The New Carpinus Collection at Caerhays
(an article for the Cornwall Garden Society Yearbook 2026)

There are said to be up to 40 recognised species of Hornbeam (Carpinus), mainly from the Northern hemisphere, although 'The Hillier Manual' of 2019 lists only 19. The latest IDS website 'Trees and Shrubs Online' adds 5 more species to the total of those growing today in the UK.

The surprising thing about Carpinus species is that only one was introduced into cultivation in the UK by the great Chinese plant hunters, Wilson & Forrest. In consequence, Caerhays has no even faintly mature plants in the garden of the Chinese or American species and the first plants in our new collection here were only planted out in 2009.

Carpinus are picturesque and easily grown trees which are usually suitable for more difficult clay or chalky soils. They, along with Corylus (Hazel), and Ostrya (Hop Hornbeam), belong to the Coryloideae: a subspecies of the Birch Family, Betulaceae. In 1985 Keith Rushforth wrote that Carpinus were 'a neglected genus' but, in more recent decades, they have become desirable 'fashion trees' and are now increasingly popular and more widely grown because of the desirable characteristics of their new growth, papery fruit bracts, bark and autumn colour. We now know, however, that several of the more recently introduced species suffer from drought conditions.

All species of Carpinus are monecious in that they have separate male and female flowers but on the same plant.

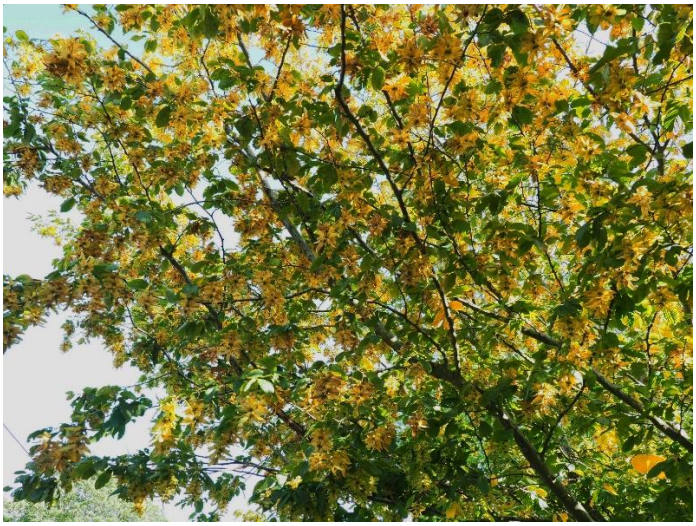
Different individual species of Carpinus can most readily be identified either by the number of veins in their leaves, the size and shape of their fruiting catkins, the shape of the leaf base, or the size and shape of their fruit bracts. However, the most difficult aspect of the final identification of several species has to come from a close examination of the leaf serrations and leaf toothing. Several species have different sets of different sized leaf tooths and it is the spacings between the larger and smaller leaf tooths, and the numbers of smaller tooths in between, which is the crucial factor in some identifications. Clearly not all leaf sizes and shapes on a particular tree have the same exact tooth size and therein lies the identification problem.

1. **The Common or European hornbeam – Carpinus betulus**

This tree is native to most of Europe including the SE of England. It has also naturalised widely further north, although you will very seldom find it growing in a Cornish hedgerow. It grows in maturity to around 30 metres with multiple slender branches. Grey bark which is smooth at first with vertical silver markings and shallow

fissures. In old age the gnarled trunks of C. betulus can resemble those of a big yew (except in colour). The characteristic which most readily distinguishes this from all other species of hornbeam is that its fruit bract has three symmetrical lobes. Hornbeams are commonly used as hedging as an alternative to the native beech and the young clipped trees hold their old leaves over winter in much the same way. There is a very good example at RHS Rosemoor Gardens. Hornbeams also lend themselves to being used in topiary and pleaching.

