

Management and
Planting Guidelines

Native Black Poplar
Populus nigra subsp betulifolia

Marianne Jones

ACKNOWLEDGMENTS

Especial thanks to the following for their research, contributions and advice in the writing of this guidance.

The Black Poplar Consortium:
Paul Hand, John Hughes, Adam Kennerley

Environment Agency: Fiona Cooper, Marianne Jones.

Shropshire Hills Area of Outstanding
Natural Beauty Office: Rob Pinsent, Mike Kelly

Photographs: Dave Phillips
Environment Agency; Frances Pheasant-Kelly



Shropshire Hills AONB

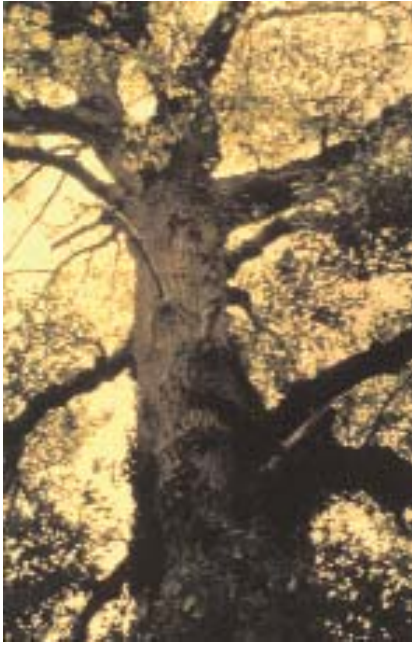
Design and illustration: S.R.Davies
The School House, Knighton, Powys LD7 1EW

Printed by: Craven Design and Print Limited
Craven Arms Business Park, Craven Arms, Shropshire SY7 8DU

First Edition
Published 2004

Contents

Introduction	5
Ecology & History	6
Identification	
Disease	
Genetic Diversity	
Protection of existing trees	10
Pollards	
Timing	
Age and condition	
Style	
Who does the work	
Creating new pollards	
Establishing new trees	14
Propagation methods	
Nursery supplies and seeds	
Where to plant	17
Landscape considerations	
Planting numbers and strategy	
Populeta and Ex situ conservation	
Summary	21
Contact Details	22
Tree Nurseries	23



Typical canopy of the Black Poplar

Introduction

Native black poplars are magnificent trees with a fascinating history. These guidelines are aimed at assisting landowners and those working in the environmental and horticultural fields. It is hoped that the following will give you a basic understanding of the tree and enable you to contribute to its conservation.

The guidelines have been produced jointly by the Environment Agency in Shrewsbury and the Shropshire Hills Area of Outstanding Natural Beauty (AONB) Office. Whilst most of the advice is general, specific reference is made to Shropshire, Herefordshire, Worcestershire, Powys, Staffordshire and the West Midlands.



Floodplain forest of Black Poplar,
River Drôme, France

Ecology & History

Populus nigra subsp betulifolia is found only in Britain, Western Germany and Northern France. It is a sub-species of the more widely distributed *Populus nigra* which ranges across Europe and Russia.

It is currently estimated that there are 7,500 black poplar in this country, with about 4,500 being found in the Vale of Aylesbury. A further large population, popularly known as the Manchester poplar, has yet to be recorded. The native black poplar is predominantly found below an imaginary line between the Humber and Lune estuaries. An interesting and genetically distinct population exists in Ireland.

The species is dioecious – it has male and female trees. Out of the national population only about 600 females exist – the possible reasons for this are discussed below.

Native black poplar is thought to have been an important component of flood plain forests. Sadly, we have to look to France and North America to study this dynamic habitat. Our own was destroyed 5,000 years ago when Neolithic man cleared vast areas of wild wood. Only a few tiny fragments that are believed to be relics of this original habitat remain in Britain.

