



Oxford Dendrochronology Laboratory
Report 2010/58

**THE TREE-RING DATING OF
PLAS COCH,
LLANEDWEN,
ANGLESEY
(NGR SH 512 684)**



Summary

A total of 14 timbers were sampled from the roof of this building, including 2 from the principal rafters of a cusped truss thought to be of earlier origin. One of these two principal rafters was found to be from a tree felled in **summer 1534**. The remaining roof timbers probably represent a single group of trees felled at about the same time, though the narrow-ringed sequences were found to contain more sapwood rings than usually encountered in Wales. A single series was from a tree felled in **spring 1592**, with others having estimated felling date ranges either incorporating this date, or slightly earlier. Since it appears the rest of the roof, other than the cusped truss, is likely to have been constructed in a single campaign, this is most likely to have taken place in 1592, or within a few years after this date.

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BACKGROUND TO DENDROCHRONOLOGY

The basis of dendrochronological dating is that trees of the same species, growing at the same time, in similar habitats, produce similar ring-width patterns. These patterns of varying ring-widths are unique to the period of growth. Each tree naturally has its own pattern superimposed on the basic 'signal', resulting from genetic variations in the response to external stimuli, the changing competitive regime between trees, damage, disease, management etc.

In much of Britain the major influence on the growth of a species like oak is, however, the weather conditions experienced from season to season. By taking several contemporaneous samples from a building or other timber structure, it is often possible to cross-match the ring-width patterns, and by averaging the values for the sequences, maximise the common signal between trees. The resulting 'site chronology' may then be compared with existing 'master' or 'reference' chronologies.

This process can be done by a trained dendrochronologist using plots of the ring-widths and comparing them visually, which also serves as a check on measuring procedures. It is essentially a statistical process, and therefore requires sufficiently long sequences for one to be confident in the results. There is no defined minimum length of a tree-ring series that can be confidently cross-matched, but as a working hypothesis most dendrochronologists use series longer than at least fifty years.

The dendrochronologist also uses objective statistical comparison techniques, these having the same constraints. The statistical comparison is based on programs by Baillie & Pilcher (1973, 1984) and uses the Student's *t*-test. The *t*-test compares the actual difference between two means in relation to the variation in the data, and is an established statistical technique for looking at the significance of matching between two datasets that has been adopted by dendrochronologists. The values of '*t*' which give an acceptable match have been the subject of some debate; originally values above 3.5 being regarded as acceptable (given at least 100 years of overlapping rings) but now 4.0 is often taken as the base value. It is possible for a random set of numbers to give an apparently acceptable statistical match against a single reference curve – although the visual analysis of plots of the two series usually shows the trained eye the reality of this match. When a series of ring-widths gives strong statistical matches in the same position against a number of independent chronologies the series becomes dated with an extremely high level of confidence.

One can develop long reference chronologies by cross-matching the innermost rings of modern timbers with the outermost rings of older timbers successively back in time, adding data from numerous sites. Data now exist covering many thousands of years and it is, in theory, possible to match a sequence of unknown date to this reference material.

It follows from what has been stated above that the chances of matching a single sequence are not as great as for matching a tree-ring series derived from many individuals, since the process of aggregating individual series will remove variation unique to an individual tree, and reinforce the common signal resulting from widespread influences such as the weather. However, a single sequence can be successfully dated, particularly if it has a long ring sequence.

Growth characteristics vary over space and time, trees in south-eastern England generally growing comparatively quickly and with less year-to-year variation than in many other regions (Bridge, 1988). This means that even comparatively large timbers in this region often exhibit few annual rings and are less useful for dating by this technique.

When interpreting the information derived from the dating exercise it is important to take into account such factors as the presence or absence of sapwood on the sample(s), which indicates the outer margins of the tree. Where no sapwood is present it may not be possible to determine how much wood has been removed, and one can therefore only give a date after which the original tree must have been felled. Where the bark is still present on the timber, the year, and even the time of year of felling can be determined. In the case of incomplete sapwood, one can estimate the number of rings likely to have been on the timber by relating it to populations of living and historical timbers to give a statistically valid range of years within which the tree was felled. For this region the estimate used is that 95% of oaks will have a sapwood ring number in the range 11 – 41 (Miles 1997a).

