

**Tree Establishment Training Day**

4th October 2017

Westonbirt Arboretum

**@plantnetwork**

**Programme**

**Wednesday October 4th**

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| --- | --- |
| 9.30 | Registration and coffee at Tree Management centre |
| 10.00 | Introduction to Westonbirt and the day ahead. Managing trees at Westonbirt from accession and landscape plans to selecting and marking planting sites and the process of managing the establishment process. **Mark Ballard, Curator of Westonbirt.** |
| 10.30 | Plant sourcing and propagation at Westonbirt **Penny Jones, Propagator.** Practical demonstrations on planting and protection. **Richard Townsend, Tree Team Supervisor.** |
| 12.30 to 13.15 LUNCH |
| 13.15 | Aftercare: inspection, remedial work and formative pruning. Recording and mapping trees through the establishment process. **Alison Vry, Westonbirt Plant Records Office** |
| 15.30 | PlantNetwork Tree Forum future programme |
| 16.00 | Close |

All presentations from our training and conferences are shared through our website. [www.plantnetwork.org](http://www.plantnetwork.org). Our website search facility also allows you to find previous newsletter articles, presentations and downloads. As always, please get in touch if you have any suggestions for website content.

# Speaker Biographies

Westonbirt, The National Arboretum, is based in Gloucestershire and located three miles from the traditional Cotswolds market town of Tetbury. An internationally important plant collection, set within a [picturesque landscape](http://www.forestry.gov.uk/forestry/infd-6xdcwe) laid out in Victorian times, the arboretum is managed by the Forestry Commission and supported by the [Friends of Westonbirt Arboretum](http://www.fowa.org.uk). The 15,000 labelled specimens (around 2,800 taxa) come from all over the temperate world, and include many rare trees and five National Collections.

Mark Ballard Curator Westonbirt Arboretum

Mark has overall responsibility for managing all aspects of the botanical collection, as well as maintaining and developing the historic Grade One listed ‘picturesque’ landscape. He has worked in a variety of roles within the Tree Management Team at Westonbirt over the last 16 years, and has a passion for seeking to improve things and bringing about a positive influence.

Richard Townsend Head Arborist Westonbirt Arboretum

Richard joined the Westonbirt tree team back in 1988, and has gained an enormous amount of experience of working with trees in one place over the last 29 years. Richard has developed a wealth of technical knowledge and practical skills, and an intimate knowledge of the arboretum, as he has always been directly involved with all aspects of tree care and the operational activity on site. He is especially passionate about maintaining the historic and ‘picturesque’ landscape style that has continually been in place for almost 200 years, as well developing landscape for future generations to enjoy.

Alison Vry Plant Records Westonbirt Arboretum

Alison manages the Plant Records at Westonbirt, as well as looking after the mapping of the landscape. One year ago she managed the transfer of the plant records from an in house Access database to IrisBG. She joined the team at Westonbirt 4 years ago, after spending 10 years working in various roles in the IT industry and taking some time off to raise 2 children.

**Penny Jones,** Propagator Westonbirt Arboretum

Penny has overall responsibility for managing all aspects of the Propagation Unit including accessioning plants and inputting propagation data into the database. Penny works closely with the Curator, Dendrologist and Database Manager and has been at Westonbirt for 17 years. She enjoys the challenges of propagating plants especially from seed and ultimately helping to find planting spots within the collection for her carefully grown plants.

## Simon Toomer PlantNetwork Chair and National Specialist for Plant Conservation with the National Trust

Originally trained in environmental biology and forestry, Simon Toomer has worked as a practical forester, land management advisor and arboriculturalist in both private and local authority sectors. In his current role with the National Trust, he is a national consultant for all areas of garden and parkland plant conservation including plant health and biosecurity, collections management and plant records.

His particular interests lie in the areas of conservation and management of native habitats and the use of ornamental trees and plants in garden landscapes. He previously worked for 15 years as Curator and Director at Westonbirt, The National Arboretum where he was responsible for overseeing the management and development of one of the finest tree collections in the World. Simon has travelled in many parts of Europe, North America, Asia and Africa in pursuit of trees and is the author of ‘Trees for the Small Garden’ (Timber Press, 2005). In 2009 he completed a second book on the establishment and maintenance of tree collections and arboreta. He is a professional member of the Arboricultural Association and a trustee of the charity Tree Aid. In July 2015 he became Chair of PlantNetwork.

