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STABLE ISOTOPE TREE-RING DATES: LIST 5

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INTRODUCTION

The objective cross-dating of annually resolved tree-ring stable isotope sequences from oak latewood cellulose has been shown to provide an extremely effective precision dating method for oak and non-oak timbers. The method is detailed in Loader et al. (2019). We report here the fifth date list for stable isotope dated samples. The samples analysed comprise both oak and elm, and include samples that exhibit disturbance in their ring series. For some buildings where isotope dendrochronology has established or confirmed the dating of more extensive ring-width assemblages, details are given in the main tree-ring date lists, with only the isotope dating presented here. This work is supported through the UKRI QUERCUS (EP/X025098/1) and SSHRC Environments of Change (895-2019-1015) projects.

Samples from regions (particularly East Anglia) where the published reference chronology contains relatively limited material have also been compared with the unpublished Central England and West chronology which is currently in development, has a wider sample catchment and better sample replication. Work is underway to develop regional chronologies for the United Kingdom.

INFORMATION REPORTED

Each entry includes: the type of sample, the final measured ring date and sapwood complement, the Student's *t*-value and the probability (1/p) of the match (corrected for filtering, autocorrelation and resampling); the total number of rings (N) and the number of rings measured isotopically (Ni) (N/Ni); the project code. Unless stated otherwise, timbers or composite series are dated against the South Central England Master chronology developed by Loader et al. (2019). Where the site is included in the tree-ring date lists, for these samples, the code 'i' indicates an isotope date, 'di' a ring-width date supported by or determined from an isotope date and 'ir' indicating that an isotope date has received additional support from wiggle-match radiocarbon dating. Where a date is assigned, the felling date or range is determined taking into account any rings not measured isotopically and the presence and completeness of the sapwood, following criteria identical to ring-width dendrochronology (English Heritage 1998; Miles 1997 and 2006; Loader et al. 2019); the 95% confidence limits for the number of sapwood rings used in this list are 9-41 and 15-40, according to individual laboratory practice. For listed buildings in England, 'LEN' is used to identify their number in the Historic England list.

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ABBREVIATIONS

ODL	Oxford Dendrochronology Laboratory
NTL	Nottingham Tree Ring Laboratory
TRS	Tree Ring Services

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ENGLAND

BERKSHIRE

1. SONNING, The Old Cottage (SU 7575 7540) *Felling dates:* **Spring 1414 and Winter 1414/15**

(a) Wall plate 1414(14C)i; (b) Crown strut 1413(29¼C)i. Mean of (a) and (b) $t = 7.98$, N/Ni 64/65, 1/p > 1 million. Ring-width dating: see Tree-ring Dating, List 343, this volume, p. xxx.

The hall range consists of three bays. The roof contains three crown-strut trusses and one scissor-brace truss. Two timbers were provided for isotope dendrochronology from the south wall plate (RGC08) and the crown strut of truss D (RGC17). Both series had bark edge preserved but could not be dated by ring width dendrochronology. The two series cross-match enabling a site mean to be constructed which was securely dated against the South Central England reference chronology. See Tree-Ring Services Report: RGOC/14/23. Samples provided by A. Moir (TRS). [SWAN075]. LEN 1117432.

NORFOLK

2. DEREHAM, Bishop Bonner's Cottage (TF 9874 1327)

(a) Southern cottage, mantel beam *Felling date range:***1575–1600**

(b) Northern cottage, inserted truss *Felling date range:* **1680–1705**

(a) Mantel beam (DBB-C02) 1560(h/s)i $t = 6.35$,N/Ni 43/41,1/p = 8565. (b) Principal rafter (DBB-C01) 1678(13)i $t = 5.61$, N/Ni 69/51, 1/p = 1577.

