Forest Research

Hardwood Price-size Curves

for 2023 Calendar Year

Forest Research and Grown in Britain

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Forest Research

Grown in Britain

The Research Agency of the Forestry Commission

Forest Research is the Research Agency of the Forestry Commission and is the leading UK organisation engaged in forestry and tree related research.

The Agency aims to support and enhance forestry and its role in sustainable development by providing innovative, high quality scientific research, data, technical support and consultancy services.

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Glossary

Term	Definition
Beam grade	Timber suitable for structural beams in construction. Of the hardwoods included in this publication, generally only oak and sweet chestnut are used for this purpose.
First grade planking	Timber suitable for producing planking and boards that has 'a uniform appearance with few if any knots, splits or other features that would limit their use in applications where little variation in appearance is permitted' (Davies and Watt, 2005).
First grade sawlog	A sawlog that has 'a uniform appearance with few if any knots, splits or other features that would limit their use in applications where little variation in appearance is permitted' (Davies and Watt, 2005). This category is used for first grade timber from cherry and lime, and for poplar sawlogs.
Motor manual harvesting	Harvesting carried out by chainsaw operators, also known as chainsaw felling.
Nominal values	Values that have not been adjusted to account for inflation.
Roadside sale	Sales of timber after harvesting. The owner is responsible for getting the trees felled and extracting them to the side of the road, ready to take away.
Sapwood	'The outer zone of a tree underneath the bark that, when the tree is growing, contains living cells and conducts sap. Sapwood is frequently paler than the heartwood though is not clearly differentiated in all species. Sapwood has a low natural durability' (Davies and Watt, 2005).
Sawlog	The part of a tree that is of a suitable size and quality to be used to produce sawn timber.
Second grade planking	Timber suitable for producing planking and boards that has 'some knots, splits or other features that limit use where uniformity of appearance is important. Nevertheless the piece will yield areas clear of unacceptable features along

	with timber suitable for applications where some variation is acceptable' (Davies and Watt, 2005).
Standing sale	Transaction where trees are purchased unfelled, and the buyer is responsible for felling and transportation off site.

1 Introduction

The 2023 price-size curves in this report provide an updated snapshot of prices for UK-grown hardwood species during the calendar year 2023. They are constructed based upon the same method used in the 2022 price-size curves published by Forest Research in collaboration with Grown in Britain (GiB), adopting a mixed approach that supplements expert judgement with timber sales data collected via a survey of sellers and buyers of UK-grown hardwood.

Graham Taylor of Pryor & Rickett Silviculture, in collaboration with GiB, provided vital industry expertise to support the project, offering expert judgement on typical prices for different hardwood species and their variation by size grade. As with the 2022 price-size curves, the average price estimates for 2023 are based upon a similar approach to the hardwood price-size curves published by GiB in 2017 and 2018, which similarly relied on Taylor's expert judgement. Whereas the latter did not draw on survey data, where sufficient data was collected, the 2023 price-size curves (along with ones for 2022) base low and high price estimates on transaction data from the survey of sellers and buyers of UK-grown hardwood. A comparison of the 2023 price-size curves with the versions for 2022, 2018 and 2017 is provided in Section 6, with a comparison in 'real terms' accounting for inflation given in Appendix C – Historical price-size curves in real terms (2023 prices).

While every effort has been made to make the results presented in this report as representative as possible, due to the outputs being based largely on expert judgement (with collected transaction data supplementing this in some but not all cases) the statistical outputs of these methods should be regarded as indicative. Consequently, the data presented should be interpreted with this in mind and may not reflect the market as a whole during 2023. It is recommended to read Section 4 – 'Assumptions', prior to interpretation of the price-size curves, as this provides important context to the data presented.

2 Disclaimer

The following data relating to British hardwood prices (the Data) is subject to change at any time and is provided for illustrative purposes only. The Data shall not be deemed to include any warranty, assurance or representation, including but not limited to, its ongoing accuracy or completeness. In particular: (i) the interpretation and use of the Data is entirely at the discretion and risk of the user; and (ii) the user should, where appropriate, seek professional third-party advice. This disclaimer is subject to the laws of England and Wales.

3 Methods

3.1 Survey data

Data was collected via SmartSurvey, with respondents asked to provide information on prices of the UK-grown hardwood products they sold or purchased. Respondents consisted of traders of UK-grown hardwood timber (both buyers and sellers). This covers sawmills, forestry management and harvesting companies, agents, and woodland owners. The survey was conducted during May and June 2024 and received responses for 63 parcels. Survey data was extracted via .csv downloads from SmartSurvey, then cleaned and analysed using R (R Core Team, 2024). Units were aligned by converting all responses to m^3. Where three or more sample data points were available, price ranges were estimated from the survey data for a product. Ranges were estimated from the 2.5^{th} and 97.5^{th} percentile, providing a range of 95% of the surveyed data prices.

3.2 Expert judgement

Expert judgement was provided by Graham Taylor of Pryor & Rickett Silviculture based on personal knowledge of markets and transactions within the hardwood market over the 2023 calendar year, including that attained through wider contacts within the industry. Expert judgement median values were provided prior to the survey data analysis.

Where insufficient data was available for a product, the upper and lower range was set as +/-25% the median (expert judgement) value. In some cases this method led to the lower range including negative values (as the estimated cost of harvesting exceeded the price for the timber). As in such cases no transaction would be expected to occur (as a woodland owner would be better off not selling the timber), negative values are rounded up to zero. In all cases, expert judgement was used to estimate the median price within the range. The source of estimates (survey versus expert judgement) is defined under each chart. For ranges based

upon the survey data, all expert judgement median estimates fell within the 95% data range covered, with the exception of 'First grade Sweet chestnut', where the expert judgement median price was well above the 97.5th percentile, and 'Grade A/B Sycamore', where the expert judgement median price was just above the 97.5th percentile. This discrepancy is likely due to relatively few observations for each product category (3) in the SmartSurvey data, with the parcels covered being atypical (Graham Taylor, pers. comm.). Further information is provided underneath Figure 8 and Figure 9.

Ranges for price-size curves including survey data may not be directly comparable with those based only on expert judgement, nor are they directly comparable with each other as the amount of survey data differs in each.

4 Assumptions

The following assumptions were used as a basis for expert judgement in estimating timber prices:

1. For each species, the values of each of the marketable grades and quality classes for sawlogs at a certain average tree size have been used (see Making the Grade (Davies and Watt, 2005) for further information on hardwood timber grading). These are as follows:
    a. Ash and beech – first/second grade planking lengths.
    b. Oak and sweet chestnut – first/second grade planking lengths plus beam grade timbers.
    c. Cherry, lime, poplar, and sycamore – first/second grade sawlogs.
2. The timber sold is assumed to be defect-free, meaning they are free of stain, shake, rot or decay.
3. Typical amounts of knots and branching that occur in trees of average size are assumed.
4. For oak and sweet chestnut, typical sapwood depth of 25-30 mm outer ring depth is assumed.
5. An average parcel size is assumed to comprise between 200 m^3 and 300 m^3 of a single species, being of a good marketable size.
6. The marketing period for timber parcels is assumed to be during the main hardwood timber season from October to March.
7. Harvesting rates assume thinning (not clear felling) in average conditions and of a reasonable scale, in accessible woodlands, somewhere in Central England.
8. Extraction distances are assumed to be less than 400 m.

9. Harvesting rates assume mechanisation where tree size currently allows the timbers to be mechanised. Larger diameter hardwood sawlog harvesting rates are based on motor manual systems.
10. Mechanised harvesting rates are those undertaken without additional motor manual support and hence imply an average quality of workmanship.
11. Harvesting rates and sale values within the curves are based on £/m^3 standing sale prices overbark. In reality most timber is harvested based upon on a tonnage rate, but variable green densities are rarely reflected in harvesting rates, hence no adjustment has been made on fresh timber density within the harvesting rates.
12. Firewood values have been subject to adjustment for green density/calorific value as this is often more reflected in the prices achieved.
13. Hardwood sawlogs are usually sold on a measured (m^3) basis and prices reflect this, with the exception Poplar, which is usually sold on a tonnage basis.
14. In all cases estimated harvesting costs are based on expert judgement.
15. The Poplar harvesting rates are assumed to be more in line with those of harvested conifer, until the trees exceed mechanised harvest size.
16. A conversion factor of 1.43 is used to convert tonnes to m^3.
17. A conversion factor of 0.03605 is used to convert hoppus ft to m^3.

5 Price-size curves

The price-size curves presented in the following section give an indication of the achieved overbark standing sales prices per m^3 for each hardwood species included during the 2023 calendar year. For ease of reading, the median lines have been smoothed using a simple moving average with the original values viewable in Appendix A – Price-size curve tables. The upper and lower bound lines have not been smoothed.

5.1 Interpretation of charts

To find the estimated standing sales price in 2023 for a given species of a given average size, three steps are needed:

i) first identify the size you are interested in on the x-axis;

ii) second, trace vertically from this point until reaching the unbroken line;

iii) third, from this point on the unbroken line, trace horizontally left to find the corresponding price on the y-axis.

The same method can be used to find the lower range and upper range (which are denoted by the lighter broken lines) – see illustrative example below.

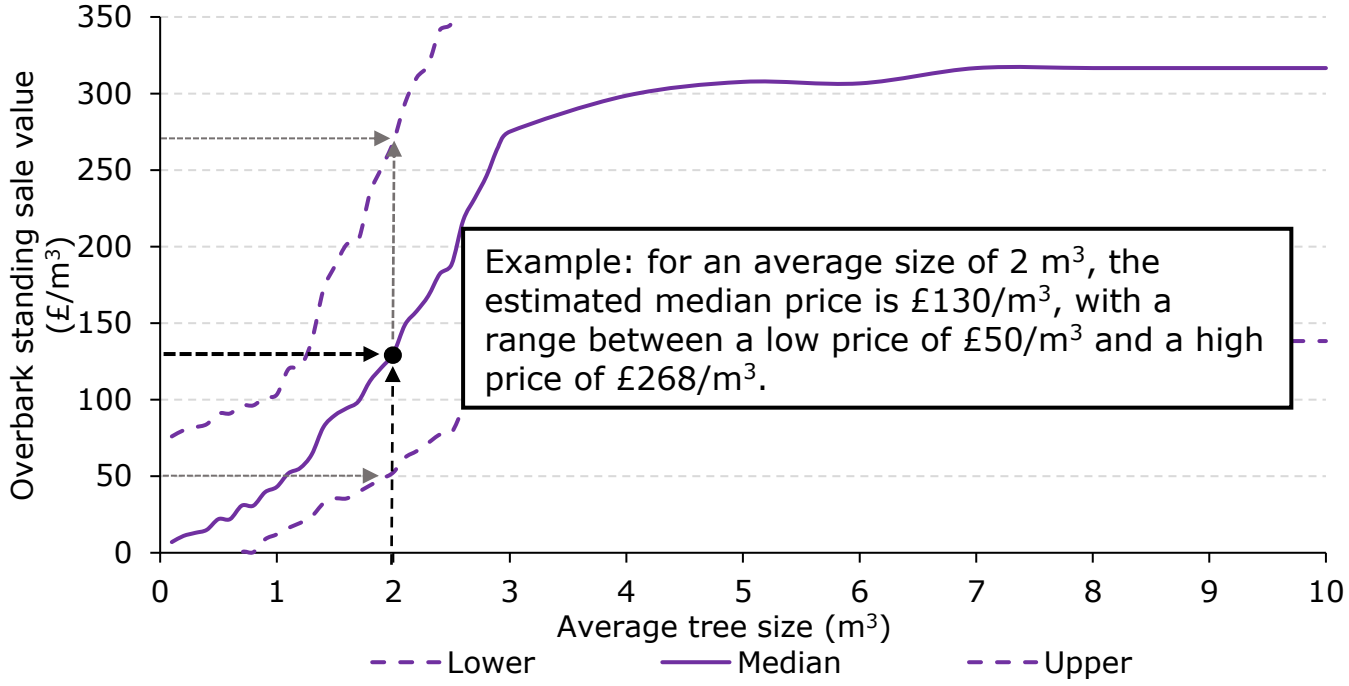

Figure 1. Illustrative example of interpreting a price-size curve chart.

