

## Calendar dating of:

- **Live trees**
- **Period Buildings**
- **Archaeological Timbers**



➤ *Establish the exact year a timber framed building was constructed from just £540.*

➤ *Free advice & call-out aside, assurance of our no date - no fee.*

➤ *Postal dating from just £80.*

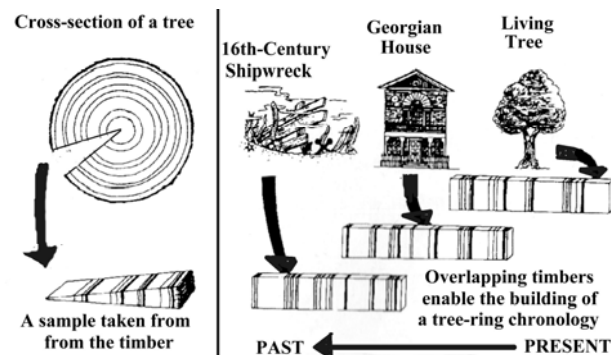
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### 1. TREE-RING DATING

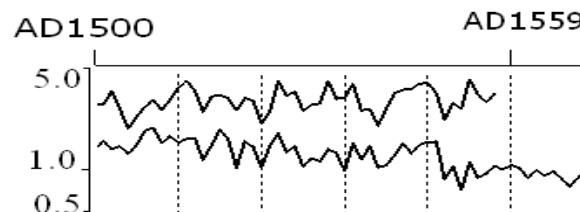
Tree-ring dating (or dendrochronology) is the study of chronological and environmental information contained within the annual growth layers of trees. It is based on the fact that the annual growth rings of trees vary from year to year, largely according to the climatic conditions.

The climatic pattern within tree-rings means that tree-ring sequences covering the same span of time match up. By overlapping matching sequences of tree-rings it is possible to count back series from live trees to period buildings to archaeological timbers preserved in bogs, etc.



### The process of overlapping tree-ring series backwards in time to create master chronologies

Through this process master chronologies have been established which in Europe date back to before 7000 BC. Comparing timbers of unknown date against our database of reference chronologies allows us to establish precise calendar dates.



A visual plot of two ring-width series showing the similarities that confirm the matching.

Before about AD 1600, most furniture and timber-framed buildings in England were made from domestic timbers. Oak having the greatest durability of such woods, it is oak

in the main that has survived. From the 1620's onwards English records show an increasing amount of imported woods, especially pine. Fortunately, in respect of tree-ring dating in the UK, both oak and pine have the greatest potential to be dated.

### 2. CAN WE DATE YOUR TIMBERS?

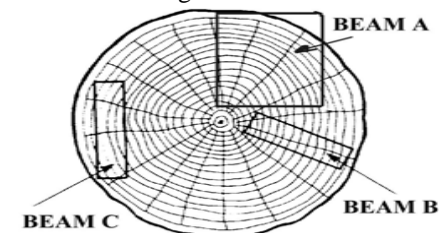
It is important to realise that not all wood can be dated by tree-ring analysis.

#### Minimum number of rings

A tree-ring series of more than 50 rings may contain a unique pattern of narrow and wide rings, corresponding to poor and good years of growth respectively, which enables dating. Just as a fingerprint can be matched to a specific person, a tree-ring pattern of 50 rings or more can be matched at one position in time. Less rings and the sequence could fit in a number of different positions in time, and therefore cannot be used.

#### Size of timber

Size of timber is unimportant, so long as they contain more than 50 rings. A fast growing tree in a good environment can develop 10 mm rings and reach a size large enough for construction in less than 30 years. A slow growing tree may only put on an average of 2 mm a year, and a small timber cut from it still contain more than the minimum of 50 rings. The number of rings a timber contains is most easily counted at its end-grain.

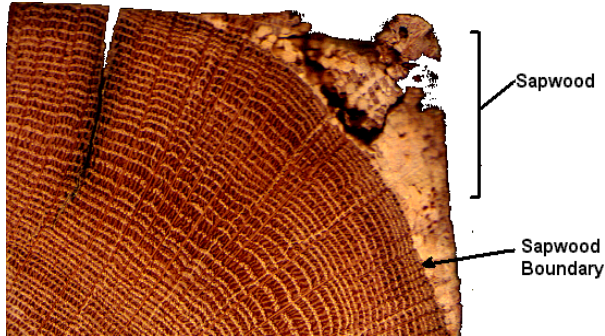


A tree trunk in cross section, showing the end-grain where tree-rings can be counted on different beams cut from it.

#### Species

In England, Oak has the greatest potential for dating followed by Pine and Yew. An important feature in the dating of oak is sapwood. Sapwood is found on the outer

rings of oak, nearest the bark. Sapwood is normally lighter in colour, friable and can be easily lost



**An example of the important lighter-coloured sapwood often evident on oak timbers.**

It is rarely an easy task to assess the number of rings and species of timbers in a building yourself. Tree-Ring Services undertakes an assessment as part of the call-out. Should an assessment identify the potential of timbers to date, we would then proceed to coring, which normally takes about half a day.

### 3. EXAMPLES OF DATING

We undertake a huge range of analysis from individual timbers, small private dwellings to large stately homes and castles. Results are presented in an illustrated report that includes photos of the sampling locations, a plan and methodology/interpretation.



#### **Bog pine Scotland**

The outermost ring identifies that the largest of these trees died in 2864 BC

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	<p><b>Rowhurst Surrey</b> Construction of rear wing and front range identified in 1346 and 1632, respectively.</p>
	<p><b>Hardwick Court Barn Surrey</b> Construction identified in 1445. Historic records identify the first court was held in 1446.</p>
	<p><b>The Old House, Milford</b> Construction identified in 1556.</p>
	<p><b>Parham House West Sussex</b> Construction identified between 1579-1580. Historical records identify that the foundation stone was laid in 1578.</p>
	<p><b>134 South Street East Sussex</b> Construction identified in 1803.</p>
	<p><b>The Longwater Limes at Hampton Court Palace</b> Climate analysis of these lime trees in comparison to Metrological data at Kew.</p>

### 4. PROFESSIONAL SERVICES

Our call out service includes the coring and removal of discreet pencil like cores from *in situ* timbers. The technique leaves small 12 mm diameter holes which do not affect the structural integrity of timbers. Should you require, we can plug and restore holes (at a small additional cost).



**Core extraction in progress.**

Tree-ring analysis costs just £450 for single phase building, plus a £90 call-out charge applicable for up to 130 miles of Hungerford. With the exception of the call-out fee, there is no charge if dating fails. With the exception of the call-out, all charges are invoiced with the final report, which typically takes 6-8 weeks.

Travel over 130 miles, large buildings (over 6-bays), multiple phases of construction, additional timbers or wood artefacts, or placing an embargo on a report (which is normally made available from our web-site) incurs additional charges. The call-out fee is chargeable for each day spent on site. Please contact us prior to commissioning an analysis for further details on additional costs, if applicable. We also offer analysis on living trees, can provide radiocarbon dating though an associated laboratory and undertake the dating of posted samples.

**For free advice or further details contact:**

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