

COPROSMA ON BANKS PENINSULA

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Introduction

Banks Peninsula has a good diversity of native shrubs; about 70 species of bushy, woody-stemmed plants 0.5 to 6.0 m tall fall neatly enough into a broad definition of a native shrub.

Which of them would you guess is the most abundant? During my botanical survey of Banks Peninsula in the 1980s I sampled the vegetation systematically by recording 1340 plots laid out on a grid across the whole of the Peninsula and adjacent Kaitorete Spit. One good measure of a species' relative abundance is the number of "hits" it scored on the systematic survey.

Muehlenbeckia complexa came top among shrubs and shrub-like plants with 218 hits, but it is better defined as a climber that forms shrub-like mounds in the open when it has nothing to climb up but itself. Of the more genuinely shrubby species, the winner is *Coprosma rhamnoides* (186 hits). Second is *Coprosma rotundifolia* (135). The bronze medal also goes to a *Coprosma*, *C. crassifolia*, with 117 hits.

Coprosma, then, is a genus of some note on Banks Peninsula, as in most other parts of New Zealand.

Worldwide, about 110 species are known, spread across a huge diamond-shaped vastness of Pacific Ocean, from Borneo in the west, southeast to Australia and New Zealand, far eastwards to the Juan Fernandez Islands off Chile, and from there northwestwards to distant Hawai'i. Easily half of them are in New Zealand; nearly all of those are endemic. They span the whole country, from the subtropical Kermadec Islands southwards to subantarctic Campbell Island, and eastwards to the Chathams. Some are large-leaved trees and tall shrubs, many are small-leaved divaricating shrubs, others are prostrate mat-formers. Few types of native or modified vegetation lack *Coprosma*.

Rubiaceae, the family to which *Coprosma* belongs, is one of the largest of all flowering plant families. Mabberley's "The Plant Book" (2nd edition 1997) gives 630 genera with 10,200 species. (Only Orchidaceae, Asteraceae and Fabaceae are bigger).

The most famous members of Rubiaceae are several shrubby species of *Coffea* from which coffee is obtained. Although *Coprosma* and *Coffea* are not placed in the same subfamily, large-leaved *Coprosma* such as *C. grandifolia* resemble *Coffea* bushes.

Fifteen species of *Coprosma* are native to Banks Peninsula, all woody, although there is one species of *Nertera* and one *Leptostigma* which are both creeping herbs and both quite closely related to *Coprosma*. Thirteen of the *Coprosma* species are small-leaved shrubs, generally known as mikimiki. Two, both known as karamū, have much larger leaves. Two more large-leaved species are more or less naturalised here from further north in New Zealand.

Coprosma is the second most-species-rich vascular plant genus on the Peninsula; only *Carex*, with 23 native species, has more. (*Epilobium* is represented by 14 native species plus *E. pictum*, which was evidently here in the early part of the 20th century but which has not been found since.) On Banks Peninsula *Coprosma* ranges from the coast to the highest summit (Te Ahu Pātiki / Mount Herbert, 920 m), and from open bluffs, grassland and shrubland into the shady interiors of tall forest. Most of the small-leaved divaricating species are tolerant of grazing and browsing. Because they readily invade grazed pasture they are often regarded as weeds by farmers, although usually not with the fierce hostility reserved for naturalised exotic gorse (*Ulex europaeus*).

Robin Waghorn, a farmer from Little Akaloa, vividly described to me how the "grey scrub" (mostly *Coprosma tayloriae*) steadily took over land that was "clean pasture" in his father's time. Such scrub is wonderful habitat for jewelled gecko, insects and birds, and is successional to podocarp / hardwood forest.

On the other hand, *Coprosma robusta* and *C. lucida* (Fig.1) are highly palatable to sheep, cattle, deer, goats, rabbits and hares, and are largely eliminated from places within reach of these exotic mammals. Since grazing and browsing by mammals was more or less excluded from Hinewai Reserve, both species have increased dramatically.



Figure 1.
Coprosma lucida

Below is an annotated list of *Coprosma* species on Banks Peninsula, in order of abundance, followed by some notes about hybrids and some dubious earlier records.

