A superb *Pseudolarix amabilis* at Kalmthout Arboretum

Pseudolarix amabilis: the golden larch

ABRAHAM RAMMELOO, Director, Kalmthout Arboretum, Belgium

I did not have to think long about choosing a Tree of the Year for this yearbook. The golden larch is one of my favourite conifers, which I can recommend to anyone with a garden or a balcony. In Belgium at the Arboretum in Kalmthout, where I have had the privilege of curating the collection for the past 25 years, it is one of our showstoppers. We have several beautiful specimens, which prevented me from realising that these trees are not as widely known as I always thought. Even in collections, they don't seem to be very common. This is almost unbelievable for a tree that was promoted by the Arnold Arboretum in 1923 as 'one of the handsomest of all the conifers with deciduous leaves and one of the most beautiful trees which can be grown in eastern North America'. In the British Isles W J Bean advertised it as 'one of the most beautiful as well as one of the most interesting trees' and it received an Award of Garden Merit in 1976 from the Royal Horticultural Society.

Pseudolarix amabilis is a fascinating tree. Taxonomically it has quite a track record of name changes and synonyms. In gardens and parks, it is extremely decorative, especially in autumn with golden yellow and later cognac-coloured foliage. In early spring the budding of the long, soft leaves is very attractive too. Probably surprising to many, the spring leaves of this tree are edible and delicious on toast with cream cheese and pepper. *Pseudolarix* is also a very interesting conifer for many other reasons. It belongs to a monotypic genus, which is a genus with only a single species. In the Northern Hemisphere there are eight of these, all restricted to the eastern part of Asia: *Cryptomeria, Fokienia, Glyptostrobus, Metasequoia, Pseudolarix, Sciadopitys, Taiwania* and *Thujopsis*. Three of them, including *Pseudolarix*, are deciduous, and there are only five deciduous conifers on the planet!

The tree looks like a larch but is more related to *Abies*, *Cedrus* and *Tsuga*. Funnily enough *Pseudolarix* is genetically closely related to *Tsuga*, while *Larix* is genetically closer to *Pseudotsuga*. *Pseudolarix* is part of the pine family, Pinaceae, and the subfamily Abietoideae. Even though it is monotypic, there were once more species of *Pseudolarix*. Fossils show that it was once widely distributed in the Northern Hemisphere.

While researching for this article, I discovered unknown facts about the trees growing in the arboretum in Kalmthout, even some early 20th century American articles write about the specimens in our collection. I was able to acquire some beautiful colour lithographs from the 19th century and a fine copy of *Pines and Firs from Japan*, with a full chapter on *Pseudolarix* ... which is not from Japan at all!

Only a few Westerners have ever seen *Pseudolarix* in its natural habitat. This was the case in the 19th century, and is still true today. The number of IDS members who have seen one in nature can be counted on the fingers of a single hand. It was the famous plant hunter Robert Fortune who introduced the tree to Europe. This happened after his 1843 trip to China for the Royal Horticultural Society; he mainly saw young plants, grown in pots or in temple gardens. It was only a decade later, in 1854, that he saw larger specimens on a subsequent trip to China, growing near the monastery of Tsan-tsin:

> They were growing in the vicinity of a Buddhist monastery in the western part of the province of Chekiang at an elevation of 300 to 450 metres above sea level. Their stems which measured 152 centimetres in circumference 60 centimetres from the ground, carried this size, with a slight diminution, to a height of 15 metres, this being the height of the lower branches. The total height I estimated about 35 to 40 metres. The stems were perfectly straight throughout, the branches symmetrical, slightly inclined to a horizontal form, and having the appearance of something between the cedar and the larch. (Fortune 1854)

Most likely, these trees were also planted and not part of the natural vegetation. They bore plenty of cones full of seeds, which he sent back to Europe. Only a small proportion of the seeds germinated.

In the autumn of 1855, Fortune travelled to China to collect more seeds of the *Pseudolarix*. He went back to Chekiang, but now sought out trees at higher elevations, around 1,200 m. He found many mature specimens, but also several young ones. Alas, none had cones and local monks told him correctly that this species has masting years for fruiting – the cycle is 3 to 5 years. Having no other choice, Fortune dug out some young plants for transport to the West. These are now presumably the oldest plants in cultivation.

It was not until 23 years later that another Westerner was able to admire *Pseudolarix* in its natural habitat. It was Charles Maries, sent to China to collect plants for the British Veitch nursery. He saw a few *Pseudolarix* in the temple complex of Teen Cha on the Lushan Range in Kiangsi. He collected seeds and sent them to his client in Britain. To complete the list of renowned plant hunters, Ernest Wilson also saw them. This was in 1907, not far from the place where Maries had been.

