

Hall's totara revisited

Mike Wilcox

The name Hall's totara (*Podocarpus hallii* Kirk) derives from its publication in Kirk (1889). Mr John William Hall was a resident of Shortland (Thames), and a local chemist and botanist (Godley 1991). He thought that totara in the Coromandel Range with thin, papery bark was probably a new species and brought it to the attention of Thomas Kirk, who described it and named it after Hall. This followed careful observations by Hall on cultivated plants of true totara (*Podocarpus totara*) and his Hall's totara side-by-side, where the larger leaves of Hall's totara were readily apparent.

Hall had a property at Parawai on the hills above the road from Thames leading up the Kauaeranga Valley. Here in 1873 he started planting native timber trees to demonstrate that, though admittedly slow growing, they could be successfully cultivated, and that the plantations would induce visits from native birds (Hall

1902). The species he planted were pohutukawa (*Metrosideros excelsa*), puriri (*Vitex lucens*), karaka (*Corynocarpus laevigata*), kauri (*Agathis australis*), rimu (*Dacrydium cupressinum*), totara (*Podocarpus totara*), tanekaha (*Phyllocladus trichomanoides*), kawaka (*Libocedrus plumosa*), kahikatea (*Dacrycarpus dacrydioides*), miro (*Prumnopitys ferruginea*), and matai (*Prumnopitys taxifolia*). Haszard (1902) recorded growth after 30 years. Today, the Hall property is a public reserve known as the William Hall Reserve off Mount Sea Rd, Thames.

There is generally no dispute that *P. hallii* is a distinct species from *P. totara*, and Rhys Gardner has presented a careful, thoughtful account of some distinguishing features (Gardner 1990), highlighting three characteristics of the adult leaves that are usefully diagnostic (Table 1).

Table 1 Foliage features distinguishing *Podocarpus hallii* from *Podocarpus totara* (from Gardner 1990)

	<i>P. hallii</i>	<i>P. totara</i>
leaf width	> 3.5 mm	< 3.5 mm
groove on upper side	deep and wide	shallow and narrow
colour	green, hardening stem becoming purple	yellow tinge on leaf margins, midrib below, and hardening stems

Bergin (2003) emphasised the greater seedling shade tolerance of Hall's totara and the difference in seed shape — long and narrow and often pointed in Hall's totara, and ovoid in true totara. Bergin & Kimberley (2002) found that the average seed length of *P. hallii* was 8 mm and that of *P. totara* 5 mm, with no overlap between them. Kirk himself emphasised its distinguishing features as being the thin papery bark, larger leaves, and pointed fruits.

In his revision of *Podocarpus*, de Laubenfels (1985) keys them out thus:

Adult leaves mostly less than 25 × 3.5 mm; pollen cones mostly clustered; bark thick — totara
 Adult leaves mostly more than 25 × 3.5 mm; pollen cones solitary; bark papery — Hall's totara

Webb and Simpson (2001) described and illustrated the seed differences:

Podocarpus hallii: seed (5.5-)6.5-8.5 mm long, oblong to elliptic, with a distinct marginal ridge from apex to base on one surface, the ridge wider at the base; apex usually with a distinct beak.

Podocarpus totara: seed 3.5-5.0 (-6.0) mm long, broadly elliptic to almost circular, with a distinct or indistinct marginal ridge from apex to base on one surface, the ridge even ; apex lacking a beak.

Molloy (2001) mentions the presence of both *Podocarpus totara* and *P. hallii* on Mt Moehau and also of *P. hallii* × *P. totara* and *P. hallii* × *P. nivalis* hybrids. In his article Molloy describes and illustrates the terminal resting bud of *P. hallii* and *P. totara*, stating that he has found this to be a reliable distinguishing feature. The New Zealand Plant Conservation Network (NZPCN) website also emphasises the size and shape of the leaf bud as being a means of distinguishing the two species. Hall's totara has a resting bud significantly broader than the diameter of the branchlet, surrounded by caducous

(falling of at an early stage), papery, broadly ovate bracts, and which resembles "a meat ball on a stick" (Fig. 1). In totara the leaf bud is narrower than or the same diameter as the branchlet, surrounded by caducous, papery, narrowly lanceolate bracts.

Patel (1967) was able to distinguish between the wood of totara and Hall's totara. Both have abundant tangential pits in the latewood tracheids, both have tracheid lengths in the range 2.32-3.09 mm, but in *P. totara* the horizontal walls of the ray parenchyma are

weakly pitted, whereas in *P. hallii* they are strongly pitted.



Fig. 1. Terminal resting bud of *Podocarpus hallii*, Huia, 20 June 2009. Mike Wilcox

Despite all these differences the distinction between the two species in the field is not always clear-cut – more so in cultivated specimens – which, according to Gardner (1990) and Molloy (2001) is probably attributable to hybridization.

As to tree dimensions, both species can grow to a huge size. Burstall & Sale (1984) list as the biggest of their kind the “Pouakani totara”, a gigantic *P. totara* measuring 3.63 m in diameter and 39 m tall, west of Mangakino, and the “Motu totara”, a *P. hallii* in Southland measuring 2.65 m in diameter and 20 m in height.