PLAS COCH

Plas Coch was surveyed by the Royal Commission (RCAHMW) for the *Anglesey Inventory* (1937), pp. 55-6. A summary of the development of the house is available on Coflein, RCAHMW's on-line database (NPRM 15808):

“The earlier part of the present mansion at Plas Coch was thought to have been built by Dafydd Llwyd, an Anglesey lawyer living in London, in 1569, as evidenced by the inscription over the porch doorway (Fig. 1). It was remodelled later in the last decade of the sixteenth century by his son Hugh Hughes, attorney general for North Wales from 1587, in a distinctive earlier Renaissance style with ornate crow-stepped gables. Substantial additions were made in the earlier nineteenth century and the house was again remodelled later in the same century producing a symmetrical facade in the style of the late sixteenth century house.

The sixteenth century house is a two storey building with cellars and attics. The walls are of coursed stone blocks under a slate gabled roof. It faced east where the facade was broken up by a full height porch and a smaller projecting bay, both with stepped gables. The windows are mullioned and transomed under pointed pediments, that over the porch doorway projecting as an oriel. The attics are lit by crow-stepped gables, topped with finials, as are all the gables. The porch presumably opened into the passage at the lower end of the hall, which has a fireplace in its long west wall. There is a large room beyond the hall, now the library. Service rooms and/or a parlour would have taken up the bay below the passage and would have communicated with the kitchen in a large rear wing. The tower in the angle between the hall and kitchen wing rises to overtop the house with an ogee roof.”

The roof to the main N-S range is comprised of eight trusses, seven of these primary, whilst the eighth one is a nineteenth century replacement. The majority of the trusses consist of a simple wide principal rafter with high collars, with the exception of Truss 2 which is of reused timbers including raking struts which together with the collar and principal rafters are cusped. Some of the other trusses (T1, T3, and T7), also have raking struts, although these are not cusped and do not have any strong evidence for reuse.

Truss 7, unlike the other trusses, had multiple pegging on the joints between the collar and the principal rafter, in the form of two rows of pegs.



Figure 1: Photograph of inscription over main porch door, bearing the date 1569

SAMPLING

Sampling took place in September 2010. All the samples were of oak (*Quercus* spp.). Core samples were extracted using a 15mm diameter borer attached to an electric drill. They were numbered using the prefix **angh**, and located on the survey plan (Fig. 2). The samples were removed for further preparation and analysis. Cores were mounted on wooden laths and then these were polished using progressively finer grits down to 400 to allow the measurement of ring-widths to the nearest 0.01 mm. The samples were measured under a binocular microscope on a purpose-built moving stage with a linear transducer, attached to a desktop computer. Measurements and subsequent analysis were carried out using DENDRO for WINDOWS, written by Ian Tyers (Tyers 2004).