**Westonbirt Arboretum Tree Spotters guide**

Carry around 100 of the nation’s best loved trees in your pocket, with Westonbirt Arboretum’s Tree Spotter’s Guide. Containing illustrations, bite-sized descriptions of each tree and tips on how to ID them, and written by leading Dendrologist, Dan Crowley, this is the only guide you need to help you identify Britain’s most popular trees. RRP: £8.99

Find out more: https://www.forestry.gov.uk/forestry/beeh-ansdmd

*‘The best time to plant a tree was twenty years ago.*

*The second best time is now.’*

Anonymous

**The PlantNetwork Directory of Botanical Collections in Britain and Ireland**

First published in hard copy in 1999. The Directory, with some updates, is now available online but there are many records out of date. Please update the entry for your garden in the Directory at:

[**www.plantnetwork.org/resources/directory**](http://www.plantnetwork.org/resources/directory)

Scroll down to the list of gardens, click on your garden.
Scroll to the end of the entry for your garden and click on the link to download a copy. Make any changes, save the file and post it to Rupert Wilson, or send it to him as an email attachment.

If you need any help with either method, please contact Rupert. rupertwilson@rhs.org.uk

**RESOURCES**

ThreatSearch A comprehensive database of conservation assessments of plants.

* Search over 242,000 conservation assessments, representing over 150,000 taxa.
* Find out if a plant has a global or regional conservation assessment or is considered threatened

<http://www.bgci.org/threat_search.php>

The GlobalTree Search The most comprehensive database of tree species.

* Search over 60,000 tree species names and their country distributions.
* Find out the geographical distribution of a tree species.
* Discover all tree species found in a country

<http://www.bgci.org/global_tree_search.php>

## Observatree

Our aim is to protect the UK’s trees, woods and forests from new pests and diseases – either arriving or spreading across the country. The earlier these are spotted, the higher the chances that outbreaks can be eliminated or controlled.

We encourage tree health professionals and people actively involved with trees to act as citizen scientists and report potential sightings of anything worrying.  More eyes on the ground means a greater chance of earlier detection. A wide range of [resources and training materials](http://www.observatree.org.uk/resources/) are available to help improve knowledge of our priority pests and diseases.

Concerns should be submitted to Tree Alert in the first instance. Find out more about how to [report a new pest or disease](http://www.observatree.org.uk/tree-health/reporting/) using Tree Alert.

<http://www.observatree.org.uk>

## British Standards

BS 8545:2014 Trees: from nursery to independence in the landscape

A new British Standard to assist people involved in planning, designing, resourcing, producing, planting and managing new trees in the landscape. It describes a process for planting young trees that will result in them achieving ‘independence in the landscape’. This means that they are healthy and have every chance of survival. The standard sets out good practice in strategic and policy formation and then follows the whole transplanting process through to independence in the landscape, under the following clause headings:

* Policy and strategy
* Site evaluation and constraints assessment
* Species selection
* Nursery production and procurement
* Handling and storage
* Planting
* Post-planting management and maintenance.

This standard applies to trees where a distinct crown has been prepared in the nursery. It does not apply to whips, transplants and seedlings, or to other woody material.

BS 3998:2010 Tree work. Recommendations Trees are dynamic, continually self-optimizing organisms, they maintain both their physiological functions and their structural integrity. Thus, the often massive structure of a mature tree above ground, consisting of the stem, branches, twigs and the attached foliage, is highly efficient in intercepting, using and storing solar energy, while also bearing its own weight and dissipating the potentially damaging forces of the wind.

Below ground, although far less obvious, the extensive root system is equally efficient both in providing anchorage and in pervading the soil in order to absorb the water and mineral nutrients that are essential for survival, growth, flowering and fruiting.

## BS 3936-1, Nursery Stock Specification for Trees and Shrubs

|  |  |
| --- | --- |
| **Specification** | **Tree Girth** |
| Light Standard (LS) | 6-8cm |
| Standard (S) | 8-10cm |
| Select Standard (SS) | 10-12cm |
| Heavy Standard (HS) | 12-14cm |
| Extra Heavy Standard (EHS) | 14-16cm |
| Advanced Heavy Standard (AHS) | 16-18cm |
| Semi mature | 18-20cm + |

The heights deciduous trees attain with age varies greatly between species and varieties which is why we prefer trees specified by girth but if you have a particular height in mind we will do our best to oblige. The following table gives typical tree heights by girth size.

|  |  |
| --- | --- |
| **Girth (cm)** | **Height (metres)** |
| 8-10 | 2.0-3.0m |
| 10-12 | 2.5-3.5m |
| 12-14 | 3.00-4.0m |
| 16-18 | 4.0-4.5m |
| 18-20 | 4.0-5.0m |
| 20-25 | 4.5-5.5m |
| 25-30 | 5.0-6.0m |
| 30-35 | 5.5-6.5m |
| 35-40 | 6.0-7.0m |
| 40-45 | 6.5-7.5m |
| 45-50 | 7.0-8.0m |

## The Trees in towns II report 2008

It has been a widely recognized fact that a significant proportion of newly planted trees fail to survive to maturity and die soon after being planted in an urban environment. The Trees in Towns II report commissioned by the Department of Communities and Local Government highlighted that as much as 25% of all planting undertaken in the public sector actually fails. Although there has not been any comparable survey undertaken in the private sector, anecdotal evidence indicates that the failure rates are similar.

