

# NFI woodland ecological condition in Scotland: Statistics

National Forest Inventory

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## Summary

The National Forest Inventory (NFI) provides a record of the size, distribution and other key attributes of forests and woodlands<sup>1</sup> in Great Britain. The NFI is composed of two elements; an earth observation programme to identify the location and extent of woodlands and a fieldwork programme to assess woodland composition. Data enabling the calculation of 15 ecological condition indicators were measured as part of the NFI survey cycle 2010-2015 and compared to a benchmark of a stand of ancient semi-natural woodland (ASNW) in good condition. This enabled woodland stands to be classified as favourable, intermediate or unfavourable in terms of their ecological condition. These results can be collated and reported upon for any geographic area in Britain (minimum size 30,000 ha). In this series of reports and in supporting data spreadsheets, scores and classes are presented by native woodland type and priority habitat type, broken down by country and region in Britain.

A series of complementary reports has been produced to describe the methodology used, to set out the underpinning statistics on the condition indicators and classes, and to summarise the results. Figure 1 illustrates the report and data products available.

For a brief summary of the work or for full details of the methodology please refer to:

- *NFI Woodland ecological condition in Great Britain: Executive Summary*
- *NFI Woodland ecological condition in Great Britain: Methodology*

For the statistical results for other countries please refer to:

- *NFI Woodland ecological condition in [country<sup>2</sup>]: Statistics*

For the classification results for the individual British countries please refer to:

- *NFI Woodland ecological condition in [country<sup>2</sup>]: Classification Results*

Results for individual priority woodland habitat types can be found in the supporting data:

- *NFI Woodland Ecological Condition in [country]: Supporting Data<sup>3</sup>*

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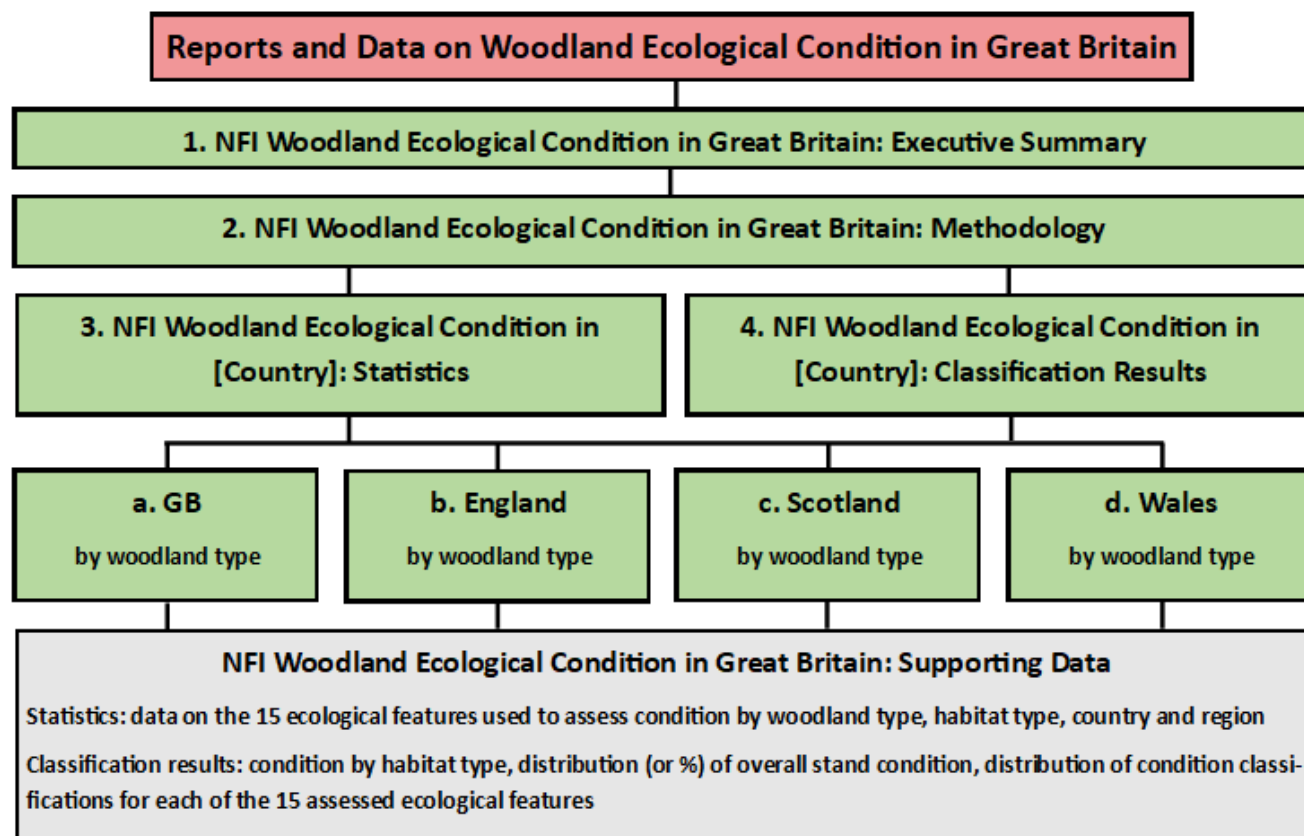
<sup>1</sup> The NFI defines woodland as areas of tree canopy over 0.5 hectare in extent and 20% canopy cover

<sup>2</sup> There are four separate reports; Great Britain, England, Scotland and Wales

<sup>3</sup> Supporting/additional data are available as MS-Excel® spreadsheets

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**Figure 1** A diagram to illustrate the link between all the reports published by the NFI on the study of woodland ecological condition in Great Britain



Notes: [green boxes] = published reports; [grey box] = detail available in supporting spreadsheets; [pink box] = over-arching theme. GB = Great Britain.

Ten reports have been published in relation to woodland ecological condition, namely; executive summary, methodology, statistics and classification results:

1. The Executive Summary spans all three topics presenting an overview of the methodology, key results and sign-posting to more detail;
2. The methodology describes the survey methodology and the calculation of the condition scores;
3. The statistics reports describe the key results, one for each of the three countries and Great Britain, and;
4. The classification results describe woodland condition (as calculated by the NFI Condition Calculator, see Methodology) by woodland type.

## Key findings

- The total area of native woodland in Britain is 1.51 million hectares, around 500,000 hectares or 50% higher than reported in previous estimates.
- The total area of native woodland in Scotland is 443 thousand hectares, around 132 thousand hectares or 30% higher than reported in previous estimates.
- In Scotland there are 124 thousand hectares of native pinewood, 120 thousand hectares of upland birchwood, 82 thousand hectares of lowland mixed deciduous woodland, 63 thousand hectares of wet woodland, 33 thousand hectares of upland oakwood, 15 thousand hectares of upland mixed ashwoods and 21 thousand hectares of broadleaved mixed yew woodlands which were not classified into a priority habitat type.
- In Scotland 77% of native stands have less than 5 % non native species in the upper canopy.
- 42% of native stands have 4 or more native tree species per stand in Scotland.
- Regeneration of young trees occurs in some form in most native stands and only 13% of native stands have neither seedlings, saplings or young trees.
- 61% of native stands have signs of herbivore browsing damage below 1.8 metres in Scotland and 39% are undamaged.
- 8% of native woodland stands in Scotland have invasive species present.

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## 1 Introduction

British woodlands are dynamic entities and ecological condition will change in response to several drivers including changing woodland management, general land use practices and impacts such as changes in climate. Through these and other factors there is a growing requirement across government, non-governmental organisations and the private sector to understand the ecological condition of British Woodlands.

This is the largest and most in-depth direct field-based assessment of woodland ecological condition to have been carried out in Britain to date. The study has been run in combination with the [National Forest Inventory](#) (NFI) that records the size, distribution and composition of woodland in Great Britain.

### 1.1 Aim

The purpose of this report is to present the statistical results of the woodland ecological condition assessment in Scotland, broken down by woodland type. These data serve as evidence to support the scoring and classification of woodland ecological condition. They also form an evidence base for further analytical work.

### 1.2 The importance of understanding the ecological condition of Britain's woodlands

There are several drivers for monitoring woodland ecological condition. The primary objective is to provide government with statistics that reflect woodland ecological condition and the main factors that impact condition, so that they can make informed decisions concerning the current state of woodland ecological condition and its management. Secondly, it is the UK's national and international requirement to monitor woodland condition. The UK government signed the following global and pan-European (EU) agreements in 1992 which led to commitments concerning the protection of biodiversity:

- The global Convention on Biological Diversity (CBD; <https://www.cbd.int>). Contracting parties are required to develop and enforce national strategies to identify, conserve and protect existing biodiversity. [Article 7](#) of the convention focuses on the requirement for identification and monitoring of biodiversity.
- The [EU Habitats Directive](#) (Directive 92/43/EEC) aims to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on its Annexes to a favourable conservation status (JNCC, 2018<sup>1</sup>). Article 17 of the directive

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<sup>1</sup> JNCC, 2018. 2nd UK Report on Implementation of the Habitats Directive. Accessed online: <http://jncc.defra.gov.uk/page-4060>, November 2018.



specifically requires members to report an assessment of the conservation status of species and habitats listed on the Annexes of the Directive every 6 years.

## 1.3 Measuring ecological condition

The [National Forest Inventory](#) (NFI) ground surveys 1 hectare sample squares that partially or entirely contain woodlands (including clear felled areas). Over the course of the first cycle of the NFI (2010 to 2015), over 15,000 sample squares in Great Britain have been surveyed, around 6,100 of which were in Scotland. The surveyed sample squares were selected as part of a stratified random sample, designed by the NFI to be representative of all woodland in Britain. The sample squares used for these reports were first surveyed during the first cycle of the National Forest Inventory fieldwork (completed in late 2015); a rolling programme designed to provide accurate information about the size, distribution, composition and condition of woodlands in Britain over time. To assess ecological condition; in each woodland stand assessed in a sample square, assessments were made for 15 different ecological features that are considered good indicators of ecological condition (woodland ecological condition indicators (WEC indicators)), the statistics for which are reported here. Full details of the methodology are provided in the complementary methodology report (see Figure 1).

The 15 WEC indicators assessed by the NFI are:

1. Age distribution of trees
2. Wild, domestic and feral herbivore damage
3. Invasive plant species
4. Number of native tree species
5. Occupancy of native trees
6. Open space within woodland
7. Proportion of favourable land cover around woodland; woodland cover and other favourable habitat
8. Woodland Regeneration: Stand or component group-level<sup>1</sup>
9. Woodland Regeneration: Square-level
10. Tree health
11. Vegetation and ground flora
12. Woodland vertical structure
13. Veteran trees
14. Volume of deadwood
15. Size of woodlands

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<sup>1</sup> Component group = Homogeneous areas that are too small (<0.05 ha) to practically map as a discrete section using Geographic Information System (GIS) software in the field, but with most of the same defining characteristics as a section. Section = within each sample square, the forest was stratified into different woodland stands or 'sections'.

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The WEC indicators were devised, reviewed and agreed in 2009 by specialists from Natural England, Forestry Commission, Forestry England, Scottish Forestry, Scottish Natural Heritage, Natural Resources Wales and the Welsh Government, under advice from RSPB and Woodland Trust. The WEC indicators and classification thresholds selected were based on other suggested and established woodland indicators (e.g. the [Common Standards Monitoring](#) approach for protected sites, JNCC), the best available scientific evidence, expert opinion and each country's reporting requirements.

## 1.3.1 The NFI map: an overview

The location and extent of all forests and woodlands in the UK ( $\geq 0.5$  hectares) is identified by the National Forest Inventory (NFI) and the resultant data is available in the form of a [digital woodland map](#). The map is updated annually and provides current and historical information on the distribution, type and size of forests and woodland in the UK. The digital woodland map is produced using aerial photography, satellite imagery and administrative records.

## 1.3.2 Sample square evaluation: an overview

NFI fieldwork samples squares are located within the bounds of the NFI woodland map. The NFI stratifies the area within each 1 hectare sample square into forest and non-forest and the forested area/s within the sample square are further stratified by the type of woodland present into distinct woodland stands. Within each forest stand information on tree species, tree age, management regime and data to assess each of the 15 WEC indicators described above was collected (see complimentary methodology report). Additionally, individual stands were vertically stratified into several layers or storeys if tree height widely differed and formed distinct bands of tree heights.

Typically, there are multiple stands and / or parts of stands within each sample square. This means, from the circa 6,000 sample squares covered by the NFI in Scotland, circa 14,900 forest stands have been assessed for ecological condition. Within each stand two or three 100 m<sup>2</sup> (0.01 hectare) circular plots were randomly located. Within each of these circular plots tree stocking was assessed and tree species, age, grid location and diameter breast height (DBH) was recorded for all trees  $\geq 4$  cm DBH. A total of some 240,000 trees were measured in Scotland. Transects were also conducted within one circular plot per stand to assess the volume of lying deadwood, and the presence and the amount of seedlings and saplings.

Each of the sample squares and circular plots are marked on the ground with metal pegs and their exact location recorded by GPS to allow for quality assurance checks and future assessment. All field measurements and information are subject to quality assurance checks.

Woodland condition parameters were assessed post survey and then stands were scored as either favourable, intermediate or unfavourable, by comparing each of the 15

indicators to a benchmark, namely 'semi-natural woodland in favourable condition' (refer to the Methodology report for more information).

The data collected for each of the 15 WEC indicators within the survey sample squares were extrapolated, using standard statistical survey methodology, to the areas of woodland recorded on the NFI map to produce the estimates presented in this report. Statistics for the 15 WEC indicators for Scotland are presented in this report, broken down by different woodland types (native, near-native and fragments, non-native). Results specifically for England, Wales and Great Britain are presented in companion statistics reports. For more detailed information on the methodology used to produce these statistics refer to the methodology report (see Figure 1).

### 1.3.3 Extrapolating NFI field survey statistics to a reporting area

The data collected within each survey sample square (used for the 15 WEC indicators), the derived scores and the classifications were extrapolated and aggregated to the areas of woodland recorded in the NFI map (e.g. woodland type) using standard statistical survey methodology. The classifications of each stand can also be extrapolated up to any sub class of woodland area, such as woodland type or habitat type (minimum size 30, 000 ha) and in turn broken down by any geographic area, such as by country or NFI region, as in this report. This report presents the results for different woodland types (native, near-native and fragments', non-native) for Scotland, results specifically for GB, England and Wales are presented in companion reports (see Figure 1). Results for individual priority woodland habitats are available in the supplementary data.

### 1.3.4 The NFI Condition Calculator: an overview

To report on condition using the NFI data, an analytical tool was developed, referred to herein as the NFI 'Condition Calculator'. This tool allows the detailed data recorded in each NFI survey square to be analysed alongside the NFI woodland map and other data. It automatically produces the stand-level condition results per woodland type and aggregated statistics for the reporting area. The advantages of establishing an automated reporting tool are that results can be generated on demand using a consistent approach. The Condition Calculator will therefore allow the data from future cycles of the NFI to be analysed using the same procedures, enabling reliable comparisons for reporting on change.

## 1.4 Definition of woodland classes

### **Woodland area**

An area of land over 0.5 hectares in extent, with 20 % or more tree canopy cover, or the potential to achieve that based upon established trees.

### **Native woodland habitat**

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Stands with 50% or more native tree species occupancy in the upper canopy that either:

- Form a discrete woodland parcel with a minimum area of 0.5 ha.
- Form a woodland stand with a minimum area of 0.1 ha that is part of a woodland that is 0.5 ha or larger.

## **Non-native woodland habitat**

Stands with less than 40% native species occupancy sitting within a woodland of any size.

## **Near native and fragments**

Stands that fail to meet the criteria for native or non-native woodland specified above are classified as 'near native and fragments'. Defining this category allows all woodland area to be assessed and reported on for its ecological condition status. Pinpointing these areas of woodland may help inform targeted restoration, as they may represent previously native woodland area that has been overplanted with non-natives.

The near native and fragments woodland type can be subdivided into two subclasses:

1. **Near native:** have a native canopy cover of somewhere between 40% to 49% and thus are 'nearly' native.
2. **Fragments:** have 50% or more native tree species occupancy in the upper canopy but fall under the minimum size threshold of 0.1 ha, falling in the size range 0.05 ha to 0.099 ha.

## **Not determinable**

Areas classified as 'not determinable' apply to woodland areas that cannot be classified due to insufficient tree or other attribute information, such as areas without canopy cover and clear-fell sites with a weak vegetation layer. These form less than 0.5% of the whole woodland population.

For a brief summary of the study please refer to *NFI Woodland ecological condition in Great Britain: Executive Summary* report. For more information about the methodology used to conduct this study please refer to *NFI Woodland ecological condition in Great Britain: Methodology*. For more information about the statistical results for other countries please refer to *NFI Woodland ecological condition in [country]: Statistics*. For more information about the classification of woodland to describe ecological condition please refer to *NFI Woodland ecological condition in Great Britain: Classification Results* (see Figure 1).

## 2 Results

Presented here are the statistical results of the woodland ecological condition assessment of woodland in Scotland, broken down by woodland type. Given the large volume of data gathered in this study it was decided that the statistical reports would focus on results by country and native woodland type. Results by habitat type and region are available in the supporting data Excel spreadsheets.

The nominal baseline date for estimates is an average of 2013 (mid-point of the survey) and the time period over which the full series of field samples were collected was January 2010 to January 2016.

All values reported for area are rounded to the nearest 100 hectares. The values reported in the tables have been independently rounded, so may not add to any totals shown.

Sampling standard errors (SE) attached to estimates are expressed in relative terms (%) to the right of the relevant estimate. The sampling standard error will account for random variation arising from the selection of the sample and random measurement errors. However, standard error will not account for any systematic biases in the field measurements, but it is unlikely that any substantial biases of this nature are present in the survey data because of NFI quality assurance processes. Also, the scale and duration of the survey help to mitigate this risk, as systematic errors are unlikely across all surveyors and equipment over the 5 years. Any standard error greater than 25% is reported in amber text and represents a lower degree of assurance in the estimates.

Charts values are presented as a proportion of total woodland area within the country.

## 3 Woodland habitat area

Total area for all woodland, separated into priority woodland habitats and native woodland types, is presented in this report (Table 3.1). Woodland loss in priority woodland habitats is a threat to the habitat because once lost it is very difficult or impossible to replace. The most recent data on total areas of woodland loss and estimates of annual new planting in Great Britain is available in the NFI report *Preliminary estimates of the changes in canopy cover in British woodlands between 2006 and 2015*, however this data cannot determine if this is native or not or if it falls into any priority habitat type.