5.2 Ash

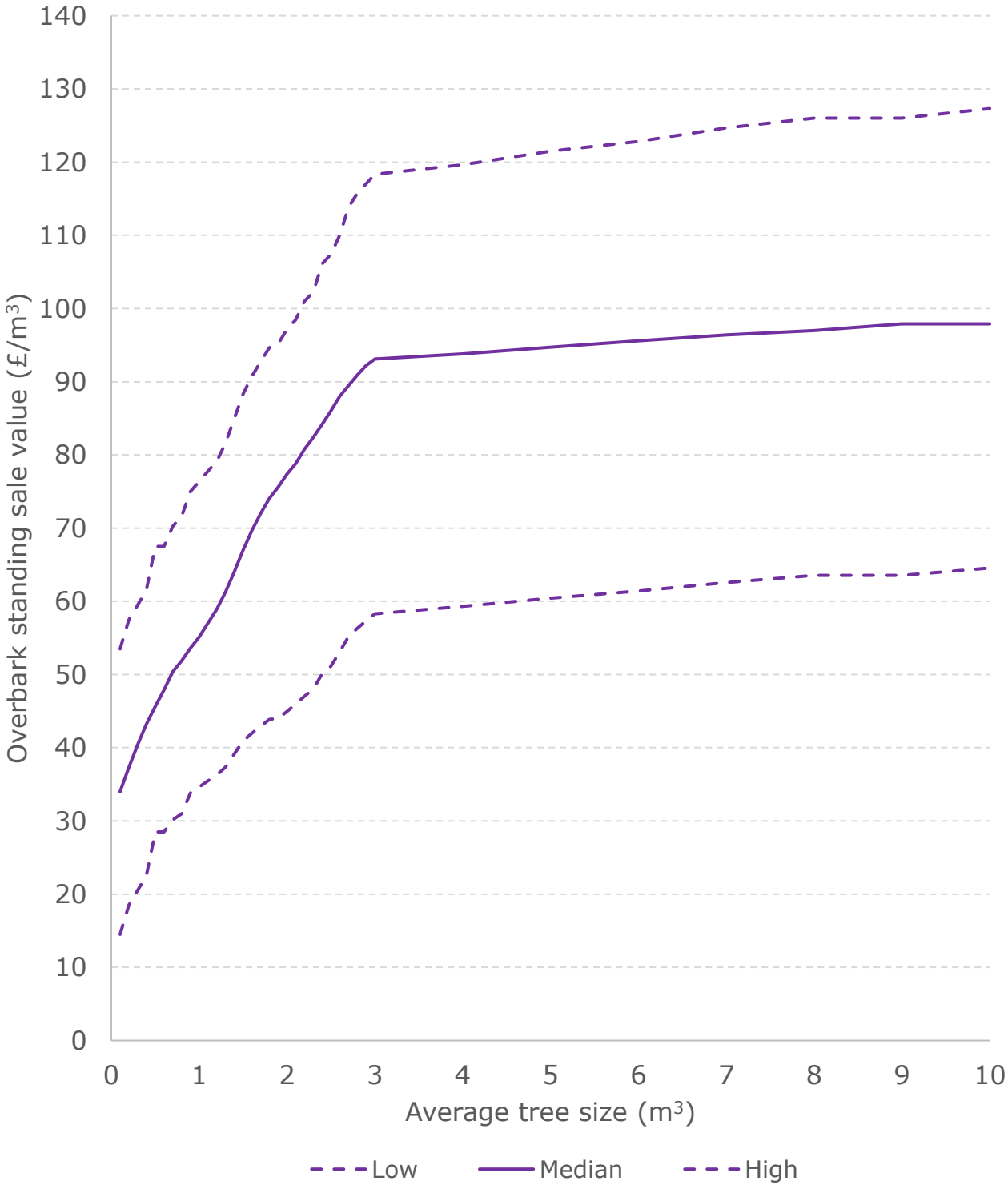

Figure 2. Ash price-size curve: standing sale price in £/m^3 at 2023 prices.
(Estimates based on survey data and expert judgement – see Appendix B.)

5.3 Beech

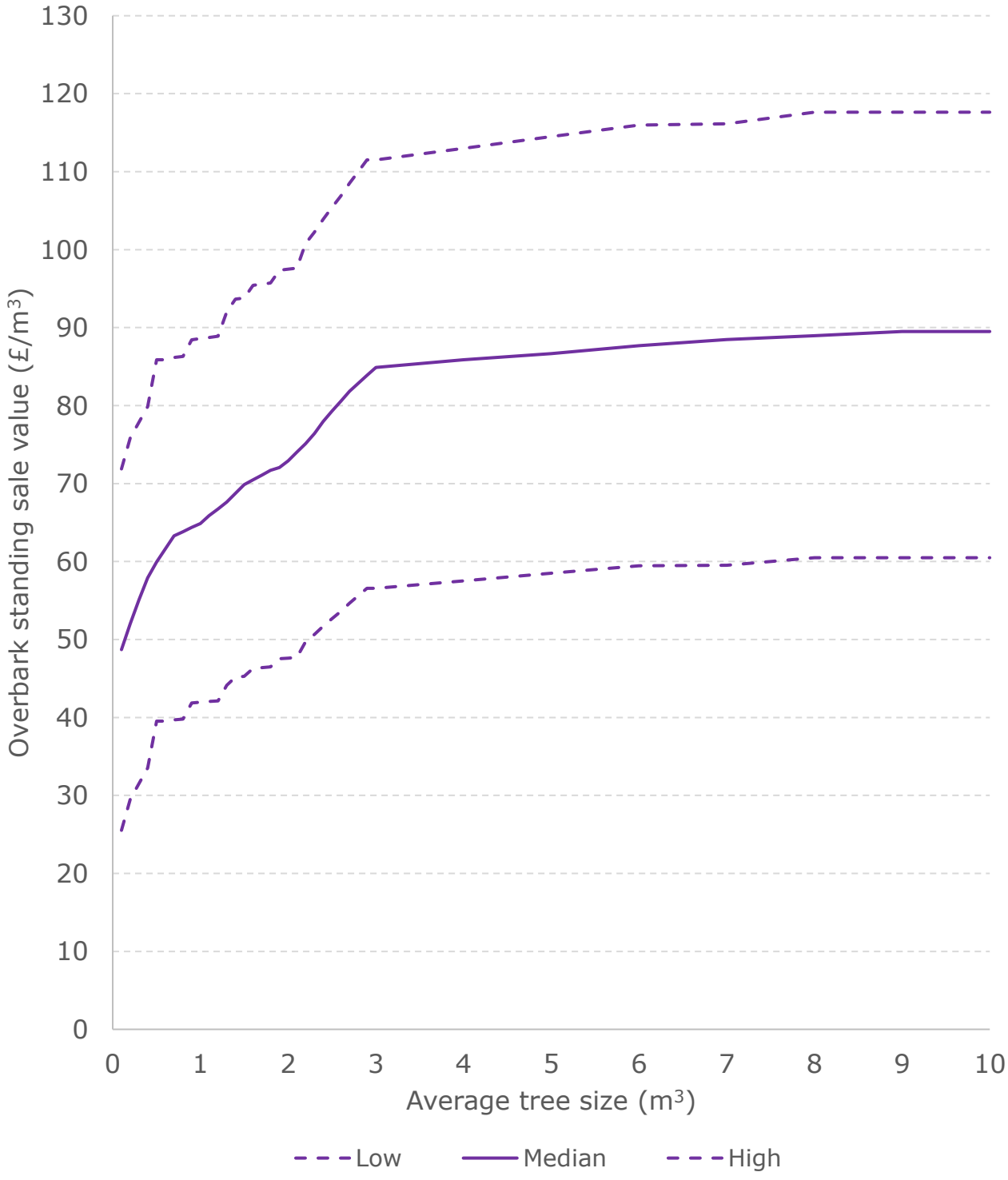

Figure 3. Beech price-size curve: standing sale price in £/m^3 at 2023 prices.
(Estimates based on survey data and expert judgement – see Appendix B.)

5.4 Cherry

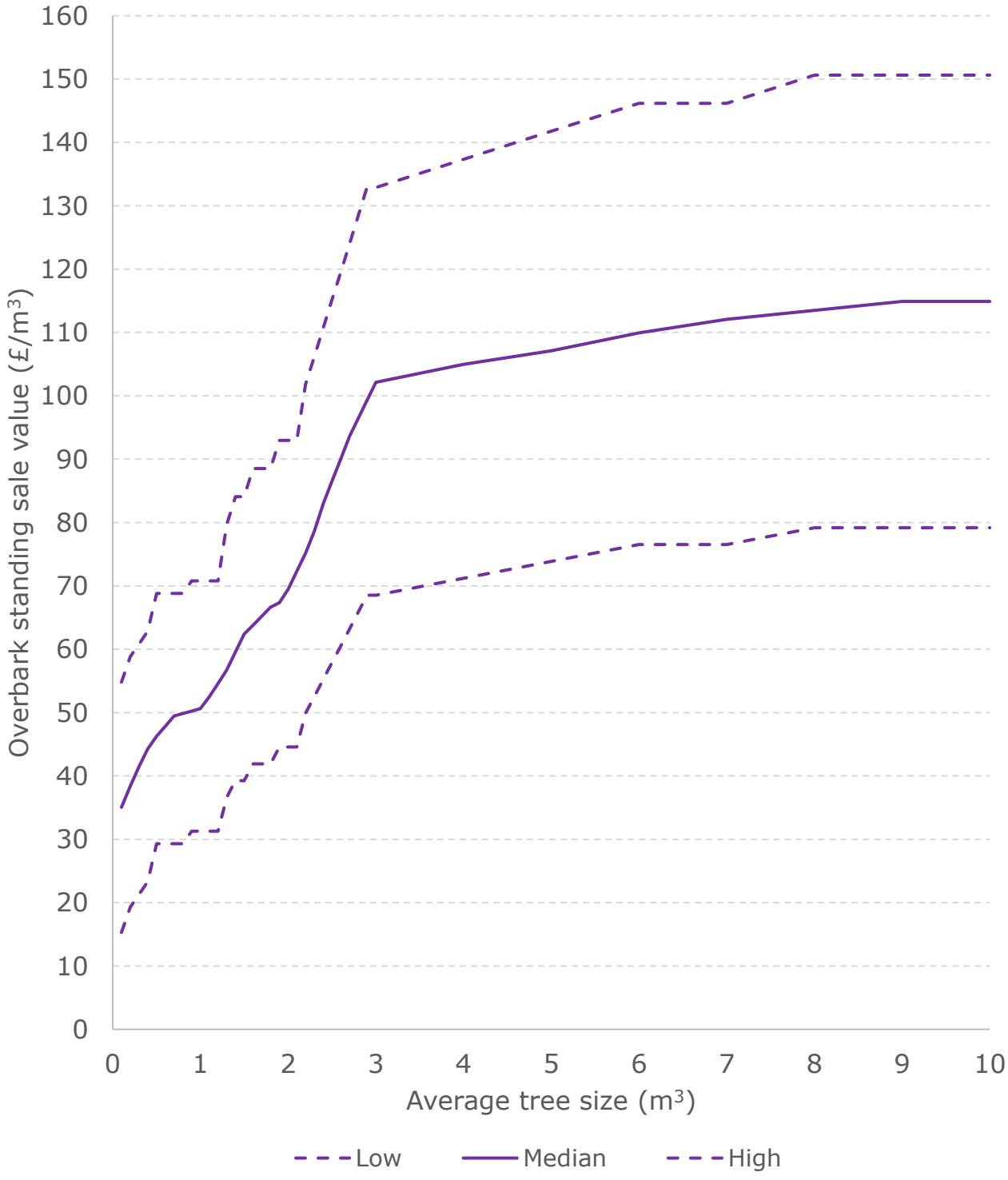

Figure 4. Cherry price-size curve: standing sale price in £/m³ at 2023 prices.
(Estimates based on expert judgement – see Appendix B.)

