

# Shelter potential of some New Zealand olearias

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Few horticulturists or farmers would argue with the proposition that permeable shelter to diffuse wind and reduce its speed is the single most important factor in successfully producing plants and animals, but despite growing interest in the landscape use of native trees and shrubs in recent years, indigenous species remain a rare sight in primary shelter belts.

There is good reason for this in extensive farmland and on larger lifestyle properties. Quite simply, there are no native trees capable of competing as primary shelter with the likes of *Pinus radiata*, *Pseudotsuga menziesii* (Douglas fir) or Leyland cypress<sup>2</sup> for growth rates, site tolerance, and suitable growth form.

For secondary, or internal, shelter, where the brunt of the wind force has been broken, the opportunities for inclusion of natives are wide open, however. The New Zealand Farm Forestry Association (NZFFA) has not only advocated the use of native plants where practicable in farm shelter but has established a specialised Indigenous Forests Section within the organisation. The IFS prints a journal, *Indigena* (Latin for “native”), that promotes both the sustainable use of native forests and wider use of natives in farm plantings. I suggested the name, and was its founding editor. I am no longer associated with *Indigena*, but I still have an active interest in promoting native species through the NZFFA’s Central Canterbury branch, for which I am one of four trustees of an experimental area on the high plains at Silverwood, near Hororata. When finances permit we are developing what eventually will be a demonstration area of the sustainable management, on a difficult site, of “alternative” tree species, including natives.

Our main research focus is on continuous-cover hardwood forestry, including the feasibility of sustainable production in a coppicing system of ground-durable chestnut posts as an environmentally-friendly alternative to steel or treated pine for vineyard use. Natives are a secondary, but important interest and, as funding permits, we are developing plantings of a range of native species that eventually will be a demonstration area for the selection and establishment of native plants on a cold, wind-prone dryland site. We are also keen to establish badly needed provenance trials aimed at selecting the best and most easily grown forms of a range of native shelter species, among which the kōhūhū, or black mapou (*Pittosporum tenuifolium*), is likely to be prominent. Kōhūhū grows relatively quickly to a height of several metres, filters wind well, retains foliage down to ground level with little or no trimming, and has a useful life span of 30 to 40 years.

Considerable time and effort has been devoted by the nursery trade to breeding or selecting ornamental forms of this plant but little attention has been paid to selecting provenances for shelter and hedge planting, although there is known to be variation in frost tolerance, growth form, disease resistance, and life span between different regional forms. Local provenances are not always necessarily the best ones to plant, as demonstrated at Silverwood by plants sourced from a geographically close foothills site. These plants, now about eight years old, are small and bushy and have had a survival rate of only about 10 per cent. This was a very small trial, and when it can obtain funding the association hopes to test a variety of provenances of kōhūhū, including small-leaved forms from the North Island as well as a range of South Island plants.

An unrelated native shrub bearing a striking resemblance in leaf shape and growth form to *Pittosporum tenuifolium* is very widely planted for wind shelter in milder areas but has been a failure at 255 m asl at Silverwood. This is *Olearia paniculata*, a mostly coastal or riparian plant that belongs in the daisy family, Asteraceae (or Compositae as the family is alternatively called), and occurs naturally as far south as Oamaru on the east coast and Greymouth in the west. Its advantage over kōhūhū is its extreme drought tolerance. On the debit side, it is vulnerable to heavy frost and prone to root rot in wet soil, so that as a hedge or shelter it is best sited on a slope with rapid soil and air drainage. After 100 per cent winter mortality in two successive plantings it is no longer being persevered with at Silverwood although it grows naturally further inland at the Rakaia Gorge. At the gorge, however, it is not only on a steep slope but is protected from extreme frost by the catabatic airflow down the river.

Two other tall olearias, both thought to be hybrids, have been identified in preliminary plantings as potentially excellent indigenous shelter, while a third hybrid olearia that has proved its mettle in my garden eight kilometres away will be further investigated as a potential substitute for box hedging.

One parent of the latter is thought to be a cultivated bushy form of *Olearia coriacea*, a loosely branched subalpine shrub with a natural range from the Awatere Valley, in Marlborough, to Jack’s Pass, near Hanmer Springs in North Canterbury. The cultivated form is no longer available in commerce as far as I know but was occasionally used in the past for low hedges.

