

New Zealand's native brooms: Overlooked treasures?

Murray Dawson¹

New Zealanders typically think of broom plants growing in the wild as rampant weeds, because they are so familiar with the widespread and exotic common (or Scotch) broom, *Cytisus scoparius* (Fig. 1A–C), and the Montpellier broom, *Genista monspessulana*, which are invasive in disturbed and sunny areas such as riversides, forest tracks and open hillsides. These infested areas are blanketed in seas of bright yellow flowers, followed by pods that explosively disperse seed several metres in all directions. Branches of European species were traditionally used for sweeping which explains the common name “broom”.

In comparison, New Zealand's native brooms contain some remarkable rarities that should not be tarred with the same brush as their weedy European cousins. Make no mistake – our native brooms are treasures with a wide range of interesting growth forms ranging from prostrate shrubs (only 2 cm tall) to spectacular trees (up to 10 m). They are predominantly leafless and are able to photosynthesise through flattened or cord-like stems called cladodes. Most native species have purple flowers, although colour varies from pale lavender through to intense pink – creamy white or yellow flowers are much less common.

Several native brooms make excellent garden subjects and deserve to be more widely grown. Most native brooms are very hardy when planted in full sun and free-draining soils and few tolerate heavy shade and high humidity.

Along with native species including kakabeak (*Clianthus* spp.) and kōwhai (*Sophora* spp.), brooms belong to the legume family Fabaceae, which is why they have pea-like flowers. Legumes fix atmospheric nitrogen through special root nodules and therefore cope well in poorly developed soils. Their seeds usually have very hard seed-coats that need to be scarified – in other words,



Fig. 1 *Cytisus scoparius* growing as a weed on Banks Peninsula, Canterbury. **A**, plant still in flower mid-winter. **B**, close-up of flower. **C**, close-up of old twisted pods that have ejected their seeds. Photos: Murray Dawson.

they must be chipped or otherwise treated – to enable them to germinate.

New Zealand's native brooms all belong to the genus *Carmichaelia*. 23 out of 24 currently recognised species of *Carmichaelia* are endemic to New Zealand – that is to say, they are unique to this country (Table 1)². Native brooms are found from the Far North to Stewart Island in a variety of habitats, from coastal to alpine. The proliferation of morphologically diverse but closely related species in *Carmichaelia* is a good example of adaptive radiation in the New Zealand flora – the rapid diversification of species to occupy ecological niches – as found elsewhere, for example, in our native *Coprosma* and *Veronica* (hebes).

Although *Carmichaelia* is distributed throughout New Zealand, many are threatened, including a high proportion of species restricted to drier eastern areas of the South Island. Most New Zealand native brooms prefer disturbed and open habitats which mean they are vulnerable to erosion and being out-competed by weeds in the lowlands. Furthermore, our native brooms are highly palatable to a wide array of browsing animals, ranging in size from rabbits and hares up to possums, sheep, goats and deer – all of the introduced herbivores seem to munch them!

Because of their high conservation values, native brooms should not be removed from the wild. Unfortunately, some plants (such as the Canterbury pink broom, *Carmichaelia torulosa*) have accidentally been killed in the wild by herbicide spraying through being confused for the weedy exotic brooms.

In this article, I will provide an overview of this remarkably diverse native plant group, covering all low growing species, and a selection of shrub and tree species suitable for cultivation. If you are interested in growing New Zealand's native brooms, there is a good range available from specialist native plant nurseries.

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² The remaining species, *Carmichaelia exsul*, is endemic to Lord Howe Island. “Exsul” is an apt species name as it is Latin for “exile”, and its ancestor probably dispersed to Lord Howe all the way from New Zealand.

Table 1 New Zealand native species of *Carmichaelia*.