Despite several introductions of this beautiful tree, the species was never widely planted in Europe or North America. The largest trees can be found in continental Europe, where warm summers are exactly what *Pseudolarix* needs. The same thing applies to North America, where they grow better in states with warmer summers. Notwithstanding the need for summer heat, it is a species that is very cold-resistant. Tests in a controlled environment have shown that *Pseudolarix* can survive winter temperatures down to -45°C.

Natural location

It is very difficult even today to actually pinpoint the natural distribution of *Pseudolarix*. Many trees have been planted and not many sources write about spontaneous populations. Most of the herbarium specimens of *Pseudolarix*, both in China and abroad, are produced from planted trees or specimens growing in parks and gardens, so this source is not reliable. Woon Young already stated in 1921 that:

> there are good reasons to believe that Pseudolarix was once very common within its range, but has been gradually cut off until very few of the trees are seen in a wild state today. The government Forest Service is planting a large area in an effort to save it from extinction.

Pei Jian Zhou (1958) gives a few provinces where the species grows: Anhui, Guangdon, Hunan, Jiangsu, Jiangxi and Zhejiang. He claims it is most common in central Zhejiang and southern Anhui, 'however there are very few wild ones and artificial protection and cultivation is urgent'. In one very recent publication Jin Cheng (2023) states that 'there are only five locations with natural populations of *Pseudolarix*, all located in the Yangtze river basin': Tianmu Mountain National Nature Reserve, Linjiatang village, Mangyu ancient village, Shuanglian village and Qingtangpu town.

PHOTO COURTESY OF ABRAHAM RAMMELOO

Pseudolarix amabilis pictured in Van Houtte's *Flore des Serres et des Jardins de l'Europe* (1852).

Pseudolarix grows in lowland mixed forest, rich in tree species. It occurs at altitudes of between 180 and 1,000 metres where there is a humid climate with warm temperatures. As *Pseudolarix* prefers a bright and sunny position, it is likely to disappear when the forest comes to a climax and broadleaved trees dominate. For natural regeneration, moderate forest disturbance, creating heterogenous habitats with edges and small gaps, is very helpful.

According to Aljos Farjon, 'primary forest with *Pseudolarix* is now extremely rare, if it still exists. The only remnants will be on isolated mountains.' The IUCN (International Union for Conservation of Nature) rates *Pseudolarix* on its Red List as *Vulnerable*, with a decreasing tendance. The status was last updated in 2010, so this definitely needs revision.

Description

Pseudolarix amabilis reaches up to 40 m with a scaly rust-brown bark that is thick and divided into broad rounded ridges. With age, the bark becomes greyish-black and fissured. The crown is irregular to broadly conical with an open structure. Normally the tree has a tall straight trunk, but in cultivation specimens can form one which is broad at the base and soon becomes narrower higher up the tree, as is often the case with early introductions of *Metasequoia*. The branches reach out horizontally and are slightly drooping

Above: leaves colour from the outside in, leaving a green eye.

Left: unfolding pseudowhorls of leaves on short shoots.

Opposite: typical tessellated bark on a tree in Tianmushan, Zhejiang Province, China, the natural habitat of *Pseudolarix amabilis*.

towards the tips. The leaves are silver/bluish-green during the year but turn a golden and brilliant cognac-amber colour before falling in autumn. The colour change begins at the outer tips of the leaves and progresses inwards, briefly giving the effect of a green eye surrounded by gold. There are two arrangements of leaves according to their position on the tree. Along the thin branchlets (the new growth of the year, long shoots), leaves are arranged in a stretched, open spiral. On the tip of the spurs (short shoots of 3 to 5 cm) up to 30 leaves are arranged in pseudowhorls, which makes each spur look

like a sea anemone rosette. The spurs are marked with annual rings, so one can easily count the age of each one. Leaves are 3 to 6 cm long and 2 to 4 mm wide, narrowly acuminate with 2 silver-green stomatal bands on the lower side. They have a sharp point but are very soft and slightly curved, especially along the branchlets.

Pseudolarix is monoecious, having separate male and female flowers on the same tree. The male flowers are arranged at the end of a leafless spur in umbellate tufts of 10 to 20. They look like little catkins on a short petiole. The female flowers are also located at the end of a spur, but usually on spurs of different branches. They are solitary and are typically globose. After pollination they will grow into cones that look like small origami artichokes. The cones have an open structure and stand upright above the foliage. They ripen within one season and have divergent scales that fall off from the central

Left: immature male flowers of *Pseudolarix*

Below: nearly ripe female cones, not too long before they disintegrate and fall off.

axis. You will never find an entire fallen cone under a tree. The oil-rich seeds are more or less enclosed by a wing.