*Olearia coriacea* is readily distinguished from other related olearias by the leaves, which are

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<sup>2</sup> See the following article on Leyland cypress (pp. 23–27).

up to 2 cm long, half as wide, and saddle shaped. Young leaves are sticky looking, but mature leaves are leathery and smooth on the upper surface. The undersides are covered with brownish-white (or whitish-brown) down. Superior forms could no doubt be selected as useful foreground shrubs in landscape plantings, because they are low-maintenance plants reasonably tolerant of difficult growing conditions, but are unlikely to be as useful as the slow-growing presumed hybrid with *Olearia xhaastii*. This plant was offered in a few Canterbury nurseries in the late 1980s and early 1990s but appears since to have slipped under the radar. I have not seen it in a commercial nursery for 20 years, but it is well worth reviving. Although slow growing initially, it is healthy, long lived, and tolerant of very difficult conditions. The plant in my garden, now about 25 years old, is more than 2 m tall, bushy and leafy (Fig. 1), and always green although the soil in which it is growing is nothing more than rubble deposited by the excavator when a soakaway was being installed.



**Fig. 1** *Olearia* 'Lochiel' foliage.  
Photo: Derrick Rooney.

I believe this hybrid has considerable potential as a domestic hedge plant, particularly for anyone who may be looking for a native substitute for box (cultivars of *Buxus sempervirens*), which has an uncertain future because of wilt disease (*Phytophthora parasitica*) that has not yet reached New Zealand but almost certainly will at some time in the future. Apart

from longevity and slow, compact growth, qualities it shares with box, an attribute that makes this hybrid *olearia* particularly suitable for hedging is that like box it can be kept compact by regular trimming and has the ability to sprout from very old wood when cut back heavily (Fig. 2). Conveniently, it strikes as readily as box does from semi-ripe cuttings.



**Fig. 2** *Olearia* 'Lochiel' sprouting from old wood after being heavily trimmed.  
Photo: Derrick Rooney.

Confusion reigns about the name of this *olearia*. When it appeared in Christchurch garden centres in the 1980s some labelled it "*Olearia haastii*" and others called it "*Olearia haastii* Hybrid". One nursery called it "*Senecio haastii*." Previously, a well-known propagator had for many years grown it privately as a selection of *Olearia coriacea*. But its leaves are shorter and narrower than those of *O. coriacea*, although they have a hint of the characteristic saddle shape when young.

The whole situation is one of the curiously anomalous mix-ups that happen from time to time with cultivated plants, because although this *olearia* has been grown in some gardens for many years, when I first looked into its history in the 1990s an extensive search of available horticultural literature failed to turn up any validly published name for it. However, inquiries revealed that *Olearia* 'Lochielia' was the name attached to a specimen in the Christchurch Botanic Gardens from

which it is thought that propagation material for the plants in cultivation originally came.

Why the name "Lochielia"?

No-one seems to know. Despite a comprehensive search by staff at the time, no record of its origin or accession could be found in the Botanic Gardens records. A possibility is that the plant is a chance hybrid between *O. coriacea* and *O. xhaastii*, perhaps collected by Botanic Gardens staff in the 1940s or 1950s at a property named Lochiel, near Hanmer Springs in North Canterbury. I have seen *O. coriacea* growing naturally not far away, in the Jacks Pass area, and the other parent may have been cultivated there, because it was at one time a popular garden shrub.

A new name is probably needed for this distinctive indigenous shrub. The Latinised 'Lochielia' is not acceptable as a cultivar name under the current international rules governing the naming of cultivated plants. Under the rules, it would be valid had it been published before January 1, 1959, but I have been unable to trace any record of this having been done. As cultivar names are now required to be in a modern language, 'Lochiel' would be an acceptable name and perhaps should be used.

The ability of this hybrid *Olearia* to survive adversity and to regenerate commands respect. In the mid-2000s I struck and potted a few cuttings, in the hope that distributing plants to other people may help to ensure its survival. Four years later I had one potted plant left. After successive repottings it was in a 30 cm pot and had grown into a bushy plant about 35 cm tall. Sadly, it had been moved aside several times to make way for new plants, and one spring day I discovered it had been moved so far aside that the sprinklers had missed it. The leaves were brown and shrivelled and the plant appeared to be clinically dead. I tossed it, pot and all, on the failures pile, intending to recycle the pot when I needed it. Four months later, I discovered the plant had done a Lazarus act. Still lying on its side, and still without water (other than any that fell from the sky on the "dead" branches), it was spangled with fresh green buds. Another four months later, cut back to half its height, repotted (in the same pot but with fresh potting

mix), and watered regularly, it was still covered with green shoots and well along the road to recovery.



