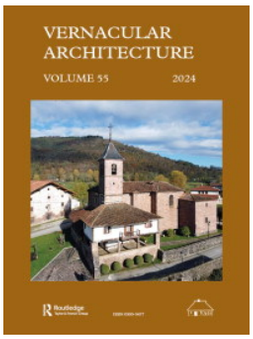

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STABLE ISOTOPE TREE-RING DATES: LIST 6

N. J. Loader, R. J. Bale, D. Davies, D. McCarroll, D. Miles, C. M. Mills, L. Forrest, J. Hughes and O. Kudarauskaite

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 both oak and non-oak timbers. The method is detailed in Loader et al. (2019). We report here the sixth 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.

Unless stated otherwise, timbers or composite series are dated against the South Central England reference chronology (Loader et al., 2019); samples from regions where the published reference chronology contains relatively limited material have been compared with the unpublished Central England and West chronology (labelled CEW), which has a wider sample catchment and greater sample replication; this is currently in development with other regional chronologies. This work is supported through the UKRI QUERCUS (EP/X025098/1) and SSHRC Environments of Change (895-2019-1015) projects. The dating of Welsh sites is supported by a grant from the Royal Commission on Ancient and Historical Monuments in Wales (RCAHMW).

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 of error (1/p) corrected for filtering, autocorrelation and resampling; the total number of rings (N) and the number of rings measured isotopically (Ni) (N/Ni). 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). Unless stated otherwise, the 95% confidence limits for the number of sapwood rings used in this list are 9-41. For sites where a combination of stable isotope dating with radiocarbon or ring-width dating has been used, suffix letters 'I', 'R' and 'D' indicate the type of date. LEN and NPRN numbers refer to the Historic England and COFLEIN lists respectively.

EDITED BY NAT ALCOCK AND CATHY TYERS

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ABBREVIATIONS

ODL: Oxford Dendrochronology Laboratory
NTRDL: Nottingham Tree Ring Dating Laboratory
TRS: Tree Ring Services

DERBYSHIRE

1. DALE ABBEY, Tattle Hill Mayfield House (SK 4356 3870), common rafters *Felling date:* **Spring 1482**
   Common rafters DAB02 $1464(22)_{I}$ N/Ni 88/68; DAB03 $1481(27^{1}/_{4}C)_{I}$ N/Ni 56/35; *Site master:* DAB02_03 $t = 5.75$, Ni 61, 1/p > 5k.; *ring-width matched:* $DAB01\ 1472(26)_{DI}$.

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Brick and stone two-storey cottage, containing reused stone from the nearby Dale Abbey; it was originally of two bays and likely to be earlier than 1840. Two common rafters from a cross-matched series of three were analysed isotopically. DAB02 and DAB03 cross match isotopically giving the series DAB02_03 from which all three samples could be dated. These rafters are presumably also reused from the abbey. Sampling Alison Arnold (NTRDL).

DEVON

2. MORETONHAMPSTEAD, 32 Cross Street, Mearsdon (SX 7547 8603)

(a) Cruck truss and rafter — *Felling date:* **Winter 1469/70**

(b) Fireplace bressummer — *Felling date range:* **1578–1610**

(a) Cruck TQCS01 1448(-)$_{I}$ $t = 5.03$,N/Ni 65/60, 1/p = 314; *ring-width matched:* Rafter TQCS02 Winter 1469/70(9C)$_{DI}$; (b) Bressummer TQCS07 1571(2)$_{DI}$ N/Ni 42/40 $t = 7.25$, 1/p > 85k (CEW).

The dating of sample TQCS01 from a cruck truss allowed a felling date to be assigned to the ring-width cross-matched rafter TQCS02. The fireplace bressummer dates the insertion of a lateral stack. Both dates are consistent with typological dating in this region (Moir, pers. comm.). Two other sampled timbers, believed to be from the primary phase have not been dated. Sampling A. K. Moir (TRS). LEN 1147008 (Mearsdon Manor).