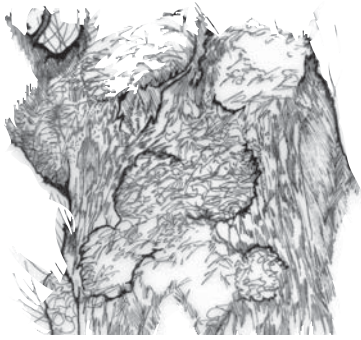
By studying the ecology of the tree and its history, we can begin to understand its demise. We can also understand the special conditions required for reproduction. Untamed rivers could change course with relative ease leaving areas of bare wet mud and gravels and providing the ideal germination conditions for native black poplar, conditions which are rarely found elsewhere. Whilst seed is set easily and is prolific, it is prone to dessication and only remains viable for around a week. The trees can also root easily from broken branches, twigs and even trunks – again this would be a distinct advantage in a dynamic habitat.



Assessing a Black Poplar, Llandinam, Powys

Pollarded Black Poplar in Aylesbury





Black Poplar bark, heavily bossed and fissured.



Male Black Poplar catkins, (red)



Female Black Poplar flower (lime green)

This early and dramatic loss of habitat helps to explain the distribution of the black poplar today. Fortunately, it was a useful timber tree and has consequently been planted and managed as such. It is suspected that cuttings from male trees have been preferred since females produce a carpet of fluffy seed in June, at a time that can cause problems with various agricultural practices.

In the 1700s our native tree suffered a further threat. New species of poplar were introduced from abroad and these faster growing, straighter trees were favoured. Not only were fewer natives planted, they could hybridise freely with anything that came into flower at the same time. Thus our legacy is an aging population and many thousands of mature hybrid black poplars which are frequently mis-identified.

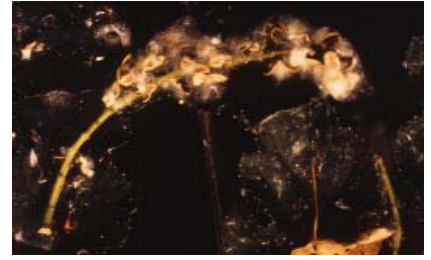
Years of vegetative propagation by cuttings, led scientists to believe that the genetic diversity within the subspecies would be poor. This has recently been verified – the trees have 88% genetic similarity.

Identification

It cannot be stressed how important proper identification of the native black poplar is – especially if you plan to take cuttings. This is adequately covered in detail elsewhere but the broad characteristics are as follows.

- Heavily bossed and fissured dark grey bark.
- A broad silhouette with branches and twigs sweeping down and ascending again at the tips.
- “Birch” shaped leaves (*betulifolia*) which flutter in the breeze.
- Male trees have reddish purple catkins in the spring whilst those of the females are green.

Your local Environment Agency, Forestry Commission or Wildlife Trust may be able to help you regarding the local distribution of trees. If you need further help or think you may have found a new tree, you can write to the National Recorder for the Botanical Society for the British Isles – Dr Fiona Cooper. Details of how to do this can be found at the rear of this booklet.



Black Poplar fluff - female

Disease

On the whole *Populus nigra subsp betulifolia* is fairly resistant to disease. However, in recent years there is a growing incidence of the pathogenic fungus *Venturia populina*. There has been a particularly high incidence in Manchester. Early symptoms include die back of the leaf tips. The Forestry Commissions Disease Diagnostic and Advisory Service can offer help, their details can be found at the rear of this booklet.

Genetic Diversity

As mentioned, a national survey to determine the degree of genetic diversity within the sub-species has just been completed. Samples were taken from 170 trees nationally and tested to determine genetic diversity. The results showed that the trees have 88% genetic similarity, this result indicates greater diversity than earlier studies that indicated trees to be 97% similar. In comparison, other woody species that have been tested seem to exhibit 60-70% similarity and so there is still reason for concern.

Whilst the samples fell into six clonal groups, there was little geographical correlation with the distribution of these groups. The trees in the Republic of Ireland all fall within the same clonal group – along with a single tree in Sussex! In addition, the large population within the Vale of Aylesbury is genetically distinct from the remainder of Britain.