Nomenclature

The correct scientific name of this plant has been subject to change since it was first described. Getting out of a labyrinth would be easier than reassembling the name-change path of *Pseudolarix*. Many authors have felt the need to come up with a new name when untangling the nomenclatural confusion. Even Robert Fortune published his opinion in the 1855 *Gardeners' Chronicle*:

> I cannot agree with Dr. Lindley in calling this an Abies, unless cedars and larches are also referred to the same genus. It is apparently a plant exactly intermediate between the cedar and the larch. It has deciduous scales like the cedar and deciduous leaves like the larch, and a habit somewhat of the one and somewhat of the other. (Fortune 1855)

Relatively soon it was thought the species needed a separate genus, and George Grodon published the name *Pseudolarix*. Funnily enough combining the Greek *pseudes* meaning false and the Latin *larix* for larch. Such a pseudo-name only clarifies what it is not, and not what it actually is. Exactly how Andrew Murray felt when he pleaded for a change in 1863:

> the name meaning false larch, is untrue, nature produces nothing false, and if she did this is not a false larch. It would be as reasonable to say that the larch is a false pseudo-larix … If the species is to have a sub-generic name at all, it should, and no doubt it will, be changed. But we have so great a dislike to changing names, even where they are bad, that we leave this to some other hand to do. (Murray 1863)

A suggestion John Nelson took to heart a couple of years later. He changed it back to *Larix* but came up with a new specific epithet, *amabilis*, from the Latin meaning lovable.

CHRONOLOGY

1833	*Abies kaempferi*	Lindley, the *Penny Cyclopaedia*
1856	*Larix kaempferi*	Carrière, *Flore des Serres* XI
1855	***Pseudolarix*** *kaempferi*	Gordon, *Pinetum*
1866	*Larix* ***amabilis***	Nelson, *Pinaceae*
1868	*Pinus kaempferi*	Parl. (non-Lambert), *DC Prodr.*
1890	*Pseudolarix fortunei*	Mayr, *Monogr. Abietin. Japan. Reich.*
1900	*Laricopsis kaempferi*	Kent, *Veitch Manual of Conifers*
1906	*Laricopsis fortunei*	Mayr, *Fremdländische Wald- und Parkbäume*
1919	***Pseudolarix amabilis***	Rehder, *Journal of the Arnold Arboretum*
1944	*Pseudolarix pourtetii*	Ferré, *Trav. Lab. Forest*
1965	*Chrysolarix amabilis*	More, *Baileya*

Nowadays there is no more discussion and Rehder's ***Pseudolarix amabilis*** is generally accepted and used.

The common names are false larch, Chinese larch and, referring to its superb autumn colour, golden larch – but remember it is botanically not a larch. The Chinese call it Kin-ye-sung (golden-leaved pine) and Chin-lo-sung (golden deciduous pine) for the same reason, but botanically it is not a pine either! Very often in the plant world vernacular names cause much botanical confusion. Many conifers are called *pines*, whilst having nothing to do with the genus *Pinus*.

Those who have seen both genera many times can easily distinguish one from the other. For others there are a few characteristics which distinguish a *Pseudolarix* from a *Larix*.

Pseudolarix	***Larix***
Leaves large(r) and broad(er)	Leaves short(er) and small(er)
Male flowers in umbellate tufts	Male flowers solitary
Cones with deciduous scales, breaking up when ripe	Cones with persistent scales, remaining intact
Pollen winged	Simple grains of pollen

Cultivation

Pseudolarix is a tree which prefers a typical continental climate with warm summers and cool winters. Very cold winters are no problem, where summers are hot. It is a light-loving species and grows best when exposed to full sun, but is tolerant of light shade. A location which is slightly sheltered from dry and strong winds is best. Young seedlings will develop in the shade, as in nature where neighbouring trees and plants cast a shadow. Seedlings normally do not develop well when exposed to full sun.

Pseudolarix needs plenty of water, and will do well with an annual rainfall of 800 to 1,200 mm. The tree prefers a fertile and well drained soil, but dampish situations will suit it too. Try to avoid soils that dry out readily. Though it is a water-demanding species, it is more sensitive to water than many broadleaved trees. From my own experience a neutral to light acidic soil is preferred. Hillier, Bean and other authors claim that it will not tolerate alkaline or chalky conditions. Webster is the only one who advises it for both calcareous and acidic soils. A sandy, peaty or a loose loamy soil composition is ideal.

