.0	118.1	(59.0 – 177.3)	4.3
one log at least 5 m	32,199.8	(29,738.0 – 34,661.6)	75.6	2,317.0	(1,738.5 – 2,895.4)	83.7
Total	42,512.6	(39,562.8 – 45,462.5)	100.0	2,770.2	(2,179.5 – 3,361.0)	100.0

Potential log length (first 6m)	Species group / Growing stock					
	Scots pine			other pine spp.		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
no straight logs	91.7	(0.0 – 246.0)	10.0	1,102.5	(974.3 – 1,230.8)	14.3
one 2 m log	51.1	(43.3 – 58.9)	5.6	1,104.5	(984.0 – 1,224.9)	14.3
two 2 m logs	46.4	(0.0 – 141.1)	5.1	656.3	(564.9 – 747.8)	8.5
one 2 m less than 3 m log	66.9	(35.0 – 98.7)	7.3	1,064.0	(943.0 – 1,185.1)	13.8
one 3 m and one 2 m log	60.2	(25.7 – 94.6)	6.6	439.6	(358.3 – 520.9)	5.7
one 4 m less than 5 m log	65.0	(0.0 – 162.3)	7.1	888.8	(742.4 – 1,035.3)	11.5
one log at least 5 m	535.1	(0.0 – 1,611.2)	58.3	2,448.1	(1,366.2 – 3,529.9)	31.9
Total	916.3	(591.2 – 1,241.4)	100.0	7,703.9	(6,449.7 – 8,958.1)	100.0

Potential log length (first 6m)	Species group / Growing stock					
	Douglas fir			larch spp.		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
no straight logs	91.3	(0.0 – 196.8)	4.7	186.8	(111.8 – 261.9)	11.8
one 2 m log	105.1	(57.0 – 153.1)	5.5	148.9	(0.0 – 334.4)	9.4
two 2 m logs	59.4	(53.1 – 65.7)	3.1	105.3	(86.3 – 124.3)	6.6
one 2 m less than 3 m log	60.7	(33.1 – 88.3)	3.2	81.2	– –	5.1
one 3 m and one 2 m log	115.4	(39.6 – 191.2)	6.0	142.1	(0.0 – 307.4)	8.9
one 4 m less than 5 m log	60.2	(0.0 – 197.3)	3.1	132.3	(88.1 – 176.4)	8.3
one log at least 5 m	1,432.1	(1,094.4 – 1,769.8)	74.4	791.4	(0.0 – 1,717.6)	49.9
Total	1,924.2	(1,566.1 – 2,282.3)	100.0	1,588.0	(877.8 – 2,298.2)	100.0

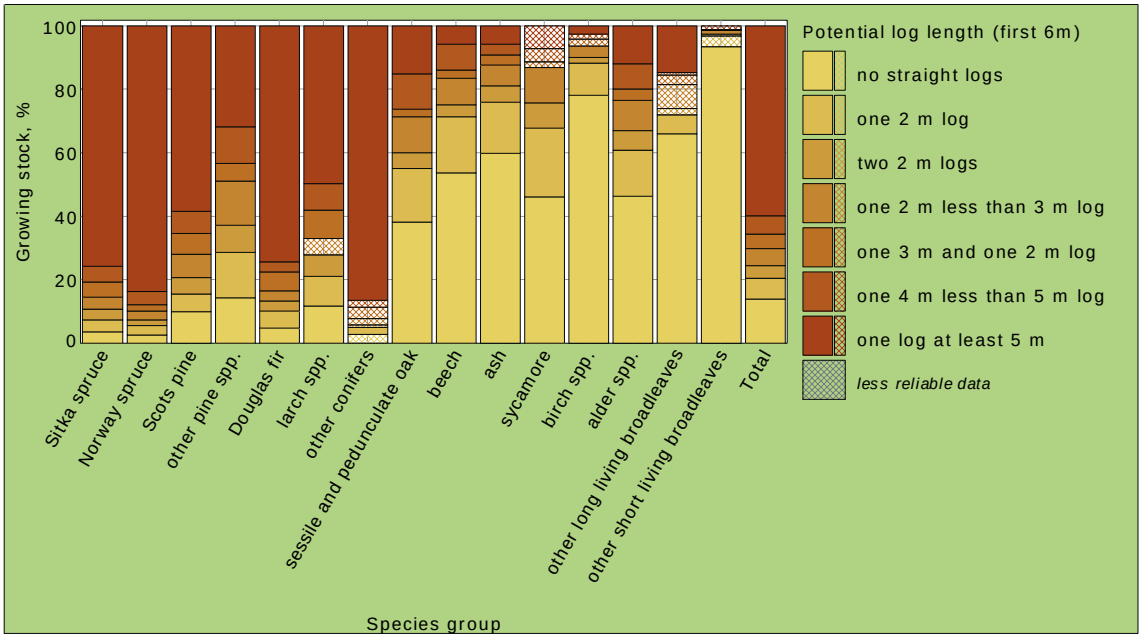
Potential log length (first 6m)	Species group / Growing stock					
	other conifers			sessile and pedunculate oak		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no straight logs	45.4	– –	2.8	910.3	(653.5 – 1,167.1)	38.1
one 2 m log	37.6	(0.0 – 118.5)	2.3	399.7	(209.9 – 589.6)	16.8
two 2 m logs	13.3	– –	0.8	119.1	(99.5 – 138.8)	5.0
one 2 m less than 3 m log	31.2	– –	1.9	269.9	(0.0 – 760.1)	11.3
one 3 m and one 2 m log	60.9	– –	3.7	58.9	(53.1 – 64.7)	2.5
one 4 m less than 5 m log	35.9	– –	2.2	264.8	(38.7 – 490.8)	11.1
one log at least 5 m	1,425.2	(544.9 – 2,305.4)	86.3	362.2	(119.1 – 605.4)	15.2
Total	1,649.4	(203.5 – 3,095.3)	100.0	2,385.0	(1,779.8 – 2,990.2)	100.0

Potential log length (first 6m)	Species group / Growing stock					
	beech			ash		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no straight logs	927.5	(707.8 – 1,147.1)	53.5	898.5	(719.0 – 1,078.1)	59.9
one 2 m log	305.6	(218.6 – 392.6)	17.7	240.0	(138.1 – 341.8)	16.0
two 2 m logs	65.5	(48.6 – 82.4)	3.8	78.1	(47.7 – 108.4)	5.2
one 2 m less than 3 m log	144.7	(0.0 – 353.9)	8.4	98.4	(18.6 – 178.1)	6.5
one 3 m and one 2 m log	43.6	(26.3 – 60.9)	2.5	49.7	(0.0 – 104.5)	3.3
one 4 m less than 5 m log	143.7	(46.8 – 240.6)	8.3	49.9	(0.0 – 173.8)	3.3
one log at least 5 m	100.0	(62.3 – 137.6)	5.8	87.7	(38.9 – 136.5)	5.8
Total	1,730.5	(1,183.3 – 2,277.8)	100.0	1,502.3	(1,248.3 – 1,756.2)	100.0

Potential log length (first 6m)	Species group / Growing stock					
	sycamore			birch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no straight logs	273.9	(195.0 – 352.7)	46.1	1,430.7	(1,221.0 – 1,640.5)	78.1
one 2 m log	128.2	(0.0 – 464.0)	21.6	185.8	(140.7 – 230.8)	10.1
two 2 m logs	46.6	(0.0 – 98.1)	7.9	33.0	(0.0 – 136.5)	1.8
one 2 m less than 3 m log	66.8	(56.1 – 77.6)	11.3	67.0	(24.5 – 109.5)	3.7
one 3 m and one 2 m log	10.6	– –	1.8	36.6	– –	2.0
one 4 m less than 5 m log	24.6	– –	4.1	32.0	– –	1.7
one log at least 5 m	42.6	– –	7.2	47.9	(35.9 – 60.0)	2.6
Total	593.4	(185.4 – 1,001.3)	100.0	1,833.1	(1,563.3 – 2,102.8)	100.0

Potential log length (first 6m)	Species group / Growing stock					
	alder spp.			other long living broadleaves		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no straight logs	392.5	(116.8 – 668.3)	46.3	512.8	(450.3 – 575.3)	65.9
one 2 m log	123.6	(67.8 – 179.3)	14.5	46.1	(38.3 – 53.9)	5.9
two 2 m logs	52.4	(25.8 – 79.0)	6.2	15.4	– –	2.0
one 2 m less than 3 m log	81.1	(0.0 – 169.5)	9.5	59.0	– –	7.6
one 3 m and one 2 m log	29.9	(7.4 – 52.4)	3.5	23.3	– –	3.0
one 4 m less than 5 m log	67.8	(52.9 – 82.8)	8.0	6.2	– –	0.8
one log at least 5 m	102.1	(0.0 – 226.8)	12.0	115.4	(0.0 – 554.2)	14.8
Total	849.4	(664.5 – 1,034.3)	100.0	778.3	(645.2 – 911.4)	100.0

Potential log length (first 6m)	Species group / Growing stock					
	other short living broadleaves			Total		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
no straight logs	1,280.7	(1,067.7 – 1,493.7)	93.3	9,706.0	(8,904.1 – 10,507.8)	13.8
one 2 m log	46.7	– –	3.4	4,613.1	(4,278.2 – 4,948.0)	6.6
two 2 m logs	9.1	– –	0.7	2,779.7	(2,548.9 – 3,010.5)	4.0
one 2 m less than 3 m log	14.9	(0.0 – 30.3)	1.1	3,792.4	(3,479.1 – 4,105.7)	5.4
one 3 m and one 2 m log	2.0	– –	0.1	3,196.4	(2,940.2 – 3,452.6)	4.6
one 4 m less than 5 m log	1.0	– –	0.08	3,996.9	(3,647.4 – 4,346.5)	5.7
one log at least 5 m	18.5	– –	1.3	42,024.9	(39,074.8 – 44,975.0)	59.9
Total	1,372.8	(1,147.2 – 1,598.5)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0


Growing stock, %
100
80
60
40
20
0
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Douglas fir
larch spp.
other conifers
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves
Total
Species group
Potential log length (first 6m)
no straight logs
one 2 m log
two 2 m logs
one 2 m less than 3 m log
one 3 m and one 2 m log
one 4 m less than 5 m log
one log at least 5 m
less reliable data

6.4 SIZE ASSORTMENTS

Definition

Size assortments

Various categories of timber, specified by length and diameter, which may be produced when cross-cutting a tree.

Methodology

Total growing stock is categorised by top diameter on the basis of tree dbh. Volume to 14 cm top diameter assumes a specified log length of 3 m. Volume to 7 cm top diameter assumes a specified log length of 1.3 m (Matthews and Mackie, 2006). The three size assortment categories are:

- Pulp (7-13.9 cm top diameter)
- Pallet (14-19.9 cm top diameter)
- Sawlog (20 cm+ top diameter).

6.4.1 Total growing stock by species group and assortments

Methodology

The total growing stock is classified by species group and size assortments.

Assortment (TD OB)	Species group / Growing stock					
	Sitka spruce			Norway spruce		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp (7-13.9 cm)	12,962.3	(12,089.6 – 13,835.1)	30.5	755.2	(572.7 – 937.6)	27.3
Pallet (14-19.9 cm)	13,122.1	(12,010.7 – 14,233.5)	30.9	662.8	(474.4 – 851.2)	23.9
Sawlog (20+ cm)	16,428.2	(13,885.7 – 18,970.7)	38.6	1,352.3	(792.5 – 1,912.0)	48.8
Total	42,512.6	(38,744.8 – 46,280.4)	100.0	2,770.2	(1,985.3 – 3,555.2)	100.0

Assortment (TD OB)	Species group / Growing stock					
	Scots pine			other pine spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp (7-13.9 cm)	96.2	(53.1 – 139.3)	10.5	2,572.7	(2,211.0 – 2,934.4)	33.4
Pallet (14-19.9 cm)	156.5	(95.6 – 217.3)	17.1	2,686.1	(2,269.9 – 3,102.3)	34.9
Sawlog (20+ cm)	663.7	(371.4 – 955.9)	72.4	2,445.0	(1,372.3 – 3,517.8)	31.7
Total	916.3	(570.5 – 1,262.1)	100.0	7,703.9	(6,284.0 – 9,123.7)	100.0

Assortment (TD OB)	Species group / Growing stock					
	Douglas fir			larch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp (7-13.9 cm)	497.1	(349.9 – 644.2)	25.8	488.6	(335.4 – 641.7)	30.8
Pallet (14-19.9 cm)	506.5	(325.6 – 687.5)	26.3	360.9	(220.6 – 501.3)	22.7
Sawlog (20+ cm)	920.6	(476.0 – 1,365.2)	47.9	738.5	(250.6 – 1,226.4)	46.5
Total	1,924.2	(1,274.6 – 2,573.7)	100.0	1,588.0	(968.2 – 2,207.8)	100.0

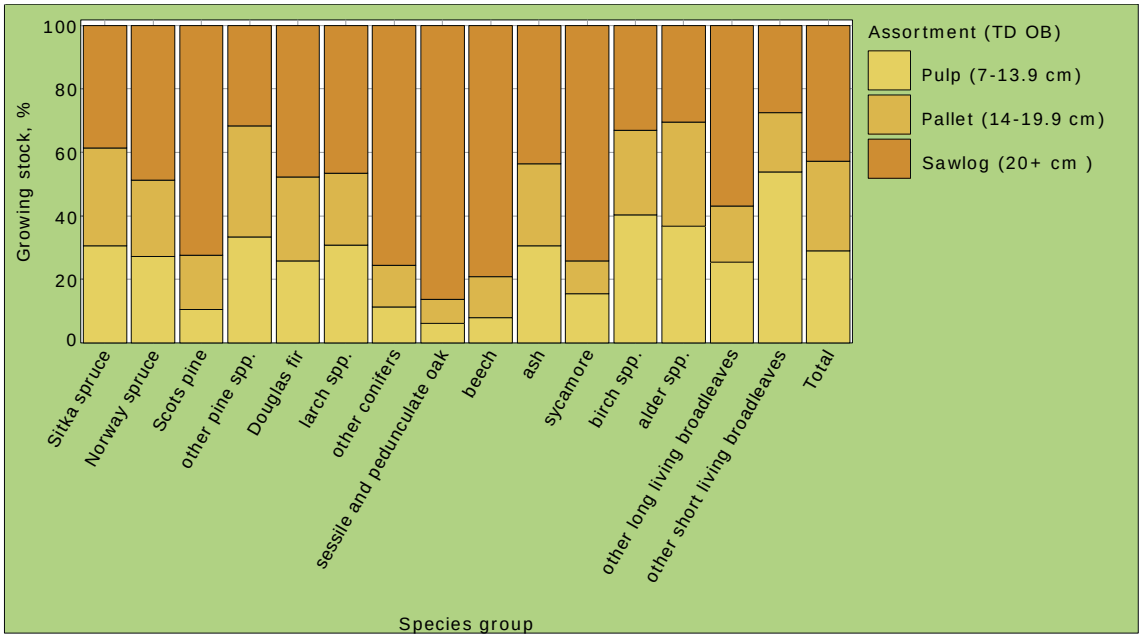
Assortment (TD OB)	Species group / Growing stock					
	other conifers			sessile and pedunculate oak		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp (7-13.9 cm)	185.7	(72.5 – 298.9)	11.3	148.1	(80.2 – 215.9)	6.2
Pallet (14-19.9 cm)	217.4	(90.6 – 344.3)	13.2	178.9	(131.6 – 226.3)	7.5
Sawlog (20+ cm)	1,246.2	(439.6 – 2,052.8)	75.5	2,058.0	(1,369.3 – 2,746.7)	86.3
Total	1,649.4	(719.8 – 2,579.0)	100.0	2,385.0	(1,653.5 – 3,116.5)	100.0

Assortment (TD OB)	Species group / Growing stock					
	beech			ash		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp (7-13.9 cm)	139.2	(99.2 – 179.2)	8.0	458.7	(345.5 – 571.9)	30.5
Pallet (14-19.9 cm)	220.2	(159.3 – 281.0)	12.7	389.4	(290.5 – 488.3)	25.9
Sawlog (20+ cm)	1,371.2	(823.9 – 1,918.5)	79.3	654.1	(444.9 – 863.3)	43.6
Total	1,730.5	(1,131.8 – 2,329.3)	100.0	1,502.3	(1,171.3 – 1,833.2)	100.0

Assortment (TD OB)	Species group / Growing stock					
	sycamore			birch spp.		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Pulp (7-13.9 cm)	91.4	(35.1 – 147.7)	15.4	737.8	(589.4 – 886.1)	40.3
Pallet (14-19.9 cm)	61.7	(33.1 – 90.4)	10.4	487.9	(382.0 – 593.9)	26.6
Sawlog (20+ cm)	440.3	(203.4 – 677.1)	74.2	607.3	(409.6 – 805.1)	33.1
Total	593.4	(321.0 – 865.8)	100.0	1,833.1	(1,490.0 – 2,176.2)	100.0

Assortment (TD OB)	Species group / Growing stock					
	alder spp.			other long living broadleaves		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Pulp (7-13.9 cm)	312.5	(199.0 – 426.1)	36.8	198.4	(139.0 – 257.8)	25.5
Pallet (14-19.9 cm)	277.3	(182.5 – 372.1)	32.6	137.0	(92.2 – 181.8)	17.6
Sawlog (20+ cm)	259.6	(132.7 – 386.4)	30.6	442.8	(187.7 – 698.0)	56.9
Total	849.4	(595.9 – 1,102.9)	100.0	778.3	(492.8 – 1,063.8)	100.0

Assortment (TD OB)	Species group / Growing stock					
	other short living broadleaves			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Pulp (7-13.9 cm)	739.9	(575.0 – 904.8)	53.9	20,383.7	(19,404.3 – 21,363.2)	29.1
Pallet (14-19.9 cm)	255.9	(197.8 – 314.0)	18.6	19,720.8	(18,513.2 – 20,928.3)	28.1
Sawlog (20+ cm)	377.0	(224.0 – 530.1)	27.5	30,004.9	(26,785.9 – 33,223.9)	42.8
Total	1,372.8	(1,108.6 – 1,637.1)	100.0	70,109.4	(65,682.1 – 74,536.7)	100.0



6.4.2 Total growing stock by species group and potential end product

Definition

Potential end product

Various categories of timber, specified by product type.

Total growing stock by top diameter assortment (6.4.1) assumes that there are no defects in the trees and all growing stock is merchantable. The reality in any forest stand is that there are factors, such as stem break or forking that will reduce the recoverable timber.

The following table outlines how NFI attributes were used to adjust the volume based on top diameter assortment to a more realistic Potential End Product volume.

Attribute	Category	Downgrade to
Fork	Up to 1.3m	Pulp
1.3m to 3m	Pulp	
Tree Break	Stem Break	Pulp
Stem Straightness	One 3m and one 2m log	Pulp
	One 2m log	Pulp
	Two 2m logs	Pulp
	No straight logs	Pulp

Methodology

The total growing stock is classified by species group and potential end product.

Potential end product	Species group / Growing stock					
	Sitka spruce			Norway spruce		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
Pulp	17,044.4	(15,775.4 – 18,313.5)	40.1	925.5	(704.7 – 1,146.2)	33.4
Pallet	10,781.6	(9,843.6 – 11,719.7)	25.4	586.8	(413.5 – 760.0)	21.2
Sawlog	14,686.6	(12,354.6 – 17,018.6)	34.5	1,258.0	(720.7 – 1,795.3)	45.4
Total	42,512.6	(38,744.8 – 46,280.4)	100.0	2,770.2	(1,985.3 – 3,555.2)	100.0

Potential end product	Species group / Growing stock					
	Scots pine			other pine spp.		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
Pulp	322.8	(178.3 – 467.2)	35.2	5,204.2	(4,486.3 – 5,922.0)	67.5
Pallet	107.5	(59.3 – 155.8)	11.7	1,044.3	(839.7 – 1,249.0)	13.6
Sawlog	486.0	(227.4 – 744.7)	53.1	1,455.4	(468.5 – 2,442.2)	18.9
Total	916.3	(570.5 – 1,262.1)	100.0	7,703.9	(6,284.0 – 9,123.7)	100.0

Potential end product	Species group / Growing stock					
	Douglas fir			larch spp.		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
Pulp	677.9	(478.4 – 877.4)	35.2	738.7	(502.0 – 975.5)	46.5
Pallet	401.5	(247.9 – 555.2)	20.9	210.8	(111.7 – 309.8)	13.3
Sawlog	844.7	(423.0 – 1,266.4)	43.9	638.5	(174.0 – 1,103.0)	40.2
Total	1,924.2	(1,274.6 – 2,573.7)	100.0	1,588.0	(968.2 – 2,207.8)	100.0

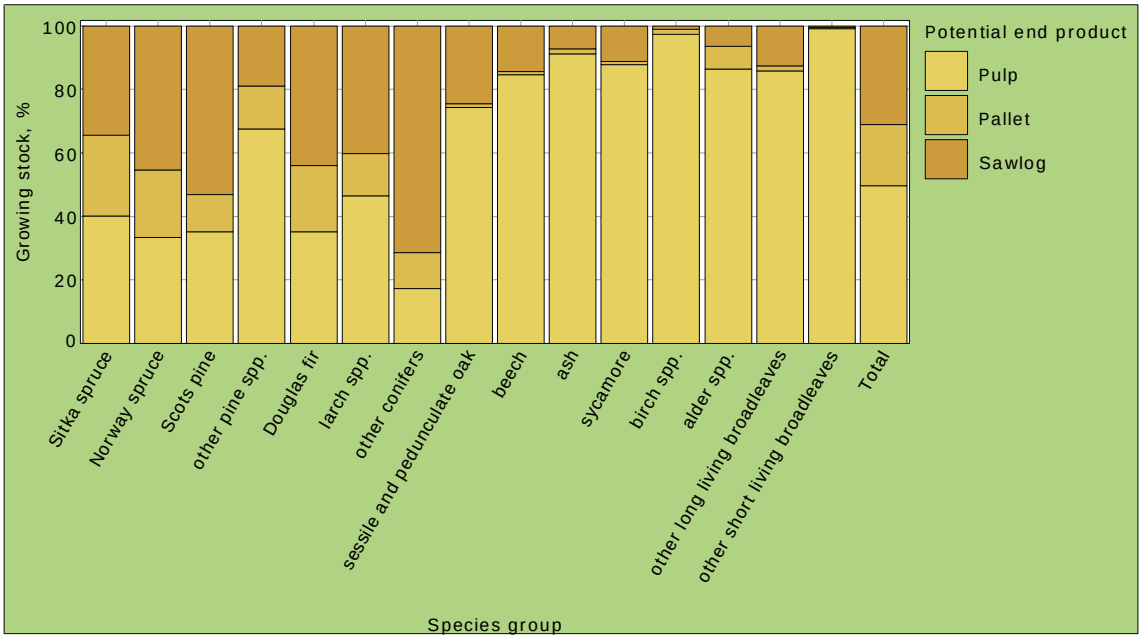
Potential end product	Species group / Growing stock					
	other conifers			sessile and pedunculate oak		
	1000 m^3	(α=0.05)	%	1000 m^3	(α=0.05)	%
Pulp	284.7	(133.3 – 436.1)	17.3	1,773.9	(1,196.0 – 2,351.7)	74.3
Pallet	185.8	(81.2 – 290.4)	11.3	25.5	(10.6 – 40.4)	1.1
Sawlog	1,178.8	(390.3 – 1,967.4)	71.4	585.6	(211.3 – 960.0)	24.6
Total	1,649.4	(719.8 – 2,579.0)	100.0	2,385.0	(1,653.5 – 3,116.5)	100.0

Potential end product	Species group / Growing stock					
	beech			ash		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp	1,462.9	(971.7 – 1,954.1)	84.5	1,370.8	(1,070.5 – 1,671.2)	91.2
Pallet	18.2	(6.4 – 30.0)	1.1	22.3	(8.5 – 36.1)	1.5
Sawlog	249.5	(92.8 – 406.1)	14.4	109.1	(47.3 – 170.8)	7.3
Total	1,730.5	(1,131.8 – 2,329.3)	100.0	1,502.3	(1,171.3 – 1,833.2)	100.0

Potential end product	Species group / Growing stock					
	sycamore			birch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp	520.4	(292.7 – 748.2)	87.7	1,785.9	(1,454.3 – 2,117.4)	97.4
Pallet	5.9	(0.0 – 12.7)	1.0	28.7	(10.7 – 46.6)	1.6
Sawlog	67.1	(0.0 – 151.9)	11.3	18.5	(3.7 – 33.4)	1.0
Total	593.4	(321.0 – 865.8)	100.0	1,833.1	(1,490.0 – 2,176.2)	100.0

Potential end product	Species group / Growing stock					
	alder spp.			other long living broadleaves		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp	734.8	(511.0 – 958.5)	86.5	667.2	(416.8 – 917.5)	85.7
Pallet	59.3	(24.5 – 94.1)	7.0	13.0	(3.2 – 22.9)	1.7
Sawlog	55.4	(23.0 – 87.7)	6.5	98.1	(0.0 – 212.4)	12.6
Total	849.4	(595.9 – 1,102.9)	100.0	778.3	(492.8 – 1,063.8)	100.0

Potential end product	Species group / Growing stock					
	other short living broadleaves			Total		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp	1,361.8	(1,098.0 – 1,625.5)	99.2	34,875.7	(33,066.8 – 36,684.7)	49.8
Pallet	4.2	(0.0 – 10.0)	0.3	13,495.5	(12,504.9 – 14,486.2)	19.2
Sawlog	6.8	(0.0 – 19.2)	0.5	21,738.1	(18,888.7 – 24,587.5)	31.0
Total	1,372.8	(1,108.6 – 1,637.1)	100.0	70,109.4	(65,682.1 – 74,536.7)	100.0



6.4.3 Total conifer growing stock by age class (10 yr) and potential end product

Methodology

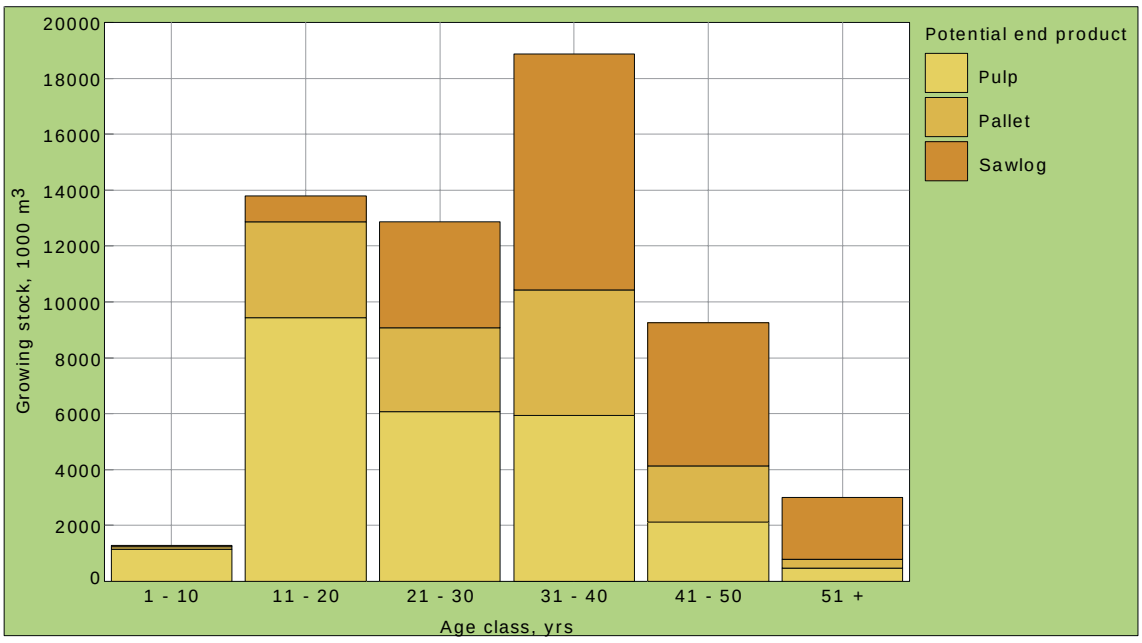
The total growing stock for conifer species is classified by age class (10 yr) and potential end product.

Potential end product	Age class, yrs / Growing stock					
	1 - 10			11 - 20		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp	1,162.3	(895.9 – 1,428.7)	90.8	9,438.5	(8,543.7 – 10,333.3)	68.5
Pallet	68.9	(21.6 – 116.3)	5.4	3,422.1	(2,936.2 – 3,908.0)	24.8
Sawlog	48.7	(0.0 – 139.0)	3.8	923.9	(636.4 – 1,211.5)	6.7
Total	1,280.0	(966.3 – 1,593.6)	100.0	13,784.5	(12,378.3 – 15,190.7)	100.0

Potential end product	Age class, yrs / Growing stock					
	21 - 30			31 - 40		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp	6,072.2	(5,304.8 – 6,839.5)	47.2	5,930.4	(5,095.8 – 6,765.1)	31.4
Pallet	3,012.9	(2,569.6 – 3,456.2)	23.4	4,497.2	(3,843.1 – 5,151.4)	23.8
Sawlog	3,788.6	(2,723.2 – 4,854.0)	29.4	8,446.4	(6,745.2 – 10,147.5)	44.8
Total	12,873.6	(11,013.9 – 14,733.3)	100.0	18,874.0	(16,098.9 – 21,649.2)	100.0

Potential end product	Age class, yrs / Growing stock					
	41 - 50			51 +		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Pulp	2,112.6	(1,469.6 – 2,755.6)	22.8	482.2	(283.9 – 680.5)	16.1
Pallet	2,017.7	(1,518.5 – 2,517.0)	21.8	299.6	(169.8 – 429.4)	10.0
Sawlog	5,122.7	(3,489.9 – 6,755.6)	55.4	2,217.6	(828.9 – 3,606.3)	73.9
Total	9,253.0	(6,887.8 – 11,618.2)	100.0	2,999.4	(1,453.7 – 4,545.1)	100.0

Potential end product	Age class, yrs / Growing stock		
	Total		
	1000 m³	(α=0.05)	%
Pulp	25,198.2	(23,712.0 – 26,684.4)	42.7
Pallet	13,318.4	(12,328.0 – 14,308.9)	22.5
Sawlog	20,548.0	(17,716.6 – 23,379.4)	34.8
Total	59,064.6	(54,749.2 – 63,380.0)	100.0



6.4.4 Total broadleaf growing stock by age class (10 yr) and potential end product

Methodology

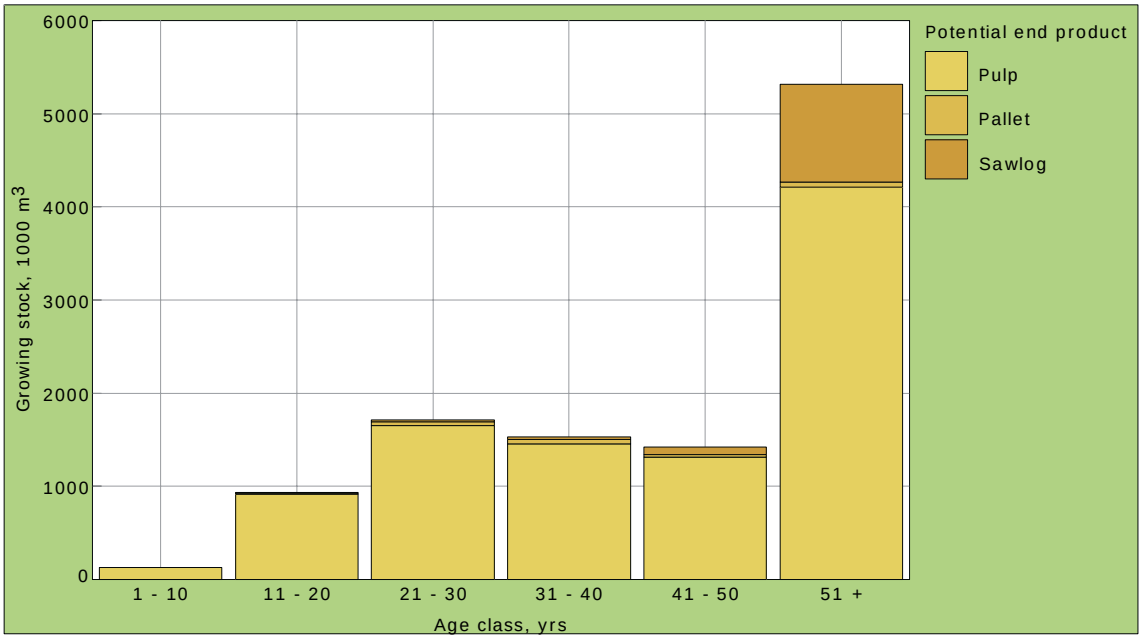
Total assortment growing stock for conifer species is classified by age class (10 yr) and potential end product.

Potential end product	Age class, yrs / Growing stock								
	1 - 10				11 - 20				
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%	
Pulp	126.2	(51.3	– 201.2)	100.0	916.0	(717.4	– 1,114.7)	98.2
Pallet	–	–	–	–	14.0	(2.3	– 25.8)	1.5
Sawlog	–	–	–	–	2.7	(0.0	– 7.5)	0.3
Total	126.2	(51.3	– 201.2)	100.0	932.8	(732.7	– 1,132.8)	100.0

Potential end product	Age class, yrs / Growing stock								
	21 - 30				31 - 40				
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%	
Pulp	1,650.0	(1,363.7	– 1,936.2)	96.1	1,459.2	(1,162.0	– 1,756.4)	95.1
Pallet	41.0	(14.0	– 68.0)	2.4	44.1	(19.3	– 68.8)	2.9
Sawlog	24.9	(5.2	– 44.6)	1.5	30.3	(8.8	– 51.7)	2.0
Total	1,715.9	(1,419.1	– 2,012.7)	100.0	1,533.6	(1,222.2	– 1,844.9)	100.0

Potential end product	Age class, yrs / Growing stock								
	41 - 50				51 +				
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%	
Pulp	1,315.1	(924.1	– 1,706.0)	92.5	4,211.0	(3,271.3	– 5,150.7)	79.3
Pallet	22.9	(8.0	– 37.8)	1.6	55.1	(33.8	– 76.5)	1.0
Sawlog	84.5	(26.5	– 142.4)	5.9	1,047.8	(615.7	– 1,479.8)	19.7
Total	1,422.4	(1,001.1	– 1,843.7)	100.0	5,313.9	(4,153.2	– 6,474.6)	100.0

Potential end product	Age class, yrs / Growing stock			
	Total			
	1000 m³	(α=0.05)		%
Pulp	9,677.6	(8,519.4	– 10,835.7)	87.6
Pallet	177.1	(129.2	– 225.0)	1.6
Sawlog	1,190.1	(751.3	– 1,629.0)	10.8
Total	11,044.8	(9,672.9	– 12,416.7)	100.0



6.5 DIAMETER CLASS

6.5.1 Total growing stock by species group and diameter class

Methodology

The total volume stock is classified by species group and 5 cm diameter classes.

Diameter class, cm	Species group / Volume					
	Sitka spruce			Norway spruce		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
7 - 12	3,728.1	(3,463.9 – 3,992.3)	8.8	320.8	(227.3 – 414.3)	11.6
12 - 17	8,450.0	(7,814.6 – 9,085.4)	19.9	351.1	(197.6 – 504.6)	12.7
17 - 22	9,752.4	(9,118.8 – 10,386.0)	22.8	404.6	(315.4 – 493.7)	14.6
22 - 27	8,108.7	(7,279.9 – 8,937.4)	19.1	544.5	(398.4 – 690.5)	19.6
27 - 32	5,568.4	(4,870.1 – 6,266.7)	13.1	490.2	(327.4 – 653.0)	17.7
32 - 37	3,380.6	(2,881.0 – 3,880.2)	8.0	380.1	(206.6 – 553.5)	13.7
37 - 42	1,898.1	(1,470.1 – 2,326.0)	4.5	155.5	(77.4 – 233.5)	5.6
42 - 47	893.7	(645.2 – 1,142.2)	2.1	80.5	– –	2.9
>47	732.7	(365.5 – 1,099.9)	1.7	43.1	– –	1.6
Total	42,512.6	(39,562.8 – 45,462.5)	100.0	2,770.2	(2,179.5 – 3,361.0)	100.0

Diameter class, cm	Species group / Volume					
	Scots pine			other pine spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
7 - 12	17.7	– –	1.9	680.3	(580.8 – 779.7)	8.8
12 - 17	47.4	(31.9 – 62.9)	5.2	1,781.9	(1,535.6 – 2,028.1)	23.1
17 - 22	101.6	(70.9 – 132.4)	11.1	2,265.9	(2,025.7 – 2,506.2)	29.4
22 - 27	119.6	(78.3 – 160.8)	13.0	1,346.0	(1,131.6 – 1,560.4)	17.5
27 - 32	113.6	(61.1 – 166.2)	12.4	609.9	(460.0 – 759.7)	7.9
32 - 37	132.7	(0.0 – 352.8)	14.5	292.1	(166.2 – 418.0)	3.8
37 - 42	127.4	(93.8 – 161.1)	13.9	60.5	(55.7 – 65.4)	0.8
42 - 47	97.8	(20.5 – 175.2)	10.7	90.0	(0.0 – 245.9)	1.2
>47	158.5	(22.1 – 294.8)	17.3	577.2	(0.0 – 2,457.9)	7.5
Total	916.3	(591.2 – 1,241.4)	100.0	7,703.9	(6,449.7 – 8,958.1)	100.0

Diameter class, cm	Species group / Volume					
	Douglas fir			larch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
7 - 12	139.9	(83.9 – 195.9)	7.3	194.1	(152.8 – 235.3)	12.2
12 - 17	299.6	(230.7 – 368.4)	15.6	277.5	(161.9 – 393.2)	17.4
17 - 22	375.8	(273.0 – 478.6)	19.4	255.8	(0.0 – 625.9)	16.1
22 - 27	351.7	(266.4 – 437.0)	18.3	205.9	(110.7 – 301.0)	13.0
27 - 32	236.4	(156.8 – 316.0)	12.3	191.5	(0.0 – 651.0)	12.1
32 - 37	179.8	(117.2 – 242.4)	9.3	157.3	– –	9.9
37 - 42	140.2	(63.3 – 217.1)	7.3	154.6	(0.0 – 350.1)	9.7
42 - 47	32.3	– –	1.7	94.6	– –	6.0
>47	168.4	(26.4 – 310.5)	8.8	56.8	– –	3.6
Total	1,924.2	(1,566.1 – 2,282.3)	100.0	1,588.0	(877.8 – 2,298.2)	100.0

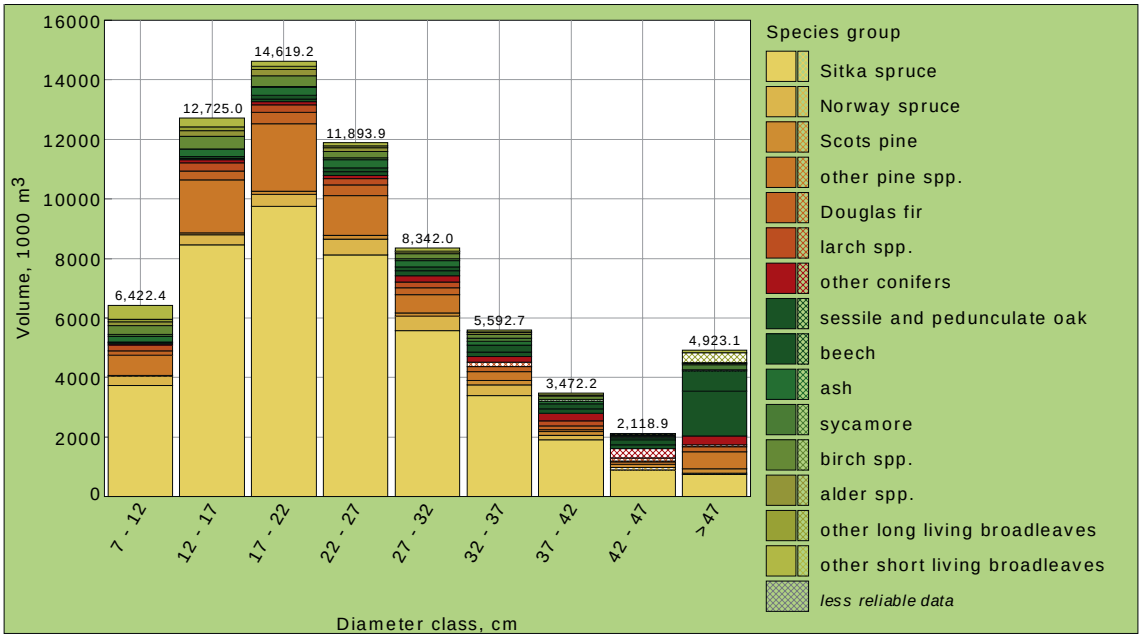
Diameter class, cm	Species group / Volume					
	other conifers			sessile and pedunculate oak		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
7 - 12	41.8	(7.3 – 76.3)	2.5	52.2	(25.5 – 78.9)	2.2
12 - 17	109.2	(0.0 – 592.4)	6.6	42.9	(22.5 – 63.4)	1.8
17 - 22	113.5	(13.0 – 213.9)	6.9	79.1	(23.4 – 134.8)	3.3
22 - 27	106.8	(0.0 – 408.4)	6.5	130.6	(69.5 – 191.8)	5.5
27 - 32	211.3	(206.6 – 216.0)	12.8	159.2	(119.0 – 199.4)	6.7
32 - 37	185.2	(108.1 – 262.4)	11.2	145.5	(102.3 – 188.6)	6.1
37 - 42	264.6	(0.0 – 853.8)	16.0	154.7	(34.0 – 275.4)	6.5
42 - 47	312.4	– –	19.0	129.5	(82.6 – 176.5)	5.4
>47	304.6	(3.8 – 605.5)	18.5	1,491.2	(912.0 – 2,070.4)	62.5
Total	1,649.4	(203.5 – 3,095.3)	100.0	2,385.0	(1,779.8 – 2,990.2)	100.0

Diameter class, cm	Species group / Volume							
	beech				ash			
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%
7 - 12	19.8	(0.0	– 51.8)	1.1	183.5	(123.2	– 243.8)	12.2
12 - 17	67.1	(36.0	– 98.2)	3.9	240.6	(180.7	– 300.5)	16.0
17 - 22	135.2	(110.9	– 159.6)	7.8	269.6	(210.8	– 328.4)	17.9
22 - 27	133.9	(95.1	– 172.6)	7.7	274.1	(205.7	– 342.6)	18.3
27 - 32	139.3	(3.9	– 274.7)	8.0	203.1	(0.0	– 406.2)	13.5
32 - 37	235.8	(53.5	– 418.0)	13.6	131.5	(0.0	– 301.4)	8.8
37 - 42	149.9	(123.1	– 176.7)	8.7	95.1	(84.4	– 105.8)	6.3
42 - 47	168.9	(96.8	– 240.9)	9.8	64.6	(31.0	– 98.2)	4.3
>47	680.7	(0.0	– 2,507.5)	39.4	40.2	–	–	2.7
Total	1,730.5	(1,183.3	– 2,277.8)	100.0	1,502.3	(1,248.3	– 1,756.2)	100.0

Diameter class, cm	Species group / Volume							
	sycamore				birch spp.			
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%
7 - 12	60.1	(0.0	– 323.5)	10.1	314.6	(233.0	– 396.1)	17.2
12 - 17	15.5	–	–	2.6	420.2	(333.3	– 507.1)	22.8
17 - 22	22.6	(17.6	– 27.5)	3.8	369.5	(304.3	– 434.7)	20.2
22 - 27	52.7	(0.0	– 203.5)	8.9	227.1	(184.9	– 269.2)	12.4
27 - 32	57.1	(22.7	– 91.5)	9.6	178.5	(142.2	– 214.8)	9.7
32 - 37	98.9	(0.0	– 394.1)	16.7	123.2	(108.5	– 137.9)	6.7
37 - 42	71.8	–	–	12.1	96.9	(64.4	– 129.4)	5.3
42 - 47	45.9	–	–	7.7	49.0	(43.1	– 55.0)	2.7
>47	168.8	(135.7	– 201.9)	28.5	54.1	(53.1	– 55.0)	3.0
Total	593.4	(185.4	– 1,001.3)	100.0	1,833.1	(1,563.3	– 2,102.8)	100.0

Diameter class, cm	Species group / Volume							
	alder spp.				other long living broadleaves			
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%
7 - 12	127.9	(6.4	– 249.3)	15.1	75.8	(30.5	– 121.0)	9.7
12 - 17	198.5	(136.3	– 260.7)	23.4	125.2	(102.1	– 148.3)	16.1
17 - 22	203.0	(137.4	– 268.6)	23.8	105.9	(73.5	– 138.2)	13.6
22 - 27	123.7	(87.0	– 160.4)	14.6	51.9	(37.0	– 66.8)	6.7
27 - 32	69.3	(45.7	– 92.9)	8.2	26.4	(0.5	– 52.4)	3.4
32 - 37	67.4	(13.1	– 121.6)	7.9	15.1	(3.5	– 26.8)	1.9
37 - 42	36.3	(15.0	– 57.7)	4.3	12.3	–	–	1.6
42 - 47	10.6	–	–	1.2	16.3	–	–	2.1
>47	12.7	–	–	1.5	349.4	–	–	44.9
Total	849.4	(664.5	– 1,034.3)	100.0	778.3	(645.2	– 911.4)	100.0

Diameter class, cm	Species group / Volume							
	other short living broadleaves				Total			
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%
7 - 12	465.9	(343.6	– 588.3)	34.0	6,422.4	(6,057.1	– 6,787.6)	9.2
12 - 17	298.2	(237.7	– 358.7)	21.7	12,725.0	(11,960.2	– 13,489.8)	18.2
17 - 22	164.6	(131.2	– 198.0)	12.0	14,619.2	(13,861.8	– 15,376.6)	20.7
22 - 27	116.9	(82.4	– 151.4)	8.5	11,893.9	(10,894.4	– 12,893.5)	17.0
27 - 32	87.7	(71.8	– 103.7)	6.4	8,342.0	(7,516.2	– 9,167.7)	11.9
32 - 37	67.7	(41.3	– 94.1)	4.9	5,592.7	(4,983.4	– 6,202.1)	8.0
37 - 42	54.1	(52.4	– 55.8)	3.9	3,472.2	(2,937.2	– 4,007.2)	5.0
42 - 47	32.8	–	–	2.4	2,118.9	(1,706.6	– 2,531.2)	3.0
>47	84.8	(59.3	– 110.3)	6.2	4,923.1	(3,677.2	– 6,169.0)	7.0
Total	1,372.8	(1,147.2	– 1,598.5)	100.0	70,109.4	(66,398.6	– 73,820.2)	100.0


Volume, 1000 m3
16000
14000
12000
10000
8000
6000
4000
2000
0
6,422.4
12,725.0
14,619.2
11,893.9
8,342.0
5,592.7
3,472.2
2,118.9
4,923.1
7 - 12
12 - 17
17 - 22
22 - 27
27 - 32
32 - 37
37 - 42
42 - 47
>47
Diameter class, cm
Species group
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Douglas fir
larch spp.
other conifers
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves
less reliable data

6.6 AGE CLASS

6.6.1 Total growing stock by species group and age-class (10 yr)

Methodology

The total growing stock is classified by species group and age class (10 yr).

