



Ancient, Veteran, Notable and Extraordinary

A new classification of the yew population of Great Britain and Ireland -2010

Tim Hills and Toby Hindson for the Ancient Yew Group.

The Ancient Yew Group (AYG) is proposing a classification of yews based on age, girth and significance. The three categories used will be Ancient, Veteran and Notable. This will enable us to:

- 1) harmonise with the categories used by the Tree Register and the Ancient Tree Hunt.
- 2) support the Conservation Foundation initiative to have Tree Preservation Order protection extended to all Ancient and Veteran churchyard yews.

This document outlines the work carried out by the AYG in order that the yews on its database can be placed into the categories of Ancient, Veteran and Notable.

The AYG will also create a category of “Extraordinary” for a small number of yews that are extremely ancient or exhibit remarkable characteristics.

The “classification protocols” explained in this document are largely based on recorded girth and other evidence of age provided by members and supporters of the AYG. Clearly if we are to estimate ages for yews, we need to do it on a basis with which we are completely comfortable, hence the considerable age overlap between the categories of Veteran/Ancient and Notable/Veteran.

We consider that where another body or individual disagrees with the age category given for any yew the onus should fall on them to provide empirical or scientific evidence to substantiate their own claims. This standpoint is non-confrontational in essence because the debate is scientific rather than doctrinal, and the AYG is committed to embracing any development or theory which helps us towards a better understanding of yews. We will be happy to reclassify a yew where credible research is presented to us.



Ancient yews at Barlavington and Slaugham in Sussex

Ancient and Veteran Yews: Classification Protocols: part 1

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Protocols for classification of *Taxus baccata* specimens in the Ancient Yew Group categories of “Ancient” and “Veteran”. While the evidence base was gathered mainly in England and Wales, we see no scientific reason why the protocols should not also be applied in Ireland and Scotland.

Ancient

Yews classed as Ancient must be 800 years old or more. There is no upper age limit to this category. Girth: 7 metres or over.

Veteran

Veteran yews must be over 500 years old, and may be up to 1200 years old. Girth: 4.9 metres (16 feet) or more.

Evidence

The forms of evidence used for substantiating age are listed and discussed below. They are in five areas:

1. Girth and the physical form of the yew
2. Historical considerations
3. Data driven considerations
4. Clone of a known yew
5. Analysis of felled yews

Referencing

The reference code used below is constructed as follows:

A=Ancient, V=Veteran, and the subordinate code that follows refers to the evidence type that supports the categorisation. So A-g means the Ancient categorisation has been given to the yew on account of its girth. An Ancient yew under 7 metres girth might have the code A-fr,urn,pg meaning that the yew is an ancient fragment of an urn shape with a previous girth measure.

Full code

A-g		Girth above 7m	V-g	Girth above 4.9m
A-fr	V-fr	Single fragment of original tree		
A-frs	V-frs	Two or more fragments of original tree		
A-hol	V-hol	Hollow shell, lack of roof to hollow interior, thin bole walls.		
A-bm	V-bm	Large section of bole missing		
A-reg	V-reg	Regrowth from stump		
A-hsh	V-hsh	Horse shoe hollow		
A-lgth	V-lgth	Shape suggests a once larger girthed tree		
A-urn	V-urn	Urn shape, girth narrowest at ground, bulging upper bole		
A-inp	V-inp	Position of internal stem implies yew was of greater girth		
A-ins	V-ins	Size of internal stem implies age underestimated by bole girth		
A-hist	V-hist	Historical references		
A-pg	V-pg	Previous girth measurements available		
A-cgr	V-cgr	Current growth rates		
A-rc	V-rc	Annual growth rings counted on a broken, cut or bored bole radius		
A-smp	V-smp	A number of yews planted at the same time, one felled and ring counted		
A-lay	V-lay	Proven natural layer(s) of an Ancient or Veteran yew		
A-prop	V-prop	Cutting taken from a known Ancient or Veteran yew		
A-alt	V-alt	Allowance made for altitude and/or latitude		

Churchyard Yews, Wild Yews and Avenues

In the absence of firm data regarding any difference between the two sets of growing conditions, wild and churchyard yews are treated as being equal in growth rate and pattern. The exception is with the category Veteran. We recognise that large wild yews are rare, and so we have set the watershed girth for veteran yews outside churchyards at 4.25 m. Veteran avenues of yew can also be recognised at 4.25m by finding the mean girth of all the trees.