A row of three cottages of different dates and widths, each with one ground-floor room, and one attic bedroom. The (earliest) southern cottage is jettied to the street frontage, and the dated mantel beam is believed to be part of the primary structure. The (second) north cottage retains a single original queen-post truss. The north and south cottages each also contain a single truncated principal rafter truss, believed to have been inserted for strengthening when the middle cottage was inserted to complete the row; sample (b) was taken from one of these rafters (truss D in the northern cottage). The street frontage retains a fine pargetted frieze created using moulds, the earlier section on the south cottage (*c*. 1650), the later section on the north and central cottages (late seventeenth century; dating information from Anna Kettle). Dating commissioned by Dereham Heritage Trust (https://www.derehamhistory.co.uk/building-history.html (accessed 14 July 2024)). Samples provided by R. Howard (NTL). [SWAN070]. LEN 1077063.

*For an image of this building, see page *** (Fig. 1).*

3. MORNINGTHORPE AND FRITTON, The Old Rectory (TM 2262 9286) *Felling date range:* **1506–1531**

Wall post (HMP-E01) 1491(h/s)i: $t = 6.38$, N/Ni 57/44, 1/p = 12293.

A single-storey open hall with an inserted floor with crossed and elaborately roll-moulded principal joists of around 1550. Twin service rooms at the north end were flanked by a narrow straight stair. A thatched two-storey parlour section either replaced the original, or was built new, in the seventeenth century. The chimney stack is built almost entirely within the hall. The house was divided into three units, probably in the nineteenth century, and recombined in 1952. A single sample from a wall post provided by R. Howard (NTL) was dated isotopically against the South Central England chronology. [SWAN071]. Dating commissioned by the Norfolk Historic Buildings Group. LEN 1050294.

4. LITTLE WALSINGHAM, 7 Friday Market, Friday Cottage (TF 9333 9286) *Felling date:* **Winter 1482/3**

Wall plate (LIT-W01) 1482(18C)i: $t = 5.61$, N/Ni 96/76, 1/p = 6054.

One of several properties investigated in Little Walsingham by the Norfolk Historic Buildings Group. It is of four bays, with flint and chalk rubble ground-floor walls and a long-jettied close-studded timber-framed first floor. The roof has evidence for down-braced crown posts (now removed). It was sampled for ring-width dendrochronology by Ian Tyers in 2008–13, but failed to date. A further sample was taken by R. Howard (NTL) for isotope analysis. [SWAN072]. The result accords well with associated documentary, and stylistic dating. See Longcroft et al. (eds), "Little Walsingham: A Study of Historic Buildings in a Medieval Pilgrimage Centre," *J. Norfolk Historic Buildings Group*, 6 (2015), 1–270, pp. 86–9. Dating supported by a grant to the Norfolk Historic Buildings Group from the VAG (RG20/02). LEN 1172151.

OXFORDSHIRE

5. GORING HEATH, Path Hill, Pilgrim Cottage (SU 6519 7849)

Felling dates: **Winter 1381/2 and Winter 1382/3**

Isotope dating: (a) Arch-brace (pcph3) 1382(17C)i: $t = 6.61$, N/Ni 45/44, 1/p = 21682; (b) Cruck blade (pcph8) 1381(9C)i: $t = 12.31$, N/Ni 36/35, 1/p > 1 million (individually dated against Central England and West Chronology); Mean of (a) and (b) $t = 10.94$, N/Ni 45/45, 1/p > 1 million.

Two bays of a cruck hall house with an arch-braced open truss and an end truss remain, although the fast-grown timbers had too few rings for secure ring-width dendrochronology. The isotopically analysed samples were cross-dated ($t = 5.70$) enabling construction of a site master chronology. The dates for the individual timbers support the tentative ring-width dating. For a description of the building and further dating, see Tree-Ring Date List 348 (this volume, p. xxx) [SWAN073]. LEN 1368948.

6. OXFORD, Merton College, Old Library, (SP 5169 0604)

(a) Principal rafter (primary build) *Felling date:* **Winter 1376/7**

(b) Tiebeam (Beerbohm Room) *Felling date:* **Winter 1471/2**

(a) First-floor principal rafter (mer30) 1376(18C)i $t = 9.19$, N/Ni 53/53, 1/p > 1 million; (b) Tiebeam (mer27) 1471(23C)i $t = 6.83$, N/Ni 121/57, 1/p > 1 million.

