

# Agathis australis

## COMMON NAME

kauri

## SYNONYMS

Dammara australis D.Don in Lamb., Podocarpus zamiaefolius Richard

## FAMILY

Araucariaceae

## AUTHORITY

Agathis australis (D.Don) Lindl.

## FLORA CATEGORY

Vascular – Native

## ENDEMIC TAXON

Yes

## ENDEMIC GENUS

No

## ENDEMIC FAMILY

No

## STRUCTURAL CLASS

Trees & Shrubs - Gymnosperms

## NVS CODE

AGAAUS

## CHROMOSOME NUMBER

2n = 26

## CURRENT CONSERVATION STATUS

2017 | Threatened – Nationally Vulnerable | Qualifiers: DP

## PREVIOUS CONSERVATION STATUSES

2012 | Not Threatened | Qualifiers: DP

2009 | Not Threatened

2004 | Not Threatened

## DISTRIBUTION

Endemic. New Zealand: North Island from Te Paki south to Pukenui (near Kawhia) in the west and near Te Puke in the east. Over much of its former range it has been heavily logged, such that the best stands now only occur in the Coromandel and Waitakere Ranges, on Great Barrier Island (Aotea Island) and Te Hauturu-o-Toi / Little Barrier Island, and in Northland at Waipoua, Tounson, Omahuta, Puketi, Herekino, Warawara and Radar Bush forests. Despite its northerly limit this species has been successfully grown as far south as Oban, Stewart Island, and seedlings have been observed near planted adults in Wellington, Nelson and Christchurch.

## HABITAT

The species forms its own forest type—kauri forest—which is typified by dense canopies of kauri. Common associates in the northern half of its range may include taraire (*Beilschmiedia tarairi*), northern rata (*Metrosideros robusta*), rimu (*Dacrydium cupressinum*), towai (*Pterophylla silvicola*), and makamaka (*Ackama rosifolia*). Historically kauri forest seems to have been best developed on river terraces, coastal plains and the generally flat flood basalts of the Tangihua complex, which make the dominant geology of Waipoua, Omahuta, Puketi, Tounson. Some people believe that the hill and range occurrences, which is where most stands can now be seen, are relictual stands not truly favoured by the species, but merely examples of where it can grow, and of course locations where it was usually left because log extraction was less feasible.



Coromandel, October. Photographer: John Smith-Dodsworth, Licence: CC BY-NC.



Female cones, at Coromandel, October. Photographer: John Smith-Dodsworth, Licence: CC BY-NC.

## DETAILED DESCRIPTION

Stout, monoecious forest tree 30–60 m tall, with trunk 3–4–(7) m diameter typically devoid of branches for majority of its height. Trees at ricker development stage have a columnar growth form with trunk scarcely free of branches. As tree matures the basal branches are progressively abscised, eventually leaving bare trunk typical of mature specimens. **Bark** blue-grey, falling in large thick flakes with scalloped margins, undersides of discarded bark and freshly exposed underbark rust brown. **Leaves** (needles) alternate to subopposite, sessile, thick and leathery; juvenile leaves 50–100 mm × 5–12 mm, lanceolate, pinkish green, often black-spotted (a fungus specific to kauri causes this); adult leaves 20–35 mm, oblong, apex obtuse. **Male cones** 20–50 mm long, stout, cylindrical. **Female cones** globose 50–75 mm diam., cone-scales (carpidia) deciduous, at first broad but then gradually narrowing toward base, bearing one ovule per scale. **Seeds** ovoid, compressed, margins winged.

## SIMILAR TAXA

None—though could be confused with the distantly allied Queensland kauri (*Agathis robusta*) which is commonly cultivated in warmer parts of New Zealand. Kauri can be distinguished from that species by its smaller, narrower needles, and by the needles often spotted with black. Queensland Kauri is much faster growing but adult trees are not nearly as massive as kauri.

## FLOWERING

Female cones produced from September–December. Male cones throughout the year but most common September–January.

## FRUITING

Mature cones occur anytime from December through to May, with rare persistent examples found on trees right up to about August

## LIFE CYCLE

Winged seeds are dispersed by wind (Thorsen et al., 2009).

## PROPAGATION TECHNIQUE

Easy from fresh seed. Very difficult from cuttings. Can be grafted onto seedling kauri.

## THREATS

Now listed as threatened because of the ongoing decline caused by *Phytophthora agathidicida* for which as yet there is no known effective preventive or treatment. Aside from ongoing losses caused by this disease, kauri on private land remain vulnerable to illegal logging, while trees are still periodically removed (although only by permit or with approval) for cultural purposes, such as for making waka (canoes) or other Maori buildings and structures. Some small southerly populations are rather vulnerable to goat browse destroying regenerating seedlings and saplings.

*Phytophthora agathidicida* remains the main threat to kauri. This fungus-like organism has caused the death of kauri trees throughout large parts of that species range and it is now a serious threat to the species (see the information and links provided below and see images above of lesions and thinning caused by the disease).

## ETYMOLOGY

**agathis:** From the Greek agathis 'ball of thread'

**australis:** Southern

## KAURI DIEBACK

Kauri dieback is a microscopic fungus-like plant pathogen (a disease causing agent) that only affects kauri. Research has identified PTA as a distinct and previously undescribed species of *Phytophthora*. Kauri dieback is believed to be a soil-borne species spread by soil and soil water movement, plant to plant transmission through underground root-to-root contact, and human and animal vectors. Symptoms include yellowing of foliage, loss of leaves, canopy thinning (see image above) and dead branches. Affected trees can also develop lesions that bleed resin (see image to the right), extending to the major roots and sometimes girdling the trunk as a 'collar rot'. Kauri dieback can kill trees and seedlings of all ages. A new website has been established that focuses on Kauri dieback entitled [Keep Kauri Standing](#).

Follow this link for an [up-to-date FAQ](#) (December 2017).

## EXTERNAL LINKS

- [Kauri dieback \(Auckland Council biosecurity information\)](#)
- [Keep Kauri Standing](#) (website)
- [Kauri \(Wikipedia\)](#)
- [Kauri forest \(Te Ara Encyclopedia of NZ\)](#)

## ATTRIBUTION

Fact Sheet Prepared for NZPCN by P.J. de Lange May 2004. Description adapted from Allan (1961).

## REFERENCES AND FURTHER READING

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## NZPCN FACT SHEET CITATION

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## MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/agathis-australis/>