My own introduction to Hall’s totara was in 1959-60 when I was based in the King Country at Pureora and Te Kuiti, and saw its abundance in the montane forests of the Hauhungaroa Range. True totara itself was an important timber tree at Pureora, but I do recall forest rangers saying that Hall’s totara, which grew at higher elevations and was logged from the montane stands for the Ellis & Burnand’s mill at

Acknowledgements

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Ongarue, was of inferior quality and not such a durable timber as true totara. Kirk was of the firm opinion that the timber of Hall’s totara was of good quality for building, but lacked the durability of true totara. He also observed that only the Maori of Stewart Island recognised that there were two different kinds of totara. Cockayne & Phillips Turner (1967) stated that commercially, no distinction is made between the timbers of the two species.

This is not the end of the story as the leading world authority on conifers (Farjon 2001) accepts that the correct name for Hall’s totara is actually *Podocarpus cunninghamii* Col., and this is followed by the New Zealand Plant Conservation Network, but not the Landcare Research New Zealand Plant Database, which maintains that *Podocarpus hallii* is the preferred name. William Colenso recognised the thin-barked totara in montane forests of the Ruahine Range as a separate species (Colenso 1884). He wrote:

“I should not omit to mention, that on my way down the mountain [Ruahine Range] from the summit, I discovered a plant which I believed to be a new species of Podocarpus and therefore named it P. cunninghamii (after my dear old friend and early Botanist in N.Z., Allan Cunningham). Its leaves and male amentae with the squamulae at their bases were very much larger than those of P. totara and the amentae were also on long peduncles; its bark, too, was semi-papery, more like that of some large specimens of Fuchsia excorticata, and not at all resembling the bark of P. totara”.

Colenso first collected this plant in 1847 and his 1884 reminiscence has been accepted by some as constituting a sufficient description to be regarded as the first formal recognition and valid publication of the species. This is the stance of NZPCN, Farjon, and also de Laubenfels (1985), who maintain that, despite Kirk’s more detailed description (and according to NZPCN he was aware of Colenso’s publication), published five years later, Colenso ought to take precedence. This has been firmly disputed by Connor & Edgar (1987) who concluded that *Podocarpus cunninghamii* is not a correct name.

To ease the confusion there is a growing tendency to call this species thin-barked totara or mountain totara, but in Auckland Bot Soc we still call it Hall’s totara (*Podocarpus hallii*). In this regard, a former Bot Soc member in the 1960’s, Mabel Hall was jocularly known as “Hallii”, reflecting her husband’s relative, John William Hall.

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Naturalisation of Mexican fan palm (*Washingtonia robusta*) in Auckland

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Introduction

Washingtonia is a genus of two palm species that is native to western North America; Mexican fan palm (*Washingtonia robusta*) is native to north-west Mexico, and Californian fan palm (*Washingtonia filifera*) is native to California. Both species are tall, solitary-trunked fan palms and both are cultivated in Auckland (Wilcox 2002).

At maturity, Mexican fan palm has a slender trunk to 30 m high, which is swollen at the base, and a compact crown of bright green leaves. Californian fan palm has a barrel-shaped trunk to a maximum of 20 m high, and a looser crown with leaves that are distinctly grey-green. On young plants, the petioles of Mexican fan palm are heavily armed with short spines and have a bright reddy-brown patch at their base, whereas the petioles of Californian fan palm are green and relatively unarmed (Floridata 2009).

Mexican fan palm has large costapalmate leaves ("Costapalmate" is the term given to palmate leaves for which the leaflets are joined for most of their length). The old leaves persist on the trunk after they die, forming a shaggy coat, but these are often removed by people to reveal the trunk (Fig. 1). The species is monoecious, self-compatible, and does not require specialist pollinators (Brusati 2003). The flowers which are produced on long panicles, are followed by small black fleshy fruit, which surround a single seed approximately 6 mm in diameter. In the USA, where the species has naturalised, dispersal of the seeds is by gravity, birds, mammals, and water (Weedwatch 2009). When the seeds germinate, the first growth is of a cotyledonary petiole down into the soil, which then swells at the tip. From here the first true root growth, the radicle, is initiated, and the

seedling shoot, the plumule, grows upwards towards the surface (Meerow 2009). This germination strategy is common for palms of arid areas, as moisture is more available at deeper soil levels. This species germinates well at soil temperatures of 25-35°C (Brown & Brown 2009).

The species is tolerant of drought, coastal exposure, and a wide range of soil types (Gilman & Watson 1994) but is best cultivated in full sun and well drained but moist soils (pers. obs). Leaves of adult plants are damaged at temperatures of -7°C or colder (The Palm Society-Northern California Chapter 2009).

Mexican fan palm is commonly cultivated throughout the Auckland Region, and large mature specimens are scattered throughout established suburbs such as Remuera, Mount Eden, and Epsom. Over the past decade, increasing availability, coupled with relatively low prices due to the species ease of cultivation, has seen this species become increasingly common, particularly in new urban areas, and in some instances, as a street tree. This paper reports on the beginning of naturalisation of this species in New Zealand.

Recent records of naturalisation

Mexican fan palm has been recently been collected as growing wild at three locations in Auckland City.

The earliest record, by Peter de Lange in May 2007 (AK 299191), was of a single plant, c. 1 m tall, growing out of the base of a concrete wall. The plant was not immediately under adult plants, but adult Mexican fan palms were present in the local area.