Carpinus betulus with male and female catkins



Carpinus betulus with fruiting bracts

Carpinus betulus

Caerhays grows three forms of Carpinus betulus:-

'Fastigiata' ('Pyramidalis') - Fastigiate hornbeam – Caerhays planted an avenue of this tree on the road below St Michaels Caerhays Church some 30 years ago to replace the dead elms. The trees are not exactly fastigiate and they are becoming nearly as broad as they are tall. Nevertheless they do make a striking architectural tree which stands out in winter, once uplifted from the base, to create a clean trunk. The inherent strength of hornbeam wood means that they stand up well to our frequent westerly gales.

Carpinus betulus 'Fastigiata'

Carpinus betulus 'Fastigiata'

Carpinus betulus 'Fastigiata'

'Incisa' ('Quercifolia') - Cut-leaved hornbeam – The Caerhays tree does readily get misidentified as a species of oak. The double toothing on the leaf margin looks more like lobing in reality. However, close up, the standard hornbeam features are evident albeit in a cut-leaf form. With us this looks to be making a broad and spreading tree which will need uplifting over the years to keep it to a manageable size as against its neighbours.

Carpinus betulus 'Incisa'

Carpinus betulus 'Incisa'

'Rockhampton Red' - 'Lochglow' – This was one of the first of the collection planted here as a standard tree in 2009. It is already 6-7 meters tall and was originally selected in the early 1990's at Mount Pleasant Trees in Gloucestershire. It is said to have striking bright red autumn colour but, as yet, we haven not seen it perform properly at Caerhays. The tree is located very close to the sea and, as is so often the case in Cornwall, the mild autumn and strong winds combine to blow the leaves away before they have had enough time or frost to colour up properly.

Carpinus betulus 'Rockhampton Red'

Carpinus betulus 'Rockhampton Red'

2. Carpinus Section Dipterocarpus – ‘False Hornbeam’

This section includes four East Asian species which are readily identifiable and more easily confused with Ostrya (Hop Hornbeam). They have the same scaly bark as seen in Ostrya together with long leaves with numerous parallel side veins and their greenish-white fruit bracts enfold the seeds and look very like bunches of hops. Of these four species Caerhays grows only three and the collection, so far, omits Carpinus cordata, the Big Leaf Hornbeam.

Carpinus fangiana - *Monkeytail Hornbeam* – This is easily the most desirable species of all Hornbeams although it only appeared in the UK in 1992 from seed collected by Mikinori Ogisu and one of the original seedlings is now a sizeable tree in Roy Lancaster’s private garden in Hampshire. It seems that Ernest Wilson missed this species when he was collecting in the Emei Shan area in China and it was not located again until seen in 1980 by Keith Rushforth who failed to graft it onto C. betulus on his return to the UK.

The new leaves are an attractive bronze-purple when young and up to 20cm long when mature. Each of the large leaves of this species have 24-34 pairs of leaf veins. The male catkins are impressive enough but the pendant female fruiting catkins are up to 45-50cm long and even more so. This makes it, by far, the most eye catching species with the longest fruiting catkins and hence its common name.

Although this plant is now stocked in small numbers by Burncoose Nurseries it was not until 2015 that Caerhays obtained a grafted plant. This first produced fruiting female catkins in 2024 but failed to do so in 2025. If it also produced male catkins in 2024 I am afraid that we did not notice them. Our plant currently has a drooping habit which is quite unlike Roy Lancaster’s upright tree. We were advised that the species was not tender but that it preferred to have its roots in a damp position that would not dry out in summer. For this reason it is not with most of our other Carpinus collection in the 2010 new planting in Kennel Close at the top of the garden in a former arable field.