1 Girth and the physical form of the yew

[A-g/V-g Girth evidence](#)

Girth is the primary form of evidence. All yews of 7m or more in girth can be classed as ancient. All yews of 4.9m or more in girth can be classed as Veteran. Many yews are certainly Veteran or Ancient even though they may fall below the relevant girth threshold. Other evidence of age, described below, allows the yews that are below threshold size to be placed into appropriate categories.

Measuring: Where the girth is very varied on the bole, the minimum girth between 1m and ground level is taken. Otherwise the girth at 1m from ground level is typically used.

[A-fr/V-fr Single fragment of original tree](#)



[A-frs/V-frs Fragments of original tree](#)

Clearly, where a very large yew breaks up but survives, the previously intact girth is the indicator of age rather than the girth of the fragment(s).



[A-hol/V-hol](#) [Hollow shell](#)

Data has been compiled on this kind of yew which indicates that the “hollow shell” denotes a particular stage of growth. Yews in this state are particularly slow-growing and typically of great age, and are recognised by considerable girth and a lack of a “roof” to their hollow interior. The bole walls are thin, and there may be white wood rather than rot on the interior faces.



[A-bm/V-bm](#) [Large section of bole missing](#)

This category is similar to A-fr/frs, but at an earlier stage, with more of the original bole intact and little post-damage regrowth to confound attempts at reconstruction. It may be possible with these specimens to very accurately model the original girth.



[A-reg/V-reg](#) [Regrowth from stump](#)

Sometimes when a yew is cut down it grows shoots from the stump and produces a tangle of stems on the stump circumference. These yews are difficult to age.



[A-hsh/V-hsh Horse shoe shaped hollow](#)

Yews of this shape have usually lost a small amount of girth on the hollow side, which needs taking into account when considering age.



[A-lgth/V-lgth Shape suggests once a larger girthed tree](#)

Sometimes there is no indication of lost girth other than the curious shape of the yew. The yew shown below at Ninfield appears to be a tangle of stems, in actuality it is a remainder consisting only of internal stems.



[A-urn/V-urn Girth narrowest at ground level, bulging upper bole](#)

Yews like this have to be measured at ground level for determining age. However the girth threshold for “Ancient” is slightly lower because the distortion causes abnormally slow growth at the narrowest point.



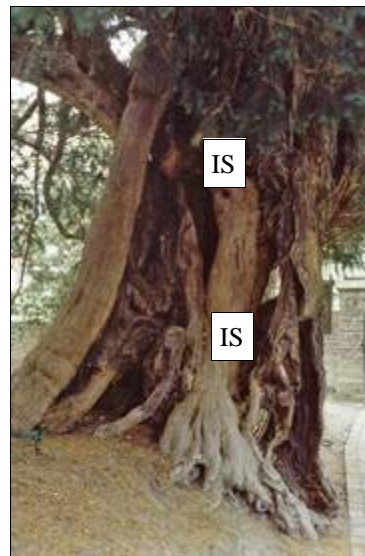
A-inp/V-inp [Position of internal stem \(IS\) implies yew was of greater girth](#)



A-ins V-ins [Size of internal stem implies age underestimated by bole girth](#)



Internal stem girth 4ft 1in.



Internal stem girth approx 5ft.

2 Historical considerations

[A-hist/V-hist](#) [Historical reference](#)

Sometimes, a planting or other reference is found which appears to refer to a very old yew. When such a reference is found, other streams of knowledge are applied to see whether the reference applies to the particular tree.

[A-pg/V-pg](#) [Previous girth measurements](#)

Previous girth measurements give a picture of the growth of the yew through time. A classic example is the yew in the churchyard at Brockenhurst in Hampshire. The tree was measured at 15 feet (4.57 m) girth in 1793 and in 1999 was 6.32 m. Early growth can be modelled using data from felled yews and a much more certain age arrived at by knowing the yews “recent” growth rate.