Plas Coch trusses

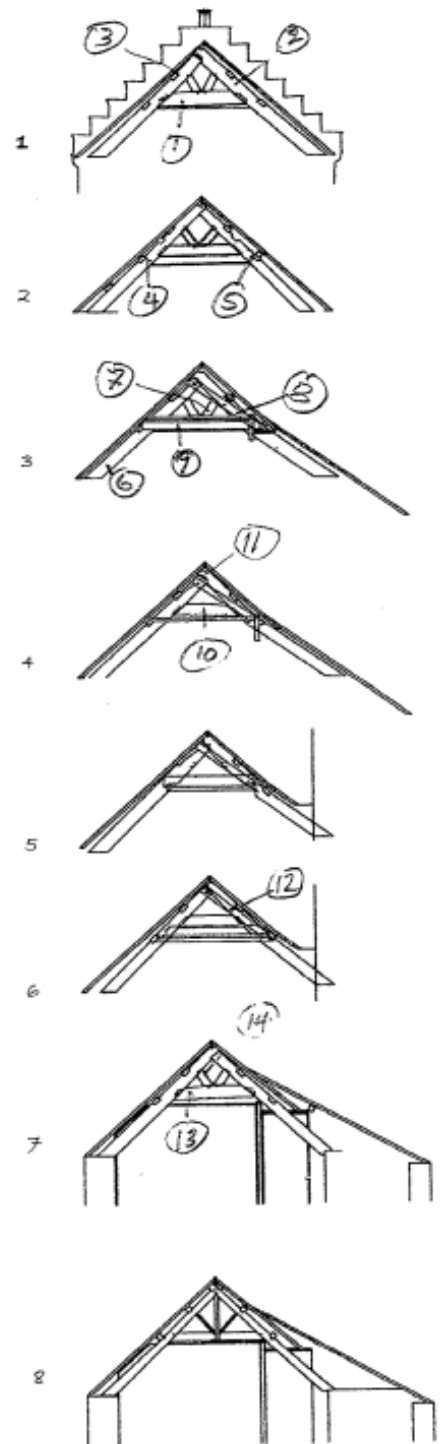
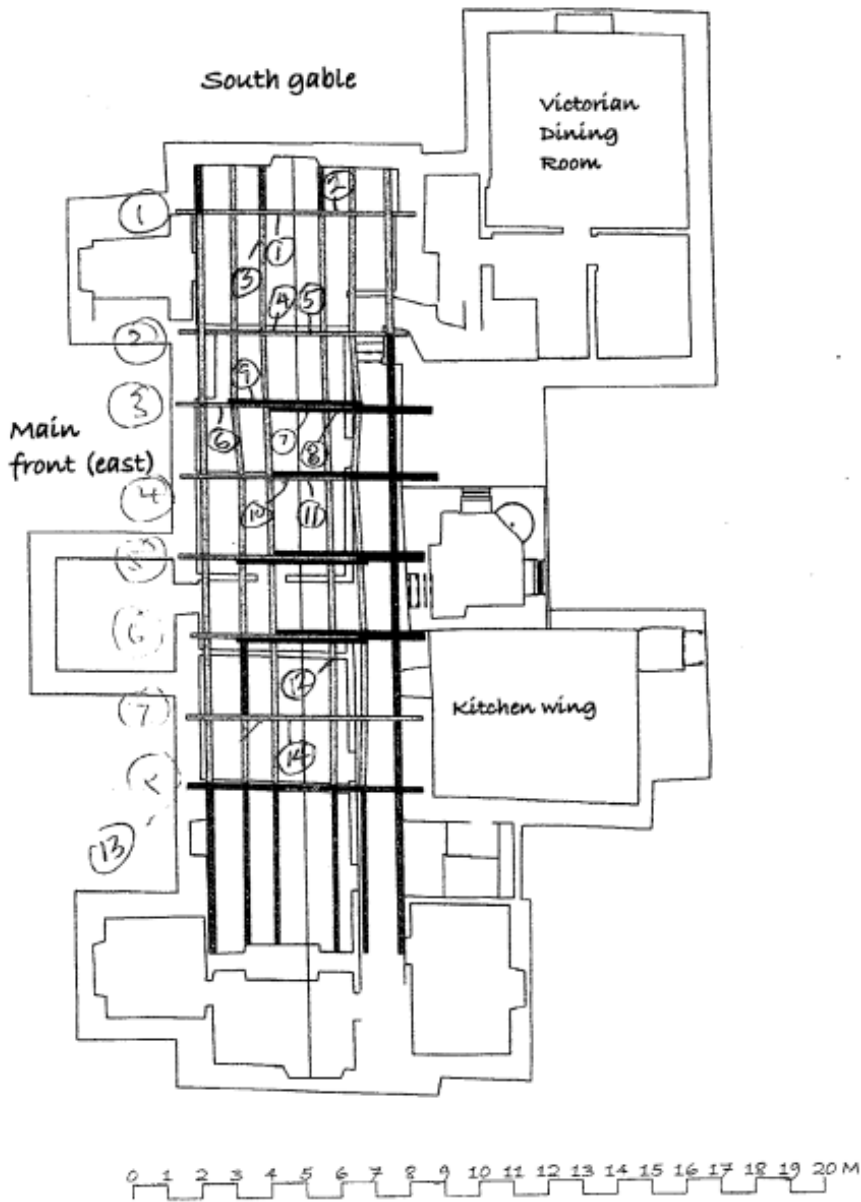


Figure 2: Drawings of the property showing the timbers sampled for dendrochronology (adapted from original drawings supplied by David Longley)

RESULTS AND DISCUSSION

Details of the samples and their locations are given in Table 1 and illustrated in Figure 2. One series, **angh03**, was too short to be used in further analysis, and was therefore discarded from further consideration. Three series (**04**, **07** and **11**) could not be dated either by internal matching, or by comparison with dated reference material. There were a number of significant cross-matches between the remaining series (listed in Table 2), but also a number of matches that were lower than might have been expected, perhaps reflecting the high year-to-year variation in the ring-widths (sensitivity). For this reason the series were dated individually against the dated reference material as an additional quality control method (Tables 3 a-j). Series **angh14**, which contained some notable bands of narrow rings, could not be adequately resolved against the other sequences, and therefore only the first 50 rings of the series were included in subsequent analysis, although the additional rings give extra information concerning likely felling dates.