Age class, yrs	Species group / Volume					
	Sitka spruce			Norway spruce		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	837.4	(671.0 – 1,003.9)	2.0	129.9	(51.2 – 208.6)	4.7
11 - 20	11,914.3	(10,910.4 – 12,918.2)	28.0	448.9	(359.3 – 538.6)	16.2
21 - 30	8,408.4	(7,382.2 – 9,434.5)	19.8	213.8	– –	7.7
31 - 40	14,381.4	(12,850.1 – 15,912.8)	33.8	772.4	(421.7 – 1,123.1)	27.9
41 - 50	6,585.9	(4,956.0 – 8,215.8)	15.5	913.2	(339.7 – 1,486.6)	33.0
51 +	385.2	(0.0 – 1,740.6)	0.9	292.1	(0.0 – 611.1)	10.5
Total	42,512.6	(39,562.8 – 45,462.5)	100.0	2,770.2	(2,179.5 – 3,361.0)	100.0

Age class, yrs	Species group / Volume					
	Scots pine			other pine spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	0.8	– –	0.08	27.5	(13.0 – 42.1)	0.4
11 - 20	51.6	– –	5.6	682.4	(549.6 – 815.3)	8.9
21 - 30	23.9	– –	2.6	3,612.2	(3,219.8 – 4,004.6)	46.8
31 - 40	128.3	(11.7 – 244.9)	14.0	2,071.6	(1,643.6 – 2,499.5)	26.9
41 - 50	82.6	– –	9.0	740.3	(0.0 – 2,049.5)	9.6
51 +	629.0	(462.4 – 795.6)	68.7	569.8	– –	7.4
Total	916.3	(591.2 – 1,241.4)	100.0	7,703.9	(6,449.7 – 8,958.1)	100.0

Age class, yrs	Species group / Volume					
	Douglas fir			larch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	62.0	(0.0 – 288.9)	3.2	218.3	(188.1 – 248.4)	13.7
11 - 20	266.7	(183.7 – 349.7)	13.9	350.2	(0.0 – 784.8)	22.1
21 - 30	265.6	– –	13.8	149.7	– –	9.4
31 - 40	816.0	(541.5 – 1,090.4)	42.4	317.7	(0.0 – 1,425.6)	20.0
41 - 50	177.0	– –	9.2	226.8	(0.0 – 682.4)	14.3
51 +	336.9	(59.5 – 614.3)	17.5	325.3	– –	20.5
Total	1,924.2	(1,566.1 – 2,282.3)	100.0	1,588.0	(877.8 – 2,298.2)	100.0

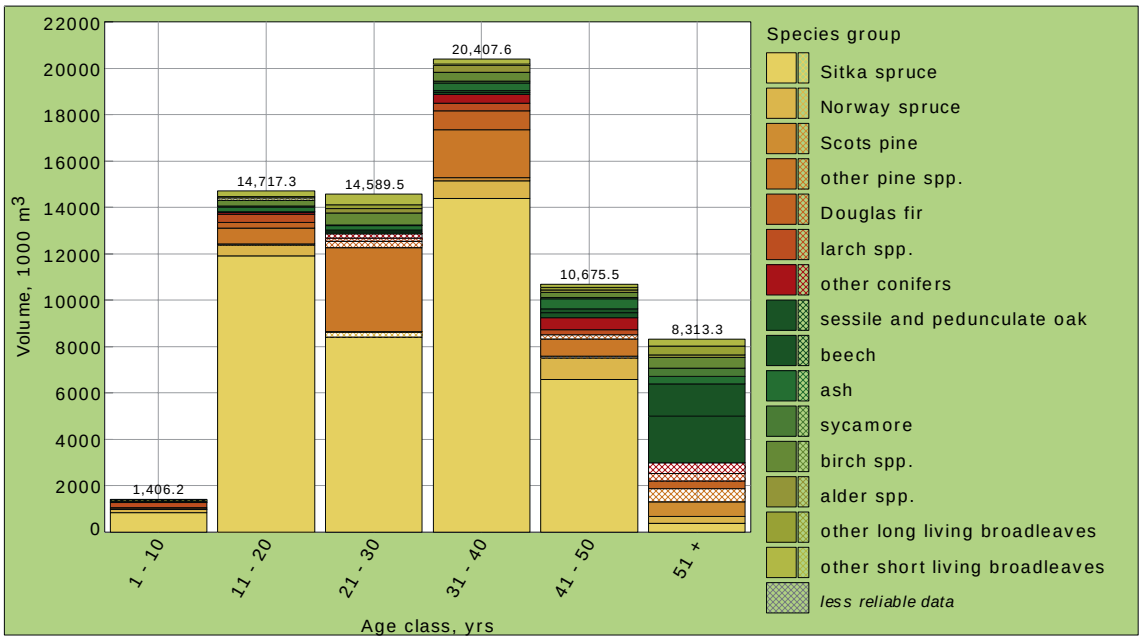
Age class, yrs	Species group / Volume					
	other conifers			sessile and pedunculate oak		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	4.1	– –	0.3	3.5	– –	0.1
11 - 20	70.3	(0.0 – 169.3)	4.3	22.7	(11.9 – 33.6)	1.0
21 - 30	200.0	– –	12.1	68.3	(0.0 – 236.9)	2.9
31 - 40	386.6	(0.0 – 2,858.6)	23.4	78.2	(0.3 – 156.0)	3.3
41 - 50	527.3	(276.9 – 777.7)	31.9	216.7	(181.6 – 251.8)	9.1
51 +	461.1	– –	28.0	1,995.7	(1,428.8 – 2,562.5)	83.6
Total	1,649.4	(203.5 – 3,095.3)	100.0	2,385.0	(1,779.8 – 2,990.2)	100.0

Age class, yrs	Species group / Volume					
	beech			ash		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	–	– –	–	40.5	– –	2.7
11 - 20	6.1	– –	0.4	203.8	(163.5 – 244.1)	13.6
21 - 30	79.5	(0.0 – 184.1)	4.6	184.6	(127.8 – 241.4)	12.3
31 - 40	91.2	(71.6 – 110.9)	5.3	328.8	(0.0 – 935.2)	21.9
41 - 50	152.3	(91.5 – 213.2)	8.8	435.1	(160.4 – 709.8)	28.9
51 +	1,401.4	(861.6 – 1,941.1)	80.9	309.4	(223.7 – 395.1)	20.6
Total	1,730.5	(1,183.3 – 2,277.8)	100.0	1,502.3	(1,248.3 – 1,756.2)	100.0

Age class, yrs	Species group / Volume					
	sycamore			birch spp.		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	10.2	(4.5 – 16.0)	1.7	16.2	– –	0.9
11 - 20	48.1	(0.0 – 321.4)	8.1	231.4	(0.0 – 646.1)	12.6
21 - 30	31.9	– –	5.4	528.5	(90.3 – 966.7)	28.8
31 - 40	60.7	(60.4 – 61.1)	10.2	398.0	(244.4 – 551.5)	21.7
41 - 50	69.4	(22.4 – 116.3)	11.7	204.9	(0.0 – 426.4)	11.2
51 +	373.1	(6.5 – 739.6)	62.9	454.2	(278.4 – 629.9)	24.8
Total	593.4	(185.4 – 1,001.3)	100.0	1,833.1	(1,563.3 – 2,102.8)	100.0

Age class, yrs	Species group / Volume					
	alder spp.			other long living broadleaves		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	46.3	(0.0 – 265.0)	5.5	1.8	– –	0.2
11 - 20	114.8	– –	13.5	55.7	(15.7 – 95.6)	7.2
21 - 30	179.7	(0.0 – 421.6)	21.2	155.0	(68.5 – 241.5)	19.9
31 - 40	289.9	(164.2 – 415.5)	34.1	58.1	(0.0 – 188.7)	7.5
41 - 50	109.8	(0.0 – 698.3)	12.9	119.5	(88.6 – 150.4)	15.4
51 +	108.9	(0.0 – 239.0)	12.8	388.2	(266.7 – 509.6)	49.8
Total	849.4	(664.5 – 1,034.3)	100.0	778.3	(645.2 – 911.4)	100.0

Age class, yrs	Species group / Volume					
	other short living broadleaves			Total		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
1 - 10	7.7	– –	0.6	1,406.2	(1,198.1 – 1,614.3)	2.0
11 - 20	250.2	(165.6 – 334.8)	18.2	14,717.3	(13,617.7 – 15,816.8)	21.0
21 - 30	488.4	(340.0 – 636.9)	35.5	14,589.5	(13,072.1 – 16,106.9)	20.8
31 - 40	228.6	(77.9 – 379.4)	16.7	20,407.6	(18,333.3 – 22,481.9)	29.1
41 - 50	114.8	(83.6 – 145.9)	8.4	10,675.5	(8,674.2 – 12,676.7)	15.2
51 +	283.1	(217.5 – 348.8)	20.6	8,313.3	(6,670.4 – 9,956.3)	11.9
Total	1,372.8	(1,147.2 – 1,598.5)	100.0	70,109.4	(66,398.6 – 73,820.2)	100.0



6.7 MEAN VOLUME

6.7.1 Mean growing stock per hectare by ownership

Methodology

The normalised mean growing stock per hectare is classified by ownership.

The calculated value of the variable under consideration for a plot (i.e. growing stock) is divided not by the whole plot area, but by the area of the part of the plot where the given variable is present. Therefore the sum of tree volume for a plot is related only to the area occupied by those trees, not to the whole plot.

Ownership	Growing stock	
	m^3/ha	($\alpha = 0.05$)
public	145	(134 – 156)
private (grant aided)	41	(34 – 47)
private (other)	137	(113 – 162)
All	112	(104 – 120)

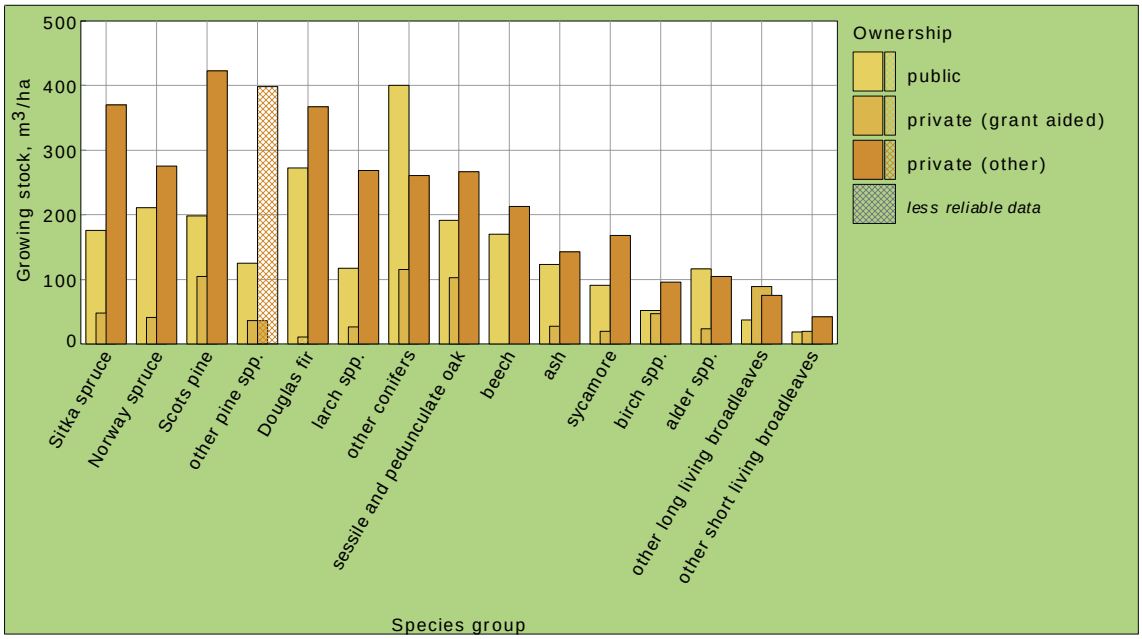
6.7.2 Mean of growing stock per hectare by ownership and species group

Methodology

The normalised mean growing stock per hectare is classified by ownership and species group.

Species group	Ownership / Growing stock			
	public		private (grant aided)	
	m^3/ha	($\alpha = 0.05$)	m^3/ha	($\alpha = 0.05$)
Sitka spruce	176	(161 – 191)	48	(41 – 56)
Norway spruce	211	(179 – 244)	41	(30 – 53)
Scots pine	198	(163 – 234)	105	(81 – 129)
other pine spp.	125	(106 – 145)	37	(10 – 63)
Douglas fir	272	(207 – 337)	10	– –
larch spp.	117	(79 – 156)	26	(13 – 39)
other conifers	401	(377 – 425)	115	(0 – 689)
sessile and pedunculate oak	191	(173 – 209)	102	(0 – 259)
beech	170	(121 – 218)	–	– –
ash	123	(37 – 210)	27	(0 – 55)
sycamore	91	(0 – 298)	19	(14 – 24)
birch spp.	52	(35 – 69)	47	(28 – 66)
alder spp.	116	(93 – 139)	23	(17 – 29)
other long living broadleaves	37	(28 – 45)	89	(0 – 542)
other short living broadleaves	19	(13 – 25)	19	(8 – 30)
All	145	(134 – 156)	41	(34 – 47)

Species group	Ownership / Growing stock			
	private (other)		All	
	m³/ha	(α = 0.05)	m³/ha	(α = 0.05)
Sitka spruce	370	(324 – 416)	133	(123 – 144)
Norway spruce	275	(0 – 611)	104	(46 – 163)
Scots pine	423	(242 – 605)	202	(37 – 367)
other pine spp.	398	– –	120	(96 – 143)
Douglas fir	367	(90 – 645)	255	(191 – 319)
larch spp.	268	(231 – 306)	70	(49 – 91)
other conifers	260	(0 – 1,015)	361	(299 – 423)
sessile and pedunculate oak	267	(219 – 314)	190	(153 – 228)
beech	213	(184 – 241)	172	(149 – 196)
ash	142	(120 – 164)	83	(65 – 102)
sycamore	168	(135 – 201)	107	(85 – 128)
birch spp.	96	(81 – 111)	67	(57 – 76)
alder spp.	105	(75 – 134)	86	(71 – 101)
other long living broadleaves	75	(59 – 92)	71	(54 – 89)
other short living broadleaves	42	(33 – 52)	29	(24 – 34)
All	137	(113 – 162)	112	(104 – 120)



6.7.3 Mean of growing stock per hectare by species group and age class (10 yr)

Methodology

The normalised mean growing stock per hectare is classified by species group and age class (10 yr).

Age class, yrs	Species group / Volume stock			
	Sitka spruce		Norway spruce	
	m³/ha	(α=0.05)	m³/ha	(α=0.05)
1 - 10	7	(4 – 9)	14	(4 – 24)
11 - 20	94	(85 – 104)	71	(57 – 85)
21 - 30	238	(214 – 263)	219	– –
31 - 40	348	(320 – 376)	355	(338 – 372)
41 - 50	452	(318 – 586)	221	(0 – 632)
51 +	309	(0 – 840)	360	(0 – 748)
All	133	(123 – 144)	104	(46 – 163)

Age class, yrs	Species group / Volume stock			
	Scots pine		other pine spp.	
	m³/ha	(α=0.05)	m³/ha	(α=0.05)
1 - 10	0	– –	3	(2 – 5)
11 - 20	62	– –	48	(34 – 63)
21 - 30	182	– –	155	(139 – 170)
31 - 40	253	(225 – 281)	244	(224 – 263)
41 - 50	186	– –	231	(23 – 439)
51 +	408	(285 – 531)	733	– –
All	202	(37 – 367)	120	(96 – 143)

Age class, yrs	Species group / Volume stock			
	Douglas fir		larch spp.	
	m³/ha	(α=0.05)	m³/ha	(α=0.05)
1 - 10	15	(4 – 27)	11	(5 – 16)
11 - 20	112	(0 – 300)	82	(65 – 100)
21 - 30	201	– –	162	(115 – 209)
31 - 40	345	(288 – 401)	323	(0 – 765)
41 - 50	452	– –	313	(295 – 331)
51 +	412	(289 – 535)	400	– –
All	255	(191 – 319)	70	(49 – 91)

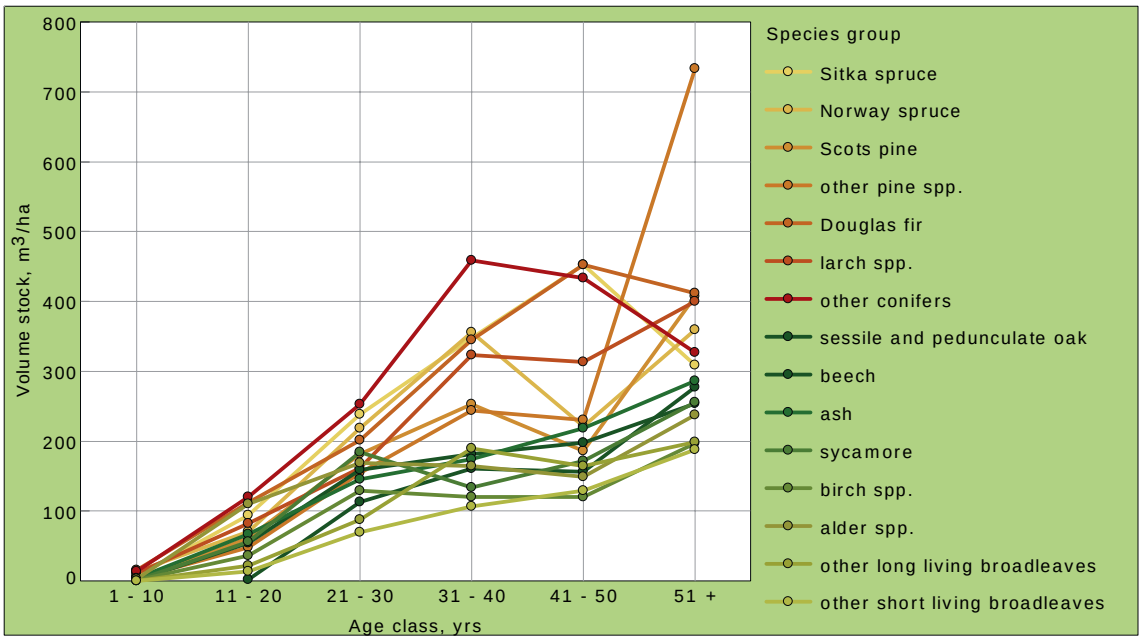
Age class, yrs	Species group / Volume stock			
	other conifers		sessile and pedunculate oak	
	m³/ha	(α=0.05)	m³/ha	(α=0.05)
1 - 10	13	– –	0	– –
11 - 20	120	(45 – 196)	55	(51 – 58)
21 - 30	252	– –	159	(82 – 235)
31 - 40	458	(417 – 500)	181	(150 – 213)
41 - 50	434	(282 – 586)	198	(172 – 224)
51 +	327	– –	254	(209 – 299)
All	361	(299 – 423)	190	(153 – 228)

Age class, yrs	Species group / Volume stock			
	beech		ash	
	m³/ha	(α=0.05)	m³/ha	(α=0.05)
1 - 10	–	– –	4	(2 – 5)
11 - 20	2	– –	67	(50 – 84)
21 - 30	113	(90 – 136)	145	(119 – 172)
31 - 40	161	(76 – 245)	175	(151 – 198)
41 - 50	156	(0 – 424)	219	(165 – 273)
51 +	277	(251 – 304)	286	(203 – 369)
All	172	(149 – 196)	83	(65 – 102)

Age class, yrs	Species group / Volume stock			
	sycamore		birch spp.	
	m³/ha	(α = 0.05)	m³/ha	(α = 0.05)
1 - 10	1	(0 – 6)	1	(0 – 2)
11 - 20	56	(8 – 103)	36	(10 – 62)
21 - 30	184	– –	129	(115 – 143)
31 - 40	134	(0 – 299)	120	(102 – 139)
41 - 50	171	(135 – 208)	120	(98 – 142)
51 +	256	(151 – 361)	197	(136 – 258)
All	107	(85 – 128)	67	(57 – 76)

Age class, yrs	Species group / Volume stock			
	alder spp.		other long living broadleaves	
	m³/ha	(α = 0.05)	m³/ha	(α = 0.05)
1 - 10	3	(0 – 6)	0	(0 – 1)
11 - 20	110	(80 – 141)	22	(8 – 36)
21 - 30	169	(0 – 421)	88	(65 – 111)
31 - 40	164	(121 – 207)	189	(79 – 300)
41 - 50	149	(0 – 680)	164	(0 – 409)
51 +	238	(150 – 325)	199	(183 – 215)
All	86	(71 – 101)	71	(54 – 89)

Age class, yrs	Species group / Volume stock			
	other short living broadleaves		All	
	m³/ha	(α = 0.05)	m³/ha	(α = 0.05)
1 - 10	0	(0 – 1)	6	(5 – 8)
11 - 20	14	(8 – 20)	79	(72 – 86)
21 - 30	69	(58 – 81)	172	(158 – 187)
31 - 40	107	(92 – 122)	289	(269 – 308)
41 - 50	129	(114 – 145)	304	(263 – 346)
51 +	188	(0 – 401)	264	(230 – 299)
All	29	(24 – 34)	112	(104 – 120)



6.7.4 Mean tree volume by species group and diameter class (5 cm)

Methodology

The weighted mean tree volume is classified by species group and 5 cm diameter class. Each tree volume is weighted by the representative number of trees, which is determined by the concentric circle where the tree is located.

Diameter class, cm	Species group / Volume stock			
	Sitka spruce		Norway spruce	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.022	(0.021 – 0.023)	0.026	(0.025 – 0.028)
12 - 17	0.081	(0.079 – 0.083)	0.090	(0.075 – 0.106)
17 - 22	0.191	(0.186 – 0.195)	0.210	(0.197 – 0.222)
22 - 27	0.349	(0.340 – 0.358)	0.368	(0.331 – 0.406)
27 - 32	0.556	(0.540 – 0.573)	0.543	(0.523 – 0.563)
32 - 37	0.824	(0.796 – 0.853)	0.749	(0.650 – 0.848)
37 - 42	1.085	(1.044 – 1.125)	0.902	(0.432 – 1.371)
42 - 47	1.304	(1.171 – 1.437)	1.278	– –
>47	2.125	(1.849 – 2.401)	1.353	– –
All	0.191	(0.170 – 0.211)	0.223	(0.126 – 0.319)

Diameter class, cm	Species group / Volume stock			
	Scots pine		other pine spp.	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.018	(0.010 – 0.026)	0.023	(0.021 – 0.025)
12 - 17	0.108	(0.040 – 0.176)	0.074	(0.071 – 0.077)
17 - 22	0.226	(0.217 – 0.235)	0.147	(0.140 – 0.153)
22 - 27	0.323	(0.293 – 0.352)	0.248	(0.238 – 0.257)
27 - 32	0.520	(0.486 – 0.554)	0.378	(0.362 – 0.394)
32 - 37	0.796	(0.619 – 0.974)	0.471	(0.386 – 0.555)
37 - 42	1.001	(0.763 – 1.239)	0.502	(0.484 – 0.520)
42 - 47	1.280	(0.789 – 1.770)	0.531	(0.249 – 0.812)
>47	1.733	(0.000 – 3.531)	1.926	(0.643 – 3.209)
All	0.583	(0.359 – 0.808)	0.143	(0.102 – 0.184)

Diameter class, cm	Species group / Volume stock			
	Douglas fir		larch spp.	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.027	(0.024 – 0.031)	0.024	(0.021 – 0.027)
12 - 17	0.097	(0.082 – 0.111)	0.075	(0.068 – 0.083)
17 - 22	0.238	(0.220 – 0.255)	0.214	(0.193 – 0.236)
22 - 27	0.388	(0.360 – 0.416)	0.373	(0.321 – 0.426)
27 - 32	0.608	(0.575 – 0.641)	0.557	(0.403 – 0.711)
32 - 37	0.967	(0.916 – 1.018)	0.811	– –
37 - 42	1.287	(1.217 – 1.358)	1.171	(1.057 – 1.286)
42 - 47	1.368	– –	1.464	– –
>47	2.386	(1.903 – 2.869)	2.453	– –
All	0.487	(0.168 – 0.806)	0.192	(0.140 – 0.245)

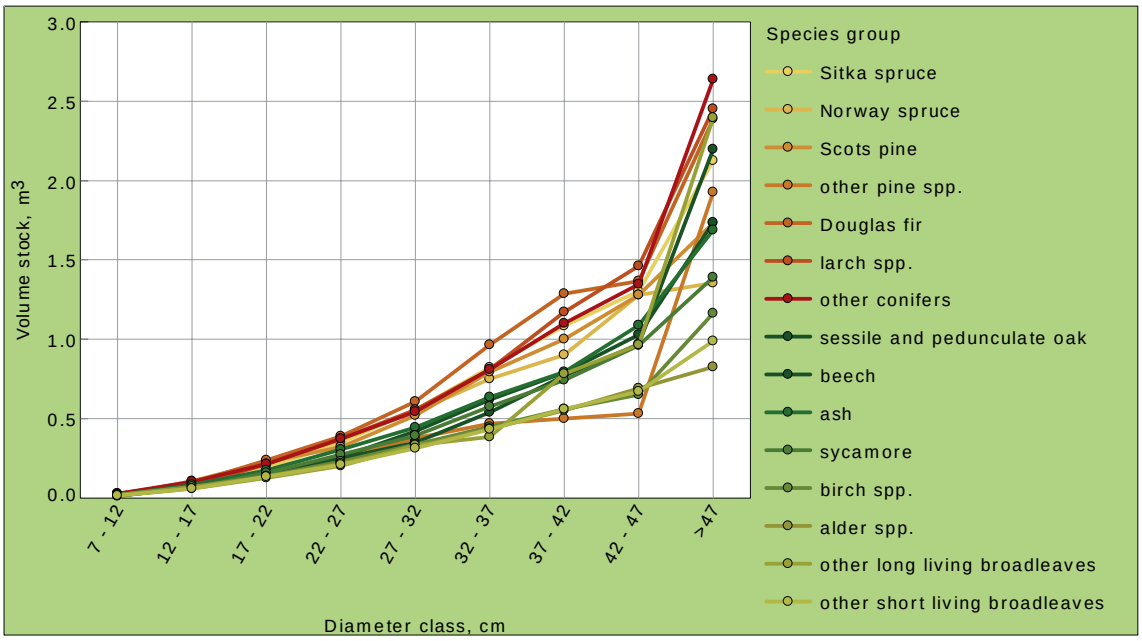
Diameter class, cm	Species group / Volume stock			
	other conifers		sessile and pedunculate oak	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.026	(0.000 – 0.062)	0.016	(0.003 – 0.030)
12 - 17	0.104	(0.094 – 0.115)	0.065	(0.062 – 0.069)
17 - 22	0.213	(0.201 – 0.224)	0.145	(0.138 – 0.152)
22 - 27	0.375	(0.263 – 0.486)	0.252	(0.234 – 0.269)
27 - 32	0.545	(0.519 – 0.570)	0.351	(0.326 – 0.377)
32 - 37	0.811	(0.501 – 1.122)	0.542	(0.501 – 0.583)
37 - 42	1.102	(1.101 – 1.104)	0.772	(0.666 – 0.879)
42 - 47	1.347	– –	0.970	(0.856 – 1.083)
>47	2.640	(1.000 – 4.280)	2.197	(1.446 – 2.948)
All	1.238	(1.158 – 1.319)	1.012	(0.711 – 1.313)

Diameter class, cm	Species group / Volume stock			
	beech		ash	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.014	(0.000 – 0.034)	0.021	(0.020 – 0.023)
12 - 17	0.072	(0.065 – 0.078)	0.082	(0.077 – 0.086)
17 - 22	0.151	(0.144 – 0.159)	0.176	(0.166 – 0.186)
22 - 27	0.258	(0.251 – 0.265)	0.305	(0.293 – 0.316)
27 - 32	0.419	(0.381 – 0.458)	0.445	(0.417 – 0.474)
32 - 37	0.619	(0.564 – 0.674)	0.635	(0.605 – 0.665)
37 - 42	0.789	(0.692 – 0.886)	0.794	(0.729 – 0.859)
42 - 47	1.031	(0.417 – 1.645)	1.090	(0.810 – 1.370)
>47	1.736	(1.604 – 1.868)	1.688	– –
All	0.603	(0.508 – 0.698)	0.189	(0.141 – 0.237)

Diameter class, cm	Species group / Volume stock			
	sycamore		birch spp.	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.020	(0.000 – 0.067)	0.021	(0.018 – 0.024)
12 - 17	0.065	– –	0.067	(0.064 – 0.070)
17 - 22	0.159	(0.149 – 0.169)	0.140	(0.131 – 0.148)
22 - 27	0.275	(0.174 – 0.376)	0.229	(0.222 – 0.235)
27 - 32	0.395	(0.364 – 0.427)	0.337	(0.325 – 0.350)
32 - 37	0.576	(0.559 – 0.592)	0.451	(0.420 – 0.481)
37 - 42	0.742	– –	0.562	(0.540 – 0.585)
42 - 47	0.964	– –	0.650	(0.389 – 0.911)
>47	1.392	(1.285 – 1.498)	1.166	(1.156 – 1.176)
All	0.458	(0.406 – 0.510)	0.129	(0.110 – 0.149)

Diameter class, cm	Species group / Volume stock			
	alder spp.		other long living broadleaves	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.018	(0.000 – 0.040)	0.014	(0.010 – 0.017)
12 - 17	0.072	(0.068 – 0.076)	0.059	(0.056 – 0.062)
17 - 22	0.134	(0.127 – 0.140)	0.128	(0.118 – 0.138)
22 - 27	0.219	(0.210 – 0.229)	0.204	(0.183 – 0.225)
27 - 32	0.321	(0.298 – 0.344)	0.332	(0.000 – 0.890)
32 - 37	0.437	(0.421 – 0.454)	0.387	(0.325 – 0.449)
37 - 42	0.552	(0.527 – 0.577)	0.782	– –
42 - 47	0.691	– –	0.967	– –
>47	0.828	– –	2.395	– –
All	0.111	(0.054 – 0.169)	0.470	(0.000 – 1.989)

Diameter class, cm	Species group / Volume stock			
	other short living broadleaves		All	
	m^3	($\alpha = 0.05$)	m^3	($\alpha = 0.05$)
7 - 12	0.015	(0.013 – 0.018)	0.021	(0.020 – 0.022)
12 - 17	0.059	(0.056 – 0.062)	0.077	(0.075 – 0.078)
17 - 22	0.134	(0.126 – 0.141)	0.176	(0.172 – 0.179)
22 - 27	0.212	(0.202 – 0.222)	0.316	(0.309 – 0.323)
27 - 32	0.312	(0.300 – 0.325)	0.499	(0.487 – 0.512)
32 - 37	0.432	(0.413 – 0.451)	0.705	(0.682 – 0.729)
37 - 42	0.561	(0.546 – 0.576)	0.928	(0.888 – 0.967)
42 - 47	0.672	– –	1.111	(1.045 – 1.176)
>47	0.987	(0.908 – 1.067)	2.221	(1.979 – 2.463)
All	0.100	(0.080 – 0.120)	0.208	(0.185 – 0.232)


Volume stock, m3
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7 - 12
12 - 17
17 - 22
22 - 27
27 - 32
32 - 37
37 - 42
42 - 47
>47
Diameter class, cm
Species group
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Douglas fir
larch spp.
other conifers
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves

CHAPTER 7
DEADWOOD

The NFI includes the first comprehensive assessment of deadwood in the Irish forest estate. The total deadwood is broken down into three primary categories: stumps, standing deadwood and lying deadwood.

Overall, deadwood is present in circa 45% of the forest estate. Considerable amounts of deadwood are present in public and private (other) forests, while not surprisingly, considerably less deadwood is found in the younger private (grant aided) forests. The total deadwood resource, at over 5.6 million m^3, represents an important resource for biodiversity.

The greatest volumes of lying deadwood are found in Galway, Cork and Wicklow, making up 33% of the total lying deadwood volume in Ireland. Galway's inclusion is somewhat surprising here, and reflects the large areas of unthinned stands, particularly lodgepole pine stands with lying deadwood, present in this county.

When the area of the forest estate with no deadwood is excluded, the mean deadwood volume per hectare is 20.1 m^3, with the public, private (grant aided) and private (other) forest estates having a mean of 21.5 m^3, 7.7 m^3 and 16.4 m^3, respectively. The mean deadwood volume per hectare for the entire forest estate is 9.0 m^3.

The greatest proportion of the total deadwood volume is found in lying deadwood (49%), with 33% present as standing deadwood and the remainder (18%) in the form of stump deadwood. In terms of decomposition, over half of the standing, lying and stump deadwood is solid. The majority of the standing deadwood (87%) comes from trees which have been dead for more than two years.

7.1 SUMMARY

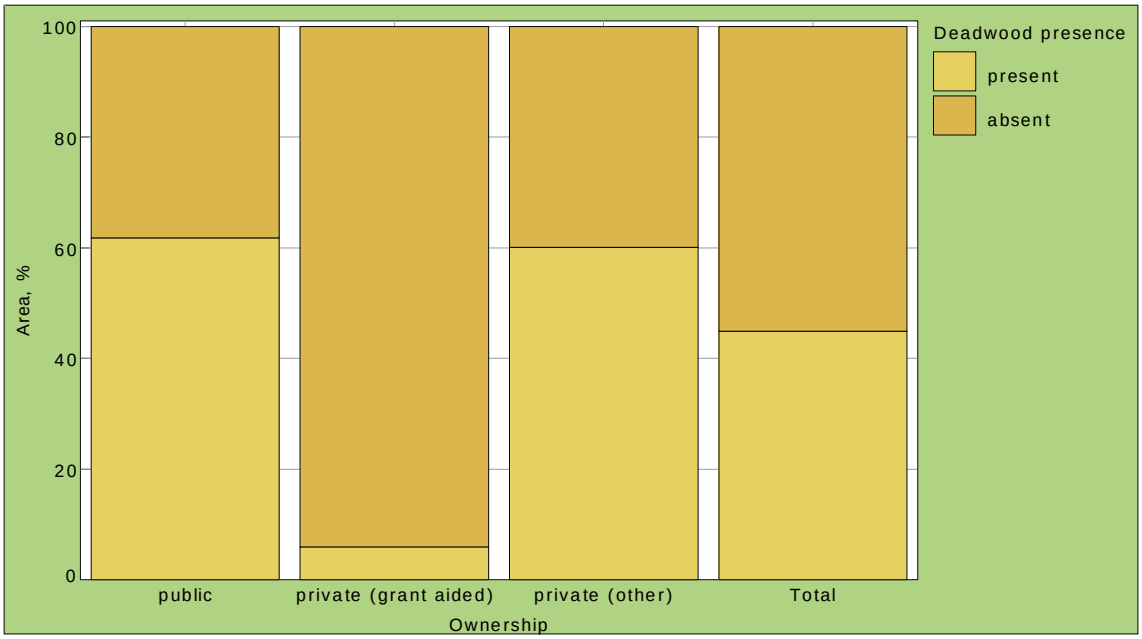
Definition
Deadwood
Sound and rotting standing dead trees, logs, snags, stumps, and branches.

7.1.1 Total stocked forest area by ownership and deadwood presence

Methodology
The total stocked forest area is classified by ownership and deadwood presence.

Deadwood presence	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
present	222.31	(207.80 – 236.82)	61.9	11.19	(7.09 – 15.30)	6.0
absent	137.10	(124.45 – 149.75)	38.1	175.79	(162.08 – 189.50)	94.0
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Deadwood presence	Ownership / Area					
	private (other)			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
present	47.71	(39.51 – 55.92)	60.1	281.22	(266.25 – 296.19)	44.9
absent	31.64	(24.89 – 38.38)	39.9	344.53	(329.56 – 359.50)	55.1
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



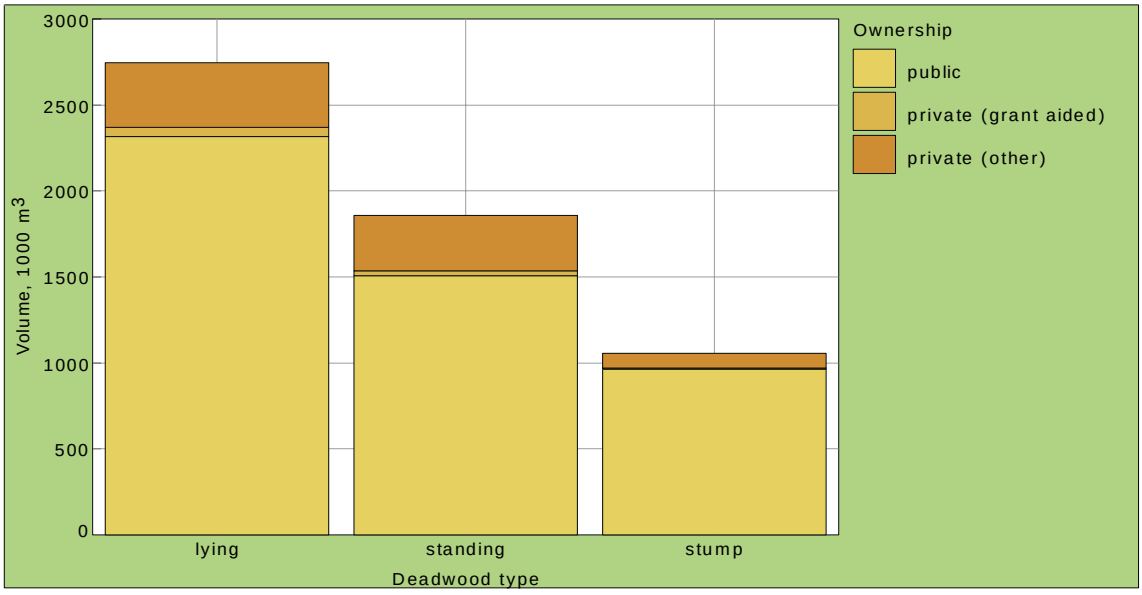
7.1.2 Total deadwood volume by ownership and deadwood type

Methodology

The total deadwood volume is classified by ownership and deadwood type.

Deadwood type	Ownership / Volume					
	public			private (grant aided)		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
lying	2,315.9	(1,425.0 – 3,206.8)	48.4	53.2	(20.0 – 86.4)	61.9
standing	1,507.9	(1,128.0 – 1,887.7)	31.5	26.9	(0.0 – 57.5)	31.3
stump	964.7	(765.8 – 1,163.7)	20.1	5.8	(1.6 – 10.1)	6.8
Total	4,788.5	(3,745.2 – 5,831.9)	100.0	85.9	(40.0 – 131.8)	100.0

Deadwood type	Ownership / Volume					
	private (other)			Total		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
lying	376.2	(199.1 – 553.3)	48.0	2,745.3	(1,839.3 – 3,651.2)	48.6
standing	323.6	(188.7 – 458.6)	41.3	1,858.4	(1,459.8 – 2,257.0)	32.8
stump	83.8	(49.0 – 118.5)	10.7	1,054.3	(853.9 – 1,254.7)	18.6
Total	783.6	(520.6 – 1,046.5)	100.0	5,658.0	(4,592.0 – 6,724.1)	100.0



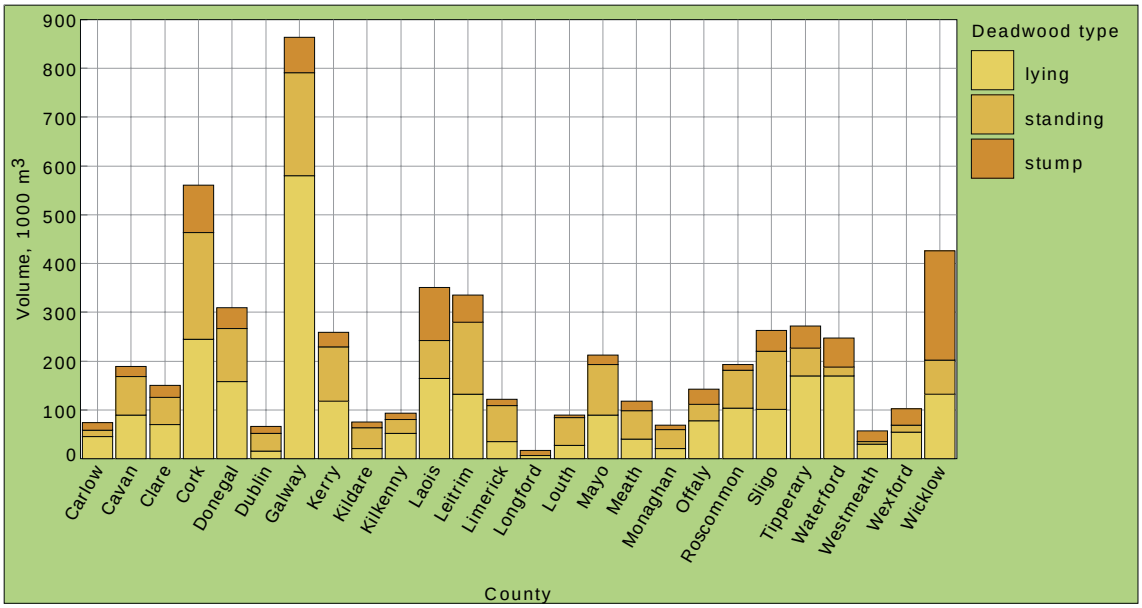
7.1.3 Total deadwood volume by deadwood type and county

Methodology

The total deadwood volume includes: standing, lying and stump deadwood. The total deadwood volume is classified by deadwood type and county.

County	Deadwood type / Volume					
	lying			standing		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Carlow	44.9	(20.3 – 69.5)	1.6	13.2	(0.0 – 26.9)	0.7
Cavan	89.2	(0.0 – 187.9)	3.2	78.9	(15.9 – 141.8)	4.2
Clare	69.6	(34.8 – 104.4)	2.5	55.8	(23.1 – 88.4)	3.0
Cork	244.2	(166.7 – 321.8)	8.9	219.1	(142.4 – 295.8)	11.8
Donegal	158.5	(95.5 – 221.4)	5.8	108.3	(43.1 – 173.5)	5.8
Dublin	15.8	(5.8 – 25.9)	0.6	36.3	(0.0 – 77.3)	2.0
Galway	580.5	(0.0 – 1,442.3)	21.0	210.7	(60.8 – 360.7)	11.3
Kerry	117.3	(68.3 – 166.3)	4.3	112.3	(71.7 – 153.0)	6.0
Kildare	20.4	(0.0 – 43.4)	0.7	43.4	(4.3 – 82.6)	2.3
Kilkenny	51.8	(2.9 – 100.7)	1.9	29.1	(13.1 – 45.1)	1.6
Laois	164.9	(102.3 – 227.5)	6.0	76.8	(12.6 – 141.0)	4.1
Leitrim	132.0	(51.8 – 212.1)	4.8	148.2	(0.0 – 400.7)	8.0
Limerick	35.1	(22.7 – 47.5)	1.3	73.2	(37.5 – 108.9)	3.9
Longford	6.9	(0.0 – 22.3)	0.3	–	–	–
Louth	27.8	(0.0 – 68.3)	1.0	56.8	(0.0 – 166.6)	3.1
Mayo	89.1	(41.8 – 136.3)	3.2	103.7	(47.7 – 159.7)	5.6
Meath	40.2	(4.5 – 75.9)	1.5	57.8	(1.7 – 113.9)	3.1
Monaghan	20.8	(2.3 – 39.3)	0.8	38.2	(0.0 – 104.5)	2.1
Offaly	77.6	(17.6 – 137.6)	2.8	33.3	(12.3 – 54.4)	1.8
Roscommon	103.6	(0.0 – 260.8)	3.8	77.6	(0.0 – 168.4)	4.2
Sligo	101.1	(30.4 – 171.8)	3.7	119.4	(9.9 – 228.9)	6.4
Tipperary	169.6	(101.1 – 238.1)	6.2	56.8	(17.9 – 95.7)	3.1
Waterford	169.3	(49.6 – 288.9)	6.2	18.5	(0.0 – 69.9)	1.0
Westmeath	29.2	(7.4 – 50.9)	1.1	6.3	(0.0 – 42.4)	0.3
Wexford	53.8	(0.0 – 107.7)	2.0	14.7	(0.0 – 88.7)	0.8
Wicklow	132.2	(89.0 – 175.3)	4.8	70.1	(18.5 – 121.6)	3.8
Total	2,745.3	(1,835.7 – 3,654.9)	100.0	1,858.4	(1,519.0 – 2,197.8)	100.0

County	Deadwood type / Volume					
	stump			Total		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
Carlow	15.9	(3.1 – 28.7)	1.5	74.0	(37.0 – 111.1)	1.3
Cavan	21.3	(12.9 – 29.7)	2.0	189.3	(66.4 – 312.3)	3.3
Clare	25.2	(14.7 – 35.6)	2.4	150.6	(93.3 – 207.9)	2.7
Cork	97.5	(74.1 – 120.9)	9.2	560.8	(423.8 – 697.9)	9.9
Donegal	43.1	(28.1 – 58.0)	4.1	309.8	(195.4 – 424.2)	5.5
Dublin	13.9	(0.0 – 38.1)	1.3	66.1	(23.4 – 108.8)	1.2
Galway	72.8	(49.1 – 96.4)	6.9	864.0	(0.0 – 1,751.6)	15.4
Kerry	28.9	(14.5 – 43.3)	2.7	258.5	(180.3 – 336.8)	4.6
Kildare	11.2	(3.5 – 18.9)	1.1	75.0	(11.2 – 138.9)	1.3
Kilkenny	12.4	(5.3 – 19.4)	1.2	93.3	(35.4 – 151.1)	1.6
Laois	109.3	(78.2 – 140.5)	10.4	351.0	(252.1 – 449.9)	6.2
Leitrim	55.0	(32.0 – 77.9)	5.2	335.1	(31.8 – 638.3)	5.9
Limerick	13.4	(2.5 – 24.4)	1.3	121.8	(77.4 – 166.1)	2.2
Longford	10.0	(0.0 – 22.6)	1.0	17.0	(0.0 – 36.6)	0.3
Louth	4.6	(0.0 – 18.2)	0.4	89.3	(0.0 – 201.3)	1.6
Mayo	19.2	(3.4 – 35.0)	1.8	212.0	(136.6 – 287.4)	3.7
Meath	20.1	(3.2 – 36.9)	1.9	118.1	(61.7 – 174.5)	2.1
Monaghan	9.4	(0.0 – 25.9)	0.9	68.4	(0.3 – 136.4)	1.2
Offaly	31.8	(14.4 – 49.2)	3.0	142.7	(77.1 – 208.3)	2.5
Roscommon	12.2	(5.7 – 18.6)	1.2	193.3	(0.0 – 398.5)	3.4
Sligo	42.3	(0.4 – 84.1)	4.0	262.8	(118.9 – 406.6)	4.6
Tipperary	46.2	(28.5 – 63.9)	4.4	272.6	(179.1 – 366.0)	4.8
Waterford	59.8	(33.4 – 86.2)	5.7	247.5	(114.4 – 380.6)	4.4
Westmeath	21.3	(11.0 – 31.7)	2.0	56.8	(21.8 – 91.8)	1.0
Wexford	34.3	(10.7 – 57.9)	3.3	102.8	(41.1 – 164.5)	1.8
Wicklow	223.3	(52.5 – 394.0)	21.1	425.5	(242.1 – 608.9)	7.5
Total	1,054.3	(864.3 – 1,244.4)	100.0	5,658.0	(4,622.8 – 6,693.3)	100.0

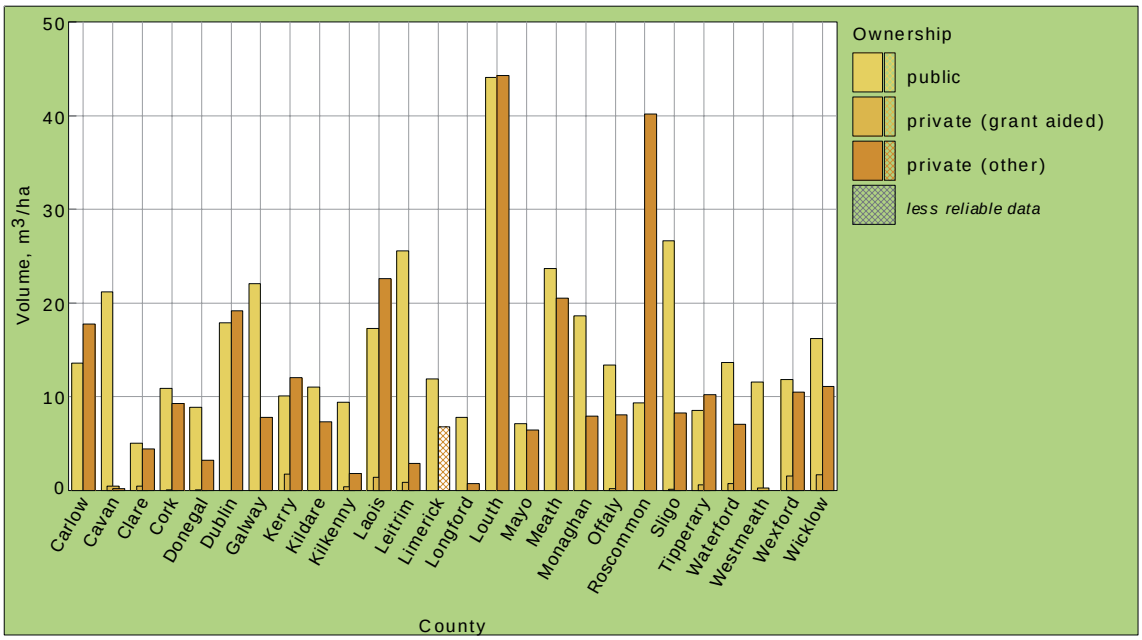

Deadwood type
lying
standing
stump
Volume, 1000 m3
900
800
700
600
500
400
300
200
100
0
Carlow
Cavan
Clare
Cork
Donegal
Dublin
Galway
Kerry
Kildare
Kilkenny
Laois
Leitrim
Limerick
Longford
Louth
Mayo
Meath
Monaghan
Offaly
Roscommon
Sligo
Tipperary
Waterford
Westmeath
Wexford
Wicklow
County

7.1.4 Mean deadwood volume stock per hectare by ownership and county

Methodology

The mean volume of deadwood per hectare is classified by ownership and county. This mean is calculated using the total stocked forest estate.

County	Ownership / Volume							
	public		private (grant aided)		private (other)		All	
	m³/ha	(α = 0.05)	m³/ha	(α = 0.05)	m³/ha	(α = 0.05)	m³/ha	(α = 0.05)
Carlow	13.6	(3.5 – 23.7)	–	–	17.8	(0.0 – 51.7)	11.6	(4.3 – 18.8)
Cavan	21.2	(6.6 – 35.8)	0.5	(0.0 – 1.5)	0.2	(0.0 – 2.4)	13.9	(4.0 – 23.7)
Clare	5.0	(2.3 – 7.8)	0.5	(0.0 – 1.2)	4.4	(0.2 – 8.6)	3.5	(1.9 – 5.1)
Cork	10.9	(7.7 – 14.1)	0.1	(0.0 – 0.2)	9.3	(2.0 – 16.6)	7.9	(5.7 – 10.2)
Donegal	8.9	(4.9 – 12.9)	0.0	(0.0 – 0.1)	3.3	(0.7 – 5.8)	5.9	(3.3 – 8.5)
Dublin	17.9	(3.2 – 32.6)	–	–	19.2	(0.0 – 79.3)	15.0	(4.0 – 26.0)
Galway	22.1	(0.0 – 45.8)	–	–	7.8	(0.9 – 14.7)	15.8	(0.0 – 31.9)
Kerry	10.1	(5.0 – 15.1)	1.7	(0.0 – 3.6)	12.1	(3.3 – 20.9)	6.3	(3.7 – 8.8)
Kildare	11.1	(0.0 – 23.0)	–	–	7.3	(0.0 – 21.4)	8.2	(0.9 – 15.4)
Kilkenny	9.4	(2.8 – 15.9)	0.4	(0.0 – 1.4)	1.8	(0.0 – 6.7)	5.8	(1.8 – 9.7)
Laois	17.3	(11.6 – 23.1)	1.4	(0.0 – 4.6)	22.6	(0.0 – 48.1)	15.4	(10.4 – 20.3)
Leitrim	25.6	(1.4 – 49.7)	0.9	(0.0 – 2.3)	2.9	(0.0 – 7.4)	16.3	(1.3 – 31.2)
Limerick	11.9	(5.9 – 18.0)	–	–	6.8	– –	6.0	(2.7 – 9.3)
Longford	7.8	(0.0 – 18.5)	–	–	0.7	(0.0 – 2.7)	2.1	(0.0 – 4.6)
Louth	44.1	(0.0 – 167.2)	–	–	44.3	(0.0 – 539.6)	44.1	(0.0 – 99.5)
Mayo	7.1	(3.8 – 10.5)	–	–	6.4	(0.1 – 12.8)	4.6	(2.6 – 6.6)
Meath	23.7	(3.2 – 44.1)	–	–	20.5	(6.3 – 34.8)	12.2	(4.4 – 19.9)
Monaghan	18.7	(0.0 – 45.2)	–	–	8.0	(0.0 – 19.3)	12.2	(0.0 – 24.5)
Offaly	13.4	(4.0 – 22.8)	0.2	(0.0 – 0.7)	8.1	(2.0 – 14.2)	7.2	(3.2 – 11.3)
Roscommon	9.4	(0.0 – 19.7)	–	–	40.2	(0.0 – 119.4)	10.0	(0.0 – 20.6)
Sligo	26.6	(9.7 – 43.6)	0.1	(0.0 – 0.3)	8.3	(0.0 – 29.3)	14.8	(5.4 – 24.1)
Tipperary	8.5	(5.0 – 12.1)	0.6	(0.0 – 1.6)	10.2	(0.0 – 22.4)	6.4	(3.9 – 8.9)
Waterford	13.7	(5.3 – 22.0)	0.8	(0.0 – 2.6)	7.1	(0.0 – 15.0)	11.0	(4.9 – 17.1)
Westmeath	11.6	(3.9 – 19.3)	0.3	(0.0 – 0.8)	–	– –	5.5	(1.5 – 9.5)
Wexford	11.8	(3.2 – 20.4)	1.5	(0.0 – 4.9)	10.5	(0.0 – 39.7)	7.9	(2.6 – 13.2)
Wicklow	16.2	(8.1 – 24.3)	1.7	(0.0 – 4.5)	11.1	(0.0 – 24.7)	13.0	(7.1 – 19.0)
All	13.3	(10.5 – 16.2)	0.5	(0.2 – 0.7)	9.9	(6.6 – 13.2)	9.0	(7.3 – 10.7)

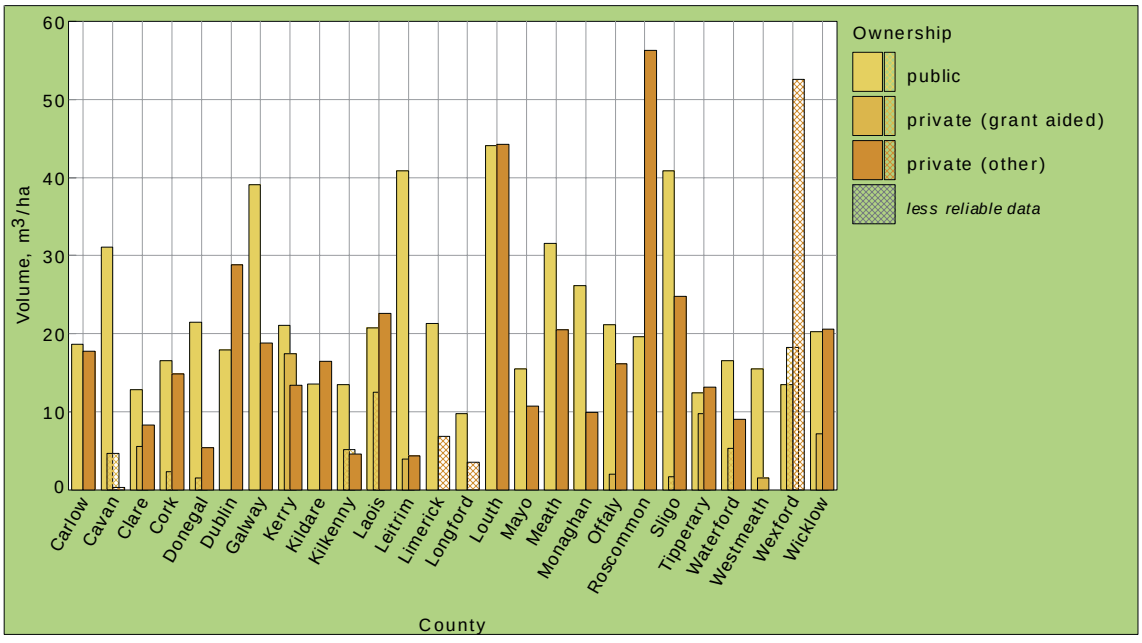


7.1.5 Mean deadwood volume per hectare by ownership and county, excluding areas with no deadwood

Methodology

The mean volume of deadwood per hectare is classified by ownership and county. This mean is calculated excluding those areas with no deadwood present, hence the higher resulting values than in the previous analysis.