**Fig. 3** Botanical illustration of *Olearia xhaastii* in Curtis's *Botanical Magazine*, London, Vol. 107 (= Ser. 3, Vol. 37): t. 6592, 1881. Image courtesy Missouri Botanical Garden, www.botanicus.org.

*Olearia xhaastii* is probably also a hybrid, although of what is uncertain. Allan, in his 1961 *Flora of New Zealand*, gave the parentage as *O. avicenniifolia* × *moschata*. Subsequently, some other authorities have disputed this, saying that there is evidence that something other than *O. moschata* is the second parent. Whatever its origin, *Olearia xhaastii* has a significant place in New Zealand horticulture (and botany) because it was one of the first New Zealand shrubs to be widely cultivated in Britain (Fig. 3), and almost certainly the hardiest. Veitch's nursery, based in Exeter and better remembered for its many introductions of rhododendrons and other shrubs from the Himalaya and for its hardy rhododendron and viburnum hybrids, listed *Olearia xhaastii* as early as 1858. The source of Veitch's plant is not known. The Veitch form of *Olearia xhaastii* is an erect, strongly branched shrub, rarely exceeding 2 m in height, and producing in midsummer numerous sprays of white, yellow-eyed flowers. The handsome evergreen leaves are white underneath and deep green and

leathery on top. Nurseries nowadays seldom stock it, but it is well worth reintroducing. It can be grown fairly easily from cuttings.



**Fig. 4** *Olearia lineata* flowers. Photo: Derrick Rooney.

Another adaptable native tree daisy, *Olearia lineata* (Fig. 4), is listed in Allan's 1961 *Flora* as a variety within the *O. virgata* complex of about seven distinct and widespread forms, several of which have since been elevated to species rank.

*Olearia lineata* in the strict sense occurs on the West Coast from Lake Brunner southwards, on Stewart Island, and in inland South Canterbury and Otago. However, from a horticulturist's viewpoint this tree daisy is of interest only for its larger-leaved cultivar *O. 'Dartonii'* (Fig. 5).



**Fig. 5** *Olearia lineata* 'Dartonii' foliage. Photo: Derrick Rooney.

*Olearia lineata* 'Dartonii' is erect, strong growing, and larger than the wild species in all its parts, with leaves up to 6 cm long, double the length of those of the wild plant. As a specimen plant it develops an attractive weeping

habit on maturity. It is hardy to  $-12^{\circ}\text{C}^3$ , perhaps lower, makes a splendid tall hedge, and has recently been talked about as a plant that may have a bright future for use as intermediate shelter on farms or as a nurse plant for indigenous revegetation projects. It tolerates wind, be it a desiccating north-westerly or salt-laden sea breeze, and even in an exposed site is capable of growing 1 m a year when young. It takes the soil as it comes, rich or bony, wet or dry. It regenerates quickly when cut back into old wood or even cut to lawnmower height. The Central Canterbury Farm Forestry Association has used it very successfully in experimental revegetation plantings as a nurse plant for slower-growing indigenous species in trials at both West Melton, in Templeton silt loam, and Hororata, in Lismore stony loam.

The origin of this fine plant is not known. Henry Darton, after whom it is named, was assistant headmaster at the Lawrence High School in the late 19th and early 20th centuries and shared an interest in growing native plants with the co-owner of the Black Horse Brewery, L. B. Hart. The two men assembled a collection of indigenous plants at Wetherstones, near Lawrence, but it is not known whether *Olearia* 'Dartonii' was one of these. The earliest known printed reference to it was in the 1937 catalogue of the Duncan and Davies nursery in Taranaki, but another three decades passed before it was widely available. It has long been an underrated plant and although it has been cultivated for more than 75 years its potential for horticultural and intermediate farm shelter is still being explored. From time to time it has been suggested that the explanation for its vigour is that it is an  $F_1$  hybrid with another New Zealand species. Its vigour, growth form, and leaf shape suggest that the most likely candidate for second parent is *Olearia traversiorum* (previously known as *O. traversii*), the Chatham Islands ake-ake.