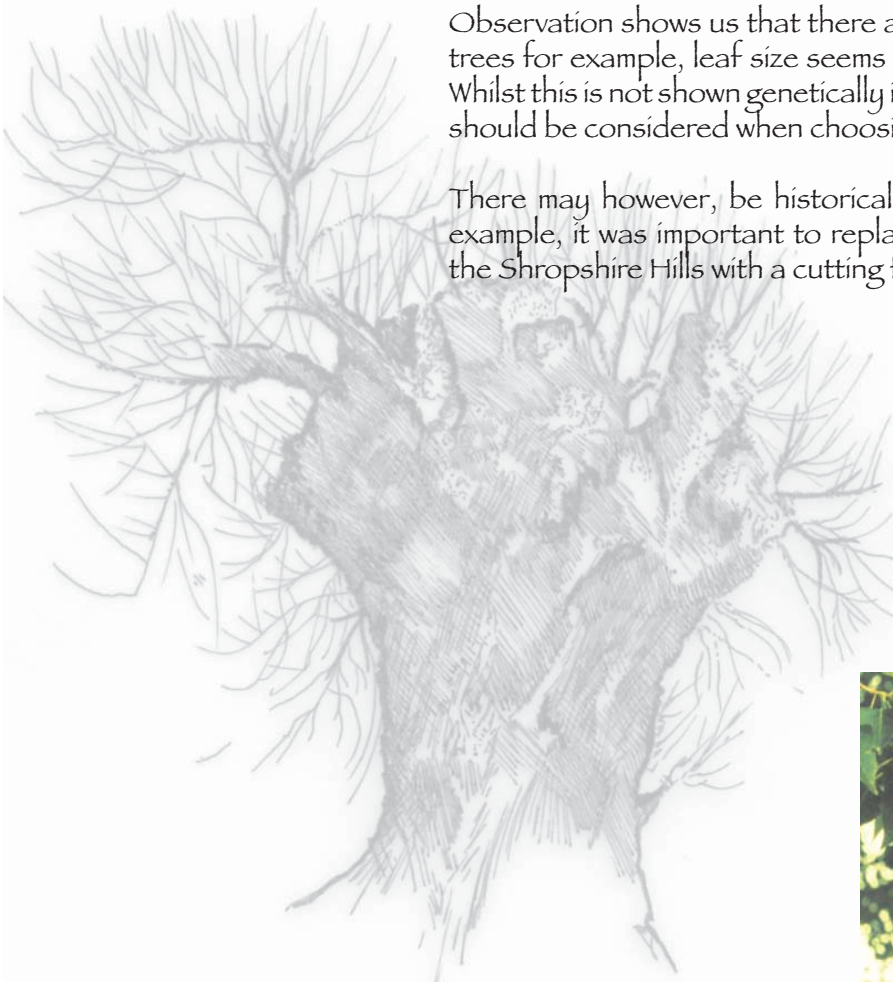
Black Poplar at Clun Castle,
Shropshire



This degree of similarity confirms that there is possibly no biological advantage for favouring one tree over another as a source of material for propagation. However, there could be an advantage in protecting the two clonal groups in Ireland and Aylesbury.

Observation shows us that there are visual differences between different trees for example, leaf size seems to be smaller in the east than the west. Whilst this is not shown genetically it could be argued that such differences should be considered when choosing material for cuttings.

There may however, be historical and cultural reasons for choice. For example, it was important to replace the Arbor Tree in Aston on Clun in the Shropshire Hills with a cutting from the original tree.



Black Poplar branches and twigs ascend

Protection of existing trees

It is always important to protect existing trees. Black poplar, as with any other mature tree should be protected from increases or decreases in soil or water table levels. Compaction of the soil around the tree must be prevented, as must fires below the canopy. Severe damage can be caused to trees by grazing animals and ploughing – ideally trees should be fenced leaving generous space around. It is worth considering that the roots of a poplar will spread to a radius about 1.5 times its height.



Pollarded Black Poplar at
Castlemorton Common,
Worcestershire

Old Black Poplar at Powick,
Worcestershire



Pollards

Many black poplars have been pollarded, especially near Aylesbury and around Worcester. A pollard is a tree that has been cut regularly at between 2-4 metres above ground level, then allowed to grow again to produce a crop of branches. This is a traditional form of management and it is very important that trees are re-pollarded at regular intervals. When carried out carefully this can extend the life of the tree. In addition, it ensures the continuation of a distinctive landscape feature.