5.5 Lime

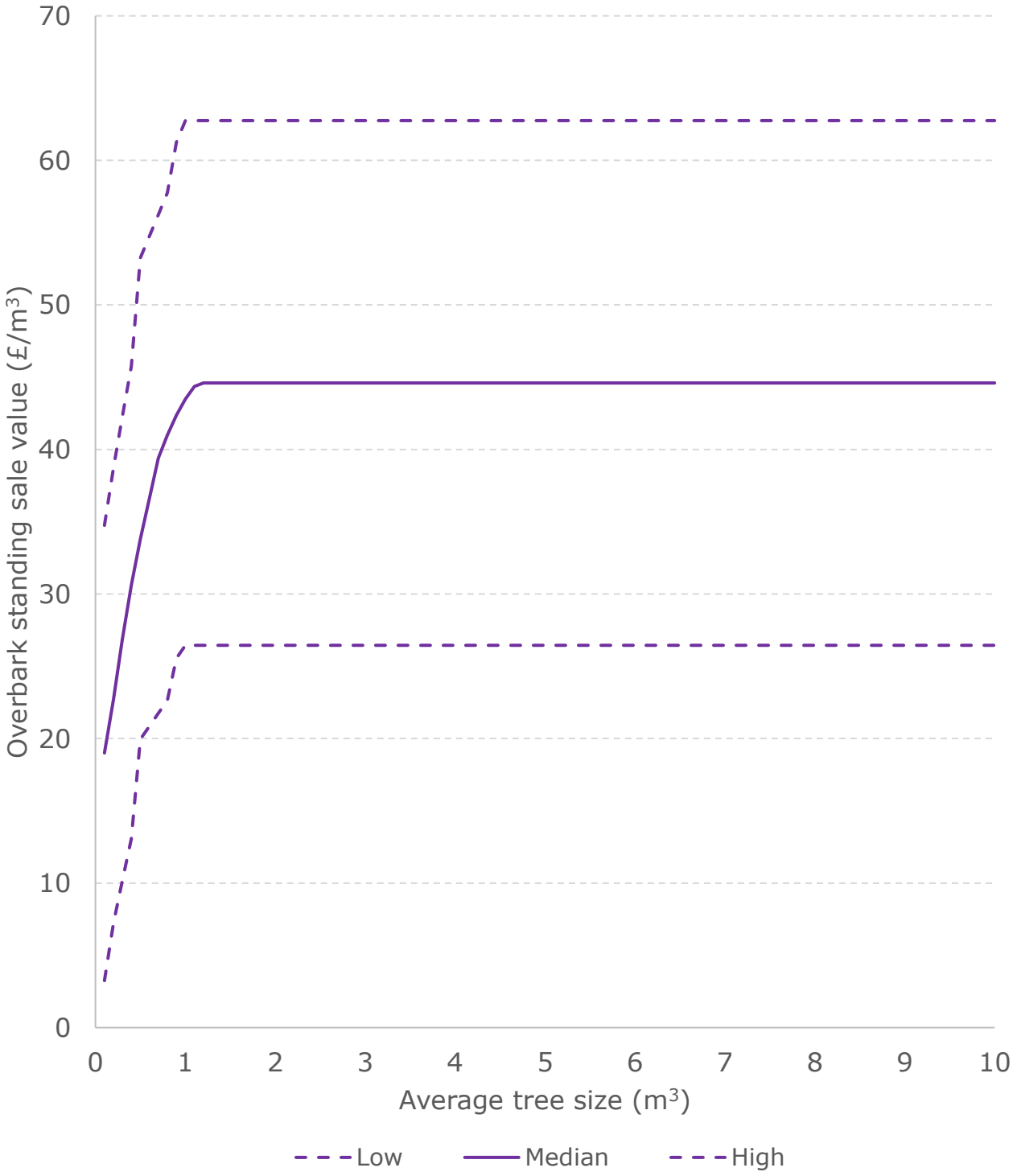

Figure 5. Lime price-size curve: standing sale price in £/m³ at 2023 prices.
(Estimates based on expert judgement – see Appendix B.)

5.6 Oak

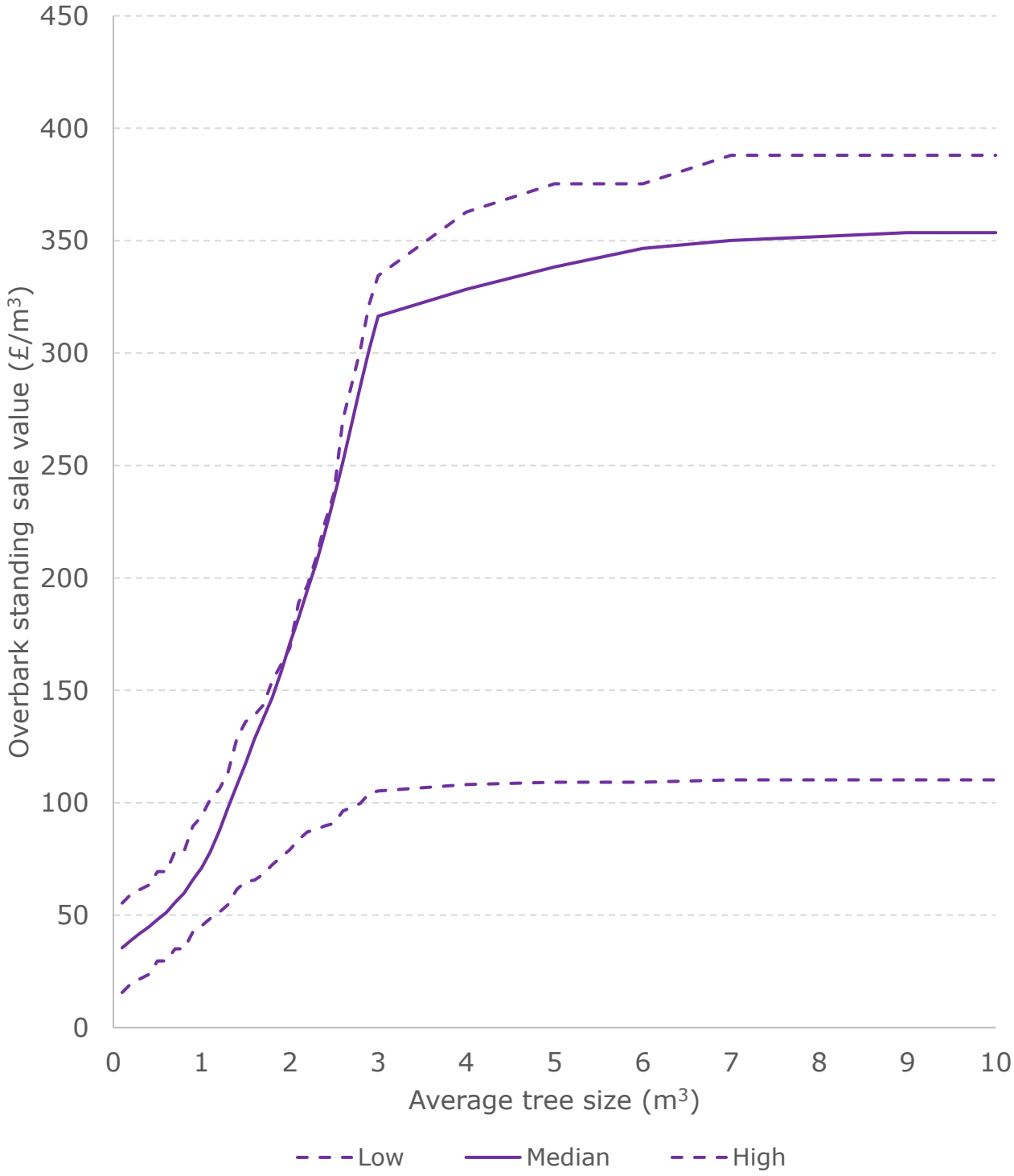

Figure 6. Oak price-size curve: standing sale price in £/m^3 at 2023 prices.
(Estimates based on survey data and expert judgement – see Appendix B.)