Carpinus fangiana

Carpinus fangiana with male catkins

Carpinus fangiana with female fruiting bracts

Carpinus fangiana with fruiting bracts

Carpinus fangiana with female fruiting bracts

Carpinus fangiana

Carpinus fangiana

Carpinus japonica - *Japanese hornbeam* - This species is one of the hardiest and we have found it quick growing, quick to produce colourful fruiting bracts, and generally rewarding and easy to grow. Of all the species at Caerhays this has, so far, been the only one to produce a decent and consistent show of yellow in autumn. One tree (the better of the two) has a broad spreading habit with no obvious leader after 13 years while the other is very upright with much smaller fruiting bracts.

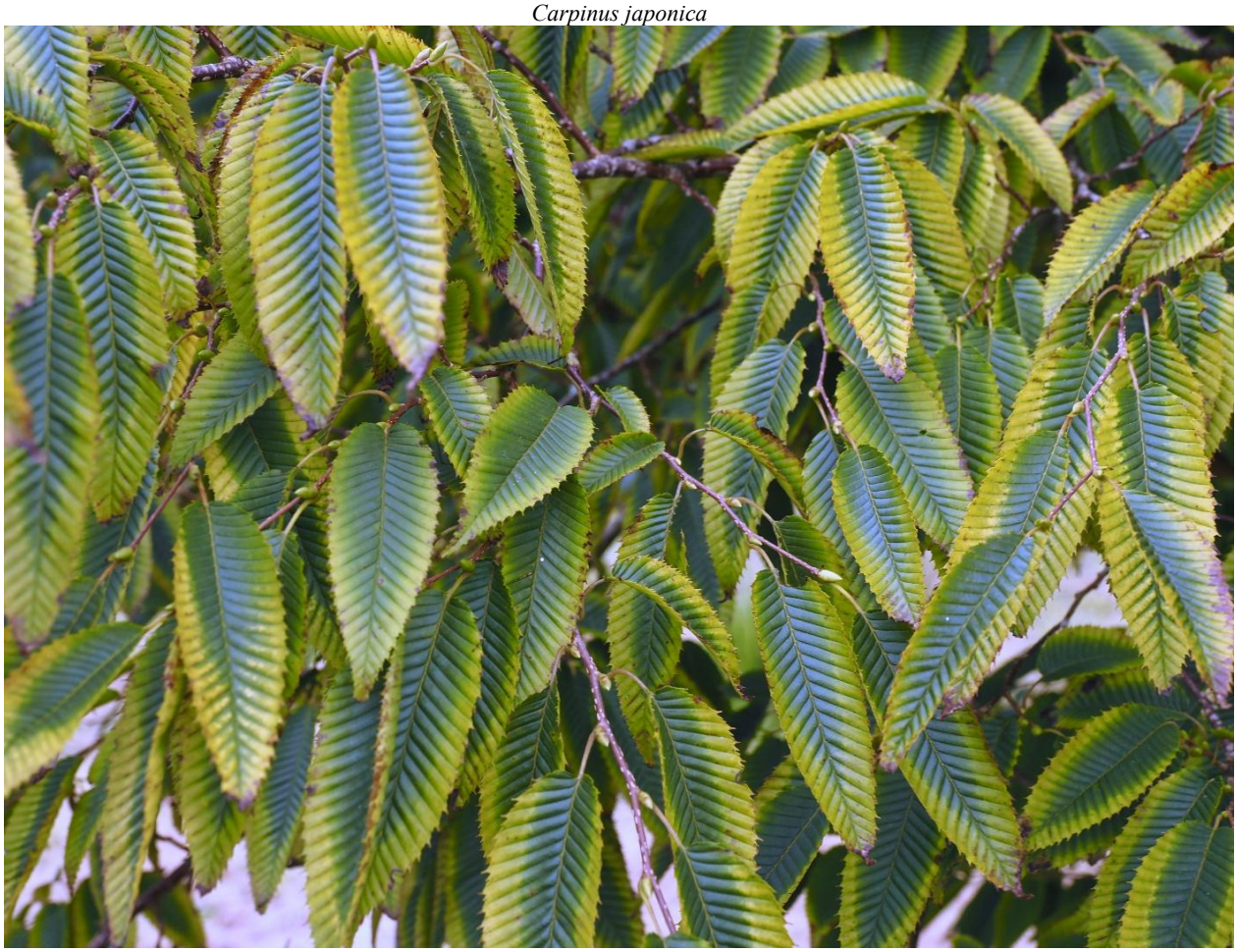
Identification of C. japonica is pretty simple once you see the numerous green fruit catkins start to turn pinkish or examine the prominently corrugated leaves. However if one reverts to the taxonomic key to hornbeam identification the leaf base is cordate (heart shaped) to rounded and there are 20-24 pairs of leaf veins; slightly fewer than C. fangiana

