

RESEARCH REPORT SERIES no. 31-2014

SHERBORNE HOUSE, NEWLAND, SHERBORNE, DORSET TREE-RING ANALYSIS OF TIMBERS FROM THE TUDOR WING

SCIENTIFIC DATING REPORT

Martin Bridge



INTERVENTION
AND ANALYSIS



ENGLISH HERITAGE

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NEWLAND, SHERBORNE,
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TREE-RING ANALYSIS OF TIMBERS FROM THE TUDOR
WING

Martin Bridge

NGR : ST 63909 16922

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ISSN 2046-9799 (Print)

ISSN 2046-9802 (Online)

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SUMMARY

A small number of samples were obtained from the 'Tudor Wing' of Sherborne House. The rings in the front of the heavy gilded ceiling beams were dated, one of which retained the heartwood-sapwood boundary, giving a likely felling date range for these timbers of AD 1468-1500. A further four timbers; three tie beams and an unrounded ceiling beam, were also dated. One tie beam retained complete sapwood, and was found to have come from a tree felled in spring AD 1671, and the likely felling date ranges for the other tie beams and the unrounded ceiling beam give likely felling date ranges that would suggest these timbers form a single batch, most likely felled at the same time, or within a few years of each other. This suggests that this wing used ceiling timbers from trees felled in the period AD 1468-1500, but it is not clear whether this represents the date of the primary construction of the wing or whether the timbers were perhaps reused. The west-end ground-floor ceiling, and the tie beams, were inserted in AD 1671 or very soon thereafter.

CONTRIBUTORS

Dr M C Bridge

ACKNOWLEDGEMENTS

I am grateful to Shahina Farid, English Heritage Scientific Dating Team, for commissioning this study. Jenny Cheshier, EH Inspector of Historic Buildings and Areas, provided useful on-site discussion during the dendrochronological assessment relating to the areas of potential interest for inclusion in the study. Cathy Tyers, EH Scientific Dating Team, made useful comments on earlier drafts of this report. Cover photograph Sherborne House © English Heritage.

ARCHIVE LOCATION

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DATE OF INVESTIGATION

2012

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INTRODUCTION

Sherborne House is a Grade 1 listed building on the Heritage at Risk register. Situated in the middle of the town of Sherborne (Fig 1), this three-storey early Georgian mansion built in cAD 1720 incorporates an earlier structure of which no wings survives at the intersection between two ranges, with an additional wing and outbuildings (Fig 2), that has been the subject of a survey by Rodwell (2009).