A 190-year long site chronology, **PLASCOCH**, was formed from these series, and its strongest matches are shown in Table 4.

Sample **angh05**, from the only cusped truss, was suspected as being earlier in origin, and indeed it was found to have been felled over half a century before the other samples, in the **summer 1534**. The only other precise felling date obtained was for **angh08**, a principal rafter from the third truss. This was felled in spring 1592. Figure 2 shows the relative positions of overlap of the dated sequences. The next problem in interpretation of the results is to decide whether or not it is likely that all the remaining dated timbers were likely to have been felled at the same time. As the samples mostly had quite narrow rings and this unusual part of the country has often been found to be more like Ireland in some of its growth characteristics, it was decided that a wider sapwood estimate of 10-55 rings might be more applicable in this case. The information in Table 1 and Figure 2 reflect this use of the wider sapwood estimate. Given some of the individual matches, for example between **angh02** and **angh08**, and the spread of likely felling date ranges, coupled with the fabric analysis of the roof itself, it seems likely that these remaining timbers do represent a single group of timbers felled at the same time, in **1592**, or within a few years of this date. It is known that the house was remodelled by Hugh Hughes in the last decade of the sixteenth century, and this is supported by the dendrochronology.

The single reused cusped truss of 1534 suggests that this might be the date of the original build. The house was previously thought to have been constructed in 1569, however, it is more likely that it might have constructed as early as the 1530s assuming the reused cusped truss did originate from the site. Nevertheless, some of the dated samples with incomplete sapwood might have originated from a phase of building represented by the 1569 carved over the porch door.

An interesting feature of the reused cusped truss T2 is the awkward joint of the rear cusped raking strut to the principal rafter (Fig. 3). Here the angle of the joint is not correct, yet it does seem to fit well with the collar, and a scribed carpenter's setting out mark suggests that it is in its original position. However, the eastern raking strut does fit correctly, suggesting that the roof pitch had not been altered. It is hard to imagine that a master carpenter would allow a mistake in setting out not to be rectified before erection on site, yet the rest of the truss would suggest this is the case. It is almost as though the timbers were marked out, but not dry-fitted on the ground before assembly, at which point the mistake would have been noticed and a new strut made. Further study of the truss is needed to help unravel this interesting constructional issue.



Figure 3: Detail of western side of reused cusped truss T2 showing ill-fitting joint to principal rafter

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Table 1: Details of samples taken from Plas Coch, Llanidan, Anglesey. Trusses are numbered from south to north.

Sample number	Timber and position	Dates AD spanning	H/S bdry	Sapwood complement	No of rings	Mean width mm	Std devn mm	Mean sens	Felling seasons and dates/date ranges (AD)
* angh01	Collar, truss 1	1458-1546	1540	6	89	1.85	0.83	0.24	1550–1595
* angh02	West principal rafter, truss 1	1435-1487	-	-	53	2.76	0.69	0.22	after 1497
angh03	Upper east purlin, bay 1-2	undated			<40	NM	-	-	unknown
angh04	East cusped principal rafter, truss 2	undated	-	3	55	1.77	0.76	0.22	unknown
angh05	West cusped principal rafter, truss 2	1448-1533	1501	32½C	86	1.71	1.08	0.18	Summer 1534
* angh06	East principal rafter, truss 3	1467-1547	1547	H/S	81	1.81	1.09	0.27	1557–1602
angh07a	West V-strut, truss 3	<i>undated</i>	-	<i>H/S+19</i>	<i>95</i>	<i>1.24</i>	<i>0.85</i>	<i>0.23</i>	
angh07b	<i>ditto</i>	<i>undated</i>	-	<i>H/S+32</i>	<i>105</i>	<i>1.32</i>	<i>0.92</i>	<i>0.26</i>	
angh07	Mean of a + b	undated	-	H/S+32NM	105	1.31	0.93	0.24	unknown
angh08a	West principal rafter, truss 3	<i>1463-1519</i>	-	-	<i>57</i>	<i>2.01</i>	<i>0.79</i>	<i>0.37</i>	
angh08b	<i>ditto</i>	<i>1490-1591</i>	<i>1547</i>	<i>44¼C</i>	<i>102</i>	<i>0.98</i>	<i>0.69</i>	<i>0.27</i>	
angh08	Mean of a + b	1463-1591	1547	44¼C	129	1.22	0.82	0.30	Spring 1592
* angh09	Collar, truss 3	1478-1543	1540	3	70	1.92	1.04	0.25	1550–1595
* angh10	Collar, truss 4	1465-1531	1531	H/S+29NM	67	1.83	1.03	0.32	1560–1586
angh11	West principal rafter, truss 4	undated		2+26NM	78	1.36	0.89	0.26	unknown
* angh12	Upper west purlin, bay 6-7	1460-1531	1531	H/S+29NM	72	1.84	0.64	0.22	1560–1586
* angh13	Collar, truss 7	1402-1526	1531	-	125+5NM	1.18	0.66	0.27	after 1536
* angh14	East V-strut, truss 7	1436-1485	<i>c</i> 1545	<i>c</i> 36	50(+ <i>c</i> 58)	1.29	0.83	0.29	after 1580
* = included in Site Master PLASCOCH		1402-1591			190	1.47	0.73	0.23	

