

Monkey Puzzle, Pehuén

Araucaria araucana

The Monkey Puzzle Tree, *Araucaria araucana*, is the National Tree of Chile where it is known as Pehuén. These striking, architectural giants are found at altitudes above 1000 metres in the south-central Andes of both Chile and Argentina. Because of their striking habit – horizontal branches arranged in whorls of five and long-lived, scale-like, almost reptilian leaves – it has been planted extensively in parks and gardens throughout cooler temperate regions of the world. A small forest of *Araucaria araucana* has been planted in the National Arboretum in Canberra and you might see these iconic trees in cooler regions of Victoria and Tasmania.



Araucaria araucana with yellow-flowered
Peruvian lilies, *Alstroemeria aurea*

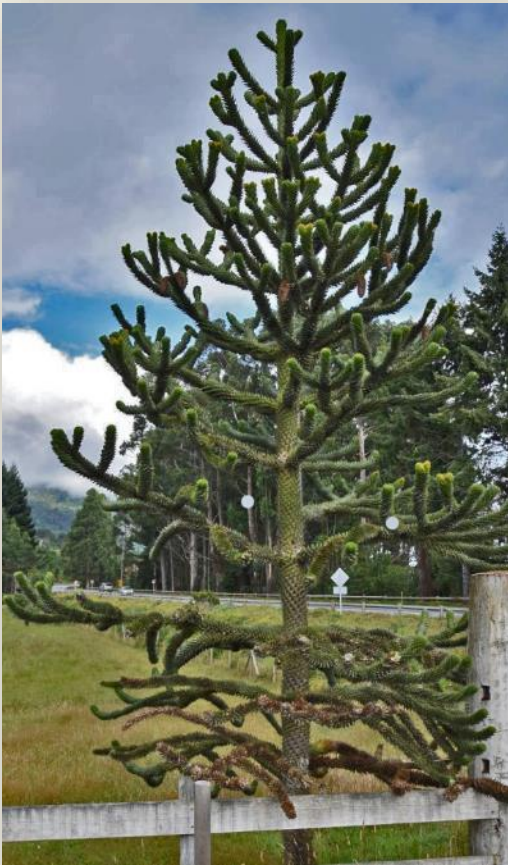
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How did *Araucaria araucana* get its common name? About 1850, British politician Sir William Molesworth was showing guests through the gardens of his family estate, Pencarrow, in Cornwall. A specimen of *Araucaria araucana* for which Molesworth had paid 20 guineas, intrigued a particular guest, barrister Charles Austin. He touched its prickly leaves and commented *It would be a puzzle for a monkey*, and the name stuck. The specific name, *araucana*, is derived from the name of the indigenous people, the Araucanians, which included Pehuénche and Mapuche.



Young *Araucaria araucana* planted in a park, Punta Arenas, southern Chile.



Young *Araucaria araucana*, Puerto Varas, Chile Photo: David Edgecombe

Monkey Puzzles are of considerable religious and economic importance for the indigenous people of the Southern Andes. The seed is important not just for food for people, but also for feed for livestock. Timber is used for houses and livestock shelters and resin for traditional medicines. References describe the cooked nuts as *rich and delicious, a trait they share with seeds of the* (Australian) *bunya pine, A. bidwillii*. The trees are also of religious significance for the Pehuénche and Mapuche. Since colonisation, the tall, straight trunks were sought after by Europeans for sailing ships masts. Monkey Puzzles are now listed as *Endangered* in Appendix 1 of CITES, so there are now strict limits for harvesting seed and timber in both Argentina and in Chile.

The family, Araucariaceae, to which *Araucaria* belongs, is considered to be the most ‘basal’ among present day living conifer families. The Araucariaceae is traditionally considered to be an iconic

Gondwanan family because of the present-day distribution of species, however there are fossil records of Araucariaceae in both Gondwana and Laurasia, but disappearing from the northern hemisphere in the late Cretaceous (> 60 mya). The genus *Araucaria* has a disjunct distribution (related species separated geographically), most species occurring in the western Pacific, (Australia, New Caledonia, Norfolk Island and New Guinea), but two species, *A. araucana* and *A. angustifolia* are native to South America.



Distribution of *Araucaria* worldwide. Red circle – *A. araucana*, Monkey Puzzle, Pehuén (Figure modified from Kunzmann 2007)



Araucaria araucana, Ascent to Sierra Nevada, Conguillio National Park, Chile. Photo: lautaroj, CC BY 2.0
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times (early Holocene), humans have contributed to the frequency of forest fires.

The rigid, spiny leaves of *Araucaria araucana* are remarkably long-lived, 24 years, amongst the longest of any plant species in the world. Botanist Chris Lusk believes leaf longevity combined with sturdy structure and very low nitrogen content are critical for survival: firstly, slow foliage turnover reduces nutrient requirements, essential for survival on low nutrient sites; secondly, slow decomposition of leaves on the forest floor probably leads to immobilisation of nutrients, favouring site retention by *A. araucana* over faster-growing, species with greater nutrient demands.

Gymnosperm Database: https://www.conifers.org/ar/Araucaria_araucana.php

Kunzmann, L. 2007. Araucariaceae (Pinopsida): Aspects in palaeobiogeography and paleobiodiversity in the Mesozoic. *Zoologischer Anzeiger* 246: 257-277.

Lusk, C H. 2001. Leaf life spans of some conifers of the temperate forests of South America. Longevidad foliar de algunas coníferas de los bosques templados de Sudamérica. *Revista Chilena de Historia Natural* 74: 711-718.

Pencarrow, *House and Gardens*: <https://www.pencarrow.co.uk/gardens/>

Wikipedia: https://en.wikipedia.org/wiki/Araucaria_araucana

Wikipedia: https://en.wikipedia.org/wiki/Andean_Volcanic_Belt

It may come as a surprise, but Monkey Puzzles are highly fire-adapted, and able to exploit and colonise regions devastated by volcanic eruptions by outcompeting other tree species. This is logical when you remember that the Andes comprises a long line of active volcanoes, the *Andean Volcanic Belt*, where forest fires caused by volcanic activity are par for the course. In more recent



Leaves of young *Araucaria araucana*, Puerto Varas, Chile
 Photo: David Edgecombe

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