*Olearia traversiorum* has been widely planted, particularly in the North Island, in hedges and horticultural shelter belts, a use for which its naturally erect growth habit makes it

<sup>3</sup> Degrees of cold tolerance listed in this article refer to minimum air temperatures, not to ground frosts.

well suited. There are now probably more specimens growing on the New Zealand mainland than in its natural environment. Its wind and drought tolerance, rapid growth, frost tolerance (to  $-10^{\circ}\text{C}$ , perhaps lower), and quick response to pruning make it one of the best New Zealand natives for utility planting in fertile soils.

For less fertile sites, a probable hybrid of this species that has been grown by some Canterbury nurseries in recent years is a good proposition. This plant was reputedly rescued more than 20 years ago by a North Canterbury enthusiast from the abandoned stock beds of the former Saunders nursery in Invercargill. It has been propagated under the tag name "Saunders" by the Southern Woods and Wai-ora Trust nurseries. There seems to be no reason why this name should not be adopted as the formal cultivar name.

The long-defunct Saunders nursery was well known in its day as a distributor of good forms of native plants and is remembered for several clones, including *Pittosporum* 'Saundersii'. *Olearia* 'Saunders' (Fig. 6) bears some resemblance to typical *O. traversiorum* and has a similar growth habit but is marginally more vigorous and somewhat more drought tolerant. It has narrower, silver-tinted rather than green, leaves. It is easy to establish and tolerant of wind and heavy frosts. Branches were broken from plants growing in Central Canterbury in the major snowstorms of June 2006, and June 2012, but growth quickly recovered when spring arrived and the cultivar was otherwise unharmed, despite the severe cold that accompanied the snow. Cuttings of this clone strike readily in late summer or early autumn. The late David Given (pers. comm.) suggested that the unknown second parent may be *O. x mollis*.



**Fig. 6** *Olearia* 'Saunders'.  
Photo: Derrick Rooney.

When I extended my garden in 1998 into a newly acquired area that had once been a traction-engine yard and more recently was a storage area for farm machinery, I needed quick shelter and planted *Olearia* 'Saunders' across what had been a gravel driveway. Instead of potting them and growing them on as usual, I planted the rooted cuttings out of their trays directly into the gravel. All survived, and 18 months later they were 1.8 m tall.

In an experimental dryland shelter belt of indigenous species at Silverwood, near Hororata in Central Canterbury, this olearia was well ahead of all other species in the trial until it died suddenly, apparently accidentally killed by spray drift from a neighbouring property.

Silverwood is a 404 ha dryland farm that is owned in trust and leased to Lincoln University. The dominant soil type is Lismore stony loam and the annual rainfall varies from about 810 mm to 830 mm, with a slight summer maximum that is offset by exposure to drying north-west winds. In many ways this drawback makes it an ideal site for the 4 ha experimental area which, together with a small adjoining private arboretum of about 100 species planted by the late Frank White, who farmed Silverwood for

60 years from 1937, is excluded from the university lease and maintained by the Central Canterbury Farm Forestry Association. CCFFA has established trials of "alternative" species including deciduous hardwoods, ground-durable eucalypts, wattles, cypresses, and of course indigenous plants. A small group of chestnut posts, harvested in a coppicing trial in October, 2012, is being tested for durability as intermediate posts in a West Melton vineyard. Despite the latter part of the 2012–13 summer being abnormally hot and dry, regrowth from some of the stumps was 2 m tall seven months after felling. Numerous shoots have sprouted, and the next step will be a thinning trial to help determine how many should be allowed to grow on each stump. The aim is sustainable production of durable posts on a seven-year cycle.

Predictably, the natives in general have lagged well behind the exotics in both growth rates and ease of establishment. The best of them have grown about two-thirds the rate of the slowest in an adjoining trial of five cypress clones. Even the failures are providing useful information about establishment techniques, however. Plans are in hand to fill the gaps with additional native species and to replant the shelter belt of *Olearia* 'Saunders'.

Trial results compiled to date, and additional information about and photographs of the experimental area, are freely available on the association's website, [www.silverwood.org.nz](http://www.silverwood.org.nz). Funding of the website and the wattle trial was assisted by a grant from the Neil Barr Foundation.