

A mature tree in the landscape.



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BLACK POPLAR: THE MOST ENDANGERED NATIVE TIMBER TREE IN BRITAIN

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Summary

The status and history of the Atlantic race of European black poplar, which is native in Britain, is reviewed. Many competent botanists and dendrologists in England and Wales have considered it to be an introduced tree, as it is so often seen as a planted tree of considerable age in farmlands. After being superseded commercially in the eighteenth century

by more productive hybrid clones it was in danger of extinction here. Recent research has revealed that, in a few places, it exists in natural riverside colonies, which have survived for hundreds of years because the tree is able to propagate itself vegetatively. Renewed interest and publicity seem to have encouraged new plantings of this noble tree.

Introduction

A complete survey of black poplar (*Populus nigra* L.) in Britain was undertaken by Edgar Milne-Redhead (Milne-Redhead, 1990). Before this survey, which started in 1973, it appears doubtful that much new planting had taken place since 1850, when the hybrid *P. x canadensis* clones became popular. Black poplar (in the aggregate sense) includes many varieties, subspecies and cultivars which are widely spread through most of central and southern Europe and into Asia. Best known of these in Britain is probably

Lombardy poplar (*Populus nigra* 'Italica'). The tree which is considered to be native in Britain, however, is a segregate population of the Atlantic race of *Populus nigra* subsp. *betulifolia* (Pursh) W. Wettst. (Stace, 1991). It is a robust, broadly rounded tree which might be 30 metres tall and 20 metres wide – quite unlike the more familiar fastigiate Lombardy poplar. The largest stem diameter on record (1992) is 242 centimetres (7.7 metres round).

The status of British black poplar

In 1975 only about 1000 standard trees were known in the British countryside; pollards were not recognised in botanical surveys. The black poplar is a riverside tree in England and Wales and used to be known as the water poplar. When man cleaned up lowland rivers and removed silt and mud banks, black poplars lost their natural seeding habitat. The short-lived, windblown seed needs to fall onto bare wet ground at the end of June, and the soil has to remain bare and moist until leaf-fall in October. If subjected to drought or flood the small seedling is likely to perish.

A few colonies have survived by vegetative propagation. A fallen tree on wet ground, if it has any life left in it, will root from the trunk and produce one or more new trees. Broken-off branches falling into mud or water will also root. Trees on river banks that have roots severed by floods, animals or man will sucker, although black poplars do not normally produce suckers. The trees in wild colonies today are usually crowded together and seldom develop into fine specimens.

Man has usually selected male trees for planting, and in consequence the male is far more frequent than the female. The opposite sexes of planted trees seldom meet, and if they do the resulting seed may not be pure if hybrid poplars are planted within pollinating distance (see Figure 1).

Older trees provide a rich wildlife habitat and micro-environment, especially for epiphytic plants, insects and invertebrates. These trees make an important visual contribution to the lowland landscape.

A scattered, remnant population of old trees remains today, nearly all of which are probably over 150 years old; some could be as much as 225 years old, and the famous specimen at Aston on Clun is known from historical records to pre-date 1715. Since 1950, many specimens have been lost by death from old age, riparian and safety felling, or windthrow, often aggravated by thick ivy growth. Damage from stubble burning appears to have been considerably reduced by recent legislation.

Two factors have combined to exclude this tree from the British countryside and the botanical literature:

1. Taxonomic confusion

The Atlantic subspecies was not recognised at all until it was exported to America by early settlers from England and subsequently described there by two botanists, quite independently of each other.

The German botanist Frederick Pursh (1774–1842)

called it *Populus betulifolius* Pursh, and Michaux (1746–1802) named it *Populus hudsonica* Michx. – both in 1813. The next available epithet for the Atlantic subspecies is *betulifolia* (Pursh) W. Wettst.

So few members of the Botanical Society of the British Isles (BSBI) could distinguish black poplar from its hybrids that the distribution map of their work, published in *The atlas of the British flora* (1952), gave a false distribution pattern, and disguised the real rarity of the native subspecies.

2. A forgotten tree

Once the American black poplar *Populus deltoides* Marsh. was crossed with *P. nigra* in America and Europe, the less productive European species was soon replaced. The first commercial black Italian poplar, *Populus* 'Serotina', was introduced in 1750. It was followed by numerous other clones, and from 1850 virtually no ordinary European black poplars were planted for the next 125 years.

New conservation interest, sparked off by Edgar Milne-Redhead and his band of enthusiasts, has resulted in widespread new planting of vegetatively propagated trees and a few carefully selected seedlings, and this work appears likely to continue. Resistance in this subspecies of *P. nigra* to bacterial canker (*Xanthomonas populi*) also makes it an important genetic resource for scientists working on tree breeding.

Figure 1: A rare occurrence of male (left) and female (right) trees side by side.



History

Black poplar probably spread unaided from Europe to Britain during the post-glacial northerly tree migration associated with the mild moist Atlantic period, 7500 BP. Planting 'water poplars' for profit has been recommended from ancient times, and by John Constable's day black poplar had become a familiar part of the lowland English landscape. Trees were established either near farms, as pollards to provide light agricultural wood products, or as open grown trees, to provide curved timbers to be split and used back to back for cruck-framed buildings. Waggon bottoms were made from the impact-absorbing soft wood, and from Victorian times clothes pegs were cut from young shoots which would not split easily in use.

