

= *Acer pseudoplatanus* =

Acer pseudoplatanus, known as the sycamore in the United Kingdom and the sycamore maple in the United States, is a flowering plant species in the soapberry and lychee family Sapindaceae. It is a large deciduous, broad @-@ leaved tree, tolerant of wind and coastal exposure. It is native to Central Europe and Western Asia, from France eastwards to Ukraine, northern Turkey and the Caucasus and southwards in the mountains of northern Spain and Italy.

The sycamore establishes itself easily from seed and was introduced to the British Isles by 1500, and is now naturalised there and in other parts of Europe, North America, Australia and New Zealand where it may become an invasive species.

The sycamore can grow to a height of about 35 m (115 ft) and the branches form a broad, rounded crown. The bark is grey, smooth when young and later flaking in irregular patches. The leaves grow on long leafstalks and are large and palmate, with 5 large radiating lobes. The flowers are greenish @-@ yellow and hang in dangling flowerheads called panicles. They produce copious amounts of pollen and nectar that are attractive to insects. The winged seeds or samaras are borne in pairs and twirl to the ground when ripe. They germinate freely in the following spring.

In its native range, the sycamore is associated with a biodiverse range of invertebrates and fungi, but these are not always present in areas to which it has been introduced. It is sometimes planted in urban areas for its value as an amenity tree and produces a hard @-@ wearing, creamy @-@ white close @-@ grained timber that is used for making musical instruments, furniture, joinery, wood flooring and kitchen utensils. It also makes good firewood. The rising sap in spring has been used to extract sugar and make alcoholic and non @-@ alcoholic drinks, and honey is made by bees collecting the nectar.

= = Taxonomy and etymology = =

Acer pseudoplatanus was first described by the Swedish naturalist Carl Linnaeus in his *Species Plantarum* in 1753. It is the type species in the maple genus *Acer*. Many forms and varieties have been proposed, including natural varieties such as var. *macrocarpum* Spach, var. *microcarpum* Spach, and var. *tomentosum* Tausch, and forms such as f. *erythrocarpum* (Carrière) Pax, f. *purpureum* (Loudon) Rehder, and f. *variegatum* (Weston) Rehder. These are all now considered to be synonyms of *Acer pseudoplatanus* L.

The specific name *pseudoplatanus* refers to the superficial similarity of the leaves and bark of the sycamore to those of plane trees in the genus *Platanus*, the prefix *pseudo-* (from Ancient Greek) meaning " false ". However, the two genera are in different families that are only distantly related. *Acer* and *Platanus* differ in the position in which leaves are attached to the stem (alternate in *Platanus*, paired or opposite in *Acer*) and in their fruit, which are spherical clusters in *Platanus* and paired samaras (winged fruit) in *Acer*.

The common name " sycamore " originally applied to the fig species *Ficus sycomorus*, the sycamore or sycomore referred to in the Bible, that is native to southwest Asia. Other common names for the tree include false plane @-@ tree, great maple, Scottish maple, mount maple, mock @-@ plane, or Celtic maple.

= = Description = =

The sycamore is a large, broadleaved deciduous tree that reaches 20 ? 35 m (66 ? 115 ft) tall at maturity, the branches forming a broad, domed crown. The bark of young trees is smooth and grey but becomes rougher with age and breaks up into scales, exposing the pale @-@ brown @-@ to @-@ pinkish inner bark.

The buds are produced in opposite pairs, ovoid (approximately oval in shape) and pointed, with the bud scales (the modified leaves that enclose and protect the bud) green, edged in dark brown and with dark brown tips, 0 @-@ 5 ? 1 cm (0 @-@ 2 @-@ 0 @-@ 4 in). When the leaves are shed they leave horseshoe shaped marks called leaf scars on the stem. The leaves are opposite,

large , 10 to 25 cm (4 to 10 in) long and broad , palmate with 5 pointed lobes that are coarsely toothed or serrated . They have a leathery texture with thick veins protruding on the underside . They are dark green in colour with a paler underside . Some cultivars have purple @-@ tinged or yellowish leaves . The leaf stalk or petiole is 5 to 15 cm (2 to 6 in) long , is often tinged red with no stipules or leaf @-@ like structures at the base .

The monoecious (or bisexual) yellow @-@ green flowers are produced after the leaves in early summer , in May or June in the British Isles , on pendulous panicles 10 to 20 cm (4 to 8 in) long with about 60 ? 100 flowers on each stalk . The fruits are paired winged seeds or samaras , the seeds 5 to 10 mm (0 @.@ 2 to 0 @.@ 4 in) in diameter , each with a wing 20 to 40 mm (0 @.@ 8 to 1 @.@ 6 in) long developed as an extension of the ovary wall . The wings are held at about right angles to each other , distinguishing them from those of *A. platanoides* and *A. campestre* , in which the wings are almost opposite , and from those of *A. saccharum* , in which they are almost parallel . When shed , the wing of the samara catches the wind and rotates the fruit as it falls , slowing its descent and enabling the wind to disperse it further from the parent tree . The seeds are mature in autumn about four months after pollination .