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**Table 3-1** Area of woodland habitat type for each country and region of GB at 2013

Region	Lowland beech/yew woodland	Lowland mixed deciduous woodland	Native pine woodlands	Non-HAP native pinewood	Upland birchwoods (Scot); birch dominated upland oakwoods (Eng, Wal)	Upland mixed ashwoods	Upland oakwoods	Wet woodland	Wood pasture & parkland	Broadleaf habitat NOT classified as priority	Non-native coniferous woodland	Clearfelled and transition	TOTAL
	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
<b>GB</b>	<b>61,925</b>	<b>908,666</b>	<b>123,577</b>	<b>37,932</b>	<b>133,528</b>	<b>53,685</b>	<b>103,088</b>	<b>169,403</b>	<b>10,895</b>	<b>53,020</b>	<b>1,292,115</b>	<b>97,456</b>	<b>3,045,290</b>
<b>ENGLAND</b>	<b>54,482</b>	<b>747,508</b>	<b>0</b>	<b>0</b>	<b>11,220</b>	<b>31,907</b>	<b>44,027</b>	<b>77,789</b>	<b>7,730</b>	<b>19,401</b>	<b>327,536</b>	<b>21,967</b>	<b>1,343,568</b>
North West England	2,980	45,578	0	0	4,004	5,101	9,351	8,081	264	4,356	39,085	2,608	121,408
North East England	1,409	23,494	0	0	3,628	4,965	1,513	5,008	15	2,058	73,895	1,518	117,503
Yorkshire and the Humber	3,680	59,873	0	0	1,421	3,241	5,192	5,704	280	3,847	35,511	1,235	119,984
East Midlands	724	70,148	0	0	431	2,390	5,219	5,619	798	1,017	14,758	1,474	102,577
East England	3,739	94,807	0	0	0	309	840	13,497	1,178	1,101	34,368	4,468	154,305
South East England	24,700	245,410	0	0	0	1,758	323	9,761	4,946	2,740	49,670	5,582	344,890
South West England	15,133	138,219	0	0	1,336	8,337	15,586	23,212	154	2,459	54,579	3,021	262,036
West Midlands	2,116	69,980	0	0	401	5,805	6,004	6,906	95	1,824	25,671	2,060	120,863
<b>SCOTLAND</b>	<b>1,018</b>	<b>81,946</b>	<b>123,577</b>	<b>37,932</b>	<b>120,087</b>	<b>14,634</b>	<b>32,934</b>	<b>63,439</b>	<b>2,679</b>	<b>21,396</b>	<b>819,388</b>	<b>69,861</b>	<b>1,388,891</b>
North Scotland	0	4,034	31,642	16,626	25,848	1,269	4,764	9,243	0	2,007	106,962	21,110	223,503
North East Scotland	208	12,417	66,236	20,387	20,054	616	1,176	9,182	204	2,567	92,691	6,889	232,627
East Scotland	512	14,974	17,287	556	14,586	1,937	3,438	5,795	468	2,199	67,269	4,707	133,728
South Scotland	96	41,681	1,424	0	13,874	7,128	6,206	19,591	2,007	8,413	310,353	14,625	425,398
West Scotland	201	8,840	6,988	364	45,725	3,685	17,351	19,627	0	6,209	242,113	22,531	373,635
<b>WALES</b>	<b>6,424</b>	<b>79,211</b>	<b>0</b>	<b>0</b>	<b>2,221</b>	<b>7,144</b>	<b>26,126</b>	<b>28,175</b>	<b>486</b>	<b>12,224</b>	<b>145,192</b>	<b>5,628</b>	<b>312,831</b>

Note: 1. The wood pasture area in the above table only relates to wood pasture as defined by NFI as woodland; i.e. woodland must be over 0.5 hectares in extent, over 20% canopy cover and 20 m in width to qualify. Although there is no agreed British definition of wood pasture and this will be a reasonable proxy of wood pasture area, some definitions of wood pasture would include land that contains less than 20% canopy cover and this area is excluded from the estimates above. 2. Lowland beech / yew woodland outside the beech zone will be yew dominated. 3. Area includes a revision to underlying total woodland area (this will be revised in Forestry Facts and Figures Sept 2020). Comparisons with woodland area should not be made as woodland area is defined differently to woodland habitat (with woodland area being greater than habitat area due to the treatment of land uses like open space and clear-fell). 4. Upland oakwood dominated by birch in Wales has been classified as birch dominated upland oakwoods.

# NFI woodland condition statistics

**Table 3-2** Area of native woodland for each country and region of GB

Region	Native	Near native & fragments	Non native	Not determinable	Total
	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
<b>GB</b>	<b>1,507,105</b>	<b>56,776</b>	<b>1,461,267</b>	<b>19,629</b>	<b>3,044,777</b>
<b>ENGLAND</b>	<b>914,095</b>	<b>29,459</b>	<b>398,186</b>	<b>1,706</b>	<b>1,343,446</b>
North West England	73,932	2,329	45,152	421	<b>121,834</b>
North East England	36,201	3,005	77,982	149	<b>117,338</b>
Yorkshire and the Humber	68,954	3,783	46,837	271	<b>119,845</b>
East Midlands	73,964	2,305	26,272	37	<b>102,577</b>
East England	107,595	3,323	43,206	181	<b>154,306</b>
South East England	280,796	6,494	57,302	308	<b>344,901</b>
South West England	186,732	4,654	70,192	205	<b>261,782</b>
West Midlands	85,920	3,566	31,243	134	<b>120,863</b>
<b>SCOTLAND</b>	<b>442,611</b>	<b>20,313</b>	<b>908,259</b>	<b>17,205</b>	<b>1,388,388</b>
North Scotland	94,541	3,303	119,908	5,751	<b>223,503</b>
North East Scotland	111,260	3,781	115,197	2,248	<b>232,485</b>
East Scotland	48,860	2,647	80,049	2,171	<b>133,728</b>
South Scotland	78,739	7,026	336,526	2,709	<b>425,000</b>
West Scotland	109,211	3,556	256,579	4,327	<b>373,672</b>
<b>WALES</b>	<b>150,399</b>	<b>7,004</b>	<b>154,822</b>	<b>718</b>	<b>312,943</b>

Notes: 1. Woodland types are defined in Section 1.4. 2. Area includes a revision to underlying total woodland area (this will be revised in Forestry Facts and Figures Sept 2020). Comparisons with woodland area should not be made as woodland area is defined differently to woodland habitat (with woodland area being greater than habitat area due to the treatment of land uses like open space and clear-fell).

This is the first British assessment of the extent of native woodland and priority habitat type based on a balanced stratified random sample of woodlands. There have been two previous assessments of native woodland extent:

1. The [Native Woodland Survey of Scotland \(NWSS\)](#), a census of native woods in Scotland, dated 2012 (survey took place between 2006 and 2013). This identified, surveyed and mapped the location, extent, type and condition of all of Scotland's native and nearly native woods, as well plantations on ancient woodland sites (PAWS).
2. JNCC created estimates of the area of UK BAP priority woodlands in 1998 using National Vegetation Classification (NVC) data, utilising 2,648 samples taken in ancient and recent woods throughout Britain (Rodwell 1991).

Direct comparisons between the estimates from NFI, NWSS and the JNCC NVC to describe native woodland extent should not be made because of differences in the methodologies.

## 4 Age distribution of trees in Scotland

**Table 4-1** Age bands of trees found within single woodland stands in Scotland by area and woodland type

Woodland Type	Not applicable		Young only		Young & intermediate		Young intermediate old	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	2,085	16	95,490	5	191,163	3	42,263	6
Near native & fragments	341	43	4,056	10	9,186	14	1,998	27
Non native	19,813	5	200,288	2	260,685	2	9,038	14
Not determinable	17,181	6	0	–	0	–	0	–
<b>Total</b>	<b>39,420</b>	<b>4</b>	<b>299,834</b>	<b>2</b>	<b>461,034</b>	<b>2</b>	<b>53,299</b>	<b>5</b>

Woodland Type	Young & old		Intermediate only		Intermediate & old		Old only		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	3,596	19	89,019	4	16,335	10	2,660	27	442,611	2
Near native & fragments	14	70	4,173	15	543	43	2	51	20,313	8
Non native	291	70	413,055	2	4,884	18	203	81	908,259	1
Not determinable	0	–	24	56	0	–	0	–	17,205	6
<b>Total</b>	<b>3,902</b>	<b>18</b>	<b>506,271</b>	<b>2</b>	<b>21,762</b>	<b>8</b>	<b>2,865</b>	<b>26</b>	<b>1,388,388</b>	<b>1</b>

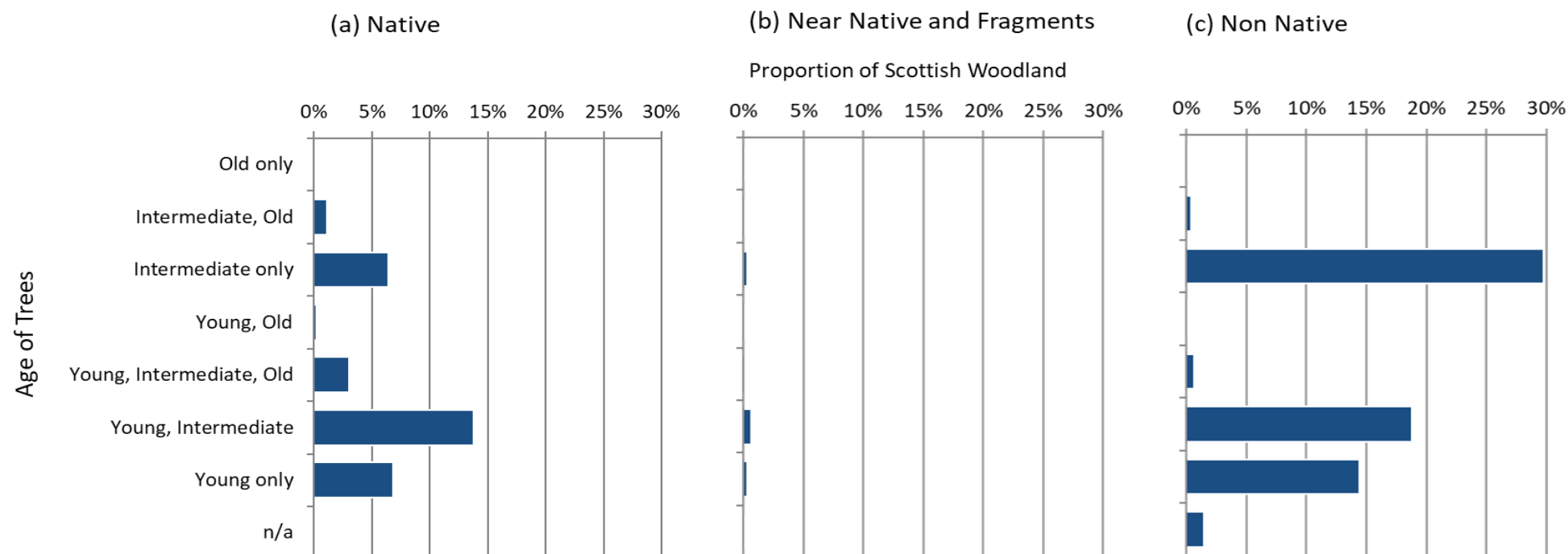
### Notes:

1. Tree Age: if birch, cherry or Sorbus species then; young = 0-20 years, intermediate = 21–60 years, old >60 years, all other species; young = 0-20 years, intermediate = 21-150 years, old >150 years.
2. SE = standard error. Amber text = values with SE >25%.
3. Woodland types are defined in Section 1.4.



# NFI woodland condition statistics

**Figure 4-1** Age bands of trees found within single woodland stands in Scotland by area and native woodland type



## Notes:

1. (a) Native woodlands; (b) Near native woodlands and fragments; (c) Non native woodland
2. Tree Age: if Birch, cherry or sorbus species then; young = 0-20 years, intermediate = 21-60 years, old >60 years, all other species; young = 0-20 years, intermediate = 21-150 years, old >150 years.
3. Woodland types are defined in Section 1.4.

## 5 Wild, domestic and feral herbivore browsing damage in Scottish woodland

**Table 5-1** Areas of different levels of herbivore damage in Scottish woodland, by woodland type

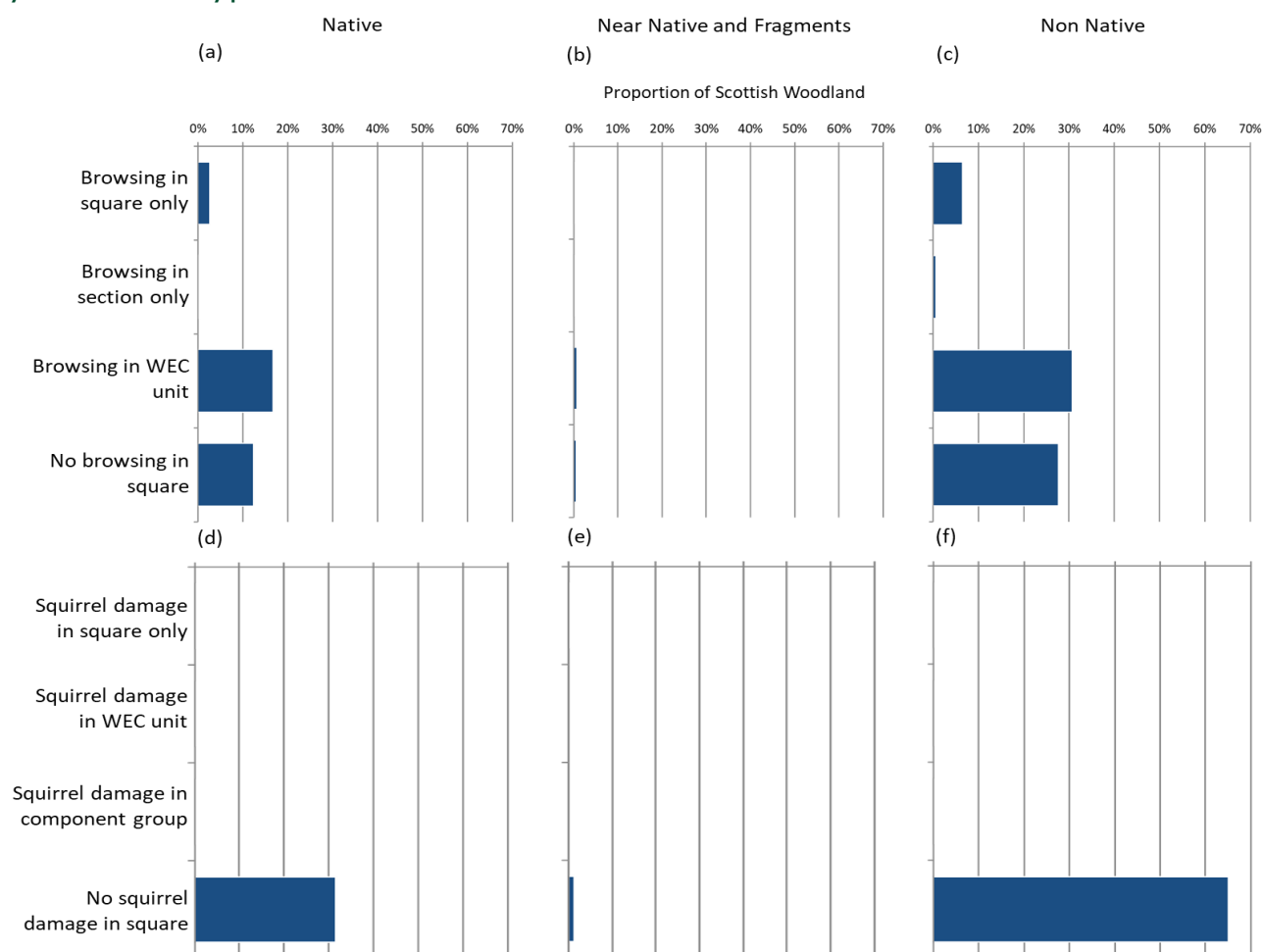
Woodland Type	No browsing in square		Browsing in component group		Browsing in section only		Browsing in square only		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	172,283	3	231,857	3	3,327	17	35,638	5	<b>443,104</b>	<b>2</b>
Near native & fragments	8,048	12	9,725	13	634	26	1,938	16	<b>20,345</b>	<b>8</b>
Non native	383,434	2	426,226	2	8,955	12	89,958	4	<b>908,573</b>	<b>1</b>
Not determinable	10,046	8	416	20	2,326	11	4,420	10	<b>17,208</b>	<b>6</b>
<b>Total</b>	<b>573,811</b>	<b>2</b>	<b>668,224</b>	<b>1</b>	<b>15,241</b>	<b>8</b>	<b>131,954</b>	<b>3</b>	<b>1,389,230</b>	<b>1</b>

Woodland Type	No squirrel damage in square		Squirrel damage in component group		Squirrel damage in section only		Squirrel damage in square only		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	439,434	2	1,419	28	63	84	2,189	28	<b>443,104</b>	<b>2</b>
Near native & fragments	19,734	8	0	–	0	–	611	39	<b>20,345</b>	<b>8</b>
Non native	903,237	1	3,015	23	28	85	2,293	27	<b>908,573</b>	<b>1</b>
Not determinable	17,208	6	0	–	0	–	0	–	<b>17,208</b>	<b>6</b>
<b>Total</b>	<b>1,379,613</b>	<b>1</b>	<b>4,434</b>	<b>18</b>	<b>91</b>	<b>64</b>	<b>5,093</b>	<b>18</b>	<b>1,389,230</b>	<b>1</b>

### Notes:

1. Browsing damage: including damage to seedlings and saplings and fraying or stripping of bark less than 1.8m above ground level
2. Squirrel damage: damage is assumed where bark stripping damage is observed greater than 1.8m above ground level.
3. The absence of herbivore damage means that no damage has been observed, as opposed to an absence of damage.
4. For definitions of Square, Section and Component group see glossary.
5. SE = standard error. Amber text = values with SE > 25%.
6. Woodland types are defined in section 1.4.
7. Damage includes all domestic, wild and feral species that can browse a tree. Refer to the methodology report for more information.

**Figure 5-1** Areas of different levels of herbivore damage in Scottish woodland, by woodland type



**Notes:**

1. (a) Browsing damage in native woodland; (b) Browsing damage in other types of woodland; (c) Browsing damage in non-native woodland; (d) Squirrel damage in native woodland; (e) Squirrel damage in other types of woodland; (f) Squirrel damage in non-native woodland.
2. For full definitions of square, section and woodland types see section 1.4 and method report.
3. Woodland ecological condition (or WEC) unit = a stand or group of stands that meet the woodland type criteria (e.g. native) and are the stand or a grouping of similar stands being evaluated.
4. Browsing and damage classes are structured based on 'closeness' of damage; browsing in WEC unit (the actual evaluation area is directly damaged), browsing in section only (the actual evaluation area is not directly damaged but damage is adjacent), browsing in square only (browsing further away).
5. Browsing damage: includes damage to seedlings and saplings and fraying or stripping of bark less than 1.8m above ground level.
6. Squirrel damage: where bark stripping damage is observed greater than 1.8m above ground level.
7. Damage includes all domestic, wild and feral species that can browse a tree.
8. The absence of herbivore damage means that no damage has been observed, as opposed to an absence of damage.