5.7 Poplar

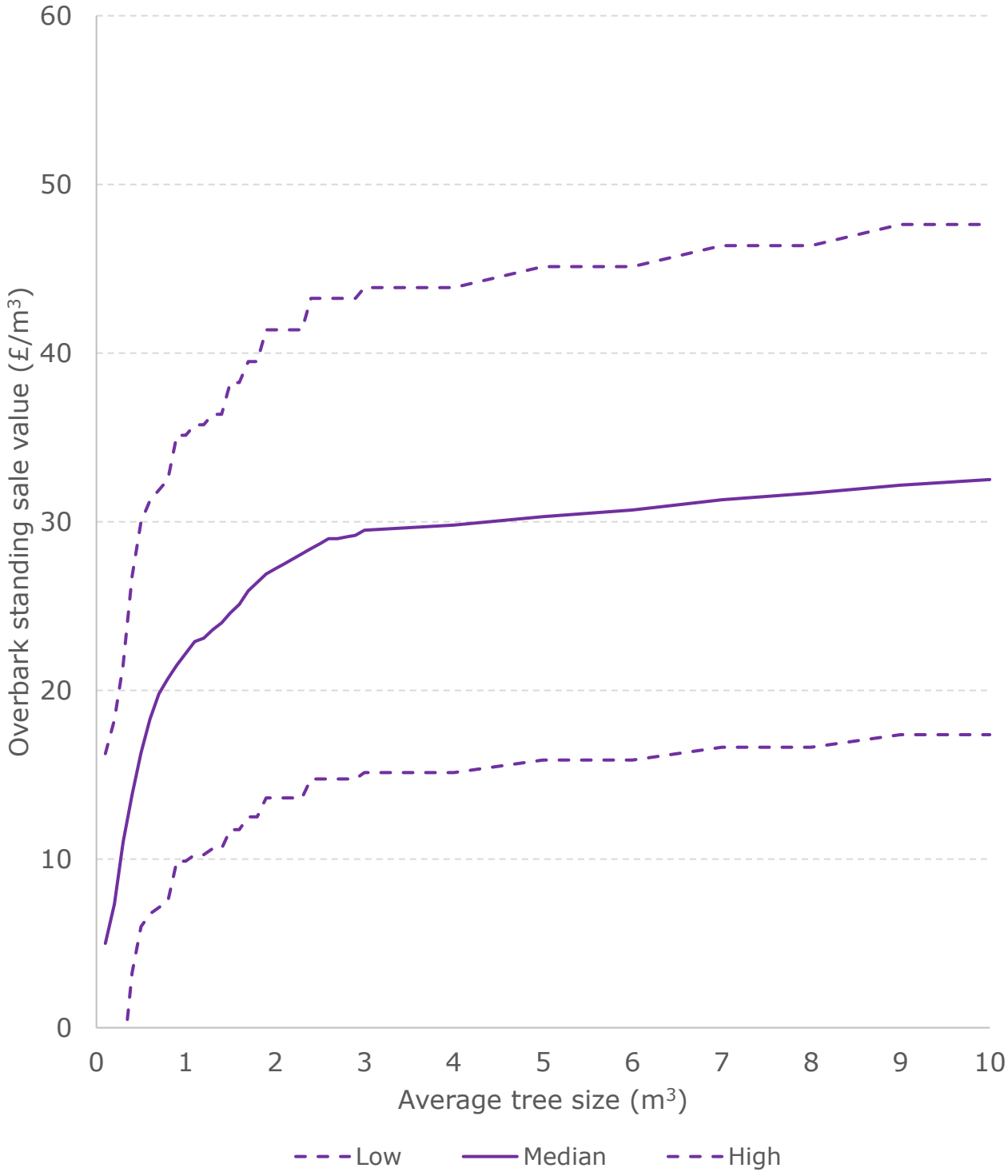

Figure 7. Poplar price-size curve: standing sale price in £/m^3 at 2023 prices.
(Estimates based on expert judgement – see Appendix B.)

5.8 Sweet chestnut

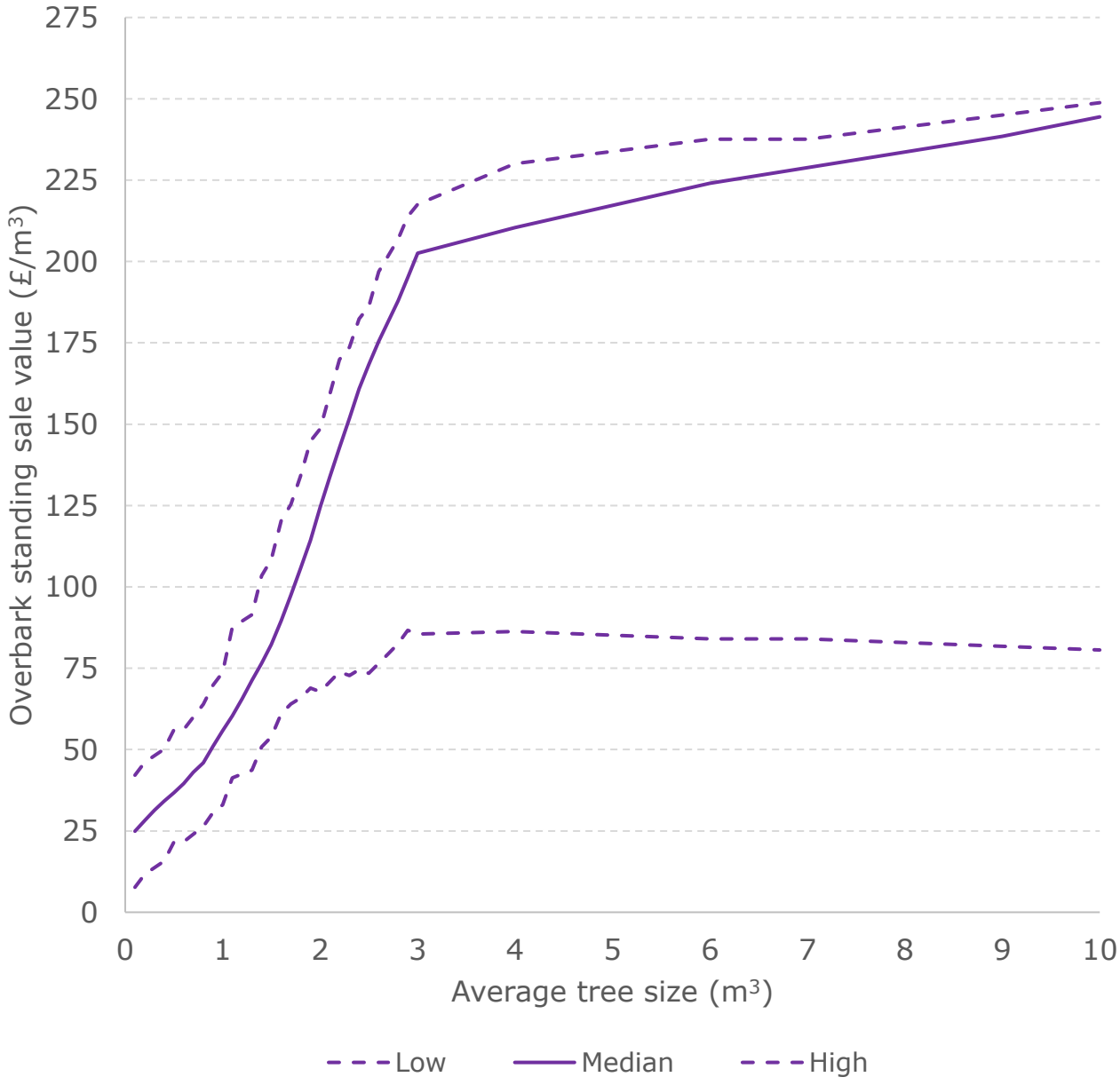

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Figure 8. Sweet chestnut price-size curve: standing sale price in £/m^3 at 2023 prices. (Estimates based on survey data and expert judgement – see Appendix B.)

Note: An anomaly between the median (expert judgement) and upper range (survey data) curves at larger sizes was apparent in relation to the price for 'first grade' sweet chestnut from survey data (£174/m^3) being substantially lower than the median price provided by expert judgement (£300/m^3). This discrepancy is likely due to relatively few observations in the SmartSurvey data with the parcels covered being atypical. For this reason, the expert judgement median price was used for the upper range value.

5.9 Sycamore

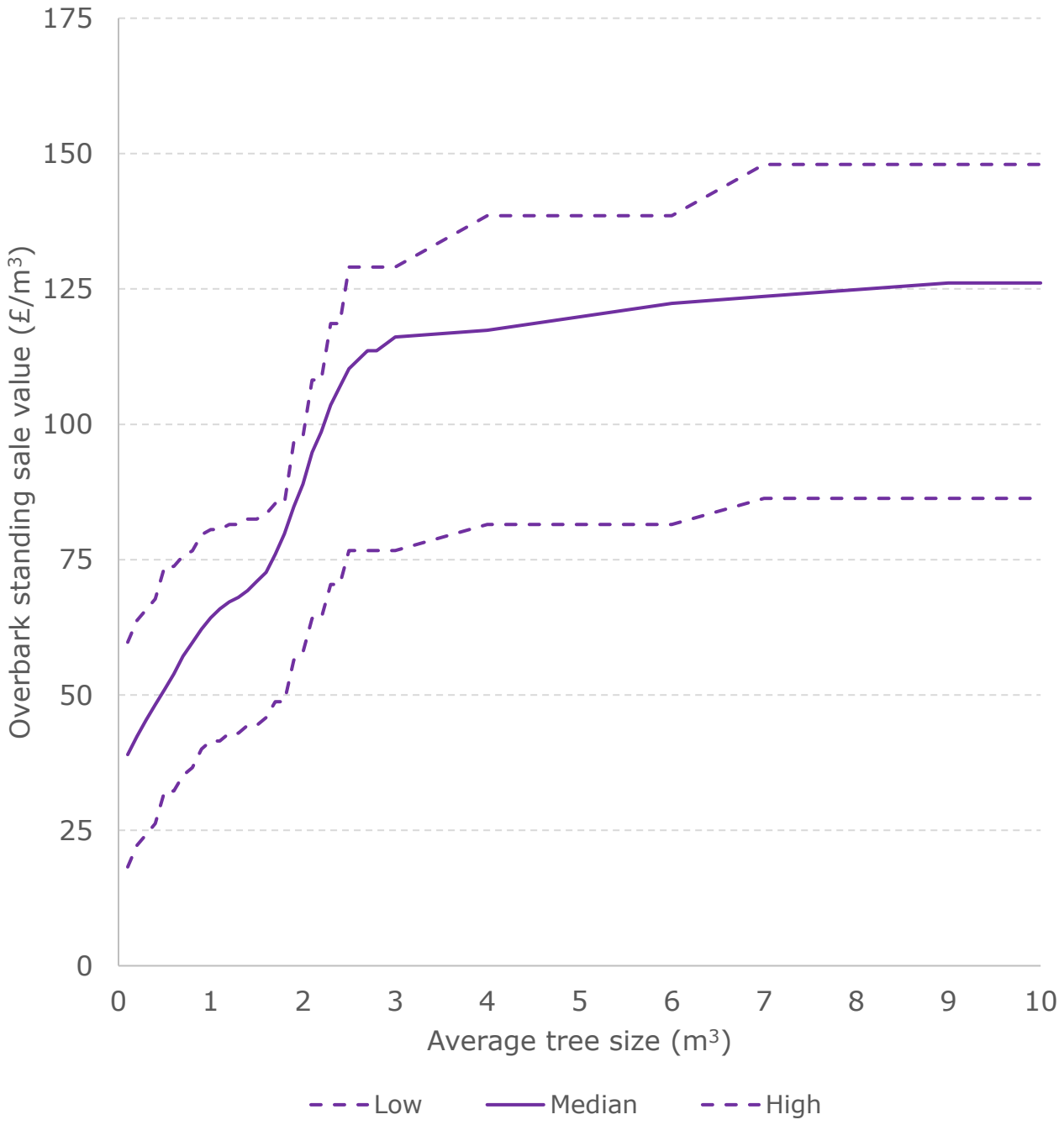


Figure 9. Sycamore chestnut price-size curve: standing sale price in £/m^3 at 2023 prices. (Estimates based on survey data and expert judgement – see Appendix B.)

Note: Estimated upper bound for 'grade A/B sycamore' from survey data (£123/m^3) was slightly lower than the median price based upon expert judgement (£125/m^3). This discrepancy is likely due to relatively few observations being available from the SmartSurvey data and being drawn from atypical parcels.

6 Trends: comparing 2023 hardwood price-size curves to 2022, 2018 and 2017 price-size curves

While the price-size curves presented in this section are based on the median for each year and rely on the same expert judgement, any inference of trends between years should be approached with caution due to potential variance within each curve presented. Although changes in the price-size curves from previous years compared to 2023 may suggest a trend, this interpretation depends on the assumption that there is little to no overlap in statistical uncertainty intervals – information that is unavailable based on the current data and methodology. Please consider the following section with this in mind.