Botanical name	Common name(s)	Growth habit and distinguishing features
* <i>C. appressa</i> G.Simpson	Appressed broom, prostrate broom	Prostrate (to decumbent) ground cover, white/purple flowers
<i>C. arborea</i> Druce	South Island broom, swamp broom, tree broom	Shrub or small tree, scented white/purple flowers
<i>C. astonii</i> G.Simpson	Aston's dwarf broom	Dwarf and spreading ground cover, white/purple flowers
* <i>C. australis</i> R.Br.	Common native broom	Shrub or small tree, white/purple flowers
† <i>C. carmichaeliae</i> (Hook.f.) Heenan	Marlborough pink broom	Shrub or small tree, slender drooping branchlets, abundant pink flowers
* <i>C. compacta</i> Petrie	Cromwell broom	Erect or spreading shrub, purple flowers
* <i>C. corrugata</i> Colenso	Common dwarf broom	Dwarf and rhizomatous, purple flowers
<i>C. crassicaulis</i> Hook.f. subsp. <i>crassicaulis</i>	Coral broom	Robust shrub, grooved branches, off-white / purple flowers
* <i>C. crassicaulis</i> subsp. <i>racemosa</i> (Kirk) Heenan	Slender coral broom	Spreading to upright shrub, grooved branches, off-white / purple flowers
* <i>C. curta</i> Petrie	Waitaki Broom, whip broom	Spreading to sprawling sparsely branched shrub, purple/white flowers
*† <i>C. glabrescens</i> (Petrie) Heenan	Marlborough pink broom	Shrub or small tree, slender drooping branchlets, abundant pink flowers
* <i>C. hollowayi</i> G.Simpson	Holloway's broom, whaupaku	Low-growing shrub, purple or red purple / white flowers
<i>C. juncea</i> Hook.f.	(No common name known)	Prostrate and sprawling shrub, flowers white with various shades of purple
* <i>C. kirkii</i> Hook.f.	Climbing broom, Kirk's broom, scrambling broom	Spreading shrub or climbing vine, white/purple flowers
† <i>C. monroi</i> Hook.f.	Stout dwarf broom	Dwarf and spreading, white and pinkish-purple flowers
* <i>C. muritai</i> (A.W.Purdie) Heenan	Clifford Bay broom, coastal tree broom	Small tree, upright growth habit, white/purple-violet flowers
*† <i>C. nana</i> (Hook.f.) Hook.f.	Dwarf broom	Dwarf ground cover, purple (or rare creamy-white) flowers
*† <i>C. odorata</i> Benth.	Leafy broom, maukoro, scented broom	Leafy shrub, scented white/purple flowers
<i>C. petriei</i> Kirk	Desert broom	Shrub, white/purple-violet flowers
*† <i>C. stevensonii</i> (Cheeseman) Heenan	Cord broom, weeping tree broom	Small tree, weeping stems, abundant sprays of pale lavender flowers
<i>C. torulosa</i> (Kirk) Heenan	Canterbury pink broom	Small tree or large shrub, pink/purple flowers
* <i>C. uniflora</i> Kirk	Dwarf broom, single-flowered broom	Dwarf and rhizomatous ground cover, white/purple flowers
<i>C. vexillata</i> Heenan	Dwarf broom	Dwarf and spreading, pinkish purple flowers
*† <i>C. williamsii</i> Kirk	Giant-flowered broom, William's broom	Robust shrub, broad and flattened cladodes, creamy-yellow flowers

* = currently available from native plant nurseries.
† = particularly recommended for cultivation.

Low-growing brooms

There are nine species of low-growing, prostrate, decumbent or dwarf native brooms. Most are restricted to the eastern South Island. Their low stature and preference to grow in dry, open and sunny conditions makes them ideal for rock gardens, container plants, or as ground covers on exposed sites. The tight growing dwarf species are especially good in rock gardens.

***Carmichaelia appressa* (appressed broom, prostrate broom):** a species largely restricted to Kaitorete Spit near Christchurch, where it grows on stabilised sand dunes and ridges (Fig. 2). Although most plants are protected within a scientific reserve, they remain vulnerable to



Fig. 2 *Carmichaelia appressa* growing wild in the seemingly barren Kaitorete Spit landscape. Photo: Peter Heenan.

damage by off-road vehicles and other disturbances. Following the New Zealand Threat Classification System, it is classified as an “At Risk – Naturally Uncommon” species. *C. appressa* has yellowy-green cladodes and white flowers streaked with purple. It is a prostrate shrub that grows to 25–40 cm tall with a spread of up to 2 m in the wild, although 0.5(–1) m across is more usual in cultivation. This species is ideally suited to rock gardens or retaining walls where there is good drainage.

***Carmichaelia astonii* (Aston's dwarf broom):** a “Threatened – Nationally Vulnerable” species confined to a few limestone cliff areas in eastern Marlborough. This dwarf and spreading

shrub grows to 20 cm tall (rarely to 50 cm tall for old plants in cultivation) and up to 50 cm across. This species has greenish-brown cladodes and produces an abundance of white flowers streaked with purple. It is easy to grow and does best in well-drained soil enriched with added lime in a sunny position.