## 6 Invasive plant species in Scotland

**Table 6-1** Area of woodland in Scotland with invasive plant species cover by woodland type

Woodland Type	None		≤ 10%		> 10%		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	408,394	2	22,026	8	12,683	15	<b>443,104</b>	<b>2</b>
Near native & fragments	16,107	9	2,240	24	1,998	28	<b>20,345</b>	<b>8</b>
Non native	867,107	1	33,044	7	8,422	13	<b>908,573</b>	<b>1</b>
Not determinable	16,949	6	259	52	0	0	<b>17,208</b>	<b>6</b>
<b>Total</b>	<b>1,308,557</b>	<b>1</b>	<b>57,569</b>	<b>5</b>	<b>23,104</b>	<b>10</b>	<b>1,389,230</b>	<b>1</b>

**Table 6-2** Area of woodland in Scotland with a presence or absence of Rhododendron or Laurel by woodland type.

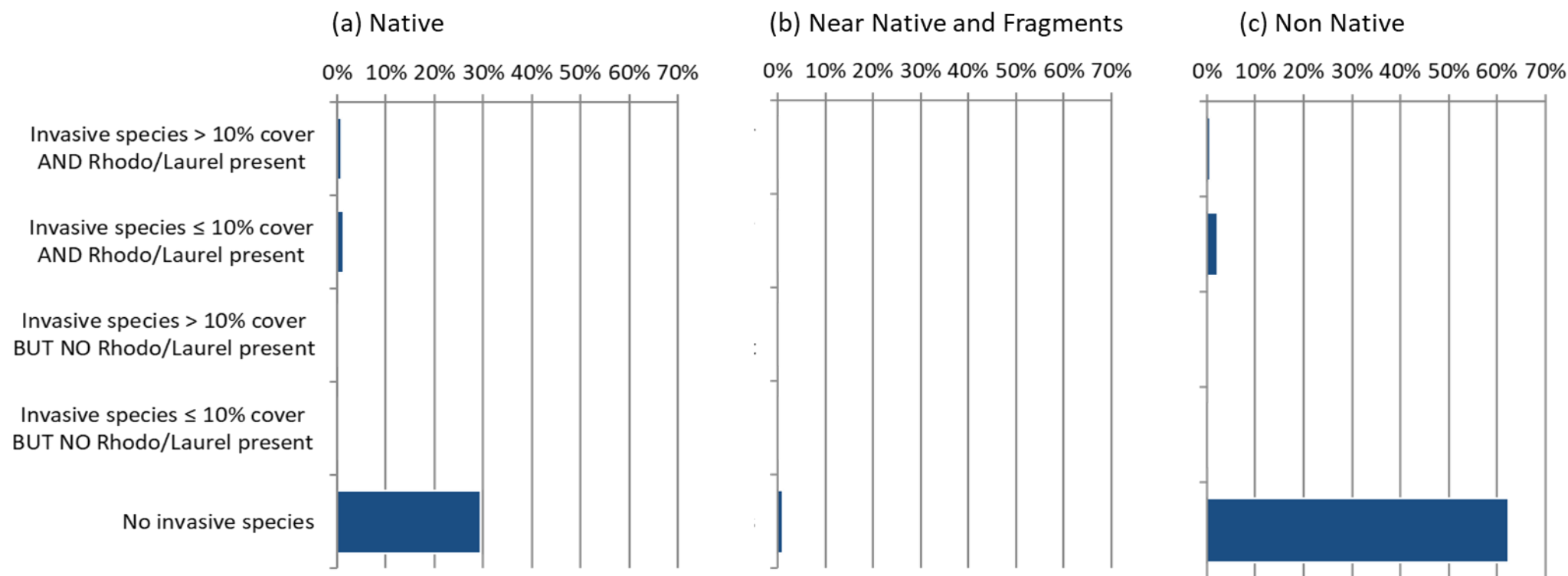
Woodland Type	Present		Absent		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	31,466	8	411,638	2	<b>443,104</b>	<b>2</b>
Near native & fragments	4,058	19	16,287	9	<b>20,345</b>	<b>8</b>
Non native	39,843	6	868,730	1	<b>908,573</b>	<b>1</b>
Not determinable	259	52	16,949	6	<b>17,208</b>	<b>6</b>
<b>Total</b>	<b>75,626</b>	<b>5</b>	<b>1,313,604</b>	<b>1</b>	<b>1,389,230</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE >25%.
2. Woodland types are defined in Section 1.4.
3. Refer to methods for a list of all species classified as invasive and further information.
4. Table 7.1 is inclusive of rhododendron and laurel.

# NFI woodland condition statistics

**Figure 6-1** Proportion of woodland area in Scotland with invasive plant species cover and presence/absence of rhododendron or laurel by woodland type



Notes: 1. (a) Native woodland (b) Near-native and fragments (c) Non-native woodland. 2. Rhodo = Rhododendron. 3. Woodland types are defined in Section 1.4, refer to methods for a list of all species classified as invasive.

## 7 Number of native tree species in a stand

**Table 7-1** The number of different native tree species present in Scottish stands by woodland type

Woodland Type	0 native		1 native		2 native		3 native		4 native	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	2,385	15	87,183	4	89,552	4	78,899	4	77,738	7
Near native & fragments	385	39	4,355	13	4,229	17	4,396	22	1,827	24
Non native	602,860	1	148,344	3	76,062	5	37,360	6	20,029	9
Not determinable	17,205	6	0	–	0	–	0	–	0	–
<b>Total</b>	<b>622,835</b>	<b>1</b>	<b>239,881</b>	<b>2</b>	<b>169,843</b>	<b>3</b>	<b>120,655</b>	<b>3</b>	<b>99,594</b>	<b>6</b>

Woodland Type	5 native		6 native		7 native		8 native		9 native	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	39,502	6	27,347	7	19,937	8	10,112	12	5,053	15
Near native & fragments	1,715	24	1,115	31	992	42	764	50	211	78
Non native	11,382	12	6,650	15	2,855	25	1,394	31	646	51
Not determinable	0	–	0	–	0	–	0	–	0	–
<b>Total</b>	<b>52,598</b>	<b>5</b>	<b>35,113</b>	<b>6</b>	<b>23,784</b>	<b>8</b>	<b>12,270</b>	<b>11</b>	<b>5,910</b>	<b>15</b>

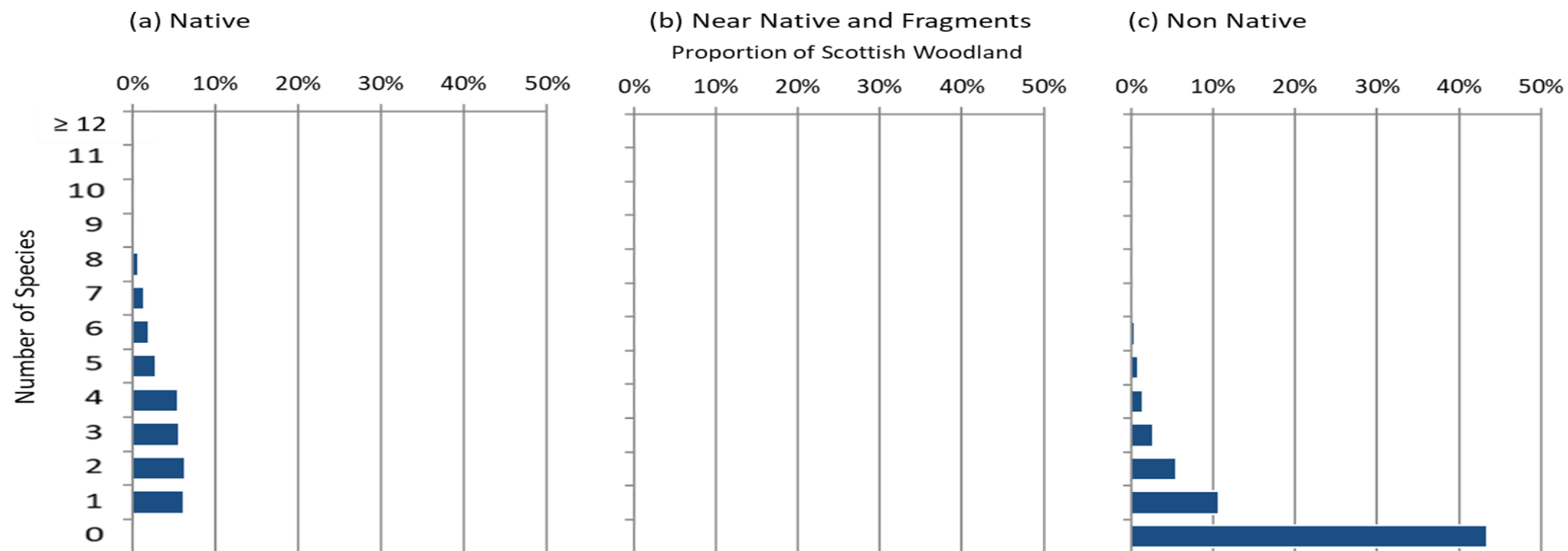
Woodland Type	10 native		11 native		12 or more native		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	2,516	23	1,149	26	1,239	36	442,611	2
Near native & fragments	131	94	0	–	192	94	20,313	8
Non native	186	83	255	50	237	94	908,259	1
Not determinable	0	–	0	–	0	–	17,205	6
<b>Total</b>	<b>2,833</b>	<b>22</b>	<b>1,404</b>	<b>24</b>	<b>1,667</b>	<b>32</b>	<b>1,388,388</b>	<b>1</b>

### Notes:

1. Native tree species = trees that colonised Scotland naturally after the last Ice Age.
2. SE = standard error. Amber text = values with SE >25%.
3. Woodland types are defined in Section 1.4.
4. Refer to methods for a list of all species classified as native.
5. Values of 0 count in native relate in the main to clear-felled and transition woodland area. Transition woodland area includes new planting, restocking and clear-fell.

# NFI woodland condition statistics

**Figure 7-1** The proportion of different native tree species present in Scottish woodland stands by woodland type



Notes: 1. (a) Native woodland (b) Near-native woodlands and fragments (c) Non-native woodland. 2. Native tree species = trees that colonised Scotland naturally after the last Ice Age. 3. Woodland types are defined in section 1.4. 4. Refer to methods for a list of all species classified as native.

## 8 Occupancy of native trees

**Table 8-1** The proportion of native trees occupying the canopy of woodland types in Scotland

Woodland Type	0 to <5%		≥5 and <10%		≥10 and <15%		≥15 and <20%		≥20 and <25%	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	0	–	0	–	0	–	0	–	0	–
Near native & fragmented	0	–	0	–	0	–	0	–	0	–
Non native	817,033	1	25,365	7	19,173	9	9,961	12	11,982	11
Not determinable	17,208	6	0	–	0	–	0	–	0	–
<b>Total</b>	<b>834,241</b>	<b>1</b>	<b>25,365</b>	<b>7</b>	<b>19,173</b>	<b>9</b>	<b>9,961</b>	<b>12</b>	<b>11,982</b>	<b>11</b>

Woodland Type	≥25 and <30%		≥30 and <35%		≥35 and <40%		≥40 and <45%		≥45 and <50%	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	0	–	0	–	0	–	0	–	0	–
Near native & fragmented	0	–	0	–	0	–	8,626	12	6,865	14
Non native	8,637	13	9,387	12	6,436	14	598	46	0	–
Not determinable	0	–	0	–	0	–	0	–	0	–
<b>Total</b>	<b>8,637</b>	<b>13</b>	<b>9,387</b>	<b>12</b>	<b>6,436</b>	<b>14</b>	<b>9,224</b>	<b>11</b>	<b>6,865</b>	<b>14</b>

Woodland Type	≥50 and <55%		≥55 and <60%		≥60 and <65%		≥65 and <70%		≥70 and <75%	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	17,837	9	6,135	14	9,438	11	10,499	12	7,598	12
Near native & fragmented	1,265	24	67	52	122	35	109	38	239	38
Non native	0	–	0	–	0	–	0	–	0	–
Not determinable	0	–	0	–	0	–	0	–	0	–
<b>Total</b>	<b>19,102</b>	<b>8</b>	<b>6,202</b>	<b>14</b>	<b>9,560</b>	<b>11</b>	<b>10,608</b>	<b>11</b>	<b>7,837</b>	<b>12</b>

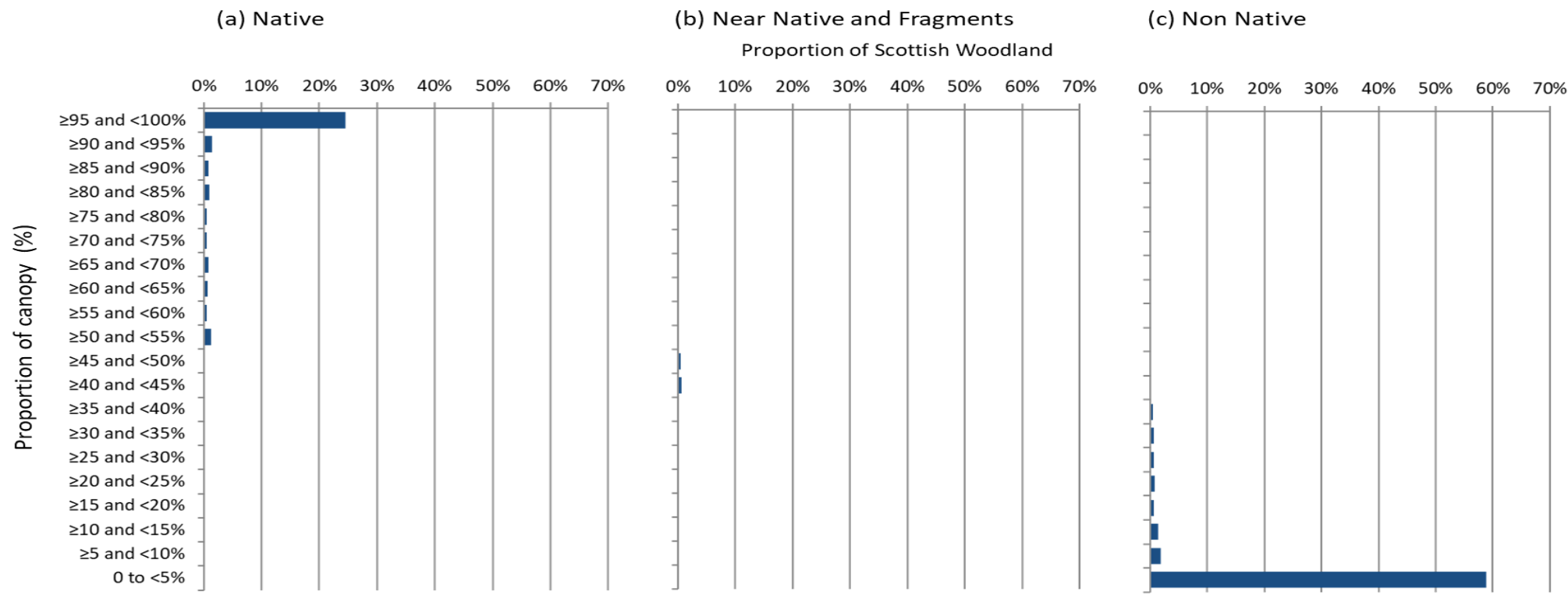
Woodland Type	≥75 and <80%		≥80 and <85%		≥85 and <90%		≥90 and <95%		≥95 and <100%		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	6,964	13	14,216	10	10,568	12	19,630	8	340,218	2	443,104	2
Near native & fragmented	92	32	31	61	103	46	75	57	2,752	29	20,345	8
Non native	0	–	0	–	0	–	0	–	0	–	908,573	1
Not determinable	0	–	0	–	0	–	0	–	0	–	17,208	6
<b>Total</b>	<b>7,056</b>	<b>13</b>	<b>14,247</b>	<b>10</b>	<b>10,671</b>	<b>11</b>	<b>19,705</b>	<b>8</b>	<b>342,970</b>	<b>2</b>	<b>1,389,230</b>	<b>1</b>

Notes: 1. Native tree species = trees that colonised Scotland naturally after the last Ice Age. 2. SE = standard error. Amber text = values with SE > 25%. 3. N. native & frag. = near native and fragments, woodland types are defined in Section 1.4. 4. ≥45 and <50% includes 45% which is defined as native. 5. Refer to methods for a list of all species classified as native. Areas in woodland types appearing to contradict classification definitions (see Section 1.4) are a result of rounding approaches on values close to the threshold.



# NFI woodland condition statistics

**Figure 8-1** The proportion of native trees occupying the canopy of different types of woodland in Scotland



Notes: 1. (a) Native woodland (b) Near-native and fragments (c) Non-native woodland. 2. Native tree species = trees that colonised Scotland naturally after the last Ice Age. 3. Woodland types are defined in section 1.3. 4. Refer to methods for a list of all species classified as native.