OXFORDSHIRE

3. OXFORD, Christ Church, Choir Library (SP 5153 0593)

(b) Purlin — *Felling date range:* **1392–1424**

(d) Internal strong room — *Felling date:* ***c.* 1603**

(b) Purlin CCOL21 1386(3) $t = 5.40$ N/Ni 44/40 1/p = 467. (d) Strong room planks (elm) CCOL03 1472(-) $t = 7.59$, N/Ni 102/73, 1/p > 1Million; CCOL06 1520(-) $t = 6.25$, N/Ni 90/58 1/p > 26k; CCOL08a 1603(C?) $t = 8.39$ N/Ni 151/68 1/p > 1Million.

The purlin and the three elm planks were dated independently; although CCOL08a has complete sapwood, the very narrow rings mean that the precise year is slightly uncertain. For details of the structure and ring-width dating, see Tree-Ring Dates, List 354, No. 3 (p. xx). Sampling ODL. LEN 1283787.

4. OXFORD, 50–51 St Giles (SP 5115 0675)

(c) Central truss (rear wing) — *Felling date:* ***c.* 1710**

(d) Jowled post (rear wing) — *Felling date:* **Spring 1709**

(c) Principal rafters EGCH16 1710(5 + c.7NM) N/Ni 49/42; EGCH17 1708(11C?) N/Ni 44/41; EGCH16,17 $t = 5.88$ Ni 1/p > 4k; (d) Post (elm) EGCH13 1708($^{1}/_{4}$C). $t = 5.75$ N/Ni 108/91 1/p > 16k (CEW).

Two oak samples from the rear wing combined isotopically into the site series (EGCH16,17). Uncertain preservation of sapwood and bark edge on both oak timbers mean that a *circa* date is assigned to these two timbers. A single jowled elm post dates independently with bark edge preserved, with a felling date consistent with the oak isotope dating. For details of the structure and ring-width dating, see Tree-Ring Dates, List 354, No. 4 (p. xx). Dating commissioned by the Ellison Institute of Technology. Sampling ODL. LEN 1047106.

STAFFORDSHIRE

5. BETLEY, Main Road, Ravenshall House (SJ 7534 4751), Cruck truss — *Felling date range:* **1465–1501**

Cruck blade RH02a 1437$_{DI}$ $t = 7.76$ 1/p >1 million N/Ni 59/58; *ring-width matched:* Cruck blades RH01 1449$_{DI}$; RH02b 1455(h/s)$_{DI}$.

Early seventeenth-century house with nineteenth-century alterations. The principal range contains the remains of an earlier building in the form of a single pair of crucks. One sample from the western cruck blade (RH01) and two from the eastern cruck blade (RH02a and b) matched by ring-width dendrochronology but did not date against available reference data. The felling date range is calculated using the 10-46 rings sapwood estimate of Bayliss and Tyers (2004). Sampling R. J. Bale (DendroArch). LEN 1038577.

YORKSHIRE, SOUTH

6. BRADFIELD, Oughtibridge Hall, Oughtibridge Lane (SK 3129 9335)

(b) East cross-wing, re-roofing — *Felling date and range:* Summer **1706$_{IR}$**, **1717–42$_{IR}$**

(c) Hall, re-roofing — *Felling date range:* **1705–30$_{IR}$**

(b) Tiebeam OTI-B01 1705(3?)$_{IR}$; (c) purlin OTI-B14 1705(15)$_{IR}$. *Site master:* OTI-Bx, $t = 5.42$, r = 0.62, 1/p = 1350, IF >1000 Ni 56.

Two samples from replacement roof timbers were cross-matched and combined into a 56-year site master. For details of the structure and dating, see Tree-Ring Dates, List 351, No. 23 (p. xx), and Radiocarbon Date List 9, No. 35 (p. xx). LEN 1314571.