Carmichaelia astonii is restricted to limestone in Marlborough and allied to *C. monroi* and *C. vexillata*. The three native brooms that are restricted to limestone habitats (called calcicoles) are *C. astonii*, *C. glabrescens* and *C. hollowayi*.

***Carmichaelia corrugata* (common dwarf broom):** an “At Risk – Declining” species found on open sandy gravel river terraces in Marlborough, Canterbury and Otago. It is very low growing (only 2–8 cm tall) and forms a dense mat (up to 1 m across) through rhizomatous growth. Its cladodes are yellowish-green with blunt orange tips and its flowers are purple with white and pink colorations. This is another species well suited to rock gardens. It is allied to *C. uniflora*.

***Carmichaelia hollowayi* (Holloway’s broom, whaupaku):** this species has the highest threat classification of “Threatened – Nationally Critical” as there are less than 250 adult plants in the wild from three populations. Like our other threatened native brooms, browsing by animals and competition from weeds are the usual culprits. *C. hollowayi* is restricted to limestone outcrops of the Waitaki River, South Canterbury. This dwarf and suckering shrub grows to 50 cm tall and 50 cm to 1 m (rarely up to 2 m) across. It has yellow-green erect and orange-tipped cladodes which are quite robust. Its flowers are purple or red purple with white margins. *C. hollowayi* has been reported to do well in cultivation despite its exacting habitat conditions in the wild.

***Carmichaelia juncea*:** another rarity (“Threatened – Nationally Vulnerable”) of the South Island and with a diminishing range in the wild. It was collected once from the North Island but is now presumed extinct there – it has also apparently disappeared from Marlborough, Canterbury, Otago and Southland. Currently, it is only known from a small area in North-West Nelson (near Puponga) and in scattered sites in Westland (from Franz-Josef Glacier south to near Haast). I remember many years ago (before current workplace safety policies!), accompanying my

workmate who was gearing up to access this species by abseiling off the main road bridge across Fox River. When we showed up, the river was unusually low and we could reach the plants wearing gumboots. At this site, *C. juncea* was growing on an island formed by forks in the river that usually prevented herbivores (and humans) from reaching the population of this threatened broom. *C. juncea* has a sprawling, prostrate growth habit and forms flattened mats up to 20 cm tall and 1.5 m across. Flowers are white or with various shades of purple streaks. In the wild, it grows on river bed gravels and stony and sandy lake sides, or on weathered rock in coastal areas. Because *C. juncea* is adapted to exposed conditions, it is well suited to rock gardens and growing in containers. *C. juncea* is related to *C. compacta* and *C. curta*.

***Carmichaelia monroi* (stout dwarf broom):** classified as “Not Threatened” but is nevertheless confined to Marlborough and Canterbury in the wild where it’s usually found in open, stony or rocky habitats adjacent tussock grassland (Fig. 3A–B). *C. monroi* is a dwarf plant (up to 15–25 cm tall) that can eventually spread up to 1 m across. Its white and pinkish-purple flowers are relatively large and contrast well with its dense and flattened yellowish-green cladodes with blunt orange or red tips. Although rather slow growing it is easy to cultivate and very well suited to the rock garden.

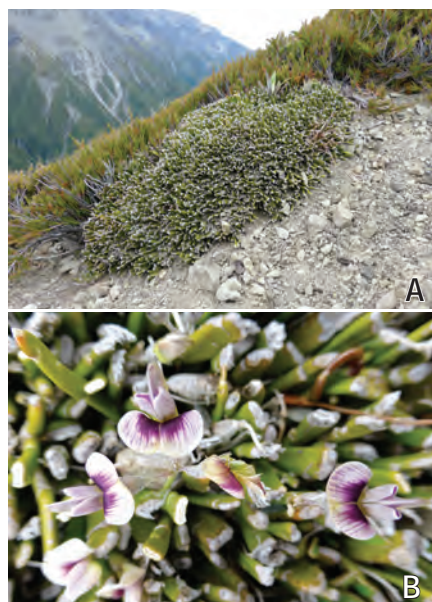


Fig. 3 *Carmichaelia monroi* growing wild on a stony slope north of Mt Fyffe, Seaward Kaikoura Range. **A**, plant showing typical heavy browsing. **B**, close-up of flowers. Photos: Murray Dawson.