"This is a veritable mine of statistics on urban trees. But this takes up only about a third of the book. The rest is concerned with the maintenance and management of urban trees drawing out examples of good practice from around the country, including a large appendix with 12 case studies on a range of subjects such as using green waste, sourcing external funding, and fostering community involvement. So in terms of use for ecologists, this book gives a descriptive base for knowing what is out there."
- Peter Thomas, British Ecological Society Bulletin, August 2013

Paperback | Feb 2008 | **#174848** | ISBN-13: 9781851128891 Available from <http://www.nhbs.com/trees-in-towns-ii-book>

## A brief guide to tree work **terminology and definitions**

Arboricultural Association (June 2016)

### **Main Pruning Definitions**

#### Crown Thinning**Crown Thin**

Crown thinning is the removal of a portion of smaller/tertiary branches, usually at the outer crown, to produce a uniform density of foliage around an evenly spaced branch structure. It is usually confined to broad-leaved species. Crown thinning does not alter the overall size or shape of the tree. Material should be removed systematically throughout the tree, should not exceed the stated percentage and not more than 30% overall. Common reasons for crown thinning are to allow more light to pass through the tree, reduce wind resistance, reduce weight (but this does not necessarily reduce leverage on the structure) and is rarely a once-only operation particularly on species that are known to produce large amounts of epicormic growth.

#### Crown Lifting**Crown Lift or Crown Raising**

Crown lifting is the removal of the lowest branches and/or preparing of lower branches for future removal. Good practice dictates crown lifting should not normally include the removal of large branches growing directly from the trunk as this can cause large wounds which can become extensively decayed leading to further long term problems or more short term biomechanical instability. Crown lifting on older, mature trees should be avoided or restricted to secondary branches or shortening of primary branches rather than the whole removal wherever possible. Crown lifting is an effective method of increasing light transmission to areas closer to the tree or to enable access under the crown but should be restricted to less than 15% of the live crown height and leave the crown at least two thirds of the total height of the tree. Crown lifting should be specified with reference to a fixed point, e.g. ‘crown lift to give 5.5m clearance above ground level’.

#### Crown Reduction**Crown Reduction**

The reduction in height and/or spread of the crown (the foliage bearing portions) of a tree. Crown reduction may be used to reduce mechanical stress on individual branches or the whole tree, make the tree more suited to its immediate environment or to reduce the effects of shading and light loss, etc. The final result should retain the main framework of the crown, and so a significant proportion of the leaf bearing structure, and leave a similar, although smaller outline, and not necessarily achieve symmetry for its own sake. Crown reduction cuts should be as small as possible and in general not exceed 100mm diameter unless there is an overriding need to do so. Reductions should be specified by actual measurements, where possible, and reflect the finished result, but may also refer to lengths of parts to be removed to aid clarity, e.g. ‘crown reduce in height by 2.0m and lateral spread by 1.0m, all round, to finished crown dimensions of 18m in height by 11m in spread (all measurements approximate.)’. Not all species are suitable for this treatment and crown reduction should not be confused with ‘topping’, an indiscriminate and harmful treatment.

Illustrations courtesy of European Arboricultural Council.

**The importance of correct pruning cuts**

Every pruning cut inflicts a wound on the tree. The ability of a tree to withstand a wound and maintain healthy growth is greatly affected by the pruning cut – its size, angle and position relative to the retained parts of the tree. As a general rule branches should be removed at their point of attachment or shortened to a lateral which is at least 1/3 of the diameter of the removed portion of the branch, and all cuts should be kept as small as possible. Examples of correct pruning cuts are shown as follows.

S**howing sequence of removal to avoid damage to the retained parts**



Diagram 2 – examples of correct pruning cuts. Drawings courtesy of European Arboricultural Council.

**Other useful terms associated with tree work**

Adaptive growth: An increase in wood production in localised areas in response to a decrease in wood strength or external loading to maintain an even distribution of forces across the structure.

Adventitious/epicormic growth: New growth arising from dormant or new buds directly from main branches/stems or trunks.

Bracing:Bracing is a term used to describe the installation of cables, ropes and/or belts to reduce the probability of failure of one or more parts of the tree structure due to weakened elements under excessive movement.

