

A GUIDE TO THE USE OF URBAN TIMBER

Geoff Cooper



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- Chris Holland, a colleague in the Timber Section at BRE, for painting the stylised tree shown in Figure 13 to illustrate some specific key features.
- Nancy Howard for extracting the information from BRE's Handbooks on hardwoods and softwoods for each of the tree species included in the *Appendix*.

All cover photos taken by Geoff Cooper:

Left, Acer pseudoplatanus, mature sycamore, showing large burrs on main trunk (Ridge Road, Letchworth Garden City, Hertfordshire)

Top right, Ulmus glabra, small elm, burr with the surface planed to show figure

Middle right, Section of Morus nigra, black mulberry, showing distinct transition from light-coloured sapwood to darker heartwood

Bottom right, Large bowl turned from Acer pseudoplatanus, sycamore, burr. Material obtained from Ridge Road, Letchworth Garden City, after the tree was blown over in a storm

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GLOSSARY OF TERMS

Banding

After a pack or parcel of timber is dried, the pack is normally held together for storage or transportation using plastic, metal or nylon strips held together with friction clips. The application of these strips is known as banding.

Birds-eye figure

Birds-eye figure can easily be mistaken for the burr figure that is created by epicormic growth due to a similarity in appearance. However, birds-eye figure is caused by irregularities in the growth rings in the form of depressions or dimples which, once formed, are perpetuated through the stem. These elements run in various directions more or less at right angles to the stem surface. The irregularities of the growth rings will show on tangentially cut surfaces as highly ornamental mass of circular 'eyes'.

Bole

A term used to describe the trunk after felling and branch removal.

Bow

See distortion.

Burl

See burr.

Burr

A burr is an irregular-shaped swelling or excrescence found most often on the lower main trunk, but also on branches and rootstocks of a range of tree species. A burr can take on several forms: it may consist of clusters of expanding slow-growing epicormic buds or be formed from a distinct series of irregular contorted swirls.

Cat's paw figure

A series of small burrs scattered over the main trunk which appear as small groups of closely packed buds on machined faces giving rise to the figure known as 'cat's paw', a condition which is most often seen on European oak, *Quercus robur*.

Check or checking

A drying defect which occurs when tensile stresses cause the wood fibres to separate and form narrow cracks. Checks are visible on the surface of a piece of timber but do not extend across the piece.

Crotch figure

Depending on the species and growth habit of the tree, most trees will branch from the main trunk into two or more large limbs from which the crown is formed. If the crown develops through the formation of two main limbs, the junction at which this occurs can generate material with highly decorated figure known as crotch or curl figure.

Cup

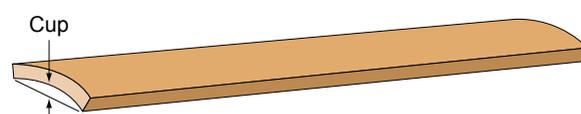
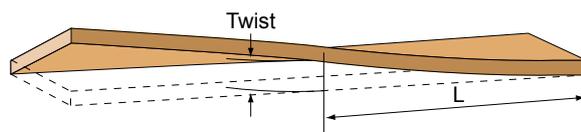
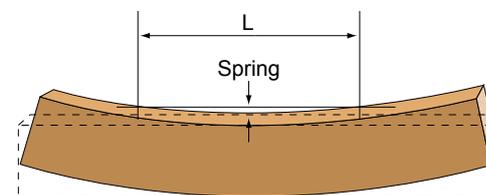
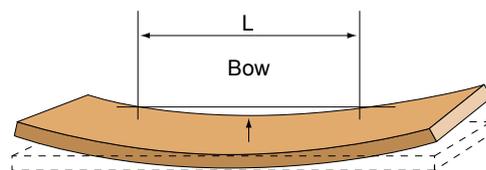
See distortion.

Curl figure

See crotch figure.

Distortion

A drying defect caused by differential shrinkage along the three axes of a piece of wood. Distortion may take the form of twist, bow, spring or cup (all four forms of distortion may be found in one piece of sawn material).



Dunnage

Waste wood material usually sawn into uniform squares of a given length and used to raise packs of sawn timber off the ground to allow fork-lift access. Dunnage is also used to separate packs of timber in the kiln-drying process.

End racking

End racking of freshly sawn timber is performed on species (especially sycamore) which are prone to surface staining (if in direct contact with any other material, including itself) during the early phases of drying. After sawing, the planks are stored vertically, under cover with only the end of each plank touching the next.

Fiddle-back figure

See ripple figure.

Figure

The term figure is usually defined as a pattern, distinctive features or markings which relieve the surface uniformity of a piece of wood. The term is most often used to describe a feature which enhances the attractiveness of a piece of wood. Figure can be produced by a variety of different mechanisms.

Fork

The point at which the main stem of a tree separates into two or more main large limbs to form the crown.

Green

A term used to describe wood which has been freshly cut and still contains a high percentage of moisture (free moisture).