This species was introduced as long ago as 1895 and there is an excellent mature specimen at Batsford Arboretum in Gloucestershire although I cannot think of one in Cornwall. Clearly a species which is well due for a revival and extremely hop-like in appearance.

Carpinus japonica with male and female catkins

Carpinus japonica with fruiting bracts

Carpinus japonica



Carpinus japonica with autumn colour

Carpinus rankanensis - I first saw this species as a stand out plant a decade or so ago at the Wakehurst National Arboretum where it was covered in male and female catkins in April. There are two plants at Caerhays, but it was the one planted only in 2016 (a Crug Farm collection) which decided to produce its first fruiting catkins in 2025, rather than the one planted earlier in 2010, which looks equally fit and healthy. What we have discovered (largely by default) is that most Carpinus hide their early flowers, at least when juvenile, within the dense canopy of their foliage and one needs to spread branches apart to look for them. Often they are only on the most wind protected side of a plant or where it gets the most sun as we have, somewhat belatedly, now discovered.

This Taiwanese species is named after a lost mountainous village in the N.E. of the country. It is the rarest in cultivation and shares the parallel leaf veins of the other 'false hornbeams' and has equally large leaves as C. fangiana. Again, it was only first introduced to the UK in 1992 by Tony Kirkham and Mark Flanagan but there have been several subsequent introductions. The fruiting catkins are 10-12cm long and the fruit bracts ripen to whitish.

With us C. rankanensis holds its full set of leaves well in January. The early spring new growth has an attractive reddish flush and the leaves have a dark black-purplish tinge as December arrives. At Kew they may indeed turn yellow but not here in Cornwall.

From its origins it would appear that this is a perfectly hardy species which will certainly become in demand from any gardener lucky enough to have seen its profusion of fruiting catkins.

Carpinus rankanensis

Carpinus rankanensis with male catkins

Carpinus rankanensis

Carpinus rankanensis with flower bracts

Carpinus rankanensis at Wakehurst

3. True Hornbeam, the species, from China, Korea, Taiwan and Japan

This is a much larger group of species of Carpinus but they are rather more uniform in leaf and flower and therefore, more difficult to easily and correctly identify. Caerhays is growing 11 species of 'true hornbeam' out of the 17 which have, so far, been introduced into the UK. According to Chinese botanists there may well be many more species of 'true hornbeam' yet to be introduced to UK gardens but, no doubt, there will be much argument about their exact botanical classification and we can all anticipate that there will be further changes and realignments between the various species of 'true hornbeams' in the next decades.

Carpinus fargesiana - This species grows in shady low altitude valleys in Southern China and was only introduced to the UK in 1999. The leaves have 12-16 secondary midribs either side of the midvein and the leaf margins are irregularly double serrate. One of our small trees, planted in 2017, had been swamped by regrowth from the graft and is still struggling. The other is developing into an arching small tree but has yet to flower or fruit.

Carpinus fargesiana with fruiting bracts

Carpinus fargesiana with autumn colour

Carpinus henryana var. simplicidentata – Henry's hornbeam - Introduced in 1995 by Keith Rushford, this form of C. henryana has smaller and more ovate leaves with 11-13 pairs of side veins. Of the three plants growing here two key out to C. henryana var. simplicidentata but the third, named just C. henryana, does not and is very probably some other species. The species C. henryana was collected by Wilson for the Arnold Arboretum in 1907 and arrived at Kew by 1912 but the plant was lost although there are a few other survivors in Norfolk.