For the majority of hardwood species covered in this publication (ash, beech, cherry, oak and sycamore) the indicative price-size curve values suggest there was an upward trend in timber prices between 2022 and 2023 in nominal terms (before accounting for inflation), as shown in the price-size curves in Figures 10, 11, 12, 14, and 17 below. In percentage terms, price increases were most notable for some of the smaller average tree sizes. The uplift in prices was generally more marked for beech and sycamore, especially for larger average tree sizes, than that for ash, oak, and cherry.

Once inflation is accounted for, the trend for the largest size grades of ash is reversed, with the modest increase in nominal prices implying a fall in prices in real terms (see Appendix C – Historical price-size curves in real terms (2023 prices)). For lime and poplar substantial decreases in timber prices were evident between 2022 and 2023, especially for some of the smaller average tree sizes, albeit with prices generally well above those estimated in 2017 and 2018 in both nominal and real terms (see Appendix C – Historical price-size curves in real terms (2023 prices)). For sweet chestnut the picture was mixed with a modest increase in

nominal prices for average tree sizes up to around 1.6 m^3, followed by a modest fall in prices for larger tree sizes.

6.1 Hardwood market insights

Significant increases in the cost of energy in the latter part of 2022 had an impact on the value of firewood and biomass across all grades. Although the rising costs of fossil fuels increased harvesting and material costs, this was more than offset by increases in consumer demand for woodfuel. Many consumers turned to woodfuel to reduce the impact of higher gas and electricity costs, with the resulting increased demand for use in domestic heating and industrial energy leading to increased prices for hardwood firewood and biomass. Consequently, competition for smaller sawlog-grade material intensified, driving up prices across all sawlog grades as sawmills also sought to secure supplies for milling. This effect is seen most strongly in the most valuable firewood species of ash and beech, which have seen the most substantial rise in price reflected in their increase in standing values in 2023 compared to 2022. Owing to the relatively low value of other species for firewood and biomass, price increases for these species has been more modest though still notable (Graham Taylor, pers. comm.).

Oak standing sales prices continued to increase through 2023, largely driven by increased prices for oak sawlogs. Since 2017 prices for oak sawlogs have continued to outpace inflation, with a rise (before accounting for inflation) of over 12% per year, well above the average inflation rate over this period (Graham Taylor, pers. comm.).

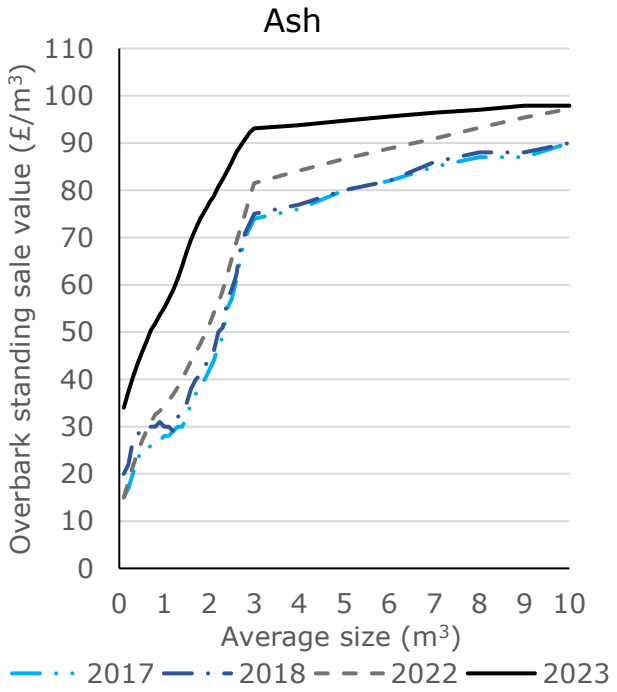


Figure 10. Ash median standing sale values by average size, grouped by year (nominal values).

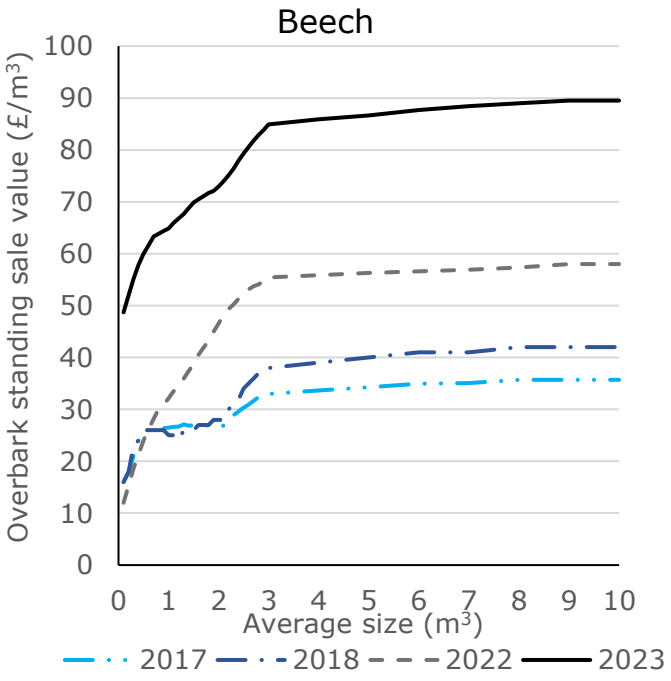


Figure 11. Beech median standing sale values by average size, grouped by year (nominal values).

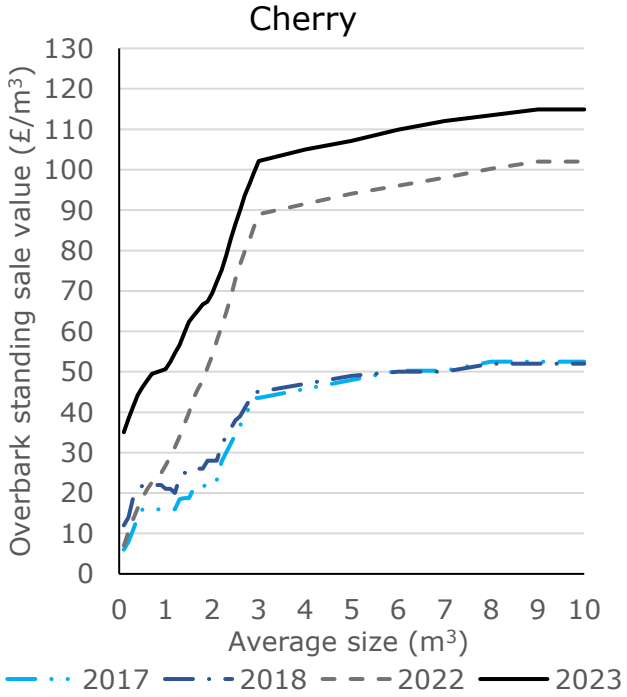


Figure 12. Cherry median standing sale values by average size, grouped by year (nominal values).

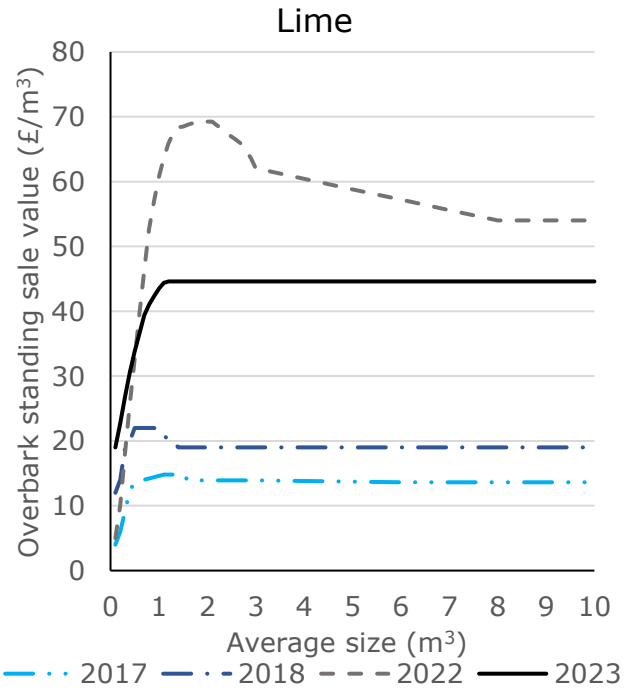


Figure 13. Lime median standing sale values by average size, grouped by year (nominal values).

Note: Data collected for 2017 and 2018 used a different methodology to data collected from 2022 onwards.

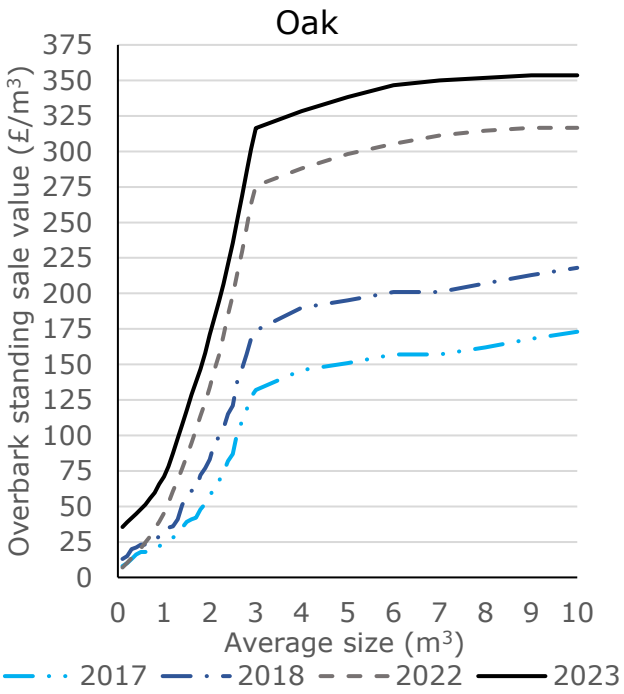


Figure 14. Oak median standing sale values by average size, grouped by year (nominal values).

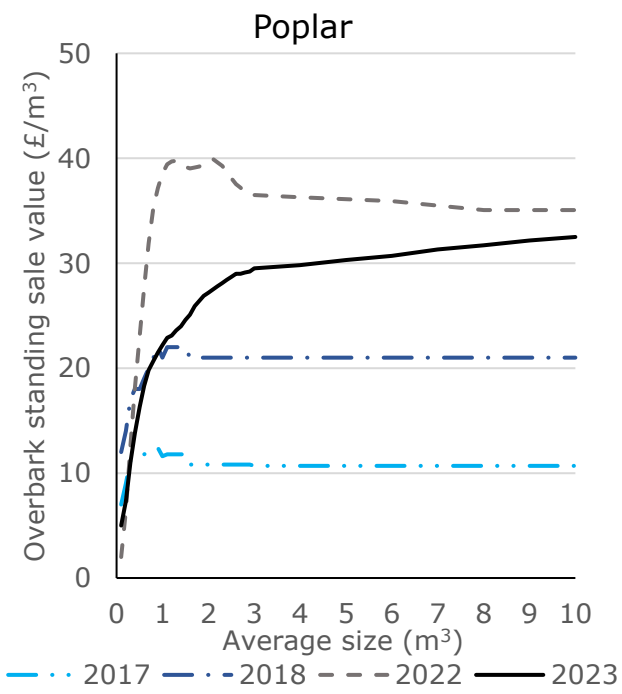


Figure 15. Poplar median standing sale values by average size, grouped by year (nominal values).