Two timbers were dated using isotope dendrochronology: a principal rafter from the primary construction phase and a moulded double roll tiebeam located towards the north end of the west range. Dating carried out as part of work by J. Singh for an MSc in Archaeological Science (Oxford University) in partnership with Swansea University. For ring-width tree-ring dating and the building description, see Tree-Ring Date List 348 (this volume, p. xxx) [SWAN074]. LEN 1369662.

SOMERSET

7. SALTFORD, Queen Square, Saltford Manor (ST 6853 6747)

(a) Joist, entrance hall (east) *Felling date range:* **1165–97**

(b) Joist entrance hall (central) *Felling date range:* **1168–1200**

(c) Joist entrance hall (west) *Felling date range:* **1169–1201**

Combined felling date range: 1170–83 (OxCal)

(d) Moulded beam (first floor) *Felling date range:* ***1456–81*** *(OxCal; unrefined* 1456-88)

(a) Joist (sltm01) 1156(h/s)i $t = 6.74$, N/Ni 42/43 1/p = 32131, (b) Joist (sltm02) 1159(?h/s)i $t = 5.97$, N/Ni 57/51 1/p = 4695, (c) Joist (sltm03) 1160(h/s)i $t = 11.25$, N/Ni 78/79 1/p > 1 million; (d) Moulded beam (sltm08) 1447(h/s)i $t = 7.33$, N/Ni 60/60 1/p > 400k. Mean of (a), (b) and (c) 1160i $t = 13.02$, Ni 79, 1/p > 1 million.

Three large oak joists from the entrance hall which could not be dated using ring-width dendrochronology were selected for stable isotope dendrochronology. As the joist samples pre-dated the South Central England chronology, they were dated against an extended reference chronology for southern England (in development). The presence of heartwood-sapwood boundaries on the three joist timbers enables felling date ranges to be estimated, which have been refined by OxCal. A moulded beam from an inserted floor was also provided for isotopic analysis with a view to further refining the chronology of this building. [SWAN076]. For ring-width dating, see Tree-Ring Date List 347 (this volume, p. xxx); for the building description and analysis, see N. Hill, "Saltford Manor House, Somerset: A Twelfth-century Chamber Block," this volume, p. xxx. Dating supported by a grant from the Vernacular Architecture Group. LEN 1384672.

SUFFOLK

8. WINSTON, Barley House Farm (TM 2002 6188) *Felling date:* ***c***. **Winter 1534**

(a) Mantel beam (elm) *c*. 1534(C)i, $t = 5.63$, N/Ni 153/81, 1/p = 5705 (Central England and West Chronology)

Possibly a compact borderline-yeoman/gentry house indicated by the high standard rural carpentry, this building was stylistically dated to the 1520s–40s. The mantel beam located at the upper end of the hall may indicate an early change in medieval social conventions such as the high-end dais and the use of living space (P. Aitken, pers. comm.). Barley House Farm has been studied for its ritual deposits and this tree-ring isotope date helps to contextualise many of these finds (see T. Easton, "Four Spiritual Middens in Mid Suffolk, England, *ca*. 1650 to 1850,"

Historical Archaeology 48.3 (2014), 10–34). The sample has bark preserved, but characteristic of elm, there are periods of growth suppression, most notably in the sapwood where it was not possible to precisely identify some ring boundaries. In this respect the date obtained is reported as a *circa* felling date, with the felling date falling within no more than five years of the reported date. Sample provided by T. Easton and M. Bridge (ODL). [SWAN077]. LEN 1352115.

For an image of this building, see this page (Fig. 2)

*Bishop Bonner's Cottage, Dereham, Norfolk (1575–1600i; 1680–1705i); see p. *** (photo: © P. Wade-Martin).*

*Barley House Farm, Winston, Suffolk (1534i); see p. *** (photo: © T. Easton).*