Branch bark ridge and collar: See diagram 3 section 3. Natural features of a fork or union that may or may not be visually obvious. Neither the branch bark ridge nor collar should be cut.

Callus: Undifferentiated tissue initiated as a result of wounding and which become specialised tissues of the repair over time.

Cavity: A void within the solid structure of the tree, normally associated with decay or deterioration of the woody tissues. May be dry or hold water, if the latter it should not be drained. Only soft decomposing tissue should be removed if necessary to assess the extent. No attempt should be made to cut or expose living tissue.

Co-dominant stems: Two or more, generally upright, stems of roughly equal size and vigour competing with each other for dominance. Where these arise from a common union the structural integrity of that union should be assessed.

Coppicing:The cutting down of a tree within 300mm (12in) of the ground at regular intervals, traditionally applied to certain species such as Hazel and Sweet Chestnut to provide stakes etc.

Crown: The foliage bearing section of the tree formed by its branches and not including any clear stem/trunk.

Deadwood: Non-living branches or stems due to natural ageing or external influences. Deadwood provides essential habitats and its management should aim to leave as much as possible, shortening or removing only those that pose a risk. Durability and retention of deadwood will vary by tree species.

Decline: When a tree exhibits signs of a lack of vitality such as reduced leaf size, colour or density.

Dieback: Tips of branches exhibit no signs of life due to age or external influences. Decline may progress, stabilise or reverse as the tree adapts to its new situation.

Dormant: The inactive condition of a tree, usually during the coldest months of the year when there is little or no growth and leaves of deciduous trees have been shed.

Drop Crotching: Shortening branches by pruning off the end back to a lateral branch which is at least 1/3 of the diameter of the removed branch.

Fertilising: The application of a substance, usually to the tree’s rooting area (and occasionally to the tree), to promote tree growth or reverse or reduce decline. This will only be effective if nutrient deficiency is confirmed. If decline is the result of other factors such as compaction, physical damage, toxins etc., the application of fertiliser will not make any difference.

Formative pruning: Minor pruning during the early years of a tree’s growth to establish the desired form and/or to correct defects or weaknesses that may affect structure in later life.

Fungi/Fruiting bodies: A member of the plant kingdom that may colonise living or dead tissues of a tree or form beneficial relationships with the roots. The fruiting body is the spore bearing, reproductive structure of that fungus. Removal of the fruiting body will not prevent further colonisation and will make diagnosis and prognosis harder to determine. Each colonisation must be considered in detail by a competent person to determine the long term implications of tree health and structure when considered alongside the tree species, site usage etc.

Lopping and Topping: Generally regarded as outdated terminology but still included as part of Planning legislation. Lopping refers to the removal of large side branches (the making of vertical cuts) and topping refers to the removal of large portions of the crown of the tree (the making of horizontal cuts, generally through the main stems). Often used to describe crude, heavy-handed or inappropriate pruning.

Painting or Sealing: Covering pruning cuts or other wounds with a paint, often bitumen based. Research has demonstrated that this is not beneficial and may in fact be harmful. On no account should timber treatments be used as these are definitely harmful to living cells.

Pollard: The initial removal of the top of a young tree at a prescribed height to encourage multistem branching from that point, traditionally for fodder, firewood or poles. Once started, it should be repeated on a cyclical basis always retaining the initial pollard point, or bolling as it becomes known.

Retrenchment pruning: A form of reduction intended to encourage development of lower shoots and emulate the natural process of tree aging.

Root pruning: The pruning back of roots (similar to the pruning back of branches). This has the ability to affect tree stability so it is advisable to seek professional advice prior to attempting root pruning.

Topping: See Lopping and Topping.

Vitality: The degree of physiological and biochemical processes (life functions) within an individual, group or population of trees.

<https://www.trees.org.uk/Help-Advice/Public/A-brief-guide-to-tree-work-terminology-and-definit>

## Fundamentals of tree establishment: a review

Abstract Mortality of landscape trees regularly reaches 30% in the first year after planting. This review aims to highlight the fundamental factors and procedures critical to tree establishment. If these are fully considered and acted upon, significant reductions in transplant losses can be expected. The principal elements essential for successful tree establishment have been identified as tree ecophysiology; rooting environment; plant quality and planting and post planting.

These are presented in a model which helps describes the multiplicity of factors involved in successful

establishment and, importantly, their interrelated nature. An understanding of how transplant survival can be markedly influenced by these factors is paramount and failure to consider any one element may lead to tree mortality. Attention is also given to practices which have been demonstrated to greatly enhance tree vitality during the establishment phase.

https://www.forestry.gov.uk/pdf/Trees-people-and-the-buit-environment\_Hirons.pdf/$FILE/Trees-people-and-the-buit-environment\_Hirons.pdf

## NOTES