The sycamore is tetraploid (each cell having four sets of chromosomes , $2n = 52$) , whereas *A. campestre* and *A. platanoides* are diploid (with 2 sets of chromosomes , $2n = 26$) .

= = Botany = =

Sycamore trees produce their flowers in hanging branched clusters known as panicles that contain a variety of different flower types . Most are morphologically bisexual , with both male and female organs , but function as if they were unisexual . Some are both morphologically and functionally male , others morphologically bisexual but function as males , and still others are morphologically bisexual but function as females . All of the flower types can produce pollen , but the pollen from functionally female flowers does not germinate . All flowers produce nectar , the functionally female flowers producing it in greater volume and with a higher sugar content .

Sycamore trees are very variable across their wide range and have strategies to prevent self @-@ pollination , which is undesirable because it limits the genetic variation of the progeny and may depress their vigour . Most inflorescences are formed of a mixture of functionally male and functionally female flowers . On any one tree , one or other of these flower types opens first and the other type opens later . Some trees may be male @-@ starters in one year and female @-@ starters in another . The change from one sex to the other may take place on different dates in different parts of the crown , and different trees in any one population may come into bloom over the course of several weeks , so that cross @-@ pollination is encouraged , although self @-@ pollination may not be completely prevented .

The sycamore may hybridise with other species in *Acer* section *Acer* , including with *A. heldreichii* where their natural ranges overlap and with *A. velutinum*. Intersectional hybrids with *A. griseum* (*Acer* section *Trifoliata*) are also known , in which the basal lobes of the leaf are reduced in size , making the leaves appear almost three @-@ lobed (trifoliolate) .

= = Distribution = =

The sycamore is native to central and eastern Europe and western Asia . Its natural range includes Albania , Austria , Belgium , Bulgaria , Czech Republic , Georgia , Germany , Greece , Hungary , Italy , Lithuania , Poland , Romania , southern Russia , Switzerland and the former Yugoslavia . Reports of it occurring in eastern Turkey have been found to refer to *A. heldreichii* subsp. *trautvetteri* . It was probably introduced into Britain in the Tudor period by 1500 and was first recorded in the wild in 1632 in Kent . The date of its first introduction into Ireland is unclear , but the oldest specimen in Ireland is in County Cavan and dates from the seventeenth century . It was introduced into Sweden around 1770 with seeds obtained from Holland .

The lack of old native names for it has been used to demonstrate its absence in Britain before introduction in around 1487 , but this is challenged by the presence of an old Scottish Gaelic name

for the tree , *fior chrann* which suggests a longer presence in Scotland at least as far back as the Gaelic settlement at Dál Riata in the late 6th and early 7th centuries . This would make it either an archaeophyte (a naturalised tree introduced by humans before 1500) or perhaps native if it can be seen to have reached Scotland without human intervention . At the moment it is usually classified as a neophyte , a plant that is naturalised but arrived with humans on or after the year 1500 . Today , the sycamore is present in 3 @, @ 461 (89 @. @ 7 %) of hectads in Britain , more than any native tree species .

The sycamore has been introduced to suitable locations outside Europe as an attractive tree for park , street or garden . These include the United States , Canada , Australia (Victoria and Tasmania) , Chile and New Zealand , Patagonia and the laurel forests of Madeira and the Azores . At the time of its introduction it was probably not appreciated that its prolific production of seeds might one day cause a problem to the landscape as it spread and out @-@ competed native species . The tree is now considered to be an environmental weed in some parts of Australia (Yarra Ranges , Victoria) and also Mount Macedon , near Daylesford , parts of the Dandenong Ranges and Tasmania , where it is naturalised in the eucalypt forests . It is also considered to be an invasive species in New Zealand , Norway , and environmentally sensitive locations in the United Kingdom .

In about 1870 , the sycamore was introduced into the United States , and was planted in New York and New Jersey . It was later cultivated as a park or street tree in New England and the Mid @-@ Atlantic states . By the early part of the 21st century , it was naturalised in fourteen states (Connecticut , Delaware , Illinois , Kentucky , Maine , Michigan , North Carolina , New Jersey , New York , Pennsylvania , Rhode Island and Washington , D.C.) , and in the Canadian provinces of British Columbia , New Brunswick , Nova Scotia and Ontario . The United States Department of Agriculture considers it an invasive species .