County	Ownership / Volume							
	public		private (grant aided)		private (other)		All	
	m^3/ha	(α=0.05)	m^3/ha	(α=0.05)	m^3/ha	(α=0.05)	m^3/ha	(α=0.05)
Carlow	18.7	(6.5 – 30.9)	–	–	17.8	(0.0 – 51.7)	18.5	(9.2 – 27.8)
Cavan	31.1	(11.1 – 51.1)	4.6	–	0.4	–	27.7	(9.7 – 45.7)
Clare	12.8	(7.0 – 18.7)	5.6	(0.0 – 19.6)	8.3	(0.8 – 15.9)	11.0	(6.8 – 15.2)
Cork	16.5	(12.2 – 20.9)	2.4	–	14.9	(3.8 – 26.0)	16.1	(12.2 – 20.0)
Donegal	21.5	(13.5 – 29.5)	1.5	–	5.4	(2.2 – 8.6)	18.6	(11.8 – 25.5)
Dublin	17.9	(3.2 – 32.6)	–	–	28.8	(0.0 – 252.1)	20.6	(7.3 – 33.9)
Galway	39.1	(0.0 – 81.2)	–	–	18.8	(8.7 – 29.0)	37.4	(0.0 – 75.7)
Kerry	21.1	(12.6 – 29.6)	17.5	(1.9 – 33.0)	13.4	(4.0 – 22.8)	18.6	(13.0 – 24.2)
Kildare	13.5	(0.0 – 28.0)	–	–	16.5	(0.0 – 58.6)	14.4	(2.2 – 26.7)
Kilkenny	13.5	(4.6 – 22.4)	5.2	–	4.6	(0.0 – 58.0)	12.1	(4.6 – 19.7)
Laois	20.8	(14.5 – 27.1)	12.5	–	22.6	(0.0 – 48.1)	20.8	(15.0 – 26.7)
Leitrim	40.9	(2.7 – 79.1)	4.0	(0.0 – 15.9)	4.4	(0.0 – 11.9)	31.4	(3.0 – 59.8)
Limerick	21.3	(13.6 – 29.0)	–	–	6.8	–	20.3	(12.9 – 27.8)
Longford	9.8	(0.0 – 23.5)	–	–	3.6	–	8.5	(0.0 – 18.4)
Louth	44.1	(0.0 – 167.2)	–	–	44.3	(0.0 – 539.6)	44.1	(0.0 – 99.5)
Mayo	15.5	(9.4 – 21.6)	–	–	10.7	(1.0 – 20.5)	14.7	(9.5 – 19.9)
Meath	31.6	(7.2 – 56.0)	–	–	20.5	(6.3 – 34.8)	26.5	(13.9 – 39.2)
Monaghan	26.1	(0.0 – 65.3)	–	–	9.9	(0.0 – 24.5)	18.9	(0.1 – 37.8)
Offaly	21.2	(7.8 – 34.6)	2.0	(0.0 – 26.5)	16.2	(9.1 – 23.2)	17.8	(9.6 – 25.9)
Roscommon	19.7	(0.0 – 41.3)	–	–	56.3	(0.0 – 179.6)	31.9	(0.0 – 65.7)
Sligo	40.8	(17.4 – 64.3)	1.7	–	24.8	(0.0 – 334.7)	36.9	(16.7 – 57.1)
Tipperary	12.4	(7.7 – 17.2)	9.8	(0.0 – 55.2)	13.1	(0.0 – 28.9)	12.4	(8.2 – 16.7)
Waterford	16.6	(6.6 – 26.5)	5.3	–	9.1	(0.0 – 19.3)	15.0	(6.9 – 23.1)
Westmeath	15.5	(6.5 – 24.4)	1.5	(0.0 – 14.7)	–	–	12.9	(5.0 – 20.9)
Wexford	13.5	(3.9 – 23.1)	18.3	–	52.6	–	16.3	(6.5 – 26.0)
Wicklow	20.2	(10.4 – 30.1)	7.2	(0.0 – 28.5)	20.6	(0.0 – 46.6)	19.6	(11.1 – 28.0)
All	21.5	(17.0 – 26.1)	7.7	(4.8 – 10.6)	16.4	(11.0 – 21.8)	20.1	(16.4 – 23.8)

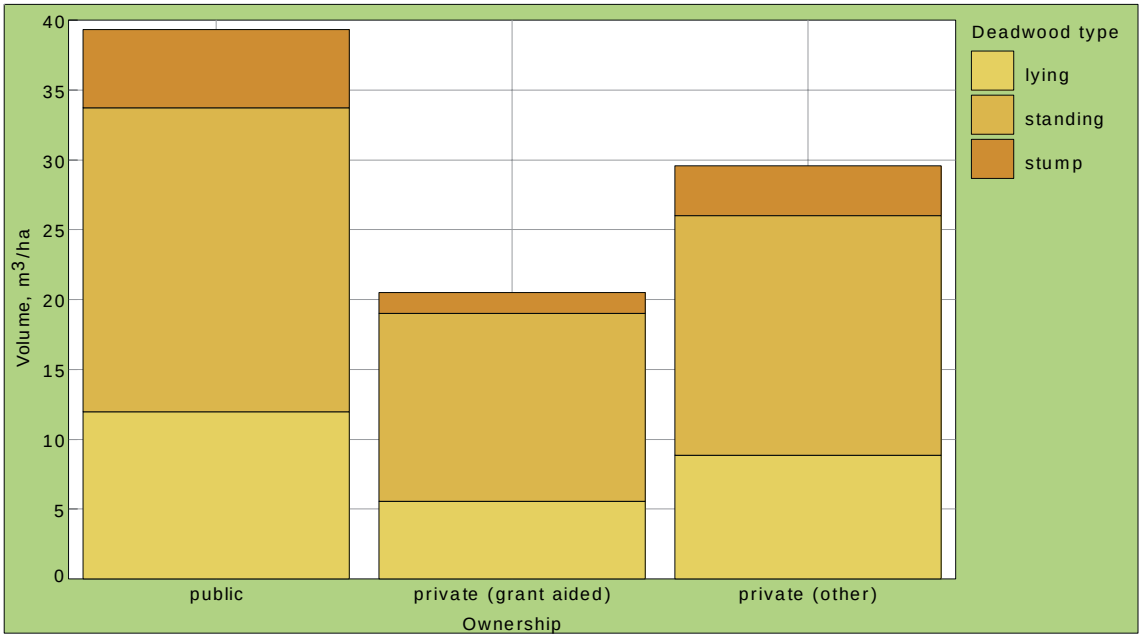


7.1.6 Mean deadwood volume per hectare by ownership and deadwood type, excluding areas with no deadwood

Methodology

The mean volume of deadwood per hectare is classified by ownership and deadwood type. This mean is calculated excluding areas with no deadwood present.

Deadwood type	Ownership / Volume			
	public	private (grant aided)	private (other)	All
	m^3/ha ($\alpha = 0.05$)	m^3/ha ($\alpha = 0.05$)	m^3/ha ($\alpha = 0.05$)	m^3/ha ($\alpha = 0.05$)
lying	11.9 (7.3 – 16.6)	5.5 (2.3 – 8.8)	8.9 (3.8 – 13.9)	11.2 (7.5 – 14.9)
standing	21.8 (17.0 – 26.5)	13.5 (11.5 – 15.5)	17.2 (12.4 – 22.0)	20.6 (16.9 – 24.4)
stump	5.6 (4.5 – 6.7)	1.5 (0.5 – 2.4)	3.5 (2.3 – 4.8)	5.3 (4.3 – 6.2)
All	21.5 (17.0 – 26.1)	7.7 (4.8 – 10.6)	16.4 (11.0 – 21.8)	20.1 (16.4 – 23.8)



7.2 LYING DEADWOOD

Definition

Lying deadwood

Lying dead logs (or parts thereof) with a minimum mid-diameter of 7 cm and minimum length of 1 m.

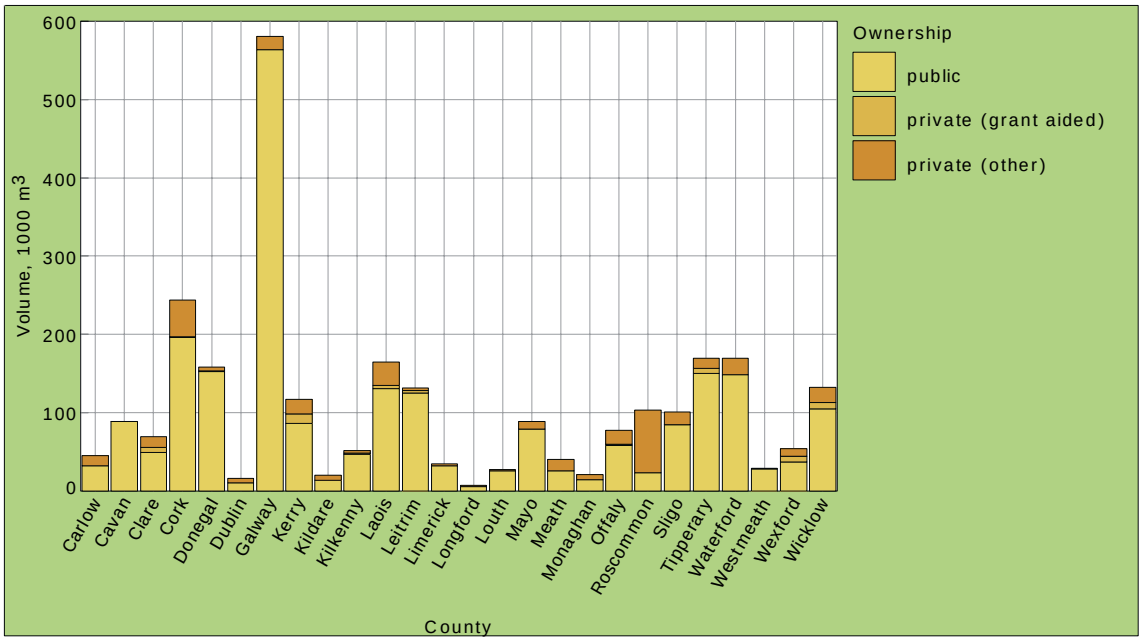
7.2.1 Total volume of lying deadwood by ownership and county

Methodology

The total volume of lying deadwood is classified by ownership and county.

County	Ownership / Volume							
	public				private (grant aided)			
	1000 m^3		($\alpha = 0.05$)	%	1000 m^3		($\alpha = 0.05$)	%
Carlow	32.6	(3.2 – 62.0)		1.4	–	–	–	–
Cavan	89.0	(0.0 – 187.5)		3.8	–	–	–	–
Clare	49.3	(11.7 – 86.9)		2.1	6.0	(0.0 – 15.7)		11.3
Cork	196.5	(123.3 – 269.7)		8.5	0.8	(0.0 – 2.4)		1.5
Donegal	152.8	(78.5 – 227.1)		6.6	0.6	(0.0 – 1.8)		1.2
Dublin	10.8	(0.0 – 22.7)		0.5	–	–	–	–
Galway	563.9	(0.0 – 1,410.4)		24.6	–	–	–	–
Kerry	86.0	(32.1 – 140.0)		3.7	12.2	(0.0 – 32.5)		23.0
Kildare	13.5	(0.0 – 35.0)		0.6	–	–	–	–
Kilkenny	47.2	(0.0 – 97.4)		2.0	1.4	(0.0 – 4.4)		2.7
Laois	130.7	(73.2 – 188.3)		5.6	4.0	(0.0 – 12.0)		7.5
Leitrim	125.0	(37.7 – 212.3)		5.4	3.4	(0.0 – 8.9)		6.4
Limerick	32.4	(11.7 – 53.1)		1.4	–	–	–	–
Longford	5.5	(0.0 – 15.3)		0.2	–	–	–	–
Louth	25.6	(0.0 – 68.3)		1.1	–	–	–	–
Mayo	79.2	(27.7 – 130.8)		3.4	–	–	–	–
Meath	25.7	(0.0 – 57.8)		1.1	–	–	–	–
Monaghan	14.7	(0.0 – 34.2)		0.6	–	–	–	–
Offaly	58.1	(0.0 – 120.4)		2.5	1.6	(0.0 – 4.8)		3.0
Roscommon	23.5	(6.4 – 40.7)		1.0	–	–	–	–
Sligo	84.7	(12.9 – 156.4)		3.7	0.5	(0.0 – 1.5)		0.9
Tipperary	150.0	(74.0 – 226.1)		6.5	6.4	(0.0 – 17.2)		12.0
Waterford	148.4	(26.3 – 270.6)		6.4	–	–	–	–
Westmeath	28.0	(3.8 – 52.2)		1.2	1.2	(0.0 – 3.3)		2.2
Wexford	37.4	(0.0 – 88.4)		1.6	7.2	(0.0 – 21.9)		13.6
Wicklow	105.1	(57.4 – 152.7)		4.5	7.8	(0.0 – 21.5)		14.7
Total	2,315.9	(1,425.0 – 3,206.8)		100.0	53.2	(20.0 – 86.4)		100.0

County	Ownership / Volume					
	private (other)			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Carlow	12.3	(0.0 – 30.7)	3.3	44.9	(13.8 – 75.9)	1.6
Cavan	0.1	(0.0 – 0.4)	0.04	89.2	(0.0 – 187.7)	3.2
Clare	14.3	(0.6 – 28.0)	3.8	69.6	(29.4 – 109.8)	2.5
Cork	46.9	(0.0 – 98.1)	12.5	244.2	(157.2 – 331.2)	8.9
Donegal	5.0	(0.0 – 10.2)	1.3	158.5	(84.3 – 232.6)	5.8
Dublin	5.1	(0.0 – 13.0)	1.3	15.8	(3.6 – 28.1)	0.6
Galway	16.6	(1.1 – 32.1)	4.4	580.5	(0.0 – 1,426.8)	21.0
Kerry	19.0	(0.0 – 39.2)	5.1	117.3	(58.1 – 176.5)	4.3
Kildare	6.9	(0.0 – 17.0)	1.8	20.4	(0.0 – 43.3)	0.7
Kilkenny	3.1	(0.0 – 9.4)	0.8	51.8	(1.6 – 102.0)	1.9
Laois	30.1	(0.0 – 73.4)	8.0	164.9	(97.1 – 232.6)	6.0
Leitrim	3.6	(0.0 – 8.1)	0.9	132.0	(45.2 – 218.7)	4.8
Limerick	2.7	(0.0 – 8.2)	0.7	35.1	(14.0 – 56.2)	1.3
Longford	1.4	(0.0 – 4.4)	0.4	6.9	(0.0 – 17.0)	0.3
Louth	2.2	(0.0 – 8.1)	0.6	27.8	(0.0 – 68.3)	1.0
Mayo	9.8	(0.0 – 24.5)	2.6	89.1	(36.0 – 142.2)	3.2
Meath	14.5	(0.0 – 37.0)	3.9	40.2	(2.8 – 77.6)	1.5
Monaghan	6.1	(0.0 – 13.5)	1.6	20.8	(1.5 – 40.1)	0.8
Offaly	17.8	(1.2 – 34.4)	4.7	77.6	(14.6 – 140.5)	2.8
Roscommon	80.1	(0.0 – 229.8)	21.6	103.6	(0.0 – 253.2)	3.8
Sligo	16.0	(0.0 – 47.9)	4.2	101.1	(24.3 – 178.0)	3.7
Tipperary	13.2	(0.0 – 26.9)	3.5	169.6	(93.0 – 246.2)	6.2
Waterford	20.8	(0.0 – 47.0)	5.5	169.3	(46.2 – 292.3)	6.2
Westmeath	–	–	–	29.2	(5.1 – 53.2)	1.1
Wexford	9.2	(0.0 – 28.0)	2.4	53.8	(0.0 – 108.5)	2.0
Wicklow	19.3	(0.1 – 38.5)	5.1	132.2	(81.9 – 182.5)	4.8
Total	376.2	(199.1 – 553.3)	100.0	2,745.3	(1,839.3 – 3,651.2)	100.0



7.2.2 Total volume of lying deadwood by ownership and decay status

Definition

Decay status

Decay status describes the level of decomposition of the dead wood.

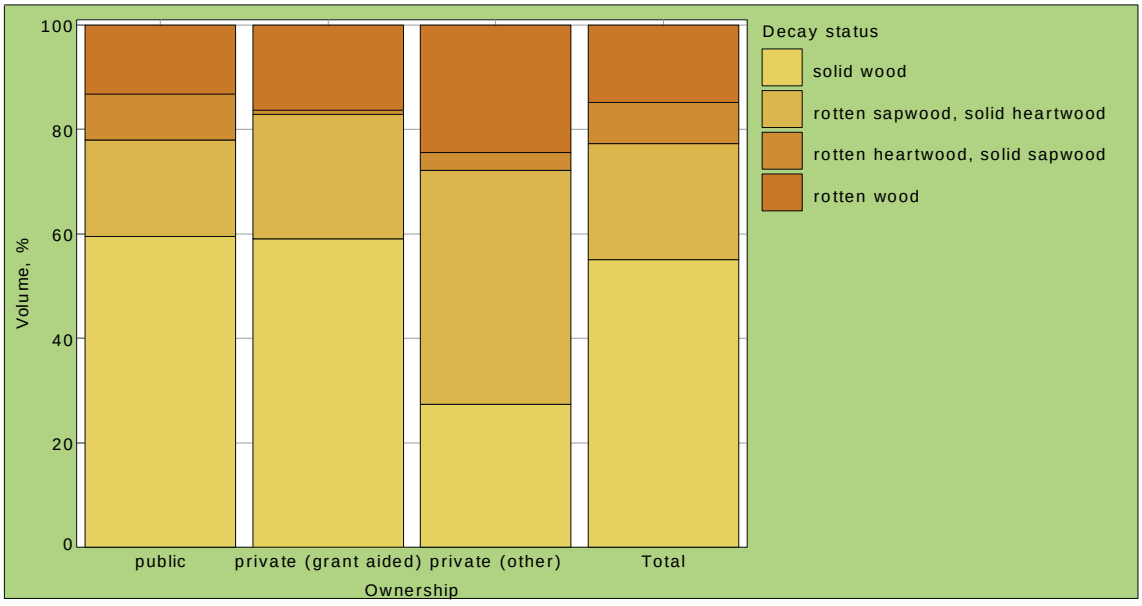
1. **Solid wood:** Wood is intact, no signs of decomposition.
2. **Rotten sapwood, solid heartwood:** Outer part of wood is rotten, inner core is solid.
3. **Rotten heartwood, solid sapwood:** Outer part of wood is solid, inner core is rotten.
4. **Rotten wood:** Timber is rotten throughout, but maintains its original shape.

Methodology

The total volume of lying deadwood is classified by ownership and decay status.

Decay status	Ownership / Volume					
	public			private (grant aided)		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
solid wood	1,378.2	(513.9 – 2,242.4)	59.5	31.4	(7.7 – 55.1)	59.1
rotten sapwood, solid heartwood	428.7	(335.4 – 522.1)	18.5	12.7	(0.0 – 26.8)	23.8
rotten heartwood, solid sapwood	202.1	(98.4 – 305.7)	8.7	0.4	(0.0 – 1.1)	0.8
rotten wood	306.9	(191.1 – 422.7)	13.3	8.7	(0.0 – 19.7)	16.3
Total	2,315.9	(1,425.0 – 3,206.8)	100.0	53.2	(20.0 – 86.4)	100.0

Decay status	Ownership / Volume					
	private (other)			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
solid wood	102.8	(57.7 – 148.0)	27.3	1,512.4	(647.2 – 2,377.6)	55.2
rotten sapwood, solid heartwood	168.9	(34.1 – 303.7)	45.0	610.3	(449.0 – 771.5)	22.2
rotten heartwood, solid sapwood	12.9	(4.1 – 21.7)	3.4	215.4	(111.5 – 319.3)	7.8
rotten wood	91.6	(52.9 – 130.2)	24.3	407.2	(286.8 – 527.6)	14.8
Total	376.2	(199.1 – 553.3)	100.0	2,745.3	(1,839.3 – 3,651.2)	100.0



7.3 STANDING DEADWOOD

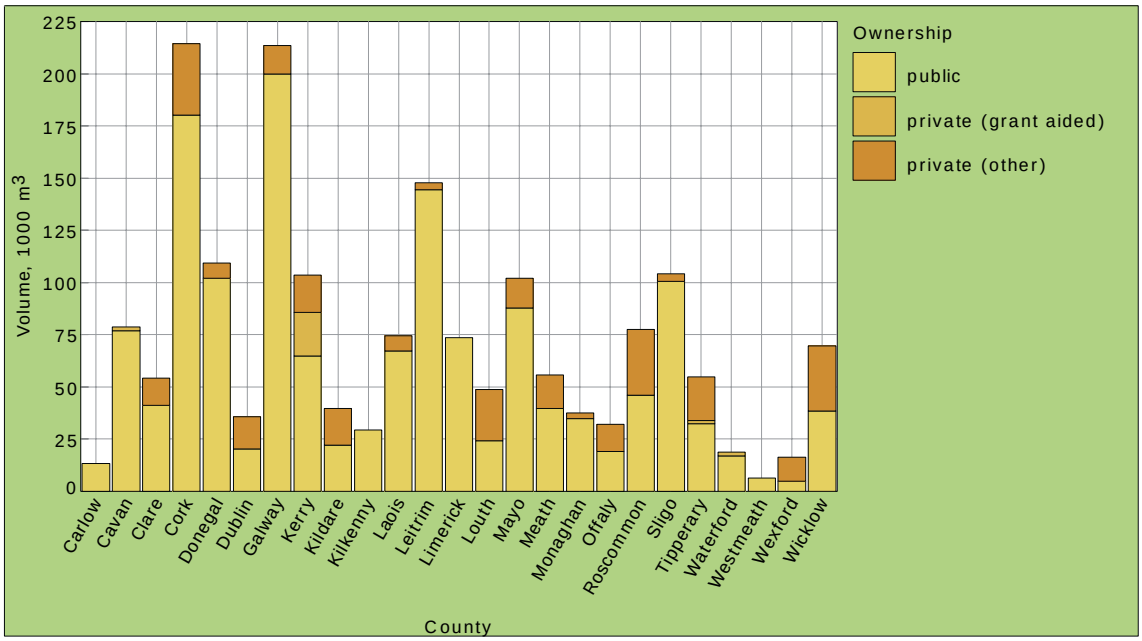
7.3.1 Total standing deadwood volume by ownership and county

Methodology

The total volume of standing deadwood is classified by ownership and county.

County	Ownership / Volume					
	public			private (grant aided)		
	1000 m^3	($\alpha = 0.05$)	%	1000 m^3	($\alpha = 0.05$)	%
Carlow	13.2	(0.0 – 29.4)	0.9	–	–	–
Cavan	77.0	(0.0 – 156.4)	5.2	1.7	(0.0 – 5.0)	6.4
Clare	41.0	(4.6 – 77.5)	2.8	–	–	–
Cork	180.1	(87.5 – 272.7)	12.1	–	–	–
Donegal	102.1	(24.2 – 180.0)	6.9	–	–	–
Dublin	20.3	(0.0 – 49.1)	1.4	–	–	–
Galway	199.7	(35.1 – 364.4)	13.3	–	–	–
Kerry	64.8	(18.8 – 110.7)	4.4	20.9	(0.0 – 50.1)	81.5
Kildare	22.0	(0.0 – 49.9)	1.5	–	–	–
Kilkenny	29.3	(0.0 – 59.1)	2.0	–	–	–
Laois	67.4	(0.8 – 133.9)	4.5	–	–	–
Leitrim	144.5	(0.0 – 373.0)	9.7	–	–	–
Limerick	73.7	(17.4 – 130.0)	5.0	–	–	–
Louth	24.3	(0.0 – 91.6)	1.6	–	–	–
Mayo	87.9	(22.7 – 153.1)	5.9	–	–	–
Meath	39.7	(0.0 – 96.8)	2.7	–	–	–
Monaghan	34.9	(0.0 – 87.2)	2.3	–	–	–
Offaly	19.0	(0.0 – 43.6)	1.3	–	–	–
Roscommon	45.9	(0.0 – 124.6)	3.1	–	–	–
Sligo	100.4	(7.8 – 193.0)	6.8	–	–	–
Tipperary	32.5	(8.5 – 56.5)	2.2	1.3	(0.0 – 3.7)	4.9
Waterford	16.9	(0.0 – 45.7)	1.1	1.8	(0.0 – 5.5)	7.2
Westmeath	6.3	(0.0 – 16.2)	0.4	–	–	–
Wexford	4.9	(0.0 – 15.0)	0.3	–	–	–
Wicklow	38.4	(8.0 – 68.8)	2.6	–	–	–
Total	1,486.0	(1,113.4 – 1,858.6)	100.0	25.6	(0.0 – 55.3)	100.0

County	Ownership / Volume					
	private (other)			Total		
	1000 m³	(α = 0.05)	%	1000 m³	(α = 0.05)	%
Carlow	–	–	–	13.2	(0.0 – 29.4)	0.7
Cavan	–	–	–	78.6	(0.0 – 157.9)	4.3
Clare	13.2	(0.0 – 29.7)	4.4	54.2	(14.6 – 93.8)	3.0
Cork	34.4	(0.0 – 72.2)	11.6	214.5	(115.9 – 313.1)	12.0
Donegal	7.2	(0.0 – 15.8)	2.4	109.3	(31.3 – 187.4)	6.0
Dublin	15.4	(0.0 – 49.8)	5.2	35.7	(0.0 – 77.0)	2.0
Galway	13.7	(0.0 – 31.5)	4.6	213.4	(48.3 – 378.6)	11.8
Kerry	18.0	(0.0 – 39.8)	6.0	103.7	(46.9 – 160.4)	5.7
Kildare	17.8	(0.0 – 54.7)	5.9	39.8	(0.0 – 84.4)	2.2
Kilkenny	–	–	–	29.3	(0.0 – 59.1)	1.6
Laois	7.1	(0.0 – 17.6)	2.4	74.4	(7.5 – 141.3)	4.1
Leitrim	3.3	(0.0 – 9.8)	1.1	147.8	(0.0 – 376.2)	8.2
Limerick	–	–	–	73.7	(17.4 – 130.0)	4.1
Louth	24.3	(0.0 – 91.9)	8.1	48.6	(0.0 – 131.2)	2.7
Mayo	14.2	(0.0 – 28.5)	4.7	102.0	(35.9 – 168.1)	5.6
Meath	16.2	(0.0 – 39.9)	5.4	55.9	(0.0 – 115.7)	3.1
Monaghan	2.7	(0.0 – 8.7)	0.9	37.6	(0.0 – 89.7)	2.1
Offaly	13.0	(0.0 – 28.1)	4.3	32.0	(3.8 – 60.1)	1.8
Roscommon	31.7	(0.0 – 76.3)	10.6	77.6	(0.0 – 166.6)	4.3
Sligo	3.6	(0.0 – 11.0)	1.2	104.0	(11.5 – 196.6)	5.7
Tipperary	21.1	(0.0 – 58.4)	7.0	54.8	(11.0 – 98.7)	3.0
Waterford	–	–	–	18.8	(0.0 – 47.7)	1.0
Westmeath	–	–	–	6.3	(0.0 – 16.2)	0.3
Wexford	11.4	(0.0 – 34.7)	3.8	16.3	(0.0 – 41.4)	0.9
Wicklow	31.3	(0.0 – 83.2)	10.4	69.7	(10.5 – 128.9)	3.8
Total	299.6	(179.3 – 419.8)	100.0	1,811.2	(1,422.8 – 2,199.6)	100.0



7.3.2 Total standing deadwood volume by ownership and dead tree type

Definition

Standing deadwood

Standing dead trees with a minimum dbh of 7 cm and minimum height of 1.3 m.

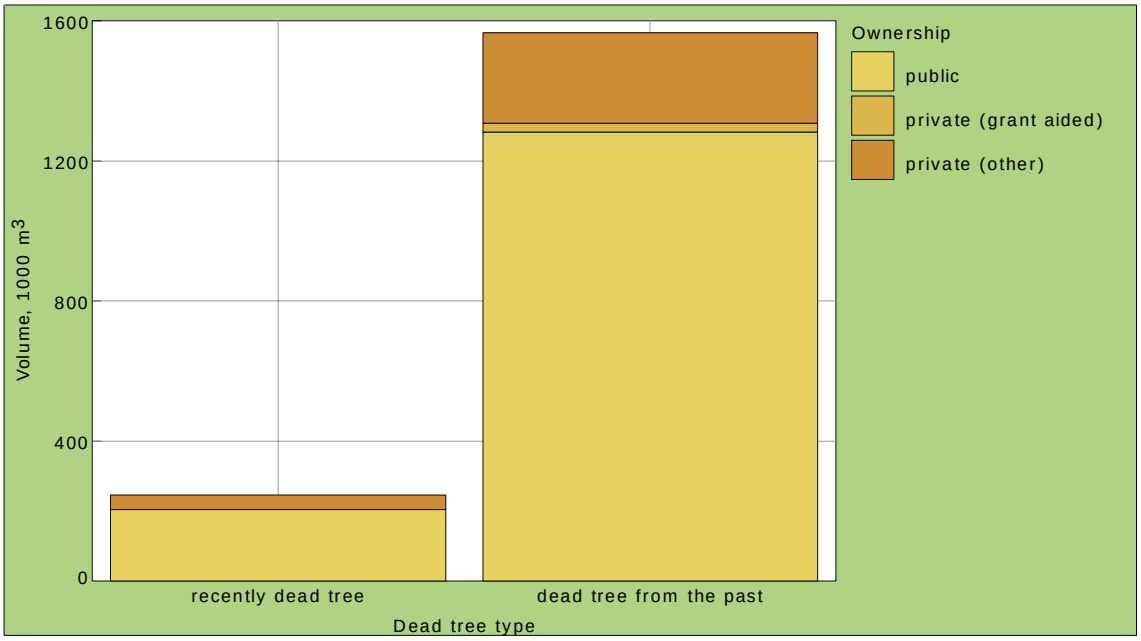
1. **Recently dead tree**: Tree has died in current or previous growing season.
2. **Dead tree from the past**: The tree has been dead for more than 2 years.

Methodology

The total volume of standing deadwood is classified by ownership and dead tree type.

Dead tree type	Ownership / Volume					
	public			private (grant aided)		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
recently dead tree	204.5	(128.7 – 280.3)	13.8	–	–	–
dead tree from the past	1,281.5	(936.4 – 1,626.6)	86.2	25.6	(0.0 – 55.3)	100.0
Total	1,486.0	(1,113.4 – 1,858.6)	100.0	25.6	(0.0 – 55.3)	100.0

Dead tree type	Ownership / Volume					
	private (other)			Total		
	1000 m³	(α=0.05)	%	1000 m³	(α=0.05)	%
recently dead tree	40.4	(10.4 – 70.5)	13.5	244.9	(163.6 – 326.2)	13.5
dead tree from the past	259.2	(149.9 – 368.4)	86.5	1,566.3	(1,206.9 – 1,925.7)	86.5
Total	299.6	(179.3 – 419.8)	100.0	1,811.2	(1,422.8 – 2,199.6)	100.0



7.3.3 Total standing deadwood volume by ownership and stem rot type

Definition

Stem rot

Stem rot is the softening, discoloration, and often disintegration of plant tissue as a result of fungal or bacterial infection.

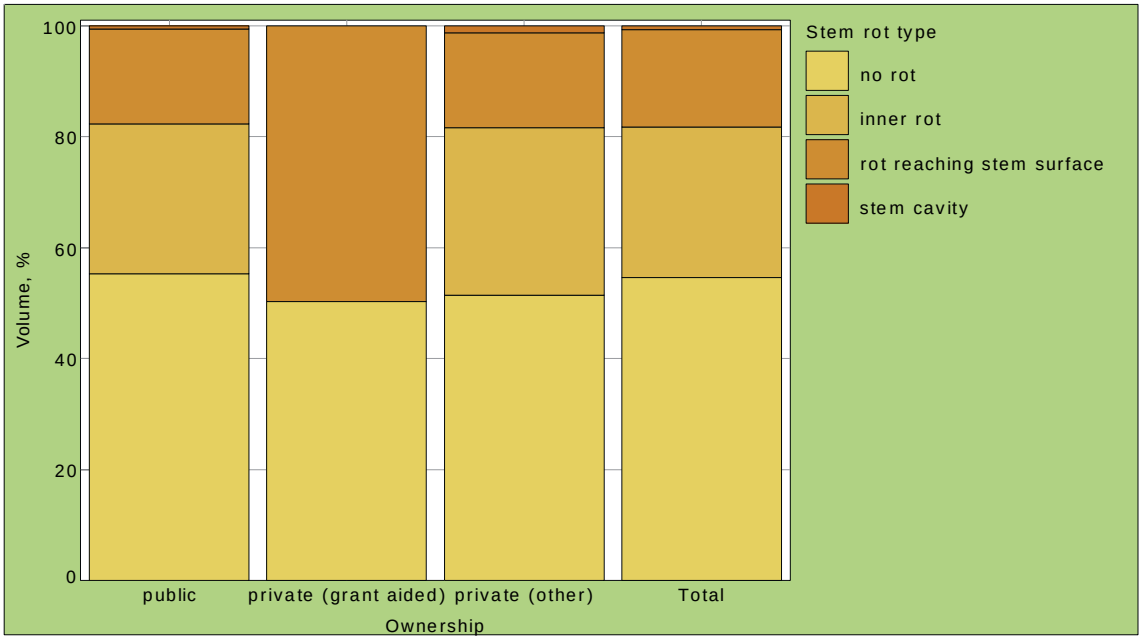
1. **No rot**: There are no signs of rot on the stem.
2. **Inner rot**: An inner section of the stem has suffered rot, which may be identified by butt-swelling and resin exudation.
3. **Stem surface rot**: Rot is present at the stem surface.
4. **Stem cavity**: The rot has created a stem cavity.

Methodology

The total volume of standing deadwood is classified by ownership and stem rot type.

Stem rot type	Ownership / Volume									
	public				private (grant aided)					
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%		
no rot	822.4	(535.2	–	1,109.7)	55.4	12.9	(0.0	–	33.1)	50.2
inner rot	401.8	(217.3	–	586.3)	27.0	–	–		–	–
rot reaching stem surface	252.7	(160.7	–	344.6)	17.0	12.8	(0.0	–	34.7)	49.8
stem cavity	9.1	(0.0	–	25.1)	0.6	–	–		–	–
Total	1,486.0	(1,113.4	–	1,858.6)	100.0	25.6	(0.0	–	55.3)	100.0

Stem rot type	Ownership / Volume									
	private (other)				Total					
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%		
no rot	154.1	(76.3	–	231.9)	51.5	989.4	(692.3	–	1,286.5)	54.6
inner rot	90.6	(20.0	–	161.2)	30.2	492.4	(298.0	–	686.8)	27.2
rot reaching stem surface	51.3	(18.7	–	84.0)	17.1	316.8	(217.7	–	415.9)	17.5
stem cavity	3.6	(0.0	–	10.5)	1.2	12.6	(0.0	–	30.1)	0.7
Total	299.6	(179.3	–	419.8)	100.0	1,811.2	(1,422.8	–	2,199.6)	100.0



7.4 STUMP DEADWOOD

Definition

Stump

The base of a tree remaining in the ground after most of the stem has been harvested. Stumps need to have a minimum top diameter of 20 cm and a height less than 1.3 m to be included. Stumps with a minimum height of 1.3 m are recorded as standing dead trees. Only the above ground section of the stump is included.

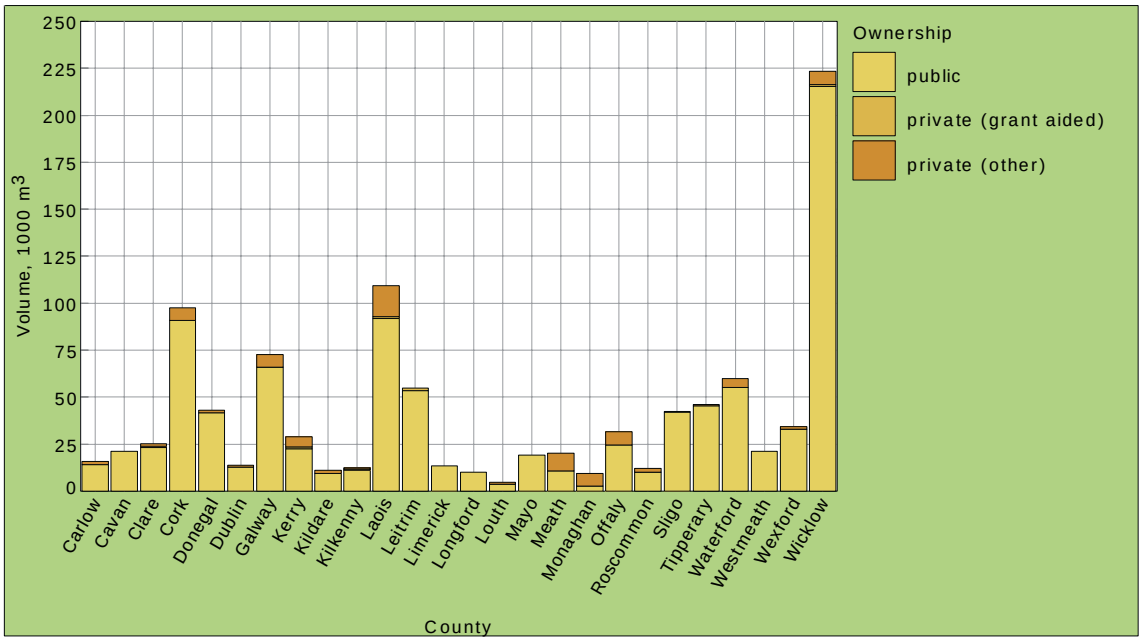
7.4.1 Total volume of stumps by ownership and county

Methodology

The total volume of stump deadwood per hectare is classified by ownership and county.

County	Ownership / Volume							
	public				private (grant aided)			
	1000 m^3		($\alpha = 0.05$)	%	1000 m^3		($\alpha = 0.05$)	%
Carlow	14.0	(0.0	– 28.1)	1.4	–	–	–	–
Cavan	21.3	(7.5	– 35.1)	2.2	–	–	–	–
Clare	23.2	(8.6	– 37.8)	2.4	0.7	(0.0	– 1.9)	12.3
Cork	90.7	(62.1	– 119.3)	9.4	0.2	(0.0	– 0.4)	2.6
Donegal	41.8	(21.5	– 62.2)	4.3	–	–	–	–
Dublin	12.7	(0.0	– 34.0)	1.3	–	–	–	–
Galway	65.8	(36.6	– 94.9)	6.8	–	–	–	–
Kerry	22.4	(5.0	– 39.9)	2.3	1.0	(0.0	– 2.9)	16.9
Kildare	9.6	(0.4	– 18.8)	1.0	–	–	–	–
Kilkenny	11.1	(2.9	– 19.3)	1.1	0.6	(0.0	– 1.9)	11.0
Laois	91.8	(58.3	– 125.3)	9.5	1.0	(0.0	– 3.0)	17.0
Leitrim	53.6	(22.1	– 85.1)	5.6	1.3	(0.0	– 3.5)	23.1
Limerick	13.4	(1.5	– 25.4)	1.4	–	–	–	–
Longford	10.0	(0.0	– 22.6)	1.0	–	–	–	–
Louth	3.7	(0.0	– 13.6)	0.4	–	–	–	–
Mayo	19.2	(2.0	– 36.4)	2.0	–	–	–	–
Meath	10.7	(0.0	– 21.6)	1.1	–	–	–	–
Monaghan	2.8	(0.0	– 6.3)	0.3	–	–	–	–
Offaly	24.5	(4.5	– 44.4)	2.5	–	–	–	–
Roscommon	10.1	(1.2	– 19.0)	1.0	–	–	–	–
Sligo	42.1	(0.0	– 85.1)	4.4	0.2	(0.0	– 0.5)	3.0
Tipperary	45.4	(25.0	– 65.7)	4.7	–	–	–	–
Waterford	55.0	(26.2	– 83.9)	5.7	–	–	–	–
Westmeath	21.3	(4.7	– 38.0)	2.2	–	–	–	–
Wexford	33.0	(6.8	– 59.2)	3.4	–	–	–	–
Wicklow	215.4	(41.9	– 389.0)	22.6	0.8	(0.0	– 2.5)	14.1
Total	964.7	(765.8	– 1,163.7)	100.0	5.8	(1.6	– 10.1)	100.0

County	Ownership / Volume						
	private (other)				Total		
	1000 m³	(α = 0.05)		%	1000 m³	(α = 0.05)	%
Carlow	1.9	(0.0	– 5.0)	2.3	15.9	(2.1 – 29.8)	1.5
Cavan	–	–	–	–	21.3	(7.5 – 35.1)	2.0
Clare	1.3	(0.0	– 3.5)	1.5	25.2	(10.5 – 39.9)	2.4
Cork	6.7	(1.3	– 12.0)	7.9	97.5	(68.9 – 126.1)	9.2
Donegal	1.2	(0.0	– 3.6)	1.5	43.1	(22.7 – 63.5)	4.1
Dublin	1.2	(0.0	– 4.0)	1.5	13.9	(0.0 – 35.0)	1.3
Galway	7.0	(0.0	– 19.4)	8.3	72.8	(41.5 – 104.0)	6.9
Kerry	5.5	(0.7	– 10.2)	6.5	28.9	(11.0 – 46.8)	2.7
Kildare	1.7	(0.0	– 4.7)	2.0	11.2	(1.9 – 20.6)	1.1
Kilkenny	0.6	(0.0	– 1.7)	0.8	12.4	(4.2 – 20.6)	1.2
Laois	16.5	(0.0	– 36.9)	19.8	109.3	(73.1 – 145.5)	10.4
Leitrim	–	–	–	–	55.0	(23.6 – 86.4)	5.2
Limerick	–	–	–	–	13.4	(1.5 – 25.4)	1.3
Longford	–	–	–	–	10.0	(0.0 – 22.6)	1.0
Louth	0.9	(0.0	– 3.4)	1.1	4.6	(0.0 – 14.2)	0.4
Mayo	–	–	–	–	19.2	(2.0 – 36.4)	1.8
Meath	9.4	(0.0	– 25.3)	11.2	20.1	(1.7 – 38.4)	1.9
Monaghan	6.6	(0.0	– 20.7)	7.8	9.4	(0.0 – 23.5)	0.9
Offaly	7.3	(0.0	– 15.4)	8.7	31.8	(11.0 – 52.6)	3.0
Roscommon	2.1	(0.0	– 5.0)	2.5	12.2	(3.0 – 21.3)	1.2
Sligo	–	–	–	–	42.3	(0.0 – 85.2)	4.0
Tipperary	0.8	(0.0	– 2.2)	1.0	46.2	(25.9 – 66.5)	4.4
Waterford	4.7	(0.0	– 11.4)	5.7	59.8	(30.8 – 88.7)	5.7
Westmeath	–	–	–	–	21.3	(4.7 – 38.0)	2.0
Wexford	1.3	(0.0	– 4.0)	1.6	34.3	(8.2 – 60.4)	3.3
Wicklow	7.0	(0.0	– 14.5)	8.3	223.3	(50.0 – 396.5)	21.1
Total	83.8	(49.0	– 118.5)	100.0	1,054.3	(853.9 – 1,254.7)	100.0



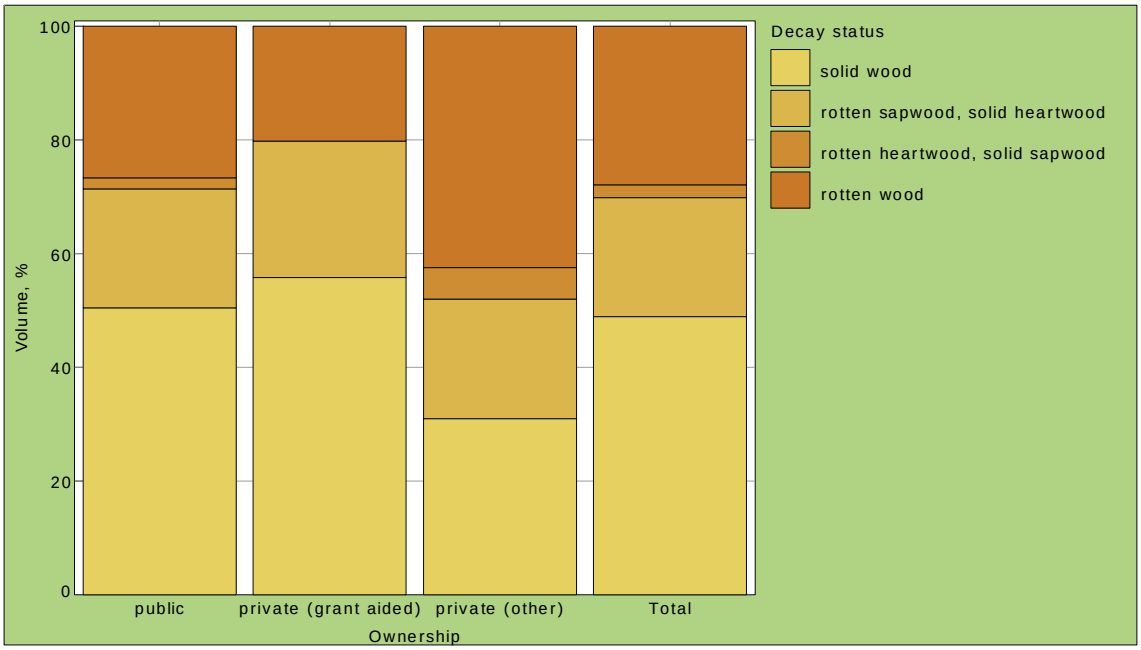
7.4.2 Total volume of stump deadwood by ownership and decay status

Methodology

The total volume of stump deadwood is classified by ownership and decay status.

Decay status	Ownership / Volume									
	public				private (grant aided)					
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%		
solid wood	486.5	(396.7	–	576.3)	50.4	3.3	(0.2	–	6.3)	55.7
rotten sapwood, solid heartwood	202.1	(158.5	–	245.7)	21.0	1.4	(0.0	–	3.4)	24.1
rotten heartwood, solid sapwood	18.8	(11.4	–	26.2)	1.9	–	–		–	–
rotten wood	257.3	(90.3	–	424.4)	26.7	1.2	(0.0	–	2.9)	20.2
Total	964.7	(765.8	–	1,163.7)	100.0	5.8	(1.6	–	10.1)	100.0

Decay status	Ownership / Volume									
	private (other)				Total					
	1000 m³	(α=0.05)		%	1000 m³	(α=0.05)		%		
solid wood	25.9	(5.7	–	46.1)	30.9	515.7	(424.0	–	607.4)	48.9
rotten sapwood, solid heartwood	17.6	(0.0	–	36.0)	21.0	221.1	(174.6	–	267.7)	21.0
rotten heartwood, solid sapwood	4.6	(1.0	–	8.3)	5.5	23.4	(15.2	–	31.6)	2.2
rotten wood	35.6	(15.7	–	55.5)	42.6	294.1	(126.2	–	462.0)	27.9
Total	83.8	(49.0	–	118.5)	100.0	1,054.3	(853.9	–	1,254.7)	100.0



7.5 BRANCH DEADWOOD

Definition
Branch
Branch deadwood on the forest floor. Branches must have a top diameter less than 7 cm. Branches with a minimum length of 1 m and minimum top diameter of 7 cm are recorded as lying deadwood.

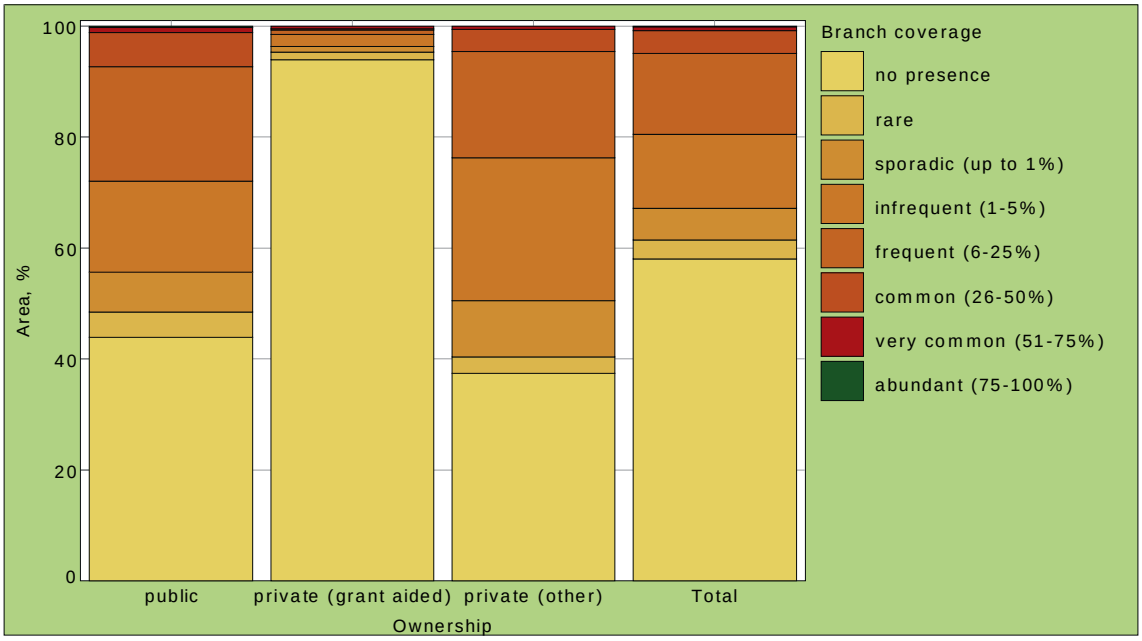
7.5.1 Total stocked forest area by ownership and branch coverage

Definition
Branch coverage
Quantifies the amount of branch deadwood present by assessing the area of the forest floor covered by branches.

Methodology
The total stocked forest area is classified by ownership and branch coverage.