YORKSHIRE, WEST

7. CALVERLEY, 14–24 Woodhall Road, Calverley Old Hall (SE 2080 3687)

(b) Solar, primary structure *Felling date and range:* **Winter 1324/25$_{DI}$, 1333–58$_{I}$**

(b) *Site master* (CAL-V51, -V78, -V84, -V86, -V97, -V98) $t = 6.83$, r = 0.65, 1/p > 700k, IF >1000 Ni 78. CALVSQ04: Posts CAL-V51 1313(5)$_{DI}$; Rail CAL-V84 1324(18C)$_{DI}$; Stud CAL-V86 1307(h/s + 1NM)$_{DI}$; Joist CAL-V97 1317(6)$_{DI}$; CALVSQ03: Joist CAL-V98 1318(h/s)$_{I}$; Not included in ring width site chronologies Post CAL-V78 1310(h/s + 1NM)$_{I}$.

Stable isotope dating was conducted on six samples from the primary phase of the Solar. The samples were individually cross-matched and combined into a 78-year site master. This confirmed tentative ring-width dating for CALVSQ04 and gave dates for individual samples CAL-V78 and CAL-V98 (dating CALVSQ03). For details of the structure and dating, see Historic England Research Report 92/2024, Tree-Ring Dates, List 351, No. 25 (p. xx), and Radiocarbon Date List 9, No. 39 (p. xx).

WALES

CARMARTHENSHIRE

8. LLANDDEUSANT, Cil-brydwen Farmhouse. (SN 7535 2549), Scarfed crucks *Felling date:* **Spring 1726**

(a) Scarfed cruck blades CBD04 1725(16¼C)$_{I}$ $t = 7.21$, 1/p >1Million N/Ni 56/57; *ring-width matched:* CBD05 1715(h/s + 1NM)$_{DI}$, CBD03 1715(5)$_{DI}$.

The presumed late eighteenth- to nineteenth-century two-storey stone farmhouse has the remains of two scarfed-cruck trusses on the first floor, retained within more recent room partitions when a higher roof was added. Four rafters were sampled for ring-width dating. Three matched each other but did not provide a date against available reference data. Sampling R. J. Bale (DendroArch). NPRN 309543.

MERIONETH

9. BRITHDIR, Gwanas Fawr (SH 7712 1662), Cruck blades *Felling date:* **Spring 1442**

GF04 1437(12)$_{I}$ N/Ni 77/63; GF05 1442(1)$_{I}$ N/Ni 39/39. *Site master:* GF04_05i: $t = 5.54$, Ni 70, 1/p = 3606'; *ring-width matched:* GF01 1438(14)$_{DI}$; GF02 1441(17¼C)$_{DI}$.

A late medieval hall house, much reconstructed in the eighteenth century and heavily restored in the later twentieth century, with an added late sixteenth-century parlour wing. It is thought to occupy the site of the 'Hospitalis de Wannas' a grange of the Knights Hospitaller mentioned in 1284. Two pairs of crucks have been truncated and reused within the eighteenth-century block, with one supported on a ground-floor ceiling beam inscribed '1722', probably the date of the rebuilding of the hall. The site sequence from the four cruck blade samples could not be ring-width dated. Sampling R. J. Bale (DendroArch). NPRN 28451.

10. LLANDRILLO, Cadwst (SJ 0334 3618)

(a) Cruck hall *Felling date:* **Spring 1417**

(b) Secondary phase *Felling dates:* **Winter 1727/8, Spring 1727**

(a) Raking strut cwst02 N/Ni 54/48 1409(2)$_{I}$; Cruck blade cwst03 N/Ni 49/47 1416(18¼C)$_{I}$; Raking strut cwst04 N/Ni 47/31 1397$_{I}$.
(b) Transverse beam cwst05 N/Ni 55/55 1727(15C)$_{I}$; Bressummer cwst07 N/Ni 67/67 1726(29¼). *Site master:* cwst02, 03, 04 $t = 6.76$ Ni = 48 1/p >64k; cwst05, 07 $t = 6.24$ Ni = 86, 1/p > 44k (against South Central England reference chronology).

A substantial full cruck-framed house comprising a two-bay open hall with in-line storeyed ends. The upper part of one blade of the open truss is composite made out of two timbers; its counterpart is a single timber. The house stands within the former commote of Edeirnion (the easternmost part of historic Merioneth); this was devastated during the Glyndŵr rebellion but (on architectural evidence) appears to have recovered relatively quickly. Sampling R. Cook (ODL). Dating commissioned by Discovering Old Welsh Houses, supported by grants from the Vernacular Architecture Group and The Woodtiger Fund. NPRN 28242.