Key: H/S bdry = heartwood/sapwood boundary - last heartwood ring date; std devn = standard deviation; mean sens = mean sensitivity; C = bark edge present, winter felled; NM = not measured. NB sapwood estimate used 10–55

Table 2: Cross-matching between dated sequences in the Site Master **PLASCOCH**

	<i>t</i> -values								
Sample	angh02	angh05	angh06	angh08	angh09	angh10	angh12	angh13	angh14
angh01	1.8	2.5	1.6	1.1	7.8	2.8	2.8	3.1	1.9
angh02		4.1	9.6	10.3	-	0.4	3.9	0.3	4.0
angh05			4.2	3.7	2.2	4.6	2.5	2.1	2.5
angh06				9.7	1.5	1.5	2.2	1.5	-
angh08					2.0	1.9	3.2	2.8	2.8
angh09						3.5	2.3	3.7	-
angh10							4.8	3.2	-
angh12								7.3	3.1
angh13									2.9

- = overlap too short to give meaningful value

Table 3a. Dating evidence for series **angh01**, AD 1458–1546 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Shropshire	Old Hall Farm, All Stretton	(Miles and Haddon-Reece 1996)	OLDHLLFM	1379-1630	89	6.2
Shropshire	Ightfield Hall barn, Whitchurch	(Groves 1997)	IGHTFELD	1341-1566	89	5.7
Shropshire	Langley Gatehouse	(Hillam and Groves 1993)	LANGLEY	1491-1600	56	5.4
Brittany	Brittany Master Chronology	(Pilcher, Guibal, Merion-Jones, pers comm)	BRIT3	1360-1560	89	5.3
Worcestershire	Upwich salt making site	(Groves and Hillam 1997)	UPWICH3	1454-1651	89	5.2
Wales	Vaynol Old Hall	(Miles <i>et al</i> 2010)	GWYNEDD2	1448-1628	89	5.2
Wales	Plas Mawr House	(Miles and Haddon-Reece 1996)	PLASMWR1	1428-1556	89	5.0
Shropshire	Upper Lake, Westbury	(Miles and Worthington 2000)	UPRLAKE	1418-1546	89	5.0

Table 3b. Dating evidence for series **angh02**, AD 1435–1487 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Brittany	Beaumanoir	(Meirion-Jones pers comm)	BMN	1421-1560	53	6.2
Wales	Brecon Cathedral	(Miles and Haddon-Reece 1996)	BRECON1	1420-1510	53	5.7
Leicestershire	Moat House, Appleby Magna	(Arnold <i>et al</i> 2008)	APMASQ02	1405-1494	53	5.6
Wales	Plas Mawr House	(Miles and Haddon-Reece 1996)	PLASMWR2	1360-1578	53	5.4
Wales	Tudor Rose, Beaumaris	(Miles <i>et al</i> 2010)	ANGLSY3a	1420-1548	53	5.2
Wales	Cefn Caer Pennel	(Miles and Worthington 1999)	CEFNCAR1	1404-1525	53	5.0
Wales	Welsh Master Chronology	(Miles 1997c)	WALES97	404-1981	53	4.8
Wales	Skerr House, Porthcawl	(Miles and Worthington 2000)	SKERHS2	1435-1553	53	4.6