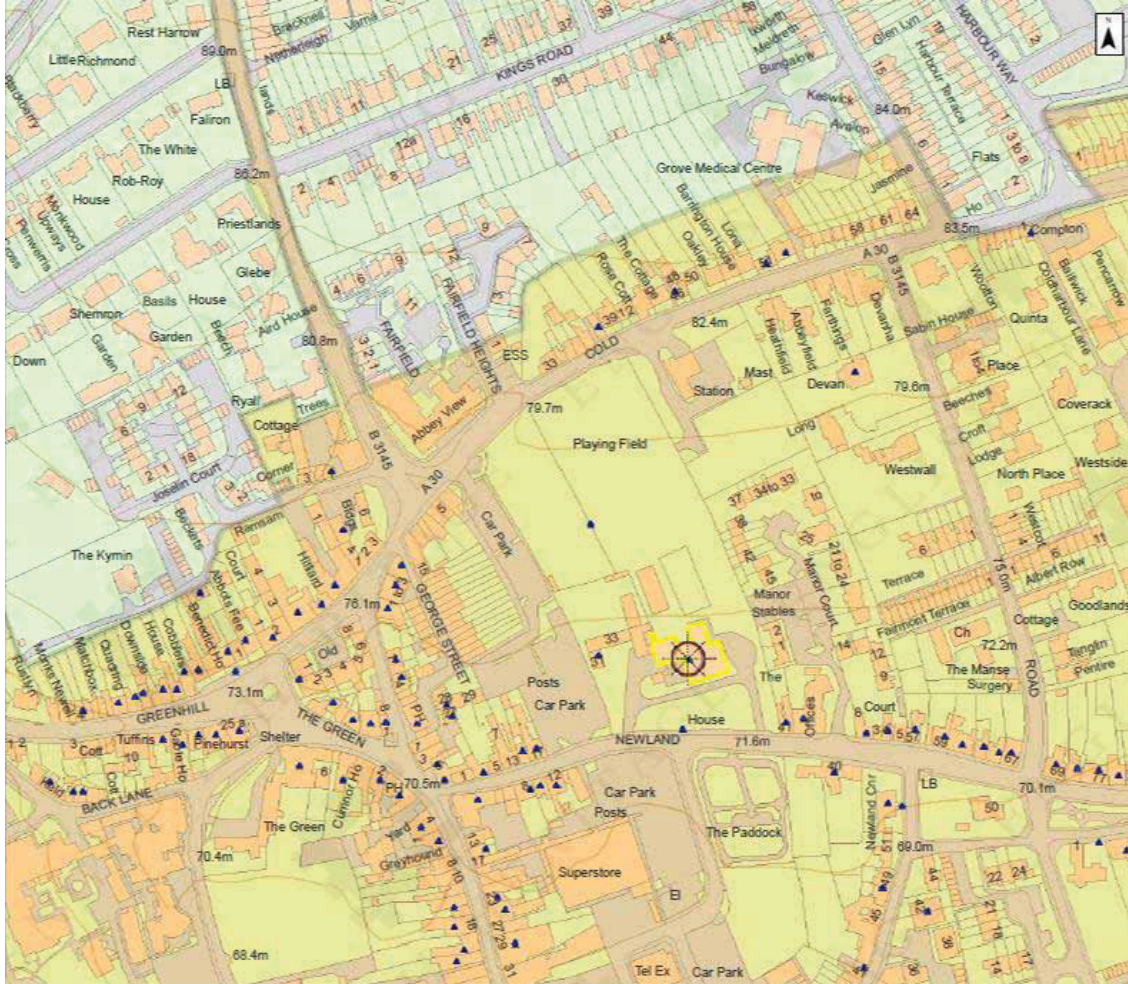


Figure 1: Map of Sherborne showing the location within the town of Sherborne House. © Crown Copyright and database right 2014. All rights reserved. Ordnance Survey Licence number 100024900

The grand, early eighteenth-century, main part of the house was undergoing renovation in late 2012 which revealed the remains of an early timber-framed wall that had become incorporated into the fabric of the later building. This discovery provided the initial impetus for English Heritage to request dendrochronological input in order to inform the historical development of the building.

METHODOLOGY

Fieldwork for the present study was carried out in November 2012. In the initial assessment accessible timbers with more than 50 rings and where possible traces of sapwood were sought, although slightly shorter sequences are sometimes sampled if little other material is available. Those timbers judged to be potentially useful were cored using a 15mm auger attached to an electric drill. The cores were glued to wooden baths, labelled, and stored for subsequent analysis.

The cores were polished on a belt sander using 80 to 400 grit abrasive paper to allow the ring boundaries to be clearly distinguished. The samples had their tree-ring sequences measured to an accuracy of 0.01mm, using a specially constructed system utilising a binocular microscope with the sample mounted on a travelling stage with a linear transducer linked to a PC, which recorded the ring widths into a dataset. The software used in measuring and subsequent analysis was written by Ian Tyers (2004). Cross-matching was attempted by a combination of visual matching and a process of qualified statistical comparison by computer. The ring-width series were compared for statistical cross-matching, using a variant of the Belfast CRO S program (Baillie and Pilcher 1973). Ring sequences were plotted on the computer monitor to allow visual comparisons to be made between sequences. This method provides a measure of quality control in identifying potential errors in the measurements when the samples cross-match.