## 9 Open space within woodland

**Table 9-1** The proportion of open space within Scottish woodlands by area (ha) and woodland type

(a) Woodland Type	< 10%		≥ 10 and ≤ 25%		> 25 and < 50%		≥ 50%		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	142,573	3	63,340	4	71,544	4	88,765	4	<b>366,223</b>	<b>2</b>
Near native & fragments	5,857	14	1,973	20	2,584	20	5,681	14	<b>16,095</b>	<b>8</b>
Non native	419,684	2	171,896	3	115,967	3	152,457	2	<b>860,003</b>	<b>1</b>
Not determinable	111	39	116	35	105	60	16,608	6	<b>16,940</b>	<b>6</b>
<b>Total</b>	<b>568,225</b>	<b>1</b>	<b>237,325</b>	<b>2</b>	<b>190,199</b>	<b>3</b>	<b>263,511</b>	<b>2</b>	<b>1,259,261</b>	<b>1</b>

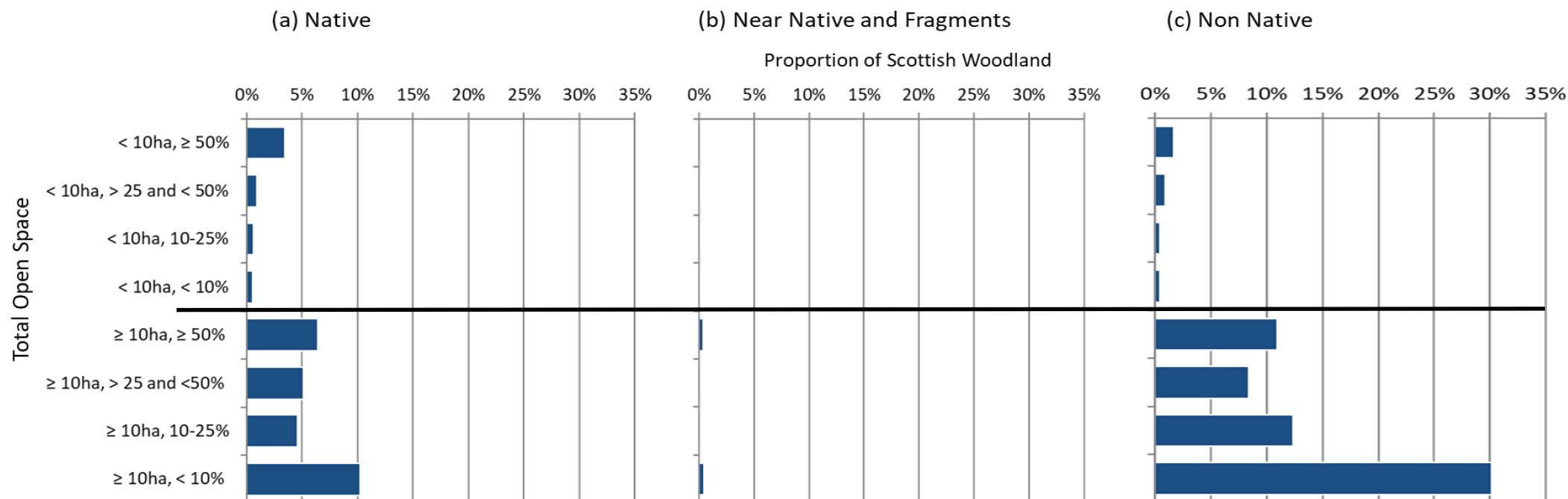
(b) Woodland Type	< 10%		≥ 10 and ≤ 25%		> 25 and < 50%		≥ 50%		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	7,161	15	8,582	13	13,248	10	47,892	13	<b>76,882</b>	<b>8</b>
Near native & fragments	700	30	601	38	605	42	2,344	38	<b>4,250</b>	<b>23</b>
Non native	6,397	16	6,523	15	11,970	11	23,680	9	<b>48,570</b>	<b>6</b>
Not determinable	0	–	0	–	0	–	268	45	<b>268</b>	<b>45</b>
<b>Total</b>	<b>14,258</b>	<b>10</b>	<b>15,705</b>	<b>10</b>	<b>25,823</b>	<b>7</b>	<b>74,184</b>	<b>9</b>	<b>129,970</b>	<b>6</b>

Notes:

1. (a) The proportion of open space within woodland greater than or equal to 10 hectares (b) The proportion of open space within woodland less than 10 hectares.
2. ha = hectares, SE = standard error. Amber text = values with SE > 25%.
3. Woodland types are defined in section 1.4.
4. The proportion of open space within woodland figures above should strictly be defined as the proportion of open space available in a woodland and will in some instances include open space immediately adjacent to woodland as well as open space entirely included within woodland. Refer to the methods report for more information.
5. Quality of open space is also used in the development of scores in the scores report, but statistics on the proportions of quality of open space are not provided.

# NFI woodland condition statistics

**Figure 9-1** The proportion of open space within Scottish woodland by woodland type and size.



## Notes:

1. (a) Native woodland (b) Near-native woodlands and fragments (c) Non-Native Woodland.
2. ha = hectare.
3. Woodland types are defined in Section 1.4.
4. Refer to the methods report for more information.

# NFI woodland condition statistics

**Table 9-2** The proportion of open area within Scottish woodland by habitat type

Habitat_name	Percentage of Scotland open space area	Quality
Upland heathland	19.7%	High
Upland flushes, fens & swamps	15.8%	High
Improved grassland	13.2%	Low
Neutral grassland	6.9%	High
ACID GRASSLAND	6.6%	Low
Fen; marsh/swamp	6.2%	High
Boundary & linear features	4.5%	High
Arable/horticulture	4.3%	Low
Blanket bog	4.0%	High
Built up areas & gardens	3.6%	Low
Other	15.2%	NA

**Table 9-3** The proportion of open area within Scottish woodland by land use type

Land use	Percentage of Scotland open space area	Quality
Open OPN	47.9%	High
Agricultural land AGR	17.6%	Low
Felled PFE	15.2%	High
Plantable land LHP	6.4%	Low
Perm. Open Space assoc. with Linear Feat. POS	2.9%	High
Linear feature & open space assoc. linear feature LIF	1.9%	High
Open Water MOW	1.9%	High
Failed PFA	1.4%	High
Residential EMR	1.3%	Low
Unplanted streamsidess FMW	0.9%	High
Other	2.5%	NA

Note: High quality habitat and land-uses are those evaluated as highly beneficial to the woodlands ecology. Low quality habitat and land-uses are considered of low or moderate to negative benefit to woodland ecology.

## 10 Favourable land cover\* around woodlands in Scotland

### 10.1 Woodland cover

**Table 10-1** Area of woodland within a 5.6 km radius (100 km<sup>2</sup>) circle of surveyed woodlands in Scotland by woodland type

Woodland Type	< 10		≥ 10 and ≤ 20		> 20 and ≤ 30		> 30 and ≤ 40		> 40 and ≤ 50	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	49,278	12	103,392	4	88,120	5	81,992	4	71,540	4
Near native & fragments	2,326	23	6,376	13	4,175	16	2,413	19	3,025	30
Non native	41,276	7	157,584	3	170,441	3	171,004	3	174,237	3
Not determinable	616	31	2,516	13	4,736	13	2,715	16	3,914	10
<b>Total</b>	<b>93,496</b>	<b>7</b>	<b>269,868</b>	<b>2</b>	<b>267,473</b>	<b>2</b>	<b>258,125</b>	<b>3</b>	<b>252,717</b>	<b>2</b>

Woodland Type	> 50 and ≤ 60		> 60 and ≤ 70		> 70 and ≤ 80		> 80 and ≤ 90		> 90		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	38,258	7	7,953	11	2,077	14	0	–	0	–	442,611	2
Near native & fragments	1,335	30	448	61	215	50	0	–	0	–	20,313	8
Non native	107,984	4	57,950	5	21,695	9	5,448	16	640	39	908,259	1
Not determinable	2,123	12	539	39	46	6	0	–	0	–	17,205	6
<b>Total</b>	<b>149,700</b>	<b>3</b>	<b>66,891</b>	<b>5</b>	<b>24,032</b>	<b>8</b>	<b>5,448</b>	<b>16</b>	<b>640</b>	<b>39</b>	<b>1,388,388</b>	<b>1</b>

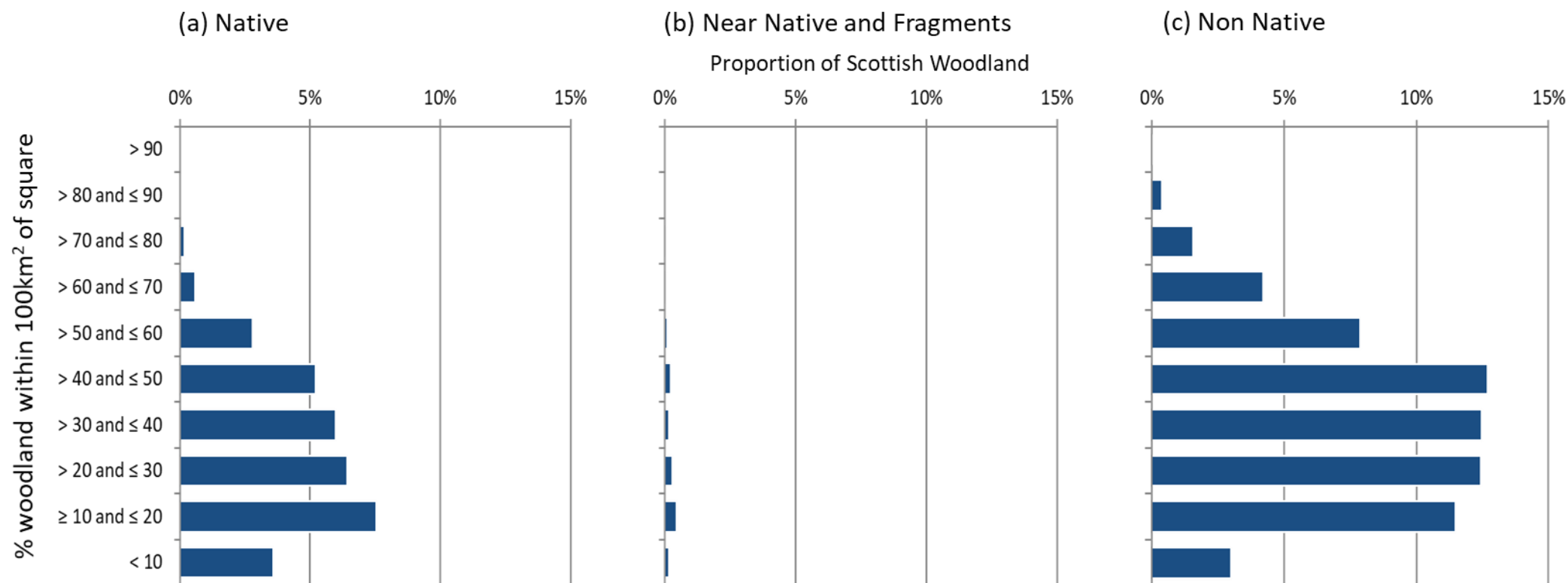
#### Notes:

1. SE = standard error. Amber text = values with SE > 25%.
2. Woodland types are defined in Section 1.4.
3. Buffer zone = Land Cover within a 5.6 km radius (100 km<sup>2</sup>) circle of the survey square centre point was assessed.
4. Sample location = 1 hectare sample squares from which data are collected and are part of a stratified random sample designed by the NFI to be representative of all woodland in Britain.
5. Refer to the methods report for more detail.

\* 'Favourable land cover' are types of land cover that are considered favourable to biodiversity in the landscape, e.g. woodland. For more details refer to the methodology.

# NFI woodland condition statistics

**Figure 10-1** Proportional cover of woodland within a 5.6 km radius (100 km<sup>2</sup>) circle of surveyed woodland in Scotland by woodland type



Notes: 1. (a) Native woodland (b) Near native woodland and fragments (c) Non-native. 2. Woodland types are defined in Section 1.4. 3. Surveyed woodland refers to the 1 hectare sample squares from which data are collected and are part of a stratified random sample designed by the NFI to be representative of all woodland in Britain. 4. Refer to the methods report for more detail.

## 10.2 Other favourable habitat around woodlands

**Table 10-2** Area of land cover composed of other favourable habitat within a 5.6 km radius (100 km<sup>2</sup>) circle of the surveyed woodland in Scotland by woodland type

Woodland Type	< 10%		≥ 10 and ≤ 20%		> 20 and ≤ 30%		> 30 and ≤ 40%		> 40 and ≤ 50%	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	209,127	3	70,953	4	36,171	6	29,885	7	24,400	7
Near native & fragments	8,358	12	4,572	22	2,573	18	2,170	23	560	23
Non native	295,933	2	116,658	4	125,974	4	124,384	4	96,826	4
Not determinable	8,531	9	1,306	24	1,703	17	1,392	16	1,456	14
<b>Total</b>	<b>521,949</b>	<b>2</b>	<b>193,489</b>	<b>3</b>	<b>166,420</b>	<b>3</b>	<b>157,830</b>	<b>3</b>	<b>123,242</b>	<b>4</b>

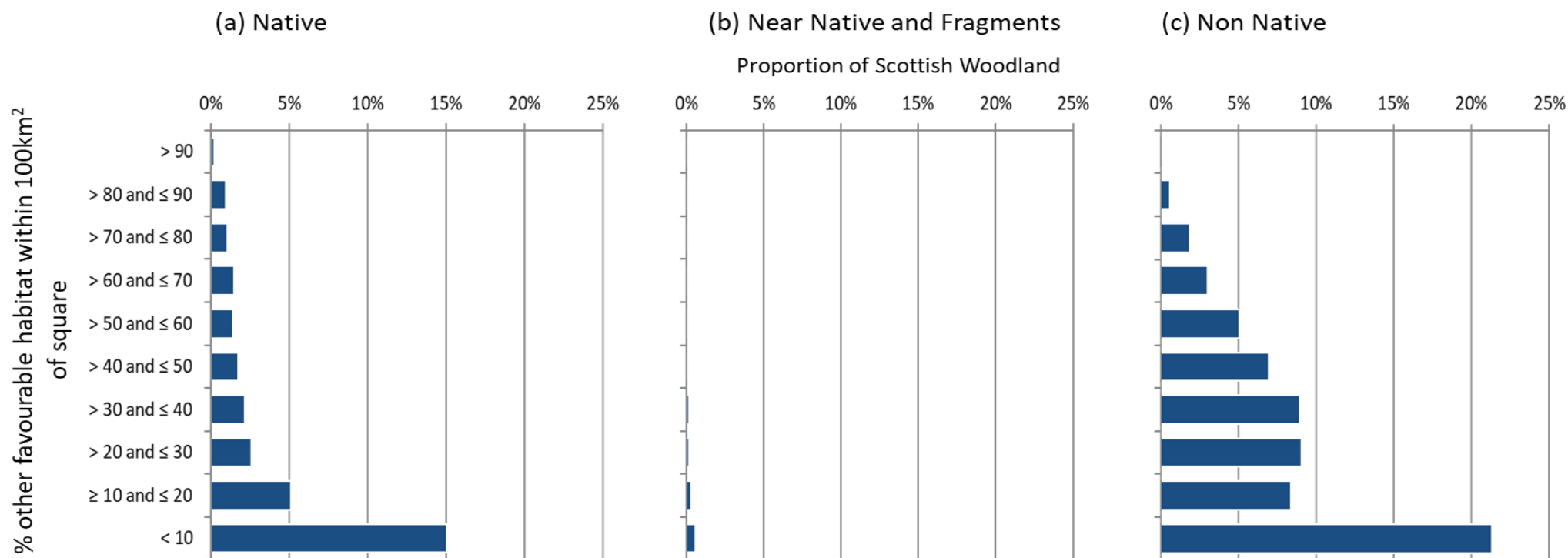
Woodland Type	> 50 and ≤ 60%		> 60 and ≤ 70%		> 70 and ≤ 80%		> 80 and ≤ 90%		> 90%		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	19,856	9	20,761	9	15,197	10	13,246	14	3,016	23	<b>442,611</b>	<b>2</b>
Near native & fragments	552	38	1,066	28	265	34	100	51	97	103	<b>20,313</b>	<b>8</b>
Non native	70,239	6	41,923	7	26,208	9	8,020	15	2,095	23	<b>908,259</b>	<b>1</b>
Not determinable	864	23	689	29	708	28	556	30	0	–	<b>17,205</b>	<b>6</b>
<b>Total</b>	<b>91,510</b>	<b>5</b>	<b>64,440</b>	<b>5</b>	<b>42,378</b>	<b>7</b>	<b>21,921</b>	<b>10</b>	<b>5,208</b>	<b>16</b>	<b>1,388,388</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE > 25%.
2. Woodland types are defined in Section 1.4.
3. Surveyed woodland refers to the 1 hectare sample squares from which data are collected and are part of a stratified random sample designed by the NFI to be representative of all woodland in Britain.
4. 'Other favourable habitats' excludes urban and arable land, for a full definition and more information refer to the methods report.

# NFI woodland condition statistics

**Figure 10-2** Proportion of land cover that is 'other favourable habitat' within a 5.6 km radius (100 km<sup>2</sup>) circle of the surveyed woodland in Scotland by woodland type



Notes: 1. (a) Native woodland (b) Near native woodland and fragments (c) Non-native woodland. 2. Woodland types are defined in section 1.4. 4. Surveyed woodland refers to the 1 hectare sample squares from which data are collected and are part of a stratified random sample designed by the NFI to be representative of all woodland in Britain. 5. 'Other favourable habitats' exclude urban and arable land, for a full definition and more information refer to the methods report.



## 11 Woodland regeneration

### 11.1 Woodland regeneration within the individual stand

**Table 11-1** Evidence of regeneration within woodland stands in Scotland by woodland type

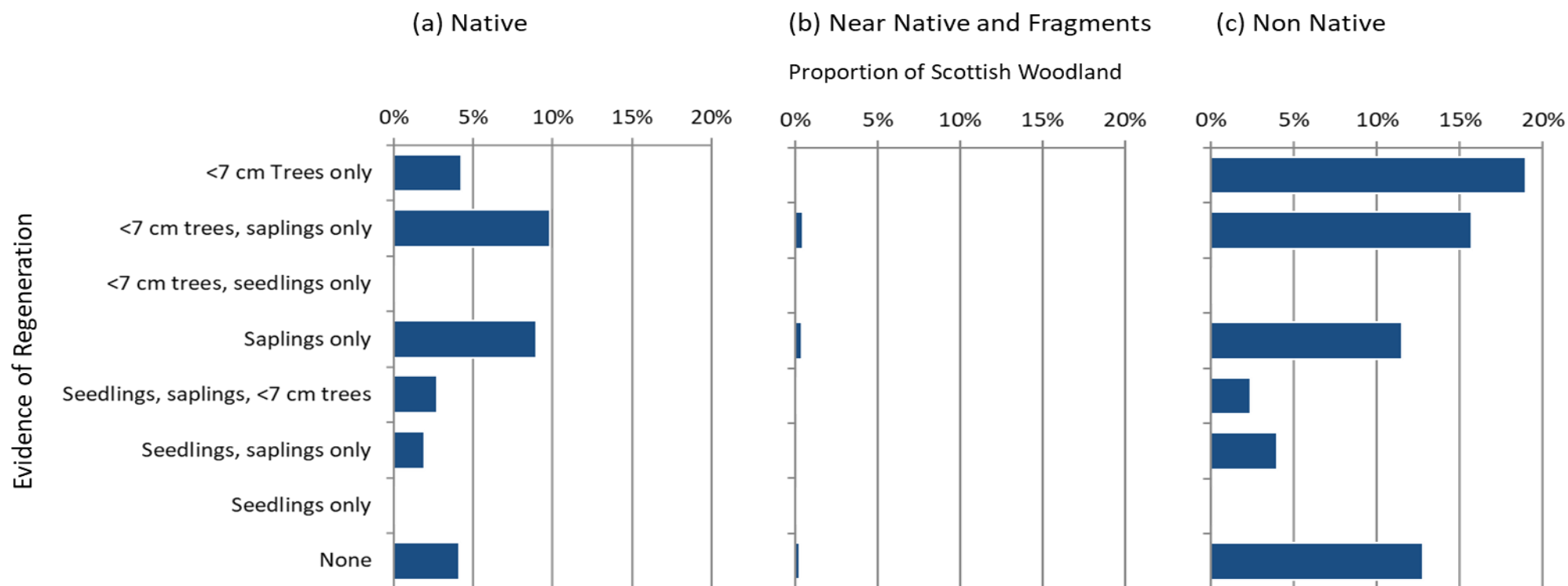
Woodland Type	None		Seedlings only		Seedlings & saplings only		Seedlings saplings < 7 cm trees	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	57,115	5	647	34	26,746	10	37,564	6
Near native & fragments	3,564	16	59	25	2,026	26	991	33
Non native	177,280	3	1,278	25	55,008	4	33,323	7
Not determinable	16,094	6	479	17	228	17	0	–
<b>Total</b>	<b>254,052</b>	<b>2</b>	<b>2,462</b>	<b>16</b>	<b>84,009</b>	<b>4</b>	<b>71,877</b>	<b>5</b>

Woodland Type	Saplings only		<7 cm trees & seedlings only		<7 cm trees & saplings only		< 7 cm trees only		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	124,681	5	205	103	136,779	3	58,875	5	442,611	2
Near native & fragments	5,276	13	0	–	6,581	18	1,815	21	20,313	8
Non native	160,108	3	363	66	217,809	3	263,090	2	908,259	1
Not determinable	405	38	0	–	0	–	0	–	17,205	6
<b>Total</b>	<b>290,471</b>	<b>3</b>	<b>568</b>	<b>56</b>	<b>361,169</b>	<b>2</b>	<b>323,781</b>	<b>2</b>	<b>1,388,388</b>	<b>1</b>

Notes: 1. Regeneration at the stand / component group level: each woodland component group is checked for the presence or absence of seedlings, saplings and 4-7 cm DBH trees, if present in at least one component of the group then this is counted as a presence (see glossary for definition of component group). This does not discern between native and non-native regeneration, however, there is a strong correlation between native type and native species presence (see Table 7.1) 2. SE = standard error. Amber text = values with SE > 25%. 3. Woodland types are defined in section 1.4, refer to the methods report for more information.