With its relatively open crown and leaves providing dappled shade, it is an ideal conifer for those who want to garden underneath it. It provides

Immature male flowers on leafless short shoots

opportunities for perennial planting and ground cover. As is the case with many trees, a single specimen is superb, but planted as a group *Pseudolarix* will be spectacular. There is no need for pruning, but if you can't hold back your secateurs it is not a problem. *Pseudolarix* is very often trained as a bonsai, therefore this species performs well in containers on a terrace or a balcony.

When planting out small trees you may want to protect them for the first winters. Even a light frost can easily scorch the top shoots, but in spring they will recover. When temperatures drop seriously, frost may kill young, unprotected specimens. *Pseudolarix* is not prone to insect attack or diseases, it is usually a very healthy tree. Only fungi are known to damage it.

Cultivars and selections

It is remarkable that there are hardly any selections of this tree, which has been in cultivation for such a long time and is praised for its ornamental value. The wild form probably can't be improved! There are just a few descriptions of named cultivars, with very limited trace of them in nursery catalogues or collections. I doubt some of them have ever been propagated more than a single time. All cultivars are dwarf forms and probably none is really cultivar-worthy.

'Annseleyana' is a dwarf and bushy plant with spreading branches. The type plant dates back to 1860 and grows at Castlewellan in Ireland. In 1964 it was over a century old and 30 m tall! So climatic conditions are probably causing the very slow growth.

'Dawsonii' is a dwarf, conical and compact shrub. It was raised from seed by J Dawson of the Arnold Arboretum in 1895. The original plant no longer survives and there are no propagules known.

'**Nana'** is something special, a so-called cultigen. It is an artificial dwarf, where the dwarfness can only be maintained by pruning. This does not fit the definition of a cultivar. There should be plenty of plants with this name in China and possibly one with this name on the label in the New York Botanical Garden.

I have contacted growers who produce *Pseudolarix* to ask how often they have found an atypical seedling among their production. Only two could provide an example – no wonder there are so few selections. In The Netherlands, Henny Kolster noticed a seedling which was a little different twice. One had golden spring foliage, which turned green later in the season. This characteristic was very distinct when it was young, but a decade later there was not much difference with his other trees. The second one was a dwarf, with a compact and dense habit. It is now 30 years old and only 2.5 m high. Though the older the plant gets, the larger the annual growth. He has never named or propagated the plants. In Belgium, Raf Lenaerts from the Botanic Treasures nursery found the first variegated *Pseudolarix*. Each leaf has two pure white stripes all along its length, with green in the middle. This form truly deserves a name as its character is very distinct. It came up as a surprise a few years ago. He has made some grafts (with *Pseudolarix* as rootstock) and the variegation is stable. It is likely something of interest for keen conifer lovers.

Propagation

The best way to grow *Pseudolarix* is by seed, which is very easy. Vegetative propagation by softwood cuttings is possible, but difficult.

In cultivation it is rare to have spontaneous seedlings under or around mature seed-bearing trees. Though there are exceptions and in such a case, one can find hundreds of seedlings. Don Teese finds them every year growing abundantly under a tree in his garden near Melbourne, but says that 'all seedlings die due to a lack of water in the Australian summer'. Probably many specimens are individuals in parks or gardens and thus lack cross-pollination which may result in better fertility of the seeds.

Kalmthout Arboretum

It is not known exactly when the first *Pseudolarix* was planted in the Arboretum in Kalmthout. There is a handwritten introduction book from 1890 where there are two mentions of the species, but without details on the origin or year. Those details are known for all deciduous trees, even the price paid for them. Unfortunately they are missing for all conifers.

The arboretum has been located at its present site since 1856. Previously it was a tree nursery in the centre of Antwerp. The owner, Charles Van Geert was the third generation of nurserymen from a Ghent horticultural family. In the 1896 *Catalogue général & prix-courant*, Charles Van Geert offers three sizes of *Pseudolarix* (under the name *Larix kaempferi*). The smallest are 20 to 30 cm

Top: young *Pseudolarix amabilis* for sale at Journées des Plantes, Chantilly, France.
Above left: variegated form in the Botanic Treasures nursery, Belgium.
Above right: spontaneous young seedlings in a well-watered spot in Victoria, Australia.