In comparing one sample or site master against other samples or chronologies, t-values over 3.5 are considered significant although in reality it is common to find demonstrably spurious t-values of 4 and 5 because more than one matching position is indicated. For this reason dendrochronologists prefer to use some t-value ranges of 5, 6, and higher, and for these to be well replicated from different, independent chronologies with both local and regional chronologies well represented, except where imported timbers are identified. Where two individual samples match together with a t-value of 10 or above, and visually exhibit exceptionally similar ring patterns they may have originated from the same parent tree. Same-tree matches can also be identified through the external characteristics of the timber itself, such as knots and shake patterns. Low t-values however do not preclude same tree derivation.

Ascribing felling dates and date ranges

Once a tree-ring sequence has been firmly dated in time, a felling date, or date range, is ascribed where possible. With samples which have sapwood complete to the underside of, or including bark, this process is relatively straightforward. Depending on the completeness of the final ring, if it has only the spring vessels or early wood formed, or the late wood or summer growth, a precise felling date and season can be given if the sapwood is partially missing, or if only a heartwood/sapwood transition boundary survives, then an estimated felling date range can be given for each sample. The number of sapwood rings can be estimated by using an empirically derived sapwood estimate with a

given confidence limit. If no sapwood or heartwood/sapwood boundary survives then the minimum number of sapwood rings from the appropriate sapwood estimate is added to the last measured ring to give a terminus post quem (tpq) or felled-after date.

A review of the geographical distribution of dated sapwood data from historic timbers has shown that a sapwood estimate relevant to the region of origin should be used in interpretation, which in this area is 9–41 rings (Miles 1997). It must be emphasised that dendrochronology can only date when a tree has been felled, not when the timber was used to construct the structure or object under study.

RESULTS AND DISCUSSION

During the assessment of the timbers in the main house wall, in the area designated cAD 1720 in Figure 2, it became apparent that none of these timbers were suitable for dendrochronology as they failed to contain sufficient numbers of rings. Assessment of other parts of the building complex did however identify several oak timbers in the western wing of the building, known as the Tudor Wing, as good candidates for dating. Following further discussion it was decided that these should be sampled as any dates they yielded would also give valuable information about the development of the site.

Basic information about the samples taken is given in Table 1. There were two areas sampled, a set of three tiebeams at first-floor level (Fig 3), and a ceiling to the ground floor (Figs 2 and 4) which consisted of a number of intersecting moulded beams, with unmoulded (plain) beams at the west end. The roof timbers above the tiebeams were of quite a different character, being of fast-grown oak with few rings. This and the nature of the principal pattern and collar suggested that these replaced the earlier roof with which the tiebeams were probably associated.

All seven samples were measured in spite of shtw 06 having only 44 rings. The data for the tree-ring series are given in the Appendix. Sample shtw 01, from the east tiebeam, had very distorted inner rings, and the first 41 rings were discarded for subsequent analysis. Cross-matching between this series and the other two tiebeams (shtw 02, shtw 03) is shown in Table 2. Although the match between shtw 01 and shtw 03 was reasonable, that for shtw 02 is poor (Table 2). However independent dating of each individual series did indicate that these three series were coeval, and they were therefore combined to form a 131-year site chronology. Subsequently, it was found that a fourth timber (shtw 05), a plain (unmoulded) beam from the west end of the ground-floor ceiling, also matched these series' (Table 2), and this was added to form the site series SH ERH 01, which was dated to the period AD 1540–1670. The dating evidence is shown in Table 3a. One timber, the east tiebeam, retained complete sapwood, and was found to have been from a tree felled in spring AD 1671, the other two tiebeams had felling date ranges which incorporated this date, as did the ceiling timber from the floor below. The relative positions of overlap and felling dates of these timbers are shown in Figure 5.



Figure 2: Ground-floor plan of Sherborne House, showing the 'Tudor Wing' outlined in red (rooms G7 and G9), and the timbers sampled for dendrochronology. Adapted from an original drawing in Rodwell (2009)



Figure 3: View of the three original tiebeams at first-floor level, looking west. (Photograph Martin Bridge)

The second series from an un-moulded beam at the west-end of the ground floor ceiling only provided a 44-year ring sequence, and this could not be satisfactorily matched against the other series, or dated independently.