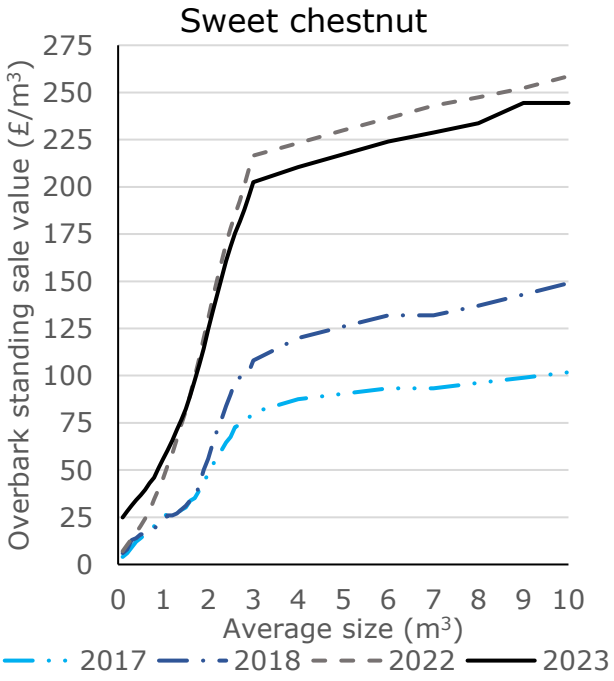


Figure 16. Sweet chestnut median standing sale values by average size, grouped by year (nominal values).

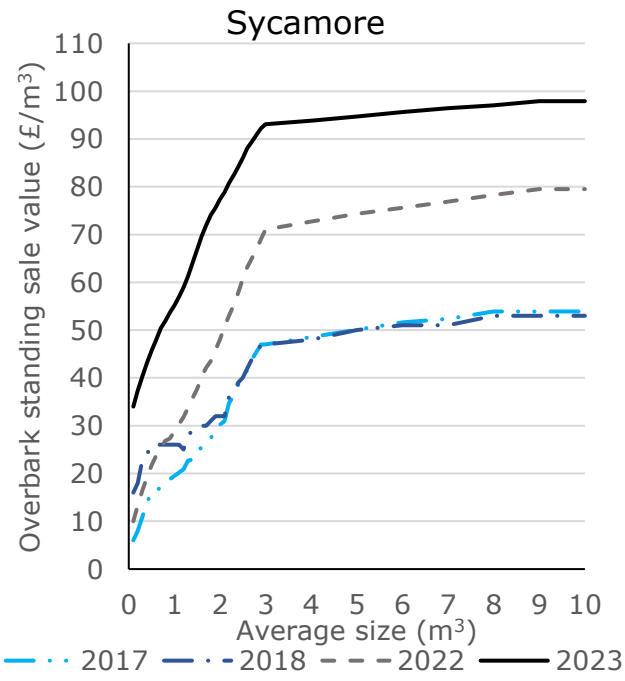


Figure 17. Sycamore median standing sale values by average size, grouped by year (nominal values).

Note: Data collected for 2017 and 2018 used a different methodology to data collected from 2022 onwards.

Appendix A – Price-size curve tables

Table 1. Ash price-size curve table.

Average tree size	Product assortment proportions				Selling roadside		Standing sale
Average size m^3	Firewood	Second	First	Prime/ niche	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	0%	0%	78	44	34
0.2	100%	0%	0%	0%	78	40	38
0.3	100%	0%	0%	0%	78	38	40
0.4	100%	0%	0%	0%	78	36	42
0.5	100%	0%	0%	0%	78	30	48
0.6	100%	0%	0%	0%	78	30	48
0.7	90%	10%	0%	0%	80	30	50
0.8	85%	15%	0%	0%	81	30	51
0.9	80%	20%	0%	0%	82	28	54
1	75%	25%	0%	0%	84	28	56
1.1	70%	30%	0%	0%	85	28	57
1.2	65%	35%	0%	0%	86	28	58
1.3	60%	30%	10%	0%	89	28	61
1.4	50%	35%	15%	0%	92	28	64
1.5	40%	40%	20%	0%	95	28	67
1.6	35%	35%	30%	0%	98	28	70
1.7	30%	35%	35%	0%	100	28	72
1.8	25%	35%	40%	0%	103	28	75
1.9	25%	30%	45%	0%	104	28	76
2	20%	30%	50%	0%	106	28	78
2.1	20%	30%	45%	5%	106	28	78
2.2	15%	25%	55%	5%	109	28	81
2.3	15%	25%	50%	10%	110	28	82
2.4	10%	20%	55%	15%	113	28	85
2.5	10%	20%	50%	20%	114	28	86
2.6	10%	20%	40%	30%	115	28	87
2.7	5%	15%	45%	35%	118	28	90
2.8	5%	10%	45%	40%	120	28	92
2.9	5%	10%	40%	45%	120	28	92
3	5%	10%	35%	50%	121	28	93
4	5%	10%	30%	55%	121	28	93
5	5%	5%	30%	60%	123	28	95
6	5%	5%	25%	65%	123	28	95
7	5%	0%	25%	70%	125	28	97
8	5%	0%	20%	75%	125	28	97
9	5%	0%	20%	75%	125	28	97
10	5%	0%	15%	80%	126	28	98

Table 2. Beech price-size curve table.

Average tree size	Product assortment proportions			Selling roadside		Standing sale
Average size m^3	Firewood	Second	First	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	0%	93	44	49
0.2	100%	0%	0%	93	40	53
0.3	100%	0%	0%	93	38	55
0.4	100%	0%	0%	93	36	57
0.5	100%	0%	0%	93	30	63
0.6	100%	0%	0%	93	30	63
0.7	90%	10%	0%	93	30	63
0.8	85%	15%	0%	93	30	63
0.9	80%	20%	0%	93	28	65
1	75%	25%	0%	93	28	65
1.1	70%	30%	0%	93	28	65
1.2	65%	35%	0%	94	28	66
1.3	60%	30%	10%	96	28	68
1.4	55%	30%	15%	97	28	69
1.5	50%	35%	15%	98	28	70
1.6	45%	35%	20%	99	28	71
1.7	40%	40%	20%	99	28	71
1.8	35%	45%	20%	99	28	71
1.9	30%	45%	25%	101	28	73
2	25%	50%	25%	101	28	73
2.1	20%	55%	25%	101	28	73
2.2	15%	50%	35%	103	28	75
2.3	15%	45%	40%	105	28	77
2.4	10%	45%	45%	106	28	78
2.5	10%	40%	50%	107	28	79
2.6	10%	35%	55%	109	28	81
2.7	5%	35%	60%	110	28	82
2.8	5%	30%	65%	111	28	83
2.9	5%	25%	70%	112	28	84
3	5%	25%	70%	112	28	84
4	5%	20%	75%	114	28	86
5	5%	15%	80%	115	28	87
6	5%	10%	85%	116	28	88
7	0%	15%	85%	116	28	88
8	0%	10%	90%	118	28	90
9	0%	10%	90%	118	28	90
10	0%	10%	90%	118	28	90

Table 3. Cherry price-size curve table.

Average tree size	Product assortment proportions			Selling roadside		Standing sale
Average size m^3	Firewood	Second	First	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	0%	79	44	35
0.2	100%	0%	0%	79	40	39
0.3	100%	0%	0%	79	38	41
0.4	100%	0%	0%	79	36	43
0.5	100%	0%	0%	79	30	49
0.6	100%	0%	0%	79	30	49
0.7	90%	10%	0%	79	30	49
0.8	85%	15%	0%	79	30	49
0.9	80%	20%	0%	79	28	51
1	75%	25%	0%	79	28	51
1.1	70%	30%	0%	79	28	51
1.2	65%	35%	0%	79	28	51
1.3	60%	30%	10%	86	28	58
1.4	55%	30%	15%	90	28	62
1.5	50%	35%	15%	90	28	62
1.6	45%	35%	20%	93	28	65
1.7	40%	40%	20%	93	28	65
1.8	35%	45%	20%	93	28	65
1.9	30%	45%	25%	97	28	69
2	25%	50%	25%	97	28	69
2.1	20%	55%	25%	97	28	69
2.2	15%	50%	35%	104	28	76
2.3	15%	45%	40%	107	28	79
2.4	10%	45%	45%	111	28	83
2.5	10%	40%	50%	115	28	87
2.6	10%	35%	55%	118	28	90
2.7	5%	35%	60%	122	28	94
2.8	5%	30%	65%	125	28	97
2.9	5%	25%	70%	129	28	101
3	5%	25%	70%	129	28	101
4	5%	20%	75%	132	28	104
5	5%	15%	80%	136	28	108
6	5%	10%	85%	139	28	111
7	0%	15%	85%	139	28	111
8	0%	10%	90%	143	28	115
9	0%	10%	90%	143	28	115
10	0%	10%	90%	143	28	115

Table 4. Lime price-size curve table.

Average tree size	Product assortment proportions		Selling roadside		Standing sale
Average size m^3	Firewood	Sawlog A/B	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	63	44	19
0.2	100%	0%	63	40	23
0.3	90%	10%	64	38	26
0.4	80%	20%	65	36	29
0.5	70%	30%	67	30	37
0.6	60%	40%	68	30	38
0.7	50%	50%	69	30	39
0.8	40%	60%	70	30	40
0.9	30%	70%	71	28	43
1	20%	80%	73	28	45
1.1	20%	80%	73	28	45
1.2	20%	80%	73	28	45
1.3	20%	80%	73	28	45
1.4	20%	80%	73	28	45
1.5	20%	80%	73	28	45
1.6	20%	80%	73	28	45
1.7	20%	80%	73	28	45
1.8	20%	80%	73	28	45
1.9	20%	80%	73	28	45
2	20%	80%	73	28	45
2.1	20%	80%	73	28	45
2.2	20%	80%	73	28	45
2.3	20%	80%	73	28	45
2.4	20%	80%	73	28	45
2.5	20%	80%	73	28	45
2.6	20%	80%	73	28	45
2.7	20%	80%	73	28	45
2.8	20%	80%	73	28	45
2.9	20%	80%	73	28	45
3	20%	80%	73	28	45
4	20%	80%	73	28	45
5	20%	80%	73	28	45
6	20%	80%	73	28	45
7	20%	80%	73	28	45
8	20%	80%	73	28	45
9	20%	80%	73	28	45
10	20%	80%	73	28	45

Table 5. Oak price-size curve table.