Branch coverage	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
no presence	157.94	(144.58 – 171.30)	44.0	175.79	(162.08 – 189.50)	94.0
rare	16.39	(11.46 – 21.31)	4.6	2.40	(0.49 – 4.32)	1.3
sporadic (up to 1%)	25.64	(19.49 – 31.79)	7.1	2.01	(0.25 – 3.77)	1.1
infrequent (1-5%)	58.89	(49.88 – 67.89)	16.4	3.99	(1.53 – 6.46)	2.1
frequent (6-25%)	74.54	(64.57 – 84.51)	20.7	1.60	(0.03 – 3.16)	0.9
common (26-50%)	22.03	(16.31 – 27.75)	6.1	0.40	(0.00 – 1.19)	0.2
very common (51-75%)	3.20	(0.98 – 5.41)	0.9	0.80	(0.00 – 1.90)	0.4
abundant (75-100%)	0.79	(0.00 – 1.90)	0.2	–	–	–
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Branch coverage	Ownership / Area					
	private (other)			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
no presence	29.64	(23.12 – 36.17)	37.3	363.37	(348.42 – 378.33)	58.1
rare	2.40	(0.48 – 4.33)	3.0	21.19	(15.61 – 26.78)	3.4
sporadic (up to 1%)	8.02	(4.52 – 11.52)	10.1	35.67	(28.48 – 42.86)	5.7
infrequent (1-5%)	20.45	(14.98 – 25.93)	25.8	83.33	(72.88 – 93.78)	13.3
frequent (6-25%)	15.21	(10.42 – 20.00)	19.2	91.35	(80.50 – 102.19)	14.6
common (26-50%)	3.22	(1.02 – 5.41)	4.1	25.65	(19.51 – 31.78)	4.1
very common (51-75%)	0.40	(0.00 – 1.20)	0.5	4.40	(1.80 – 6.99)	0.7
abundant (75-100%)	–	–	–	0.79	(0.00 – 1.90)	0.1
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0


100
80
60
40
20
0
Area, %
public
private (grant aided)
private (other)
Total
Ownership
Branch coverage
no presence
rare
sporadic (up to 1%)
infrequent (1-5%)
frequent (6-25%)
common (26-50%)
very common (51-75%)
abundant (75-100%)

CHAPTER 8
CARBON

In this chapter, the analysis of the carbon pools in the forest estate is presented. Forests, as a land-use that sequesters and stores atmospheric carbon dioxide, have a role in mitigating climate change. In 1997, Ireland committed itself, through the Kyoto protocol, to reduce the net emissions of greenhouse gases in an effort to combat climate change. Since then, the interest in carbon sequestration by forest stands as a means of mitigating greenhouse gas emissions has increased.

The NFI results indicate that the national estate is an important sink for carbon, at 321 million tonnes. The carbon stock in forest soils and litter is the dominant component, accounting for 90% of the carbon stock in the forest estate. Total living tree biomass amounts to 9% of the total carbon stock, while deadwood, including logs, stumps and standing dead trees, constitutes the remaining 1%. The public forest estate contains 58% of the carbon stock in the total forest estate, the private (grant aided) estate 30% and the private (other) forests 12%.

The carbon stock in the living tree biomass is 30 million tonnes, with Sitka spruce and 'other pine' species the predominant contributors (69%). From an ownership perspective, the public, private (other) and private (grant aided) forest estates account for 69.4%, 16.2% and 14.4% of the carbon stock in the living tree biomass.

8.1 CARBON

Methodology

For information on how the carbon estimates were calculated, please refer to the *Proceedings of the NFI Conference* publication.

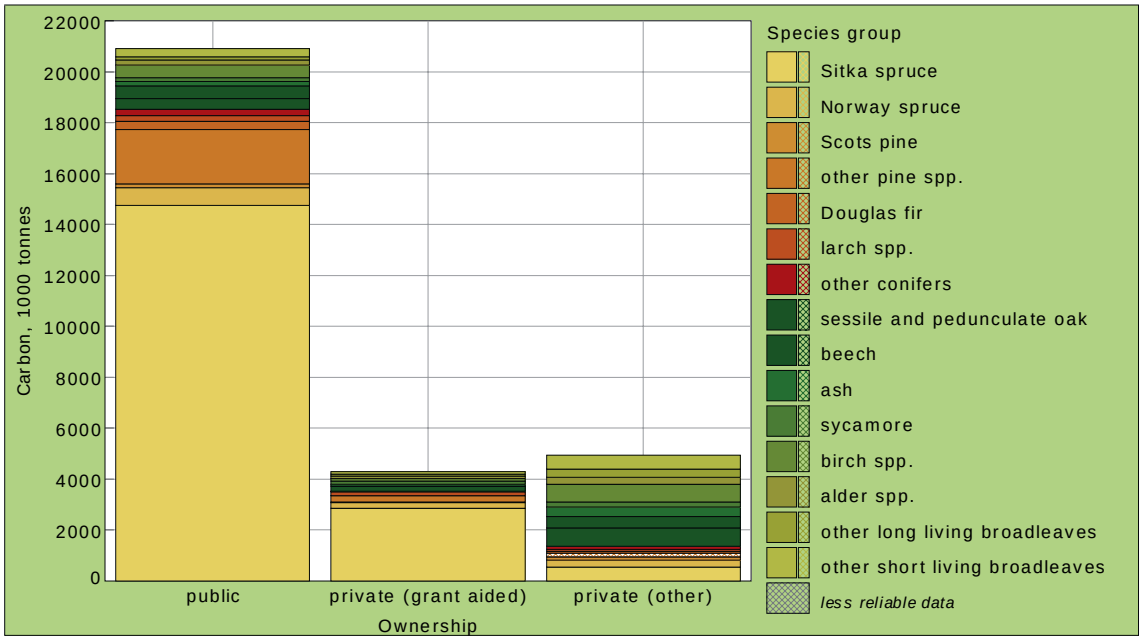
8.1.1 Total living tree carbon stock by ownership and species group

Methodology

The total living tree carbon stock is classified by ownership and species group.

Species group	Ownership / Carbon					
	public			private (grant aided)		
	1000 tonnes	(α=0.05)	%	1000 tonnes	(α=0.05)	%
Sitka spruce	14,755	(13,761 – 15,750)	70.7	2,850	(2,557 – 3,142)	66.5
Norway spruce	690	(533 – 848)	3.3	221	(167 – 275)	5.2
Scots pine	138	(80 – 196)	0.7	31	(26 – 37)	0.7
other pine spp.	2,135	(1,929 – 2,342)	10.2	242	(138 – 345)	5.6
Douglas fir	333	(261 – 405)	1.6	20	– –	0.5
larch spp.	220	(95 – 345)	1.1	137	(92 – 182)	3.2
other conifers	245	(0 – 536)	1.2	33	– –	0.8
sessile and pedunculate oak	427	(249 – 605)	2.0	184	(26 – 342)	4.3
beech	501	(316 – 686)	2.4	0	– –	0.005
ash	174	(124 – 223)	0.8	74	(33 – 115)	1.7
sycamore	144	(86 – 201)	0.7	120	(36 – 203)	2.8
birch spp.	510	(411 – 608)	2.4	106	(0 – 315)	2.5
alder spp.	198	(0 – 486)	0.9	103	(0 – 344)	2.4
other long living broadleaves	115	(69 – 160)	0.5	76	(0 – 191)	1.8
other short living broadleaves	322	(254 – 390)	1.5	87	(25 – 150)	2.0
Total	20,906	(19,798 – 22,013)	100.0	4,285	(3,867 – 4,703)	100.0

Species group	Ownership / Carbon					
	private (other)			Total		
	1000 tonnes	(α=0.05)	%	1000 tonnes	(α=0.05)	%
Sitka spruce	540	(275 – 805)	10.9	18,145	(17,066 – 19,224)	60.2
Norway spruce	277	(0 – 917)	5.6	1,188	(964 – 1,412)	3.9
Scots pine	115	(74 – 156)	2.3	284	(198 – 370)	0.9
other pine spp.	156	– –	3.2	2,533	(2,249 – 2,817)	8.4
Douglas fir	86	(34 – 138)	1.7	440	(364 – 515)	1.5
larch spp.	71	(0 – 253)	1.4	428	(293 – 563)	1.4
other conifers	130	(0 – 555)	2.6	408	(116 – 700)	1.4
sessile and pedunculate oak	698	(466 – 931)	14.1	1,310	(1,042 – 1,577)	4.3
beech	470	(223 – 717)	9.5	972	(719 – 1,224)	3.2
ash	371	(277 – 465)	7.5	618	(521 – 716)	2.1
sycamore	183	(0 – 367)	3.7	447	(284 – 610)	1.5
birch spp.	708	(547 – 869)	14.4	1,324	(1,156 – 1,492)	4.4
alder spp.	276	(12 – 539)	5.6	577	(451 – 702)	1.9
other long living broadleaves	315	(243 – 388)	6.4	506	(434 – 578)	1.7
other short living broadleaves	552	(394 – 709)	11.1	961	(811 – 1,110)	3.2
Total	4,949	(4,437 – 5,461)	100.0	30,139	(28,833 – 31,445)	100.0



8.1.2 Total carbon stock by ownership and carbon pool

Definition

Carbon pool

Carbon estimation for the forest estate was completed for five pools:

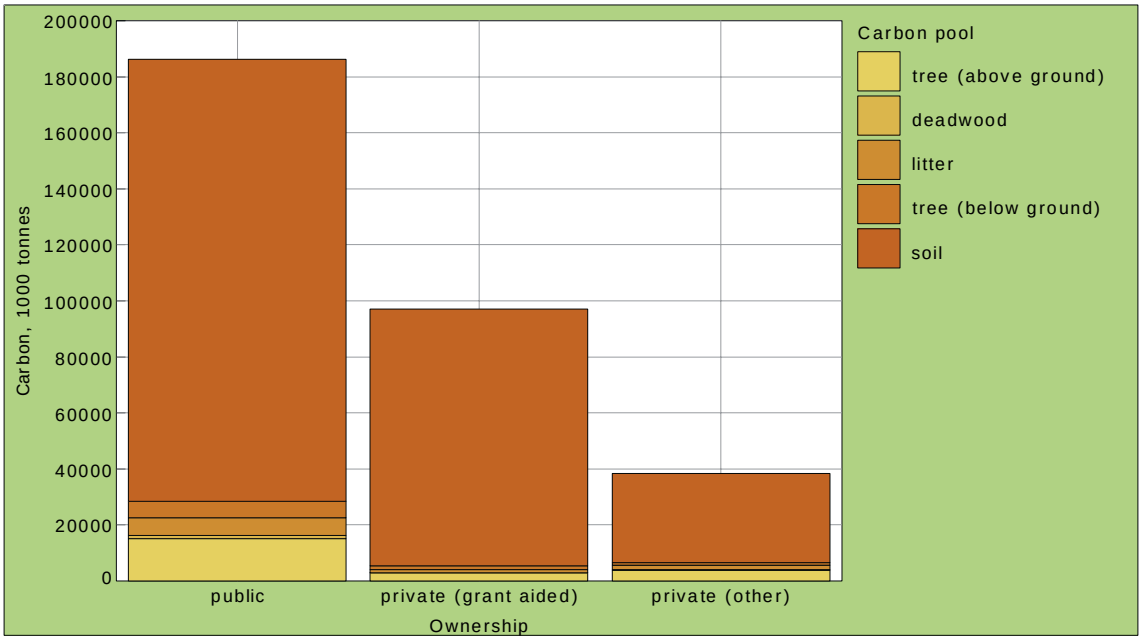
1. Tree above ground
2. Tree below ground
3. Dead wood (lying, standing and stump)
4. Soil
5. Litter

Methodology

Total carbon stock is classified by ownership and carbon pool.

Carbon pool	Ownership / Carbon					
	public			private (grant aided)		
	1000 tonnes	(α = 0.05)	%	1000 tonnes	(α = 0.05)	%
tree (above ground)	15,071.0	(13,852.9 – 16,289.0)	8.1	2,969.5	(2,529.0 – 3,410.1)	3.1
deadwood	1,200.2	(949.8 – 1,450.5)	0.6	21.7	(7.1 – 36.2)	0.02
litter	6,228.2	(5,919.9 – 6,536.4)	3.3	1,047.2	(931.2 – 1,163.1)	1.1
tree (below ground)	5,834.5	(5,352.0 – 6,317.1)	3.1	1,315.3	(1,125.3 – 1,505.2)	1.4
soil	157,856.6	(147,067.0 – 168,646.2)	84.9	91,800.8	(81,836.7 – 101,764.9)	94.4
Total	186,190.4	(174,609.6 – 197,771.2)	100.0	97,154.4	(86,954.6 – 107,354.3)	100.0

Carbon pool	Ownership / Carbon					
	private (other)			Total		
	1000 tonnes	(α = 0.05)	%	1000 tonnes	(α = 0.05)	%
tree (above ground)	3,940.2	(3,263.7 – 4,616.6)	10.3	21,980.7	(20,729.6 – 23,231.7)	6.8
deadwood	214.5	(136.3 – 292.8)	0.6	1,436.4	(1,176.8 – 1,696.0)	0.4
litter	1,390.2	(1,205.3 – 1,575.0)	3.6	8,665.5	(8,415.8 – 8,915.1)	2.7
tree (below ground)	1,008.6	(832.5 – 1,184.7)	2.6	8,158.4	(7,682.3 – 8,634.5)	2.5
soil	31,787.6	(25,586.3 – 37,988.9)	82.9	281,445.0	(269,902.1 – 292,987.9)	87.6
Total	38,341.1	(31,637.9 – 45,044.2)	100.0	321,685.9	(310,212.9 – 333,159.0)	100.0


Carbon, 1000 tonnes
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
public
private (grant aided)
private (other)
Ownership
Carbon pool
tree (above ground)
deadwood
litter
tree (below ground)
soil

CHAPTER 9
HEALTH AND VITALITY

In general, the health and vitality of the forest estate are good. Wind is the only significant damaging factor.

Tree or crown break, lean or bending occurred in approximately 25% of trees with a dbh over 7 cm. The overall occurrence of stem damage is low. Visible root damage is also infrequent. Where peeling (resulting from biotic causes) did occur, it seems to have been mainly confined to sycamore and other long-lived broadleaves.

Vitality of all species, on the basis of the IUFRO classification, appears to be satisfactory. 'Other pine' species, Douglas fir, beech, sycamore and short-lived broadleaves display a lower level of vitality than all other species.

Trees exhibiting defoliation in excess of 10% account for 38% of overall tree numbers, with the highest proportion of defoliated trees (53%) in 'other pine' species.

The extent of discolouration present is low, with only 5% of trees assessed having a discolouration intensity of greater than 10%. The discolouration trend is from old needles to young needles in spruces and from young needles to old needles in 'other pine' species. Spruce discolouration is mainly related to nutrient deficiencies.

9.1 TREE DAMAGE

Definition

Tree damage

Describes a range of factors which can impact on tree growth.

9.1.1 Total number of trees by species group and tree break (dbh ≥ 7 cm)

Definition

Tree break

Tree break details the presence or absence of defects along the bole or in the crown of the tree.

1. **No break**: No signs of the breakage or damage listed below.
2. **Tree top break**: Less than two years' leader growth has been broken off.
3. **Crown break**: The crown of the tree is broken, more severe than tree top break, but still occurring in the live crown.
4. **Stem break**: The stem below the live crown has broken or snapped. Note: the remaining stem must be at least 1.3 m in height to be a tree, otherwise it is a stump.
5. **Bent, curved or slanted tree**: The tree is bent or slanted, e.g. basal sweep or partially windblown tree. The tree is not lying on the ground.
6. **Substitute tree top**: The tree top has been broken off but has been replaced by a new leader. This results in a kink in the stem otherwise described as a 'bayonet' feature.
7. **Lying living tree**: The tree is lying on the ground and is still living, i.e. windblown tree. Trees that are obviously supported by another tree are also included in this category.

Methodology

The total number of trees is classified by species group and tree break. All trees with a minimum dbh of 7 cm were included in the analysis.

Tree break	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	290,383	(277,960 – 302,807)	82.5	19,027	(14,003 – 24,051)	78.4
tree top break	2,819	(2,587 – 3,050)	0.8	296	– –	1.2
crown break	513	(486 – 540)	0.1	243	– –	1.0
stem break	32	– –	0.009	–	– –	–
bended or slanted tree	4,106	(3,553 – 4,659)	1.2	274	(0 – 575)	1.1
substitute tree top	38,929	(35,961 – 41,898)	11.0	3,234	(2,170 – 4,298)	13.3
replicated substitute tree top	13,145	(12,329 – 13,961)	3.7	1,018	– –	4.2
lying living tree	2,490	(1,391 – 3,590)	0.7	184	– –	0.8
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Tree break	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	2,318	(2,049 – 2,586)	82.7	43,724	(39,934 – 47,514)	57.1
tree top break	50	– –	1.8	1,915	(116 – 3,714)	2.5
crown break	16	– –	0.6	242	– –	0.3
stem break	–	– –	–	116	– –	0.2
bended or slanted tree	120	– –	4.3	11,554	(9,567 – 13,542)	15.1
substitute tree top	238	– –	8.5	13,508	(12,043 – 14,972)	17.7
replicated substitute tree top	58	– –	2.1	3,974	(347 – 7,600)	5.2
lying living tree	–	– –	–	1,490	(931 – 2,049)	1.9
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Tree break	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	9,365	(6,313 – 12,418)	71.4	10,851	(8,784 – 12,918)	72.8
tree top break	347	– –	2.6	154	– –	1.0
crown break	8	– –	0.06	104	– –	0.7
stem break	–	– –	–	–	– –	–
bended or slanted tree	619	(0 – 3,228)	4.7	2,169	(1,156 – 3,182)	14.6
substitute tree top	2,019	(1,267 – 2,772)	15.4	1,533	(816 – 2,250)	10.3
replicated substitute tree top	761	(18 – 1,504)	5.8	84	– –	0.6
lying living tree	–	– –	–	–	– –	–
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

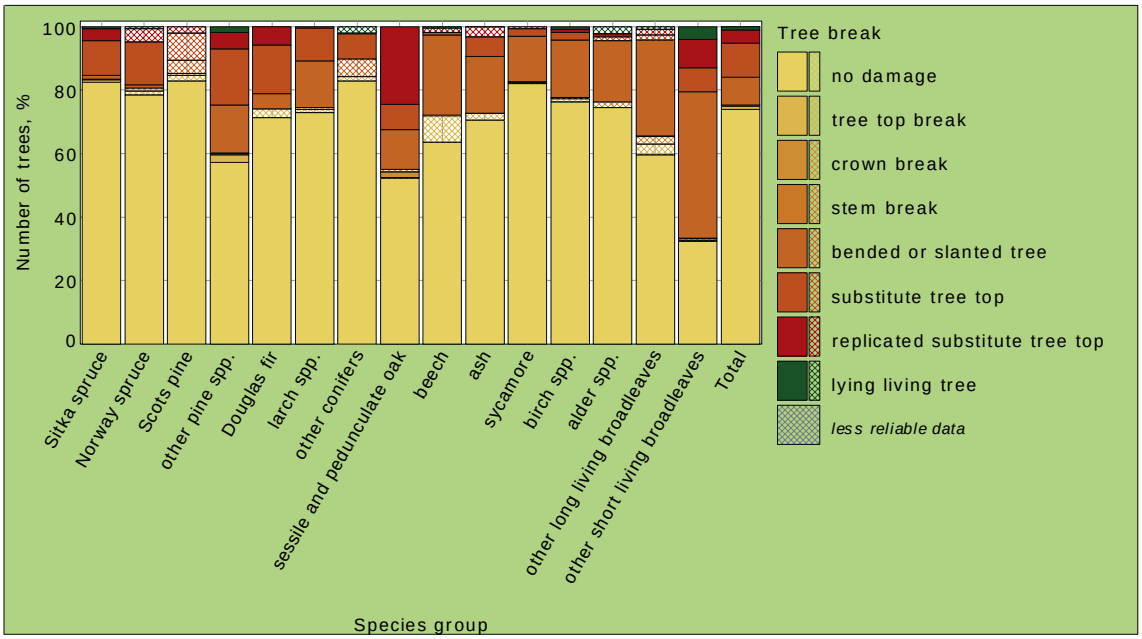
Tree break	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	3,963	(0 – 11,462)	82.6	3,326	(1,461 – 5,192)	52.1
tree top break	66	– –	1.4	24	– –	0.4
crown break	–	– –	–	114	(78 – 150)	1.8
stem break	–	– –	–	50	– –	0.8
bended or slanted tree	271	– –	5.7	799	(666 – 933)	12.5
substitute tree top	377	(0 – 1,040)	7.9	497	(395 – 598)	7.8
replicated substitute tree top	8	– –	0.2	1,569	(855 – 2,282)	24.6
lying living tree	103	– –	2.2	–	– –	–
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Tree break	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	3,171	(2,605 – 3,737)	63.5	11,173	(7,086 – 15,260)	70.5
tree top break	416	– –	8.3	345	– –	2.2
crown break	–	– –	–	–	– –	–
stem break	8	– –	0.2	8	– –	0.05
bended or slanted tree	1,260	(0 – 3,090)	25.2	2,815	(1,021 – 4,608)	17.8
substitute tree top	41	(6 – 75)	0.8	968	(300 – 1,635)	6.1
replicated substitute tree top	73	– –	1.5	515	– –	3.3
lying living tree	24	– –	0.5	16	– –	0.1
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Tree break	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	3,381	(2,611 – 4,152)	82.1	21,939	(18,804 – 25,074)	76.2
tree top break	16	– –	0.4	316	– –	1.1
crown break	8	– –	0.2	42	– –	0.1
stem break	–	– –	–	34	– –	0.1
bended or slanted tree	588	(553 – 622)	14.3	5,228	(3,337 – 7,118)	18.2
substitute tree top	92	(0 – 194)	2.2	683	(152 – 1,214)	2.4
replicated substitute tree top	32	– –	0.8	278	(0 – 1,349)	1.0
lying living tree	–	– –	–	247	(0 – 582)	0.9
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Tree break	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	8,825	(5,059 – 12,592)	74.4	5,323	(2,921 – 7,726)	59.5
tree top break	8	– –	0.07	302	– –	3.4
crown break	219	– –	1.8	208	– –	2.3
stem break	–	– –	–	16	– –	0.2
bended or slanted tree	2,278	(0 – 7,701)	19.2	2,711	(2,081 – 3,342)	30.3
substitute tree top	139	– –	1.2	130	– –	1.5
replicated substitute tree top	127	(0 – 333)	1.1	158	– –	1.8
lying living tree	259	– –	2.2	85	– –	1.0
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

Tree break	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	($\alpha = 0.05$)	%	1000	($\alpha = 0.05$)	%
no damage	12,744	(10,219 – 15,269)	32.4	449,514	(433,553 – 465,476)	73.7
tree top break	34	– –	0.09	7,107	(6,394 – 7,820)	1.2
crown break	252	– –	0.6	1,969	(1,808 – 2,131)	0.3
stem break	76	– –	0.2	341	(238 – 444)	0.06
bended or slanted tree	18,150	(13,859 – 22,441)	46.2	52,942	(47,867 – 58,018)	8.7
substitute tree top	2,944	(2,687 – 3,201)	7.5	65,330	(61,427 – 69,234)	10.7
replicated substitute tree top	3,506	(2,091 – 4,921)	8.9	25,305	(21,471 – 29,139)	4.2
lying living tree	1,598	(0 – 5,221)	4.1	6,498	(2,775 – 10,221)	1.1
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0



9.1.2 Total number of trees by species group and stem damage (dbh ≥7 cm)

Definition

Stem damage

Damage to stems caused by abiotic (e.g. wind, harvesting or extraction machines).

1. **No damage**: Damage is not present.
2. **Damage up to 1/8 of circumference**: Up to 1/8 of the stem circumference has been damaged.
3. **Damage to more than 1/8 of circumference**: More than 1/8 of the stem circumference of the stem has been damaged.

Methodology

The total number of trees is classified by species group and stem damage. All trees with a minimum dbh of 7 cm were included in the analysis.

Stem damage	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no stem damage	339,028	(324,519 – 353,537)	96.2	22,762	(17,656 – 27,867)	93.8
damaged up to 1/8 of circumference	8,098	(6,931 – 9,265)	2.3	516	(0 – 1,184)	2.1
damaged more than 1/8 of circumference	5,292	(3,424 – 7,159)	1.5	998	(0 – 2,673)	4.1
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Stem damage	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no stem damage	2,695	(2,389 – 3,001)	96.3	74,058	(68,314 – 79,802)	96.7
damaged up to 1/8 of circumference	32	– –	1.1	804	– –	1.1
damaged more than 1/8 of circumference	72	– –	2.6	1,662	(1,332 – 1,992)	2.2
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Stem damage	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no stem damage	12,884	(10,639 – 15,130)	98.2	14,654	(11,952 – 17,357)	98.4
damaged up to 1/8 of circumference	100	– –	0.8	90	– –	0.6
damaged more than 1/8 of circumference	135	– –	1.0	151	– –	1.0
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

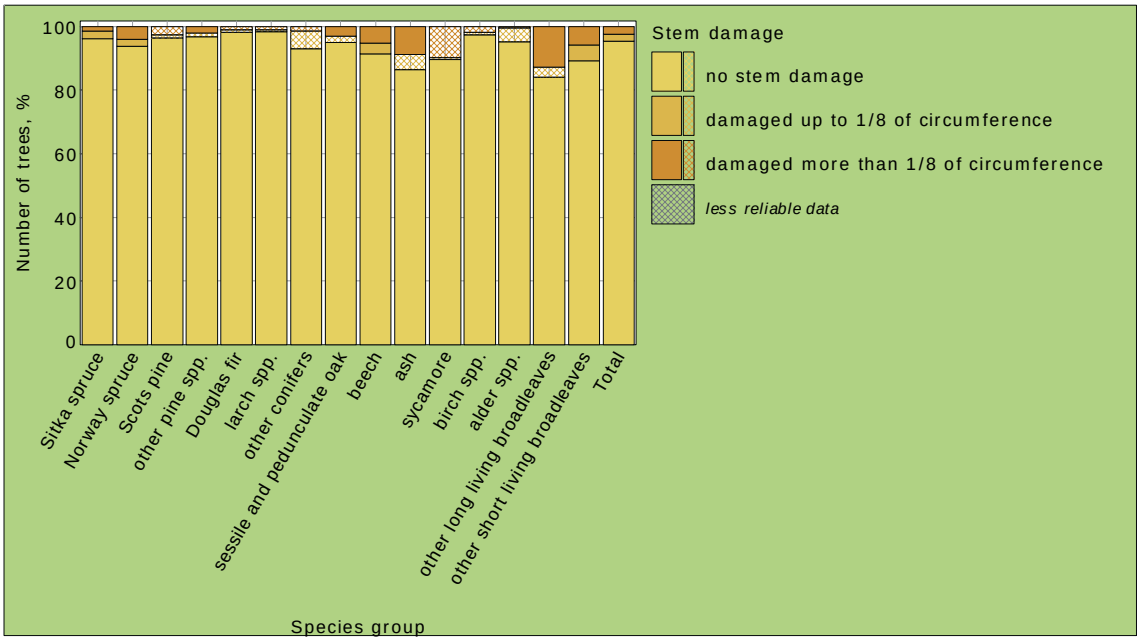
Stem damage	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no stem damage	4,451	(0 – 11,483)	93.0	6,056	(2,410 – 9,702)	94.9
damaged up to 1/8 of circumference	262	– –	5.5	132	– –	2.1
damaged more than 1/8 of circumference	74	– –	1.5	191	(89 – 292)	3.0
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Stem damage	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no stem damage	4,563	(2,660 – 6,465)	91.4	13,682	(11,181 – 16,183)	86.4
damaged up to 1/8 of circumference	163	(114 – 212)	3.3	762	– –	4.8
damaged more than 1/8 of circumference	267	(182 – 351)	5.3	1,396	(1,067 – 1,726)	8.8
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Stem damage	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no stem damage	3,691	(0 – 11,124)	89.6	28,018	(24,137 – 31,898)	97.3
damaged up to 1/8 of circumference	24	– –	0.6	187	– –	0.7
damaged more than 1/8 of circumference	402	– –	9.8	562	– –	2.0
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Stem damage	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	($\alpha = 0.05$)	%	1000	($\alpha = 0.05$)	%
no stem damage	11,278	(6,609 – 15,946)	95.1	7,505	(4,731 – 10,279)	84.0
damaged up to 1/8 of circumference	509	– –	4.3	293	– –	3.3
damaged more than 1/8 of circumference	68	– –	0.6	1,137	(1,010 – 1,263)	12.7
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

Stem damage	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	($\alpha = 0.05$)	%	1000	($\alpha = 0.05$)	%
no stem damage	35,090	(28,176 – 42,005)	89.3	580,416	(560,524 – 600,307)	95.3
damaged up to 1/8 of circumference	1,923	(1,820 – 2,025)	4.9	13,896	(12,130 – 15,663)	2.3
damaged more than 1/8 of circumference	2,290	(2,160 – 2,420)	5.8	14,695	(12,936 – 16,455)	2.4
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0



9.1.3 Total number of trees by species group and root damage (dbh ≥7 cm)

Definition

Root damage

Damage to roots caused by abiotic (e.g. wind, harvesting or extraction machines).

1. **No root damage**: No visible root damage present.
2. **Roots damaged**: There is root damage present.

Methodology

The total number of trees is classified by species group and root damage. All trees with a minimum dbh of 7 cm were included in the analysis.

Root damage	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	348,447	(333,593 – 363,301)	98.9	24,031	(18,792 – 29,271)	99.0
roots damaged	3,971	(3,078 – 4,864)	1.1	245	– –	1.0
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Root damage	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	2,784	(2,380 – 3,187)	99.4	72,630	(66,915 – 78,344)	94.9
roots damaged	16	– –	0.6	3,894	(2,987 – 4,801)	5.1
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Root damage	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	13,093	(10,838 – 15,348)	99.8	14,887	(12,199 – 17,574)	100.0
roots damaged	26	– –	0.2	8	– –	0.05
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

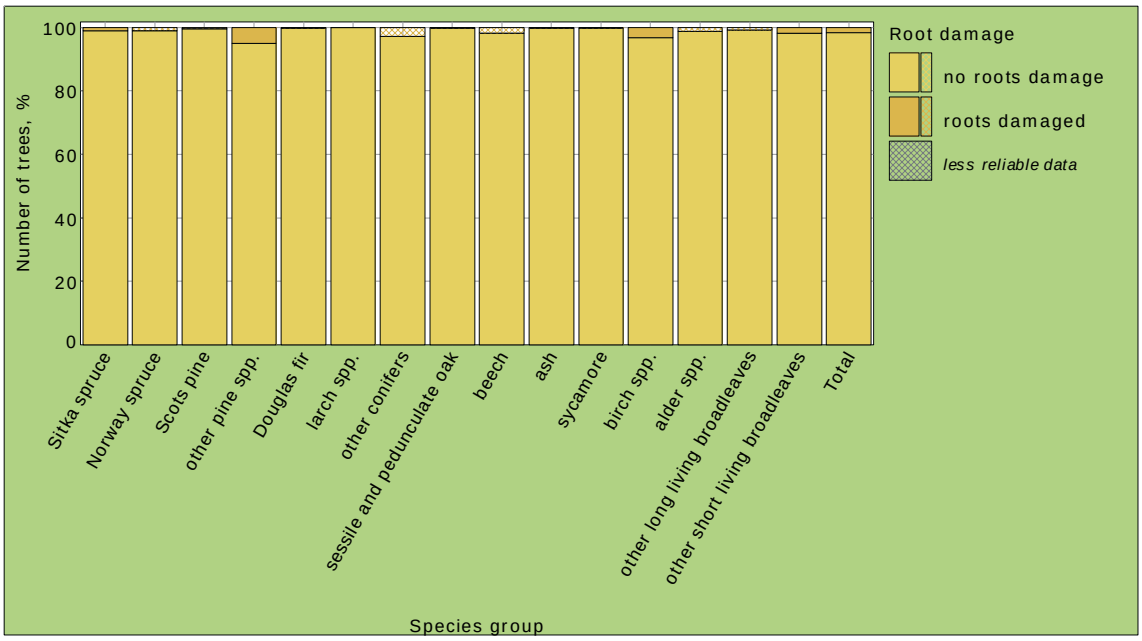
Root damage	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	4,650	(0 – 12,090)	97.1	6,363	(2,726 – 9,999)	99.7
roots damaged	137	– –	2.9	16	– –	0.3
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Root damage	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	4,902	(2,974 – 6,830)	98.2	15,782	(13,012 – 18,552)	99.6
roots damaged	90	– –	1.8	58	– –	0.4
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Root damage	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	4,110	(0 – 11,545)	99.8	27,845	(24,121 – 31,568)	96.8
roots damaged	8	– –	0.2	922	(224 – 1,620)	3.2
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Root damage	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	11,697	(6,216 – 17,177)	98.7	8,857	(6,228 – 11,485)	99.1
roots damaged	158	– –	1.3	78	– –	0.9
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

Root damage	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no roots damage	38,586	(31,502 – 45,671)	98.2	598,663	(578,097 – 619,229)	98.3
roots damaged	717	(296 – 1,137)	1.8	10,345	(8,684 – 12,005)	1.7
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0


Root damage
no roots damage
roots damaged
less reliable data
Number of trees, %
100
80
60
40
20
0
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Douglas fir
larch spp.
other conifers
sessile and pedunculate oak
beech
ash
sycamore
birch spp.
alder spp.
other long living broadleaves
other short living broadleaves
Total
Species group

9.1.4 Total number of trees by species group and peeling damage (dbh ≥7 cm)

Definition

Peeling damage

Damage to stems caused by biotic factors (e.g. deer).

1. **No damage**: Damage is not present.
2. **Damage up to 1/8 of circumference**: Up to 1/8 of the stem circumference has been damaged.
3. **Damage to more than 1/8 of circumference**: More than 1/8 of the stem circumference of the tree has been damaged.

Methodology

The total number of trees is classified by species group and peeling damage. All trees with a minimum dbh of 7 cm were included in the analysis.

Peeling	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	352,360	(337,406 – 367,313)	100.0	24,268	(19,114 – 29,422)	100.0
damaged up to 1/8 of circumference	50	– –	0.01	8	– –	0.03
damaged more than 1/8 of circumference	8	– –	0.002	–	– –	–
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Peeling	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	2,799	(2,387 – 3,211)	100.0	76,508	(70,687 – 82,330)	100.0
damaged up to 1/8 of circumference	–	– –	–	16	– –	0.02
damaged more than 1/8 of circumference	–	– –	–	–	– –	–
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Peeling	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	13,119	(10,865 – 15,373)	100.0	14,869	(12,182 – 17,555)	99.8
damaged up to 1/8 of circumference	–	– –	–	26	– –	0.2
damaged more than 1/8 of circumference	–	– –	–	–	– –	–
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

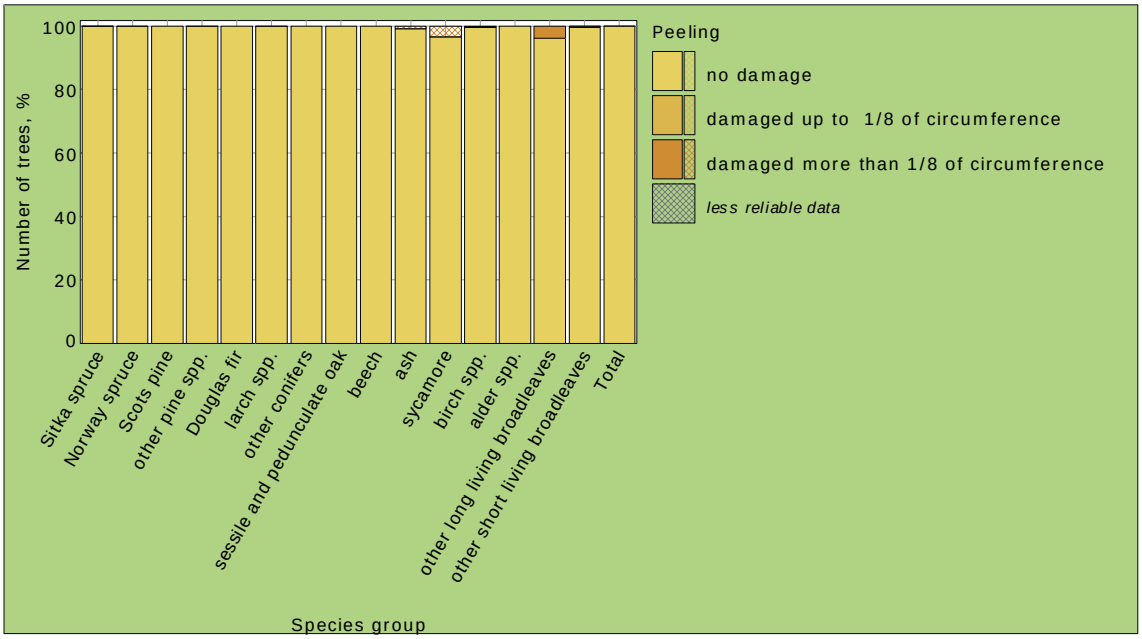
Peeling	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0
damaged up to 1/8 of circumference	–	– –	–	–	– –	–
damaged more than 1/8 of circumference	–	– –	–	–	– –	–
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Peeling	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	4,992	(3,061 – 6,923)	100.0	15,690	(12,920 – 18,461)	99.1
damaged up to 1/8 of circumference	–	– –	–	–	– –	–
damaged more than 1/8 of circumference	–	– –	–	150	– –	0.9
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Peeling	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no damage	3,975	(0 – 11,409)	96.5	28,611	(24,683 – 32,540)	99.4
damaged up to 1/8 of circumference	–	– –	–	79	– –	0.3
damaged more than 1/8 of circumference	143	– –	3.5	77	– –	0.3
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Peeling	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
no damage	11,855	(6,375 – 17,336)	100.0	8,595	(5,935 – 11,254)	96.2
damaged up to 1/8 of circumference	–	–	–	–	–	–
damaged more than 1/8 of circumference	–	–	–	339	(0 – 995)	3.8
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

Peeling	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
no damage	39,099	(31,623 – 46,575)	99.4	607,908	(587,190 – 628,625)	99.9
damaged up to 1/8 of circumference	143	–	0.4	322	–	0.05
damaged more than 1/8 of circumference	61	–	0.2	778	(0 – 1,611)	0.1
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0



9.1.5 Total number of trees by species group and stem rot (dbh ≥7 cm)

Methodology

The total number of trees is classified by species group and stem rot. All trees with a minimum dbh of 7 cm were included in the analysis.

Stem rot	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no	351,883	(336,970 – 366,795)	99.9	24,152	(19,010 – 29,294)	99.6
inner rot	377	(276 – 479)	0.1	58	– –	0.2
rot reaching stem surface	158	– –	0.04	58	– –	0.2
stem cavity	–	– –	–	8	– –	0.03
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Stem rot	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no	2,757	(2,347 – 3,168)	98.5	76,026	(70,196 – 81,855)	99.3
inner rot	–	– –	–	281	(204 – 357)	0.4
rot reaching stem surface	42	– –	1.5	75	– –	0.1
stem cavity	–	– –	–	143	– –	0.2
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Stem rot	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no	13,119	(10,865 – 15,373)	100.0	14,845	(12,157 – 17,532)	99.7
inner rot	–	– –	–	42	– –	0.3
rot reaching stem surface	–	– –	–	8	– –	0.05
stem cavity	–	– –	–	–	– –	–
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

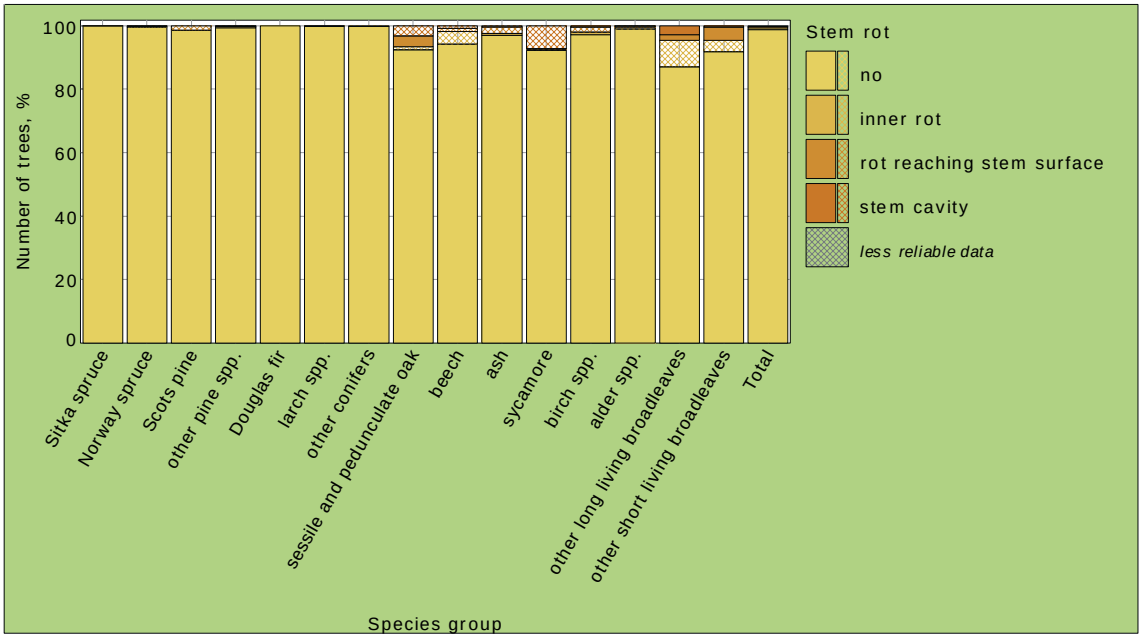
Stem rot	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no	4,771	(0 – 12,213)	99.7	5,892	(2,255 – 9,528)	92.4
inner rot	16	– –	0.3	64	– –	1.0
rot reaching stem surface	–	– –	–	217	(168 – 266)	3.4
stem cavity	–	– –	–	206	– –	3.2
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Stem rot	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no	4,704	(2,778 – 6,629)	94.2	15,340	(12,584 – 18,096)	96.8
inner rot	190	– –	3.8	94	(0 – 423)	0.6
rot reaching stem surface	58	– –	1.2	328	– –	2.1
stem cavity	40	– –	0.8	78	– –	0.5
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Stem rot	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no	3,792	(0 – 11,224)	92.1	27,966	(24,095 – 31,837)	97.3
inner rot	16	– –	0.4	186	(0 – 1,205)	0.6
rot reaching stem surface	16	– –	0.4	490	– –	1.7
stem cavity	294	– –	7.1	124	(23 – 225)	0.4
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Stem rot	Species group / Number of trees					
	alder spp.			other long living broadleaves		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
no	11,727	(6,253 – 17,201)	98.9	7,776	(5,123 – 10,429)	87.0
inner rot	78	– –	0.7	751	– –	8.4
rot reaching stem surface	34	– –	0.3	157	(0 – 359)	1.8
stem cavity	16	– –	0.1	251	(88 – 413)	2.8
Total	11,855	(6,375 – 17,336)	100.0	8,934	(6,307 – 11,562)	100.0

Stem rot	Species group / Number of trees					
	other short living broadleaves			Total		
	1000	(α = 0.05)	%	1000	(α = 0.05)	%
no	36,072	(29,176 – 42,967)	91.8	600,821	(580,351 – 621,291)	98.7
inner rot	1,364	– –	3.5	3,517	(0 – 7,517)	0.6
rot reaching stem surface	1,701	(0 – 3,506)	4.3	3,343	(1,251 – 5,435)	0.5
stem cavity	167	(65 – 268)	0.4	1,328	(1,176 – 1,480)	0.2
Total	39,303	(31,796 – 46,810)	100.0	609,008	(588,284 – 629,732)	100.0



9.1.6 Total number of trees by other damage (dbh ≥7 cm)

Definition

Other damage

Other factors which can impact on tree growth.

Methodology

The total number of trees is classified by other damage. All trees with a minimum dbh of 7 cm were included in the analysis.

Other damage	Number of trees		
	1000	($\alpha = 0.05$)	%
no damage	552,612	(532,643 – 572,580)	90.8
insect	4,310	(2,009 – 6,612)	0.7
fungus	3,747	(2,557 – 4,937)	0.6
deer damage	3,205	(1,203 – 5,207)	0.5
squirrel damage	286	– –	0.05
fire	219	(0 – 857)	0.04
storm, windbreak	5,320	(3,064 – 7,576)	0.9
air pollution	410	– –	0.07
poor nutrition	21,438	(17,815 – 25,060)	3.5
frost	1,825	(1,214 – 2,437)	0.3
drought	155	(0 – 770)	0.03
poor drainage	1,797	(0 – 7,391)	0.3
exposure	3,675	(0 – 10,930)	0.6
poor planting stock	26	– –	0.004
unsuitable site	1,467	(0 – 5,255)	0.2
crown competition	7,579	(6,006 – 9,152)	1.2
other animal damage	936	– –	0.2
Total	609,008	(588,284 – 629,732)	100.0

9.2 Tree vitality

9.2.1 Total number of trees by species group and tree vitality (IUFRO) (dbh ≥ 7 cm)

Definition

Tree vitality

Tree vitality describes the capacity of a tree to survive and grow.

1. **Very Biotic**: Vigorous growth with no or little defoliation.
2. **Normal**: Regular tree with no serious damage present in the crown.
3. **Slimsy**: Poorly performing tree. Serious damage to the crown.

Methodology

The total number of trees is classified by species group and vitality (IUFRO). All trees with a minimum dbh of 7 cm were included in the analysis.

Vitality (IUFRO)	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
very biotic	40,245	(34,901 – 45,590)	11.4	2,776	(2,740 – 2,812)	11.4
normal	288,230	(274,904 – 301,556)	81.8	20,343	(15,262 – 25,424)	83.8
slimsy	23,943	(21,399 – 26,486)	6.8	1,157	(886 – 1,429)	4.8
Total	352,418	(337,464 – 367,372)	100.0	24,276	(19,122 – 29,430)	100.0

Vitality (IUFRO)	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
very biotic	40	– –	1.4	877	(806 – 949)	1.1
normal	2,452	(2,082 – 2,822)	87.6	68,761	(63,261 – 74,261)	89.9
slimsy	307	(103 – 511)	11.0	6,886	(5,521 – 8,252)	9.0
Total	2,799	(2,387 – 3,211)	100.0	76,524	(70,702 – 82,346)	100.0

Vitality (IUFRO)	Species group / Number of trees					
	Douglas fir			larch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
very biotic	332	(26 – 637)	2.5	1,519	(902 – 2,135)	10.2
normal	11,281	(8,494 – 14,067)	86.0	13,205	(10,768 – 15,641)	88.6
slimsy	1,507	(0 – 5,097)	11.5	172	– –	1.2
Total	13,119	(10,865 – 15,373)	100.0	14,895	(12,208 – 17,581)	100.0

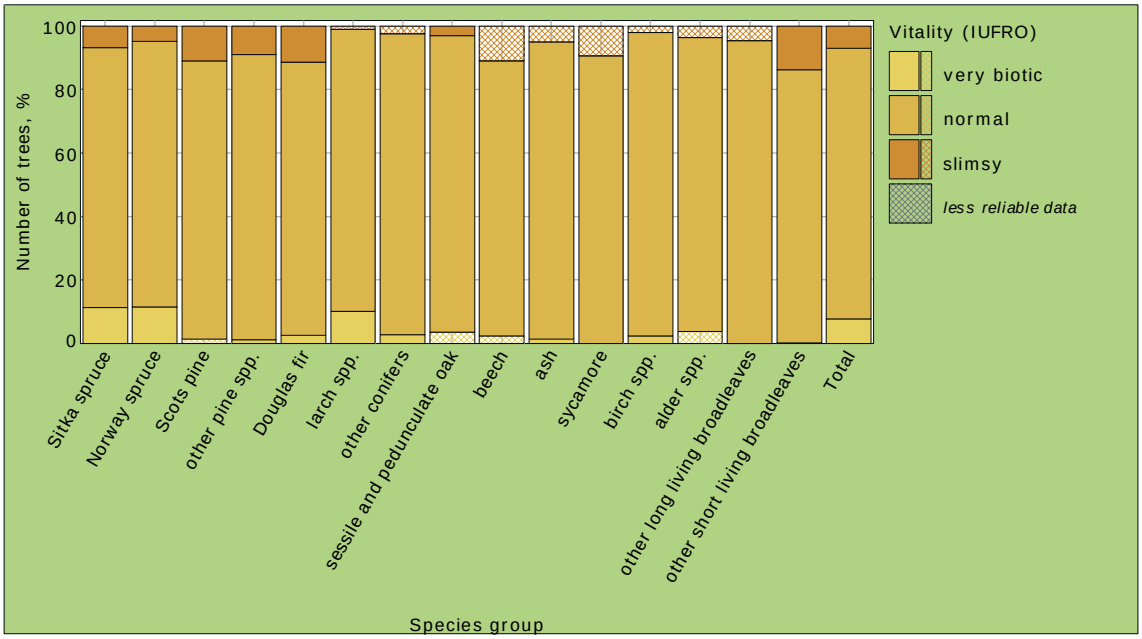
Vitality (IUFRO)	Species group / Number of trees					
	other conifers			sessile and pedunculate oak		
	1000	(α=0.05)	%	1000	(α=0.05)	%
very biotic	133	(35 – 230)	2.8	222	– –	3.5
normal	4,534	(0 – 12,077)	94.7	5,966	(2,327 – 9,605)	93.5
slimsy	121	– –	2.5	191	(0 – 395)	3.0
Total	4,787	(0 – 12,230)	100.0	6,379	(2,742 – 10,015)	100.0

Vitality (IUFRO)	Species group / Number of trees					
	beech			ash		
	1000	(α=0.05)	%	1000	(α=0.05)	%
very biotic	120	– –	2.4	221	(119 – 323)	1.4
normal	4,318	(3,647 – 4,989)	86.5	14,803	(12,172 – 17,434)	93.4
slimsy	554	– –	11.1	816	– –	5.2
Total	4,992	(3,061 – 6,923)	100.0	15,840	(13,069 – 18,611)	100.0

Vitality (IUFRO)	Species group / Number of trees					
	sycamore			birch spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
very biotic	–	– –	–	689	(358 – 1,020)	2.4
normal	3,732	(0 – 11,166)	90.6	27,464	(23,580 – 31,347)	95.5
slimsy	386	– –	9.4	614	– –	2.1
Total	4,118	(0 – 11,552)	100.0	28,767	(24,834 – 32,699)	100.0

Vitality (IUFRO)	Species group / Number of trees							
	alder spp.				other long living broadleaves			
	1000		($\alpha = 0.05$)	%	1000		($\alpha = 0.05$)	%
very biotic	457	–	–	3.9	8	–	–	0.09
normal	10,969	(6,116	– 15,822)	92.5	8,511	(5,885	– 11,136)	95.2
slimsy	429	–	–	3.6	416	–	–	4.7
Total	11,855	(6,375	– 17,336)	100.0	8,934	(6,307	– 11,562)	100.0

Vitality (IUFRO)	Species group / Number of trees							
	other short living broadleaves				Total			
	1000		($\alpha = 0.05$)	%	1000		($\alpha = 0.05$)	%
very biotic	60	–	–	0.2	47,700	(42,124	– 53,275)	7.8
normal	33,793	(27,731	– 39,855)	85.9	518,361	(499,650	– 537,072)	85.1
slimsy	5,450	(4,572	– 6,328)	13.9	42,947	(38,960	– 46,935)	7.1
Total	39,303	(31,796	– 46,810)	100.0	609,008	(588,284	– 629,732)	100.0



9.2.2 Total number of oak and beech trees by broadleaf vitality (dbh ≥7 cm)

Definition

Broadleaf vitality

Broadleaf vitality describes the capacity of a broadleaf tree species to continue to grow in a healthy condition.