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

11. LLANDDERFEL Henblas (SH 9880 3780)

(a) Hall *Felling date:* **Winter 1424/5**

(b) Wing *Felling date:* **Winter 1425/6**

(a) Cruck blade henb05 N/Ni 35/37 1351_{I}; Tiebeam henb6 N/Ni 45/46 $1402(h/s)_{I}$; Collar henb07 $1424(31C)_{I}$ N/Ni 116/117; Arch brace henb08 N/Ni 50/51 $1424(15C)_{I}$; (b) Principal rafter henb02 N/Ni 34/34 $1425(10C)_{I}$; Collar henb03 N/Ni 70/67 $1421(5)_{I}$. *Site master:* henb_site $t = 8.12$, Ni 118, $1/p > 1$ million.

A rubble-walled barn adjoining the main house contains the service bay and one bay of the hall; the two remaining bays of the hall and the upper-end box-framed crosswing are within the present house. The cruck trusses are arch-braced and the massive service-end truss incorporates the three doorways to the service rooms and external kitchen. It has composite blades with joints about 2 ft (0.63 m) above the sill beam. The main cruck-framed hall timbers slightly predate those of the box-framed wing, similar to phasing observed at Llwyn Celyn, Monmouthshire (*Vernacular Architecture* 50 (2019): 90). As for the preceding entry, this house lies within the former commote of Edeirnion. Two samples from the wing and four from the main Hall were dated isotopically and combined into the site chronology henb_site. Sampling R. Cook (ODL). Dating commissioned by Discovering Old Welsh Houses, supported by grants from the Vernacular Architecture Group and The Woodtiger Fund. NPRN 28481

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

12. LLANEGRYN, St Mary and St Egryn's Church (SH 6050 0550)

(a) Roof *Felling date range:* **1505–35**

(b) Rood Loft *Felling date range:* **1512–32**

(a) Arch-brace LEGM3 N/Ni 51/50 $1494(h/s)_{I}$; (b) Stud LEGM5 N/Ni 35/36 $1496(5 + 15NM)$. *Site master:* LEGM3,5 Ni 53 $t = 7.1$, $1/p > 250k$.

Llanegryn parish church retains a particularly fine example of a carved medieval screen and rood loft. The roof with cusped arch-braced principals and collars is seen to be broadly contemporary with the rood loft. The majority of timbers have been de-frassed with only one sample retaining poorly preserved sapwood. A local sapwood estimate of 11-41 rings has been used. Sampling: Ross Cook (ODL) for RCAHMW. NPRN 43890.

For an image of this building, see page xxx (Fig. 3).

MONMOUTHSHIRE

13. LLANVIHANGEL CRUCORNEY, Trewyn House (SO 3287 2285) *Felling dates:* **Winter 1694/5, Spring 1695**

(a) Principal rafters TH01 $1694(15C)_{I}$ N/Ni 57/57; TH02 $1694(13C)_{I}$ N/Ni 53/53. *Site master:* TH01_02 $t = 7.04$ Ni 57 $1/p > 330K$; *ring-width matched:* Ceiling beam $1694(17^{1}/_{4}C)_{DI}$.

A country house reported to have had a date of 1692 on the main front, though it has late medieval origins, evidenced by extensive vaulted cellars. Sampling was restricted to a single roof truss and a ceiling beam. The three samples cross-matched, but could not be dated against available ring-width chronologies. Description in J. Newman, *Buildings of Wales: Monmouthshire/Gwent* (2009), pp. 125–6. Sampling: R. J. Bale and N. Nayling (DendroArch). NPRN 20318.

MONTGOMERYSHIRE

14. LLAWR-Y-GLYN, Y Gribyn (SN 9270 9160), main range *Felling date:* **Winter 1665/6**

Purlin YG01 $1665(18C)_{I}$ $t = 6.63$, $1/p > 60k$ N/Ni 76/62; *ring-width matched:* Purlins YG03 1656_{DI}; YG04 $1655(9)_{DI}$; YG16 $1655(h/s)_{DI}$; Ridge piece YG14 $1641(h/s)_{DI}$.