Carpinus henryana var. simplicidentata

Carpinus henryana var. simplicidentata

Carpinus kawakamii - The Taiwanese species was known about by Japanese botanists by 1913 but it does not seem to have arrived in cultivation in the UK until around 1985. The Caerhays plant dates from 2013 and is from a Crug Farm collection. It grows in Taiwan in forest glades and limestone crags and is regarded as perfectly hardy. The exceptional and highly unusual feature of the Caerhays plant is that, with us, it is totally evergreen. Even the 'Beast from the East' in March 2018 failed to dent its foliage. While the Caerhays tree does not exhibit much of the reddish new growth which the reference books talk about it is perhaps the only truly evergreen species of Carpinus, at least in Cornwall. Imported plants at Burncoose Nurseries are semi-evergreen suggesting they were grown from seed collected from a different altitude.

This species has 10-15 pairs of leaf veins according to Trees & Shrubs online although their own key describes it as having 20-25 pairs of leaf veins. Our plant has 10-12 pairs of leaf veins and the leaves are double serrate at the edges. After 12 years our plant has just started to produce tiny fruiting bracts.

Carpinus kawakamii with reddish new growth

Carpinus kawakamii

Carpinus kawakamii

Carpinus kawakamii with its first fruiting bracts

Carpinus laxiflora - This species originates from Korea and Japan and has been confused with the Chinese C. viminea which does not grow at Caerhays and is often referred to as the Chinese form of C. laxiflora.

One of the two Caerhays trees has just started to produce a few fruiting catkins with distinctive three lobed bracts although this has taken 22 years. The other key feature of this species is that the leaves flush greenish and the leaf veins are in c.12 parallel pairs. The very tips on the secondary new growth is briefly reddish after a flush of rain but it is questionable as to whether our older plant is true to name.

Our oldest plant was from a 2002 purchase from Duchy Nurseries at the Royal Cornwall Show.

Carpinus laxiflora

Carpinus laxiflora

Carpinus laxiflora with male catkins

Carpinus laxiflora

Carpinus laxiflora with autumn colour

Carpinus omeiensis - *Mount Omei hornbeam* - Our young but vigorous small tree is also from a 1985 Keith Rushford introduction from the Emei Shan in Sichuan after which the species is named. The ovate and apex pointed leaves have lateral veins in 12-16 parallel pairs and are distinctive enough to be fairly easily recognisable. Again the young foliage has a reddish tinge but, unlike the description in the reference books, this reddish tinge does not yet persist on the undersides of the leaf through the summer on our plants.

Carpinus omeiensis

Carpinus omeiensis

Carpinus polyneura - Of the ‘true hornbeams’ this is, so far, the most attractive of these species growing at Caerhays. Right through the year there is plentiful red new growth at the ends of the many pendulous shoots on what are graceful cascading small trees. Our plants do well in full sun but they detest a dry summer which results in dieback.

C. polyneura was the first Chinese hornbeam species to be named and appeared at Kew in 1889 (under another name). Newer introductions date from the 1980’s and this species covers a wide area in China. The leaf toothing is usually double and the lateral veins are in 16-20 parallel pairs. (The picture below are deceptive because you have to count the veins to the very tip of the mature leaves).

Carpinus polyneura

Carpinus polyneura

Carpinus polyneura

Carpinus polyneura with fruiting bracts

A fruiting bract on Carpinus polyneura

Carpinus tschonoskii - *Silky Hornbeam* - The large broadly, ovate leaves, of this species resemble those of Betula utilis and this is the closest hardy relative to the European C. betulus of any of the east Asian hornbeams. The species was first discovered in 1881 and Kew received its first plant in 1904.