Symbols

Native geographic range:

- K Kermadec Islands
- TK Three Kings Islands
- N North Island
- S South Island
- Ch Chatham Islands
- St Stewart Island
- * naturalised on Banks Peninsula, not believed to be native there.

Abundance

Four broad categories are indicated, based on sampling frequency:

- abundant greater than 50 "hits"
- common 20 to 50 "hits"
- uncommon 1 to 19 "hits"
- rare no "hits"

The figures are the number of "hits" for each species on the systematic grid survey of Banks Peninsula and Kaitorete.

Altitudinal range:

- C Coastal
- LCT Lower cool temperate, from sea level up to 500m
- UCT Upper cool temperate, 500 - 750 m
- SA Subalpine, 750m upwards

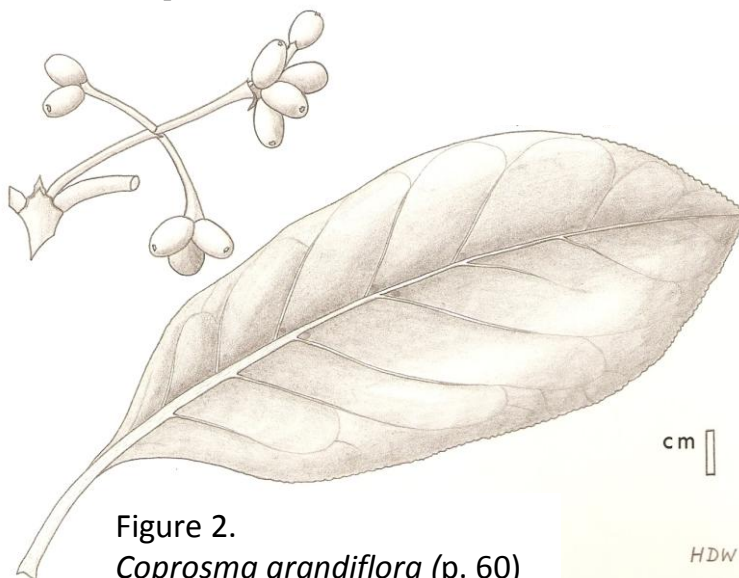


Figure 2.
Coprosma grandiflora (p. 60)