Table 3c. Dating evidence for series **angh05**, AD 1448–1533 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Pen y Bryn, Abergwyngregyn	(Miles <i>et al</i> 2010)	GWYNEDD4	1403-1585	86	6.0
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	86	5.9
Wales	Tudor Rose, Beaumaris	(Miles <i>et al</i> 2010)	ANGLSY3a	1420-1548	86	5.7
Wales	Ty Mawr, Llandrog	(Miles <i>et al</i> 2010)	GWYNEDD1	1428-1535	86	5.6
Brittany	Beaumanoir	(Meirion-Jones pers comm)	BMN	1421-1560	86	5.4
Wales	Cefn Caer Pannel	(Miles and Worthington 1999)	CEFNCAR1	1404-1525	78	5.2
Wales	Pengwern Old Hall	(Miles <i>et al</i> 2003)	PENGWERN	1353-1521	74	5.1
Wales	Clenennau, Dolbenmaen	(Miles <i>et al</i> 2006)	BDGLRT10	1406-1570	86	5.0

Table 3d. Dating evidence for series **angh06**, AD 1467–1547 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Tydyddyn Lwydion	(Miles and Haddon-Reece 1996)	TYDDYN	1385-1601	81	5.1
Oxfordshire	Chastleton House, Chastleton	(Miles <i>et al</i> 2005)	CHSTLTN1	1452-1610	81	5.0
Wales	Vaynol Old Hall	(Miles <i>et al</i> 2010)	GWYNEDD2	1448-1628	81	4.8
Wales	Pen y Bryn, Abergwyngregyn	(Miles <i>et al</i> 2010)	GWYNEDD4	1403-1585	81	4.8
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	81	4.6
Wales	Trefrechan barn	(Miles <i>et al</i> 2004)	TREFECHN	1423-1606	81	4.5
Wales	Rose and Crown, Gwydwn	(Miles and Worthington 2000)	GWYDWN	1411-1571	81	4.3
Wales	Ty Mawr, Llandrog	(Miles <i>et al</i> 2010)	GWYNEDD1	1428-1535	69	4.3

Table 3e. Dating evidence for the site series **ANGH08**, AD 1463–1591 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	116	6.5
Wales	Vaynol Old Hall	(Miles <i>et al</i> 2010)	GWYNEDD2	1448-1628	129	6.1
Somerset	Manor Court House, Chard	(Arnold <i>et al</i> 2004)	SMCASQ01	1409-1517	55	5.8
Wales	Pen y Bryn, Abergwyngregyn	(Miles <i>et al</i> 2010)	GWYNEDD4	1403-1585	123	5.4
Wales	Cae'nycoed-uchaf, Maentwrog	(Miles <i>et al</i> 2006)	BDGLRT17	1407-1592	129	5.2
Wales	Trefrechan barn	(Miles <i>et al</i> 2004)	TREFECHN	1423-1606	129	5.1
Derbyshire	Bentley Hall, Hungry Bentley	(Arnold and Howard 2009)	HBNASQ01	1444-1675	129	5.0
Wales	Bangor Town Hall	(Miles <i>et al</i> 2010)	BANGOR	1412-1545	83	5.0
Northamptonshire	Dower House, Fawsley Park	(Howard <i>et al</i> 1999)	FAWSLEY1	1427-1575	113	4.9
Wales	Royal House, Machynlleth	(Miles <i>et al</i> 2004)	ROYALHS3	1427-1575	113	4.8

Table 3f. Dating evidence for series **angh09**, AD 1478–1543 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Suffolk	Otley Hall	(Bridge 2001)	OTYHALL1	1415-1587	70	6.1
Essex	Eastbury	(Tyers 1997)	EASTBURY	1250-1565	70	5.8
Suffolk	Bedfield Hall	(Miles <i>et al</i> 2007)	BEDFLD2	1473-1627	70	5.6
Norfolk	Marriots Warehouse	(Tyers 1999)	MARRIOTS	1310-1583	70	5.5
Shropshire	Ightfield Hall barn, Whitchurch	(Groves 1997)	IGHTFELD	1341-1566	70	5.4
Shropshire	Habberley Hall	(Miles and Haddon-Reece 1995)	HABBERLY	1386-1554	70	5.3
East Anglia	East Anglia Master Chronology	(Bridge 2003)	ANGLIA03	944-1789	70	5.2
Shropshire	Old Hall Farm, All Stretton	(Miles and Haddon-Reece 1996)	OLDHLLFM	1379-1630	70	5.2