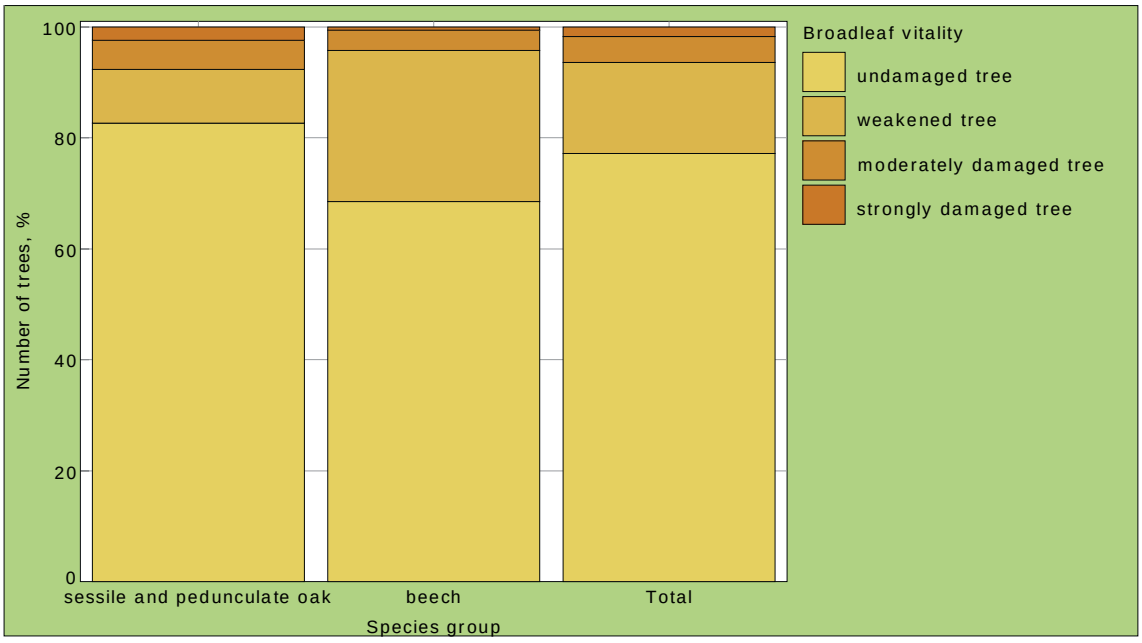
1. **Undamaged**: Tree is growing healthily.
2. **Weakened**: Tree growth is slightly affected due to minor stress, such as minimal stem damage.
3. **Moderately damaged**: Tree growth is moderately affected due to considerable stress, such as prolonged periods of drought or defoliation caused by insect infestation.
4. **Strongly damaged**: Tree is under severe stress, significantly affecting tree growth/survival. High levels of defoliation and/or dieback. Serious crown damage may also be present.

Methodology

Assessment is made on oak and beech trees that have been sampled for height measurement. The total numbers of these oak and beech are classified by vitality type. All trees with a minimum dbh of 7 cm were included in the analysis.

Broadleaf vitality	Species group / Number of trees					
	sessile and pedunculate oak			beech		
	1000	(α=0.05)	%	1000	(α=0.05)	%
undamaged tree	3,514	(1,705 – 5,322)	82.7	1,849	(1,241 – 2,458)	68.6
weakened tree	409	(186 – 631)	9.6	734	(80 – 1,389)	27.2
moderately damaged tree	225	(104 – 346)	5.3	98	(16 – 180)	3.6
strongly damaged tree	100	(18 – 183)	2.4	16	(0 – 49)	0.6
Total	4,248	(2,410 – 6,085)	100.0	2,698	(1,792 – 3,604)	100.0

Broadleaf vitality	Species group / Number of trees		
	Total		
	1000	(α=0.05)	%
undamaged tree	5,363	(3,447 – 7,279)	77.1
weakened tree	1,143	(444 – 1,842)	16.5
moderately damaged tree	323	(160 – 486)	4.7
strongly damaged tree	116	(28 – 205)	1.7
Total	6,945	(4,893 – 8,998)	100.0



9.3 DEFOLIATION

Definition

Defoliation

Tree defoliation is the abnormal loss of tree foliage.

Methodology

Defoliation is assessed on spruce and pine species that have a minimum dbh of 7 cm and have been sampled for height measurement. Therefore, the total number of trees for each species group is reduced when compared to previous analyses. Defoliation is firstly assessed on the whole tree and then only in the top one-third of the crown.

9.3.1 Total number of conifer trees by species group and degree of defoliation

Definition

Degree of defoliation

The percentage of needles or leaves lost.

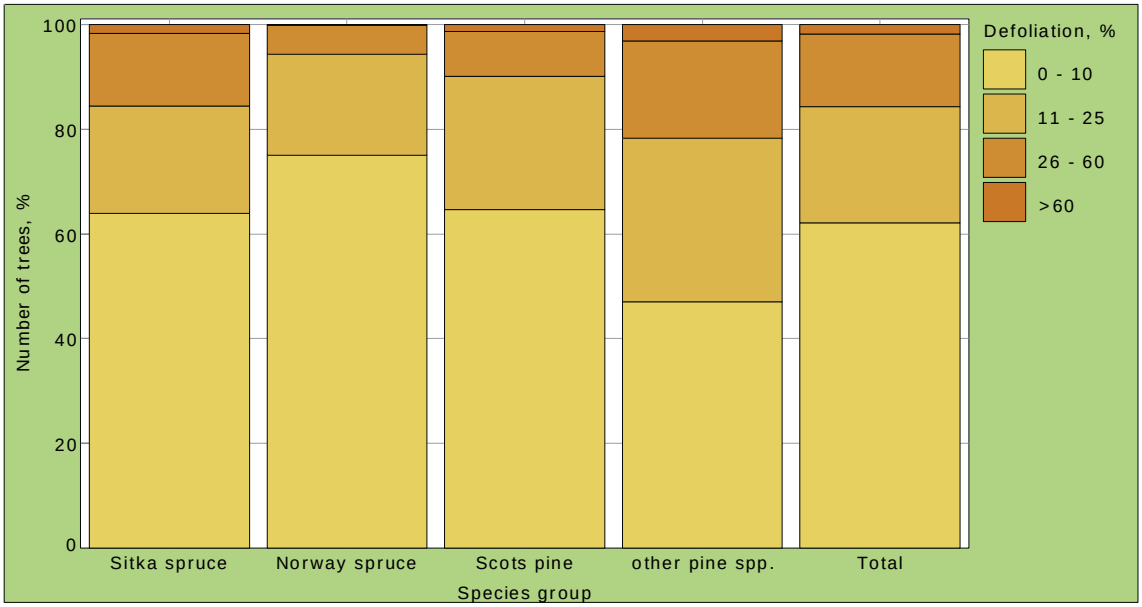
Methodology

The total number of trees that were assessed for height is classified by species group and the defoliation percentage of the whole crown.

Defoliation, %	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
0 - 10	96,164	(86,314 – 106,013)	64.0	11,039	(7,476 – 14,602)	75.1
11 - 25	30,837	(26,090 – 35,584)	20.5	2,845	(1,463 – 4,227)	19.3
26 - 60	20,747	(16,855 – 24,638)	13.8	825	(106 – 1,544)	5.6
>60	2,604	(1,419 – 3,789)	1.7	8	(0 – 24)	0.05
Total	150,352	(138,282 – 162,422)	100.0	14,717	(10,507 – 18,927)	100.0

Defoliation, %	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
0 - 10	1,273	(619 – 1,926)	64.7	14,624	(11,584 – 17,663)	47.0
11 - 25	500	(162 – 838)	25.4	9,731	(7,464 – 11,999)	31.3
26 - 60	169	(56 – 281)	8.6	5,781	(3,866 – 7,695)	18.6
>60	26	(0 – 77)	1.3	959	(201 – 1,717)	3.1
Total	1,967	(1,205 – 2,729)	100.0	31,095	(26,291 – 35,899)	100.0

Defoliation, %	Species group / Number of trees		
	Total		
	1000	(α=0.05)	%
0 - 10	123,099	(112,133 – 134,065)	62.1
11 - 25	43,914	(38,434 – 49,394)	22.2
26 - 60	27,521	(23,145 – 31,898)	13.9
>60	3,597	(2,201 – 4,993)	1.8
Total	198,131	(184,459 – 211,803)	100.0


Defoliation, %
0 - 10
11 - 25
26 - 60
>60
Number of trees, %
100
80
60
40
20
0
Sitka spruce
Norway spruce
Scots pine
other pine spp.
Total
Species group

9.3.2 Total number of trees by species group and degree of defoliation in the top third of the crown

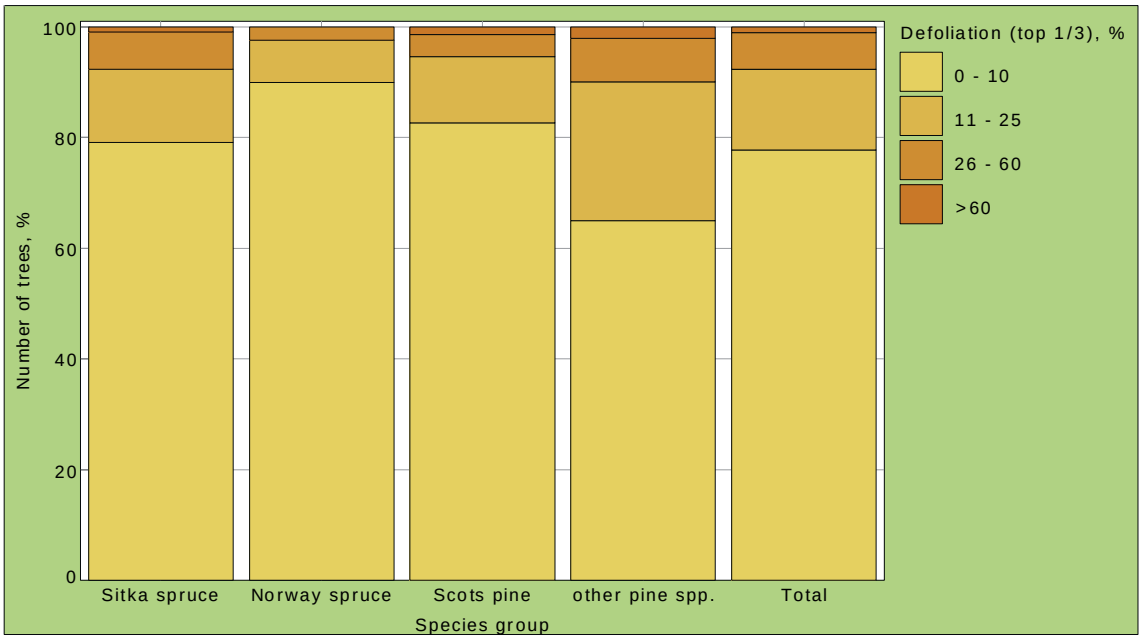
Methodology

The total number of trees that were assessed for height is classified by species group and defoliation percentage in the top one third of the crown.

Defoliation (top 1/3), %	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
0 - 10	119,016	(108,065 – 129,967)	79.1	13,239	(9,320 – 17,159)	90.0
11 - 25	19,783	(16,207 – 23,359)	13.2	1,132	(353 – 1,910)	7.7
26 - 60	10,207	(7,718 – 12,696)	6.8	346	(30 – 662)	2.3
>60	1,346	(458 – 2,234)	0.9	–	–	–
Total	150,352	(138,282 – 162,422)	100.0	14,717	(10,507 – 18,927)	100.0

Defoliation (top 1/3), %	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
0 - 10	1,626	(901 – 2,350)	82.6	20,207	(16,549 – 23,866)	65.0
11 - 25	236	(86 – 385)	12.0	7,823	(5,434 – 10,213)	25.2
26 - 60	80	(17 – 143)	4.1	2,436	(1,396 – 3,477)	7.8
>60	26	(0 – 77)	1.3	628	(0 – 1,315)	2.0
Total	1,967	(1,205 – 2,729)	100.0	31,095	(26,291 – 35,899)	100.0

Defoliation (top 1/3), %	Species group / Number of trees		
	Total		
	1000	(α=0.05)	%
0 - 10	154,088	(141,793 – 166,383)	77.8
11 - 25	28,974	(24,641 – 33,308)	14.6
26 - 60	13,069	(10,376 – 15,761)	6.6
>60	2,000	(885 – 3,114)	1.0
Total	198,131	(184,459 – 211,803)	100.0



9.4 DISCOLOURATION

Definition

Discolouration

Discolouration is a deviation from the usual colour of the living foliage for that species; dead or dying needles/leaves are excluded.

Methodology

Discolouration is assessed on spruce and pine species that have a minimum dbh of 7 cm and have been sampled for height measurement.

9.4.1 Total number of conifer trees by species group and discolouration type

Definition

Discolouration type

The colour change is recorded as yellowing or browning.

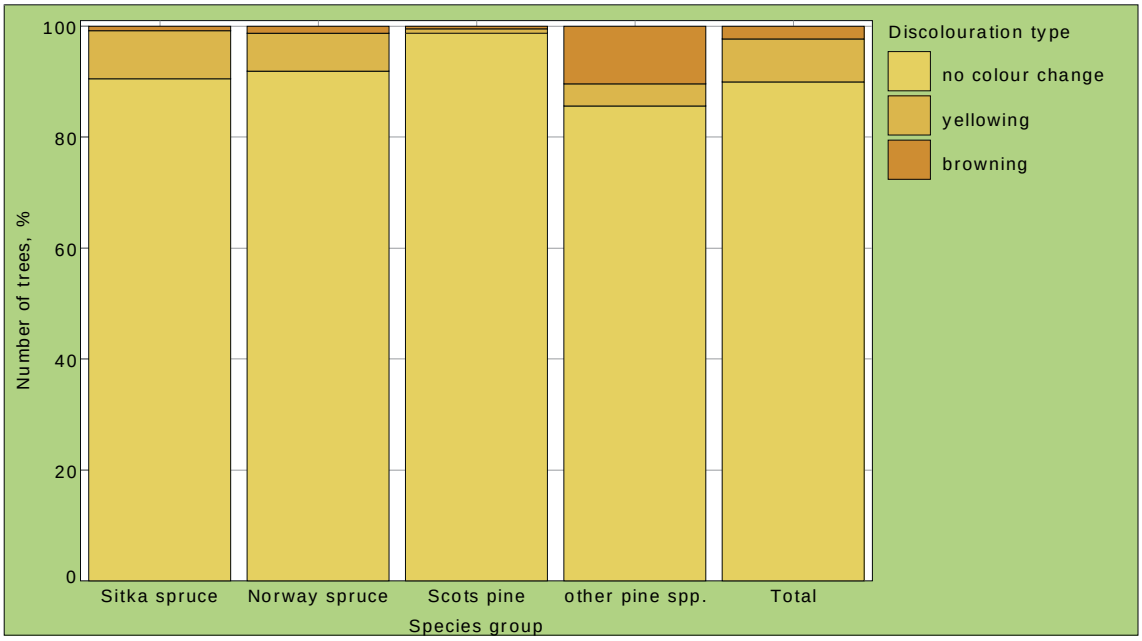
Methodology

The total number of trees that were assessed for height is classified by species group and discolouration type.

Discolouration type	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no colour change	136,117	(124,457 – 147,777)	90.5	13,533	(9,537 – 17,530)	92.0
yellowing	13,072	(9,708 – 16,436)	8.7	1,001	(0 – 2,207)	6.8
browning	1,162	(152 – 2,172)	0.8	182	(0 – 470)	1.2
Total	150,352	(138,282 – 162,422)	100.0	14,717	(10,507 – 18,927)	100.0

Discolouration type	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no colour change	1,943	(1,182 – 2,705)	98.8	26,621	(22,162 – 31,079)	85.7
yellowing	16	(0 – 39)	0.8	1,257	(238 – 2,277)	4.0
browning	8	(0 – 24)	0.4	3,217	(2,216 – 4,218)	10.3
Total	1,967	(1,205 – 2,729)	100.0	31,095	(26,291 – 35,899)	100.0

Discolouration type	Species group / Number of trees		
	Total		
	1000	(α=0.05)	%
no colour change	178,214	(165,081 – 191,348)	90.0
yellowing	15,347	(11,523 – 19,171)	7.7
browning	4,570	(3,135 – 6,004)	2.3
Total	198,131	(184,459 – 211,803)	100.0



9.4.2 Total number of trees by species group and discolouration trend

Definition

Discolouration trend

The colour change is recorded as one of the following:

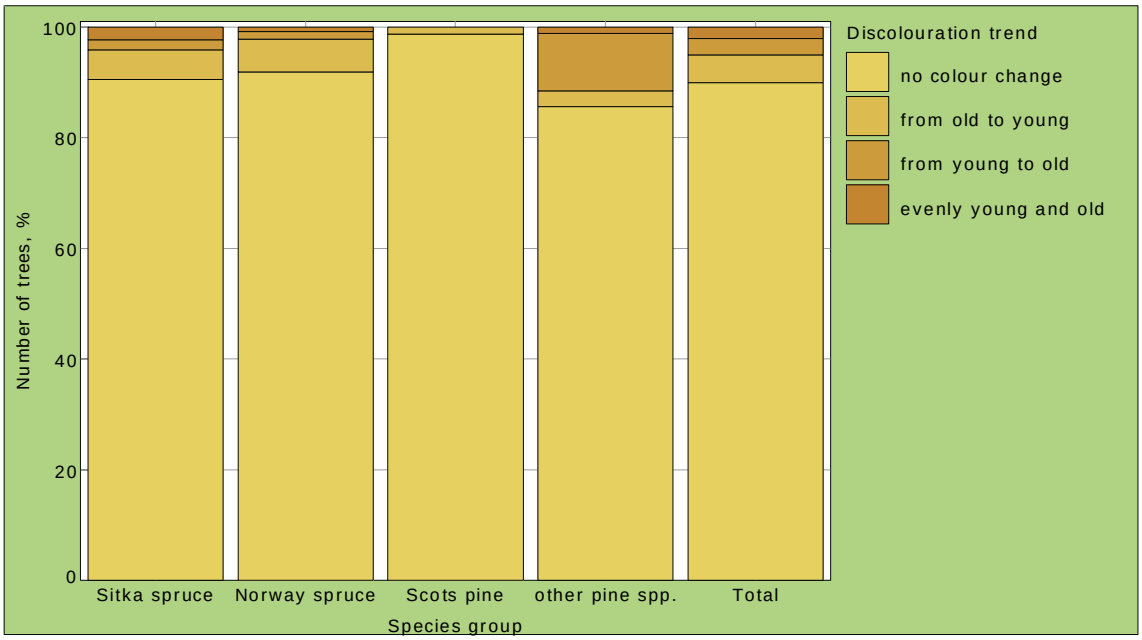
1. **From old to young**: The intensity of discolouration is more extreme in the old foliage, than in the newer foliage.
2. **From young to old**: The intensity of discolouration is more extreme in the young foliage, than in the older foliage.
3. **Evenly young and old**: Foliage age has no impact on the discolouration trend.

Methodology

The total number of trees that were assessed for height is classified by species group by species group and discolouration trend.

Discolouration trend	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no colour change	136,117	(124,457 – 147,777)	90.5	13,533	(9,537 – 17,530)	92.0
from old to young	8,103	(5,538 – 10,668)	5.4	869	(0 – 2,049)	5.9
from young to old	2,648	(1,413 – 3,883)	1.8	193	(0 – 487)	1.3
evenly young and old	3,484	(1,742 – 5,225)	2.3	121	(0 – 340)	0.8
Total	150,352	(138,282 – 162,422)	100.0	14,717	(10,507 – 18,927)	100.0
Discolouration trend	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
no colour change	1,943	(1,182 – 2,705)	98.8	26,621	(22,162 – 31,079)	85.6
from old to young	24	(0 – 52)	1.2	895	(342 – 1,448)	2.9
from young to old	–	–	–	3,238	(2,127 – 4,350)	10.4
evenly young and old	–	–	–	341	(12 – 669)	1.1
Total	1,967	(1,205 – 2,729)	100.0	31,095	(26,291 – 35,899)	100.0

Discolouration trend	Species group / Number of trees		
	Total		
	1000	(α = 0.05)	%
no colour change	178,214	(165,081 – 191,348)	89.9
from old to young	9,891	(6,951 – 12,832)	5.0
from young to old	6,079	(4,400 – 7,759)	3.1
evenly young and old	3,946	(2,162 – 5,729)	2.0
Total	198,131	(184,459 – 211,803)	100.0



9.4.3 Total number of trees by species group and degree of discolouration

Definition

Discolouration intensity

The percentage of needles or leaves discoloured.

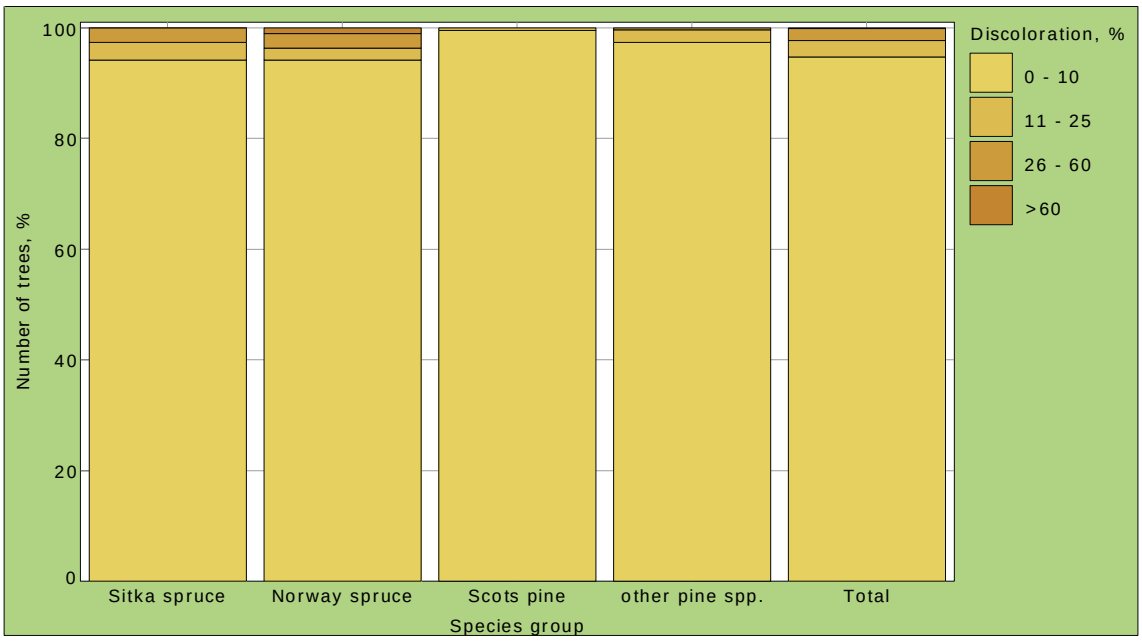
Methodology

The total number of trees that were assessed for height is classified by species group and intensity of discolouration.

Discoloration, %	Species group / Number of trees					
	Sitka spruce			Norway spruce		
	1000	(α=0.05)	%	1000	(α=0.05)	%
0 - 10	141,585	(129,773 – 153,396)	94.1	13,863	(9,810 – 17,915)	94.2
11 - 25	4,905	(3,018 – 6,791)	3.3	324	(0 – 898)	2.2
26 - 60	3,836	(2,187 – 5,486)	2.6	388	(0 – 807)	2.6
>60	26	(0 – 78)	0.02	142	(0 – 428)	1.0
Total	150,352	(138,282 – 162,422)	100.0	14,717	(10,507 – 18,927)	100.0

Discoloration, %	Species group / Number of trees					
	Scots pine			other pine spp.		
	1000	(α=0.05)	%	1000	(α=0.05)	%
0 - 10	1,959	(1,197 – 2,721)	99.6	30,276	(25,516 – 35,036)	97.4
11 - 25	8	(0 – 24)	0.4	717	(341 – 1,093)	2.3
26 - 60	–	–	–	102	(10 – 195)	0.3
>60	–	–	–	–	–	–
Total	1,967	(1,205 – 2,729)	100.0	31,095	(26,291 – 35,899)	100.0

Discoloration, %	Species group / Number of trees		
	Total		
	1000	(α=0.05)	%
0 - 10	187,682	(174,308 – 201,056)	94.7
11 - 25	5,954	(3,914 – 7,994)	3.0
26 - 60	4,327	(2,624 – 6,030)	2.2
>60	168	(0 – 459)	0.08
Total	198,131	(184,459 – 211,803)	100.0



CHAPTER 10
REGENERATION

Trees with a dbh less than 70 mm that occur within the 3 m radius plot are classified as regeneration. These include all planted trees, and naturally regenerated trees with a height greater than 20 cm.

The majority of the information regarding regeneration comes from sites which have been afforested, or recently restocked following clearfell. The remainder of the data on small trees comes from natural regeneration.

As the definition includes both planted and naturally regenerated trees, regeneration is present on a considerable portion of the forest estate, amounting to 72% of the total stocked forest area. Thirteen percent of the forest area where regeneration is found has an overstorey present.

Of the total stocked forest area with regeneration present, 40% consists of sites where natural regeneration represents more than 20% of the small trees present. On almost 60% of the private (other) forest estate area where regeneration is present, natural regeneration makes up more than 80% of the number of small trees.

Regularity or randomness of the small tree distribution tends to reflect the origin of the regeneration. On 65% of the area with regeneration present the distribution was classified as regular, representing planting. The distribution of small trees on the majority of the area with regeneration present in the private (other) estate (82%) is considered random, and is associated with natural regeneration.

The species structure of the regeneration indicates that mixtures are quite common in the national estate, with 48% of forest area with regeneration present considered mixed. The occurrence of natural regeneration, such as birch or willow, in stands that were afforested as single species stands, is contributing to the area of regeneration classified as been mixed.

10.1 PRESENCE OF REGENERATION

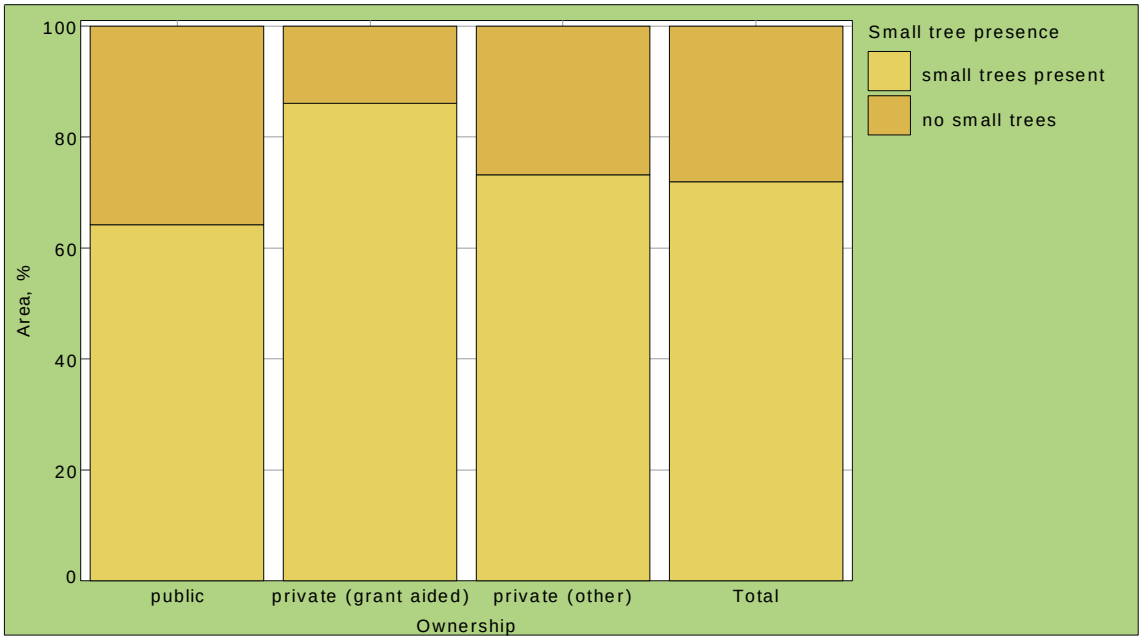
Definition
Presence of regeneration
Indicates whether regeneration is absent or present.

10.1.1 Total stocked forest by ownership and presence of regeneration

Methodology
The total stocked forest area is classified by ownership and presence of regeneration.

Small tree presence	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
small trees present	230.89	(216.18 – 245.59)	64.2	160.96	(147.66 – 174.25)	86.1
no small trees	128.52	(116.02 – 141.02)	35.8	26.03	(19.84 – 32.22)	13.9
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Small tree presence	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
small trees present	58.10	(49.13 – 67.08)	73.2	449.95	(436.05 – 463.84)	71.9
no small trees	21.25	(15.65 – 26.84)	26.8	175.80	(161.90 – 189.69)	28.1
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



10.2 PRESENCE OF AN OVERSTOREY

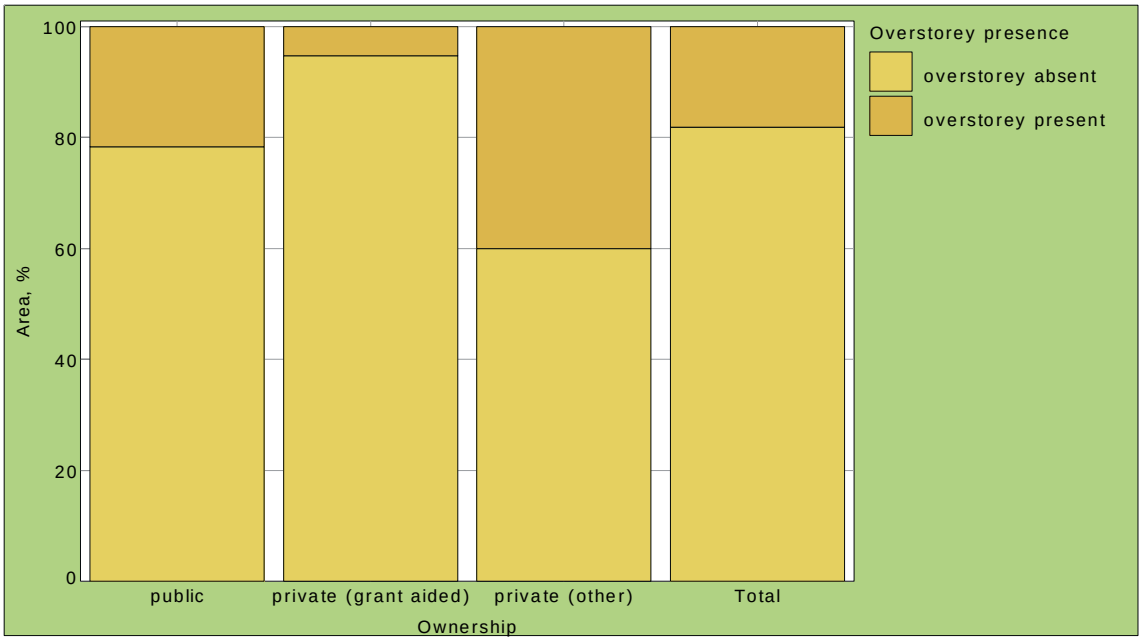
Definition
Presence of overstorey
The presence or absence of an overstorey above regeneration.

10.2.1 Total stocked forest area with regeneration present by ownership and overstorey presence

Methodology
The total stocked forest area with regeneration present is classified by ownership and overstorey presence.

Overstorey presence	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
overstorey absent	180.82	(166.94 – 194.71)	78.3	152.57	(139.53 – 165.61)	94.8
overstorey present	50.06	(41.73 – 58.40)	21.7	8.38	(4.82 – 11.95)	5.2
Total	230.89	(216.18 – 245.59)	100.0	160.96	(147.66 – 174.25)	100.0

Overstorey presence	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
overstorey absent	34.83	(27.78 – 41.89)	60.0	368.23	(352.99 – 383.47)	81.8
overstorey present	23.27	(17.40 – 29.14)	40.0	81.72	(71.38 – 92.05)	18.2
Total	58.10	(49.13 – 67.08)	100.0	449.95	(436.05 – 463.84)	100.0



10.3 ORIGIN OF REGENERATION

Definition

Origin of regeneration

Origin of regeneration describes whether a tree was artificially introduced or else regenerated naturally.

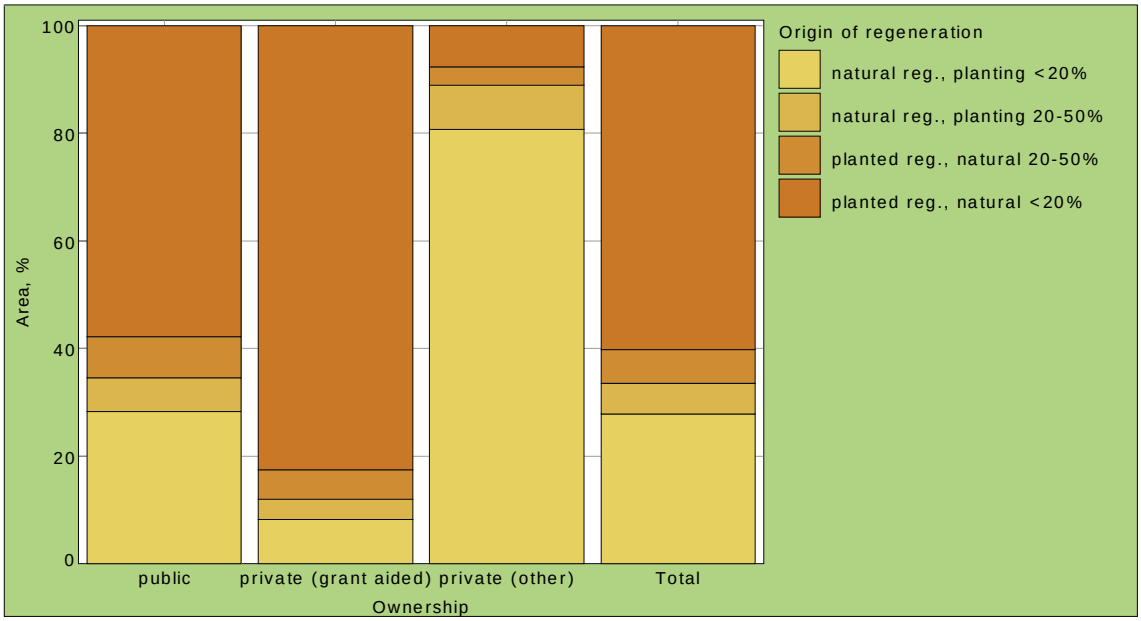
1. **Natural regeneration, planting < 20%**: Most of the regeneration, i.e. ≥ 80%, is the result of natural regeneration. Planted trees make up < 20%.
2. **Natural regeneration, planting 20-50%**: The majority of the regeneration canopy, 50-80%, is the result of natural regeneration. Planted trees make up a minority of the regeneration canopy, 20-50%.
3. **Planting, Natural regeneration 20-50%**: The majority of the regeneration canopy, 50-80%, is the result of planting. Natural regeneration makes up a minority of the regeneration canopy, 20-50%.
4. **Planting, natural regeneration < 20%**: Most of the regeneration canopy, i.e. ≥ 80%, is the result of planting. Natural regeneration makes up < 20%.

10.3.1 Total stocked forest area with regeneration present by ownership and origin of regeneration

Methodology

The total stocked forest area with regeneration present is classified by ownership and origin of regeneration.

Origin of regeneration	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
natural reg., planting <20%	65.28	(55.86 – 74.71)	28.3	13.21	(8.74 – 17.67)	8.2
natural reg., planting 20-50%	14.44	(9.82 – 19.07)	6.3	6.02	(2.99 – 9.06)	3.7
planted reg., natural 20-50%	17.64	(12.53 – 22.75)	7.6	8.82	(5.18 – 12.45)	5.5
planted reg., natural <20%	133.52	(121.01 – 146.03)	57.8	132.91	(120.44 – 145.38)	82.6
Total	230.89	(216.18 – 245.59)	100.0	160.96	(147.66 – 174.25)	100.0
Origin of regeneration	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
natural reg., planting <20%	46.89	(38.75 – 55.03)	80.6	125.38	(113.03 – 137.73)	27.9
natural reg., planting 20-50%	4.80	(2.10 – 7.50)	8.3	25.26	(19.18 – 31.35)	5.6
planted reg., natural 20-50%	2.01	(0.25 – 3.76)	3.5	28.46	(22.05 – 34.87)	6.3
planted reg., natural <20%	4.41	(1.82 – 7.00)	7.6	270.84	(255.54 – 286.14)	60.2
Total	58.10	(49.13 – 67.08)	100.0	449.95	(436.05 – 463.84)	100.0


100
80
60
40
20
0
Area, %
public
private (grant aided)
private (other)
Total
Ownership
Origin of regeneration
natural reg., planting <20%
natural reg., planting 20-50%
planted reg., natural 20-50%
planted reg., natural <20%

10.4 DISTRIBUTION OF REGENERATION

Definition

Distribution of regeneration

The distribution of small trees in terms of their spatial arrangement.

1. **Regular**: The trees are distributed uniformly, e.g. 2 m x 2 m square spacing.
2. **Group**: The trees are distributed in groups.
3. **Random**: The trees are distributed randomly with no particular pattern.

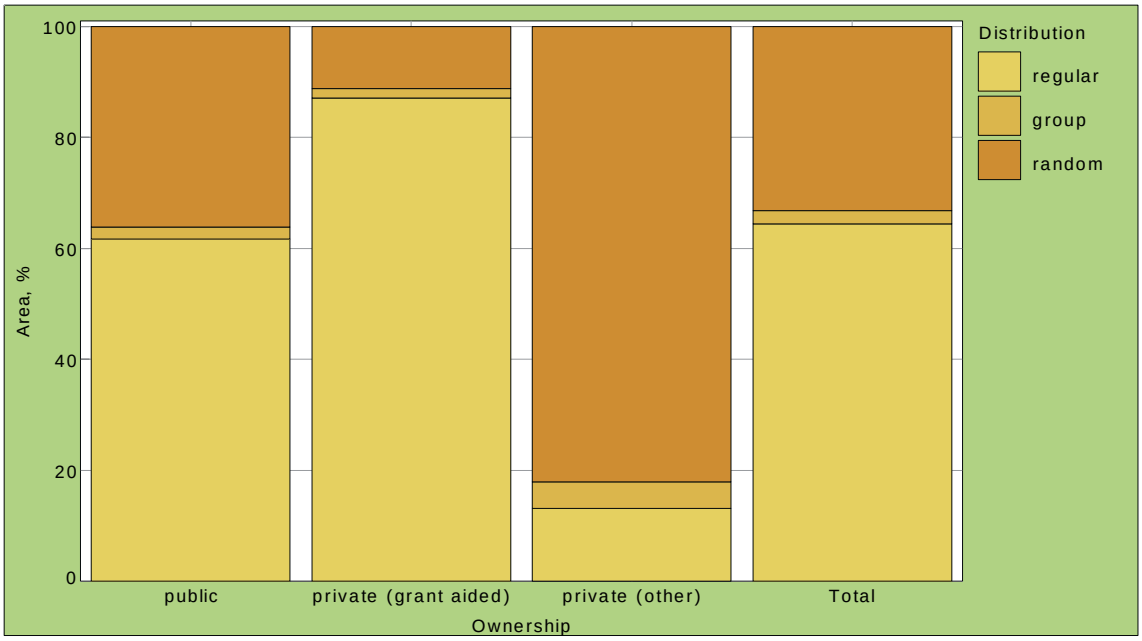
10.4.1 Total stocked forest area with regeneration present by ownership and distribution of regeneration

Methodology

The total stocked forest area with regeneration present is classified by ownership and distribution of regeneration.

Distribution	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
regular	142.35	(129.45 – 155.25)	61.6	140.15	(127.42 – 152.89)	87.1
group	5.21	(2.39 – 8.03)	2.3	2.80	(0.74 – 4.87)	1.7
random	83.33	(72.90 – 93.76)	36.1	18.00	(12.86 – 23.14)	11.2
Total	230.89	(216.18 – 245.59)	100.0	160.96	(147.66 – 174.25)	100.0

Distribution	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
regular	7.62	(4.22 – 11.01)	13.1	290.11	(274.65 – 305.58)	64.5
group	2.81	(0.73 – 4.88)	4.8	10.82	(6.79 – 14.86)	2.4
random	47.68	(39.46 – 55.91)	82.1	149.01	(135.88 – 162.14)	33.1
Total	58.10	(49.13 – 67.08)	100.0	449.95	(436.05 – 463.84)	100.0



10.5 SPECIES STRUCTURE OF REGENERATION

Definition

Species structure of regeneration

Species structure describes the species distribution of regeneration in the forest stand. If there is more than one species present, the plant distribution may follow a predefined structure e.g. planting in groups.

1. **Homogenous**: Only one tree species is present.
2. **Individually mixed**: More than one species present, with the species mixture occurring in a random manner.
3. **Group-mixed**: The structure is based on groups of trees of each species. Line mixtures are included in this category.

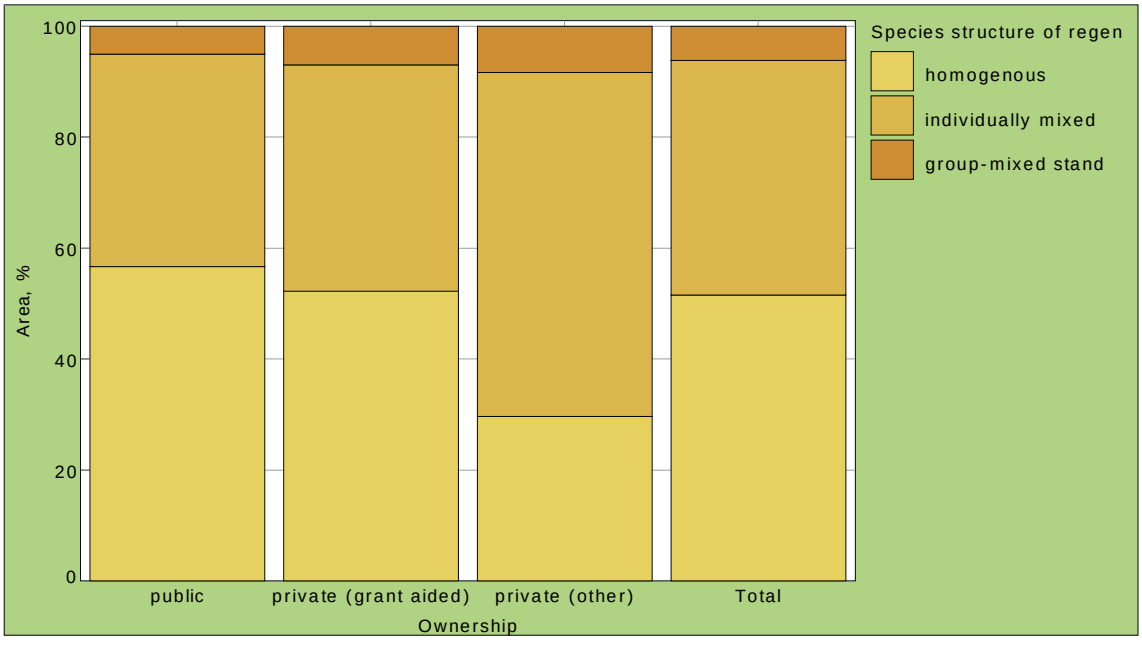
10.5.1 Total stocked forest area with regeneration present by ownership and species structure of regeneration

Methodology

The total stocked forest area with regeneration present is classified by ownership and the species structure of the regeneration.

Species structure of regen	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
homogenous	130.73	(118.24 – 143.22)	56.6	84.03	(73.69 – 94.38)	52.2
individually mixed	88.55	(77.80 – 99.30)	38.4	65.72	(56.29 – 75.16)	40.8
group-mixed stand	11.61	(7.45 – 15.77)	5.0	11.20	(7.11 – 15.29)	7.0
Total	230.89	(216.18 – 245.59)	100.0	160.96	(147.66 – 174.25)	100.0

Species structure of regen	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
homogenous	17.25	(12.20 – 22.30)	29.7	232.01	(217.16 – 246.87)	51.6
individually mixed	36.05	(28.85 – 43.25)	62.0	190.32	(176.12 – 204.53)	42.3
group-mixed stand	4.80	(2.09 – 7.51)	8.3	27.61	(21.34 – 33.88)	6.1
Total	58.10	(49.13 – 67.08)	100.0	449.95	(436.05 – 463.84)	100.0



10.6 DOMINATING NEGATIVE FACTOR

Definition

Dominant negative factor

Factors impacting on the survival, growth and development of the small trees.

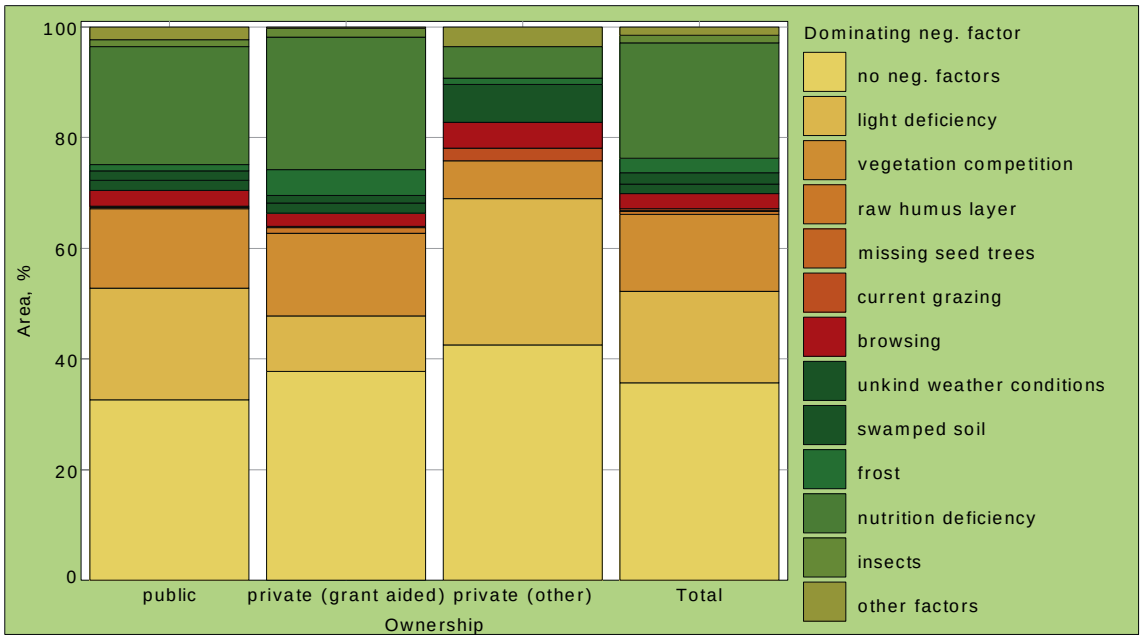
10.6.1 Total stocked forest area with regeneration present by ownership and dominating negative factor

Methodology

The total stocked forest area with regeneration present is classified by ownership and dominating negative factor. Those areas with regeneration occurring beneath an overstorey are excluded. Therefore the areas with regeneration included in this analysis are areas of afforestation and reforestation following clearfell.

Dominating neg. factor	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no neg. factors	58.89	(49.91 – 67.87)	32.6	57.61	(48.72 – 66.50)	37.6
light deficiency	36.53	(29.31 – 43.75)	20.2	15.21	(10.44 – 19.98)	10.0
vegetation competition	26.05	(19.86 – 32.24)	14.4	22.81	(17.00 – 28.63)	15.0
raw humus layer	0.40	(0.00 – 1.20)	0.2	1.61	(0.04 – 3.17)	1.1
missing seed trees	0.40	(0.00 – 1.21)	0.2	–	–	–
current grazing	–	–	–	0.40	(0.00 – 1.20)	0.3
browsing	5.22	(2.43 – 8.01)	2.9	3.61	(1.28 – 5.94)	2.4
unkind weather conditions	3.21	(1.00 – 5.42)	1.8	2.80	(0.73 – 4.87)	1.8
swamped soil	3.22	(1.00 – 5.44)	1.8	2.00	(0.25 – 3.76)	1.3
frost	2.00	(0.25 – 3.75)	1.1	7.22	(3.93 – 10.52)	4.7
nutrition deficiency	38.50	(31.09 – 45.90)	21.3	36.49	(29.31 – 43.67)	23.9
insects	2.40	(0.48 – 4.31)	1.3	2.40	(0.48 – 4.32)	1.6
other factors	4.01	(1.53 – 6.49)	2.2	0.40	(0.00 – 1.20)	0.3
Total	180.82	(166.94 – 194.71)	100.0	152.57	(139.53 – 165.61)	100.0

Dominating neg. factor	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no neg. factors	14.81	(10.11 – 19.51)	42.4	131.31	(118.78 – 143.84)	35.8
light deficiency	9.22	(5.48 – 12.95)	26.5	60.96	(51.80 – 70.11)	16.6
vegetation competition	2.40	(0.48 – 4.32)	6.9	51.27	(42.77 – 59.77)	13.9
raw humus layer	–	–	–	2.01	(0.26 – 3.76)	0.5
missing seed trees	–	–	–	0.40	(0.00 – 1.21)	0.1
current grazing	0.80	(0.00 – 1.91)	2.3	1.20	(0.00 – 2.56)	0.3
browsing	1.59	(0.03 – 3.16)	4.6	10.42	(6.49 – 14.36)	2.8
unkind weather conditions	–	–	–	6.01	(2.99 – 9.03)	1.6
swamped soil	2.40	(0.49 – 4.32)	6.9	7.63	(4.22 – 11.04)	2.1
frost	0.40	(0.00 – 1.21)	1.2	9.62	(5.84 – 13.40)	2.6
nutrition deficiency	1.99	(0.25 – 3.74)	5.7	76.98	(66.95 – 87.00)	20.9
insects	–	–	–	4.80	(2.09 – 7.51)	1.3
other factors	1.21	(0.00 – 2.57)	3.5	5.62	(2.69 – 8.55)	1.5
Total	34.83	(27.78 – 41.89)	100.0	368.23	(352.99 – 383.47)	100.0


100
80
60
40
20
0
Area, %
public
private (grant aided)
private (other)
Total
Ownership
Dominating neg. factor
no neg. factors
light deficiency
vegetation competition
raw humus layer
missing seed trees
current grazing
browsing
unkind weather conditions
swamped soil
frost
nutrition deficiency
insects
other factors

CHAPTER 11
VEGETATION AND LICHENS

In this chapter, the distribution of non-tree vegetation in the national forest estate is evaluated. The quantity and distribution of non-tree plant species in the national forest estate varies greatly. A primary factor influencing the non-tree vegetation is the stage of development of a forest, as it impacts on the growing space by regulating light. The soil, through factors such as fertility, moisture and previous land-use, also impacts on non-tree vegetation.

Some 82% of the total forest area has more than five non-tree plant species present, and 31% of the area has more than ten species. These percentages are quite similar in both public and private forests, with a tendency towards greater numbers in private (other) forests. The cover of non-tree vegetation is also extensive, with over 90% of all categories of ownership having a vegetation cover greater than 25%. Significant proportions of grass, herb, moss, fern, brush and shrub cover exist across the forest estate. A feature for the data on non-tree vegetation is that the confidence bands are relatively narrow.

Lichens, usually associated with a clean atmosphere, are present on 52% of the stocked forest estate. The age distribution and species structure in the private (grant aided) estate are less uniform than those in the private (other) forests, resulting in the lowest (37%) lichen occurrence in the private (grant aided) forests and the highest (79%) occurrence in the private (other) forest estate.

11.1 VEGETATION

Definition
Vegetation
Describes the structure, cover and species composition of non-tree plant species within the forest estate.

11.1.1 Total forest area by forest type and total number of plant species

Methodology
The total stocked forest area is classified by forest type and the number of non-tree plant species present.