# NFI woodland condition statistics

**Figure 11-1** Evidence of regeneration within woodland individual stands in Scotland by woodland type



Notes: (a) Native woodland (b) Near native woodland and fragments (c) Non-native woodland. 1. Component Group: Homogeneous areas that are too small (<0.05 ha) to practically map as a discrete section /stand within GIS but with most of the same defining characteristics as a section. 2. Regeneration at the component group / stand level: each woodland component group is checked for the presence or absence of seedlings, saplings and 4-7 cm DBH trees, if present in at least one component of the group then this is counted as a presence. This does not discern between native and non-native regeneration, however, there is a strong correlation between native type and native species presence (see Table 8.1) 3. Woodland types are defined in section 1.4. 4. Refer to the methods report for more information.

## 11.2 Woodland regeneration at the square level: within and surrounding the stand

**Table 11-2** Evidence of regeneration within and around woodland stands in Scotland by woodland type

Woodland Type	None		Seedlings only		Seedlings, saplings only		Seedlings, saplings, <7 cm trees	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	37,321	7	0	–	23,309	12	69,880	5
Near native & fragments	1,773	27	0	–	1,835	28	2,605	16
Non native	99,709	4	186	103	54,561	5	88,762	4
Not determinable	7,937	10	0	–	895	14	582	22
<b>Total</b>	<b>146,740</b>	<b>3</b>	<b>186</b>	<b>103</b>	<b>80,600</b>	<b>5</b>	<b>161,829</b>	<b>3</b>

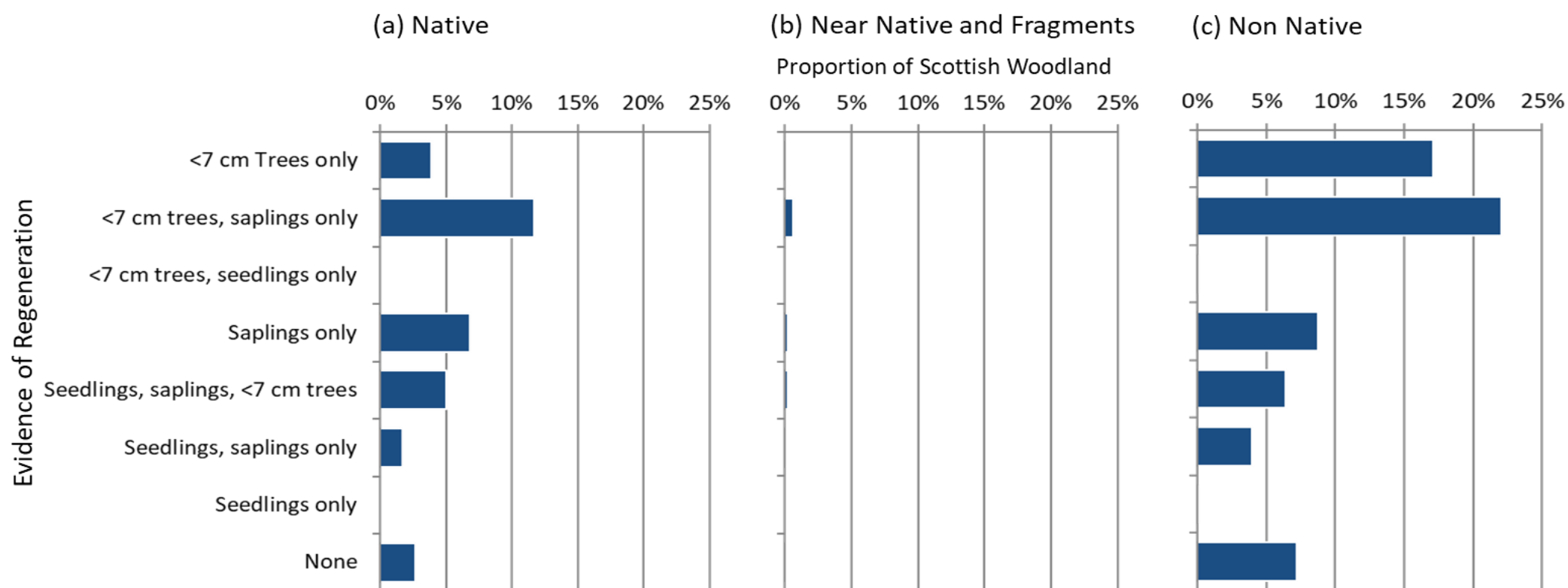
Woodland Type	Saplings only		<7 cm trees, seedlings only		<7 cm trees, saplings only		<7 cm trees only		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	95,111	6	0	–	162,548	3	54,443	6	<b>442,611</b>	<b>2</b>
Near native & fragments	3,442	19	0	–	9,034	13	1,625	21	<b>20,313</b>	<b>8</b>
Non native	121,758	3	402	60	305,657	2	237,223	3	<b>908,259</b>	<b>1</b>
Not determinable	2,828	12	0	–	2,775	10	2,188	16	<b>17,205</b>	<b>6</b>
<b>Total</b>	<b>223,139</b>	<b>3</b>	<b>402</b>	<b>60</b>	<b>480,014</b>	<b>2</b>	<b>295,478</b>	<b>2</b>	<b>1,388,388</b>	<b>1</b>

### Notes:

1. Square: A one-hectare (100 m by 100 m) square, which may be entirely within woodland or may overlap the woodland edge.
2. Regeneration at the square level: once the stand / component group level assessment is complete within a square, results for all stands / component groups in the square are aggregated and if seedlings, saplings, 4-7 cm DBH trees are found in at least one stand / component group in the square then this is counted as a presence. This does not discern between native and non-native regeneration, however, there is a strong correlation between native type and native species presence (see Table 8.1)
3. SE = standard error. Amber text = values with SE > 25%.
4. Woodland types are defined in section 1.4, refer to the methods report for more information.

# NFI woodland condition statistics

**Figure 11-2** Evidence of regeneration in and around woodland stands in Scotland by woodland type



Notes: (a) Native woodland (b) Near native woodland and fragments (c) Non-native woodland. 1. Square: A one-hectare (100 m by 100 m) square, which may be entirely within woodland or may overlap the woodland edge. 2. Regeneration at the square level: once the stand / component group level assessment is complete within a square, results for all stands / component groups in the square are aggregated and if seedlings, saplings, 4-7 cm DBH trees are found in at least one stand / component group in the square then this is counted as a presence. This does not discern between native and non-native regeneration, however, there is a strong correlation between native type and native species presence (see Table 8.1) 3. Woodland types are defined in section 1.4. 4. Refer to the methods report for more information.

## 12 Tree health

**Table 12-1** Area of woodland in Scotland without or with pest and disease by woodland type

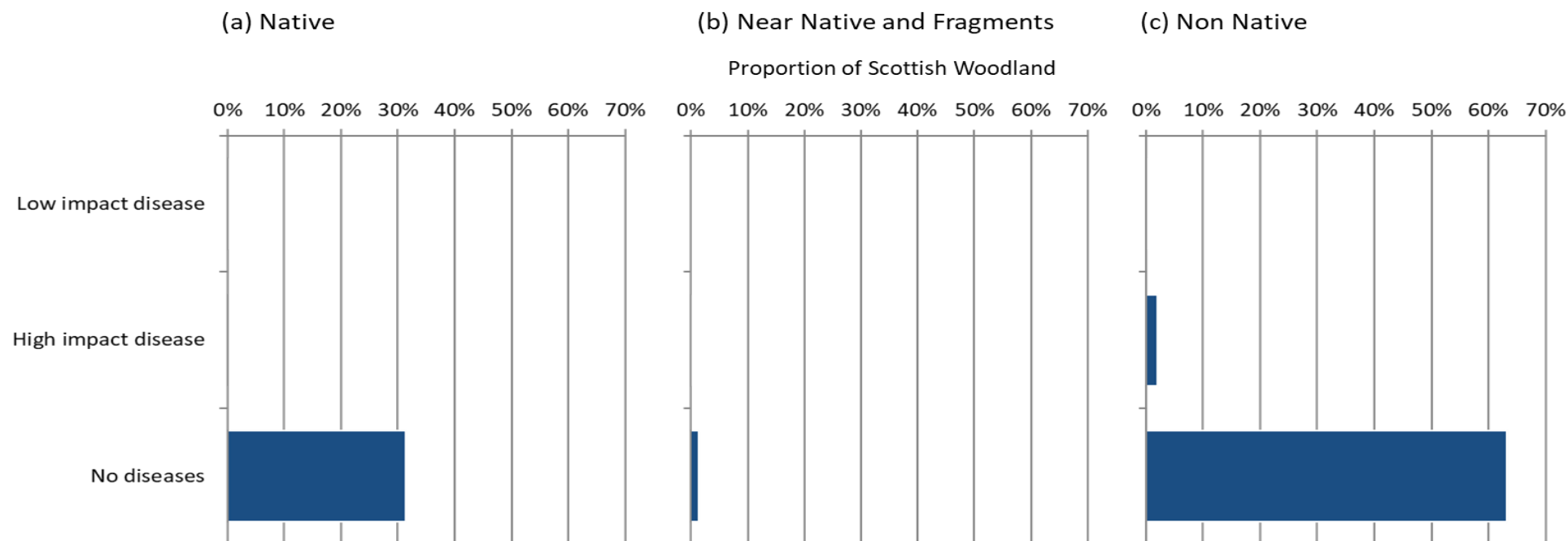
Woodland type	No pest & disease		Low impact pest & disease		High impact pest & disease		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	436,507	2	742	44	5,363	14	442,611	2
Near native & fragments	20,193	8	0	–	120	44	20,313	8
Non native	878,464	1	1,376	23	28,419	6	908,259	1
Not determinable	15,271	6	0	–	1,934	14	17,205	6
<b>Total</b>	<b>1,350,434</b>	<b>1</b>	<b>2,118</b>	<b>22</b>	<b>35,836</b>	<b>5</b>	<b>1,388,388</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE >25%.
2. Woodland types are defined in Section 1.4.
3. Low impact disease examples include Horse Chestnut Leaf Miner and Oak Processionary Moth; High impact disease examples include Ash Dieback and *Phytophthora ramorum*. For a full list of tree diseases with impact classification please refer to the methodology report.
4. This assessment will not be exhaustive as some tree diseases and pests are difficult to detect at low infection levels and positive detection for several pests and diseases requires destructive sampling, which was not undertaken during the NFI Surveys. However, high impact infections and high levels of mortality in trees are unlikely to be missed and moderate infections and infestations equally will be observed by surveyors. Time of year and leaf on or not will also impact upon the ability to observe/ identify some diseases and results were not normalised for season. Therefore, while positive results are a valuable indicator, negative results may not always be an indication of absence.

# NFI woodland condition statistics

**Figure 12-1** Proportion of woodland area in Scotland without or with disease in by woodland type



Notes: (a) Native woodlands (b) Near native woodland or fragments (c) Non-native woodland. 1. SE = standard error. Amber text = values with SE > 25%. 2. Woodland types are defined in section 1.4. 3. Low impact disease examples include Horse Chestnut Leaf Minor and Oak Processionary Moth; High impact disease examples include Ash Dieback and *Phytophthora ramorum*. For a full list of tree diseases with impact classification please refer to the methodology report. 4. Some of the diseases are difficult to detect at low infection levels and surveying for several of the insects requires destructive sampling, which was not undertaken during the NFI Surveys, but high impact infections and high levels of mortality in trees are unlikely to be missed. Time of year and leaf on or not will impact the ability to observe/identify some diseases and results were not normalised for season Therefore, while positive results are a valuable indicator, negative results may not always be an indication of absence.

# NFI woodland condition statistics

**Table 12-2** Area of woodland in Scotland with tree mortality by woodland type

Woodland type	≤ 11% mortality		> 11% and < 25% mortality		≥ 25% mortality		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	410,879	2	21,165	9	10,568	11	<b>442,611</b>	<b>2</b>
Near native & fragments	19,309	8	867	37	138	41	<b>20,313</b>	<b>8</b>
Non native	860,112	1	35,829	7	12,318	10	<b>908,259</b>	<b>1</b>
Not determinable	16,814	6	303	36	88	47	<b>17,205</b>	<b>6</b>
<b>Total</b>	<b>1,307,114</b>	<b>1</b>	<b>58,163</b>	<b>5</b>	<b>23,111</b>	<b>7</b>	<b>1,388,388</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE > 25%.
2. Woodland types are defined in Section 1.4.
3. Dead trees associated with wind blow or failed planting are not included in this assessment. Refer to the methodology report for more information.

**Table 12-3** Proportion of woodland without or with crown dieback in Scottish woodlands by woodland type

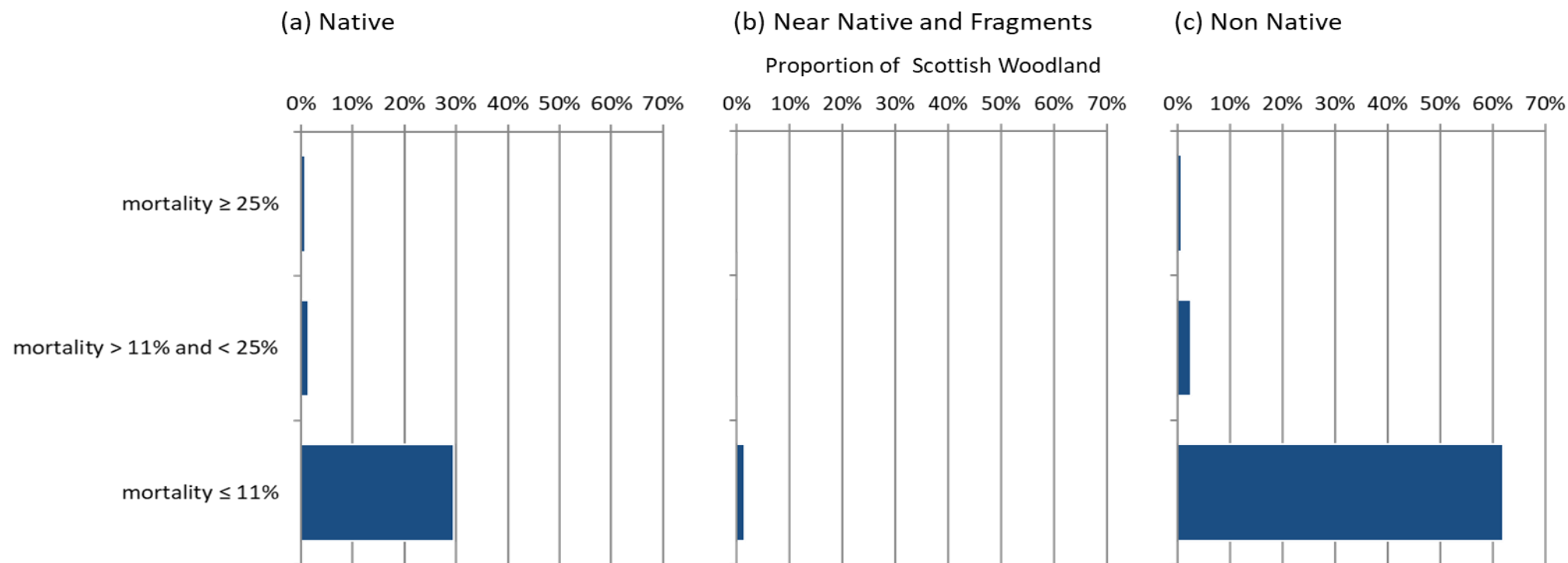
Woodland type	No crown dieback		Some crown dieback		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	392,106	2	50,505	6	<b>442,611</b>	<b>2</b>
Near native & fragments	18,181	8	2,132	25	<b>20,313</b>	<b>8</b>
Non native	819,971	1	88,288	4	<b>908,259</b>	<b>1</b>
Not determinable	16,969	6	236	47	<b>17,205</b>	<b>6</b>
<b>Total</b>	<b>1,247,228</b>	<b>1</b>	<b>141,160</b>	<b>3</b>	<b>1,388,388</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE > 25%.
2. Woodland types are defined in Section 1.4.
3. Crown dieback = the death of branches within a tree's crown. Crown dieback may be due to causes injurious and non-injurious to long term tree health, for example squirrels may cause temporary crown dieback while *H. fraxineus* may cause permanent mortality. Refer to the methods report for more information.

# NFI woodland condition statistics

**Figure 12-2** Proportion of tree mortality within stands in woodland in Scotland by woodland type



Notes:

(a) Native woodland (b) Near native and fragments (c) Non-native woodland. 1. Woodland types are defined in section 1.4. 2. Dead trees associated with wind blow or failed planting are not included in this assessment. 3. Refer to the methodology report for more information.



## 13 Vegetation: field and ground flora in Scottish woodlands

The combined area for the field and ground layer vegetation must sum to 100% of the section area, with the assumption these layers are spatially discrete. However, it is acknowledged that there is likely to be some ground layer vegetation beneath the field layer, therefore to account for this likely overlap 25% of the field layer coverage is universally added to the ground layer coverage. Refer to the methodology report for more information.

