

BEAUVALE HOUSE, MARKET PLACE, BINGHAM, NOTTINGHAMSHIRE; TREE-RING ANALYSIS OF TIMBERS

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SUMMARY

Analysis by dendrochronology of 10 samples obtained from timbers within this building has resulted in the production of a single dated site chronology, comprising two samples, and dated a further single sample individually.

The site chronology, composed of the sample from the bressumer beam to the fireplace in the lounge and the sample from the main ceiling beam to west, or left-hand, front, bedroom, is 117 rings long, these rings dated as spanning the years 1603–1719.

Interpretation of the sapwood on these samples would indicate that at least one timber, the main ceiling beam, was felled in 1719. The other timber may also have been felled at this time, but this is not certain.

The individually dated timber, a common joist to the, dining room ceiling is likely to have been felled between 1574 at the earliest and 1599 at the latest.

Unfortunately, the other eight timbers from this building, although having sufficient rings for analysis, remain undated.

INTRODUCTION

Beauvale House on the Market Place in Bingham, Nottinghamshire would appear to be a relatively modern two storey house of a main, east–west range, with a north–south cross-wing, the cross-wing containing attic level rooms. Although ‘Georgianised’ the house retains a substantial amount of timberwork, particularly to ground and first floor ceilings, although it is quite possible that much of this timber dates to the later-eighteenth century. There is no visible framing to any of the walls or to the roofs.

Detailed plans of the house are available in the accompanying house history report.

Core samples were obtained from a number of timbers which appeared suitable for tree-ring dating by reason of having sufficient rings for reliable analysis, and by appearing to be pertinent to the construction and development of the house. These timbers were distributed throughout the building to ground and first floors as well as to the roof. Although there were in theory a few other timbers available for sampling, these were derived from fast-grown trees and as such were unlikely to provide sample with the minimum number of rings, 50, here deemed necessary for reliable analysis.

Details of the samples are given in Table 1, below, including the timber sampled and its location, the total number of rings each sample has, and how many of these, if any, are sapwood rings. The individual date span of each dated sample is also given. In this Table the rear of the building is taken to be facing north onto the courtyard and garden, the front to be facing south onto Market Place.

Table 1: Details of tree-ring samples from Beauvale House, Market Place, Bingham, Nottinghamshire

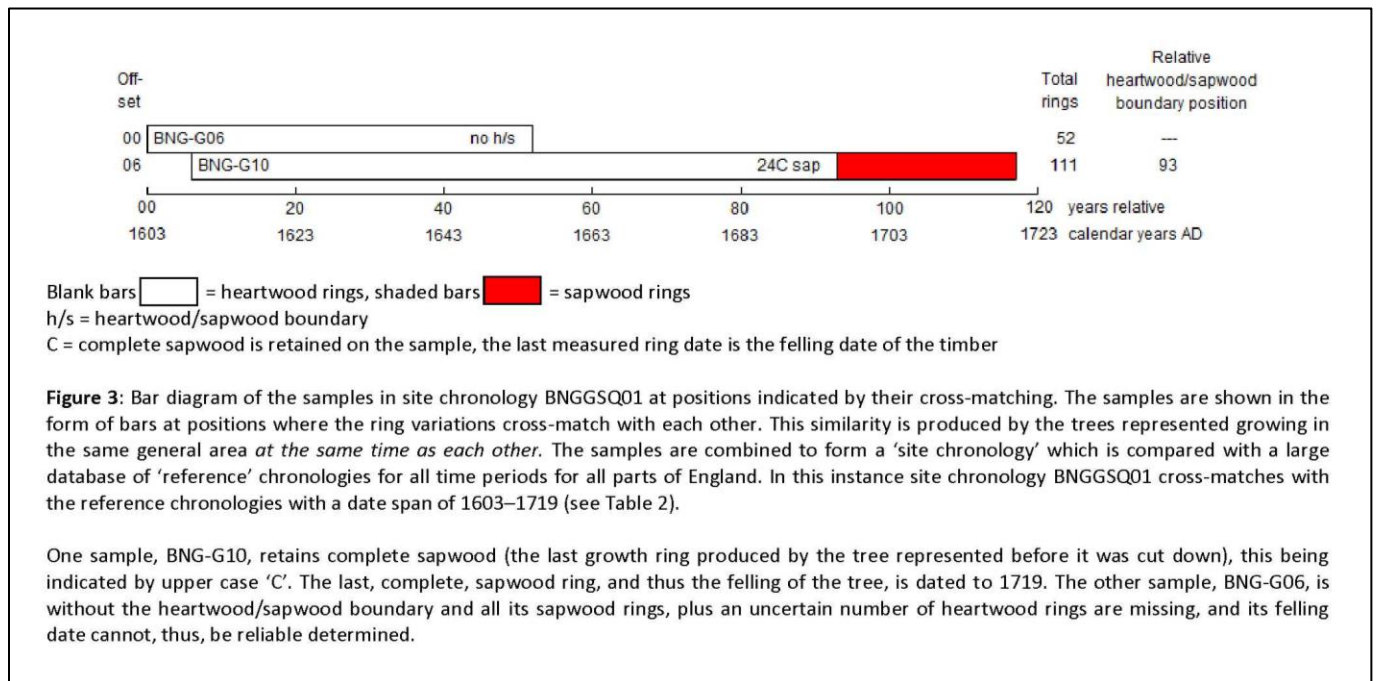
Sample number	Sample location	Total rings	Sapwood rings*	First measured ring date (AD)	Heart/sap boundary (AD)	Last measured ring date (AD)
BNG-G01	Main ceiling beam to party wall at back door	51	h/s	-----	-----	-----
BNG-G02	Common ceiling joist 6 from back door	50	h/s	-----	-----	-----
BNG-G03	Common joist 7, W (N?) side, dining room ceiling	85	no h/s	-----	-----	-----
BNG-G04	Common joist 8, W (N?) side, dining room ceiling	74	h/s	1486		1559
BNG-G05	Common joist 6, E (S?) side, dining room ceiling	52	h/s	-----	-----	-----
BNG-G06	Fireplace bressummer to lounge	52	no h/s	1603	-----	1654
BNG-G07	Main ceiling beam to east (RH) front bedroom	50	h/s			
BNG-G08	Main ceiling beam to rear bedroom/corridor	55	h/s			
BNG-G09	Cm J3 (from E), N of N ceiling beam back bedroom	50	h/s	-----	-----	-----
BNG-G10	Main ceiling beam to west (LH) front bedroom	111	24C	1609		1719