Stone and brick-built $1^{1}/_{2}$-storey house, with some timber framing, thought to have medieval origins though heavily altered in the seventeenth century. The main range is a two-unit timber-framed house, probably of end-chimney lobby-entry type with a post-and-panel partition between hall and inner rooms and spine beams with ogee stops. The fireplace has a possibly spurious date inscription: 11 May 1653. In a second phase (not dated) a partly stone-walled kitchen wing was added against the hall creating an L-plan. Three oak trusses remain and principal rafters, a collar, a tiebeam and truss infill posts were sampled, along with the oak purlins and ridge piece. All truss elements proved to be sourced from heavily managed mature trees, with one containing 212 rings including some ten cyclic episodes of growth suppression, and neither these nor the cross-matched purlins and ridge piece could be

dated against available ring-width chronologies. The isotope-dated sample allowed the cross-matched purlins and ridge piece to be dated. Sampling: R. J. Bale (DendroArch). NPRN 29076.

PEMBROKESHIRE

15. HOOK, 4 and 6 Lower Quay Road (SM 9781 1161)

(a) Principal rafters (6 Lower Quay Road) *Felling date:* **Spring 1753$_{DI}$**

(b) Joists (4 Lower Quay Road) *Felling date:* **Spring 1752 $_{DI}$**

(a) Principal rafters 6LQ03 1752(11C?)$_I$ $t = 5.63$, 1/p = 459 N/Ni 42/35; *ring-width matched:* 6LQ02 1752(14$^1/_4$C)$_{DI}$; (b) Joists 4LQ05 1751(13$^1/_4$C)$_I$ $t = 6.62$, 1/p >40K N/Ni 53/51; *ring-width matched:* 4LQ07 1752(21C)$_{DI}$; 4LQ04 1751(13$^1/_4$C)$_{DI}$.

The two adjoining stone cottages, both two-roomed and of 1$^1/_2$ storeys, have an L-shaped plan. The original timbers throughout both cottages are of small scantling, sourced from fast grown young trees (*c.* 15–55 rings). No. 6 Lower Quay has three oak principal-rafter trusses with pegged collars, although the purlins have been removed and the roof itself replaced. No. 4 Lower Quay has a modern first floor and roof but the original oak ceiling joists survive in one room. Two of the three rafters sampled, from different trusses, cross-dated to form a 45-year master sequence, as did three of the four joists sampled (54-year sequence). However, these sequences did not match each other, nor any available reference data. The isotopic dating of one rafter and one joist sample shows that the cottages are of almost the same date. Sampling R. J. Bale (DendroArch).

RADNORSHIRE

16. GLASBURY, Old Vicarage (SO 1772 3903)

(a) Primary phase *Felling date:* **Winter 1430/1$_{DI}$**

(a) Principal rafters (OVG2a) 1430(9C?)$_I$ 34/29; OVG3 1430(12C)$_I$ 36/37; ring-width matched: Collar 1430(17C)$_D$. *Site master*: OVG_2a_3 $t = 6.11$ Ni -/37 1/p = 1016.

This stone-walled late medieval hall house with an exceptionally ornate roof had previously been assessed as having too few rings for conventional dendrochronology and two samples were used for isotopic analysis. Sampling: D. Miles (ODL). For a building description and details of the ring-width dating, see Tree-Ring Dates, List 353, No. 29 (p. xx). NPRN 81453.

ORCID

N. J. Loader http://orcid.org/0000-0002-6841-1813

N. Alcock http://orcid.org/0000-0002-8890-6477

Figure 1. Cadwst, Llandrillo, Merioneth (1417$_I$); see p. xxx (photo: © Martin Cherry).

Figure 2. Henblas, Llandderfel, Merioneth (1424/5_I); see p. xxx (photo: © Ross Cook).

Figure 3. St Mary and St Egryn's Church, Llanegryn, Merioneth, roof (1505–35_I) and rood loft (1512–32_I); see p. xxx (photo: © Ross Cook).