### 13.1 Vegetation: ground layer

**Table 13-1** Percentage cover of ground layer vegetation in woodland stands in Scotland by woodland type and area

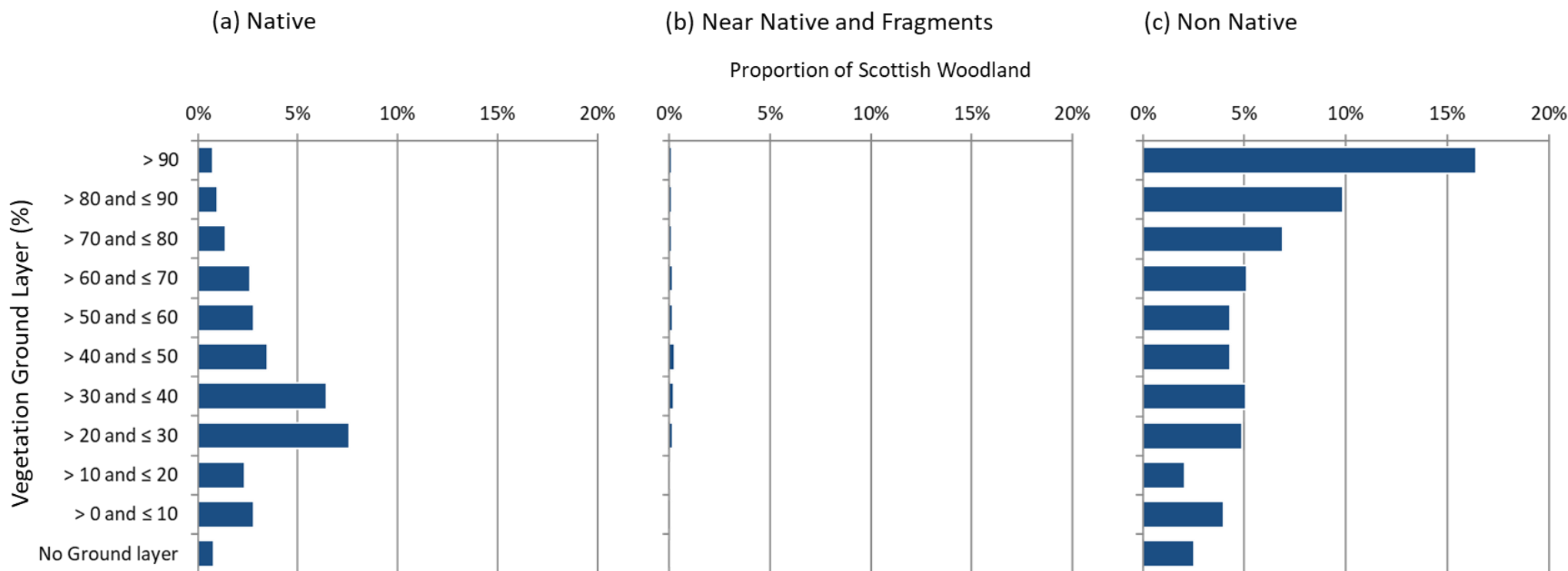
Woodland Type	No Ground layer		> 0 and ≤ 10 %		> 10 and ≤ 20 %		> 20 and ≤ 30 %		> 30 and ≤ 40 %		> 40 and ≤ 50 %	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	10,815	10	38,572	7	32,577	7	105,312	4	89,559	7	48,261	5
Near native & fragments	620	51	752	40	534	30	2,556	16	3,069	19	3,545	27
Non native	35,247	6	55,093	5	28,714	8	67,610	5	70,109	4	59,700	5
Not determinable	5,935	10	676	31	118	34	1,329	23	2,232	16	1,418	20
<b>Total</b>	<b>52,618</b>	<b>5</b>	<b>95,093</b>	<b>4</b>	<b>61,944</b>	<b>5</b>	<b>176,807</b>	<b>3</b>	<b>164,969</b>	<b>4</b>	<b>112,924</b>	<b>4</b>

Woodland Type	> 50 and ≤ 60 %		> 60 and ≤ 70 %		> 70 and ≤ 80 %		> 80 and ≤ 90 %		> 90 %		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	38,573	6	36,218	6	19,164	9	13,491	11	10,069	12	<b>442,611</b>	<b>2</b>
Near native & fragments	2,000	26	2,054	23	1,943	27	1,404	27	1,836	24	<b>20,313</b>	<b>8</b>
Non native	59,396	5	71,324	4	95,989	4	136,877	3	228,201	3	<b>908,259</b>	<b>1</b>
Not determinable	1,360	19	783	26	929	28	1,506	19	918	23	<b>17,205</b>	<b>6</b>
<b>Total</b>	<b>101,329</b>	<b>4</b>	<b>110,379</b>	<b>4</b>	<b>118,025</b>	<b>4</b>	<b>153,277</b>	<b>3</b>	<b>241,024</b>	<b>2</b>	<b>1,388,388</b>	<b>1</b>

Notes: 1. SE = standard error. Amber text = values with SE > 25%. 2. Woodland types are defined in section 1.4. 3. Ground layer = the lowest layer of a plant community, often comprising mosses, lichens, leaf litter and fungi. 4. Refer to methods for more information.

# NFI woodland condition statistics

**Figure 13-1** Proportion of ground layer vegetation in woodland stands in Scotland by woodland type



**Notes:**

(a) Native woodland (b) Near native woodlands and fragments (c) Non-native woodland. 1. Ground layer = the lowest layer of plant community, comprising of things like mosses, lichens, leaf litter and fungi. 2. Woodland types are defined in section 1.4. 3. None = no data collected. 4. Refer to the method report for more information

## 13.2 Vegetation: field layer

**Table 13-2** Percentage cover of field layer vegetation in woodland stands in Scotland by woodland type and area

Woodland Type	No field layer		> 0 and ≤ 10%		> 10 and ≤ 20%		>20 and ≤ 30%		>30 and ≤ 40%		>40 and ≤ 50%	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	19,400	8	37,323	7	31,189	7	31,777	7	33,512	7	39,582	6
Near native & fragments	1,551	28	2,695	34	1,789	24	2,558	23	1,190	28	2,026	24
Non native	261,285	2	246,706	2	75,262	5	52,824	5	42,531	5	45,901	5
Not determinable	6,813	9	1,663	18	660	26	726	25	1,153	25	802	24
<b>Total</b>	<b>289,050</b>	<b>2</b>	<b>288,387</b>	<b>2</b>	<b>108,900</b>	<b>4</b>	<b>87,886</b>	<b>4</b>	<b>78,386</b>	<b>4</b>	<b>88,310</b>	<b>4</b>

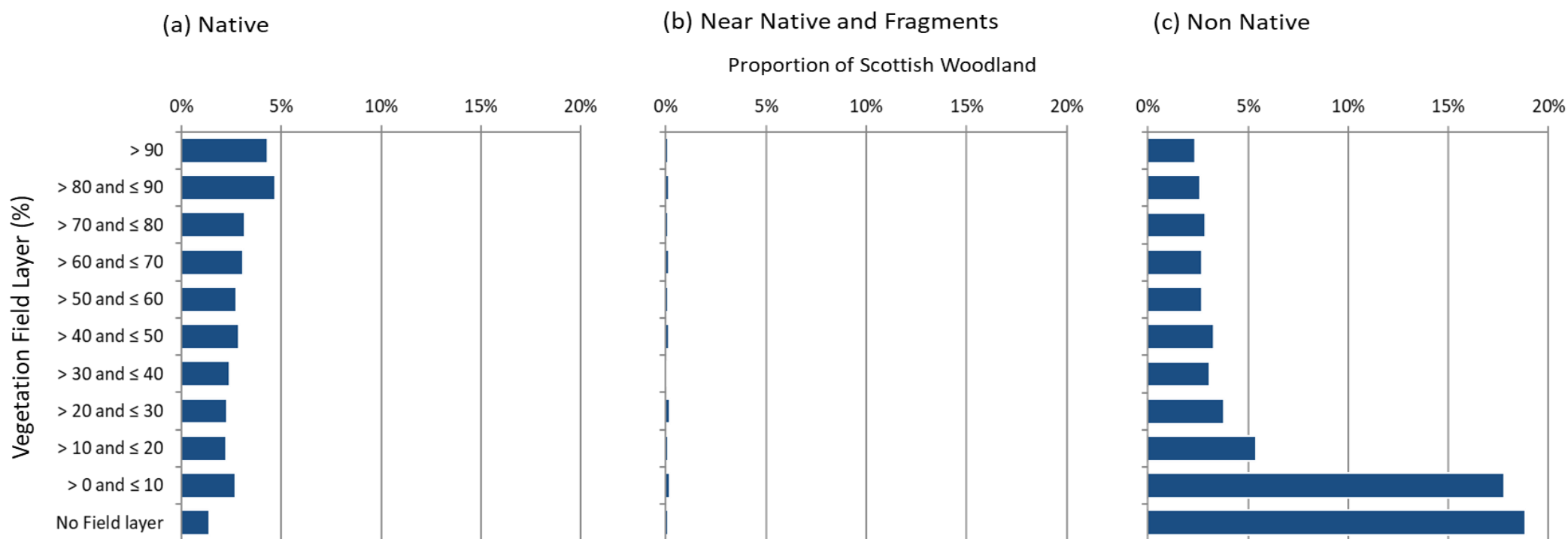
Woodland Type	>50 and ≤ 60%		>60 and ≤ 70%		>70 and ≤ 80%		> 80 and ≤ 90%		> 90%		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	37,894	6	42,790	6	44,029	6	65,312	10	59,802	6	442,611	2
Near native & fragments	1,371	18	1,941	24	1,737	19	1,949	25	1,506	26	20,313	8
Non native	37,178	5	37,585	5	40,072	6	36,391	5	32,524	8	908,259	1
Not determinable	666	25	1,394	20	1,219	23	1,547	19	562	40	17,205	6
<b>Total</b>	<b>77,108</b>	<b>4</b>	<b>83,711</b>	<b>4</b>	<b>87,057</b>	<b>4</b>	<b>105,198</b>	<b>6</b>	<b>94,395</b>	<b>5</b>	<b>1,388,388</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE >25%.
2. Woodland types are defined in Section 1.4.
3. Field layer = the Field layer is made up of grasses, ferns and flowering plants.
4. Refer to methods for more information.

# NFI woodland condition statistics

**Figure 13-2** Proportion of field layer vegetation in woodland stands in Scotland by woodland type



## Notes:

(a) Native woodland (b) Near native woodlands and fragments (c) Non-native woodland. 1. Field layer = the field layer is made up of grasses, ferns and flowering plants. 2. Woodland types are defined in section 1.4. 3. None = no data collected. 4. Refer to the method report for more information

## 13.3 Vegetation: bare soil

**Table 13-3** Percentage cover of bare soil in woodland stands in Scotland by woodland type and area

Woodland Type	No bare soil		> 0 and ≤ 10%		> 10 and ≤ 20%		>20 and ≤ 30%		>30 and ≤ 40%		>40 and ≤ 50%	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	393,566	2	42,599	6	3,783	19	1,256	24	799	41	334	52
Near native & fragments	16,262	9	3,280	19	440	41	234	85	17	103	33	108
Non native	776,565	1	111,282	4	10,764	10	3,261	16	2,480	13	1,869	25
Not determinable	13,051	7	3,085	14	706	22	155	56	208	52	0	–
<b>Total</b>	<b>1,199,444</b>	<b>1</b>	<b>160,246</b>	<b>3</b>	<b>15,693</b>	<b>8</b>	<b>4,906</b>	<b>13</b>	<b>3,505</b>	<b>14</b>	<b>2,236</b>	<b>22</b>

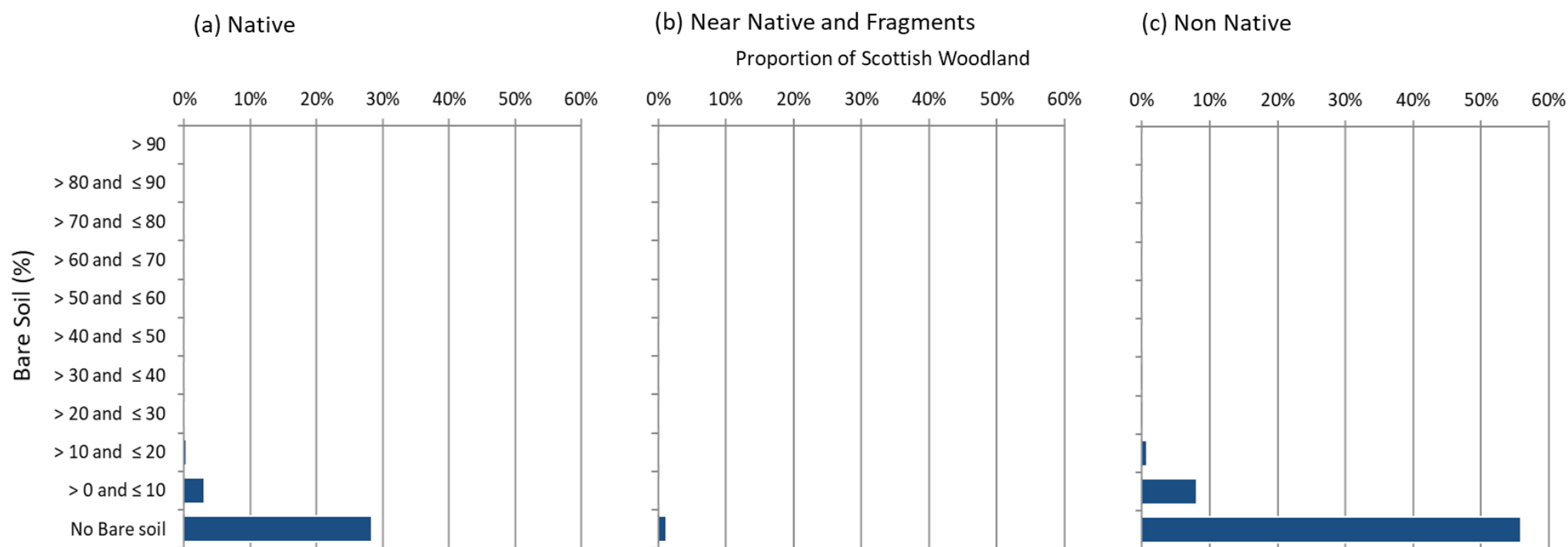
Woodland Type	>50 and ≤ 60%		>60 and ≤ 70%		>70 and ≤ 80%		> 80 and ≤ 90%		> 90%		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	96	90	66	94	111	68	0	–	0	–	442,611	2
Near native & fragments	0	–	0	–	43	97	0	–	4	108	20,313	8
Non native	745	33	370	28	214	50	337	52	372	48	908,259	1
Not determinable	0	–	0	–	0	–	0	–	0	–	17,205	6
<b>Total</b>	<b>841</b>	<b>31</b>	<b>436</b>	<b>28</b>	<b>368</b>	<b>37</b>	<b>337</b>	<b>52</b>	<b>376</b>	<b>47</b>	<b>1,388,388</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE >25%.
2. Woodland types are defined in Section 1.4.
3. Refer to the method report for more information.

# NFI woodland condition statistics

**Figure 13-3** Proportion of bare soil in woodland stands in Scotland by woodland type



Notes:

(a) Native woodland (b) Near native woodlands and fragments (c) Non-native woodland. 1. Woodland types are defined in section 1.4.

2. None = no data collected. 3. Refer to the method report for more information

## 14 Woodland vertical structure

**Table 14-1** The vertical structure of woodlands in Scotland by area by woodland type

Woodland Type	No storeys		1 storey		2 storeys		3 storeys	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	1,950	17	98,605	6	113,253	4	74,948	4
Near native & fragments	341	43	3,522	13	4,562	21	2,795	18
Non native	16,879	6	356,719	2	260,745	2	132,426	3
Not determinable	17,181	6	24	56	0	–	0	–
<b>Total</b>	<b>36,350</b>	<b>4</b>	<b>458,870</b>	<b>2</b>	<b>378,560</b>	<b>2</b>	<b>210,169</b>	<b>3</b>

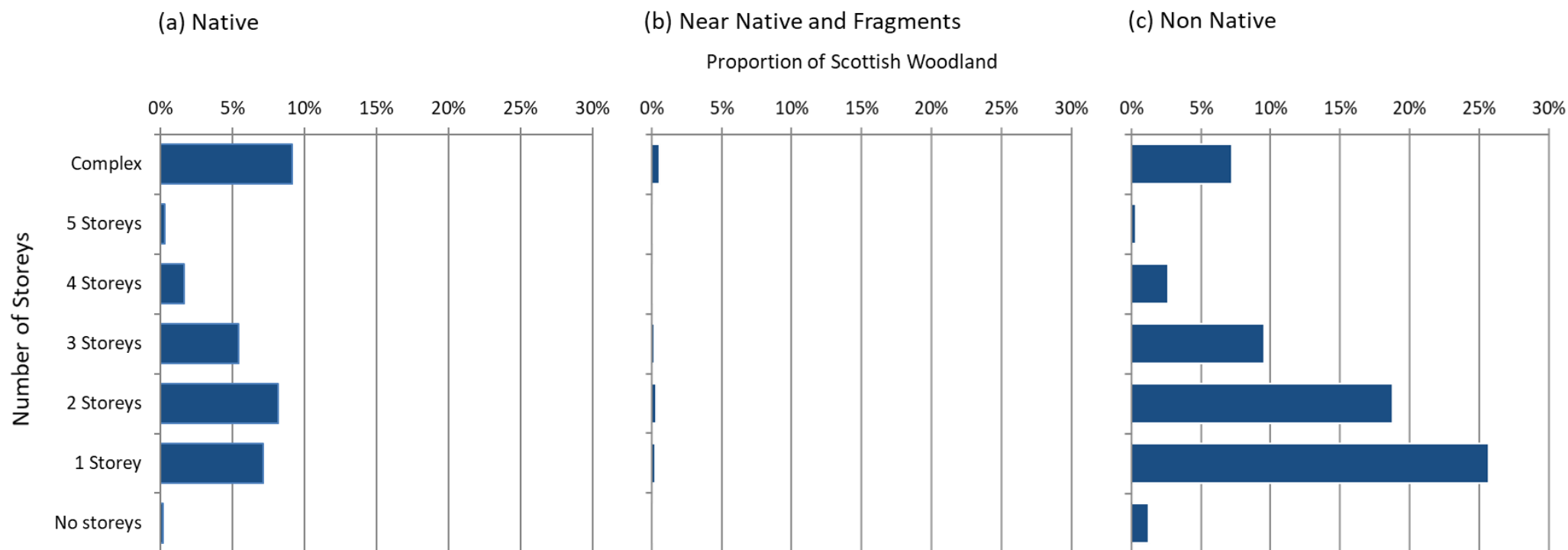
Woodland Type	4 storeys		5 storeys		Complex		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	22,699	8	4,237	19	126,920	3	442,611	2
Near native & fragments	1,115	36	280	80	7,698	13	20,313	8
Non native	36,749	7	4,114	20	100,625	4	908,259	1
Not determinable	0	–	0	–	0	–	17,205	6
<b>Total</b>	<b>60,564</b>	<b>5</b>	<b>8,632</b>	<b>13</b>	<b>235,243</b>	<b>3</b>	<b>1,388,388</b>	<b>1</b>

### Notes:

1. SE = standard error. Amber text = values with SE > 25%.
2. Complex storey = stands that are composed of 5 or more storeys or multiple heights of trees without it being possible to stratify into broad height bands (such as upper, middle or lower).
3. No storeys = occur due to clear fell or areas of open space less than 0.5 hectares within a woodland. Refer to the methods report for more information.
4. Woodland types are defined in section 1.4

# NFI woodland condition statistics

**Figure 14-1** The vertical structure of Scottish woodlands by woodland type



**Notes:**

(a) Native woodland (b) Near native woodlands and fragments (c) Non-native woodland. 1. Complex storey = stands that are composed of 5 or more storeys or multiple heights of trees without it being possible to stratify into broad height bands (such as upper, middle or lower); No storeys = occur due to clear fell or areas of open space less than 0.5 hectares within a woodland. 2. Refer to the methods report for more information. 3. Woodland types are defined in section 1.4.