3 Data driven considerations

[A-cgr/V-cgr](#) [The current growth rate, similar to A-pg, but better controlled and shorter term](#)

Researchers are devising ways of measuring the current growth rate of individual yews. A successful pilot study has been carried out using yews at Ankerwyke and West Tisted. The current rate of growth can help with modelling the growth curve of individual yews.

[A-rc/V-rc](#) [Annual growth rings have been counted on a broken, cut or bored bole radius](#)

Ring counts can often be taken on exposed sections of yew wood. This kind of evidence is seldom conclusive but can be very useful when it is extensive and properly carried out and recorded. Cliff yews that are natural bonsais can be categorised by this method.

[A-smp/V-smp](#) [A number of yews planted/seeded at the same time, one felled and ring counted](#)

Occasionally it is possible to deduce the age of a yew from the remains of another contemporary individual that has been cut down. It is unfortunate when this happens, but it’s a waste not to take the opportunity presented.

4 Clone of a known yew

[A-lay](#) [V-lay](#) [Proven natural layer\(s\) of an Ancient or Veteran yew.](#)

Branches grow into the ground and take root, often becoming individual trees.

[A-prop](#) [V-prop](#) [Cutting taken from a known Ancient or Veteran yew.](#)

Propagated under control by man, these clones are spread further afield than natural layers. Examples are the Yews for the Millennium cuttings taken by the Conservation Foundation. Another example is the cutting that replaced the Selborne yew.

Clones of Ancient Veteran and Notable yews are of unknown importance, though full of potential. They are genetically identical to the yew they were taken from, a disconnected part of the same tree. It will be of enormous interest seeing their growth patterns, which may have implications for aging their originator in the future.



Yews at Mamhilad (left) and Llangernyw (right) are among 45 ancient trees whose cuttings now grow in churchyards, parks and gardens all over Britain.

5 Data from felled yews and growth rate analysis

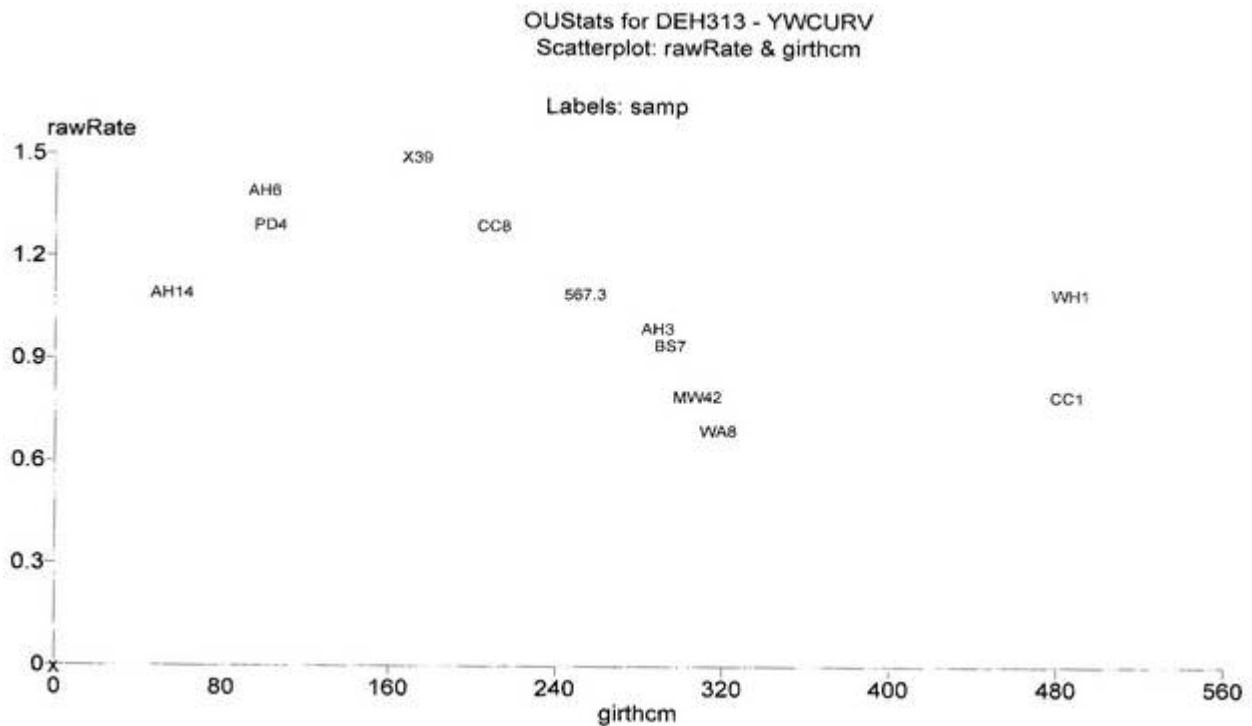
See the AYG website for further research details and data sets.