Number of plant species	Forest type / Area							
	temporarily unstocked				conifer high forest			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
No plants	0.40	(0.00 – 1.21)		0.6	1.20	(0.00 – 2.57)		0.3
1 - 5	10.42	(6.43 – 14.40)		16.6	88.08	(77.28 – 98.87)		21.9
6 - 10	34.47	(27.36 – 41.57)		54.8	218.32	(203.26 – 233.37)		54.3
11 - 15	14.42	(9.77 – 19.06)		22.9	80.19	(69.79 – 90.59)		19.9
16 - 20	3.22	(0.99 – 5.44)		5.1	12.00	(7.74 – 16.26)		3.0
>20	–	–	–	–	2.40	(0.48 – 4.33)		0.6
Total	62.91	(53.51 – 72.32)		100.0	402.19	(386.19 – 418.19)		100.0

Number of plant species	Forest type / Area							
	broadleaf high forest				mixed high forest			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
No plants	–	–	–	–	–	–	–	–
1 - 5	6.82	(3.59 – 10.04)		9.4	9.19	(5.50 – 12.87)		10.2
6 - 10	30.08	(23.45 – 36.71)		41.7	46.87	(38.70 – 55.04)		52.3
11 - 15	28.47	(21.99 – 34.95)		39.4	24.84	(18.77 – 30.92)		27.7
16 - 20	5.61	(2.68 – 8.53)		7.8	7.61	(4.20 – 11.02)		8.5
>20	1.20	(0.00 – 2.55)		1.7	1.20	(0.00 – 2.55)		1.3
Total	72.17	(62.31 – 82.02)		100.0	89.71	(78.84 – 100.58)		100.0

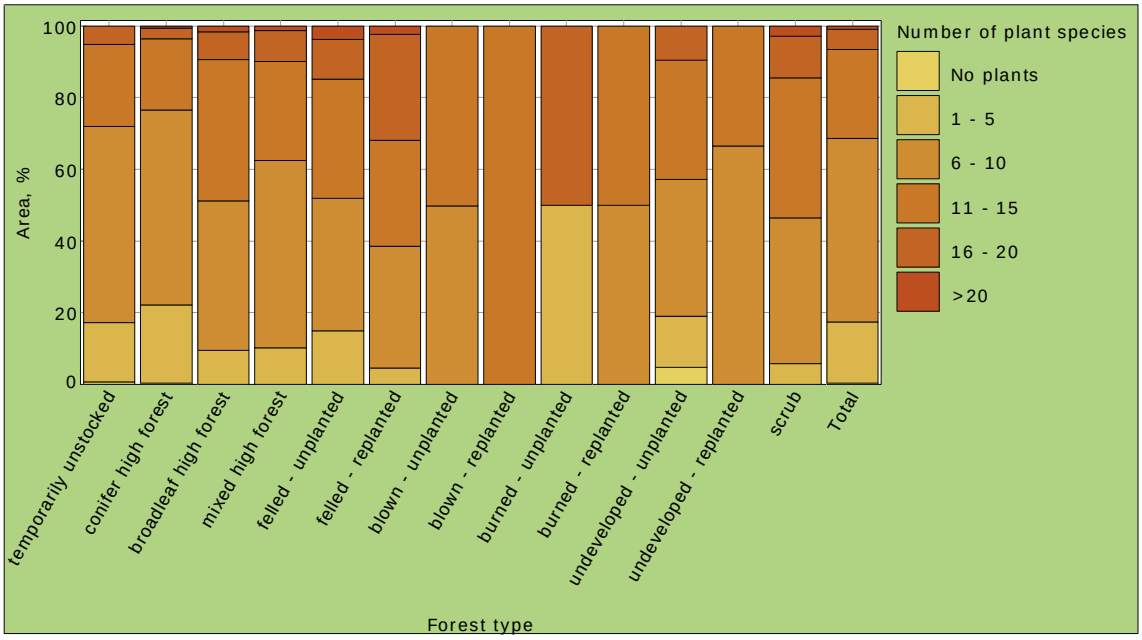
Number of plant species	Forest type / Area							
	felled - unplanted				felled - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
No plants	–	–	–	–	–	–	–	–
1 - 5	1.61	(0.03 – 3.18)		14.9	0.80	(0.00 – 1.90)		4.5
6 - 10	4.00	(1.52 – 6.48)		37.0	6.01	(3.01 – 9.00)		34.1
11 - 15	3.59	(1.25 – 5.94)		33.2	5.20	(2.39 – 8.02)		29.5
16 - 20	1.21	(0.00 – 2.57)		11.2	5.22	(2.40 – 8.04)		29.6
>20	0.40	(0.00 – 1.26)		3.7	0.40	(0.00 – 1.20)		2.3
Total	10.81	(6.76 – 14.87)		100.0	17.63	(12.52 – 22.74)		100.0

Number of plant species	Forest type / Area							
	blown - unplanted				blown - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
No plants	–	–	–	–	–	–	–	–
1 - 5	–	–	–	–	–	–	–	–
6 - 10	1.19	(0.00 – 2.54)		49.7	–	–	–	–
11 - 15	1.21	(0.00 – 2.57)		50.3	0.41	(0.00 – 1.20)		100.0
16 - 20	–	–	–	–	–	–	–	–
>20	–	–	–	–	–	–	–	–
Total	2.40	(0.48 – 4.31)		100.0	0.41	(0.00 – 1.20)		100.0

Number of plant species	Forest type / Area							
	burned - unplanted				burned - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
No plants	–	–	–	–	–	–	–	–
1 - 5	0.40	(0.00	– 1.21)	49.9	–	–	–	–
6 - 10	–	–	–	–	0.80	(0.00	– 1.91)	49.9
11 - 15	–	–	–	–	0.81	(0.00	– 1.93)	50.1
16 - 20	0.40	(0.00	– 1.20)	50.1	–	–	–	–
>20	–	–	–	–	–	–	–	–
Total	0.80	(0.00	– 1.93)	100.0	1.61	(0.04	– 3.19)	100.0

Number of plant species	Forest type / Area							
	undeveloped - unplanted				undeveloped - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
No plants	0.40	(0.00	– 1.19)	4.8	–	–	–	–
1 - 5	1.20	(0.00	– 2.55)	14.3	–	–	–	–
6 - 10	3.20	(0.98	– 5.41)	38.1	0.79	(0.00	– 1.90)	66.6
11 - 15	2.79	(0.74	– 4.84)	33.3	0.40	(0.00	– 1.18)	33.4
16 - 20	0.80	(0.00	– 1.93)	9.5	–	–	–	–
>20	–	–	–	–	–	–	–	–
Total	8.38	(4.84	– 11.92)	100.0	1.19	(0.00	– 2.54)	100.0

Number of plant species	Forest type / Area							
	scrub				Total			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
No plants	–	–	–	–	2.00	(0.25	– 3.76)	0.3
1 - 5	1.60	(0.03	– 3.17)	5.8	120.10	(107.86	– 132.35)	17.2
6 - 10	11.21	(7.11	– 15.32)	40.6	356.94	(340.62	– 373.26)	51.2
11 - 15	10.81	(6.78	– 14.85)	39.1	173.13	(159.07	– 187.19)	24.8
16 - 20	3.21	(0.99	– 5.42)	11.6	39.26	(31.75	– 46.78)	5.6
>20	0.80	(0.00	– 1.91)	2.9	6.41	(3.28	– 9.53)	0.9
Total	27.63	(21.26	– 33.99)	100.0	697.84			100.0



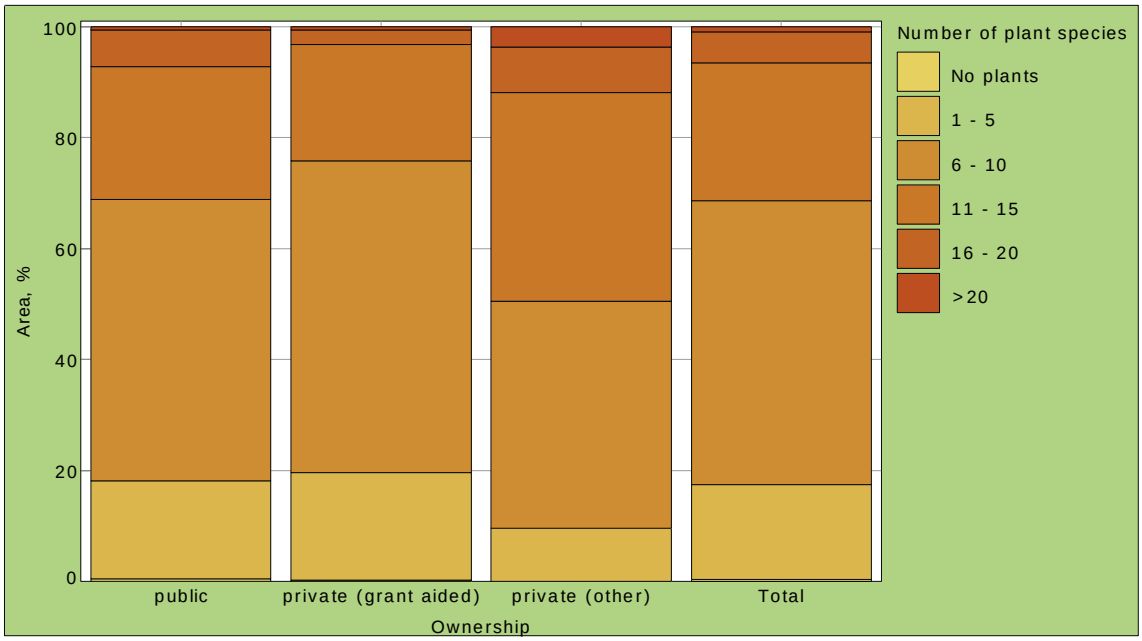
11.1.2 Total forest area by ownership and total number of plant species

Methodology

The total forest area is classified by ownership and the number of non-tree plant species present.

Number of plant species	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
No plants	1.60	(0.03 – 3.17)	0.4	0.40	(0.00 – 1.19)	0.2
1 - 5	70.50	(60.62 – 80.39)	17.7	41.17	(33.50 – 48.84)	19.4
6 - 10	201.53	(186.86 – 216.20)	50.7	119.32	(107.12 – 131.52)	56.2
11 - 15	95.38	(84.20 – 106.56)	24.0	44.50	(36.55 – 52.45)	21.0
16 - 20	26.45	(20.22 – 32.68)	6.7	5.61	(2.68 – 8.54)	2.6
>20	2.00	(0.25 – 3.75)	0.5	1.20	(0.00 – 2.55)	0.6
Total	397.46	(381.49 – 413.44)	100.0	212.20	(197.39 – 227.01)	100.0

Number of plant species	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
No plants	–	–	–	2.00	(0.25 – 3.76)	0.3
1 - 5	8.43	(4.91 – 11.95)	9.6	120.10	(107.86 – 132.35)	17.2
6 - 10	36.09	(28.87 – 43.31)	40.9	356.94	(340.62 – 373.26)	51.2
11 - 15	33.25	(26.29 – 40.21)	37.7	173.13	(159.07 – 187.19)	24.8
16 - 20	7.21	(3.89 – 10.52)	8.2	39.26	(31.75 – 46.78)	5.6
>20	3.21	(0.99 – 5.42)	3.6	6.41	(3.28 – 9.53)	0.9
Total	88.18	(77.45 – 98.91)	100.0	697.84		100.0



11.2 VEGETATION COVER

Definition

Vegetation cover

The total vegetation cover (%) is classified as a percentage of the ground covered in a forest stand:

No presence	Frequent (6-25%)
Rare abundance	Common (26-50%)
Sporadic (up to 1%)	Very common (51-75%)
Infrequent (1-5%)	Abundant (75-100%)

Vegetation cover is further classified into the following species categories and quantified using the same scale as above:

Grass	Fern
Herb	Brush e.g. Ulex.
Moss	Shrub e.g. Rhododendron

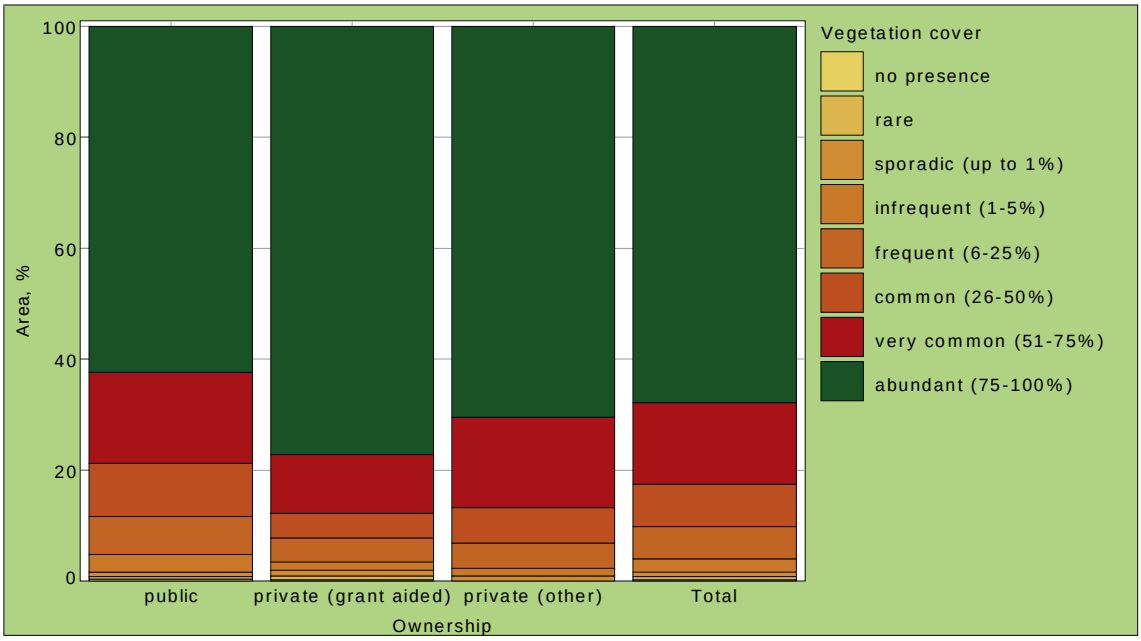
11.2.1 Total forest area by ownership and vegetation cover

Methodology

The total forest area is classified by ownership and the percentage vegetation cover.

Vegetation cover	Ownership / Area								
	public				private (grant aided)				
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%	
no presence	1.20		(0.00 – 2.56)	0.3	0.40		(0.00 – 1.19)	0.2	
rare	2.01		(0.25 – 3.77)	0.5	1.60		(0.03 – 3.17)	0.8	
sporadic (up to 1%)	3.20		(0.99 – 5.41)	0.8	2.00		(0.25 – 3.74)	0.9	
infrequent (1-5%)	12.41		(8.09 – 16.74)	3.1	3.19		(0.98 – 5.39)	1.5	
frequent (6-25%)	27.25		(20.89 – 33.60)	6.9	9.21		(5.47 – 12.95)	4.3	
common (26-50%)	38.08		(30.64 – 45.52)	9.6	9.61		(5.79 – 13.43)	4.5	
very common (51-75%)	65.64		(56.14 – 75.14)	16.5	22.41		(16.63 – 28.18)	10.6	
abundant (75-100%)	247.67		(232.22 – 263.12)	62.3	163.79		(150.08 – 177.49)	77.2	
Total	397.46		(381.49 – 413.44)	100.0	212.20		(197.39 – 227.01)	100.0	

Vegetation cover	Ownership / Area								
	private (other)				Total				
	1000 ha		(α=0.05)	%	1000 ha		(α=0.05)	%	
no presence	–		–	–	1.60		(0.03 – 3.17)	0.2	
rare	–		–	–	3.61		(1.26 – 5.97)	0.5	
sporadic (up to 1%)	0.80		(0.00 – 1.93)	0.9	6.00		(2.97 – 9.02)	0.9	
infrequent (1-5%)	1.21		(0.00 – 2.57)	1.4	16.80		(11.79 – 21.82)	2.4	
frequent (6-25%)	4.02		(1.54 – 6.50)	4.6	40.47		(32.82 – 48.13)	5.8	
common (26-50%)	5.61		(2.68 – 8.53)	6.4	53.30		(44.59 – 62.01)	7.6	
very common (51-75%)	14.41		(9.75 – 19.07)	16.3	102.46		(90.90 – 114.01)	14.7	
abundant (75-100%)	62.14		(52.91 – 71.36)	70.4	473.60		(458.46 – 488.73)	67.9	
Total	88.18		(77.45 – 98.91)	100.0	697.84			100.0	


100
80
60
40
20
0
Area, %
public
private (grant aided)
private (other)
Total
Ownership
Vegetation cover
no presence
rare
sporadic (up to 1%)
infrequent (1-5%)
frequent (6-25%)
common (26-50%)
very common (51-75%)
abundant (75-100%)

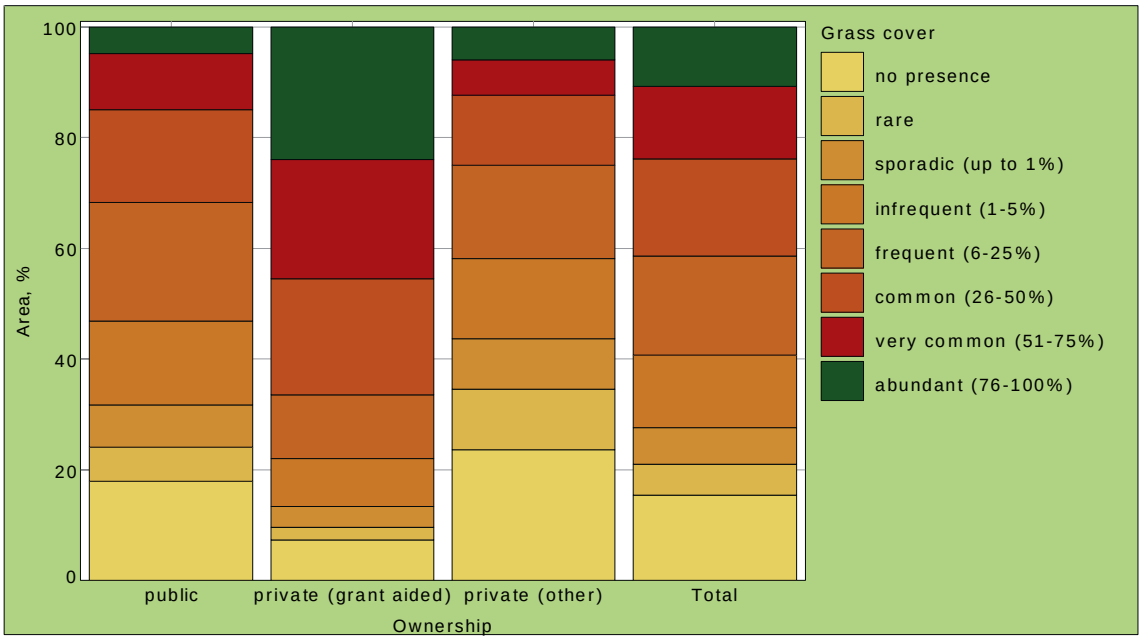
11.2.2 Total forest area by ownership and grass cover

Methodology

The total forest area is classified by ownership and the percentage grass cover.

Grass cover	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	70.97	(61.17 – 80.78)	17.9	15.59	(10.76 – 20.42)	7.3
rare	24.81	(18.75 – 30.87)	6.2	4.81	(2.10 – 7.52)	2.3
sporadic (up to 1%)	30.05	(23.41 – 36.68)	7.6	8.00	(4.54 – 11.47)	3.8
infrequent (1-5%)	60.46	(51.30 – 69.62)	15.2	18.41	(13.19 – 23.63)	8.7
frequent (6-25%)	85.33	(74.61 – 96.05)	21.4	24.38	(18.38 – 30.38)	11.5
common (26-50%)	66.61	(57.25 – 75.97)	16.8	44.54	(36.65 – 52.43)	21.0
very common (51-75%)	40.45	(32.80 – 48.10)	10.2	45.67	(37.60 – 53.74)	21.5
abundant (76-100%)	18.78	(13.52 – 24.04)	4.7	50.80	(42.42 – 59.17)	23.9
Total	397.46	(381.49 – 413.44)	100.0	212.20	(197.39 – 227.01)	100.0

Grass cover	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	20.83	(15.31 – 26.35)	23.6	107.40	(95.73 – 119.06)	15.4
rare	9.62	(5.80 – 13.45)	10.9	39.25	(31.74 – 46.75)	5.6
sporadic (up to 1%)	8.02	(4.53 – 11.52)	9.1	46.07	(37.97 – 54.18)	6.6
infrequent (1-5%)	12.83	(8.43 – 17.24)	14.6	91.70	(80.70 – 102.70)	13.1
frequent (6-25%)	14.82	(10.09 – 19.55)	16.8	124.53	(112.01 – 137.06)	18.0
common (26-50%)	11.23	(7.10 – 15.37)	12.7	122.38	(110.43 – 134.32)	17.5
very common (51-75%)	5.61	(2.70 – 8.52)	6.4	91.73	(80.68 – 102.78)	13.1
abundant (76-100%)	5.20	(2.39 – 8.01)	5.9	74.78	(64.83 – 84.74)	10.7
Total	88.18	(77.45 – 98.91)	100.0	697.84		100.0



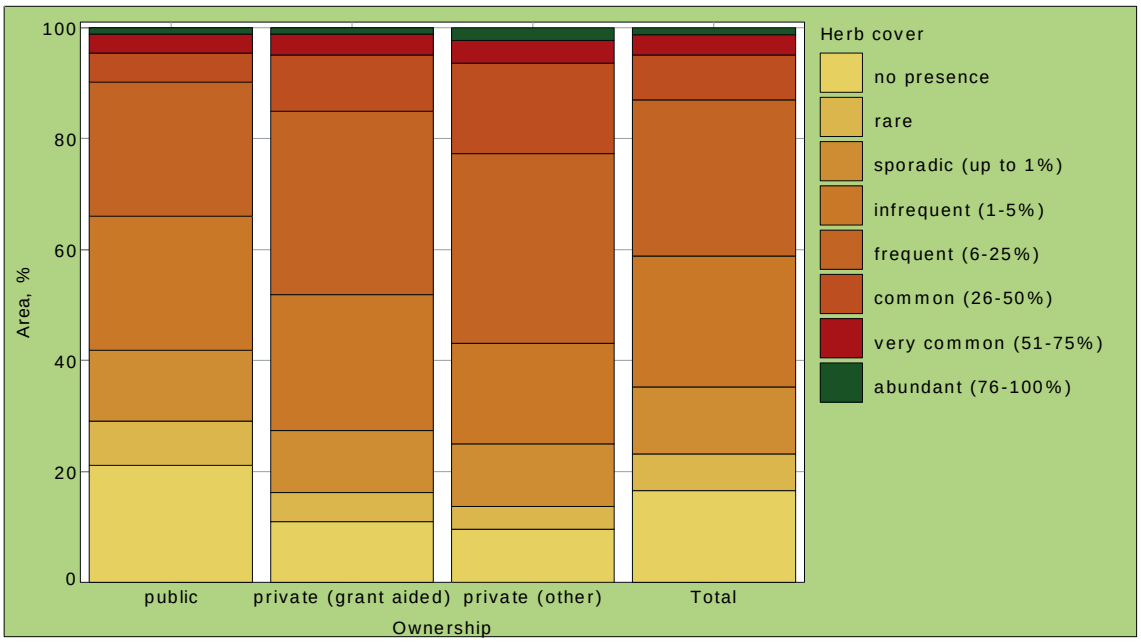
11.2.3 Total forest area by ownership and herb cover

Methodology

The total forest area is classified by ownership and the percentage herb cover.

Herb cover	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	83.78	(73.26 – 94.30)	21.1	23.18	(17.33 – 29.03)	10.9
rare	31.61	(24.89 – 38.34)	8.0	11.18	(7.11 – 15.26)	5.3
sporadic (up to 1%)	50.84	(42.38 – 59.30)	12.8	23.62	(17.72 – 29.51)	11.1
infrequent (1-5%)	96.19	(84.98 – 107.40)	24.2	52.10	(43.50 – 60.70)	24.6
frequent (6-25%)	96.17	(84.95 – 107.40)	24.2	70.13	(60.30 – 79.95)	33.0
common (26-50%)	20.83	(15.27 – 26.38)	5.2	21.60	(15.97 – 27.23)	10.2
very common (51-75%)	13.62	(9.10 – 18.15)	3.4	8.01	(4.55 – 11.46)	3.8
abundant (76-100%)	4.41	(1.82 – 7.00)	1.1	2.39	(0.48 – 4.31)	1.1
Total	397.46	(381.49 – 413.44)	100.0	212.20	(197.39 – 227.01)	100.0

Herb cover	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	8.41	(4.86 – 11.96)	9.5	115.37	(103.35 – 127.39)	16.5
rare	3.61	(1.26 – 5.95)	4.1	46.40	(38.41 – 54.38)	6.6
sporadic (up to 1%)	10.01	(6.12 – 13.89)	11.3	84.46	(73.84 – 95.08)	12.1
infrequent (1-5%)	16.02	(11.13 – 20.92)	18.2	164.32	(150.50 – 178.13)	23.5
frequent (6-25%)	30.09	(23.46 – 36.73)	34.1	196.39	(181.85 – 210.94)	28.3
common (26-50%)	14.43	(9.77 – 19.09)	16.4	56.86	(47.97 – 65.75)	8.1
very common (51-75%)	3.60	(1.25 – 5.95)	4.1	25.23	(19.20 – 31.26)	3.6
abundant (76-100%)	2.00	(0.25 – 3.76)	2.3	8.81	(5.17 – 12.45)	1.3
Total	88.18	(77.45 – 98.91)	100.0	697.84		100.0



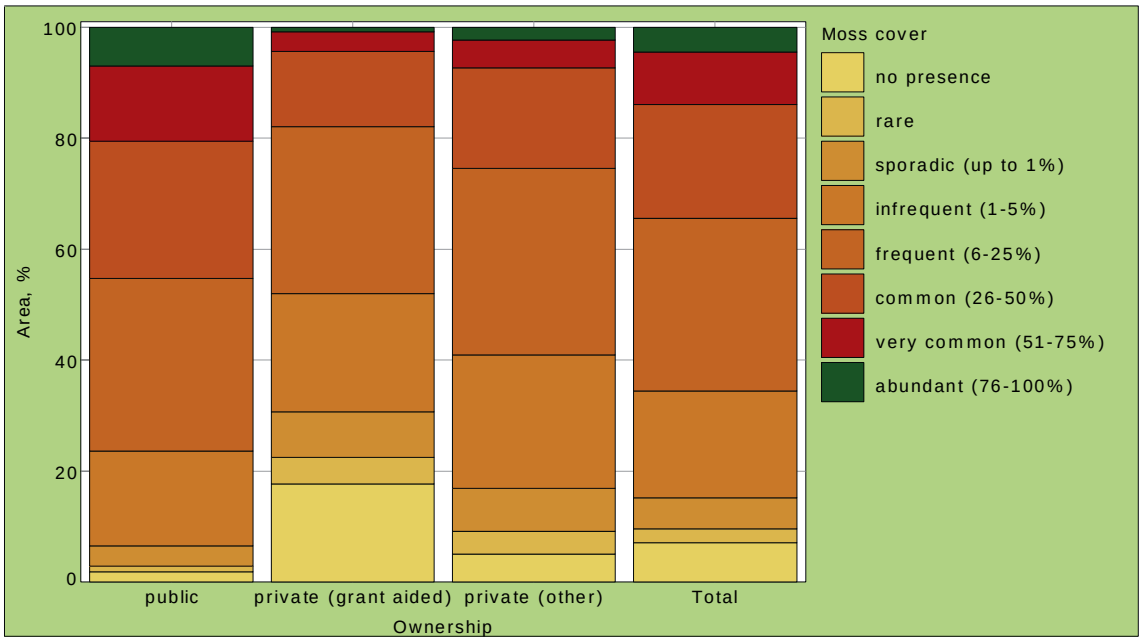
11.2.4 Total forest area by ownership and moss cover

Methodology

The total forest area is classified by ownership and the percentage moss cover.

Moss cover	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	7.20	(3.88 – 10.53)	1.8	37.60	(30.35 – 44.86)	17.7
rare	4.01	(1.53 – 6.49)	1.0	9.98	(6.13 – 13.82)	4.7
sporadic (up to 1%)	14.43	(9.78 – 19.08)	3.6	17.59	(12.45 – 22.72)	8.3
infrequent (1-5%)	68.03	(58.41 – 77.66)	17.1	45.22	(37.24 – 53.19)	21.3
frequent (6-25%)	123.82	(111.39 – 136.24)	31.2	63.76	(54.41 – 73.12)	30.0
common (26-50%)	98.25	(87.12 – 109.39)	24.7	28.86	(22.41 – 35.32)	13.6
very common (51-75%)	54.09	(45.35 – 62.83)	13.6	7.59	(4.20 – 10.99)	3.6
abundant (76-100%)	27.63	(21.25 – 34.01)	7.0	1.60	(0.03 – 3.16)	0.8
Total	397.46	(381.49 – 413.44)	100.0	212.20	(197.39 – 227.01)	100.0

Moss cover	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	4.41	(1.85 – 6.97)	5.0	49.22	(41.05 – 57.39)	7.1
rare	3.62	(1.29 – 5.94)	4.1	17.60	(12.51 – 22.69)	2.5
sporadic (up to 1%)	6.82	(3.59 – 10.05)	7.7	38.83	(31.34 – 46.33)	5.6
infrequent (1-5%)	21.20	(15.59 – 26.82)	24.0	134.46	(121.82 – 147.09)	19.3
frequent (6-25%)	29.67	(23.07 – 36.27)	33.7	217.24	(202.19 – 232.30)	31.0
common (26-50%)	16.04	(11.13 – 20.96)	18.2	143.16	(130.32 – 156.01)	20.5
very common (51-75%)	4.41	(1.83 – 6.98)	5.0	66.09	(56.57 – 75.61)	9.5
abundant (76-100%)	2.01	(0.25 – 3.76)	2.3	31.24	(24.49 – 37.98)	4.5
Total	88.18	(77.45 – 98.91)	100.0	697.84		100.0



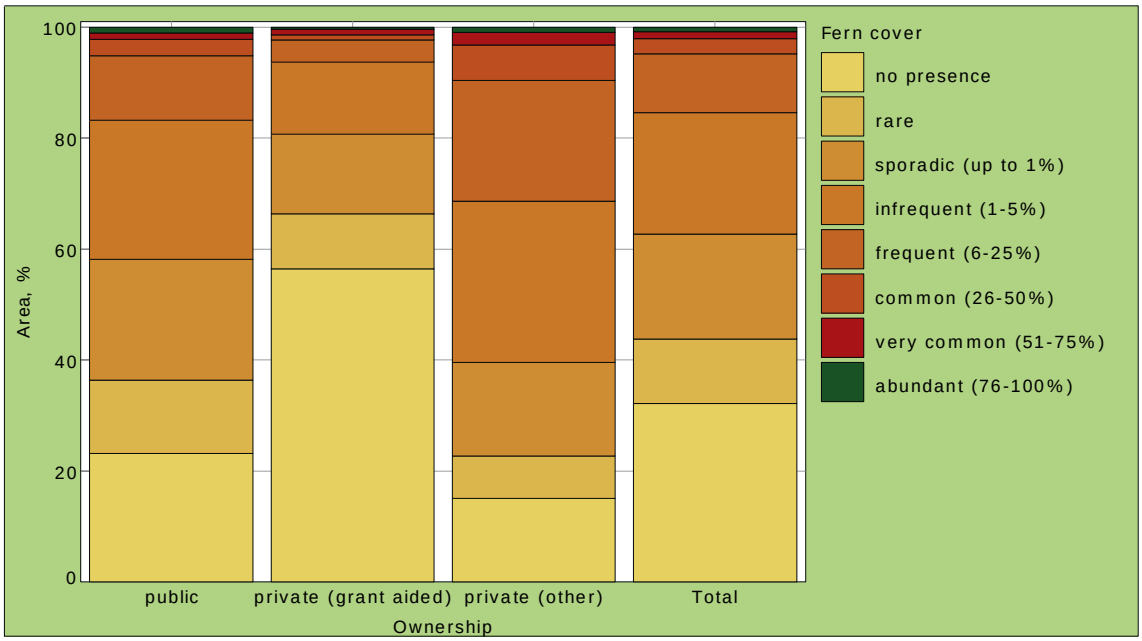
11.2.5 Total forest area by ownership and fern cover

Methodology

The total forest area is classified by ownership and the percentage fern cover.

Fern cover	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	91.81	(80.73 – 102.89)	23.1	119.68	(107.49 – 131.86)	56.5
rare	52.84	(44.26 – 61.41)	13.3	21.19	(15.65 – 26.73)	10.0
sporadic (up to 1%)	86.52	(75.78 – 97.26)	21.8	30.42	(23.76 – 37.07)	14.3
infrequent (1-5%)	99.77	(88.38 – 111.17)	25.1	27.66	(21.33 – 34.00)	13.0
frequent (6-25%)	46.09	(37.98 – 54.21)	11.6	8.44	(4.87 – 12.02)	4.0
common (26-50%)	12.02	(7.79 – 16.25)	3.0	2.01	(0.25 – 3.76)	0.9
very common (51-75%)	4.40	(1.80 – 6.99)	1.1	2.00	(0.25 – 3.76)	0.9
abundant (76-100%)	4.02	(1.54 – 6.49)	1.0	0.80	(0.00 – 1.95)	0.4
Total	397.46	(381.49 – 413.44)	100.0	212.20	(197.39 – 227.01)	100.0

Fern cover	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	13.23	(8.82 – 17.64)	15.0	224.71	(209.60 – 239.83)	32.2
rare	6.81	(3.58 – 10.04)	7.7	80.83	(70.51 – 91.16)	11.6
sporadic (up to 1%)	14.84	(10.11 – 19.56)	16.8	131.77	(119.03 – 144.52)	18.9
infrequent (1-5%)	25.67	(19.49 – 31.86)	29.1	153.11	(139.66 – 166.56)	21.9
frequent (6-25%)	19.23	(13.88 – 24.58)	21.8	73.77	(63.71 – 83.83)	10.6
common (26-50%)	5.60	(2.68 – 8.52)	6.4	19.63	(14.24 – 25.01)	2.8
very common (51-75%)	2.00	(0.23 – 3.77)	2.3	8.40	(4.83 – 11.97)	1.2
abundant (76-100%)	0.80	(0.00 – 1.94)	0.9	5.62	(2.69 – 8.54)	0.8
Total	88.18	(77.45 – 98.91)	100.0	697.84		100.0



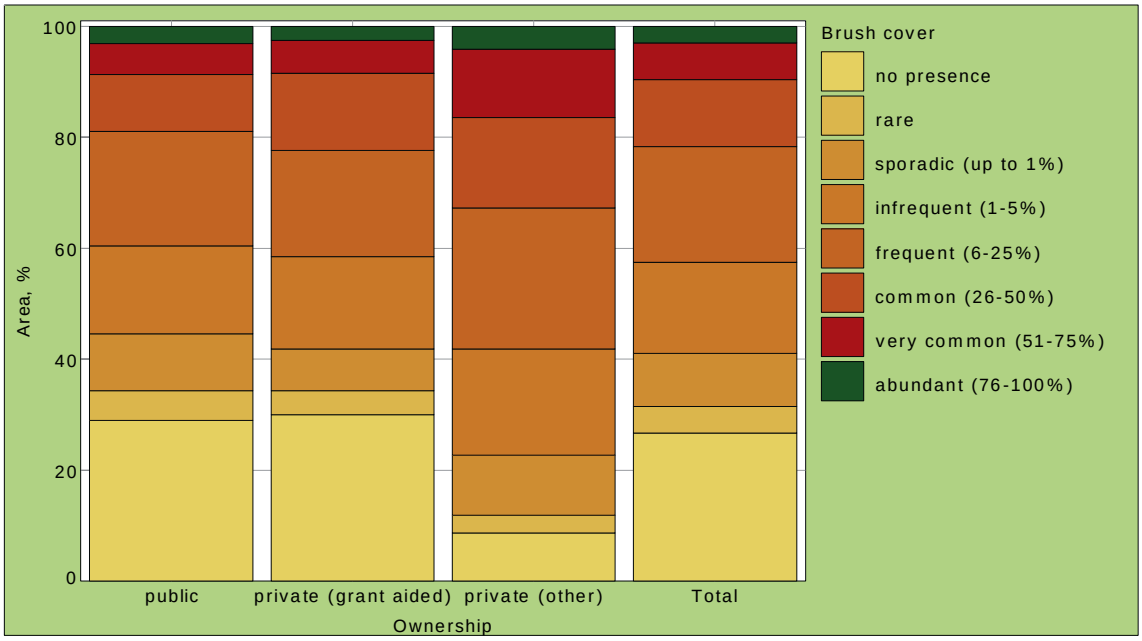
11.2.6 Total forest area by ownership and brush cover

Methodology

The total forest area is classified by ownership and the percentage brush cover.

Brush cover	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	114.94	(102.87 – 127.01)	29.0	63.61	(54.23 – 72.98)	30.1
rare	21.59	(15.94 – 27.23)	5.4	9.20	(5.48 – 12.93)	4.3
sporadic (up to 1%)	40.80	(33.15 – 48.45)	10.3	15.99	(11.09 – 20.89)	7.5
infrequent (1-5%)	62.91	(53.52 – 72.30)	15.8	35.24	(28.08 – 42.41)	16.6
frequent (6-25%)	81.89	(71.53 – 92.25)	20.6	40.87	(33.20 – 48.54)	19.3
common (26-50%)	40.88	(33.20 – 48.57)	10.3	29.29	(22.78 – 35.81)	13.8
very common (51-75%)	22.45	(16.73 – 28.16)	5.6	12.81	(8.41 – 17.21)	6.0
abundant (76-100%)	12.00	(7.75 – 16.25)	3.0	5.19	(2.39 – 7.98)	2.4
Total	397.46	(381.49 – 413.44)	100.0	212.20	(197.39 – 227.01)	100.0

Brush cover	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	7.62	(4.22 – 11.02)	8.6	186.16	(171.76 – 200.57)	26.7
rare	2.80	(0.73 – 4.88)	3.2	33.59	(26.64 – 40.54)	4.8
sporadic (up to 1%)	9.61	(5.80 – 13.43)	10.9	66.41	(56.86 – 75.95)	9.5
infrequent (1-5%)	16.84	(11.82 – 21.86)	19.1	115.00	(102.85 – 127.14)	16.5
frequent (6-25%)	22.44	(16.66 – 28.22)	25.4	145.20	(132.08 – 158.32)	20.8
common (26-50%)	14.44	(9.78 – 19.10)	16.4	84.62	(74.02 – 95.21)	12.1
very common (51-75%)	10.81	(6.82 – 14.80)	12.3	46.06	(38.05 – 54.08)	6.6
abundant (76-100%)	3.62	(1.27 – 5.97)	4.1	20.81	(15.29 – 26.33)	3.0
Total	88.18	(77.45 – 98.91)	100.0	697.84		100.0



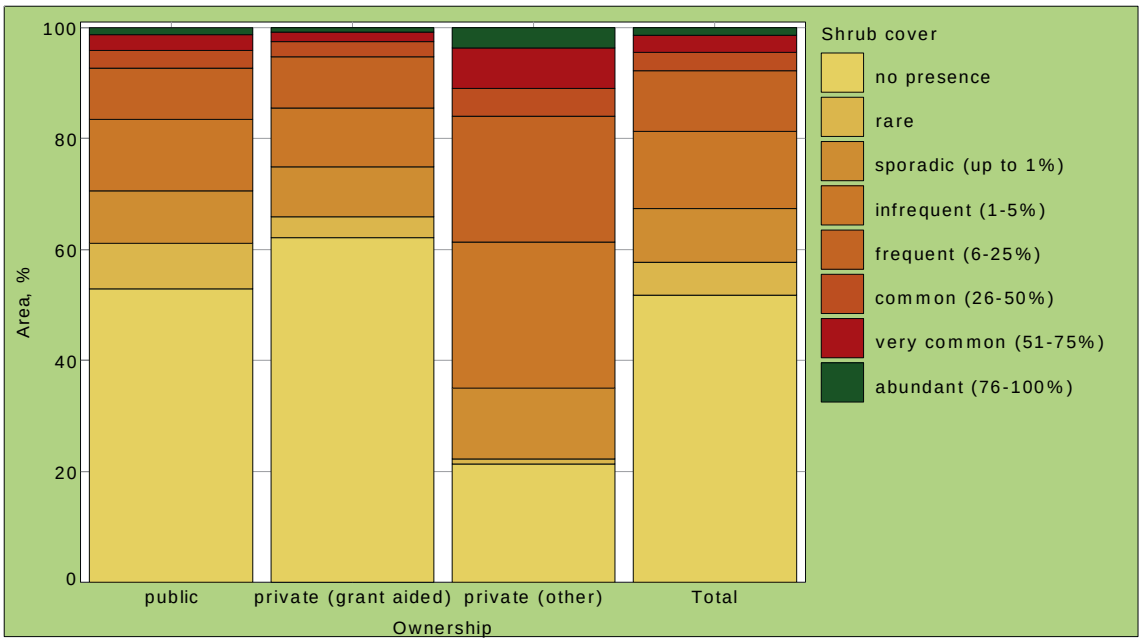
11.2.7 Total forest area by ownership and shrub cover

Methodology

The total forest area is classified by ownership and the percentage shrub cover.

Shrub cover	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	210.24	(195.73 – 224.75)	52.9	131.82	(119.06 – 144.58)	62.1
rare	32.79	(25.91 – 39.68)	8.3	8.00	(4.51 – 11.49)	3.8
sporadic (up to 1%)	37.66	(30.27 – 45.04)	9.5	19.19	(13.86 – 24.52)	9.0
infrequent (1-5%)	51.20	(42.71 – 59.69)	12.9	22.41	(16.67 – 28.14)	10.6
frequent (6-25%)	36.76	(29.46 – 44.05)	9.2	19.59	(14.19 – 24.98)	9.2
common (26-50%)	12.40	(8.09 – 16.72)	3.1	5.99	(2.99 – 9.00)	2.8
very common (51-75%)	11.61	(7.42 – 15.80)	2.9	3.60	(1.26 – 5.94)	1.7
abundant (76-100%)	4.80	(2.10 – 7.50)	1.2	1.61	(0.03 – 3.19)	0.8
Total	397.46	(381.49 – 413.44)	100.0	212.20	(197.39 – 227.01)	100.0

Shrub cover	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no presence	18.84	(13.56 – 24.13)	21.4	360.91	(345.19 – 376.62)	51.6
rare	0.80	(0.00 – 1.92)	0.9	41.59	(33.92 – 49.27)	6.0
sporadic (up to 1%)	11.20	(7.10 – 15.30)	12.7	68.05	(58.38 – 77.71)	9.8
infrequent (1-5%)	23.26	(17.38 – 29.14)	26.4	96.87	(85.60 – 108.14)	13.9
frequent (6-25%)	20.04	(14.55 – 25.52)	22.7	76.38	(66.19 – 86.57)	10.9
common (26-50%)	4.41	(1.82 – 7.00)	5.0	22.80	(17.02 – 28.59)	3.3
very common (51-75%)	6.41	(3.32 – 9.49)	7.3	21.61	(15.98 – 27.24)	3.1
abundant (76-100%)	3.22	(0.99 – 5.45)	3.6	9.63	(5.84 – 13.41)	1.4
Total	88.18	(77.45 – 98.91)	100.0	697.84		100.0



11.3 LICHENS

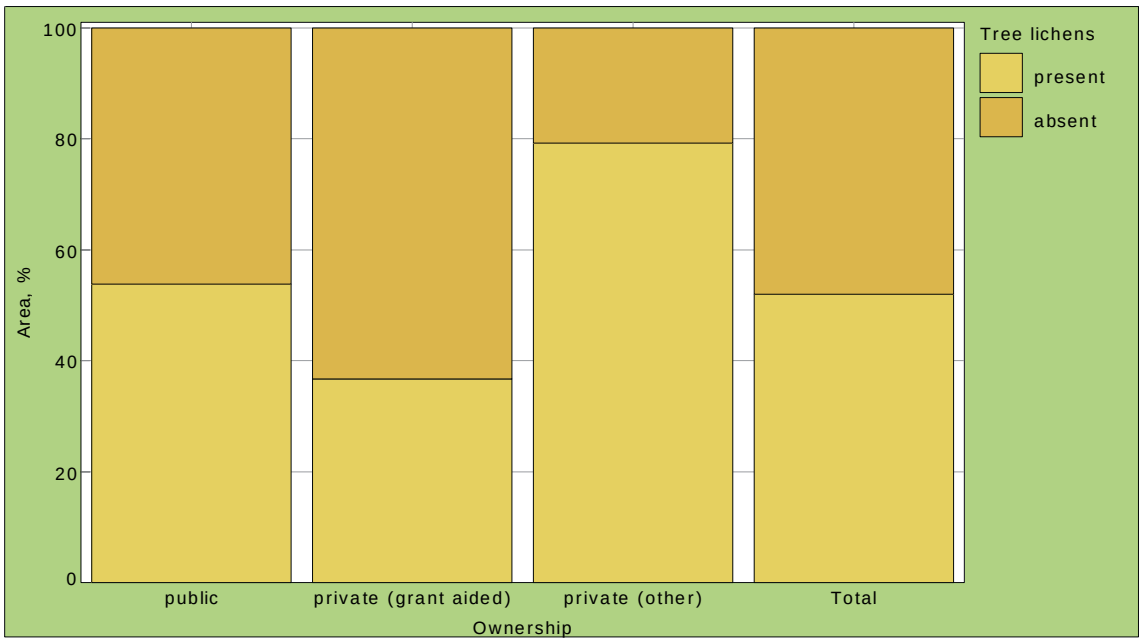
Definition
Lichen
An organism consisting of an outer fungal body enclosing photosynthetic algae.

11.3.1 Total stocked forest area by ownership and tree lichen occurrence

Methodology
The total stocked forest area is classified by ownership and the presence of lichens.

Tree lichens	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	193.61	(179.74 – 207.48)	53.9	68.58	(59.04 – 78.12)	36.7
absent	165.80	(152.58 – 179.01)	46.1	118.40	(106.46 – 130.35)	63.3
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Tree lichens	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	62.92	(53.62 – 72.22)	79.3	325.11	(310.38 – 339.85)	52.0
absent	16.43	(11.50 – 21.37)	20.7	300.63	(285.90 – 315.37)	48.0
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



11.3.2 Total stocked forest area by lichen type and the occurrence on conifer species

Definition

Lichen type

Lichens were classified into three groups:

1. **Crustose**: Encrusting forms that spread over and into the surface substrate on which they grow.
2. **Foliose**: Leafy forms that spread horizontally over the substrate. Attached by root-like threads called rhizinae.
3. **Fruticose**: Shrubby or beard-like forms that may be erect or pendulous.

Definition

Lichen occurrence

Lichen quantity is classified as one of the following:

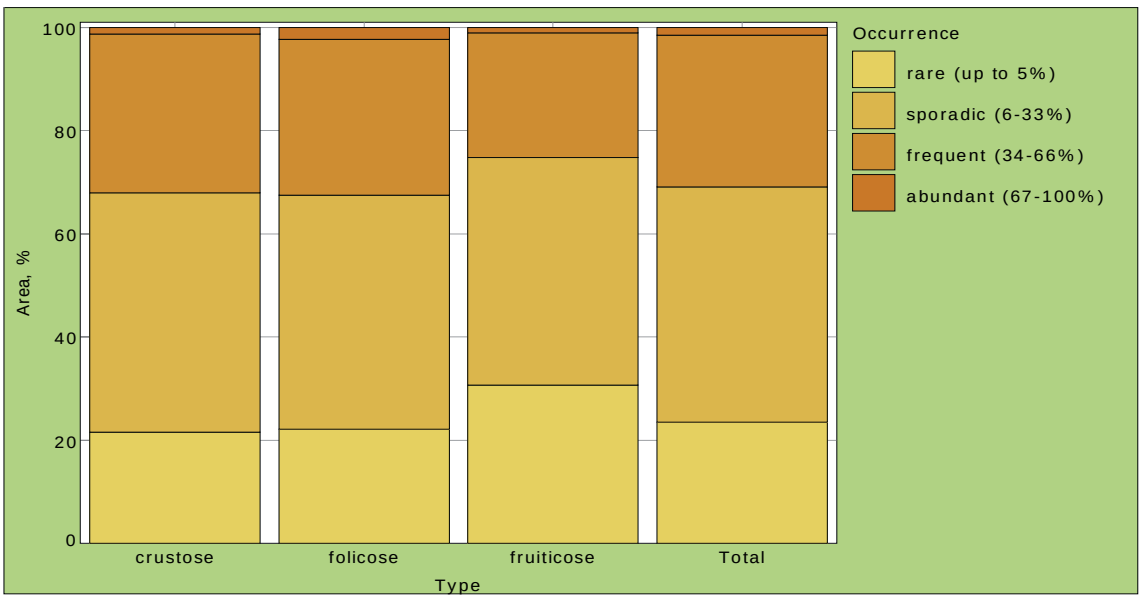
- Rare (up to-5%)
- Sporadic (6-33%)
- Frequent (34-66%)
- Abundant (67-100%)

Methodology

The total stocked forest area on which lichens were found on conifer tree species is classified by lichen type and occurrence.

Occurrence	Type / Area					
	crustose			folicose		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
rare (up to 5%)	42.86	(35.05 – 50.67)	21.5	31.64	(24.86 – 38.42)	22.1
sporadic (6-33%)	92.26	(81.58 – 102.95)	46.4	65.04	(55.90 – 74.19)	45.4
frequent (34-66%)	61.39	(52.58 – 70.21)	30.9	43.33	(35.73 – 50.92)	30.3
abundant (67-100%)	2.40	(0.48 – 4.32)	1.2	3.20	(0.99 – 5.42)	2.2
Total	198.92	(185.60 – 212.23)	100.0	143.21	(131.30 – 155.12)	100.0

Occurrence	Type / Area					
	fruiticose			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
rare (up to 5%)	24.87	(18.88 – 30.85)	30.7	99.36	(86.27 – 112.45)	23.5
sporadic (6-33%)	35.74	(28.90 – 42.57)	44.1	193.04	(174.91 – 211.18)	45.6
frequent (34-66%)	19.63	(14.32 – 24.93)	24.2	124.35	(107.99 – 140.71)	29.4
abundant (67-100%)	0.80	(0.00 – 1.92)	1.0	6.40	(2.37 – 10.43)	1.5
Total	81.02	(71.45 – 90.59)	100.0	423.15	(395.51 – 450.79)	100.0



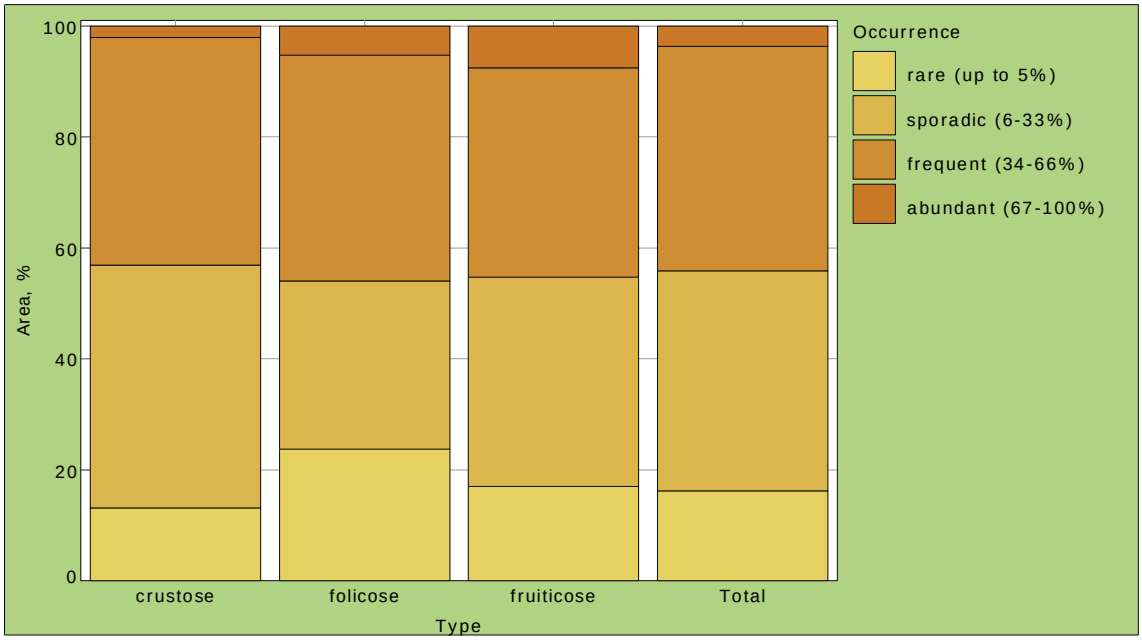
11.3.3 Total stocked forest area by lichen type and occurrence on smooth barked broadleaf species

Methodology

The total stocked forest area, on which lichens were found on smooth barked broadleaf tree species, is classified by lichen type and occurrence.