At Caerhays this has (so far) been easily the best performer, as far as autumn colour is concerned, of all our young hornbeam species. A very good show of yellow which is unusual in our climate. Our plant was a Crug Farm collection and last year we saw the very first fruiting catkins, 15 years after planting.

Carpinus tschonoskii

Carpinus tschonoskii

Carpinus tschonoskii with male catkins

Carpinus tschonoskii with autumn colour

Carpinus tschonoskii with autumn colour

Carpinus nimpoli - This is almost certainly a completely misnamed plant which grows here the origins of which I have unfortunately lost. Nevertheless this is a dwarf growing form with the not unexpected red new leaves. Our plant is still only about 60-90cms tall 10 years after planting.

Carpinus nimpoli (?)

Carpinus nimpoli (?)

Carpinus nimpoli (?)

Our plants of Carpinus pubescens, Carpinus shensiensis and Carpinus turczaninowii var. turczaninowii are still too immature to confirm their key features and fruiting bracts. They are therefore represented here by a few pictures for each.

Carpinus pubescens

Carpinus pubescens

Carpinus shensiensis

Carpinus shensiensis

Carpinus turczaninowii var. turczaninowii

Carpinus turczaninowii var. turczaninowii

Carpinus turczaninowii var. turczaninowii

4. Other European species of Hornbeam

Carpinus orientalis – Oriental Hornbeam - This species can be found in the wild from Italy through to Iran and in the Ukraine where the tangled shrubby growth of this species is said to have impeded the advances of English troops in the Crimean War. In hotter climates, and in open conditions, it grows as a low bush but, in sheltered woodland conditions, it will become a sizeable tree.

The small leaves are ovate and regularly double toothed while the fruiting bracts are completely untoothed in a ‘D’ shape.

While this is an unusual tree to find in a Cornish garden with its attractive small leaves it does not have showy flowers or fruit and no appreciable autumn colour. Probably just a collector’s item.

Carpinus orientalis

Carpinus orientalis

Carpinus orientalis at Batsford Arboretum

Carpinus orientalis at Batsford Arboretum

Carpinus x schuschaensis – Shusha hornbeam - This hornbeam is a product of natural cross fertilisation between C. betulus and C. orientalis in the Caucasus Mountains and is named after the city of Scusha. It was first introduced to the West by Roy Lancaster and Ann Ala from Iran in 1972. In theory the cross should produce plants which incorporate the vigour of C. betulus and the heat tolerance of C. orientalis. However some introductions have proved to be shrubby although not the 17 year old plant at Caerhays which is steaming ahead. Leaves oblong with 10-14 pairs of leaf veins and irregularly double serrate leaf edges.

Carpinus x schuschaensis

Carpinus x schuschaensis

Carpinus x schuschaensis

Carpinus x schuschaensis

5. Other American species

Carpinus caroliniana – American hornbeam, Musclewood - This American species occupies the same role in the lowland forests of E. North America as does C. betulus across Europe. It does not, however, grow as big as C. betulus and is more of a shade tolerant understory plant in the wild.

The 3 different Caerhays trees have so far proved as vigorous and quick growing as any of their Chinese compatriots. The C. caroliniana from Mexico has larger leaves than the one of American origin and C. caroliniana 'Red Fall' does not always show us every year why it was given this name. So far not many fruiting bracts but the ovate leaves, with a rounded base, have 14 pairs of lateral veins each of which is tipped by a fine tooth. Between each of these tooths are several much smaller teeth.

Carpinus caroliniana

Carpinus caroliniana with male catkins

Carpinus caroliniana with fruiting bracts

Carpinus caroliniana

Carpinus caroliniana 'Red Fall'

The Caerhays collection is still far from complete as you can see on the attached schedule. Missing are several important species which already grow at Tregrehan including the Chinese C. viminea which has reddish-purple colour right through the season on the undersides of its leaves, the Taiwanese C. hebestroma, and the Vietnamese C. londoniana. The American species are also incomplete without the inclusion of C. tropicalis from Central America.