Hub

The central location or depot where material is deposited after collection.

Parcel

A pack of sawn timber consisting of a set number of pieces arranged in layers and columns to form a parcel of a specific dimension.

Ripple figure

Ripple or fiddle-back figure is a series of closely grouped horizontal bands most often seen on the radial cut surface of sycamore, *Acer pseudoplatanus*. This figure is an optical effect caused by variations in the alignment of the wood fibres. It is the result of the axial elements of the tree undulating through the stem giving a transverse barred effect on the radial cut face.

Rip-sawing

The sawing of a piece of timber along its length.

Shakes

A separation or breakage of the wood fibres caused by stresses in the standing tree or by felling and log handling. Shakes are not caused by shrinkage during drying.

Spalting

In the early stages of infection of timber by fungi, certain fungal species cause the development of conspicuous dark lines (zone lines) and various colour changes to develop throughout the timber. The figure created by the myriad of dark intersecting lines is commonly known as spalting. Although this can be found on a range of different species, beech, *Fagus sp.*, seems particularly prone to this form of attack.

Split

A drying defect which occurs when tensile stresses cause wood fibres to separate and form cracks. Splits extend across the piece.

Spring

See distortion.

Stickers

Thin pieces (usually in the region of 22 mm × 38 mm of variable length) of timber used to separate each layer of timber forming a parcel or pack, thus allowing air to filter through the stack to assist drying.

Tiger-stripe figure

Tiger-stripe figure is a colour variation in oak timber caused by an infection in the living tree by a wood-rotting fungus. In the early stages of infection, the butt rot fungi, Beefsteak fungus, *Fistulina hepatica*, causes dark streaks to form in the main stem of oak resulting in the formation of an attractive striped figure.

Twist

See distortion.

Waney edged

A sawn plank of wood still retaining a natural edge (may include the bark) along one or both sides of the piece of timber.



1 INTRODUCTION

Every day across the UK, thousands of tonnes of wood residue are produced through arboricultural work undertaken by local authorities, the Highways Agency, train companies, local tree surgeons and small woodland owners. The timber produced is normally variable and inconsistent in both dimension and quality. This variability, together with the logistical problems of collection, transportation and selection, has relegated most of this material to the mulch or firewood bin.

During the past five years a lot of effort and funding have been directed at utilising much of this material as fuel wood. For a proportion of the material this is an ideal use, especially where a central timber collection hub has been established.

However, carefully selected material has the potential to generate an additional funding stream for such a timber collection hub (or stand-alone sawmill), while ensuring that the high quality timbers seen in streets and parks find their way into wood products rather than being burnt as wood fuel. Because of the varied nature of the species located in the urban environment, much of this material has the potential and inherent quality for use in bespoke furniture manufacture, musical instruments and decorative items, such as bowls, boxes and sculptures.

This report provides guidance on how to improve the utilisation of material culled from the UK's urban timber resource. It contains information on:

- selection of tree species most likely to provide a good economic return
- processing methods required to convert the timber
- wood drying required to enable both common and exotic urban tree species to be used for solid wood products.

The economics of undertaking such a venture will rely on many different organisational aspects, not least:

- setting up a processing facility
- timber selection
- collection of timber material
- marketing of timber material.

Although the report does not investigate the economic implications of utilising the material described in this publication, such material has quality, visual impact and value, and a good percentage of the timber being harvested from our streets and parklands should find its way into solid wood products, rather than being used for fuel.

The report has been written to encourage local authorities, arboriculturists, wood fuel collection hubs, The Highways Agency, train companies and small sawmills to identify and utilise an important UK wood resource. One of the most difficult aspects of devising a process to utilise urban timber is how to form a collective group of industrial partners with the drive and enthusiasm to put a system in place where material can be identified, prepared at the roadside, transported, processed and finally marketed.

An aim of the report is to provide the in-depth information required by a collective of authorities to utilise as solid timber a large percentage of the material produced during routine arboricultural maintenance. The report provides information on:

- selection of species
- value-added growth features
- processing methods
- drying
- grading
- valuation
- how to identify prospective markets.

The report also contains a list of the species with the most potential, and includes for each an image and a description of its properties and its uses.

Despite the rapid expansion of the wood fuel market, it is important that material that can be used more profitably is channelled into sawn wood products instead of the smoke stack.

A GUIDE TO THE USE OF URBAN TIMBER

This illustrated guide provides information on improving the use of timber culled from the UK's urban timber resource (streets, parks, gardens and urban woodlands), giving advice on:

- selection and identification of high-value stems
- wood processing
- drying
- transport
- storage.

The report aims to promote the use of common and exotic urban tree species for solid wood products rather than being processed for firewood or chipped to produce mulch.

The guidance will help local authorities, park owners and individuals interested in unusual tree species to maximise the value of the timber produced in towns and cities and to develop the best practicable options for using the solid wood produced during normal maintenance procedures.

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