Occurrence	Type / Area					
	crustose			folicose		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
rare (up to 5%)	10.40	(6.43 – 14.37)	13.2	7.23	(3.91 – 10.55)	23.7
sporadic (6-33%)	34.51	(27.42 – 41.60)	43.7	9.24	(5.49 – 12.98)	30.3
frequent (34-66%)	32.48	(25.70 – 39.26)	41.1	12.43	(8.14 – 16.72)	40.8
abundant (67-100%)	1.61	(0.04 – 3.17)	2.0	1.60	(0.03 – 3.17)	5.2
Total	78.99	(68.76 – 89.22)	100.0	30.49	(23.86 – 37.13)	100.0

Occurrence	Type / Area					
	fruiticose			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
rare (up to 5%)	3.62	(1.26 – 5.98)	17.0	21.25	(15.19 – 27.30)	16.2
sporadic (6-33%)	8.01	(4.52 – 11.51)	37.7	51.76	(41.44 – 62.08)	39.6
frequent (34-66%)	8.03	(4.58 – 11.48)	37.8	52.93	(42.55 – 63.32)	40.5
abundant (67-100%)	1.61	(0.03 – 3.18)	7.5	4.81	(1.31 – 8.31)	3.7
Total	21.27	(15.68 – 26.85)	100.0	130.75	(112.80 – 148.69)	100.0



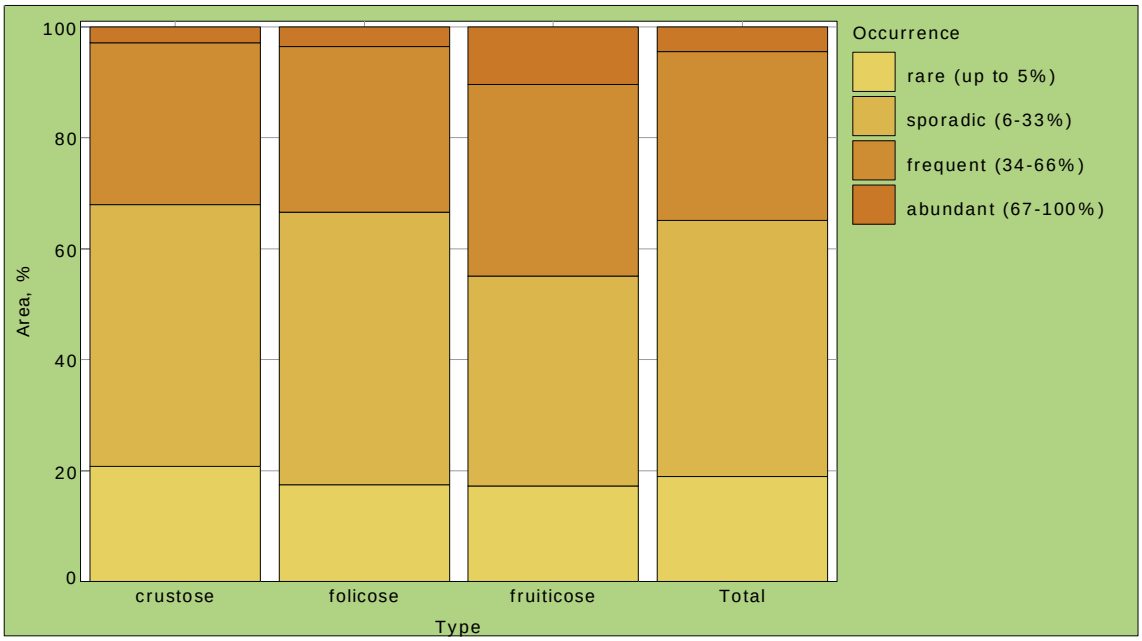
11.3.4 Total stocked forest area by lichen type and occurrence on rough barked broadleaf species

Methodology

The total stocked forest area, on which lichens were found on rough barked broadleaf tree species, is classified by lichen type and occurrence.

Occurrence	Type / Area					
	crustose			folicose		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
rare (up to 5%)	6.00	(2.97 – 9.04)	20.8	3.99	(1.55 – 6.43)	17.5
sporadic (6-33%)	13.62	(9.12 – 18.13)	47.2	11.22	(7.11 – 15.34)	49.2
frequent (34-66%)	8.42	(4.85 – 11.99)	29.2	6.81	(3.61 – 10.02)	29.8
abundant (67-100%)	0.81	(0.00 – 1.93)	2.8	0.81	(0.00 – 1.93)	3.5
Total	28.86	(22.40 – 35.31)	100.0	22.83	(17.06 – 28.60)	100.0

Occurrence	Type / Area					
	fruiticose			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
rare (up to 5%)	1.99	(0.25 – 3.74)	17.2	11.98	(7.08 – 16.89)	18.9
sporadic (6-33%)	4.40	(1.81 – 7.00)	37.9	29.25	(21.12 – 37.38)	46.2
frequent (34-66%)	4.00	(1.53 – 6.47)	34.5	19.23	(12.23 – 26.24)	30.4
abundant (67-100%)	1.21	(0.00 – 2.59)	10.4	2.82	(0.00 – 6.27)	4.5
Total	11.60	(7.44 – 15.77)	100.0	63.29	(49.82 – 76.76)	100.0



CHAPTER 12
SITE

Soil cultivation has been carried out on 69% of the public forest estate area, while the area cultivated in the private (grant aided) estate rises to 90%. Ploughing and mounding are the dominant cultivation types in the public forest estate, while mounding dominates in the private (grant aided) estate. Pit planting (21%) or no cultivation (71%) characterises the soil cultivation in the private (other) forests.

Litter is present on 85% of total area, somewhat less in private (grant aided) forests. In relation to forest type, litter depth tends to be greater in those stands classified as conifer high forest than in broadleaf high forest. The presence of humus in the broadleaf high forest is more frequent than in the conifer high forest. The degree of decomposition is also more advanced in the broadleaf high forest.

Less than half (42%) of the national estate is located on soils with a peat depth of at least 30 cm. The private (other) forest estate has the highest percentage (77%) of forest area on sites with a peat depth of less than 30 cm. Peat depths over 30 cm are found on 45% of public and private (grant aided) forest areas. Nearly one-third (32%) of the stocked forest area is located on blanket peat, while gleys occupy 25% of the stocked forest estate.

Some 18% of the area of semi-natural forest occur on basin peat, while 8% are located on blanket peat.

For stands established on peat, the age class with the highest frequency (50%) is the 11-to-20 year age class, confirming that planting on peat peaked around 10-to-20 years ago. For gleys, this most frequent age class is the 1-to-10 year class.

In terms of soil drainage, public and private (grant aided) forests are distinctly different from private (other) forest, with imperfectly to poorly drained soils predominating in the former and well drained soils in the latter. The national forest estate is located predominantly on terrain without major operational obstacles, particularly the private (grant aided) forest estate.

12.1 SOIL CULTIVATION METHOD

12.1.1 Total stocked forest area by ownership and soil cultivation method

Definition

Soil cultivation method

Soil cultivation method describes treatments applied to the soil in order to make it more suitable for natural regeneration or the establishment of planted trees.

The soil cultivation method is recorded as one of the following:

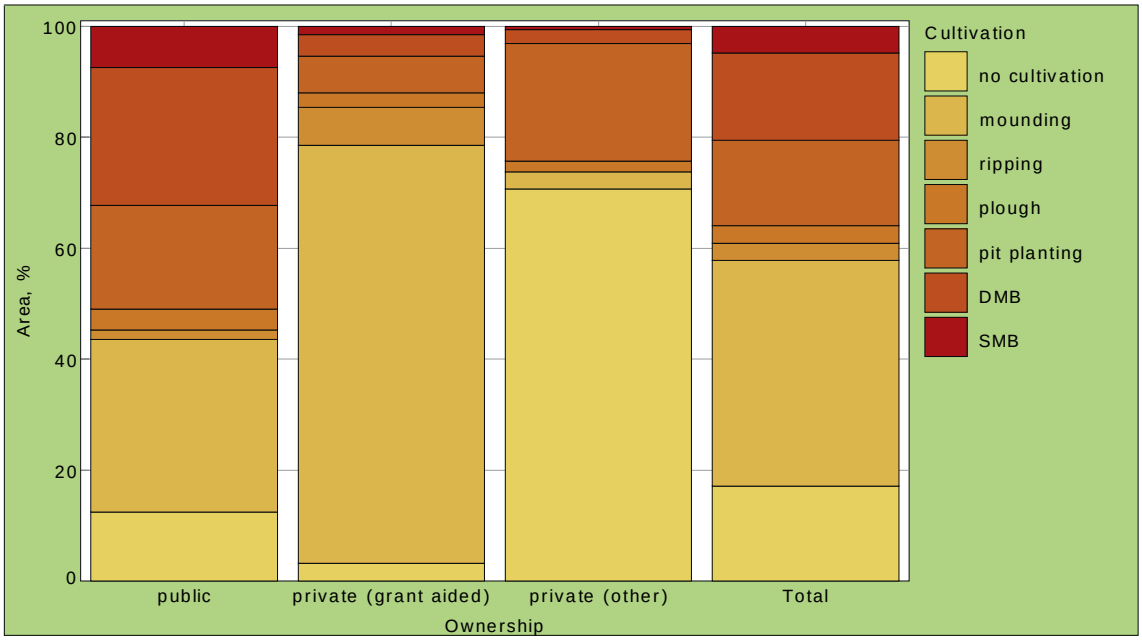
Mounding	Double mould board ploughing (DMB)
Ripping	Single mould ploughing (SMB)
Agricultural ploughing	No cultivation
Pit planting	

Methodology

The total stocked forest area is classified by ownership and soil cultivation method.

Cultivation	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no cultivation	44.81	(36.81 – 52.80)	12.5	6.00	(2.99 – 9.01)	3.2
mounding	111.84	(100.04 – 123.65)	31.0	140.94	(128.30 – 153.58)	75.3
ripping	6.02	(3.00 – 9.05)	1.7	12.84	(8.55 – 17.14)	6.9
plough	13.62	(9.14 – 18.09)	3.8	4.80	(2.10 – 7.50)	2.6
pit planting	67.29	(58.07 – 76.50)	18.7	12.39	(8.13 – 16.64)	6.6
DMB	89.38	(78.83 – 99.94)	24.9	7.20	(3.94 – 10.47)	3.9
SMB	26.45	(20.26 – 32.64)	7.4	2.81	(0.73 – 4.88)	1.5
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Cultivation	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no cultivation	56.10	(47.29 – 64.90)	70.8	106.90	(95.25 – 118.56)	17.1
mounding	2.41	(0.49 – 4.32)	3.0	255.19	(240.19 – 270.20)	40.8
ripping	–	–	–	18.87	(13.70 – 24.04)	3.0
plough	1.61	(0.02 – 3.19)	2.0	20.02	(14.65 – 25.40)	3.2
pit planting	16.83	(11.83 – 21.83)	21.2	96.51	(86.01 – 107.00)	15.4
DMB	2.00	(0.25 – 3.75)	2.5	98.59	(87.68 – 109.49)	15.8
SMB	0.40	(0.00 – 1.20)	0.5	29.66	(23.11 – 36.21)	4.7
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0


100
80
60
40
20
0
Area, %
public
private (grant aided)
private (other)
Total
Ownership
Cultivation
no cultivation
mounding
ripping
plough
pit planting
DMB
SMB

12.2 LITTER AND HUMUS

12.2.1 Total stocked forest area by ownership and occurrence of litter layer

Definition

Litter layer

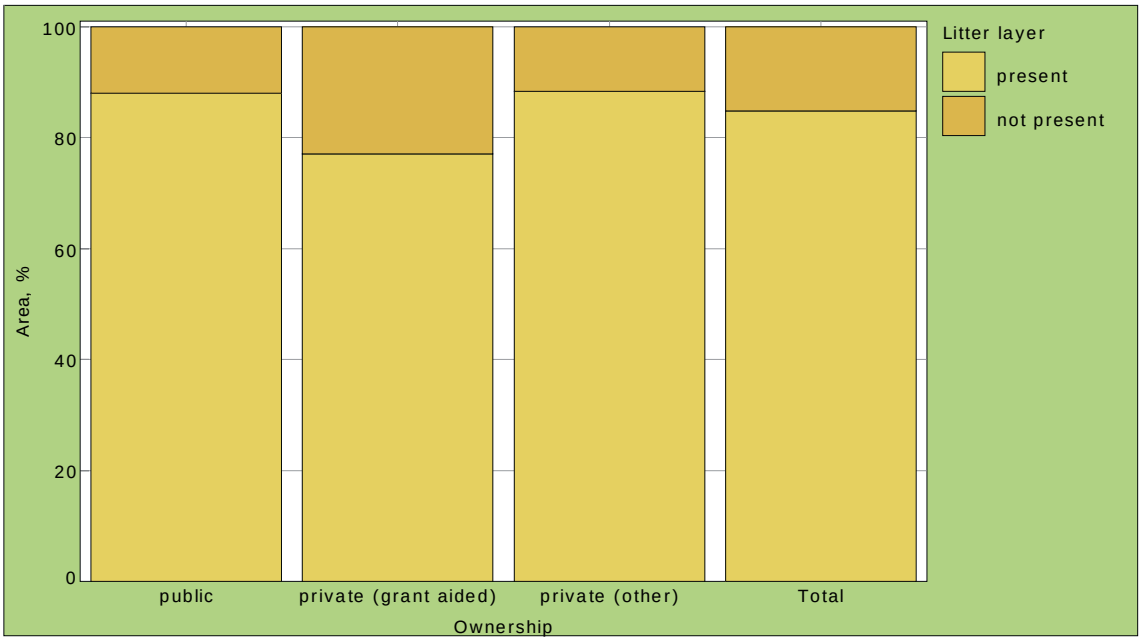
The non-living, slightly decomposed, organic material on the surface of the forest floor.

Methodology

The total stocked forest area is classified by ownership and the occurrence of a litter layer.

Litter layer	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	316.54	(301.29 – 331.79)	88.1	144.15	(131.24 – 157.07)	77.1
not present	42.87	(35.14 – 50.60)	11.9	42.83	(35.22 – 50.45)	22.9
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Litter layer	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
present	70.13	(60.40 – 79.87)	88.4	530.83	(520.07 – 541.58)	84.8
not present	9.22	(5.48 – 12.96)	11.6	94.92	(84.16 – 105.67)	15.2
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



12.2.2 Total stocked forest area by forest type and litter depth

Methodology

The total stocked forest area is classified by forest type and litter depth.

Litter depth, mm	Forest type / Area							
	temporarily unstocked				conifer high forest			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
no litter	–	–	–	–	61.69	(52.72	– 70.66)	15.4
0 - 10	–	–	–	–	82.89	(72.53	– 93.24)	20.8
11 - 20	0.40	(0.00	– 1.21)	50.4	85.68	(75.12	– 96.24)	21.5
21 - 30	–	–	–	–	59.71	(50.70	– 68.72)	15.0
31 - 40	–	–	–	–	31.70	(24.92	– 38.48)	7.9
41 - 50	–	–	–	–	18.47	(13.22	– 23.71)	4.6
51 - 60	–	–	–	–	22.03	(16.42	– 27.65)	5.5
>60	0.40	(0.00	– 1.19)	49.6	37.23	(29.97	– 44.48)	9.3
Total	0.80	(0.00	– 1.91)	100.0	399.39	(384.70	– 414.08)	100.0

Litter depth, mm	Forest type / Area							
	broadleaf high forest				mixed high forest			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
no litter	6.00	(3.00	– 9.00)	8.4	13.23	(8.79	– 17.66)	14.8
0 - 10	25.62	(19.52	– 31.71)	35.7	22.39	(16.66	– 28.13)	25.1
11 - 20	15.66	(10.97	– 20.35)	21.8	27.24	(21.00	– 33.48)	30.5
21 - 30	8.83	(5.18	– 12.48)	12.3	9.22	(5.48	– 12.95)	10.3
31 - 40	4.82	(2.10	– 7.54)	6.7	6.83	(3.62	– 10.04)	7.6
41 - 50	4.01	(1.53	– 6.50)	5.6	0.79	(0.00	– 1.91)	0.9
51 - 60	3.61	(1.26	– 5.96)	5.0	4.81	(2.11	– 7.50)	5.4
>60	3.21	(0.99	– 5.43)	4.5	4.80	(2.10	– 7.51)	5.4
Total	71.77	(62.03	– 81.50)	100.0	89.31	(78.56	– 100.06)	100.0

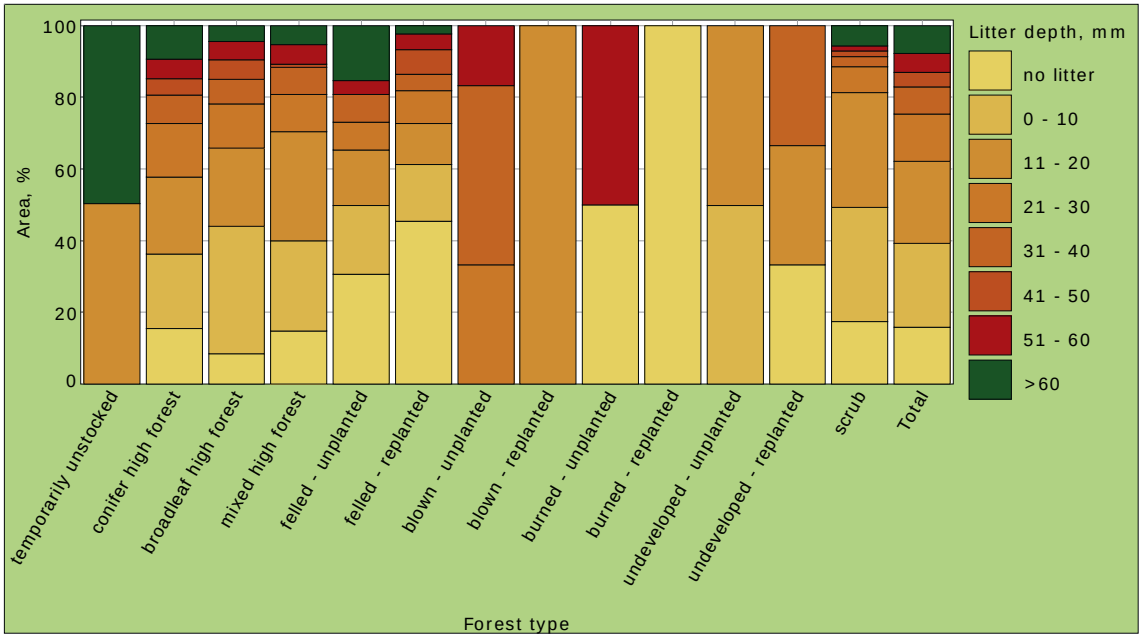
Litter depth, mm	Forest type / Area							
	felled - unplanted				felled - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
no litter	3.20	(0.99	– 5.41)	30.5	8.00	(4.53	– 11.47)	45.5
0 - 10	2.00	(0.25	– 3.75)	19.2	2.81	(0.75	– 4.86)	15.9
11 - 20	1.61	(0.04	– 3.19)	15.5	2.01	(0.25	– 3.76)	11.4
21 - 30	0.80	(0.00	– 1.93)	7.7	1.61	(0.05	– 3.17)	9.1
31 - 40	0.81	(0.00	– 1.93)	7.8	0.80	(0.00	– 1.91)	4.5
41 - 50	–	–	–	–	1.21	(0.00	– 2.57)	6.8
51 - 60	0.41	(0.00	– 1.20)	3.9	0.80	(0.00	– 1.91)	4.5
>60	1.60	(0.03	– 3.17)	15.4	0.40	(0.00	– 1.20)	2.3
Total	10.42	(6.44	– 14.39)	100.0	17.63	(12.53	– 22.73)	100.0

Litter depth, mm	Forest type / Area							
	blown - unplanted				blown - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
no litter	–	–	–	–	–	–	–	–
0 - 10	–	–	–	–	–	–	–	–
11 - 20	–	–	–	–	0.41	(0.00	– 1.20)	100.0
21 - 30	0.80	(0.00	– 1.90)	33.2	–	–	–	–
31 - 40	1.20	(0.00	– 2.55)	50.0	–	–	–	–
41 - 50	–	–	–	–	–	–	–	–
51 - 60	0.40	(0.00	– 1.21)	16.8	–	–	–	–
>60	–	–	–	–	–	–	–	–
Total	2.40	(0.48	– 4.31)	100.0	0.41	(0.00	– 1.20)	100.0

Litter depth, mm	Forest type / Area							
	burned - unplanted				burned - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
no litter	0.40	(0.00	– 1.22)	49.9	1.61	(0.04	– 3.19)	100.0
0 - 10	–	–		–	–	–		–
11 - 20	–	–		–	–	–		–
21 - 30	–	–		–	–	–		–
31 - 40	–	–		–	–	–		–
41 - 50	–	–		–	–	–		–
51 - 60	0.40	(0.00	– 1.21)	50.1	–	–		–
>60	–	–		–	–	–		–
Total	0.80	(0.00	– 1.94)	100.0	1.61	(0.04	– 3.19)	100.0

Litter depth, mm	Forest type / Area							
	undeveloped - unplanted				undeveloped - replanted			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
no litter	–	–		–	0.40	(0.00	– 1.19)	33.2
0 - 10	1.19	(0.00	– 2.55)	49.8	–	–		–
11 - 20	1.20	(0.00	– 2.58)	50.2	0.40	(0.00	– 1.18)	33.4
21 - 30	–	–		–	–	–		–
31 - 40	–	–		–	0.40	(0.00	– 1.18)	33.4
41 - 50	–	–		–	–	–		–
51 - 60	–	–		–	–	–		–
>60	–	–		–	–	–		–
Total	2.39	(0.48	– 4.30)	100.0	1.19	(0.00	– 2.54)	100.0

Litter depth, mm	Forest type / Area							
	scrub				Total			
	1000 ha	(α=0.05)		%	1000 ha	(α=0.05)		%
no litter	4.80	(2.09	– 7.52)	17.4	99.33	(88.37	– 110.28)	15.9
0 - 10	8.81	(5.17	– 12.46)	32.0	145.71	(133.10	– 158.32)	23.1
11 - 20	8.82	(5.19	– 12.46)	31.9	143.43	(130.76	– 156.10)	22.9
21 - 30	1.99	(0.25	– 3.74)	7.2	82.95	(72.64	– 93.27)	13.3
31 - 40	0.81	(0.00	– 1.93)	2.9	47.36	(39.23	– 55.49)	7.6
41 - 50	0.40	(0.00	– 1.20)	1.5	24.88	(18.82	– 30.93)	4.0
51 - 60	0.40	(0.00	– 1.19)	1.4	32.86	(26.09	– 39.63)	5.3
>60	1.59	(0.04	– 3.14)	5.7	49.23	(41.03	– 57.42)	7.9
Total	27.63	(21.28	– 33.98)	100.0	625.75			100.0



12.2.3 Total stocked forest area by forest type and humus form

Definition

Humus

Organic layers at the soil surface, where leaf litter and other organic matter are decomposing and being incorporated into the upper mineral soil. Humus forms:

1. **Mor humus**: This is raw humus, composed of unincorporated organic material, usually distinct from the mineral soil. It comprises the current litter layer overlying a matted layer of partly decomposed material.
2. **Moder humus**: This is the intermediate between mor and mull. The current litter layer overlies partly decomposed material, which is not matted as in mor.
3. **Mull humus**: This is the humus-rich layer of forest soils consisting of mixed organic and mineral matter. The humus is being incorporated into the soil, i.e. there is no clear differentiation between the soil and humus layer.
4. **No humus**: No humus development. The litter layer may not have formed yet or could be removed due to surface runoff or flooding.

Methodology

The total stocked forest area is classified by forest type and the humus form present.

Humus form	Forest type / Area					
	temporarily unstocked			conifer high forest		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
mull	–	–	–	23.24	(17.42 – 29.07)	5.8
moder	0.40	(0.00 – 1.19)	49.6	68.47	(58.85 – 78.09)	17.1
mor	0.40	(0.00 – 1.21)	50.4	143.13	(130.42 – 155.85)	35.8
no humus developed	–	–	–	164.54	(151.29 – 177.80)	41.3
Total	0.80	(0.00 – 1.91)	100.0	399.39	(384.70 – 414.08)	100.0

Humus form	Forest type / Area					
	broadleaf high forest			mixed high forest		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
mull	19.68	(14.30 – 25.06)	27.4	11.21	(7.15 – 15.26)	12.5
moder	16.43	(11.47 – 21.39)	22.9	23.20	(17.40 – 29.00)	26.0
mor	18.88	(13.62 – 24.14)	26.3	24.87	(18.86 – 30.89)	27.8
no humus developed	16.78	(11.83 – 21.74)	23.4	30.03	(23.45 – 36.62)	33.7
Total	71.77	(62.03 – 81.50)	100.0	89.31	(78.56 – 100.06)	100.0

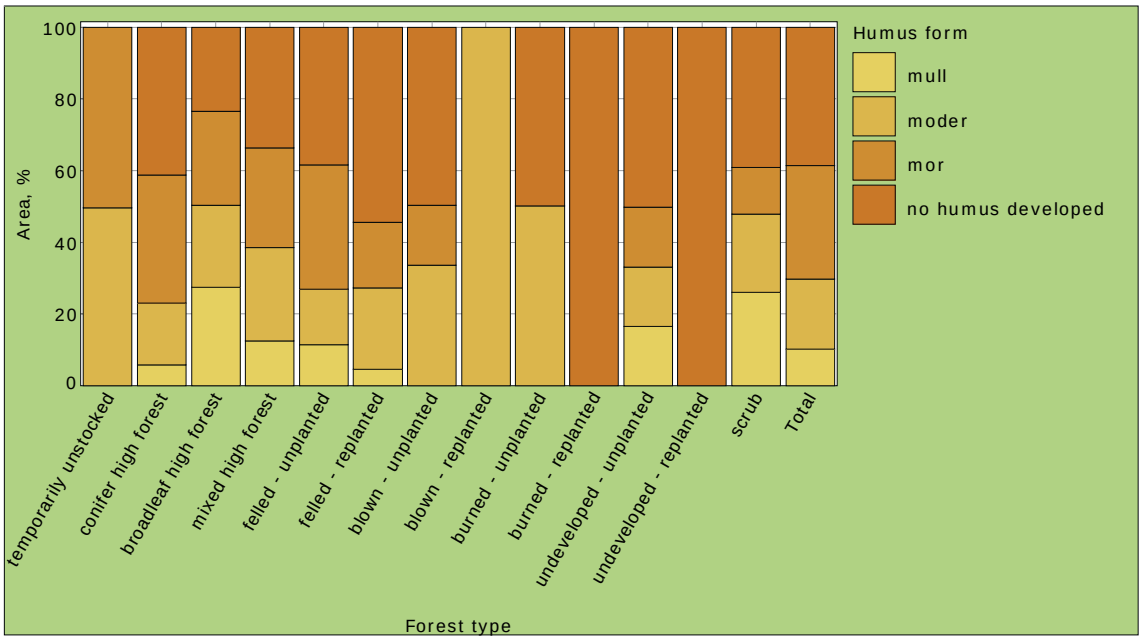
Humus form	Forest type / Area					
	felled - unplanted			felled - replanted		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
mull	1.20	(0.00 – 2.55)	11.5	0.79	(0.00 – 1.90)	4.5
moder	1.60	(0.03 – 3.17)	15.4	4.02	(1.55 – 6.49)	22.8
mor	3.61	(1.26 – 5.95)	34.6	3.22	(0.99 – 5.44)	18.3
no humus developed	4.01	(1.53 – 6.49)	38.5	9.59	(5.81 – 13.37)	54.4
Total	10.42	(6.44 – 14.39)	100.0	17.63	(12.53 – 22.73)	100.0

Humus form	Forest type / Area					
	blown - unplanted			blown - replanted		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
mull	–	–	–	–	–	–
moder	0.80	(0.00 – 1.93)	33.5	0.41	(0.00 – 1.20)	100.0
mor	0.40	(0.00 – 1.20)	16.7	–	–	–
no humus developed	1.19	(0.00 – 2.54)	49.8	–	–	–
Total	2.40	(0.48 – 4.31)	100.0	0.41	(0.00 – 1.20)	100.0

Humus form	Forest type / Area							
	burned - unplanted				burned - replanted			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
mull	–	–	–	–	–	–	–	–
moder	0.40	(0.00 – 1.21)		50.1	–	–	–	–
mor	–	–	–	–	–	–	–	–
no humus developed	0.40	(0.00 – 1.22)		49.9	1.61	(0.04 – 3.19)		100.0
Total	0.80	(0.00 – 1.94)		100.0	1.61	(0.04 – 3.19)		100.0

Humus form	Forest type / Area							
	undeveloped - unplanted				undeveloped - replanted			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
mull	0.40	(0.00 – 1.19)		16.5	–	–	–	–
moder	0.40	(0.00 – 1.19)		16.5	–	–	–	–
mor	0.40	(0.00 – 1.21)		16.8	–	–	–	–
no humus developed	1.20	(0.00 – 2.58)		50.2	1.19	(0.00 – 2.54)		100.0
Total	2.39	(0.48 – 4.30)		100.0	1.19	(0.00 – 2.54)		100.0

Humus form	Forest type / Area							
	scrub				Total			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
mull	7.20	(3.90 – 10.49)		26.0	63.71	(54.48 – 72.94)		10.2
moder	6.01	(2.98 – 9.03)		21.7	122.13	(109.94 – 134.32)		19.5
mor	3.60	(1.25 – 5.95)		13.0	198.52	(184.63 – 212.41)		31.7
no humus developed	10.82	(6.79 – 14.86)		39.3	241.38	(226.86 – 255.91)		38.6
Total	27.63	(21.28 – 33.98)		100.0	625.75			100.0



12.3 Soil

12.3.1 Total stocked forest area by ownership and soil condition

Definition

Soil Condition

Broad assessment of peat and mineral soil.

1. **No peat:** Mineral soil with no peat present.
2. **Less than 30 cm of peat:** Mineral soil overlain with less than 30 cm of peat.
3. **More than 30 cm of peat:** Mineral soil overlain with more than 30 cm of peat.
4. **Mineral soil less 20 cm:** Mineral soil less than 20 cm in depth.
5. **Outcropping rock:** Bedrock exposed, no soil or peat present.

Methodology

The total stocked forest area is classified by ownership and soil condition.

Soil condition	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no peat	106.63	(95.41 – 117.85)	29.7	77.99	(68.00 – 87.99)	41.7
less than 30 cm of peat	83.69	(73.37 – 94.01)	23.3	23.22	(17.37 – 29.06)	12.4
more than 30 cm of peat	161.89	(148.87 – 174.90)	45.0	83.78	(73.54 – 94.01)	44.8
mineral soil less than 20 cm	7.21	(3.98 – 10.43)	2.0	2.00	(0.25 – 3.75)	1.1
outcropping rock	–	–	–	–	–	–
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Soil condition	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
no peat	54.95	(46.16 – 63.73)	69.3	239.57	(225.39 – 253.74)	38.3
less than 30 cm of peat	2.40	(0.49 – 4.30)	3.0	109.30	(97.80 – 120.80)	17.5
more than 30 cm of peat	18.01	(13.02 – 23.01)	22.7	263.68	(249.74 – 277.62)	42.1
mineral soil less than 20 cm	3.59	(1.26 – 5.93)	4.5	12.80	(8.50 – 17.09)	2.0
outcropping rock	0.40	(0.00 – 1.20)	0.5	0.40	(0.00 – 1.20)	0.06
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0

12.3.2 Total stocked forest area by ownership and soil group

Definition

Soil group

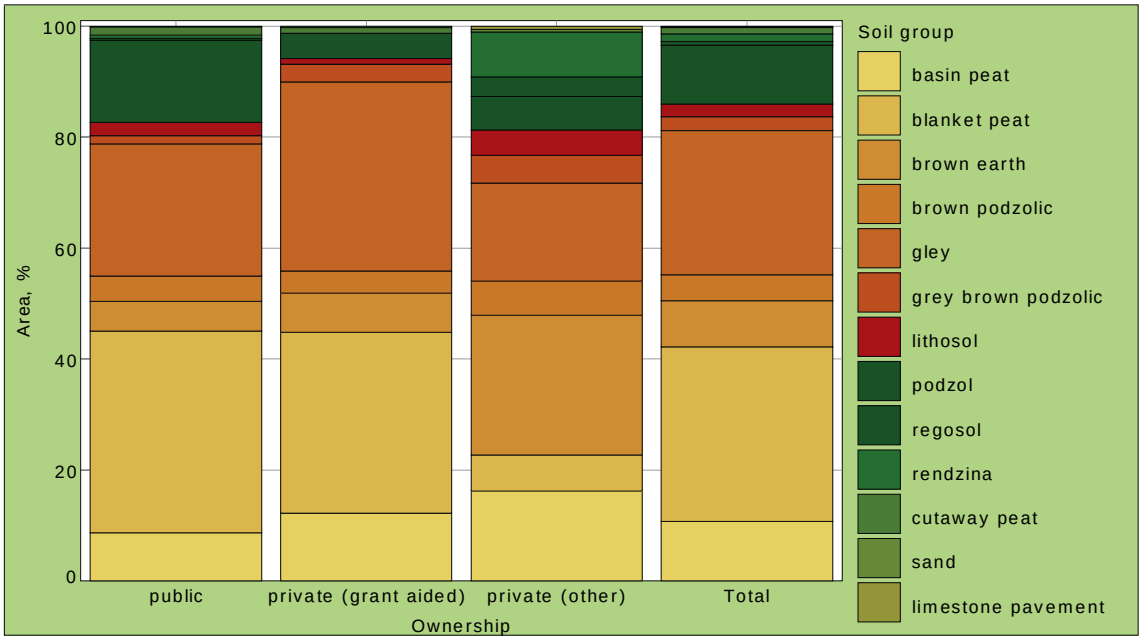
A standardised system of nomenclature was adopted to classify peat and soil into groups.

Methodology

The total stocked forest area is classified by ownership and soil group.

Soil group	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
basin peat	31.23	(24.82 – 37.65)	8.7	22.83	(17.21 – 28.45)	12.2
blanket peat	130.65	(118.82 – 142.48)	36.3	60.95	(52.19 – 69.71)	32.6
brown earth	19.23	(13.94 – 24.52)	5.4	13.21	(8.78 – 17.63)	7.1
brown podzolic	16.46	(11.56 – 21.36)	4.6	7.61	(4.22 – 10.99)	4.1
gley	85.70	(75.38 – 96.02)	23.8	63.59	(54.40 – 72.78)	33.9
grey brown podzolic	5.23	(2.42 – 8.04)	1.5	6.00	(3.00 – 9.01)	3.2
lithosol	8.80	(5.23 – 12.37)	2.4	2.00	(0.25 – 3.75)	1.1
podzol	53.28	(45.14 – 61.42)	14.8	8.40	(4.83 – 11.98)	4.5
regosol	1.20	(0.00 – 2.57)	0.3	–	–	–
rendzina	2.00	(0.25 – 3.75)	0.6	–	–	–
cutaway peat	5.22	(2.41 – 8.04)	1.5	2.00	(0.25 – 3.76)	1.1
sand	0.40	(0.00 – 1.19)	0.1	0.40	(0.00 – 1.20)	0.2
limestone pavement	–	–	–	–	–	–
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Soil group	Ownership / Area					
	private (other)			Total		
	1000 ha	(α = 0.05)	%	1000 ha	(α = 0.05)	%
basin peat	12.82	(8.58 – 17.05)	16.2	66.88	(58.38 – 75.37)	10.7
blanket peat	5.20	(2.40 – 7.99)	6.5	196.80	(184.25 – 209.35)	31.5
brown earth	20.03	(14.59 – 25.48)	25.1	52.47	(44.00 – 60.94)	8.4
brown podzolic	4.83	(2.12 – 7.53)	6.1	28.89	(22.51 – 35.28)	4.6
gley	14.01	(9.43 – 18.59)	17.7	163.30	(150.41 – 176.18)	26.1
grey brown podzolic	4.02	(1.59 – 6.44)	5.1	15.25	(10.60 – 19.90)	2.4
lithosol	3.59	(1.26 – 5.93)	4.5	14.39	(9.84 – 18.94)	2.3
podzol	4.83	(2.11 – 7.54)	6.1	66.51	(57.55 – 75.47)	10.6
regosol	2.82	(0.74 – 4.91)	3.6	4.03	(1.54 – 6.51)	0.6
rendzina	6.41	(3.32 – 9.49)	8.1	8.41	(4.89 – 11.92)	1.3
cutaway peat	–	–	–	7.23	(3.93 – 10.53)	1.2
sand	0.40	(0.00 – 1.19)	0.5	1.19	(0.00 – 2.54)	0.2
limestone pavement	0.40	(0.00 – 1.20)	0.5	0.40	(0.00 – 1.20)	0.06
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



12.3.3 Total stocked forest area by rotation type and soil group

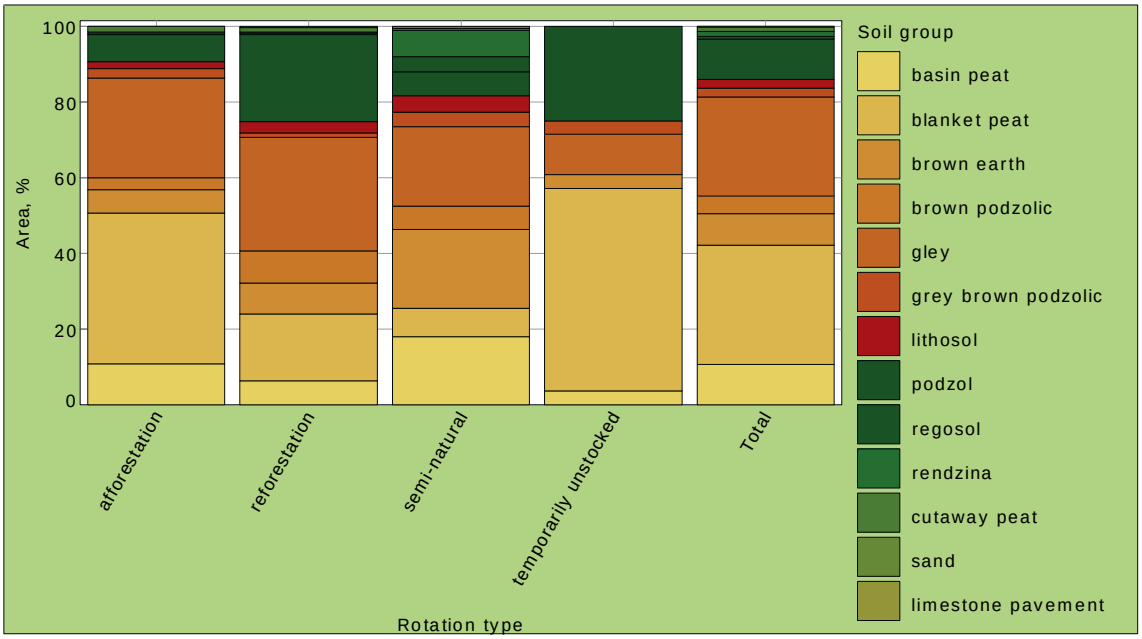
Methodology

The total stocked forest area is classified by rotation type and soil group.

Soil group	Rotation type / Area					
	afforestation			reforestation		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
basin peat	43.78	(36.59 – 50.96)	10.8	7.99	(4.68 – 11.31)	6.3
blanket peat	162.48	(150.56 – 174.40)	39.9	22.18	(16.48 – 27.88)	17.6
brown earth	24.55	(18.68 – 30.41)	6.0	10.44	(6.66 – 14.22)	8.3
brown podzolic	13.42	(9.01 – 17.83)	3.3	10.54	(6.62 – 14.45)	8.4
gley	107.07	(95.84 – 118.31)	26.3	37.83	(30.58 – 45.08)	30.1
grey brown podzolic	10.13	(6.30 – 13.95)	2.5	1.52	(0.12 – 2.91)	1.2
lithosol	7.25	(3.98 – 10.53)	1.8	3.69	(1.36 – 6.03)	2.9
podzol	29.32	(22.93 – 35.71)	7.2	29.11	(22.90 – 35.32)	23.1
regosol	0.40	(0.00 – 1.21)	0.1	0.40	(0.00 – 1.22)	0.3
rendzina	2.30	(0.52 – 4.08)	0.6	0.40	(0.00 – 1.23)	0.3
cutaway peat	5.62	(2.70 – 8.54)	1.4	1.56	(0.03 – 3.09)	1.2
sand	0.40	(0.00 – 1.20)	0.1	0.40	(0.00 – 1.19)	0.3
limestone pavement	–	–	–	–	–	–
Total	406.72	(392.49 – 420.95)	100.0	126.06	(114.18 – 137.94)	100.0

Soil group	Rotation type / Area					
	semi-natural			temporarily unstocked		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
basin peat	14.70	(10.30 – 19.11)	18.0	0.40	(0.00 – 1.22)	3.6
blanket peat	6.13	(3.18 – 9.07)	7.5	6.01	(2.98 – 9.04)	53.5
brown earth	17.09	(12.16 – 22.02)	20.9	0.40	(0.00 – 1.19)	3.6
brown podzolic	4.93	(2.29 – 7.58)	6.0	–	–	–
gley	17.20	(12.33 – 22.06)	21.0	1.20	(0.00 – 2.57)	10.7
grey brown podzolic	3.20	(1.07 – 5.33)	3.9	0.40	(0.00 – 1.21)	3.6
lithosol	3.44	(1.21 – 5.68)	4.2	–	–	–
podzol	5.27	(2.53 – 8.02)	6.5	2.80	(0.73 – 4.88)	25.0
regosol	3.22	(1.00 – 5.45)	3.9	–	–	–
rendzina	5.71	(2.84 – 8.58)	7.0	–	–	–
cutaway peat	0.05	(0.00 – 0.14)	0.06	–	–	–
sand	0.40	(0.00 – 1.19)	0.5	–	–	–
limestone pavement	0.40	(0.00 – 1.20)	0.5	–	–	–
Total	81.75	(71.69 – 91.81)	100.0	11.22	(7.09 – 15.35)	100.0

Soil group	Rotation type / Area		
	Total		
	1000 ha	($\alpha = 0.05$)	%
basin peat	66.88	(58.38 – 75.37)	10.7
blanket peat	196.80	(184.25 – 209.35)	31.5
brown earth	52.47	(44.00 – 60.94)	8.4
brown podzolic	28.89	(22.51 – 35.28)	4.6
gley	163.30	(150.41 – 176.18)	26.1
grey brown podzolic	15.25	(10.60 – 19.90)	2.4
lithosol	14.39	(9.84 – 18.94)	2.3
podzol	66.51	(57.55 – 75.47)	10.6
regosol	4.03	(1.54 – 6.51)	0.6
rendzina	8.41	(4.89 – 11.92)	1.3
cutaway peat	7.23	(3.93 – 10.53)	1.2
sand	1.19	(0.00 – 2.54)	0.2
limestone pavement	0.40	(0.00 – 1.20)	0.06
Total	625.75		100.0



12.3.4 Total stocked forest area by soil group and age class (10 yr)

Methodology

The total stocked forest area is classified by soil group and age class (10 yr).

Age class, yrs	Soil group / Area					
	basin peat			blanket peat		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
temporarily unstocked	0.40	(0.00 – 1.22)	0.6	6.01	(2.98 – 9.04)	3.1
1 - 10	28.12	(22.37 – 33.86)	42.0	53.17	(44.99 – 61.34)	27.0
11 - 20	16.69	(12.37 – 21.01)	25.0	59.93	(51.32 – 68.55)	30.4
21 - 30	9.33	(5.96 – 12.70)	14.0	39.79	(32.58 – 47.01)	20.2
31 - 40	9.09	(5.68 – 12.50)	13.6	28.55	(22.33 – 34.76)	14.5
41 - 50	2.22	(0.64 – 3.80)	3.3	7.39	(4.18 – 10.59)	3.8
51 +	1.03	(0.00 – 2.10)	1.5	1.96	(0.35 – 3.57)	1.0
Total	66.88	(58.38 – 75.37)	100.0	196.80	(184.25 – 209.35)	100.0

Age class, yrs	Soil group / Area							
	brown earth				brown podzolic			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
temporarily unstocked	0.40	(0.00 – 1.19)		0.8	–	–		–
1 - 10	11.17	(7.51 – 14.83)		21.3	11.96	(7.85 – 16.07)		41.4
11 - 20	13.32	(9.29 – 17.36)		25.3	7.83	(4.53 – 11.12)		27.1
21 - 30	7.97	(5.01 – 10.94)		15.2	2.19	(0.58 – 3.81)		7.6
31 - 40	5.54	(3.05 – 8.03)		10.6	1.06	(0.09 – 2.03)		3.7
41 - 50	4.97	(2.77 – 7.17)		9.5	1.69	(0.15 – 3.23)		5.8
51 +	9.10	(6.11 – 12.09)		17.3	4.17	(1.90 – 6.43)		14.4
Total	52.47	(44.00 – 60.94)		100.0	28.89	(22.51 – 35.28)		100.0

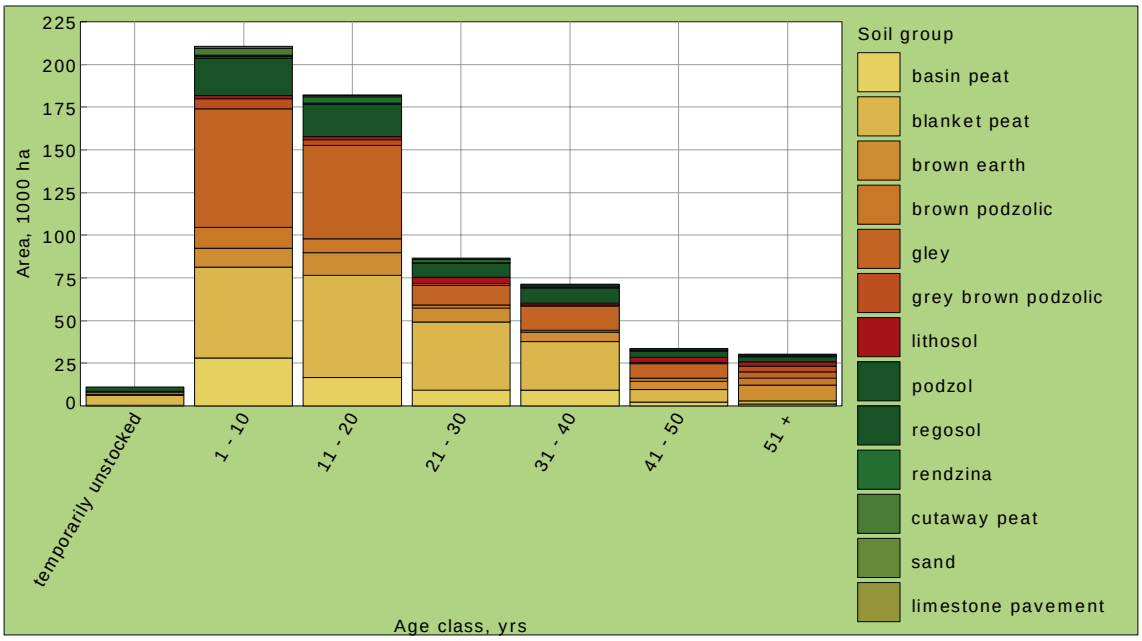
Age class, yrs	Soil group / Area							
	gley				grey brown podzolic			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
temporarily unstocked	1.20	(0.00 – 2.57)		0.7	0.40	(0.00 – 1.21)		2.6
1 - 10	69.74	(60.51 – 78.96)		42.8	5.66	(2.93 – 8.39)		37.2
11 - 20	54.68	(46.37 – 63.00)		33.5	3.28	(1.20 – 5.37)		21.5
21 - 30	11.14	(7.50 – 14.79)		6.8	1.27	(0.05 – 2.50)		8.4
31 - 40	14.12	(9.82 – 18.43)		8.6	0.93	(0.00 – 1.97)		6.1
41 - 50	8.64	(5.29 – 12.00)		5.3	0.60	(0.00 – 1.42)		3.9
51 +	3.77	(2.03 – 5.51)		2.3	3.10	(1.21 – 4.98)		20.3
Total	163.30	(150.41 – 176.18)		100.0	15.25	(10.60 – 19.90)		100.0

Age class, yrs	Soil group / Area							
	lithosol				podzol			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
temporarily unstocked	–	–		–	2.80	(0.73 – 4.88)		4.2
1 - 10	1.83	(0.30 – 3.35)		12.7	22.08	(16.68 – 27.48)		33.2
11 - 20	1.93	(0.37 – 3.49)		13.4	18.97	(13.89 – 24.04)		28.5
21 - 30	3.73	(1.56 – 5.91)		25.9	7.90	(4.62 – 11.18)		11.9
31 - 40	1.08	(0.00 – 2.33)		7.5	8.56	(5.11 – 12.01)		12.9
41 - 50	3.06	(1.07 – 5.06)		21.3	3.42	(1.30 – 5.54)		5.1
51 +	2.76	(0.96 – 4.56)		19.2	2.78	(1.00 – 4.56)		4.2
Total	14.39	(9.84 – 18.94)		100.0	66.51	(57.55 – 75.47)		100.0

Age class, yrs	Soil group / Area							
	regosol				rendzina			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
temporarily unstocked	–	–		–	–	–		–
1 - 10	0.95	(0.02 – 1.89)		23.7	0.71	(0.04 – 1.38)		8.5
11 - 20	0.68	(0.08 – 1.29)		17.0	3.60	(1.58 – 5.63)		42.9
21 - 30	0.39	(0.00 – 0.86)		9.7	2.02	(0.54 – 3.50)		24.0
31 - 40	1.04	(0.00 – 2.13)		25.7	0.91	(0.00 – 1.86)		10.8
41 - 50	0.39	(0.00 – 0.81)		9.7	0.55	(0.00 – 1.38)		6.5
51 +	0.57	(0.00 – 1.27)		14.2	0.62	(0.01 – 1.22)		7.3
Total	4.03	(1.54 – 6.51)		100.0	8.41	(4.89 – 11.92)		100.0

Age class, yrs	Soil group / Area							
	cutaway peat				sand			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
temporarily unstocked	–	–		–	–	–		–
1 - 10	4.23	(1.74 – 6.73)		58.5	0.80	(0.00 – 1.92)		66.7
11 - 20	0.94	(0.00 – 2.08)		13.0	0.03	(0.00 – 0.09)		2.5
21 - 30	0.81	(0.00 – 1.92)		11.1	0.02	(0.00 – 0.07)		2.0
31 - 40	0.41	(0.00 – 1.20)		5.6	–	–		–
41 - 50	0.80	(0.00 – 1.91)		11.1	–	–		–
51 +	0.05	(0.00 – 0.14)		0.7	0.34	(0.00 – 1.03)		28.8
Total	7.23	(3.93 – 10.53)		100.0	1.19	(0.00 – 2.54)		100.0

Age class, yrs	Soil group / Area						
	limestone pavement			Total		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
temporarily unstocked	–	–	–	11.22	(7.09 – 15.35)	1.8
1 - 10	–	–	–	210.41	(196.75 – 224.06)	33.7
11 - 20	0.40	(0.00 – 1.20)	100.0	182.30	(169.14 – 195.45)	29.1
21 - 30	–	–	–	86.58	(76.71 – 96.45)	13.8
31 - 40	–	–	–	71.29	(62.03 – 80.54)	11.4
41 - 50	–	–	–	33.72	(27.40 – 40.04)	5.4
51 +	–	–	–	30.24	(24.81 – 35.66)	4.8
Total	0.40	(0.00 – 1.20)	100.0	625.75		100.0



12.3.5 Total stocked afforested area by age class (10 yr) and soil group

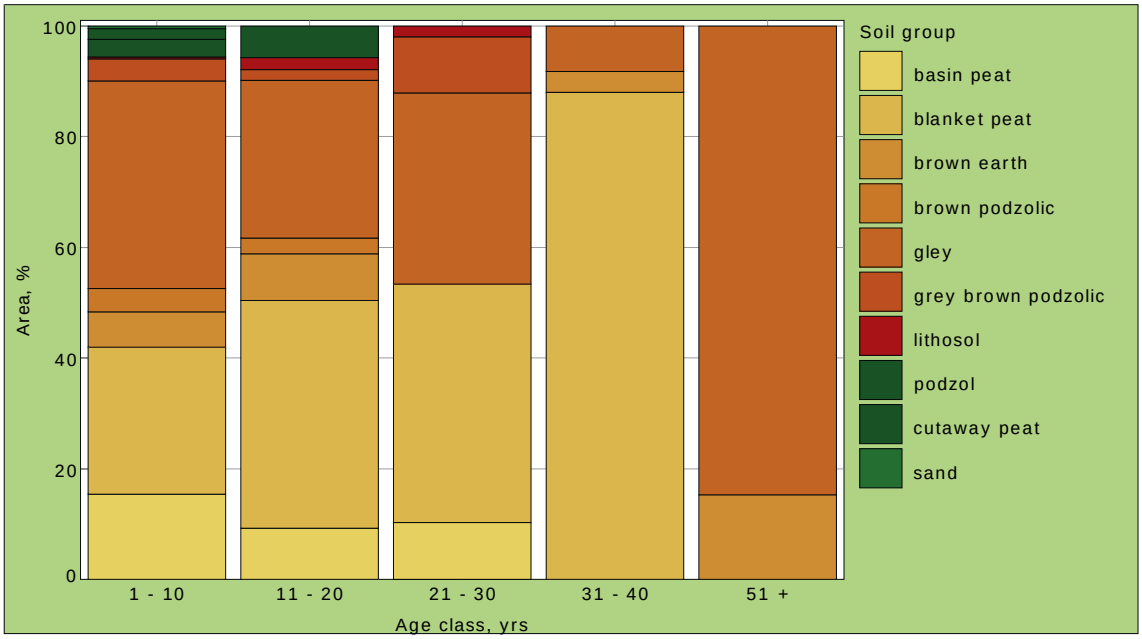
Methodology

The total stocked afforested area is classified by the age class (10 yr) of the tree species and soil group. As only the afforested area is included, the total forest area is reduced from the previous analyses.