This article is also unfinished business because, as yet, not all species have actually begun to flower and fruit properly so that you can see what they actually look like in maturity.

Nevertheless it is amusing to think that 100-120 years on from Wilson and Forrests' plant hunting expeditions Caerhays can still have all the excitement and enjoyment of establishing a collection of a whole new genus which did not exist at all in the garden here until just over 20 years ago. Nothing much has really changed in that many of these new species have arrived as a result of overseas plant collections, not by plant explorers, but by botanists and nurserymen who we know well and whose passion for trying out and collecting new species is shared.

Perhaps I may have become a 'carpinophile' or lover of hornbeams? This was a tongue in cheek phrase coined by Michael Dirr in 1983 but it may yet catch on. Identification of some species using the taxonomy and charts

is complex, inconclusive, and often impossible until a plant has achieved flowering age. It is very easy to muddle species and confuse oneself.

Let's not even get started on Acer carpinifolium, the Acer with leaves just like the 'average' hornbeam, or Ostrya carpinifolia, the Hop hornbeam!

My thanks to Tom Hudson for all his knowledge and help with the preparation of this article. All the mistakes which I may have made are entirely my own.

Charles Williams VMH

Carpinus Collection at Caerhays – June 2025

Location	Plant	Date Planted
Tin Garden	Carpinus turczaninowii var. turczaninowii (Farrer)	2022
Area 27	Carpinus tschonoskii - BSWJ 10800	2010
Area 27	Carpinus betulus 'Purpurea'	2010
Area 27	Carpinus polyneura	2019
Area 27	Carpinus orientalis 'Perdika'	2019
Area 27	Carpinus japonica	2012
Area 27	Carpinus henryana var. simplicidentata KR	2013
Area 27	Carpinus omeiensis	2019
Area 27	Carpinus caroliniana 'Red Fall'	2019
Area 27	Carpinus orientalis	2019
Area 26	Carpinus betulus 'Fastigiata'	2009
Area 26	Carpinus japonica BSWJ 10803	2010
Area 25	Carpinus rankanensis RWJ 939	2010
Area 24	Carpinus fargesiana KR8780 Ha Giang Province, North Vietnam	2018
Area 23	Carpinus caroliniana (C. americana)	2014
Area 23	Carpinus pubescens	2022
Area 23	Carpinus shensiensis	2023
Area 20	Carpinus laxiflora (?)	2003
Area 21	Carpinus polyneura	2017
Area 21	Carpinus caroliniana (C. americana) from Mexico	2018
Area 21	Carpinus polyneura	2017
Area 21	Carpinus rankanensis RWJ 9839	2016
Area 21	Carpinus betulus 'Quercifolius' ('Incisa')	2019
Area 15	Carpinus x schuschaensis	2009
Area 15	Carpinus henryana var simplicidentata	2009
Area 15	Carpinus laxiflora	2009
Area 15	Carpinus nimpoli (?)	2016
Area 13	Carpinus fangiana	2015
Area 11	Carpinus henryana (?)	2009
Area 11	Carpinus shensiensis	2017
Area 11	Carpinus omeiensis KR0280	2017
Area 11	Carpinus fargesiana	2017
Area 11	Carpinus betulus 'Rockhampton Red'	2021
Area 06	Carpinus polyneura	2016
Area 06	Carpinus orientalis	2016
Area 04	Carpinus kawakamii - CWJ 12412	2013

To obtain

Carpinus cordata
Carpinus coreana (Chollipo)
Carpinus fangiana
Carpinus hebestroma (Taiwan)
Carpinus londoniana (Vietnam)
Carpinus mollicarpa
Carpinus monbeigiana
Carpinus putoensis
Carpinus tropicalis (Central America)
Carpinus viminea (Chinese form of C. laxiflora)