***Carmichaelia nana* (dwarf broom):** an “At Risk – Declining” species found in scattered locations in the North Island (Central Volcanic Plateau) and South Island (Marlborough, Canterbury and Otago). North Island plants were previously known as *C. orbiculata* and South Island plants as *C. enysii*, but in 1995 my colleague Peter Heenan, as part of his PhD revisions of the native brooms, accepted a broader circumscription, reducing both names to synonyms of *C. nana*. This species is usually found in open places, river terraces and moraines. Plants form dense, very low-growing mats that only reach 2–6(–10) cm tall, with a spread of 10–20(–50) cm across. Its cladodes are usually erect and densely crowded, and green or yellow-green in colour. Although it has relatively small flowers, they are conspicuous and contrast well with the narrow cladodes. Flowers are usually purple (Fig. 4A), although rare creamy-white flowered variants have also been found in the wild (Fig. 4B). *C. nana* is easily grown and makes an attractive and diminutive addition to the rock garden.



Fig. 4 *Carmichaelia nana*. **A**, plant with typical coloured flowers growing wild at McKenzie Pass. Photo: Peter Heenan. **B**, creamy white-flowered variant from Two Thumb Range, Otago. Photo: Andrew Purdie.

***Carmichaelia uniflora* (dwarf broom, single-flowered broom):** an “At Risk – Declining” dwarf broom found in open habitats including river beds, terraces and stony ground.

This species is restricted to South Island localities in Nelson, Canterbury, Otago and Southland. It forms a low-growing cushion 2–6 cm tall and 30 cm to 1 m across through rhizomatous growth. This species has thread-like and erect cladodes and unless seen in flower, plants are somewhat hidden (and can be out-competed) by any surrounding vegetation. Flowers are usually solitary (hence the species name “uniflora”), and are white with purple streaks. It is slow-growing in cultivation and well suited to rock gardens. *C. uniflora* is somewhat similar to *C. corrugata*.

***Carmichaelia vexillata* (dwarf broom):** the remaining dwarf broom is yet another “At Risk – Declining” species. In 1995 Peter Heenan recognised this species as new and segregated it from *C. monroi*. *C. vexillata* is restricted to the eastern side of the Main Divide of the South Island, where it occurs in open habitats including river terraces. It grows to 15 cm tall with a spread of 40 cm across. Cladodes are yellowish-green with blunt orange or red tips. Flowers are pink with purple streaks. Like all of the dwarf brooms, *C. vexillata* is easy to propagate and grow. However, it is not widely cultivated under that name.

Shrub / small tree brooms

The majority of New Zealand’s native brooms are shrubs, or at best, small trees. Some that are found in cultivation are mentioned in this article.

***Carmichaelia australis* (common native broom):** called the “common native broom” because of its relative abundance. Accordingly, this species is categorised as “Not Threatened” and is found wild in both the North and South Islands (excluding Otago and Southland), where it grows in a range of generally open habitats. This species is a fast growing, upright to spreading shrub or small tree (Fig. 5A) which can attain 6 m or more in height (although 4 m is more usual in cultivation). The green stems (cladodes) are flattened and there are scattered true leaves, especially on shaded plants. Flowers are relatively small and are white with purple markings (Fig. 5B). As in other native brooms, upon maturity the sides of the seed pod walls fall away to reveal seeds that hang in the remaining structure called a replum (Fig. 5C).



Fig. 5 *Carmichaelia australis* in cultivation. **A**, mature shrub growing at Fernglen Native Plant Garden showing a typical upright habit with multiple branching from the base. **B**, close-up of purple flowers (Auckland Botanic Gardens). **C**, close-up of open pods, each containing an orange-red seed with black mottling (Fernglen Native Plant Garden). Photos: Murray Dawson.

In 1995, Peter Heenan broadened the circumscription of *C. australis* to reduce more than a dozen species into synonymy with it. Some of these previously accepted names persist in horticulture (e.g., *C. arenaria*, *C. cunninghamii*, *C. egmontiana*, *C. flagelliformis*, *C. rivulata* and *C. robusta*).

***Carmichaelia carmichaeliae* and *C. glabrescens* (Marlborough pink brooms):**

these two native pink-flowering brooms share similar growth habits, slender drooping branchlets and pink flowers, but have slightly different pods. In the wild, both are confined to steep valley sides and cliff faces in Marlborough. However, *C. carmichaeliae* is the rarer species (“Threatened – Nationally Critical”) and found north of the Awatere fault whereas *C. glabrescens* is “Not Threatened” and grows south of the Awatere fault. Prior to Peter Heenan’s revision, they were included as species of *Notospartium*³.