= = Ecology = =

In its native range , the sycamore is a natural component of birch (*Betula* sp .) , beech (*Fagus* sp .) and fir (*Abies* sp .) forests . It readily invades disturbed habitats such as forest plantations , abandoned farmland and brownfield land , railway lines and roadsides verges , hedgerows , native and semi @-@ natural woodland and , in New Zealand , high country tussock grassland . As an introduced , invasive species it may degrade the laurel forest in Madeira and Portugal and is a potential threat to the rare endemic Madeiran orchid , *Dactylorhiza foliosa* .

It is tolerant of a wide range of soil types and pH , except heavy clay and is at its best on nutrient @-@ rich slightly calcareous soils . The roots of the sycamore form highly specific beneficial mycorrhizal associations with the fungus *Glomus hoi* which promotes phosphorus uptake from the soil . Sycamore mycorrhizas are of the internal arbuscular mycorrhizal type , in which the fungus grows within the tissues of the root and forms branched , tree @-@ like structures within the cells of the root cortex .

The larvae of a number of species of moth use the leaves as a food source . These include the sycamore moth (*Acronicta aceris*) , the maple prominent (*Ptilodon cucullina*) and the plumed prominent (*Ptilophora plumigera*) . The horse @-@ chestnut leaf miner (*Cameraria ohridella*) occasionally lays its eggs on the sycamore , although 70 % of the larvae do not survive beyond the second instar . The leaves attract aphids , and also the ladybirds and hoverflies that feed on them . The flowers produce copious amounts of nectar and pollen and are attractive to bees and other insects , and the seeds are eaten by small mammals such as voles and birds . As an introduced plant , in Britain the sycamore has a relatively small associated insect fauna of about 15 species , but it does have a larger range of leafhoppers than does the native field maple .

The tree may also be attacked by the horse chestnut scale insect (*Pulvinaria regalis*) which sucks sap from the trunk and branches , but does not cause serious damage to the tree . Sometimes squirrels will strip the bark off branches , girdling the stem ; as a result whole branches may die , leaving brown , wilted leaves .

The sycamore gall mite *Eriophyes macrorhynchus* produces small red galls , similar to those of the nail gall mite *Eriophyes tiliae* , on leaves of sycamore and field maple , *Acer campestre* from April

onwards . Another mite , *Aceria pseudoplatani* causes a ' sycamore felt gall ' on the underside of leaves of both sycamore and Norway maple (*Acer platanoides*) . The sycamore aphid *Drepanosiphum platanoidis* sucks sap from buds and foliage , producing large quantities of sticky honeydew that contaminate foliage , cars and garden furniture beneath .

The sycamore is susceptible to sooty bark disease , caused by the fungus *Cryptostroma corticale* . This causes wilting of the crown and the death of branches . Rectangular patches of bark become detached exposing thick layers of black fungal spores . The fungus may be present in the heartwood without symptoms for many years , working its way towards the bark following long , hot summers . The spores are hyper @-@ allergenic and cause a condition called maple bark stripper ? s disease , a hypersensitivity pneumonitis . Less serious is the fungus *Rhytisma acerinum* which often forms the disease known as tar spot , in which black spots with yellow margins form on the foliage . The leaves may fall prematurely but the vigour of the tree is little affected . Sycamore leaf spot , caused by the fungus *Cristulariella depraedans* , results in pale blotches on leaves which later dry up and fall . This disease can cause moderate leaf loss but trees are little affected in the long run .

= = Cultivation = =

Sycamore self @-@ seeds very vigorously , the seeds germinating en masse in the spring so that there is little , or no , seed bank in the soil . It is readily propagated from seed in cultivation , but varieties cannot be relied on to breed true . Special cultivars such *A. pseudoplatanus* ' *Brilliantissimum* ' may be propagated by grafting . This variety is notable for the bright salmon @-@ pink colour of the young foliage and is the only sycamore cultivar to have gained the Royal Horticultural Society 's Award of Garden Merit . A rare weeping form with dangling branches , *A. pseudoplatanus* var. *pendulum* , was first sold by Knight & Perry 's exotic nursery in Chelsea , England before 1850 when the name was published by W.H. Baxter in the Supplement to Loudon 's *Hortus Brittanicus* , but no specimens of this cultivar are known to survive .

The sycamore is noted for its tolerance of wind , urban pollution , salt spray , and low summer temperatures , which makes it a popular tree for planting in cities , along roads treated with salt in winter , and in coastal localities . It is cultivated and widely naturalised north of its native range in Northern Europe , notably in the British Isles and Scandinavia north to Tromsø , Norway (seeds can ripen as far north as Vesterålen) ; Reykjavík , Iceland ; and Tórshavn on the Faroe Islands . It now occurs throughout the British Isles , having been introduced in the 16th century .