The two series derived from moulded ceiling beams (shtw 04, shtw 07) from the ground floor matched each other very well ($t = 15.5$ with 100 years overlap), suggesting that the timbers were derived from the same parent tree. These two series were therefore combined, and the resulting 142-year chronology, SH ERH 0 2, was dated against the available reference material, the strongest matches being shown in Table 3b. One of these timbers retained the heartwood-sapwood boundary, and a felling date range of AD 1468–1500 could therefore be derived for these two beams, as shown in Figure 5.

Two phases of development of the Tudor Wing were here identified from this study, giving previously known information for this site. The tie beams and west-end of the ground-floor ceiling were most likely inserted in AD 1671 or within a year or two after this date. The moulded ceiling beams represent an earlier phase of development of the building, having most likely been inserted, or possibly reused from a phase of building in the latter decades of the fifteenth century.



Figure 4: View of the ground-floor ceiling beams . (Photograph Martin Bridge)

Rodwell (2009) had not recognised any age division between the two sides of the room she designated as G 7 (Fig 2), simply suggesting that the woodwork was cAD 1500 and that the room was divided into a high-quality heated living room to the east and a simpler service room to the west.

The dating evidence for the two derived site master chronologies (Tables 3a and 3b) shows wide-spread geographical matching. This may be the result of the distribution of available chronologies representing the relevant time periods, especially in the case of the later timbers in SHERHO 1. It seems likely that the timbers were derived from relatively local sources, although there is little evidence to support this view in the matches found.

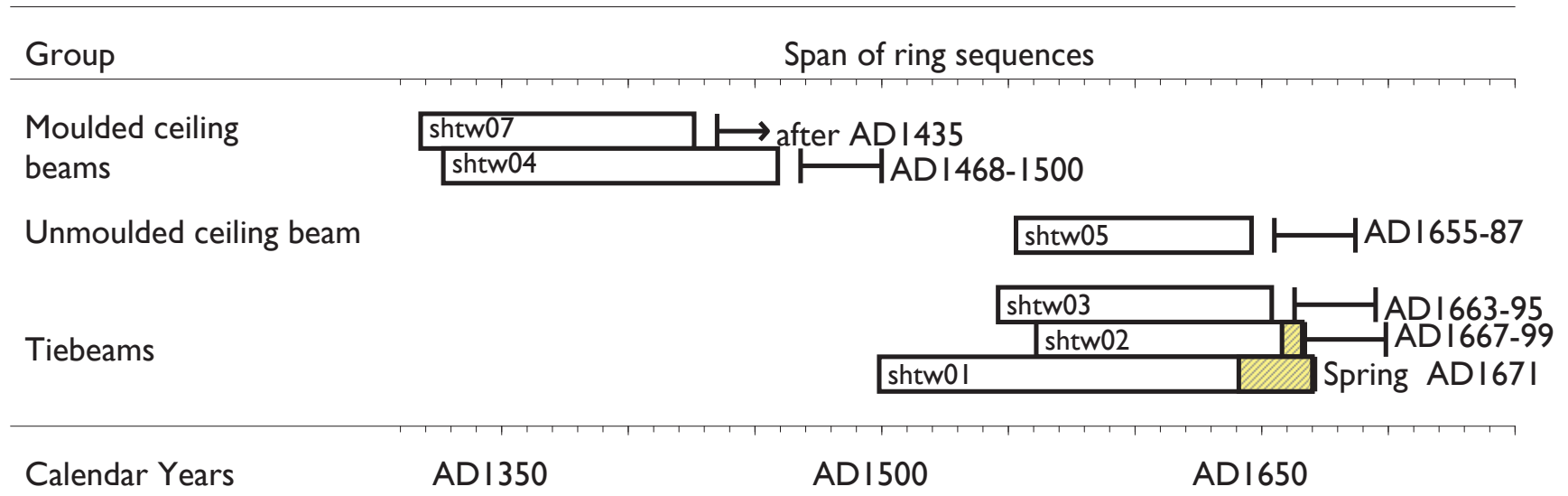


Figure 5: Bar diagram showing the relative positions of overlap of the dated timbers from the Tudor Wing, Sherborne House. White bars represent heartwood rings and hatched yellow sections represent sapwood rings

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