Table 3g. Dating evidence for series **angh10**, AD 1465–1531 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Pen y Bryn, Abergwyngregyn	(Miles <i>et al</i> 2010)	GWYNEDD4	1403-1585	67	6.2
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	67	5.3
Berkshire	Combe Church	(Miles and Worthington 2001)	COMBE2	1339-1618	67	5.1
Hampshire	Trees Cottage, Froxfield	(Miles and Haddon-Reece 1993)	TREES3	1442-1553	67	5.0
Oxfordshire	The Stores, East Hendred	(Miles and Worthington 2002)	EHENDRD4	1440-1567	67	4.9
Wales	Tyn Celyn	(Miles <i>et al</i> 2004)	TYNCELYN	1375-1524	67	4.9
Oxfordshire	Chastleton House, Chastleton	(Miles <i>et al</i> 2005)	CHSTLTN1	1452-1610	67	4.8
Warwickshire	Palmer's Farm, Wilmcote	(Miles and Worthington 2000)	ARDEN3	1454-1580	67	4.7

Table 3h. Dating evidence for series **angh12**, AD 1460–1531 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	72	7.3
Wales	Neuadd Cynhinfa Pontrobert	(Miles and Haddon-Reece 1996)	neu1	1438-1506	47	6.1
Wales	Tyn Celyn	(Miles <i>et al</i> 2004)	TYNCELYN	1375-1524	65	6.0
Wales	Cefn Caer Pennel	(Miles and Worthington 1999)	CEFNCAR1	1404-1525	66	5.9
Wales	Tyn-Llyn Gwyddelwern	(Miles <i>et al</i> 2010)	DENBY5	1410-1518	59	5.7
Wales	Tyddyn Cynnar Llansilin	(Miles <i>et al</i> 2003)	TYDDYNC2	1459-1609	72	5.5
Lincolnshire	Fenton Church	(Arnold <i>et al</i> 2005)	FENASQ02	1434-1617	72	5.5
Wales	Tyddyn Lwydion	(Miles and Haddon-Reece 1996)	TYDDYN	1385-1601	72	5.3

Table 3i. Dating evidence for series **angh13**, AD 1402–1526 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	125	7.9
Wales	Tydyddyn Lwydion	(Miles and Haddon-Reece 1996)	TYDDYN	1385-1601	125	7.4
Gloucestershire	Westgate St, Gloucester	(Tyers and Wilson 2000)	WGATE1	1209-1518	117	7.0
Wales	Welsh Master Chronology	(Miles 1997c)	WALES97	404-1981	125	7.0
Somerset	Gatehouse, Bristol Cathedral	(Arnold <i>et al</i> 2003)	BRICSQ01	1306-1494	93	6.8
Shropshire	Old Hall Farm, All Stretton	(Miles and Haddon-Reece 1996)	OLDHLLFM	1379-1630	125	6.7
Shropshire	Oswestry Old Grammar School	(Miles <i>et al</i> 2008)	OSWTRYOG	1356-1552	125	6.5
Wales	White Hall, Presteigne	(Miles and Worthington 1999)	WHITEHLL	1352-1462	61	6.3

Table 3j. Dating evidence for series **angh14**, AD 1436–1485 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	50	7.0
Shropshire	Alcaston Hall	(Miles and Worthington 1998)	ALCASTON	1389–1556	50	5.8
Worcestershire	Crowle Abbey	(Hillam 1997)	CROWLE2	1412-1496	50	5.4
Wales	Welsh Master Chronology	(Miles 1997c)	WALES97	404-1981	50	5.0
Wales	Neuadd Cynhinfa Pontrobert	(Miles and Haddon-Reece 1996)	neu1	1438-1506	48	4.9
Worcestershire	Mere Hall, Hanbury	(Miles <i>et al</i> 2005)	MEREHALL	1408-1610	50	4.9
Wales	Old Beaupre Castle	(Miles <i>et al</i> 2010)	OLDBPRE2	1443-1525	50	4.8
Wales	Rose and Crown, Gwydwn	(Miles and Worthington 2000)	GWYDWN	1411-1571	50	4.7

Table 4. Dating evidence for the Site Master chronology **PLASCOCH**, AD 1402–1591 against regional (**bold**) individual site chronologies