Average tree size	Product assortment proportions				Selling roadside		Standing sale
Average size m^3	Firewood	Fence	Beam	Planking	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	0%	0%	80	44	36
0.2	100%	0%	0%	0%	80	40	40
0.3	100%	0%	0%	0%	80	38	42
0.4	100%	0%	0%	0%	80	36	44
0.5	100%	0%	0%	0%	80	30	50
0.6	100%	0%	0%	0%	80	30	50
0.7	90%	10%	0%	0%	87	30	57
0.8	90%	10%	0%	0%	87	30	57
0.9	80%	20%	0%	0%	94	28	66
1	75%	25%	0%	0%	98	28	70
1.1	70%	25%	5%	0%	107	28	79
1.2	65%	30%	5%	0%	111	28	83
1.3	60%	30%	10%	0%	121	28	93
1.4	50%	30%	20%	0%	140	28	112
1.5	45%	30%	25%	0%	150	28	122
1.6	45%	25%	30%	0%	156	28	128
1.7	40%	30%	30%	0%	160	28	132
1.8	35%	25%	40%	0%	176	28	148
1.9	30%	25%	45%	0%	186	28	158
2	25%	25%	50%	0%	195	28	167
2.1	20%	25%	50%	5%	214	28	186
2.2	15%	25%	55%	5%	224	28	196
2.3	15%	25%	50%	10%	232	28	204
2.4	15%	20%	50%	15%	247	28	219
2.5	15%	20%	45%	20%	256	28	228
2.6	10%	20%	40%	30%	283	28	255
2.7	10%	15%	40%	35%	298	28	270
2.8	10%	10%	40%	40%	313	28	285
2.9	5%	10%	40%	45%	332	28	304
3	5%	10%	35%	50%	340	28	312
4	5%	5%	30%	60%	364	28	336
5	5%	5%	25%	65%	373	28	345
6	5%	5%	25%	65%	373	28	345
7	5%	5%	20%	70%	382	28	354
8	5%	5%	20%	70%	382	28	354
9	5%	5%	20%	70%	382	28	354
10	5%	5%	20%	70%	382	28	354

Table 6. Poplar price-size curve table.

Average tree size	Product assortment proportions			Selling roadside		Standing sale
Average size m^3	Biomass	Sawlog A/B	Prime/niche	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	0%	45	40	5
0.2	100%	0%	0%	45	38	7
0.3	90%	10%	0%	46	36	10
0.4	80%	20%	0%	47	32	15
0.5	70%	30%	0%	48	30	18
0.6	60%	40%	0%	49	30	19
0.7	55%	45%	0%	50	30	20
0.8	50%	50%	0%	50	30	20
0.9	45%	55%	0%	51	28	23
1	45%	55%	0%	51	28	23
1.1	40%	60%	0%	51	28	23
1.2	40%	60%	0%	51	28	23
1.3	35%	65%	0%	52	28	24
1.4	35%	65%	0%	52	28	24
1.5	30%	65%	5%	53	28	25
1.6	30%	65%	5%	53	28	25
1.7	30%	60%	10%	54	28	26
1.8	30%	60%	10%	54	28	26
1.9	25%	60%	15%	56	28	28
2	25%	60%	15%	56	28	28
2.1	25%	60%	15%	56	28	28
2.2	25%	60%	15%	56	28	28
2.3	25%	60%	15%	56	28	28
2.4	20%	60%	20%	57	28	29
2.5	20%	60%	20%	57	28	29
2.6	20%	60%	20%	57	28	29
2.7	20%	60%	20%	57	28	29
2.8	20%	60%	20%	57	28	29
2.9	20%	60%	20%	57	28	29
3	15%	65%	20%	58	28	30
4	15%	65%	20%	58	28	30
5	15%	60%	25%	59	28	31
6	15%	60%	25%	59	28	31
7	15%	55%	30%	60	28	32
8	15%	55%	30%	60	28	32
9	15%	50%	35%	61	28	33
10	15%	50%	35%	61	28	33

Table 7. Sweet chestnut price-size curve table.

Average tree size	Product assortment proportions				Selling roadside		Standing sale
Average size m^3	Firewood	Fencing	Second planking	First planking	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	0%	0%	69	44	25
0.2	100%	0%	0%	0%	69	40	29
0.3	100%	0%	0%	0%	69	38	31
0.4	100%	0%	0%	0%	69	36	33
0.5	100%	0%	0%	0%	69	30	39
0.6	100%	0%	0%	0%	69	30	39
0.7	90%	10%	0%	0%	72	30	42
0.8	80%	20%	0%	0%	75	30	45
0.9	70%	30%	0%	0%	78	28	50
1	60%	40%	0%	0%	81	28	53
1.1	50%	40%	10%	0%	92	28	64
1.2	45%	45%	10%	0%	94	28	66
1.3	40%	50%	10%	0%	96	28	68
1.4	35%	45%	20%	0%	105	28	77
1.5	35%	40%	25%	0%	109	28	81
1.6	30%	35%	35%	0%	119	28	91
1.7	30%	30%	40%	0%	123	28	95
1.8	30%	25%	40%	5%	133	28	105
1.9	25%	25%	40%	10%	144	28	116
2	25%	25%	35%	15%	150	28	122
2.1	20%	25%	35%	20%	162	28	134
2.2	15%	25%	35%	25%	173	28	145
2.3	15%	25%	30%	30%	179	28	151
2.4	15%	20%	30%	35%	189	28	161
2.5	15%	20%	25%	40%	195	28	167
2.6	10%	20%	25%	45%	207	28	179
2.7	10%	15%	30%	45%	211	28	183
2.8	10%	10%	35%	45%	215	28	187
2.9	5%	10%	40%	45%	220	28	192
3	5%	10%	35%	50%	226	28	198
4	5%	5%	30%	60%	242	28	214
5	5%	5%	25%	65%	248	28	220
6	5%	5%	20%	70%	254	28	226
7	5%	5%	20%	70%	254	28	226
8	5%	5%	15%	75%	260	28	232
9	5%	5%	10%	80%	266	28	238
10	5%	5%	5%	85%	272	28	244

Table 8. Sycamore price-size curve table.

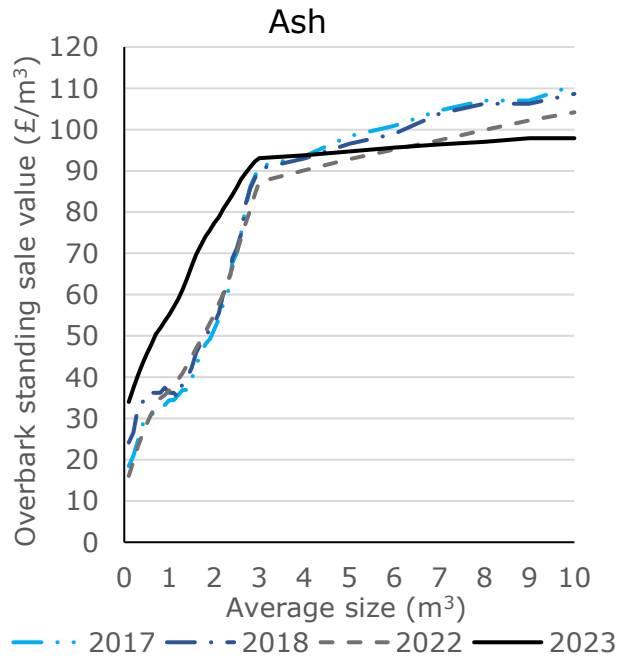
Average tree size	Product assortment proportions			Selling roadside		Standing sale
Average size m^3	Firewood	Sawlog A/B	Prime/niche	Roadside value £/m^3	Harvest £/m^3	Standing value £/m^3
0.1	100%	0%	0%	83	44	39
0.2	100%	0%	0%	83	40	43
0.3	100%	0%	0%	83	38	45
0.4	100%	0%	0%	83	36	47
0.5	100%	0%	0%	83	30	53
0.6	100%	0%	0%	83	30	53
0.7	90%	10%	0%	87	30	57
0.8	85%	15%	0%	89	30	59
0.9	80%	20%	0%	91	28	63
1	75%	25%	0%	94	28	66
1.1	75%	25%	0%	94	28	66
1.2	70%	30%	0%	96	28	68
1.3	70%	30%	0%	96	28	68
1.4	65%	35%	0%	98	28	70
1.5	65%	35%	0%	98	28	70
1.6	60%	40%	0%	100	28	72
1.7	50%	50%	0%	104	28	76
1.8	50%	50%	0%	104	28	76
1.9	40%	55%	5%	114	28	86
2	35%	60%	5%	117	28	89
2.1	30%	60%	10%	125	28	97
2.2	30%	60%	10%	125	28	97
2.3	25%	60%	15%	133	28	105
2.4	25%	60%	15%	133	28	105
2.5	20%	60%	20%	142	28	114
2.6	20%	60%	20%	142	28	114
2.7	20%	60%	20%	142	28	114
2.8	20%	60%	20%	142	28	114
2.9	20%	60%	20%	142	28	114
3	20%	60%	20%	142	28	114
4	20%	55%	25%	148	28	120
5	20%	55%	25%	148	28	120
6	20%	55%	25%	148	28	120
7	20%	50%	30%	154	28	126
8	20%	50%	30%	154	28	126
9	20%	50%	30%	154	28	126
10	20%	50%	30%	154	28	126

Appendix B – Data table: Prices

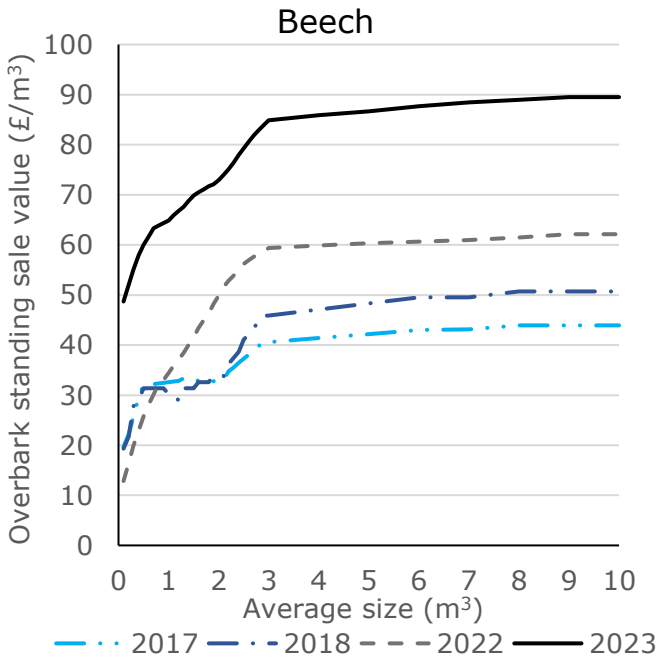
Table 9. Table of timber product price data and sources of data.