In Shropshire, the floors of the second storey of country houses were often of black poplar wood, mainly because it did not catch fire easily. Scaffolding poles, presumably cut from pollards, were used in the fourteenth century. The wood turns well and to the present day is used to make bowls and other receptacles. In eighteenth and nineteenth century tree breeding for timber production, *P. nigra* was widely used, but the Atlantic subspecies is seldom specified. The Manchester poplar is an example of widespread use of a single clone for urban planting in the industrial north. There appears to be no historical evidence for the tree ever being reproduced by seed.

Distribution

Black poplar was once widespread at low elevation, south of a line from the Mersey to The Wash and as far as the Thames basin and the River Severn; it extended from East Anglia to east Wales. On the east side of Yorkshire it occurs as far north as the Tees. This is not a forest or plantation tree and was always planted in isolation or in single rows. Male trees were favoured because they do not produce the seed fluff

which emanates from female trees whether fertilized or not. The subspecies also occurs in continental Europe, particularly in north-west France. The botanical and physical transition between this and the type species, continental *P. nigra*, is indistinct through naturalisation, and much obscured by artificial cultivation.

Botanical descriptions

Populus nigra subsp. *nigra*

This subspecies, which occurs in central Europe and extends eastwards, is not well known in Britain, so it is difficult, until more taxonomic research has been undertaken, to state precise diagnostic characters that distinguish it from subsp. *betulifolia*. Black poplar trees are most easily recognised from a distance, especially in winter. They have rough stems, often leaning at an angle, and dark grey rugged bark usually interrupted by large woody swellings or burrs. The arching lower branches are irregular and untidy (see Figure 2). The upper



Figure 2: Outline of a typical mature black poplar.

crown is often quite open, sometimes with more-or-less vertical young growth for a time. The soft, open-grained wood is creamy white and woolly. Growth is fast until the tree reaches old age. Stems over one metre in diameter may then produce up to seven annual rings per centimetre. Suckers occasionally occur, mostly from severed roots.

The shoots are yellow ochre to pale buff-brown and glabrous, with shining brown alternate prominent viscid buds, each with a sharp point often turned slightly away from the stem. The leaves are polymorphic depending

on their position, range from deltoid to angularenovate in shape, and are up to 10 cm long by 3–8 cm wide (see Figure 3). After a brief bronze flushing period, they unfold bright green in late April and remain semi-lustrous mid green until October. Autumn colour is typically mottled green and gold with a short final pale golden display. The leaves flutter audibly in the slightest breezes, especially in the downdraught prior to a rain shower. Leaf margins have translucent rounded teeth, and the leaf tip is elongated to an acute point. The petiole is laterally compressed, 3–7 cm long, and there are no glandular swellings, except sometimes on later produced leaves.

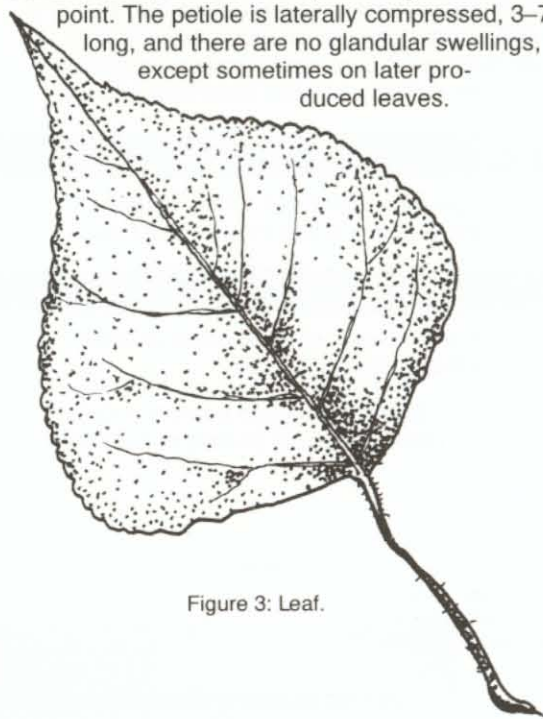


Figure 3: Leaf.

Poplars are dioecious, so self fertilisation is not possible. Catkins occur, before the leaves, from about the last week in March. Female catkins are lime green and semi-pendulous; individual flowers are about 1.5 mm in diameter, each with a pair of stigmas. Pollination is by wind from crimson male flowers, also in pendulous catkins (see Figure 4).

Populus nigra subsp. *betulifolia*

This subspecies differs from the Continental type



Figure 4: Female flowers, left; male flowers, right.

How and where to grow black poplar

Planting sites must be in full light with good moisture supply and a lowland climate. Black poplar is not, by nature, a woodland tree and it will not tolerate side shade or being in mixture with other species.

Propagation from cuttings out of doors in mid-winter is easy using vigorous current shoots. Cuttings from older trees or older wood may grow less well, and a stock plant should be established first and coppiced to overcome this problem. Rooted cuttings can usually be planted out after one year and should be subsequently protected from weed competition and vermin. They must not be allowed to dry out for the first few years.

To avoid perpetuating confusion, the origin and distribution of plants should be accurately and permanently recorded. It is generally preferable to raise stocks from local trees and plant them back into the

countryside nearby.

Care is needed when purchasing saplings from the trade; some stockists sell hybrids under the name 'nigra' and others stock plants of Continental origin which may not be subspecies *betulifolia*. The sex of young plants for sale is frequently unknown.

Sensitive sites near to drains, underground services, roads, or buildings on shrinkable soils should be avoided. Female trees should be placed carefully so that seed fluff is not a nuisance. Where space is restricted, above ground pollarding is an option after about 10 years and subsequently at 5–10 year intervals. John Evelyn (1664) tells us 'to pollard a sapling, cut the trunk off at the required height when it is as thick as one's arm'.

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