However, a word of caution, some groups in Aylesbury have found that a significant number of trees have died after re-pollarding. They suggest that re-pollarding is not always the best option for the tree and this should be limited to certain situations.

1. Where adjacent to watercourses
2. Where adjacent to footpaths, public open space, roads
3. Where the tree has landscape value.



Timing

The ideal time for re-pollarding is between autumn and spring. January to March is the optimal time for the benefit to the tree, whilst causing little disturbance to associated wildlife. Black poplars may provide habitat for protected species such as bats. Advice is available from English Nature or The Countryside Council for Wales on correct procedure should bats be found.

Work should not be carried out during or immediately after a period of drought or severe cold as this is believed to render the tree more vulnerable to various fungal infections that attack the bark or leaves. There is some suggestion that the drier conditions in the east of the country may make re-pollarding more difficult.

Black Poplars: Aylesbury





Age and condition

It is important that the age and condition of the tree are considered prior to any major works, a tree surgeon will be able to advise. Older trees and those that have not been pollarded for many years may struggle to recover from the works. In the case of such trees where the work is necessary, it is recommended that cuttings are taken for replanting and that the style of the work is carefully considered.

If there are a number of trees on site in the same condition it is important to stagger the work, thereby testing the methods employed. It is also important to take photographs and make records of the work undertaken.

Black Poplars: Castlemorton Common,
Worcestershire





Style

When re-pollarding it is important to protect the area known as the branch collar (a ring of bark where the branch joins the trunk). It is sometimes worth considering cutting the tree in two or more stages, several years apart. In the first stage the upper branches are removed, a high proportion being retained lower down. After a period of one to five years the second cut can bring the crown down to a lower level retaining some of the new growth produced as a result of the first cut.

The type of cut made (i.e.. slanted or straight, jagged or clean) is open to debate and it is best to experiment and find out what is best for your site.

Who does the work?

Carrying out any tree surgery is an extremely dangerous occupation and should always be carried out by a fully qualified certificated operator, wearing full personal protective clothing. In most cases it is necessary to have certificates for using a chainsaw at height, and for tree climbing, these should be checked by whoever is responsible for site safety. In addition, it is advisable to check that the tree surgeon has adequate insurance for the work to be undertaken.

Creating new pollards

New pollards can be created when the girth of a young sapling reaches about 150-200mm. The tree is cut, usually between 2-4 metres from the ground to cause it to bush out. It is important to gain a management commitment when creating new pollards since re-pollarding is essential and should be carried out on about a 10 year cycle. During the establishment period this could be reduced to every 3-5 years.

Establishing New Trees

Propagation Methods

Taking cuttings is quite simple. It is important to make sure that the poplar has been identified as a true native black poplar before cuttings are taken. It is imperative to gain the permission of the landowner.

When collecting material, thought should also be given to the ratio between male and female trees. Female trees are popular because of their rarity but it is important to remember the problems encountered with the copious amounts of fluffy seeds that are produced.

Very often older trees will be lacking the suitable young growth required for cuttings but can often form vigorous epicormic shoots that grow straight from the bark which are very suitable. Newly cut pollards are an excellent source of material.



Black Poplar at Shrawardine, Shropshire



Black Poplar at Aston on Clun,
Shropshire

Below Black Poplar at Powick,
Worcestershire



Great care should be taken when collecting material from Britain's tallest native tree! In addition, older trees can be extremely unstable and should be treated with respect and caution. It may be necessary to employ the specialist help of a tree surgeon.

Poplar will grow from hardwood or softwood cuttings; the latter requires more elaborate horticultural technology. Softwood cuttings may be considered in an emergency situation if a tree collapses or has to be felled during the summer months should this be necessary. Softwood cuttings are best taken between the end of July and end of August. It is possible to continue into October but, success rates are poor.

Hardwood cuttings are taken in the autumn and winter when the tree is largely dormant, the current year's wood has ripened, but root growth still takes place. Since very good results can be obtained from hardwood cuttings, it is likely that this will be the most common method chosen.

Hardwood cuttings can be taken any time over the dormant months. Cuttings taken before Christmas usually start to root and these may then be broken by frost heave in the soil during the latter part of winter. Many have reported that cuttings taken in February and March have been extremely successful.