## 15 Veteran trees

**Table 15-1** Number of veteran trees per hectare per stand of Scottish woodlands by woodland type

Woodland Type	0 trees per ha		0 - 1 tree per ha		> 1 and ≤ 2 trees per ha		> 2 and ≤ 5 trees per ha	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	429,400	2	696	51	1,607	29	1,811	28
Near native & fragments	21,030	8	0	–	0	–	1,209	54
Non native	914,163	1	219	101	226	90	472	42
Not determinable	17,205	6	0	–	0	–	0	–
<b>Total</b>	<b>1,381,798</b>	<b>1</b>	<b>915</b>	<b>46</b>	<b>1,833</b>	<b>27</b>	<b>3,493</b>	<b>24</b>

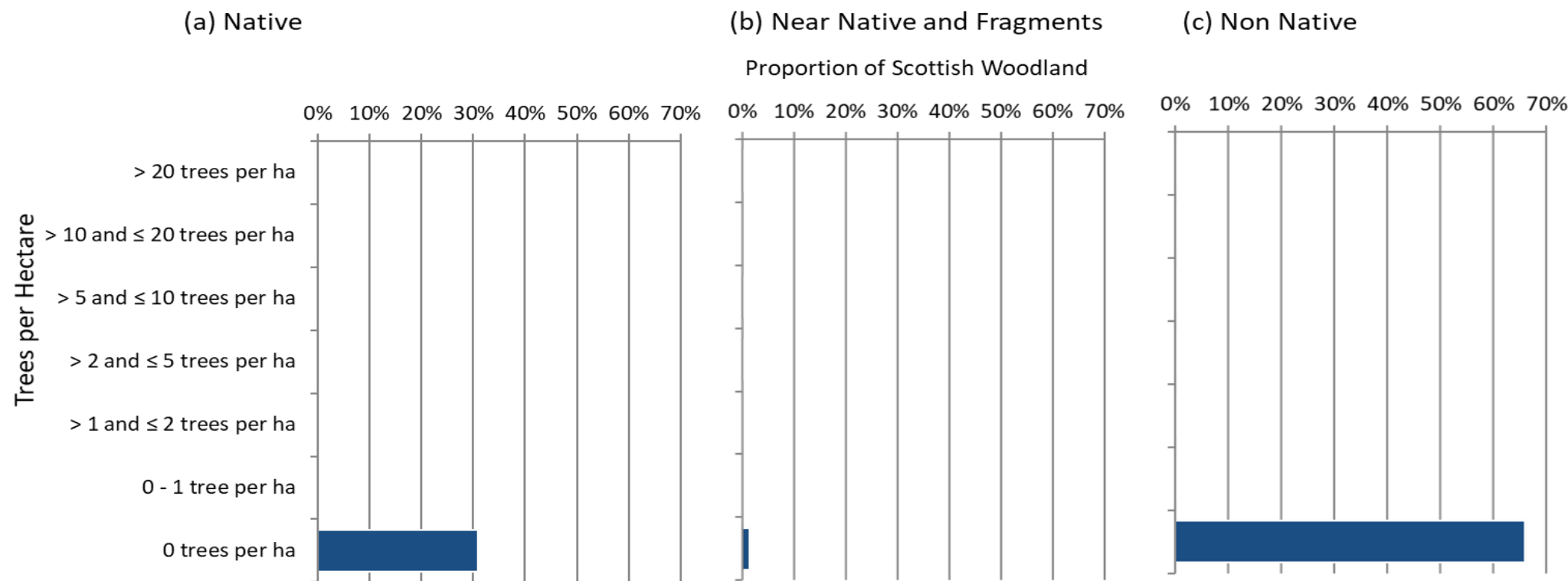
  

Woodland Type	> 5 and ≤ 10 trees per ha		> 10 and ≤ 20 trees per ha		> 20 trees per ha		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	262	42	120	71	0	–	433,894	2
Near native & fragments	58	92	0	–	78	91	22,377	8
Non native	322	66	34	65	17	103	915,453	1
Not determinable	0	–	0	–	0	–	17,205	6
<b>Total</b>	<b>642</b>	<b>38</b>	<b>153</b>	<b>57</b>	<b>95</b>	<b>77</b>	<b>1,388,929</b>	<b>1</b>

Notes:

1. SE = standard error. Amber text = values with SE > 25%.
2. Woodland types are defined in section 1.4.
3. A veteran tree is defined as a tree that is of interest biologically, culturally or aesthetically because of its age, size or condition. It is important to note that veteran trees are also found in found outside of woodland, in wood pasture, parkland and hedgerows on agricultural land and other areas not covered by this study. Refer to the methods report for more information.

**Figure 15-1** The number of veteran trees per hectare in Scottish woodlands by woodland type



Notes:

(a) Native woodland (b) Near native woodlands and fragments (c) Non-native woodland. 1. Woodland types are defined in section 1.4. 2. A veteran tree is defined as a tree that is of interest biologically, culturally or aesthetically because of its age, size or condition. It is important to note that veteran trees are also found outside of woodland in wood pasture, parkland and hedgerows on agricultural land and other areas not covered by this study. Refer to the methods report for more information.

## 16 Volume of deadwood

**Table 16-1** The volume of deadwood (m<sup>3</sup> per hectare) in woodland stands in Scotland by woodland type

Woodland Type	None		>0 and ≤ 10		>10 and ≤ 20		>20 and ≤ 30		>30 and ≤ 40	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	239,422	3	87,382	4	33,729	7	22,963	8	13,004	10
Near native & fragments	9,694	12	4,583	17	1,585	25	479	48	712	44
Non native	364,767	2	227,184	3	80,968	4	53,891	5	36,383	6
Not determinable	5,490	11	3,348	12	2,292	16	1,311	15	1,741	17
<b>Total</b>	<b>619,373</b>	<b>1</b>	<b>322,497</b>	<b>2</b>	<b>118,575</b>	<b>4</b>	<b>78,644</b>	<b>4</b>	<b>51,840</b>	<b>5</b>

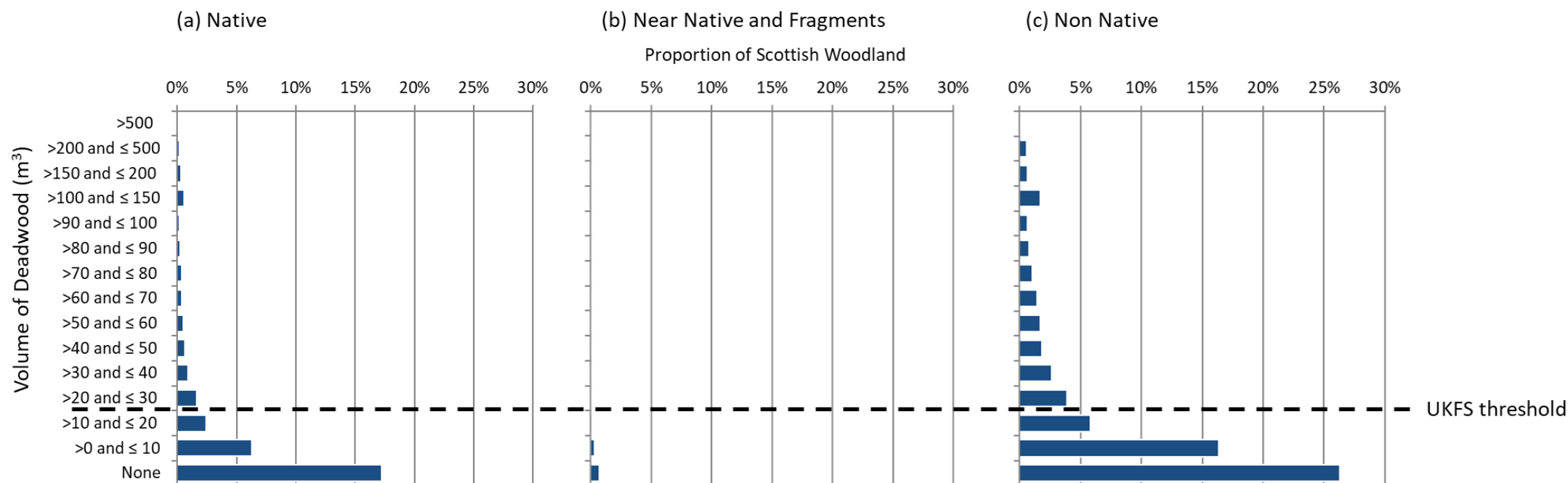
Woodland Type	>40 and ≤ 50		>50 and ≤ 60		>60 and ≤ 70		>70 and ≤ 80		>80 and ≤ 90	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	8,814	12	6,576	15	5,204	17	5,070	18	3,259	22
Near native & fragments	616	42	619	43	353	53	115	76	556	59
Non native	25,216	7	23,300	8	19,925	8	14,642	11	10,730	10
Not determinable	646	30	556	33	348	33	443	49	163	18
<b>Total</b>	<b>35,291</b>	<b>6</b>	<b>31,051</b>	<b>7</b>	<b>25,830</b>	<b>7</b>	<b>20,270</b>	<b>9</b>	<b>14,707</b>	<b>9</b>

Woodland Type	>90 and ≤ 100		>100 and ≤ 150		>150 and ≤ 200		>200 and ≤ 500		>500		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	2,370	26	8,339	13	4,073	18	2,124	22	283	53	442,611	2
Near native & fragments	233	102	659	32	26	50	83	27	0	–	20,313	8
Non native	9,032	13	23,770	7	9,397	12	8,465	11	586	39	908,259	1
Not determinable	48	21	742	22	80	30	0	–	0	–	17,205	6
<b>Total</b>	<b>11,683</b>	<b>11</b>	<b>33,510</b>	<b>6</b>	<b>13,575</b>	<b>10</b>	<b>10,672</b>	<b>10</b>	<b>869</b>	<b>31</b>	<b>1,388,388</b>	<b>1</b>

Notes: 1. The NFI records three types of deadwood: Standing dead trees, Lying deadwood and Stumps. The NFI Deadwood Calculator derives a standing deadwood volume per hectare, a lying deadwood volume per hectare and a stump volume per hectare (the methodology is set out in a document available on request from the NFI). 2. The NFI Condition Calculator uses the deadwood volume from standing dead trees and lying deadwood only, to match the UK Forestry Standard (Forestry Commission, 2017). 3. The deadwood volume calculations are at a section-level, so if multiple woodland component groups exist within a section, each will have the same per hectare values for lying and standing deadwood. 4. Estimations presented here exclude stumps. 5. SE = standard error. Amber text = values with SE > 25%. 6. N. native & frags. =near native and fragments, woodland types are defined in section 1.4. 7. Refer to the methods report for more information.

# NFI woodland condition statistics

**Figure 16-1** The volume of deadwood (m<sup>3</sup> per hectare) in woodland stands in Scotland by woodland type



Notes: (a) Native woodland (b) Near native woodlands and fragments (c) Non-native woodland. 1. The NFI records three types of deadwood: Standing dead trees, Lying deadwood, Stumps. 2. The NFI Deadwood Calculator derives a standing deadwood volume per hectare, a lying deadwood volume per hectare and a stump volume per hectare (the methodology is set out in a document available on request from the NFI). 3. The NFI Condition Calculator uses the deadwood volume from standing dead trees and lying deadwood only, to match the UK Forestry Standard (Forestry Commission, 2017). 4. The deadwood volume calculations are at a section-level, so if multiple woodland component groups exist within a section, each will have the same per hectare values for lying and standing deadwood. 5. Estimations presented here excludes stumps. 6. Woodland types are defined in section 1.4. 7. Refer to the methods report for more information. 8. Dashed black line refers to the UK Forestry Standard threshold.

## 17 Size of woodlands that habitat types sit within in Scotland

**Table 17-1** Size of woodland that stands are found within in Scotland

Woodland Type	<5 ha		≥5 and <10 ha		≥10 and <15 ha		≥15 and <20 ha		≥20 and <25 ha		≥25 and <30 ha	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	53,847	12	22,832	8	13,642	10	9,960	15	10,856	13	10,011	13
Near native & fragments	3,220	29	1,014	27	938	30	426	51	417	57	359	62
Non native	31,560	8	16,905	10	15,729	11	12,630	13	12,117	16	9,596	13
Not determinable	268	45	0	-	260	74	96	53	287	54	294	35
<b>Total</b>	<b>88,895</b>	<b>8</b>	<b>40,752</b>	<b>6</b>	<b>30,568</b>	<b>7</b>	<b>23,113</b>	<b>10</b>	<b>23,676</b>	<b>10</b>	<b>20,260</b>	<b>9</b>

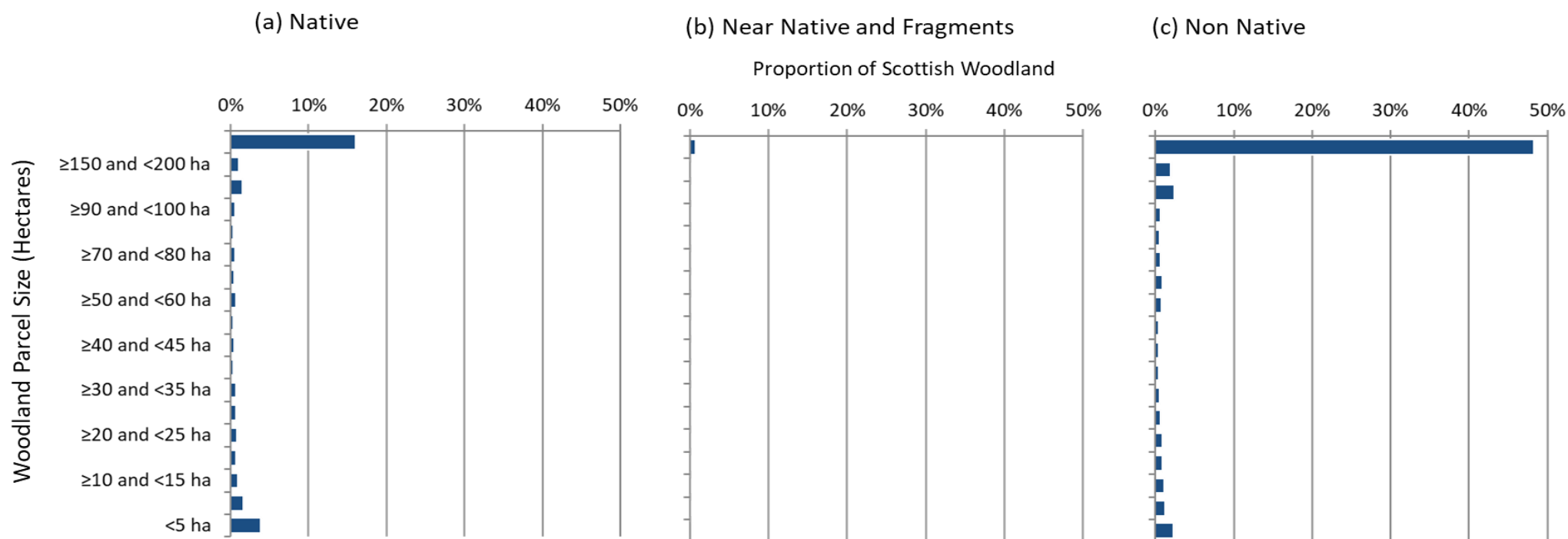
Woodland Type	≥30 and <35 ha		≥35 and <40 ha		≥40 and <45 ha		≥45 and <50 ha		≥50 and <60 ha		≥60 and <70 ha	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	9,219	16	4,662	16	6,681	15	4,002	21	9,585	12	7,076	15
Near native & fragments	381	37	276	54	162	36	104	58	957	41	371	62
Non native	8,269	14	6,528	16	5,390	19	6,008	18	11,829	12	13,110	12
Not determinable	498	32	75	53	0	-	236	62	289	49	140	62
<b>Total</b>	<b>18,367</b>	<b>10</b>	<b>11,542</b>	<b>11</b>	<b>12,234</b>	<b>12</b>	<b>10,350</b>	<b>13</b>	<b>22,660</b>	<b>9</b>	<b>20,696</b>	<b>9</b>

Woodland Type	≥70 and <80 ha		≥80 and <90 ha		≥90 and <100 ha		≥100 and <150 ha		≥150 and <200 ha		≥200 ha		Total	
	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%	Area (ha)	SE%
Native	8,115	20	5,532	17	7,183	15	21,747	9	14,810	11	222,850	2	<b>442,611</b>	<b>2</b>
Near native & fragments	179	42	217	37	338	58	927	31	654	43	9,372	11	<b>20,313</b>	<b>8</b>
Non native	9,682	14	8,193	14	9,927	15	34,009	7	27,153	8	669,623	1	<b>908,259</b>	<b>1</b>
Not determinable	108	6	452	44	272	45	594	28	534	33	12,803	6	<b>17,205</b>	<b>6</b>
<b>Total</b>	<b>18,083</b>	<b>12</b>	<b>14,393</b>	<b>11</b>	<b>17,720</b>	<b>10</b>	<b>57,277</b>	<b>6</b>	<b>43,151</b>	<b>6</b>	<b>914,649</b>	<b>1</b>	<b>1,388,388</b>	<b>1</b>

Notes: 1. SE = standard error. Amber text = values with SE >25%. 2. Woodland types are defined in Section 1.4. 3. Refer to methods report for more information.

# NFI woodland condition statistics

**Figure 17-1** Proportion of Scottish woodlands by size and woodland type



Notes:

- (a) Native woodlands (b) Near native woodlands and fragments (c) Non-native woodland. 1. Woodland types are defined in section 1.4.
2. Refer to methods for more information.