Both are beautiful shrubs or small trees that deserve to be much more widely cultivated. In the wild they can grow to 5 m (for *C. carmichaeliae*) and 7 m (*C. glabrescens*) or more tall, although as garden plants they are usually much smaller. Their habit, foliage and especially their abundant sprays of strongly coloured pink flowers make them excellent subjects for planting. Although *C. glabrescens* is said to be difficult to keep growing (which is likely true in warm and humid climates such as Auckland), there is a magnificent 30-year old specimen at my workplace (Landcare Research in Lincoln), planted by the late Andrew Purdie (Fig. 6A–D). Andrew provided this plant with ideal conditions – a raised limestone rock garden in full sun, with perfect drainage and no watering.

***Carmichaelia compacta* (Cromwell broom):**

as its common name implies, this species is restricted (“At Risk – Naturally Uncommon”) in the wild to several river gorges in Central Otago where it grows on loose rocky schist. The species name “compacta” refers to its tighter growth form than many other native shrubby brooms and it grows 1–2 m tall. Cladodes are yellow-green and it produces predominantly purple flowers with white markings. *C. compacta* is not that common in cultivation but probably worthy of being grown more widely.

³ Based on the taxonomic evidence he gathered, Peter decided that the two tree broom genera (that included species in *Chordospartium* and *Notospartium*) and a shrub genus (*Coralliospartium crassicaulis*) did not warrant their separate recognition from *Carmichaelia*. Consequently, Peter placed all New Zealand native broom species into the one genus, *Carmichaelia*.



Fig. 6 *Carmichaelia glabrescens* cultivated at Landcare Research, Lincoln. **A**, plant in full flower. **B**, pink flowers. **C**, close-up of bright pink flowers. **D**, close-up of seed pods. Photos: Murray Dawson.

***Carmichaelia crassicaulis* (coral broom):** both subspecies (the “At Risk – Declining” coral broom, subsp. *crassicaulis*, and the “Threatened – Nationally Vulnerable” slender coral broom, subsp. *racemosa*) are found in the South Island east of the Main Divide and were previously placed in *Corallospartium*. The common name “coral broom” refers to the distinctive appearance of these unusual shrubs that resemble coral with their parallel grooved branches. This is most obvious in the more robust *Carmichaelia crassicaulis* subsp. *crassicaulis* (Fig. 7), which is taller growing (up to 2 m tall, but seldom reaching that in the wild due to browsing). Slender coral broom is lower growing (up to 1.2 m) and has a more spreading habit and thinner branches. Flowers of both subspecies are cream to pale pink streaked with purple.



Fig. 7 *Carmichaelia crassicaulis* subsp. *crassicaulis* growing wild in the Mackenzie Basin. Photo: Andrew Purdie.

This species is occasionally grown as a novelty or connoisseur plant but seldom offered for sale.

***Carmichaelia odorata* (leafy broom, maukoro, scented broom):** classified as “Not Threatened” and found in the wild in southern areas of the North Island and northern and western areas of the South Island. As the name “odorata” suggests, this species (Fig. 8A–C) has sweetly scented flowers. The small flowers are quite showy, being white with purple veins and produced in abundance throughout summer. Its common name “leafy broom” is because it can become quite leafy over spring and summer,

unlike most of our other native broom species. This shrub is relatively compact, growing to 3 m tall (usually 1–2.4 m in cultivation) and is also quite broad (growing to 2 m across). These features make it well suited to cultivation and it can also tolerate light shade. Selections have been sold under the cultivar name *Carmichaelia odorata* ‘Lilac Bouquet’, but I doubt they are significantly different to the typical species. *C. arborea* is a similar species, and is also leafy and with scented flowers.

