



## DENDROCHRONOLOGY REVEALS HISTORY OF HERITAGE BUILDINGS

*Dr Martin Bridge discusses the role of dendrochronology in interpreting the history and development of heritage timber buildings*



The term dendrochronology covers a wide range of studies based on the annual rings of trees. These basically fall into two main areas, dating and climate reconstruction. Whilst climate reconstruction is of course a hugely important area, particularly because of the potential for annual resolution in the models of the variation in the weather on past growth, I am going to concentrate here on the use of tree-rings as a dating tool.

Although every tree reflects its individual life history in its rings, trees of the same species growing at the same time over quite wide geographical areas will have similar external influences that make the patterns broadly similar, and where the growth has not been heavily influenced by local factors, like management for example, the annual ring widths will show great similarities, allowing species chronologies to be derived. The local variation itself may be the object of study, perhaps dating events such as floods, fires, or outbreaks of defoliating insects.

As long as there is a source of older material for that species, the inner rings of living trees can be cross-matched with the outer rings of, say, timbers from an old building, or archaeological timbers, to extend the chronology back in time. In this way it has been possible to build an oak chronology going back thousands of years, although of course replication is best over the last millennium.

The database has been expanded to include oak boards imported from the Baltic over many centuries and used in doors, chests and panel paintings, allowing not only dating, but also the provenance of the timber to be derived. We also have chronologies for pine imported from areas like Scandinavia over recent centuries and are beginning to discover oak imported from North America from the late 18th century onwards.

The main focus for dating in recent decades has, however been on standing buildings, whether to assist in statutory designations for conservation, the interpretation of developments of buildings, or just for a better understanding of the building itself. In England and Wales this area of study has received enormous input from bodies like Historic England (and its various predecessors), the RCAHMW, Historic Royal Palaces, the National Trust, archaeological units and many individuals. Scotland has not been so lucky in the allocation of resources for this kind of work, although there is great potential for similar studies.

It can be quite interesting to learn more about a particular building, but perhaps the most interesting areas are when accumulated data can be used to show the use of variations of carpentry techniques and different building types in an area, or characteristics of different groups of buildings. For example,

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studies over the last 20 years have revealed that many post mills have main posts that are much older than previously realised, re-used when the mill has been rebuilt following storm damage or fire, and several old timbers may be incorporated in the new mill. Asking how old a post mill is gives rise to a complicated answer in many cases!

Traditionally, the number of rings present in a timber has been one of the main limiting factors on the potential of that timber to be dated, but more recently, developments in radiocarbon wiggle matching (itself made possible based on dendrochronologically dated wood) and the study of oxygen isotope variation through time has opened up not only the possibility of dating shorter ring sequences, but also dating many more species of old wood. ■

*Below: Late C12th roof in East Sussex*



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