Pseudolarix amabilis, Arnold Arboretum, Boston

tall and priced at 1 franc, plants of 40 to 50 cm are on offer for 2 francs and for small trees of 75 to 90 cm he charged 3 francs (as a reference, the average daily wage at the time was 4.5 francs). His ultimate selling point is *'les sujets que nous offrons proviennent de graines saines, récoltées en Europe, ils sont beaux et vigoureux'* ('the plants we offer are grown from healthy seed harvested in Europe, they are vigorous and beautiful'). In 1903 a special booklet on the conifer collection of the arboretum was published. The then curator Antoine Kort wrote about the *Pseudolarix*:

> *ses feuilles ... sont d'un vert tendre très gai et passent en automne au jaune brillant. Il est parfaitement rustique cependant, comme il végète très tard en automne, les gelées tardives détruisent souvent en partie les pousses de tête, mais celles-ci se reforment très aisément. Notre sujet de collection a 10 mètres de hauteur et un tronc d'une circonférence de 80 cm, il fructifie pour la première fois cette année, la plupart des grains était stériles.*
>
> Its leaves ... are a soft green and very cheerful, they turn bright yellow in autumn. The tree is perfectly hardy, however, as it keeps growing until late into autumn, late spring frosts often destroy the top shoots, but the plant makes new ones very easily. Our specimen is 10 m high and has a circumference of 80 cm, it is bearing fruit for the first time this year, but most of the seeds were sterile.

We have lost two important trees to storms, one in 1990 (last girth measurement 1983: 215 cm at 150 cm height) and one in 2004 (last girth measurement 2002: 134 cm at 150 cm height). Today we still have several specimens, including the old and spectacular one in the Blue Garden. A fungus has been growing on the base of the trunk (*Pholiota* sp.) for a few years, but the tree is still vigorous and growing well. To get an idea of possible damage, testing with a resistograph has been executed. Besides a cavity in the middle of the stem, more than 140 annual rings were counted. Without a doubt, this makes it one of the early introductions of the species in Belgium. In 2024, the tree had a circumference of 291 cm! For future insurance, some young, vigorously growing *Pseudolarix* have been added to the collection. In 2023, we found our first spontaneous seedling. Fortunately it installed itself in a suitable location, so we have assigned it a collection number and label.

Acknowledgements
Many thanks to the following IDS members for their input: Zdenek Blahnik, Koen Camelbeke, Martin Carree, Tom Christian, Philippe de Spoelberch, Aljos Farjon, Gert Fortgens, Mariese Hely, Don Teese, Peter Vanlaerhoven and Alistair Watt.

References

Bean, W.J. (1976) *Trees and Shrubs Hardy in the British Isles*. John Murray, London.
Carrière, É.-A. (1867) *Traité général des conifères*. Chez l'Auteur, Paris.
Chen, H. (1921) *Chinese Economic Trees*. Commercial Press Ltd, Shanghai.

Even in a snowy landscape the silhouette of *Pseudolarix* is recognisable and pleasing to the eye.

Webster, A.D. (1918) Best Methods of Cultivation. *Coniferous Trees for Profit & Ornament*. Constable and Co., London.
Farjon, A. (2010) *A Handbook of the World's Conifers*. Brill, Leiden, Boston.
Farjon, A., Filer, D. (2013) *An Atlas of the World's Conifers*. Brill, Leiden, Boston.
Gordon, G. (1858) *The Pinetum*. H G Bohn, London.
Murray, A. (1863) *The pines and firs of Japan.* Bradbury & Evans, London.
Van Tieghem, P.E.L. (1891) Structure et affinités des abies et des genres les plus voisins. *Le Monde des Plantes.*
Kort, A. (1903) Article title? *Notices sur les Conifères de l'Arboretum de Calmpthout*.
Author (1918) Native and Foreign Trees. *Bulletin of Popular Information*. [Arnold Arboretum of Harvard University.]
Author (1919) *Pseudolarix Amabilis*. *Bulletin of Popular Information*. [Arnold Arboretum of Harvard University.]
Koller, G.L. (1980) Outstanding Plants of the Arnold Arboretum: *Pseudolarix amabilis*. *Arnoldia* 40(5).
Huxley, A.J., Griffiths, M. (1992) *The New Royal Horticultural Society Dictionary of Gardening*. Macmillan, London.
Wilson, E.H. (1916) *The Conifers and Taxads of Japan*. Cambridge University Press.
Cheng, J., Yongchuan, Y., Zhou, L., and Chen, Y. (2023) Village Fengshui forests contribute to the biodiversity conservation in mountainous villages. *Guihaia* 43(8): 1437-1445.

Tree of the Year 2025

The chosen taxon for 2025 is *Erythrina crista-galli*, Fabaceae. Please send any information, comments and photographs to Roderick Cameron at: roderick.cameron@treesandshrubsonline.org