Sycamores make new growth from the stump or roots if cut down and can therefore be coppiced to produce poles and other types of small timber . Its coppice stools grow comparatively rapidly , reaching up to 10 feet in diameter in 450 years . It is grown as a species for medium to large bonsai in many areas of Europe where some fine specimens can be found .

= = Uses = =

Sycamore is planted in parks for ornamental purposes , and sometimes as a street tree , since its tolerance of air pollution makes it suitable for use in urban plantings . Because of its tolerance to wind , it has often been planted in coastal and exposed areas as a windbreak .

It produces a hard @-@ wearing , white or cream close @-@ grained timber that turns golden with age . The wood can be worked and sawn in any direction and is used for making musical instruments , furniture , joinery , wood flooring and parquetry . Because it is non @-@ staining , is used for kitchen utensils , wooden spoons , bowls , rolling pins and chopping boards . In Scotland it has traditionally been used for making fine boxes , sometimes in association with contrasting , dark @-@ coloured laburnum wood . The reference to the " white maple " in the English Christmas carol , " Wassail , Wassail All Over the Town " , in " Our bowl , it is made of the white maple tree " presumably refers not to the silver or white maple (*A. saccharinum*) , which does not occur naturally in Europe , but to the white wood of the sycamore or the field maple , *Acer campestre* .

Occasionally , trees produce wood with a wavy grain , greatly increasing the value for decorative veneers . The wood is a medium weight for a hardwood , weighing 630 kg per cubic metre . It is a

traditional wood for use in making the backs , necks and scrolls of violins . The wood is often marketed as rippled sycamore . Whistles can be made from straight twigs when the rising sap allows the bark to be separated , and these , and sycamore branches , are used in customs associated with early May in Cornwall . The wood is used for fuel , being easy to saw and to split with an axe , producing a hot flame and good embers when burnt .

In Scotland , sycamores were once a favoured tree for hangings , because their lower branches rarely broke under the strain . Both male and female flowers produce abundant nectar , which makes a fragrant , delicately flavoured and pale @-@ coloured honey . The nectar and copious dull yellow ochre pollen are collected by honeybees as food sources . The sap rises vigorously in the spring and like that of sugar maple can be tapped to provide a refreshing drink , as a source of sugar and to make beer .

= = Notable specimens = =

= = The Tolpuddle Martyrs ' Tree = =

Under this sycamore tree at Tolpuddle in Dorset , England , six agricultural labourers , known as the Tolpuddle Martyrs , formed an early trades union in 1834 . They were found to have breached the Incitement to Mutiny Act 1797 and were transported to Australia . The subsequent public outcry led to their release and return . The tree now has a girth of 5 @. @ 9 metres (19 feet , 4 inches) and a 2005 study dated the tree to 1680 . The tree is cared for by the National Trust , who have pollarded the tree in 2002 and 2014 .

= = The Corstorphine Sycamore Tree = =

An ancient sycamore (sometimes described as a " plane ") with distinctive yellow foliage formerly stood in the village of Corstorphine , now a suburb of Edinburgh , Scotland . The tree was reputedly planted in the 15th century and is named as the form *Acer pseudoplatanus* f. *corstorphinense* Schwer . Not only was it claimed to be the " largest sycamore in Scotland " but also the scene of James Lord Forrester 's murder in 1679 . The tree was blown down in a storm on Boxing Day 1998 , but a replacement , grown from a cutting , now stands in the churchyard of Corstorphine Kirk . The tree is commemorated in the badge of the Corstorphine Bowling Club of Edinburgh , designed in 1950 to feature the Corstorphine sycamore tree and a single horn , and redesigned in 1991 for the club ' s centenary .

= = The Newbattle Abbey sycamore = =

The Newbattle Abbey sycamore near Dalkeith , planted in 1550 , was the specimen with the earliest known planting date in Scotland . It had achieved a girth of 5 m (16 ft) and a height of 26 m (85 ft) by the time it was toppled by a gale in May 2006 at the age of 456 years .

= = The Money Tree = =

Saint Fintan founded a monastery at Clonenagh , Ireland , in the sixth century and it had a spring beside it . This was considered holy and was visited by pilgrims . In the nineteenth century , a Protestant land owner , annoyed at people visiting the site , filled the well in , whereupon the water started to flow into the hollow interior of a sycamore tree on the other side of the road . Filled with amazement , people hung rags on the tree and pressed coins into its trunk as votive offerings and it became known as the " Money Tree " . Some years later , it fell down , but new shoots appeared from its base , and the water still welled up . It remains a place of veneration on St Fintan 's day , February 17 .