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Wales	Plas Mawr House	(Miles 1997b)	PLASMAWR	1360-1578	177	11.6
Wales	Rose and Crown, Gwydwn	(Miles and Worthington 2000)	GWYDWN	1411-1571	161	10.6
Shropshire	Old Hall Farm, All Stretton	(Miles and Haddon-Reece 1996)	OLDHLLFM	1379-1630	190	10.3
Wales	Welsh Master Chronology	(Miles 1997c)	WALES97	404-1981	190	9.3
Wales	Branas-Uchaf, Llandrillo	(Miles <i>et al</i> 2010)	DENBY6	1388-1763	190	8.9
Wales	Llwyn Llandrinio Montgomeryshire	(Miles <i>et al</i> 2003)	LLWYN	1413-1551	139	8.7
Shropshire	Abcott Manor, Clungunford	(Miles and Worthington 2002)	CGFA	1422-1545	123	8.5
Shropshire	Ightfield Hall barn, Whitchurch	(Groves 1997)	IGHTFELD	1341-1566	165	8.5
Wales	Tydyddyn Lwydion	(Miles and Haddon-Reece 1996)	TYDDYN	1385-1601	190	8.4
Shropshire	Shropshire Master Chronology	(Miles 1995)	SALOP95	881-1745	190	8.4
Wales	Peniarth-Uchaf Meifod	(Miles and Haddon-Reece 1996)	PENIARTH	1385-1550	149	8.0

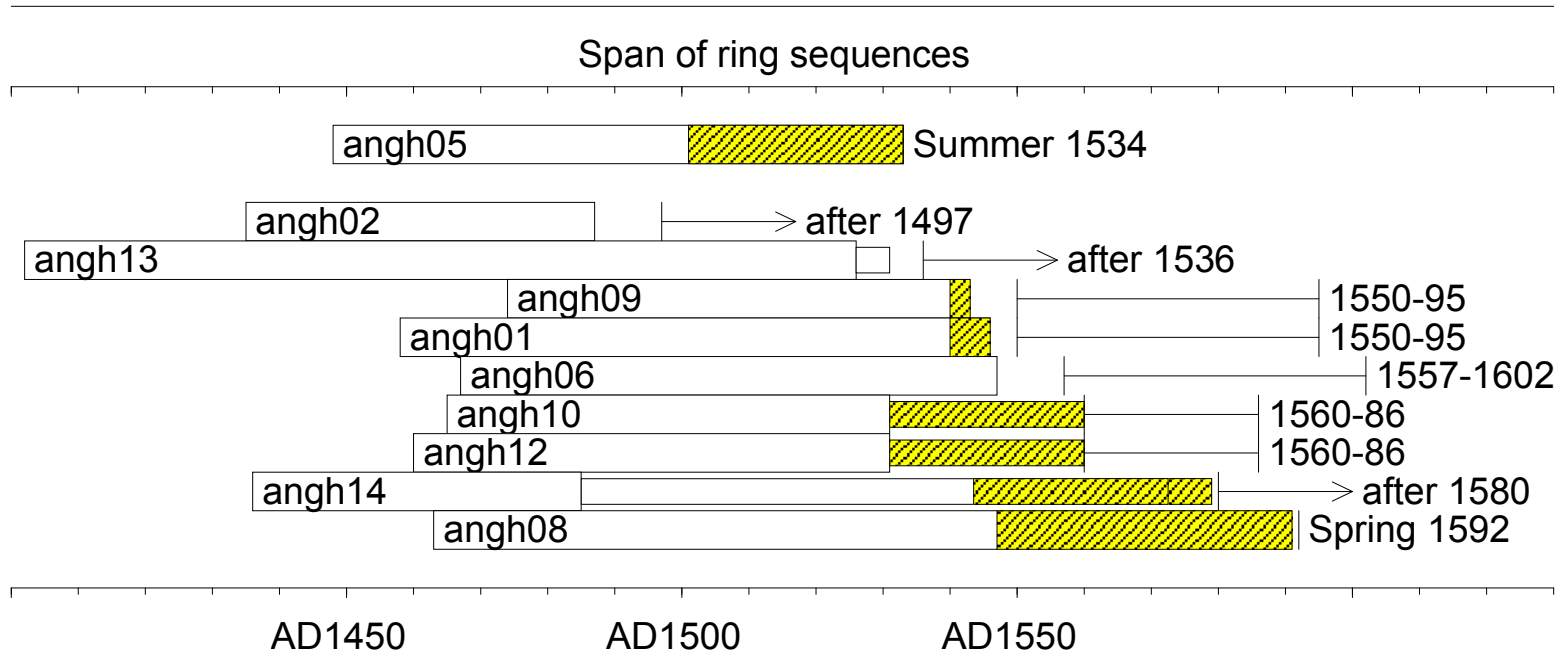


Figure 2: Bar diagram showing the relative positions of overlap of the dated timbers from Plas Coch, Llanidan, along with their interpreted felling dates/date ranges. Yellow hatched sections represent sapwood rings.

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