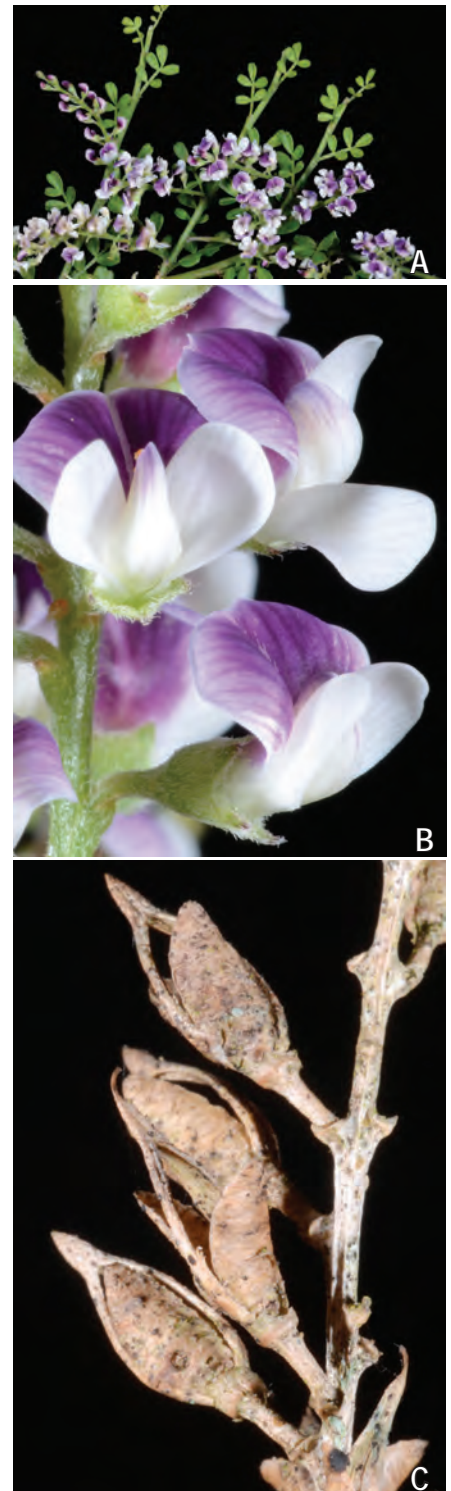


Fig. 8 *Carmichaelia odorata*. **A**, plant in flower. **B**, close-up of flowers. **C**, close-up of mature seed pods. Photos: Peter Heenan.

***Carmichaelia williamsii* (giant-flowered broom, William's broom):** an "At Risk – Relict" species endemic to the North Island. In the wild, it is a strictly coastal species known mainly from northern offshore islands (particularly the Poor Knights and Alderman Islands). On the mainland it is apparently now only known from two small remnant populations near East Cape. This distinctive species is the only New Zealand native broom with creamy-yellow flowers. The flowers and seed pods are comparatively large as are the broadly flattened green branchlets (cladodes). These robust shrubs can grow to 4 m tall, but are usually much shorter in cultivation (1.2–2 m), and can be trimmed to keep them compact. Plants can be grown in the open or they will tolerate light shade. *C. williamsii* is likely to do best when planted in warmer, northern coastal areas. However, the best plant that I have ever seen is cultivated far south of its natural range, in the Larnach Castle grounds atop the Otago Peninsula (Fig. 9A–E).

The Marlborough tree brooms

Special mention must be made of my personal favourites – the Marlborough tree brooms once belonging to the genus *Chordospartium*.

Early in my career at the then DSIR Botany Division (in the 1980s), I had the privilege of accompanying the late Andrew Purdie on field work to study New Zealand native tree brooms in Marlborough and Canterbury.

In those days, these tree brooms were placed in the genera *Chordospartium* (a genus restricted to Marlborough) and *Notospartium* (confined to inland Canterbury). Following Andrew's untimely death in 1989, Peter Heenan took on the revision of New Zealand's native brooms as the subject of his PhD studies in the 1990s. As mentioned previously, as a result of Peter's revisions, all New Zealand native broom species are now placed into the one genus, *Carmichaelia*.

***Carmichaelia muritai* (Clifford Bay broom, coastal tree broom):**

I well remember visiting this then newly discovered coastal tree broom growing at Clifford Bay in Marlborough (which has long been proposed as an alternative South Island site to Picton for the inter-island ferry terminal). *Carmichaelia muritai* was first discovered at this unlikely location in the early 1980s by Ron Feron⁴, a Noxious Plants Officer based at Seddon.