The early growth of yews up to 300 years old is well researched and analysed, and empirical data exist to support a curve that extends to 500 years old. Some extrapolation has been necessary to give a mean girth for an 800 year old yew.

Below are two empirically generated yew growth curves which illustrate a significant part of the data used to moderate the variables described above.

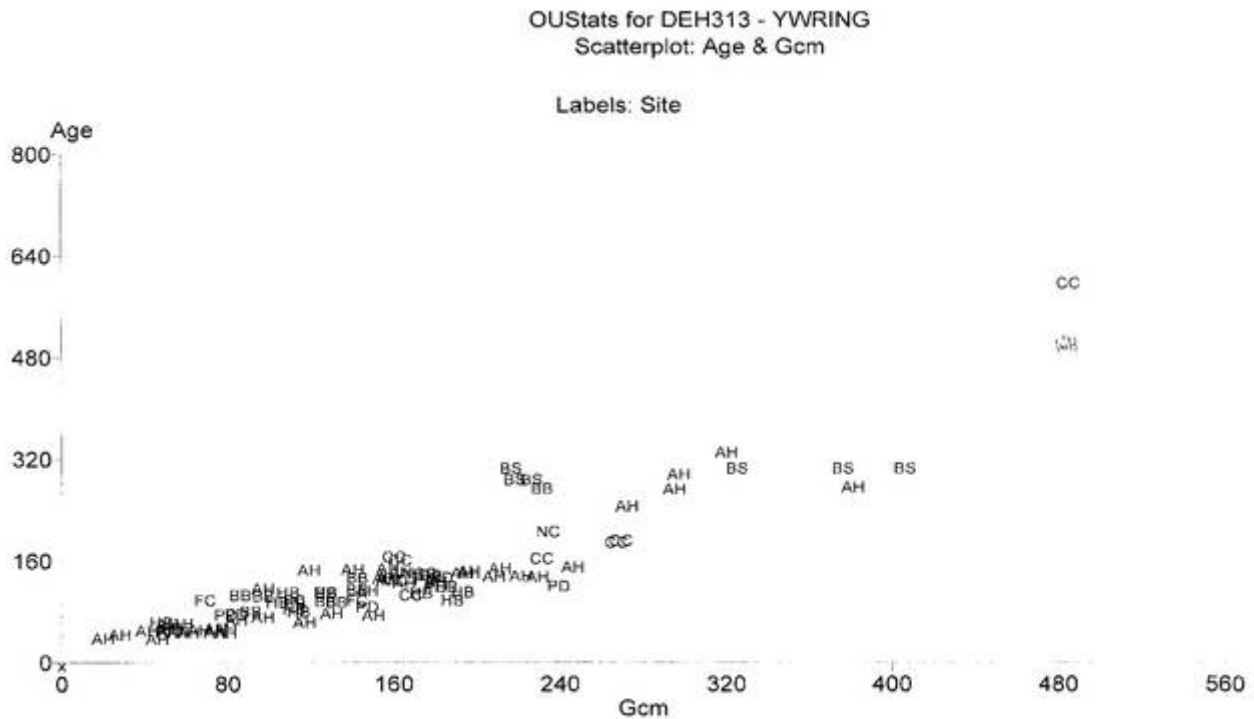
Growth rates of samples of accurately aged yew by site and by girth

The “YWCURV” scatterplot shows groups of yews labelled by sample size and location. Some are felled and ring counted, others are in avenues of known age. On the x-axis is the mean girth of the sample in centimetres, and on the y-axis is the overall growth rate of the sample. The axes have matching scales and rawRate is measured in cm GIRTH INCREASE per annum. The rise and decline of the growth rate of the yew is clearly seen, as is the apparently anomalous rise in growth rate of the two larger yews WH1 and CC1. This rise is accounted for by hollowing, and subsides as the yew increases further in girth. Also noticeable is the fact that site does not appear to be a very significant factor, although all the sites are in the southern half of England, Herefordshire to Hampshire.