Species: Product	Expert Price (£)	Lower Estimate (£)	Upper Estimate (£)	Type	Number of parcels	Total Volume in Survey (m^3)
Ash: Firewood	78	58.5	97.5	Expert Opinion	N/A	N/A
Ash: First grade	120	77.51	136.31	Survey Data	22	676
Ash: Second grade	100	75	125	Expert Opinion	N/A	N/A
Ash: Prime/niche	130	97.5	162.5	Expert Opinion	N/A	N/A
Beech: Firewood	92.7	69.53	115.88	Expert Opinion	N/A	N/A
Beech: First grade	120	90.40	148.61	Survey Data	6	18
Beech: Second grade	95	71.25	118.75	Expert Opinion	N/A	N/A
Cherry: Firewood	79	59.29	98.81	Expert Opinion	N/A	N/A
Cherry: First grade	150	112.5	187.5	Expert Opinion	N/A	N/A
Cherry: Second grade	79	59.25	98.75	Expert Opinion	N/A	N/A
Lime: Firewood	63	47.25	78.75	Expert Opinion	N/A	N/A
Lime: Sawlog A/B	75	56.25	93.75	Expert Opinion	N/A	N/A
Oak: Beam	275	127.49	249.25	Survey Data	7	594
Oak: Fence	152	114.00	190.00	Expert Opinion	N/A	N/A
Oak: Firewood	79.5	59.63	99.38	Expert Opinion	N/A	N/A
Oak: Planking	450	148.58	502.38	Survey Data	16	472
Poplar: Biomass	45	33.75	56.25	Expert Opinion	N/A	N/A
Poplar: Sawlog A/B	55	41.25	68.75	Expert Opinion	N/A	N/A
Poplar: Prime/niche	75	56.25	93.75	Expert Opinion	N/A	N/A
Sweet chestnut: Fencing	100	75	125	Expert Opinion	N/A	N/A
Sweet chestnut: Firewood	68.9	51.68	86.13	Expert Opinion	N/A	N/A
Sweet chestnut: First planking	300	112.37	173.78	Survey Data	3	122
Sweet chestnut: Second planking	180	135	225	Expert Opinion	N/A	N/A
Sycamore: Firewood	83	62.25	103.75	Expert Opinion	N/A	N/A
Sycamore: Prime/niche	125	91.24	122.99	Survey Data	3	22
Sycamore: Sawlog A/B	250	187.5	312.5	Expert Opinion	N/A	N/A

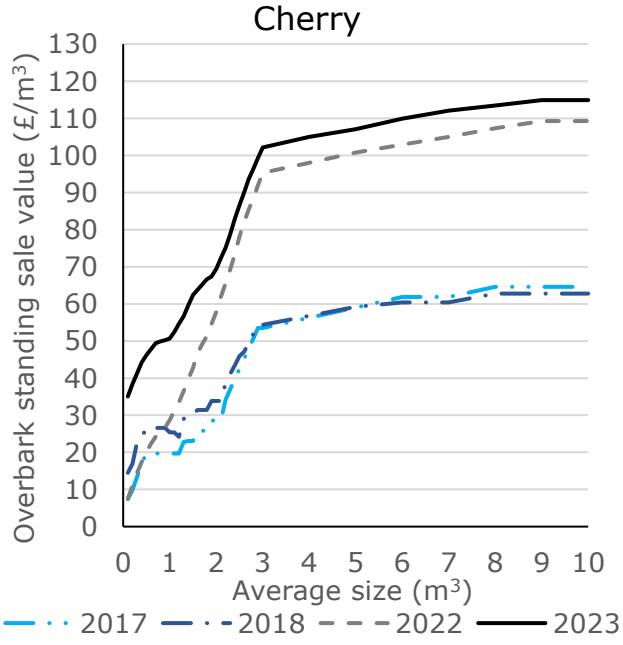
Appendix C – Historical price-size curves in real terms (2023 prices)



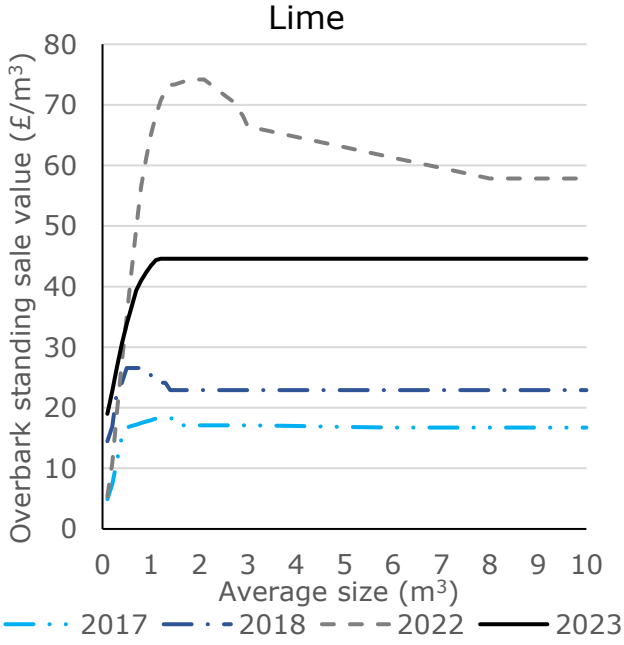
Ash median standing sale value by average size, grouped by year (real values 2023 prices).



Beech median standing sale values by average size, grouped by year (real values 2023 prices).

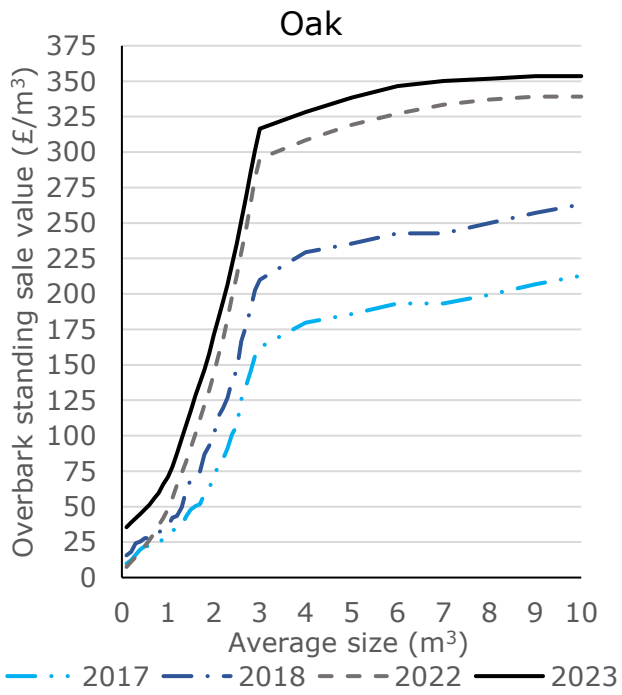


Cherry median standing sale values by average size, grouped by year (real values 2023 prices).

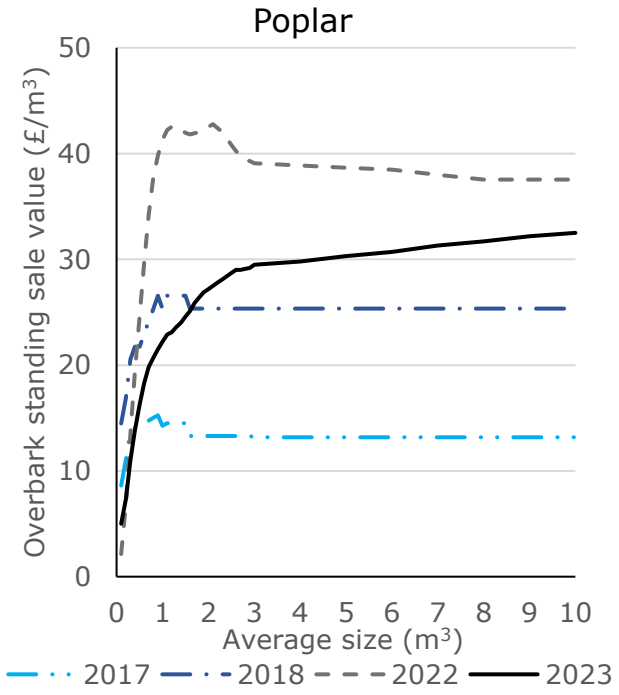


Lime median standing sale values by average size, grouped by year (real values 2023 prices).

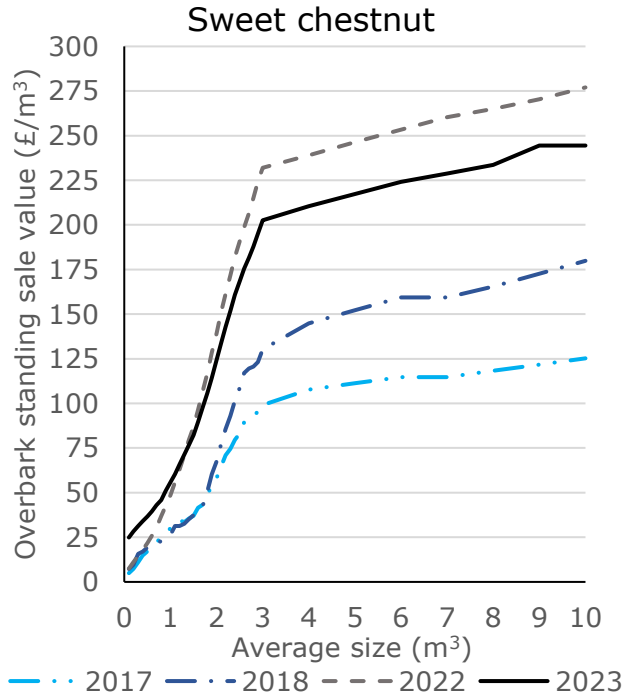
Note: Data collected for 2017 and 2018 used a different methodology to data from 2022 onwards. Real values calculated using UK government deflator (HM Treasury, 2024).



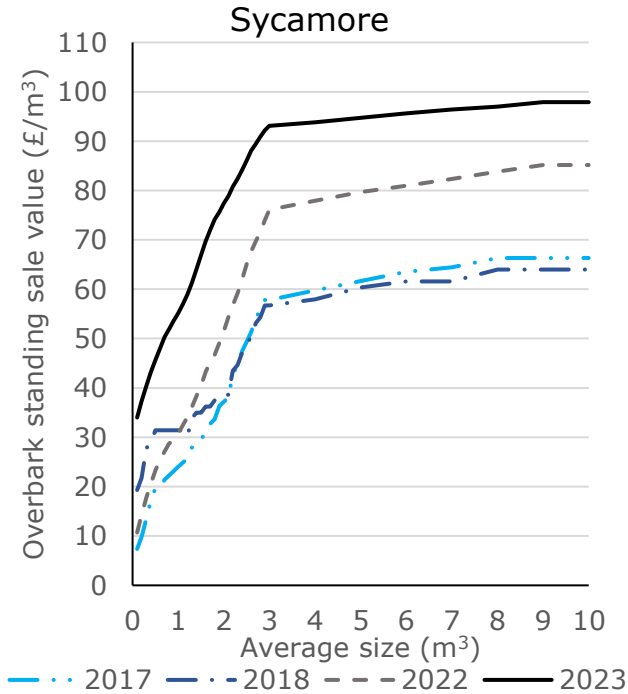
Oak median standing sale values by average size, grouped by year (real values 2023 prices).



Poplar median standing sale values by average size, grouped by year (real values 2023 prices).



Sweet chestnut median standing sale values by average size, grouped by year (real values 2023 prices).



Sycamore median standing sale values by average size, grouped by year (real values 2023 prices).

Note: Data collected for 2017 and 2018 used a different methodology to data from 2022 onwards. Real values calculated using UK government deflator (HM Treasury, 2024).

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Alice Holt Lodge
Farnham
Surrey, GU10 4LH, UK
Tel: **0300 067 5600**

Northern Research Station
Roslin
Midlothian, EH25 9SY, UK
Tel: **0300 067 5900**

Forest Research in Wales
Environment Centre Wales
Deiniol Road, Bangor
Gwynedd, LL57 2UW, UK
Tel: **0300 067 5774**

info@forestresearch.gov.uk
www.forestresearch.gov.uk

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