*h/s = the sample has the heartwood/sapwood boundary, ie. only the sapwood rings are missing

C = complete sapwood is retained on the sample; the last measured ring date is the felling date of the tree represented

ANALYSIS

Each of the 10 samples obtained from the various timbers of this building was prepared by sanding and polishing and the widths of their annual growth rings were measured. The data of these measurements were then compared with each other and a single group of two cross-matching samples could be formed, the two samples cross-matching with each other at the positions indicated in the bar diagram below.



The two cross-matching samples were combined at their indicated off-set positions to form BNGGSQ01, a site chronology with an overall length of 117 rings. This site chronology was then satisfactorily dated by repeated and consistent cross-matching with a large number of relevant reference chronologies for oak as spanning the years 1603 to 1719. The evidence for this dating is given in the *t*-values of Table 2, below.

Table 2: Results of the cross-matching of site chronology BNGGSQ01 and the reference chronologies when the first ring date is 1603 and the last ring date is 1719

Reference chronology	<i>t</i> -value	
Riding House, Bolsover Castle, Derbys	10.7	(Arnold <i>et al</i> 2005)
East Midlands Master Chronology	10.4	(Laxton and Litton 1988)
Church Farm House, Ockbrook, Derbys	9.3	(Arnold and Howard 2009)
Easton Neston, Northants	8.6	(Howard <i>et al</i> 1994)
Bretby Hall, Bretby, Derbys	7.5	(Howard <i>et al</i> 1999)
5 The Green, Lyddington, Rutland	7.4	(Arnold and Howard 2010 unpubl)
Hempshill Hall, Hempshill, Nottm	6.9	(Arnold and Howard 2007)
Castle House, Melbourne, Derbys	6.7	(Arnold and Howard 2009 unpubl)

Site chronology BNGGSQ01 is a composite of the data of the two cross-matching samples as seen in the bar diagram Figure 3. This composite data produces an 'average' tree-ring pattern, where the overall climatic signal of the growth is enhanced, and the possible erratic variations of either individual sample are reduced. This 'average' site chronology is then compared with several hundred reference patterns covering every part of Britain for all time periods, the site chronology dating only at the time span indicated.

One of the dated samples, BNG-G10, from the main ceiling beam to the west bedroom (or left hand side as the house is viewed from Market Place), retains complete sapwood (this is indicated by upper case 'C' in Table 1 and the bar diagram). This means that it retains the last growth ring produced by the tree it represents before it was felled. In this case this last, complete, sapwood ring, and thus the felling of the tree, is dated to 1719.

The exact felling date of the other timber in this site chronology, represented by sample BNG-G06 from the bressummer beam to the fireplace in the lounge, cannot be determined precisely. This is because it does not retain the heartwood/sapwood boundary and thus, not only is the sample missing all its sapwood rings, but an unknown number of heartwood rings as well. With a last extant, heartwood, ring date of 1654, the felling date is, however, unlikely to be before about 1660 at the earliest. It is thus possible that the timber was also felled in 1719, but this is not certain.

The individually dated timber, a common to the dining room ceiling, and represented by sample BNG-G04, has a last extant ring date of 1559. This last ring is at the heartwood/sapwood boundary (denoted by 'h/s' in Table 1), this meaning that only the sapwood rings are missing. Given that the amount of sapwood on oak trees generally lies within known limits (15–40 rings), it is possible to say that the tree were almost certainly cut at some point between 1574 at the earliest and 1599 at the latest.

CONCLUSION

Site chronology BNGGSQ01 comprises two samples, one from a main ceiling beam, and the other from the lounge fireplace bressummer. One timber was certainly felled in 1719, and may represent part of the early 'Georginisation' of the building, and it is possible that the other one was cut at this time as well.

One other timber, however, is considerably earlier, being felled in the later-sixteenth century and reused as part of the later works to the house.

Undated samples

While it is very common in tree-ring analysis to find that a few samples remain ungrouped and undated, at Beauvale House the undated proportion is unusually high at 70%. None of the undated samples shows any peculiarities, such as compression or distortion, which might make cross-matching difficult, and the reason for the lack of dating is unknown. It may be noticed from Table 1, however, that the majority of these samples have very close to the minimum number of rings (50) required for reliable analysis and it is possible that this contributes to the lack of dating.

It is also possible that the undated timbers represent timbers felled at different time and while such samples can sometimes be dated individually, eg sample BNG-G04), it is usually more difficult. A further possibility is that the source trees were grown during a time period (the later eighteenth century) for which, at the moment, there is little reference data available in this region. It is only with the accumulation of data, such as that obtained as part of the Bingham Buildings project, that this gap may be filled and the presently undated samples may in due course be dated.