Felled yews: ring counts v girth

The "YWRING" Scatterplot shows the empirical data generated by ring counting individual stumps. The labels are by location. The x-axis is the girth of the yew in cm, and the y-axis is the age which has been derived from the ring count. Usually ring count and age are treated as the same thing.



The "YWRING" graph shows the variety of growth rate in individual yews, and also shows clearly the basis for extrapolation. Extrapolation of this chart, taking into account variations in growth rate due to the typical state of the yew at various stages gives an 800 year old yew a typical girth of 650 cm. 50% of yews 650 cm in girth will have reached 800 years in age.

Applying data from Monnington Walk, an avenue of 42 yews planted at the same time, we have constructed a NON-Gaussian bell curve and calculated the standard deviations for girth. From this operation we conclude that at 700 cm in girth a yew will be 80% likely to be 800 years old (1sd 1-tailed is at 720 cm =84% of sample), and only a very small number (2sd 1-tailed = 7 or 8 individuals in the whole sample we statistically calculate to be 800 years or over) will be seriously overestimated in age by this process. We therefore choose 700 cm as our watershed girth for Ancient. We are able to base the watershed for Veteran directly on the graphic representations above, and have done so. Underestimation of yew age by girth is more of a problem, and is to be rectified by applying the criteria for inclusion detailed above.

A potential set of significant variables which are under investigation relate to broad geographical location, latitude and local growing conditions. Although site and growing conditions appear to have little overall influence in the samples illustrated, yew ages by girth in Scotland, and English and Welsh upland areas may require adjustment upwards. A sample from the Brecon Beacons indicates that a variation of up to 10% is possible.

Notable

Notable yews are those that fall into the 300-700 year old age bracket. These trees are of enormous importance, they are the stock from which ancient specimens will arise in the next 500 years. If 300 years old seems early to regard a yew as notable, then bear in mind that one can grow oblivious of the huge spans of time involved in understanding yew ages after researching them for a while. Some of us forget how old 300 really is. It represents 10 generations of human beings; a yew of this age could have been planted as a seedling by your great great great great great grandfather. It would have been a sapling at the time Great Britain was created from the union of England and Scotland in 1707, or the completion of St Paul's cathedral in 1710. Some species of tree, such as the birch, grow to maturity, decline, and rot to nothing three times over in that span. Finally, of course, 300 year old yews take 300 years to replace, essentially they are therefore irreplaceable even at this stage of their development.

We would of course prefer not to have a cut-off point, and track the development of all yews, however that is unfeasible, and we are, after all, the *Ancient* yew Group. On the other hand we wish to provide leeway for the definition of Notable to include significant younger trees, such as those with a known planting date, or a tree that has a particular local resonance or popular consent, and those smaller yews which are currently the focus of research.

The yews which qualify for this category on the basis of girth alone will have a girth of 3.7m (12 feet). 3.7 m is a girth which indicates an age which is on balance of probability in excess of 300 years, although a great many exceptions do exist. The lowest girthed Notable open grown intact yew we know of is 1.9 m at 3 feet from the ground. It is at least 350 years old. The largest of the same age is 4.5m at three feet from the ground. Mean girth for a yew at 300 years old is approximately 3.1m. The figure of 3.7m is therefore quite a strict criterion for categorising yews of 300 years and over.

Extraordinary

This final category is for yews which defy analysis because they are so ancient or otherwise remarkable. To be chosen for this category the yew must already be classed as Ancient.

If the yew is chosen because of its girth it will be, or will have been, over 10 meters. Another factor might be that the yew is the only, or clearly the best exemplar of its type. An extraordinarily small and ancient cliff yew might be a contender.

Extraordinary is, however an open category and inclusion is considered on a case by case basis by the AYG. Below are the extraordinary yews at Tisbury and Llanerfyl.



These categories are examined in greater depth in Classification Protocols part II. Here the general principles highlighted in part I will be further examined and quantified.