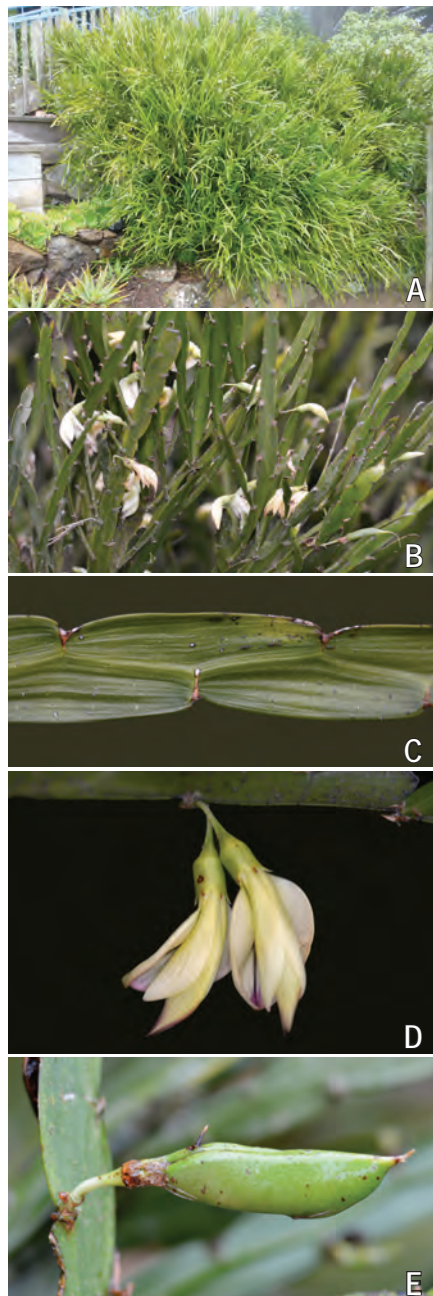


Fig. 9 *Carmichaelia williamsii* cultivated in the South Seas Garden on the Larnach Castle grounds. **A**, magnificent architectural specimen planted in an ideal location. **B**, flowers and branchlets. **C**, close-up of a wide and flattened branchlet called a cladode. **D**, close-up of distinctive creamy-yellow flowers. **E**, close-up of seed pod. Photos: Murray Dawson.

Ron sent plant specimens of his find to Andrew Purdie for identification and as a result I accompanied Andrew on at least one trip to the field site. At Clifford Bay we saw them barely maintaining their existence, hanging on to steep eroding coastal cliff faces, sandwiched between the farmland pasture terraces above and the coast below. Only 28 mature plants from this one population were surviving (just), and all accessible seedlings were being actively browsed by rabbits and hares.

In 1985, this outlier tree broom was described as a separate species by Andrew Purdie, who named it *Chordospartium muritai* ("muritai" appropriately meaning "sea breeze" in Māori), before the species was subsequently transferred to *Carmichaelia* by Peter Heenan. On-site conservation efforts at the time comprised of collecting seed from this remnant population, growing them in cultivation and planting the seedlings back out in the wild surrounded by wire mesh in an attempt to exclude the hordes of hungry mouths. A second small population has since been found at Marfells Beach, to the south of the Clifford Bay discovery site. However, this species remains extremely rare and like its counterpart *Carmichaelia stevensonii*, *C. muritai* is classified as a "Threatened – Nationally Endangered" species. *C. muritai* has an upright, rather stiff growth habit (up to 6 m tall) compared to the weeping habit of *C. stevensonii*. It produces sprays of whitish flowers with purple-violet markings (Fig. 10A–B). Although not as spectacular as *C. stevensonii*, *C. muritai* is easy to grow and worth cultivating for its rarity value alone.

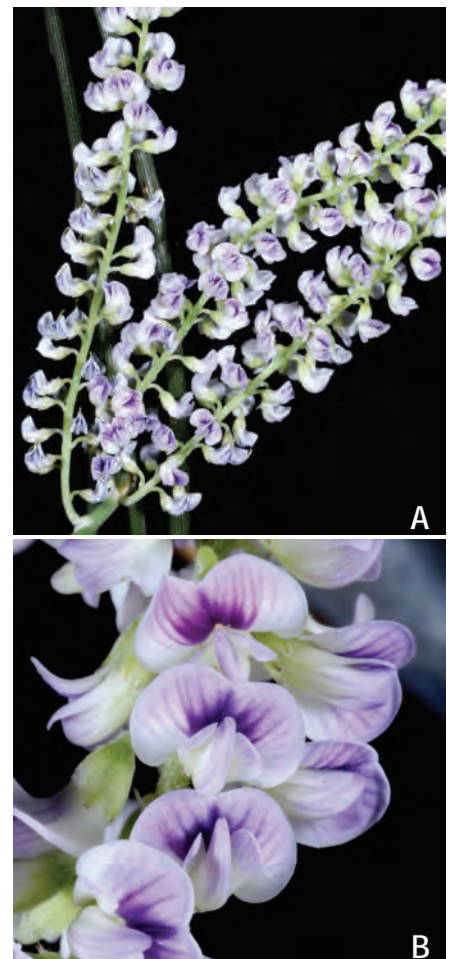


Fig. 10 *Carmichaelia muritai*. **A**, flowers. **B**, close-up of flowers. Photos: Peter Heenan.