Hardwood cuttings should be taken from new growth made in the previous summer. They should be 150-200mm long with at least half their length then planted below ground. The cuttings can be rooted straight into the open ground or rooted into pots, either way weed control is very important over the first year. Competition from weeds can be reduced by using a mulch.

Potted rooted cuttings can usually be planted out after their first year. All new planting should be protected from damage by rabbits or other grazing animals and surrounding weed growth should be controlled for the first few years.

In order to relieve pressure on native trees, save time in collecting material and produce vigorous cutting material, the establishment of stool beds is recommended. Cuttings must be well labelled during their life in the nursery.

Some choose to establish new trees by planting 'truncheons' (large cuttings) directly on site. Sections of young branch, about 50-100mm in diameter, and 1.5 metres long can be used. Use a bar to create a hole and bury the cutting so it has about one third in the soil. Firm the soil around and protect as any other new tree.

Nursery Supplies and Seeds

Whilst some nurseries are carefully sourcing and propagating native black poplar others are not. Be prepared to quiz your suppliers to make sure you are receiving *Populus nigra subsp betulifolia*.

As mentioned earlier, native black poplars will hybridise with any other poplar that comes into flower at the same time. The estimated radius for pollen travel is about 16 kilometers. This means that any seed or seedlings are most likely to be hybrids.

There are a few situations where the seed has been produced under controlled laboratory conditions, however, anyone offering supplies should be treated with a certain amount of suspicion!

True black poplars are available from some local nurseries. These are listed at the rear of this booklet.



Old Black Poplar,
Shropshire

Young Black Poplar,
Pentrehodre



Where to Plant

There are several practical guidelines that need to be taken into consideration when choosing a site to plant black poplars.

New trees must be planted well away from any structures and underground services. As mentioned earlier, it is estimated that black poplar will affect the ground for a distance with a radius that is at least one and a half times the height of the tree.

The ability of any poplar to dry out the ground needs to be considered carefully when introducing new black poplars to an area of existing wetland habitat or adjacent to an area of archaeological importance. Care must be taken to ensure damage is not inflicted upon existing features. Likewise, the effects of shade and leaf fall on the existing habitat need to be weighed up. Care should be taken in choosing sites for female black poplars since the large amounts of fluffy seed can create problems.



Black Poplar: Corfton Shropshire



Planting sites will ideally be in full light with good moisture supply and a lowland climate. Black poplar is not thought to tolerate a great deal of shade. If appearance is important then one should note that black poplars planted close to other trees will take on a drawn appearance and will not develop the broad heavy-limbed silhouette that is so characteristic of the older trees. Planting centres should be at least 20 meters apart.

Black poplars are normally found on alluvial soils although they have also been found on the lower slopes of upland areas, the Longmynd in Shropshire being a particular stronghold. Whatever the location, soils must be water retentive or rainfall needs to be high. Water quality in the adjacent watercourse does not seem to be a critical factor and black poplars may benefit from nutrient enrichment. Black poplar does not thrive in acid soil.

A pre-printed postcard is enclosed in the back of this booklet to encourage people to record any new planting thus helping to keep the distribution maps up to date.



Black Poplar: Shrawardine, Shropshire



Landscape Considerations

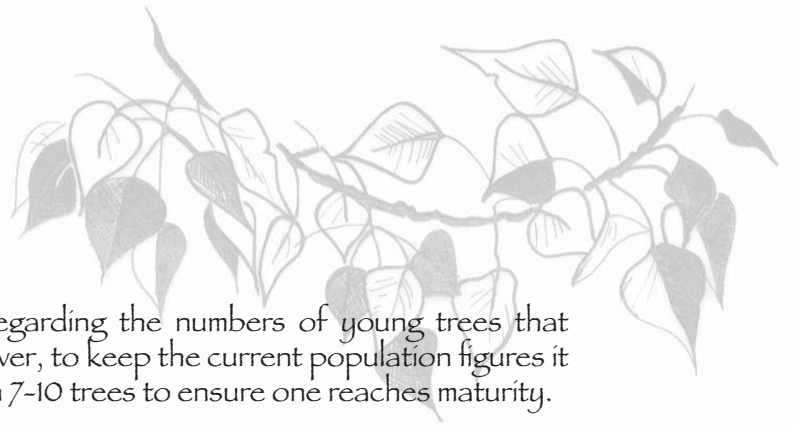
When looking for planting sites in your area it is important to study the local patterns that exist. Do the older trees follow hedgerows, rivers or estate boundaries? Are there distinctive groups on common land or broad village greens such as in areas of Worcestershire and Gloucestershire? Are they on higher ground or by farmsteads? Or are they scrubby and windswept like the trees in Llanelli?