Soil group	Age class, yrs / Area					
	1 - 10			11 - 20		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
basin peat	15.59	(10.92 – 20.26)	15.4	6.55	(3.50 – 9.59)	9.3
blanket peat	26.80	(20.81 – 32.79)	26.5	29.03	(22.73 – 35.33)	41.1
brown earth	6.42	(3.31 – 9.54)	6.4	5.95	(2.97 – 8.94)	8.4
brown podzolic	4.32	(1.78 – 6.86)	4.3	2.00	(0.25 – 3.75)	2.8
gley	37.86	(30.70 – 45.01)	37.5	20.14	(14.77 – 25.52)	28.5
grey brown podzolic	3.98	(1.61 – 6.35)	3.9	1.40	(0.00 – 2.82)	2.0
lithosol	0.40	(0.00 – 1.20)	0.4	1.52	(0.03 – 3.02)	2.2
podzol	3.20	(0.99 – 5.42)	3.2	4.00	(1.53 – 6.47)	5.7
cutaway peat	2.00	(0.25 – 3.76)	2.0	–	–	–
sand	0.40	(0.00 – 1.20)	0.4	–	–	–
Total	100.98	(89.94 – 112.02)	100.0	70.60	(60.99 – 80.21)	100.0

Soil group	Age class, yrs / Area							
	21 - 30				31 - 40			
	1000 ha		(α = 0.05)	%	1000 ha		(α = 0.05)	%
basin peat	0.40	(0.00 – 1.18)		10.2	–	–	–	–
blanket peat	1.68	(0.11 – 3.25)		43.2	0.36	(0.00 – 1.09)		88.0
brown earth	–	–	–	–	0.02	(0.00 – 0.05)		3.8
brown podzolic	–	–	–	–	–	–	–	–
gley	1.35	(0.03 – 2.66)		34.6	0.03	(0.00 – 0.10)		8.2
grey brown podzolic	0.40	(0.00 – 1.19)		10.1	–	–	–	–
lithosol	0.07	(0.00 – 0.22)		1.9	–	–	–	–
podzol	–	–	–	–	–	–	–	–
cutaway peat	–	–	–	–	–	–	–	–
sand	–	–	–	–	–	–	–	–
Total	3.90	(1.58 – 6.22)		100.0	0.41	(0.00 – 1.14)		100.0

Soil group	Age class, yrs / Area							
	51 +				Total			
	1000 ha		(α = 0.05)	%	1000 ha		(α = 0.05)	%
basin peat	–	–	–	–	22.53	(16.96 – 28.11)		12.8
blanket peat	–	–	–	–	57.88	(49.33 – 66.43)		32.9
brown earth	0.01	(0.00 – 0.04)		15.3	12.41	(8.12 – 16.70)		7.1
brown podzolic	–	–	–	–	6.32	(3.24 – 9.39)		3.6
gley	0.08	(0.00 – 0.24)		84.7	59.46	(50.58 – 68.34)		33.8
grey brown podzolic	–	–	–	–	5.78	(2.86 – 8.70)		3.3
lithosol	–	–	–	–	2.00	(0.25 – 3.75)		1.1
podzol	–	–	–	–	7.20	(3.90 – 10.51)		4.1
cutaway peat	–	–	–	–	2.00	(0.25 – 3.76)		1.1
sand	–	–	–	–	0.40	(0.00 – 1.20)		0.2
Total	0.09	(0.00 – 0.25)		100.0	175.99	(162.31 – 189.66)		100.0



12.4 PRINCIPAL SOIL TYPE

Definition

Principal soil type

Principal soil type categorises the soil groups into more descriptive classes e.g. gleys are further categorised into gleys and peaty gleys.

12.4.1 Total stocked forest area by principal soil type

Methodology

The total stocked forest area is classified by principal soil type.

Principal soil	Area		
	1000 ha	($\alpha = 0.05$)	%
BsP-unmodified	8.79	(5.18 – 12.40)	1.4
BsP-industrial sod cutover	2.40	(0.50 – 4.30)	0.4
BsP-industrial milled cutover	5.21	(2.46 – 7.97)	0.8
BsP-peat hand cutover	19.62	(14.38 – 24.87)	3.1
BsP-peat hand cutover and reclaimed	22.04	(16.74 – 27.34)	3.5
Fen peat-man modified	6.41	(3.30 – 9.52)	1.0
interdrumlin peat	2.41	(0.48 – 4.33)	0.4
BkP-high level (unflushed)	37.35	(30.27 – 44.43)	6.0
BkP-high level (flushed)	60.02	(51.21 – 68.83)	9.6
BkP-high level (hand cutover)	19.25	(13.94 – 24.56)	3.1
BkP-high level (cutover and reclaimed)	10.05	(6.19 – 13.91)	1.6
BkP-high level (industrial sod cut.)	0.40	(0.00 – 1.23)	0.06
BkP-low level (unflushed)	15.65	(11.16 – 20.15)	2.5
BkP-low level (flushed)	26.00	(19.98 – 32.02)	4.2
BkP-low level (hand cutover)	15.65	(10.89 – 20.40)	2.5
BkP-low level (cutover and reclaimed)	11.22	(7.22 – 15.22)	1.8
BkP-low level (industrial sod cutover)	0.81	(0.00 – 1.92)	0.1
BkP-low level (industrial milled cut.)	0.40	(0.00 – 1.19)	0.06
acid brown earth	35.27	(28.32 – 42.22)	5.6
brown earth (high base)	17.20	(12.21 – 22.20)	2.7
brown podzolic	28.89	(22.51 – 35.28)	4.6
gley	104.46	(93.47 – 115.46)	16.9
peaty gley	52.02	(43.55 – 60.48)	8.3
peaty podzolised gley	6.82	(3.60 – 10.03)	1.1
gley brown pozolic	15.25	(10.60 – 19.90)	2.4
lithosol	14.39	(9.84 – 18.94)	2.3
podzol	28.86	(22.48 – 35.25)	4.6
peaty podzol	37.65	(30.54 – 44.76)	6.0
river alluvial	2.82	(0.74 – 4.90)	0.5
lake alluvial	0.81	(0.00 – 1.94)	0.1
esturine alluvial	0.40	(0.00 – 1.21)	0.06
rendzina	8.41	(4.89 – 11.92)	1.3
cutaway peat	7.23	(3.93 – 10.53)	1.2
sand	1.19	(0.00 – 2.54)	0.2
limestone pavement	0.40	(0.00 – 1.20)	0.06
Total	625.75		100.0

12.5 SOIL CHARACTERISTICS

12.5.1 Total stocked forest area, with peat present, by soil condition and peat texture

Definition

Peat texture

Measures the degree of peat decomposition or humification on a ten point scale.

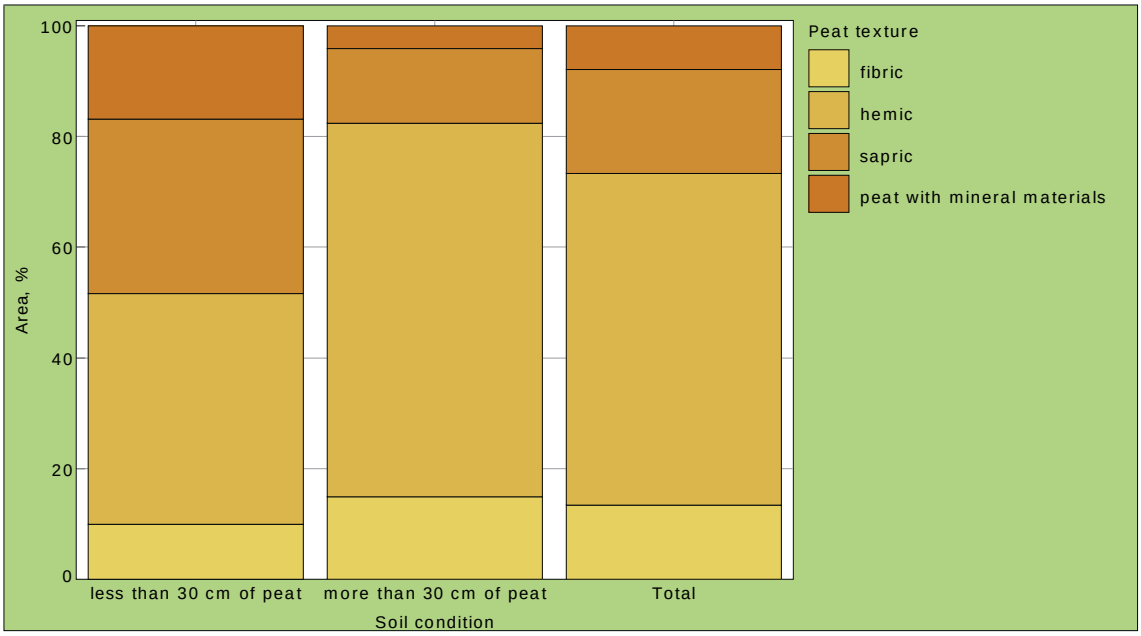
1. **Fibric**: Degree of decomposition is from 1 to 3, very light in colour, full of non-decomposed plant remains, primarily *Sphagnum* species.
2. **Hemic**: Degree of decomposition is from 4 to 6 and it is dark brown in colour. Identification of plant residues is difficult.
3. **Sapric**: Degree of decomposition is from 7 to 10. It is black in colour, greasy in texture and identification of plant remains is very difficult.
4. **Peat with mineral materials**: This covers areas where reclamation has taken place or where most of the peat has been removed or incorporated into the mineral layer. The peat has been altered by the addition of mineral materials and fertilisers.

Methodology

The total stocked forest area, with peat present, is classified by soil condition and peat texture.

Peat texture	Soil condition / Area					
	less than 30 cm of peat			more than 30 cm of peat		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
fibric	10.81	(6.77 – 14.84)	9.9	39.19	(31.74 – 46.63)	14.9
hemic	45.60	(37.66 – 53.54)	41.7	178.03	(165.29 – 190.76)	67.5
sapric	34.46	(27.47 – 41.45)	31.5	35.68	(28.64 – 42.71)	13.5
peat with mineral materials	18.44	(13.20 – 23.67)	16.9	10.79	(6.77 – 14.81)	4.1
Total	109.30	(97.80 – 120.80)	100.0	263.68	(249.74 – 277.62)	100.0

Peat texture	Soil condition / Area		
	Total		
	1000 ha	(α=0.05)	%
fibric	49.99	(41.64 – 58.35)	13.4
hemic	223.63	(209.70 – 237.55)	60.0
sapric	70.13	(60.46 – 79.80)	18.8
peat with mineral materials	29.22	(22.70 – 35.75)	7.8
Total	372.98	(358.59 – 387.36)	100.0


100
80
60
40
20
0
Area, %
less than 30 cm of peat
more than 30 cm of peat
Total
Soil condition
Peat texture
fibric
hemic
sapric
peat with mineral materials

12.5.2 Total stocked forest area, with soil present, by soil texture

Definition

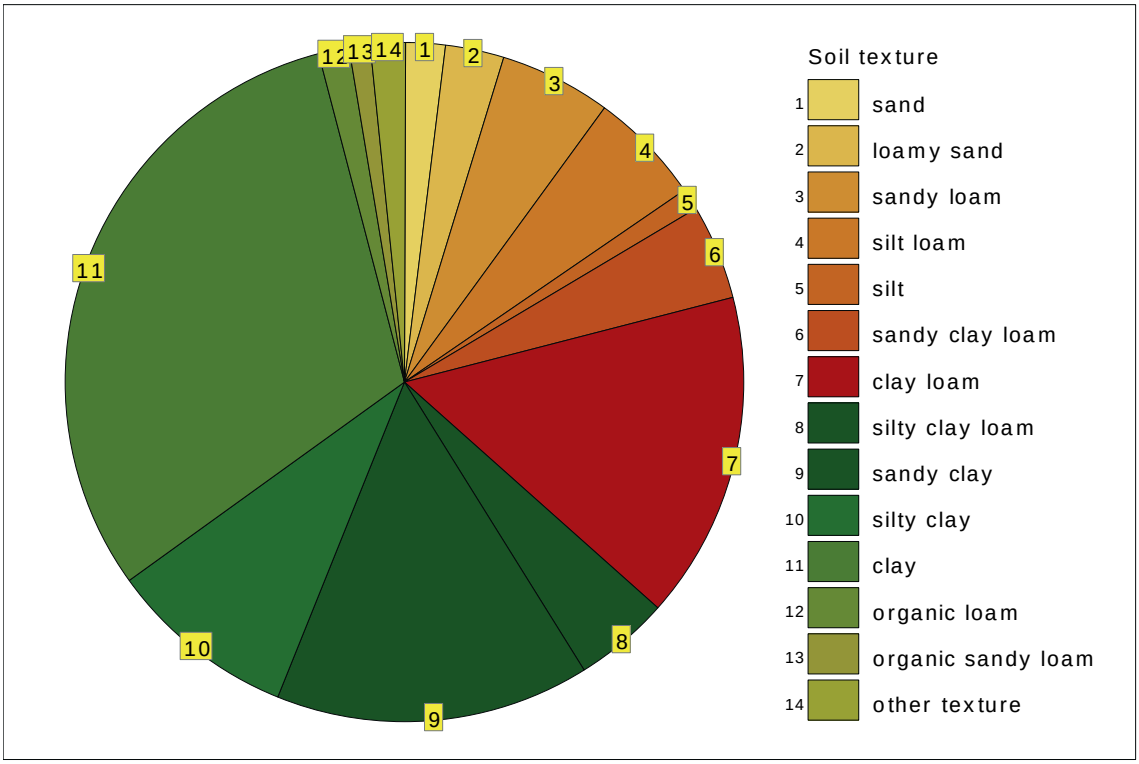
Soil Texture

Soil texture refers to the relative proportions of the various size particles in the mineral fraction of the soil.

Methodology

The total stocked forest area, with soil present, is classified by soil texture. Forests with peat greater than 30 cm are excluded from the analysis.

Soil texture	Area		
	1000 ha	($\alpha = 0.05$)	%
sand	6.79	(3.58 – 9.99)	1.9
loamy sand	10.02	(6.15 – 13.89)	2.8
sandy loam	19.23	(13.90 – 24.57)	5.3
silt loam	19.62	(14.23 – 25.01)	5.4
silt	3.61	(1.26 – 5.95)	1.0
sandy clay loam	16.42	(11.52 – 21.33)	4.5
clay loam	56.55	(47.92 – 65.18)	15.6
silty clay loam	16.47	(11.55 – 21.38)	4.6
sandy clay	54.43	(45.95 – 62.91)	15.0
silty clay	32.48	(25.70 – 39.26)	9.0
clay	111.22	(99.80 – 122.64)	30.8
organic loam	5.23	(2.41 – 8.05)	1.4
organic sandy loam	3.59	(1.26 – 5.93)	1.0
other texture	6.02	(2.98 – 9.05)	1.7
Total	361.67	(347.73 – 375.61)	100.0



12.5.3Total stocked forest area by ownership and soil moisture

Definition

Soil Moisture

Moisture contained in the soil above the water table.

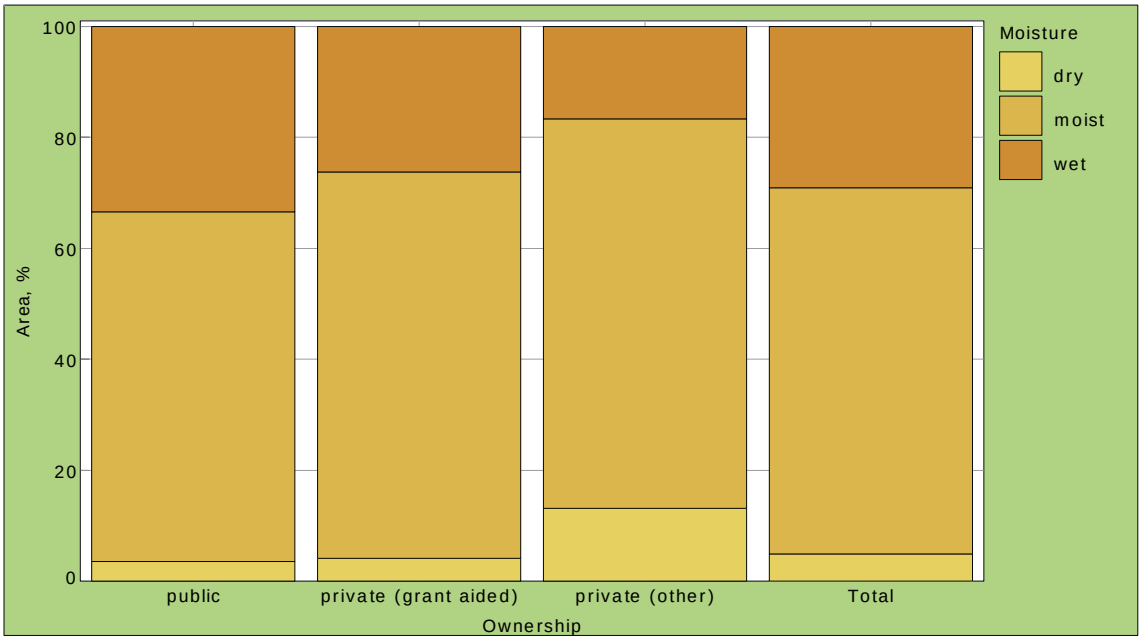
1. **Dry**: The soil is dry with little or no moisture present, e.g. excessively drained coastal sand.
2. **Moist**: The soil is moist with some moisture present, e.g. most mineral soils or drained peat.
3. **Wet**: The soil is wet with a lot of moisture present, e.g. gleys or undrained peat.

Methodology

The total forest area is classified by ownership and soil moisture.

Moisture	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
dry	12.82	(8.45 – 17.18)	3.6	7.60	(4.24 – 10.97)	4.1
moist	226.72	(212.38 – 241.07)	63.0	130.44	(118.13 – 142.74)	69.7
wet	119.87	(108.32 – 131.41)	33.4	48.95	(40.77 – 57.13)	26.2
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Moisture	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
dry	10.44	(6.53 – 14.36)	13.2	30.86	(24.32 – 37.41)	4.9
moist	55.70	(46.92 – 64.49)	70.2	412.86	(399.29 – 426.43)	66.0
wet	13.20	(8.75 – 17.65)	16.6	182.02	(169.01 – 195.03)	29.1
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



12.6 SOIL AND PEAT DEPTH

Definition

Soil/Peat Depth

The depth of soil, peat or the combination of both is recorded to a maximum of 1m.

12.6.1 Total stocked forest area by soil group and soil depth

Methodology

The total stocked forest area is classified by group soil and soil depth.

Soil depth, cm	Soil group / Area							
	basin peat				blanket peat			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
0	61.25	(52.97 – 69.54)		91.6	185.59	(173.35 – 197.84)		94.4
1 - 10	0.81	(0.00 – 1.93)		1.2	1.60	(0.03 – 3.17)		0.8
11 - 20	1.61	(0.03 – 3.18)		2.4	2.01	(0.25 – 3.77)		1.0
21 - 30	0.40	(0.00 – 1.20)		0.6	0.80	(0.00 – 1.91)		0.4
31 - 40	–	–	–	–	0.80	(0.00 – 1.91)		0.4
41 - 50	0.80	(0.00 – 1.91)		1.2	1.99	(0.25 – 3.74)		1.0
51 - 60	0.80	(0.00 – 1.93)		1.2	0.80	(0.00 – 1.90)		0.4
61 - 70	–	–	–	–	0.80	(0.00 – 1.94)		0.4
71 - 80	–	–	–	–	–	–	–	–
81 - 90	–	–	–	–	–	–	–	–
>90	1.21	(0.00 – 2.58)		1.8	2.40	(0.48 – 4.31)		1.2
Total	66.88	(58.38 – 75.37)		100.0	196.80	(184.25 – 209.35)		100.0

Soil depth, cm	Soil group / Area							
	brown earth				brown podzolic			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
0	–	–	–	–	–	–	–	–
1 - 10	–	–	–	–	–	–	–	–
11 - 20	2.40	(0.49 – 4.31)		4.6	0.40	(0.00 – 1.24)		1.4
21 - 30	4.81	(2.11 – 7.52)		9.2	0.81	(0.00 – 1.93)		2.8
31 - 40	6.01	(2.98 – 9.04)		11.5	3.61	(1.26 – 5.96)		12.5
41 - 50	8.41	(4.84 – 11.99)		16.0	6.43	(3.30 – 9.56)		22.3
51 - 60	7.59	(4.21 – 10.97)		14.5	4.80	(2.10 – 7.50)		16.6
61 - 70	6.01	(2.99 – 9.04)		11.5	5.62	(2.70 – 8.55)		19.5
71 - 80	4.41	(1.81 – 7.01)		8.4	2.00	(0.25 – 3.74)		6.9
81 - 90	2.41	(0.49 – 4.32)		4.6	2.81	(0.73 – 4.89)		9.7
>90	10.43	(6.52 – 14.34)		19.7	2.41	(0.49 – 4.33)		8.3
Total	52.47	(44.00 – 60.94)		100.0	28.89	(22.51 – 35.28)		100.0

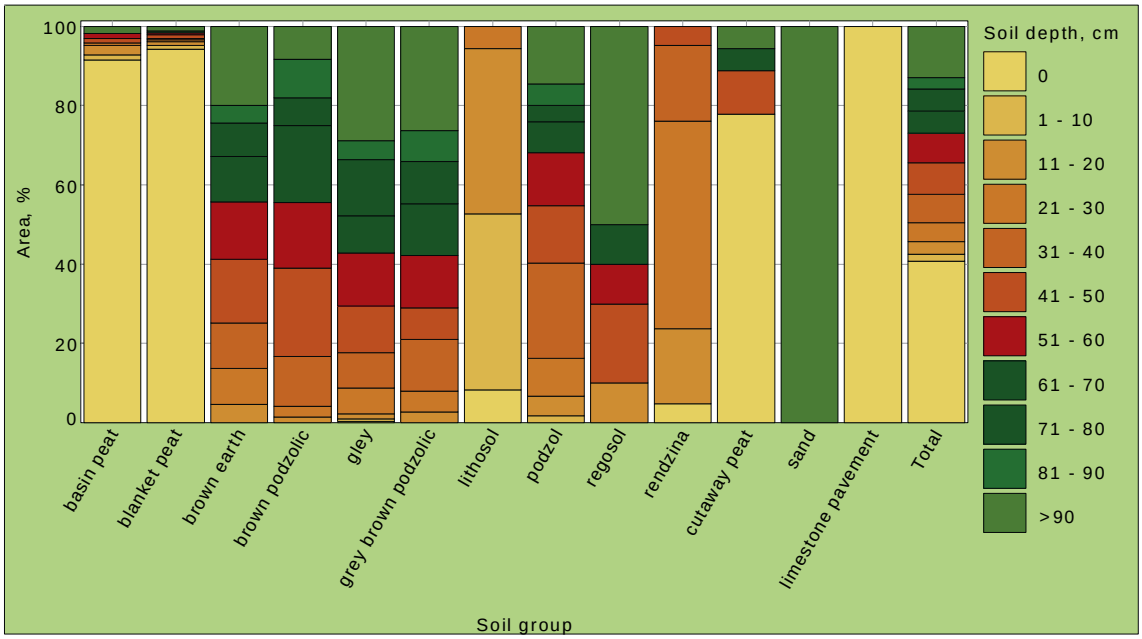
Soil depth, cm	Soil group / Area							
	gley				grey brown podzolic			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
0	0.40	(0.00 – 1.21)		0.2	–	–	–	–
1 - 10	1.21	(0.00 – 2.57)		0.7	–	–	–	–
11 - 20	2.00	(0.26 – 3.74)		1.2	0.40	(0.00 – 1.29)		2.6
21 - 30	10.76	(6.83 – 14.68)		6.6	0.80	(0.00 – 1.95)		5.3
31 - 40	14.42	(9.79 – 19.04)		8.8	2.01	(0.25 – 3.76)		13.2
41 - 50	19.20	(13.86 – 24.54)		11.8	1.21	(0.00 – 2.57)		7.9
51 - 60	22.05	(16.41 – 27.69)		13.5	2.02	(0.24 – 3.79)		13.2
61 - 70	15.23	(10.48 – 19.99)		9.3	2.00	(0.23 – 3.78)		13.1
71 - 80	23.24	(17.42 – 29.06)		14.2	1.60	(0.04 – 3.17)		10.5
81 - 90	7.61	(4.23 – 11.00)		4.7	1.20	(0.00 – 2.55)		7.8
>90	47.18	(39.29 – 55.07)		29.0	4.01	(1.55 – 6.47)		26.4
Total	163.30	(150.41 – 176.18)		100.0	15.25	(10.60 – 19.90)		100.0

Soil depth, cm	Soil group / Area							
	lithosol				podzol			
	1000 ha	($\alpha = 0.05$)		%	1000 ha	($\alpha = 0.05$)		%
0	1.19	(0.00	– 2.54)	8.3	–	–	–	–
1 - 10	6.39	(3.30	– 9.48)	44.4	1.20	(0.00	– 2.55)	1.8
11 - 20	6.00	(2.99	– 9.02)	41.7	3.21	(0.99	– 5.43)	4.8
21 - 30	0.80	(0.00	– 1.92)	5.6	6.41	(3.30	– 9.52)	9.6
31 - 40	–	–	–	–	16.02	(11.32	– 20.71)	24.2
41 - 50	–	–	–	–	9.61	(5.82	– 13.40)	14.5
51 - 60	–	–	–	–	8.82	(5.17	– 12.47)	13.3
61 - 70	–	–	–	–	5.22	(2.40	– 8.04)	7.8
71 - 80	–	–	–	–	2.81	(0.74	– 4.88)	4.2
81 - 90	–	–	–	–	3.61	(1.26	– 5.97)	5.4
>90	–	–	–	–	9.61	(5.88	– 13.33)	14.4
Total	14.39	(9.84	– 18.94)	100.0	66.51	(57.55	– 75.47)	100.0

Soil depth, cm	Soil group / Area							
	regosol				rendzina			
	1000 ha	($\alpha = 0.05$)		%	1000 ha	($\alpha = 0.05$)		%
0	–	–	–	–	0.40	(0.00	– 1.18)	4.7
1 - 10	–	–	–	–	–	–	–	–
11 - 20	0.40	(0.00	– 1.22)	10.0	1.60	(0.03	– 3.17)	19.0
21 - 30	–	–	–	–	4.40	(1.83	– 6.97)	52.4
31 - 40	–	–	–	–	1.60	(0.03	– 3.17)	19.1
41 - 50	0.80	(0.00	– 1.92)	19.9	0.40	(0.00	– 1.20)	4.8
51 - 60	0.40	(0.00	– 1.22)	10.0	–	–	–	–
61 - 70	–	–	–	–	–	–	–	–
71 - 80	0.40	(0.00	– 1.21)	10.0	–	–	–	–
81 - 90	–	–	–	–	–	–	–	–
>90	2.02	(0.26	– 3.78)	50.1	–	–	–	–
Total	4.03	(1.54	– 6.51)	100.0	8.41	(4.89	– 11.92)	100.0

Soil depth, cm	Soil group / Area							
	cutaway peat				sand			
	1000 ha	($\alpha = 0.05$)		%	1000 ha	($\alpha = 0.05$)		%
0	5.63	(2.72	– 8.54)	77.9	–	–	–	–
1 - 10	–	–	–	–	–	–	–	–
11 - 20	–	–	–	–	–	–	–	–
21 - 30	–	–	–	–	–	–	–	–
31 - 40	–	–	–	–	–	–	–	–
41 - 50	0.80	(0.00	– 1.90)	11.0	–	–	–	–
51 - 60	–	–	–	–	–	–	–	–
61 - 70	–	–	–	–	–	–	–	–
71 - 80	0.40	(0.00	– 1.20)	5.5	–	–	–	–
81 - 90	–	–	–	–	–	–	–	–
>90	0.40	(0.00	– 1.21)	5.6	1.19	(0.00	– 2.54)	100.0
Total	7.23	(3.93	– 10.53)	100.0	1.19	(0.00	– 2.54)	100.0

Soil depth, cm	Soil group / Area							
	limestone pavement				Total			
	1000 ha	($\alpha = 0.05$)		%	1000 ha	($\alpha = 0.05$)		%
0	0.40	(0.00	– 1.20)	100.0	254.87	(241.25	– 268.49)	40.7
1 - 10	–	–	–	–	11.20	(7.13	– 15.27)	1.8
11 - 20	–	–	–	–	20.04	(14.59	– 25.49)	3.2
21 - 30	–	–	–	–	30.00	(23.42	– 36.57)	4.8
31 - 40	–	–	–	–	44.46	(36.62	– 52.30)	7.1
41 - 50	–	–	–	–	49.66	(41.34	– 57.97)	7.9
51 - 60	–	–	–	–	47.27	(39.14	– 55.40)	7.6
61 - 70	–	–	–	–	34.89	(27.82	– 41.96)	5.6
71 - 80	–	–	–	–	34.86	(27.78	– 41.94)	5.6
81 - 90	–	–	–	–	17.64	(12.56	– 22.72)	2.8
>90	–	–	–	–	80.85	(71.04	– 90.66)	12.9
Total	0.40	(0.00	– 1.20)	100.0	625.75			100.0



12.6.2 Total stocked forest area, where peat is present, by soil group and peat depth

Methodology

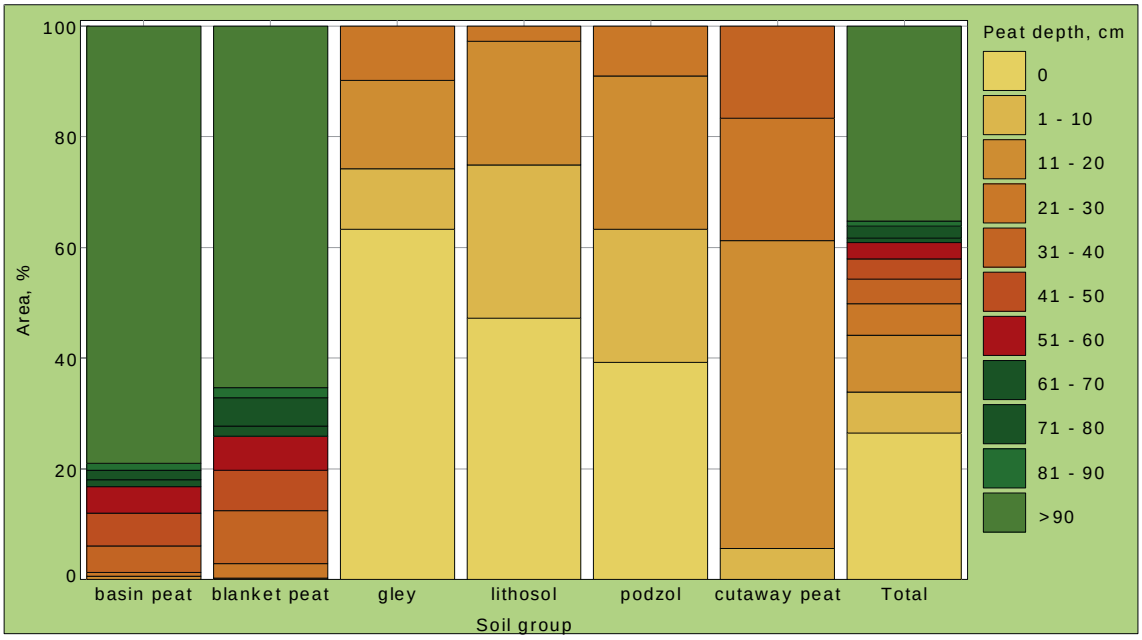
The total stocked forest area where peat is present is classified by soil group and peat depth.

Peat depth, cm	Soil group / Area							
	basin peat				blanket peat			
	1000 ha		(α = 0.05)	%	1000 ha		(α = 0.05)	%
0	–	–	–	–	–	–	–	–
1 - 10	–	–	–	–	–	–	–	–
11 - 20	0.40	(0.00	– 1.19)	0.6	0.40	(0.00	– 1.19)	0.2
21 - 30	0.40	(0.00	– 1.24)	0.6	5.22	(2.40	– 8.03)	2.7
31 - 40	3.21	(1.00	– 5.41)	4.8	18.84	(13.55	– 24.13)	9.6
41 - 50	4.01	(1.54	– 6.48)	6.0	14.43	(9.78	– 19.09)	7.3
51 - 60	3.20	(0.99	– 5.40)	4.8	12.03	(7.77	– 16.29)	6.1
61 - 70	0.80	(0.00	– 1.91)	1.2	3.60	(1.26	– 5.94)	1.8
71 - 80	1.20	(0.00	– 2.55)	1.8	10.05	(6.18	– 13.92)	5.1
81 - 90	0.80	(0.00	– 1.91)	1.2	3.62	(1.27	– 5.96)	1.8
>90	52.86	(45.03	– 60.69)	79.0	128.62	(117.17	– 140.07)	65.4
Total	66.88	(58.38	– 75.37)	100.0	196.80	(184.25	– 209.35)	100.0

Peat depth, cm	Soil group / Area							
	gley				lithosol			
	1000 ha		(α = 0.05)	%	1000 ha		(α = 0.05)	%
0	103.26	(92.31	– 114.21)	63.3	6.80	(3.61	– 10.00)	47.2
1 - 10	18.04	(12.86	– 23.21)	11.0	3.99	(1.53	– 6.44)	27.7
11 - 20	26.01	(19.82	– 32.20)	15.9	3.21	(0.99	– 5.42)	22.3
21 - 30	15.99	(11.10	– 20.88)	9.8	0.40	(0.00	– 1.19)	2.8
31 - 40	–	–	–	–	–	–	–	–
41 - 50	–	–	–	–	–	–	–	–
51 - 60	–	–	–	–	–	–	–	–
61 - 70	–	–	–	–	–	–	–	–
71 - 80	–	–	–	–	–	–	–	–
81 - 90	–	–	–	–	–	–	–	–
>90	–	–	–	–	–	–	–	–
Total	163.30	(150.41	– 176.18)	100.0	14.39	(9.84	– 18.94)	100.0

Peat depth, cm	Soil group / Area							
	podzol				cutaway peat			
	1000 ha	(α = 0.05)		%	1000 ha	(α = 0.05)		%
0	26.06	(19.97 – 32.16)		39.2	–	–	–	–
1 - 10	16.03	(11.27 – 20.78)		24.1	0.40	(0.00 – 1.19)		5.5
11 - 20	18.43	(13.26 – 23.60)		27.7	4.02	(1.54 – 6.50)		55.7
21 - 30	5.99	(3.01 – 8.98)		9.0	1.60	(0.03 – 3.17)		22.2
31 - 40	–	–	–	–	1.20	(0.00 – 2.57)		16.6
41 - 50	–	–	–	–	–	–	–	–
51 - 60	–	–	–	–	–	–	–	–
61 - 70	–	–	–	–	–	–	–	–
71 - 80	–	–	–	–	–	–	–	–
81 - 90	–	–	–	–	–	–	–	–
>90	–	–	–	–	–	–	–	–
Total	66.51	(57.55 – 75.47)		100.0	7.23	(3.93 – 10.53)		100.0

Peat depth, cm	Soil group / Area		
	Total		
	1000 ha	(α = 0.05)	%
0	136.12	(123.87 – 148.38)	26.4
1 - 10	38.45	(31.17 – 45.73)	7.5
11 - 20	52.46	(43.94 – 60.99)	10.2
21 - 30	29.60	(23.02 – 36.18)	5.7
31 - 40	23.25	(17.39 – 29.10)	4.5
41 - 50	18.45	(13.19 – 23.70)	3.6
51 - 60	15.23	(10.47 – 19.99)	3.0
61 - 70	4.40	(1.82 – 6.98)	0.9
71 - 80	11.24	(7.15 – 15.34)	2.2
81 - 90	4.42	(1.83 – 7.01)	0.9
>90	181.48	(168.30 – 194.66)	35.1
Total	515.10	(503.58 – 526.62)	100.0



12.7 TERRAIN CLASSIFICATION

12.7.1 Total stocked forest area by ownership and drainage

Definition

Drainage

Soil drainage describes the capacity of the soil to drain water.

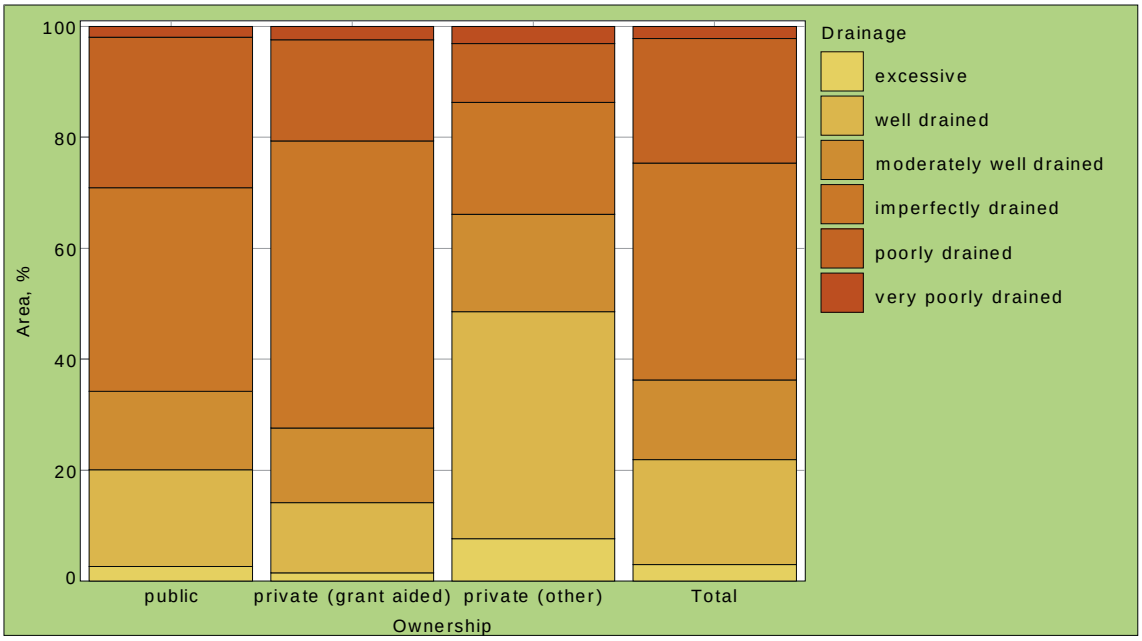
1. **Excessive**: Soil has poor moisture retaining ability, e.g. Coastal Sand.
2. **Well drained**: Site is dry and the soil profile shows no sign of water impedance, e.g. Brown Podzolic with shale parent material.
3. **Moderately well drained**: No significant sign of impedance, e.g. Podzol.
4. **Imperfectly drained**: Drainage is restricted due to the soil texture or presence of an iron pan. When the soil pit has been dug, the hole may partially fill with water, e.g. Surface water gley.
5. **Poorly drained**: Soil has poor capacity to drain excess water. The soil pit will usually fill with water as it is being dug, e.g. Ground water gley.
6. **Very poorly drained**: Site is very wet, i.e. water present at the surface, e.g. Blanket peat – low level.

Methodology

The total stocked forest area is classified by ownership and drainage.

Drainage	Ownership / Area					
	public			private (grant aided)		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
excessive	9.63	(5.98 – 13.28)	2.7	2.80	(0.75 – 4.86)	1.5
well drained	62.54	(53.63 – 71.46)	17.4	23.62	(17.74 – 29.49)	12.6
moderately well drained	50.83	(42.47 – 59.19)	14.1	25.22	(19.16 – 31.28)	13.5
imperfectly drained	131.78	(119.24 – 144.32)	36.7	96.86	(85.86 – 107.86)	51.8
poorly drained	97.82	(86.86 – 108.78)	27.2	34.08	(27.18 – 40.99)	18.2
very poorly drained	6.81	(3.59 – 10.03)	1.9	4.40	(1.81 – 6.99)	2.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Drainage	Ownership / Area					
	private (other)			Total		
	1000 ha	($\alpha = 0.05$)	%	1000 ha	($\alpha = 0.05$)	%
excessive	6.03	(3.07 – 9.00)	7.6	18.47	(13.74 – 23.20)	3.0
well drained	32.47	(25.59 – 39.35)	41.0	118.63	(107.04 – 130.23)	19.0
moderately well drained	14.00	(9.45 – 18.56)	17.6	90.05	(79.39 – 100.71)	14.4
imperfectly drained	16.03	(11.15 – 20.92)	20.2	244.67	(229.92 – 259.42)	39.0
poorly drained	8.41	(4.82 – 11.99)	10.6	140.31	(127.87 – 152.75)	22.4
very poorly drained	2.40	(0.48 – 4.32)	3.0	13.61	(9.08 – 18.14)	2.2
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0


100
80
60
40
20
0
Area, %
public
private (grant aided)
private (other)
Total
Ownership
Drainage
excessive
well drained
moderately well drained
imperfectly drained
poorly drained
very poorly drained

12.7.2 Total stocked forest area by ownership and site roughness

Definition

Site Roughness

Site roughness describes the unevenness of the surface of the terrain.

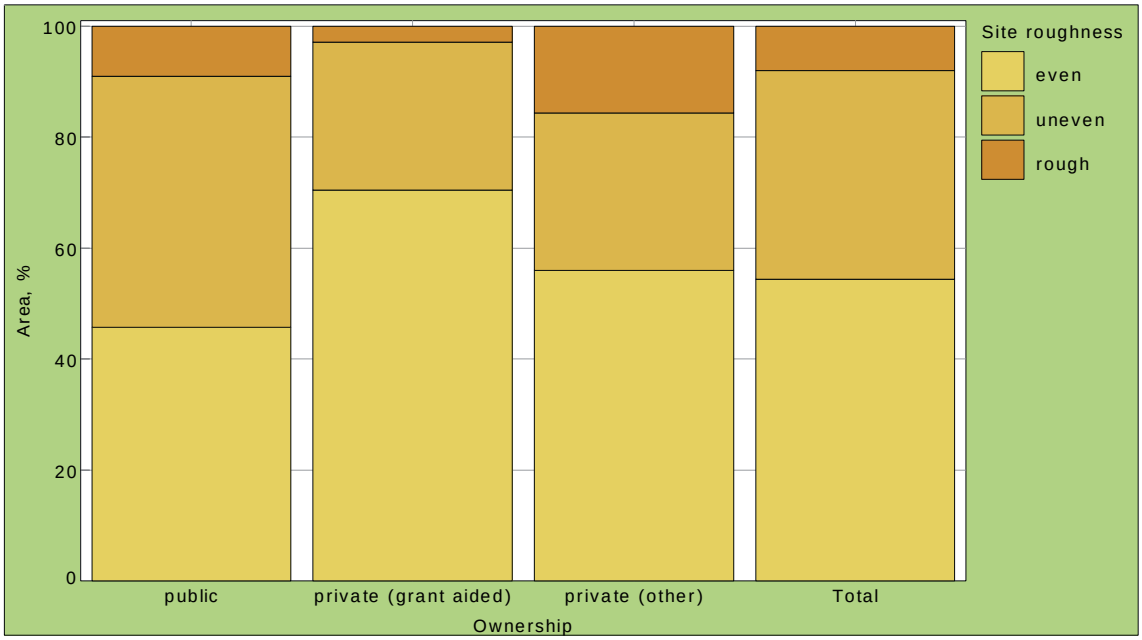
1. **Even**: Even terrain, no obstacles, such as ripping, pit planting, mounding or agricultural ploughing.
2. **Uneven**: Obstacles frequent, but these do not restrict normal forest management practices e.g. SMB or DMB. Some mounded sites may also be included if there is a high frequency of drains.
3. **Rough**: Obstacles occurring frequently of a size that may restrict or require modifications to normal forest management practices. e.g. deep drains, boulders, etc.

Methodology

The total stocked forest area is classified by ownership and site roughness

Site roughness	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even	164.45	(150.97 – 177.92)	45.8	131.74	(119.25 – 144.23)	70.4
uneven	162.63	(149.31 – 175.95)	45.2	50.04	(41.68 – 58.41)	26.8
rough	32.33	(25.59 – 39.08)	9.0	5.20	(2.38 – 8.02)	2.8
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Site roughness	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
even	44.46	(36.60 – 52.32)	56.1	340.65	(325.72 – 355.57)	54.4
uneven	22.47	(16.74 – 28.20)	28.3	235.15	(220.43 – 249.86)	37.6
rough	12.41	(8.08 – 16.74)	15.6	49.95	(41.71 – 58.19)	8.0
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



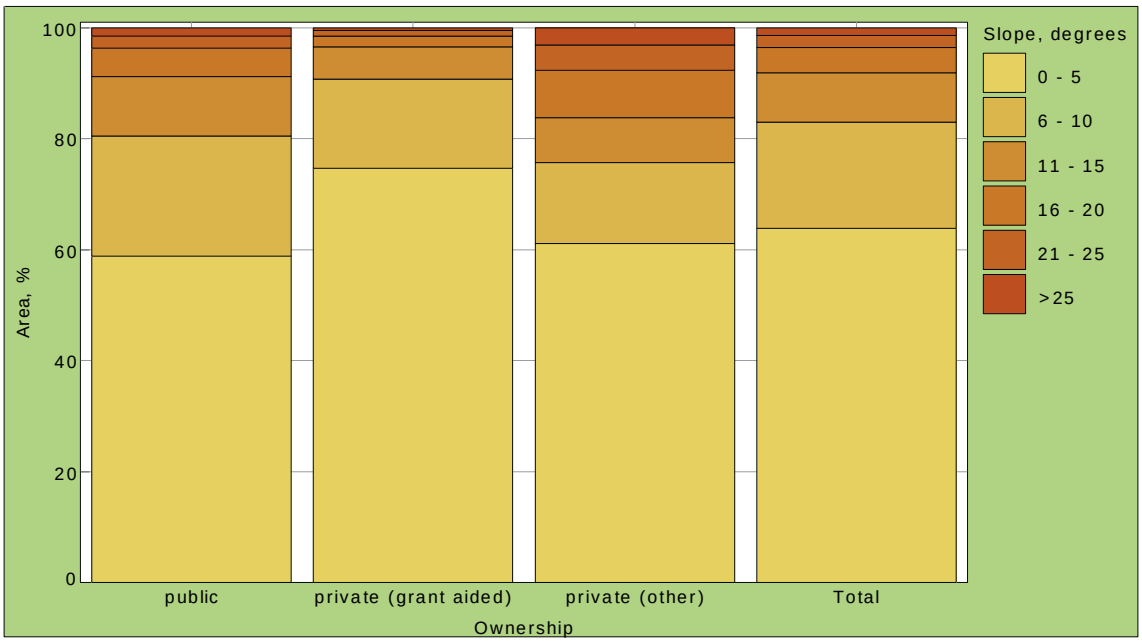
12.7.3 Total stocked forest area by ownership and slope

Methodology

The total stocked forest area is classified by ownership and slope.

Slope, degrees	Ownership / Area					
	public			private (grant aided)		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 5	211.61	(197.20 – 226.01)	59.0	139.72	(127.07 – 152.37)	74.7
6 - 10	77.74	(67.61 – 87.87)	21.6	30.04	(23.41 – 36.66)	16.1
11 - 15	38.44	(31.04 – 45.83)	10.7	10.84	(6.81 – 14.87)	5.8
16 - 20	18.42	(13.22 – 23.62)	5.1	3.60	(1.25 – 5.94)	1.9
21 - 25	8.02	(4.53 – 11.50)	2.2	2.00	(0.25 – 3.75)	1.1
>25	5.19	(2.39 – 7.99)	1.4	0.79	(0.00 – 1.90)	0.4
Total	359.41	(344.28 – 374.54)	100.0	186.99	(173.02 – 200.95)	100.0

Slope, degrees	Ownership / Area					
	private (other)			Total		
	1000 ha	(α=0.05)	%	1000 ha	(α=0.05)	%
0 - 5	48.48	(40.34 – 56.62)	61.2	399.81	(385.54 – 414.07)	63.9
6 - 10	11.62	(7.43 – 15.81)	14.6	119.39	(107.33 – 131.45)	19.1
11 - 15	6.42	(3.30 – 9.54)	8.1	55.69	(46.95 – 64.44)	8.9
16 - 20	6.81	(3.59 – 10.04)	8.6	28.83	(22.37 – 35.29)	4.6
21 - 25	3.61	(1.25 – 5.96)	4.5	13.62	(9.10 – 18.15)	2.2
>25	2.41	(0.50 – 4.32)	3.0	8.40	(4.84 – 11.96)	1.3
Total	79.35	(69.10 – 89.60)	100.0	625.75		100.0



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Further Information
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Tá breis eolais le fáil ach glaoch ar:
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Eastát Chaisleán Bhaile Sheonach
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