## 18 Discussion

The EC [Habitats Directive](#) signed in 1992 requires Member States to report on the conservation status of habitats and species. Nearly 20 years have elapsed since this was proposed and the publication of this set of NFI Woodland Ecological Condition reports. This period of time reflects the complex design and planning required for the implementation of such a large-scale project. Time was required first to determine a set of woodland ecological indicators that would provide a reliable indication of woodland ecological condition and then to collect the field data. In turn a process to convert this data to a classification of condition status had to be established. The data collection was coordinated by the National Forest Inventory (NFI) team and this study is the largest and most in-depth assessment of the ecological condition of any habitat in Great Britain.

The statistics in this report were collected as part of a scientific survey, the NFI, which has proven itself dependable in the domains of timber stock estimation and carbon stock estimation. Most of the statistics presented are based on simple identification of tree and vegetation species, or quantitative measures such as tree counts and deadwood volume. Other more qualitative or complex measures, such as % levels of herbivore browsing damage, or % of squirrel stripping high in the canopy, may under report to some extent, but overall the broad trends identified hold and have stood up to testing against comparable data sources and expert opinion.

### 18.1 Woodland area

One of the most notable results from this study was the total area of native woodland in Great Britain is now estimated to be 1.51 million hectares. This is circa 500 thousand hectares greater than previously reported in the 2008 HAP assessment. Similarly, the native woodland area estimate in Scotland has also risen. In Scotland 443 thousand hectares is now classified as native woodland, an increase of 132 thousand hectares on the previous estimate reported in the 2013 NWSS. Most of this increase in native woodland resource is in North East and West Scotland.

The increase in the NFI estimation of area of native woodland in Britain as compared to the 2008 Hap assessment is as a result of the application of improved earth observation techniques, which identified existing woodlands that previous assessments missed. Those previously missed tended to be smaller woods.

The greater area of native woodland found by the NFI as compared to NWSS is a result of the different minimum size thresholds used compared to the NWSS survey. The NFI includes stands as small as 0.1 hectare, whereas NWSS had a minimum threshold of 0.5 hectare.

# NFI woodland condition statistics

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The estimates of the relative proportions of the different native woodland habitat types has also changed as a result of the data collected in this study. Estimates now suggest that some habitats that were previously thought to be rare are much more prevalent. This is because in this study the NFI reduced the minimum area of a 'qualifying stand' of a woodland habitat within a woodland from  $\geq 0.5$  ha to  $\geq 0.01$  ha. Therefore, woodland types such as wet woodland, which naturally occur in smaller localised patches (of wetter land), are now recorded and included, where previously they may have been 'lost' in the counts of other woodland types.

There has also been changes in the area classified as priority woodland types compared with the [Native Woodland Survey of Scotland](#) (NWSS), due to the use of lower minimum size thresholds of assessment used by the NFI including:

- 82 thousand hectares of lowland mixed deciduous woodland in Scotland compared to the 23,189 hectares estimated in NWSS (2014).
- 124 thousand hectares of native Pine wood in Scotland, an increase from 87,599 hectares reported by the NWSS (2014).
- 33 thousand hectares of Upland Oakwood in Scotland compared to previously reported estimates of 19 thousand hectares (NWSS),
- 120 thousand hectares of Upland Birchwood in Scotland compared to the NWSS estimate of 91 thousand hectares.
- 20 thousand hectares of nearly native woodland and fragments in Scotland.

Areas of near native woodlands and fragments include native woodland patches of  $< 0.1$  hectares or stands with only 40 to 50% native canopy cover meaning that areas of native stands that are  $\geq 0.1$  hectares and  $\leq 0.5$  hectares are now included in native woodland area.

This study also suggests that there is a shift in the relative proportions between Upland Oakwood and Upland Birchwood when compared to previous estimates in NWSS. This study estimates 33 thousand hectares of Upland Oakwood in Scotland compared to the NWSS estimate of 19,500 thousand hectares and estimates 120 thousand hectares of Upland Birchwood in Scotland compared to the NWSS estimate of 91,200 thousand hectares. This change in estimates is likely to be as a result of methodological differences between this study and NWSS and how these two habitats are separated in situations where the two habitats overlap.



The present study estimates that there is 20 thousand hectares of near native woodland and fragments in Scotland, compared to the NWSS that estimated 13,400 ha of near native woodland. However, the NWSS estimate of near native woodlands only included woodland with 40-50% native tree species and did not include fragments.

## 18.2 Ecological condition

Many woodland variables can be used as indicators of ecological condition, including age class structure, capacity to support invertebrate and vertebrate life, threats to health and regenerative status. The statistics reported here have been used in a qualitative scoring system to calculate the condition status for each stand as either 'favourable', 'intermediate' or 'unfavourable' as compared to an agreed threshold for each indicator. A benchmark of expected condition that would be found in an ancient semi-natural woodland (ASNW) in good condition was used as that threshold and has been reported in the *NFI Woodland Ecological Condition of Great Britain: Methodology* and the condition status classification of each woodland type in Scotland is reported in *NFI Woodland Ecological Condition in Scotland: Classification Report*. Reports for other GB countries are also available.

## 18.3 Conclusion

This study is a foundation and a reference data source that will be used to build a fuller picture of woodland ecological condition in all woodland types in Scotland. Broad comparisons can be made, in terms of woodland area figures, against previous surveys such as the NWSS and the 2008 HAP assessment. Successive reports will allow trends to be established and monitored.

## 19 Glossary

Word/phrase	Definition
Age class	A grouping of trees into specific age ranges for classification purposes. For the purposes of the "age distribution of trees" NFI WEC indicator, trees are grouped into three age classes: 0 – 20 years (Young); 21 - 150 years (Intermediate); >150 years (Old). For birch, cherry or Sorbus species: 0 - 20 years (Young); 21 - 60 years (Intermediate) >60 years (Old). Not applicable is used for stands without trees.
Ancient semi-natural woodland (ASNW)	Woodland which has been in continuous existence since 1600 (1750 in Scotland).
Area (forest/woodland)	Forest and woodland area can be defined in net or gross terms. Net area is the land actually covered by trees (in the National Forest Inventory that is to the drip line of the canopy). Gross area includes both the area covered by trees and the open spaces (<0.5 hectare) within (e.g. rides, glades, ponds).
Bark stripping	The removal of bark from trees by herbivores.
Biodiversity	Biodiversity represents 'all heritability-based variation at all levels of organisation, from the genes within a single local population, to the species composing all or part of a local community, and finally to the communities themselves that compose the living parts of the multifarious ecosystems of the world' (Wilson, 1997, p.1)
Broadleaves	Trees and shrubs that belong to the angiosperms (flowering plants) (as distinct from the gymnosperms that includes conifers). Most in the UK are deciduous and have laminar leaves (they do not have needles or cones) and a few, such as alder, have cone-like structures for their seeds which are not true cones. Sometimes referred to as 'hardwoods'.
Browsing	Herbivores feeding on tree buds, shoots and foliage.
Canopy	The mass of foliage and branches formed collectively by the crowns of trees.
Canopy cover	The percentage cover of the canopy across a defined area (e.g. NFI survey section or square).
Clear-felling	Cutting down of an area of woodland (if it is within a larger area of woodland it is typically a felling greater than 0.25 hectare). Sometimes a scatter or small clumps of trees may be left standing within the felled area.
Common Standards Monitoring (CSM)	The CSM approach was established during the 1990s by UK conservation agencies to describe the condition of protected sites, such as Sites of Special Scientific Interest (SSSI), in order to assess the effectiveness of conservation policies and practice.
Component (or sub-component)	Individual elements of the NFI survey component group. For example, each tree species will be recorded under a separate component, as will each habitat type if two habitats are intimately mixed (such as upland birchwood and wet woodland).
Component group	Homogeneous areas of the NFI survey that are too small (<0.05 ha) to practically map using Geographic Information System (GIS) software in the field, but with most of the same defining characteristics as a section. Component groups can be subdivided into components.
Condition	Shorthand for Woodland Ecological Condition.

# NFI woodland condition statistics

Word/phrase	Definition
Conifers	Trees and shrubs that belong to the gymnosperms, as distinct from the angiosperms that include broadleaves). Conifers mostly have needles or scale-like leaves and are usually evergreen. Sometimes referred to as 'softwoods'.
Convention on Biological Diversity (CBD)	A multilateral treaty to develop national strategies for the conservation and sustainable use of biological diversity.
Crown dieback	The death of branches within a tree's crown.
Deadwood	Non-living woody biomass not contained in the litter, either standing or lying on the ground (the NFI 'volume of deadwood' indicator does not include data on stumps).
Diameter at breast height (DBH)	The diameter on the stem of a tree at 'breast height', defined as 1.3 m from ground level.
Drip line	The drip line is the furthest tip of the widest branch in the crown; the last point from which the tree can drip if wet. If two treed sections have drip lines that cross over each other use the centre line of the cross over.
Earth observation	The collection of information about the physical, chemical, and biological systems of the planet via remote-sensing technologies.
Ecology	The relations of organisms to one another and to their physical surroundings.
Establishment	The formative period that ends once young trees are of sufficient size that, given adequate protection, they are likely to survive at the required stocking. This varies for species and according to environmental condition, but is typically from around five to twenty years.
EU Habitats Directive	The EU Habitats Directive (Directive 92/43/EEC) aims to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on its Annexes to a favourable conservation status (JNCC, 2018).
(Vegetation) field layer	Vegetation 10 cm to 2 m tall measured as part of the NFI vegetation assessment.
Flora	The plants of a particular region, habitat, or geological period.
Forest (or woodland)	See woodland
Forestry Commission (FC)	The government department responsible for regulating forestry, implementing forestry policy and managing state forests in England. It was formerly also responsible for Forestry in Wales and Scotland, however on 1 April 2013 the Forestry Commission's functions in Wales transferred to a new organisation, Natural Resources Wales. From 1 April 2019, forestry was fully devolved, except for common issues addressed on a GB or UK basis, such as international forestry, plant health and forestry standards. Following devolution, two new Scottish Government agencies were created, Scottish Forestry and Forest & Land Scotland.
Forestry and Land Scotland (FLS)	The Scottish Government agency responsible for managing Scotland's national forests and land.
Fragments	Small areas of woodland with 50% or more native tree species occupancy in the upper canopy, but that fall in the size range 0.05 ha to 0.099 ha.

# NFI woodland condition statistics

Word/phrase	Definition
Geographic Information System (GIS)	A system designed to capture, store, manipulate, analyse, manage, and present spatial or geographic data.
Global Positioning System (GPS)	A satellite-based global navigation satellite system that provides geolocation and time information to a GPS receiver.
Great Britain (GB)	England, Scotland and Wales.
(Vegetation) ground layer	Vegetation 0 – 10 cm tall measured as part of the NFI vegetation assessment.
Habitat Action Plan (HAP)	For all UK BAP priority habitats classified between 1995 and 1999, a Habitat Action Plan (HAP) was created (45 in total). For the habitats added to the priority habitats list in 2007, no UK action plans have been, or will be, produced, as conservation action is now primarily carried out at a country-level, rather than a UK-level, in response to the generation of country-level biodiversity strategies and aims (JNCC, 2019a).
Herbivore	An animal that is adapted to eating plant material for the main component of its diet.
Hectare (ha)	Unit of area defined as 10,000 square metres (100 m by 100 m), approximately equivalent to 2.47 acres.
Indicator	A quantitative or qualitative parameter that synthesises complex information and can be periodically measured to assess trends over time. 15 stand level indicators were selected to assess the condition of woodlands as part of the NFI WEC approach.
Invasive species	A species that is not native to a location, where it is likely to cause ecological or economic harm.
Invertebrate	A cold-blooded animal that does not have a backbone.
Lichen	A composite organism that arises from algae or cyanobacteria living among filaments of multiple fungi species in a mutualistic relationship.
National Forest Inventory (NFI)	National forest inventories are carried out in GB by the FC to provide accurate, up-to-date information about the size, distribution, composition and condition of the forests and woodlands. The current NFI, which began in 2009, is a multi-purpose operation that has involved the production of a forest and woodland map for GB and a continuing programme of field surveys of the mapped forest and woodland areas.
National Forest Inventory map	An earth observation-based programme that monitors and maps the extent and location of woodlands across GB on an annual basis.
National Forest Inventory field survey	A field survey of a large, stratified-random sample (15,100 sites) of woodlands across GB on a 5-year rolling cycle using a standardised protocol.
Native species	Species that have arrived and inhabited an area naturally, without deliberate assistance by man. For trees and shrubs in the United Kingdom usually taken to mean those present after post-glacial re-colonisation (around 11,000 years ago) and before historic times. Some species are only native in particular regions - hence locally native.
Natural England (NE)	The government's adviser for the natural environment in England. Natural England is an executive non-departmental public body, sponsored by Defra.
Naturalised species	A species that, once it is introduced outside its native distributional range, establishes self-sustaining populations.

# NFI woodland condition statistics

Word/phrase	Definition
Natural Resources Wales (NRW)	The organisation responsible for advising the Welsh Government on the environment, created on 1 April 2013. NRW is responsible for the functions previously carried out by the Environment Agency in Wales, the Countryside Council for Wales and Forestry Commission Wales.
National Vegetation Classification (NVC)	Vegetation classification system commonly used in Great Britain.
Native woodland	Woodland with 50% or more native tree species occupancy in the upper canopy that either: <ul style="list-style-type: none"> <li>- Forms a discrete woodland parcel with a minimum area of 0.5 ha.</li> <li>- Forms a woodland stand with a minimum area of 0.1 ha that is part of a woodland that is 0.5 ha or larger.</li> </ul>
Native Woodland Survey of Scotland (NWSS)	A survey of all native woodlands, nearly native woodlands and non-native plantations on ancient woodland sites in Scotland.
Near native woodland	'Nearly' native woodland with 40% to 49% native species canopy cover.
NFI Condition Calculator	An analytical GIS tool developed to automatically produces the component group-level NFI WEC indicator results per woodland type and aggregated statistics for the reporting area.
NFI WEC working group	The expert committee that was established to develop the NFI WEC indicator approach. This group consists of representatives from (former) FC England and Scotland, Scottish Natural Heritage, Natural England, Natural Resources Wales and the Welsh Government.
Non-native woodland (Woodland) parcel	Woodland with less than 40% native species occupancy. Discrete blocks of woodland that are separated from other woodland parcels by gaps of at least 20 m in length.
Private sector estate	Forests and woodlands in the UK not managed by the Forestry Commission, Natural Resources Wales or Forest Service. In the context of the National Forest Inventory, 'Private sector' is used for convenience although it includes land owned or managed by bodies such as local authorities and charities.
(Natural) Regeneration	The regeneration of existing woodland by natural means, i.e. without sowing or planting.
(Ecological) resilience	The ecological resilience of woodland ecosystems refers to their ability to absorb disturbance while maintaining the major habitat-forming species that define their structure and ecosystem functioning. Resilience incorporates both the woodland ecosystem's ability to resist changes in response to disturbance or, failing this, its capacity to recover functioning via adaptation.
(NFI) sample square	The one-hectare (100 m by 100 m) square plots, which may be entirely within woodland or may overlap the woodland edge, used for the NFI field survey.
Sapling	Young tree $\geq 50$ cm tall and $< 4$ cm in diameter.
Saproxyllic	Dependent on deadwood.
(NFI WEC) score	An ordinal score is assigned to the individual indicator classes of 'unfavourable' (1), 'intermediate' (2) and 'favourable' (3). The scores are summed for all 15 indicators to provide each stand's overall ecological condition score, which has a maximum value of 45.
Scottish Natural Heritage (SNH)	The public body responsible for protecting and promoting Scotland's natural heritage, especially its natural, genetic and scenic diversity. To be renamed 'NatureScot' from May 2020.

# NFI woodland condition statistics

Word/phrase	Definition
Section	Within each NFI sample square, the forest was stratified into different woodland 'sections'. Sections are defined by individual strata at least 0.05 ha in size that are differentiated on basis of forest type, habitat, land use, silviculture system, tree and shrub composition, age and structure.
Seedling	Young tree <50 cm tall.
Shrub	Woody plants often (but not always) branching abundantly from the base that are between 2-5 m tall.
(Vegetation) shrub layer	Vegetation 2-5 m tall measured as part of the NFI vegetation assessment.
Site of Special Scientific Interest (SSSI)	A formal conservation designation that is applied to areas of particular interest to science because of the geology/geomorphology features or species it contains or supports.
(Woodland) Stand	A distinct area of woodland (from either planting or natural regeneration), generally composed of a uniform group of trees in terms of species composition and spatial distribution, and age and size class distribution.
Standard error (SE)	The measure of the margin of error associated with an estimate as a result of sampling from a population with statistical variability. Larger standard errors indicate less precision in the estimate. Standard errors in this report are quoted in relative terms (i.e. as percentages of the value of the estimate). In this report, any standard error greater than 25% is reported in amber italics and represents a lower degree of assurance in the estimates.
Stocking	The density of trees within a woodland.
Stump	The above-ground base part of a tree that would usually remain after felling.
Transect	A path along which a survey is carried out.
Transition woodland	Land classified as woodland area that is in transition between no tree cover and tree cover. Examples include clear-fell sites, restock sites, new planting sites and land with natural regeneration.
UK Biodiversity Action Plan (UK BAP)	The UK government's national biodiversity action plan that was developed in response to the Convention on Biological Diversity and replaced by the 'UK Post-2010 Biodiversity Framework' in 2012 following new international targets. It described the biological resources of the UK and provided detailed plans for conservation of these resources (JNCC, 2019a). The UK BAP priority habitats were identified as the most threatened habitats requiring conservation action under the UK BAP.
UK Forestry Standard (UKFS)	The reference standard for sustainable forest management across the UK that applies to all woodland to ensure that international agreements and conventions on areas such as sustainable forest management, climate change, biodiversity and the protection of water resources are applied in the UK.
United Kingdom (UK)	Great Britain and Northern Ireland.
Woodland (or forest)	Land predominately covered in trees (defined as land under stands of trees with a canopy cover of at least 20%, or the ability to achieve this, and with a minimum area of 0.5 hectare and minimum width of 20 m), whether in large tracts (generally called forests) or smaller areas known by a variety of terms (including woods, copses, spinneys or shelterbelts).

## NFI woodland condition statistics

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Word/phrase	Definition
(NFI) Woodland Ecological Condition (WEC)	The approach used by the NFI to assess the ecological condition of woodlands in GB in terms of their likely biodiversity value.
(Woodland) storey	A woodland's trees and shrubs can often be stratified into distinct layers, or storeys, according to their height.
Vertical (woodland) structure	The number of canopy storeys present.
Veteran trees	A tree that is of interest biologically, culturally or aesthetically because of its age, size or condition (Read, 2000)



## 20 NFI national reports

This inventory report is one of a series of publications reporting the outputs of the Forestry Commission National Forest Inventory.

These and NFI data can be found on the NFI website:

[www.forestresearch.gov.uk/inventory](http://www.forestresearch.gov.uk/inventory)

## Official Statistics

This is an Official Statistics publication. More information about Official Statistics and the UK Statistics Authority is available at [www.statisticsauthority.gov.uk](http://www.statisticsauthority.gov.uk)

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