⁴ Not "Feron" as spelt by Metcalf 2011, p. 52.

***Carmichaelia stevensonii* (cord broom, weeping tree broom):** another standout recollection of my early field work as a botanist is spending hours climbing up a steep, rugged and narrow stream in the Seaward Kaikoura ranges to reach the upper catchment – an area completely inaccessible to the sheep and cattle that we left behind in the lowlands. Exhausted from our day of exertions, Andrew Purdie and I pitched a tent in the streambed and were heating a brew at dusk when we had two deer walk right past our tent before noticing us! The following morning, after walking further upstream, we were greeted by the amazing sight of dozens of weeping tree brooms growing with their characteristic straight banded trunks supporting an umbrella of cascading cord-like photosynthetic stems (like many native brooms they largely lack true leaves). Where we saw them in this upper catchment, they were seemingly impossibly growing up out of rocky ground on exposed slopes alongside the streambed (Fig. 11).



Fig. 11 *Carmichaelia stevensonii* growing wild in the upper George Stream, 900 m asl. Photo: Peter Heenan.

Like other brooms, *C. stevensonii* has hard seed coats that need to be scarified, in this case, possibly by the abrasive action of stones as seed are washed down streams – these are plants adapted to disturbed habitats. The weeping tree broom is not confined to their upper Marlborough catchments by choice as it was once found all the way down to the coast. However, they now have no chance of establishing downstream with their seedlings being eaten out by ravenous herbivores and are out-competed

by lowland weeds of riverbeds. This species is classified as “Threatened – Nationally Endangered”.

Carmichaelia stevensonii is one of our most beautiful native brooms. It is the tallest tree broom, and can grow to 10 m tall, although 3–5 m is more usual in cultivation. It has weeping foliage and cascading racemes of white flowers with purple streaks, giving the overall impression of pale lavender coloured flowers. In cultivation (Fig. 12A–D) it makes an excellent architectural feature tree that I highly recommend.



Fig. 12 *Carmichaelia stevensonii* planted at the front of a house in Beckenham, Christchurch. **A**, mature tree. **B**, banded trunks. **C**, flowers and weeping stems. **D**, close-up of lavender coloured flowers. Photos: Murray Dawson.

The climbing broom

There remains one more surprise amongst all of the diversity found in our native brooms – the remarkable climbing broom.

Carmichaelia kirkii (climbing broom, Kirk’s broom, scrambling broom):

instead of a low-growing plant, or shrub, or tree, this oddball stands out as the only climbing species. *C. kirkii* (Fig. 13A–B) is a “Threatened – Nationally Vulnerable” species restricted to eastern South Island (from the Awatere River in Marlborough south to Otago). It is found naturally in scrubland on river terraces, in wetlands and native kahikatea or tōtara forests. Its tolerance of poorly drained habitats, having a reasonable number of leaves in shaded situations, and especially its climbing habit is most unusual compared to our other native broom species. It has interlacing green to brownish stems that climb, scramble or sprawl 1–3 m high. Flowers are predominantly white with smaller purple markings and are arranged in small clusters. This species is not widely cultivated, but is reported to do well when given moist ground and allowed to grow up through a shrub or over a wall.



Fig. 13 *Carmichaelia kirkii*. **A**, close-up of clustered flowers. **B**, close-up of mature seed pods. Photos: Peter Heenan.

Final comments

Amongst the remarkable diversity of our native broom species profiled here, there is a good range suitable for cultivation that deserves to be more widely planted.

Provided that you meet their growing requirements, I particularly recommend (as indicated in Table 1) the dwarf species such as *C. monroi* or *C. nana* for the rock garden, the bright pink-flowered *C. carmichaeliae* or *C. glabrescens* as a shrub for open areas, *C. odorata* for its scented white and purple flowers, *C. williamsii* as a bold architectural shrub with yellow flowers, and *C. stevensonii* as an outstanding specimen tree with lavender flowers.

Because so many of our native brooms are threatened in the wild, growing them in cultivation may help ensure their survival. Some of the most threatened species include *Carmichaelia carmichaeliae*, *C. hollowayi*, *C. muritai*, *C. stevensonii* and *C. torulosa*.

Ideally, natural habitat restoration in the wild is the best long term conservation solution for any threatened species. Unfortunately, habitat restoration is difficult for the brooms when considering their preference for growing in disturbed habitats and major issues with weed infestation and high browsing pressure. Hopefully this article helps raise awareness of these unique members of our native flora.

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