Thought should also be given to the creation of new pollards. This choice may be made in order to ensure the continuation of a valuable landscape feature, or from a practical point of view, to save space.

There is a growing interest amongst conservation bodies, in the recreation of flood plain forest and indeed some demonstration sites are being set up in Milton Keynes and Mid Wales. Trees grow densely and are tall and drawn and give way to oak and elm on drier land. Sadly, no matter how accurately we try to reproduce these conditions, hybridisation will always prevent complete restoration.

Planting numbers and strategy

Since the national population is of an even age that is largely mature, it is essential that a long-term strategy be implemented over a 50-100 year period. This of course is impossible for one person to achieve but it is hoped that using continued promotion and education an ongoing protection can be ensured.



There is wide controversy regarding the numbers of young trees that should be re-planted. However, to keep the current population figures it is necessary to plant between 7-10 trees to ensure one reaches maturity.

Views regarding planting numbers vary considerably and are often personal and hard to define. Many maintain that, since it is rare, it is important not to plant black poplar too widely. By its very size it is a tree to plant singly and in small groups and was traditionally used as a boundary marker or feature. Large-scale use on landscape schemes is probably inappropriate in most situations, other than the creation of floodplain forest. Landscape historian, Oliver Rackham, suggests that small leaved lime is being devalued by becoming commonplace and Peter Marren talks about the delight of stumbling across rare plants in his book 'Britain's Rare Plants.' These are points to consider; there is no right or wrong.

Populeta and Ex situ conservation

There currently exist a number of 'Populeta' which have been established by the Forestry Commission. These comprise of several small plantations of native black poplar, grown purely as a collection of genetic material. Recent genetic analysis means that a review of the content of these collections is probably due.

Ex-situ conservation also covers the storage of appropriate genetic material, usually seeds, in cold storage.

SUMMARY

If you have any further questions please call Marianne Jones at the Environment Agency, Shrewsbury on (01743) 283424 or Mike Kelly at the Shropshire Hills AONB Office on (01588) 674091. There are many bodies involved in the conservation of native black poplar and you may find specific advice from your local branch of the Environment Agency, Forestry Commission, Local or County Council or Wildlife Trust.

Celebrating Arbor Day.
Black Poplar: the Arbor Tree, Aston on Clun, Shropshire



Contact Details:

If you have found a black poplar tree in the landscape - as yet unrecorded, send the following details:

- Location Plan and / or national grid reference
- Photograph if possible
- Sample of twig and leaves
- Stamped Addressed Envelope

Address to:

Dr Fiona Cooper
The Rough, Henley Common, Marshbrook, Shropshire, SY66RS

To record new planting of native black poplars send a postcard with the following details:

- Parent tree (if known)
- Grid reference and / or location of new planting

Address to:

Dr Fiona Cooper, National Recorder,
The Rough, Henley Common, Marshbrook, Shropshire, SY66RS

If you discover or have concerns about *venturia populina* disease in black poplar contact the

Disease Diagnostic & Advisory Service, Forestry Commission
Telephone 01420 526243

Local Tree Nurseries

Supplying true black poplars :

John Holliday,
Potters Farm Nursery,
Lower Hatton,
Ludlow,
Shropshire
SY8 2AY
01584 823394

Bucknell Nurseries,
Bucknell
Shropshire,
SY7 0EL
Telephone 01547 530606

Prees Heath Forest Nurseries,
Mill Lane,
Higher Heath,
Whitchurch,
Shropshire,
SY13 2HR
Tel 01948 841353

Black Poplar near Acton Scott, Shropshire.