HDW

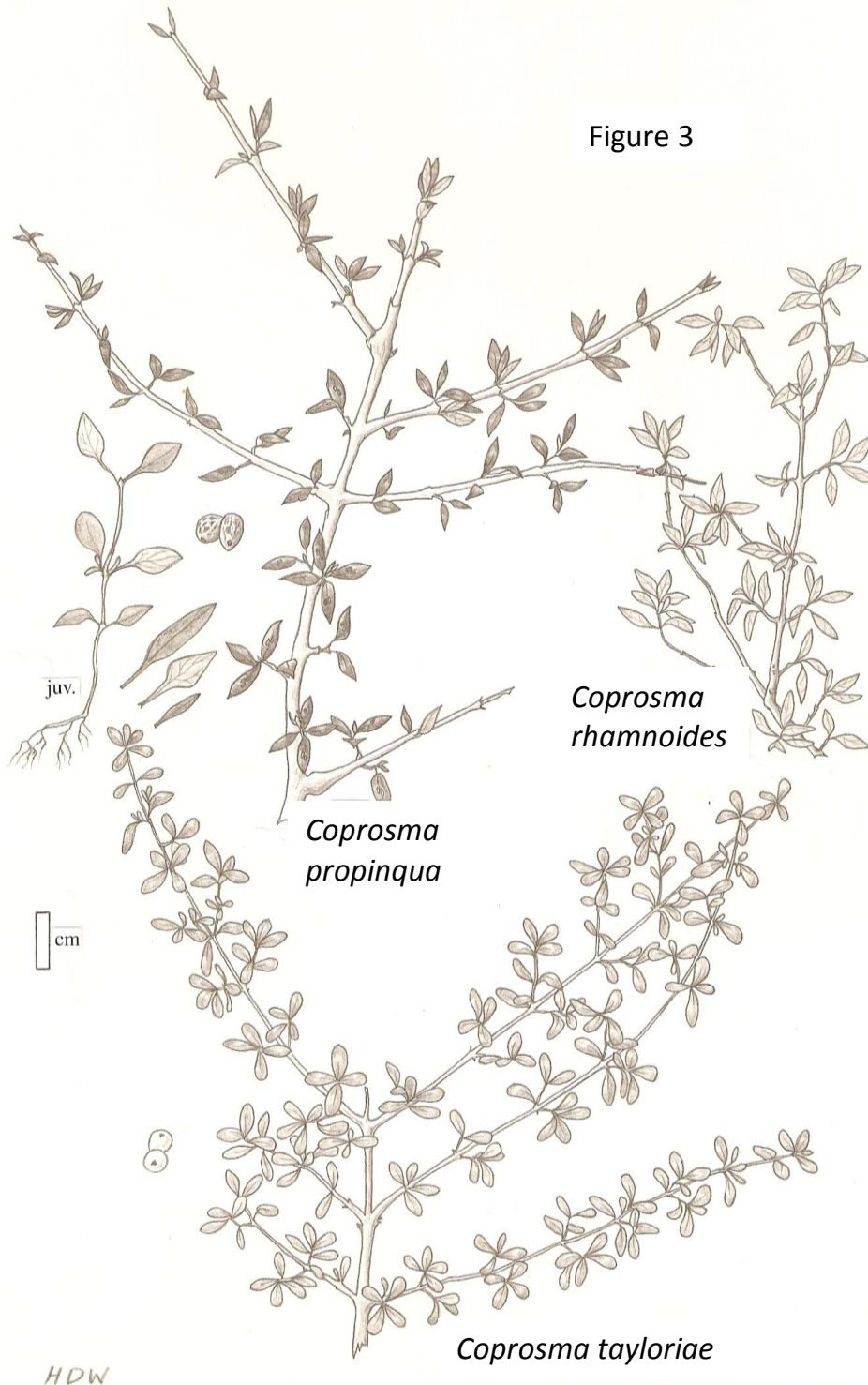
Coprosma Species On Banks Peninsula

C. rhamnoides (mikimiki, red-currant coprosma), Fig. 3

186. Abundant. C, LCT, UCT, SA

Shrubland, scrub and forest, often the dominant understorey shrub under grazed kānuka. Plants in the open can look very different from plants in shade.

N, S, St (including *C. polymorpha*)



C. rotundifolia (round-leaved coprosma)

135. Abundant. LCT, UCT

Forest, scrub, less commonly in more open shrubland.

N, S, St

C. crassifolia (mikimiki, thick-leaved coprosma)

117. Abundant. C, LCT, UCT

Shrubland, scrub and forest, often growing in dense dark brown-green thickets in the open, especially on rocky ground.

N, S

C. tayloriae (mikimiki), Fig. 3

96. Abundant. C, UCT, SA

Shrubland, scrub and forest, sometimes scattered in pasture; rare near sea level and mostly above 500m.

N, S, St (very rare on St)

Recognised for several decades under the tag-name "*Coprosma* sp. ' t ' ", this shrub was formally named *Coprosma tayloriae* A.P. Druce ex G. T. Jane, by Jane in 2005. In the same paper he also named *Coprosma dumosa* (Cheeseman) G. T. Jane, which he regarded as a distinct species close to *C. tayloriae*. His distribution maps indicate that he recognises both species on Banks Peninsula.

I find myself unable to separate two entities on the characters emphasised by Jane, although I need to check female flowers much more thoroughly than I have managed so far. Jane states "*Coprosma dumosa* differs most clearly from *C. tayloriae* in having deeply lobed female flowers" and " - - - female flowers in *C. tayloriae* are shallowly lobed and the fruit almost always white rather than normally orange to red in *C. dumosa*."

Banks Peninsula seems to have one large variable population with continuous variation in habit, leaf size, fresh leaf colour, yellowing of old leaves, length and stoutness of midrib, and fruit colour. The situation may prove different in the mountains, so in the meantime I am tentatively calling the whole population on Banks Peninsula *C. tayloriae* and excluding *C. dumosa* from the known Banks Peninsula flora. But I am left feeling dubious about the distinctiveness of the two taxa.

C. propinqua (mikimiki), Fig. 3

70. Abundant. C, LCT, UCT, SA

Shrubland, scrub, sometimes in forest, scattered in grassland, on rocky bluffs, on stony ground including coastal gravels where the plants can be prostrate, on coastal banks, and on wet sites.

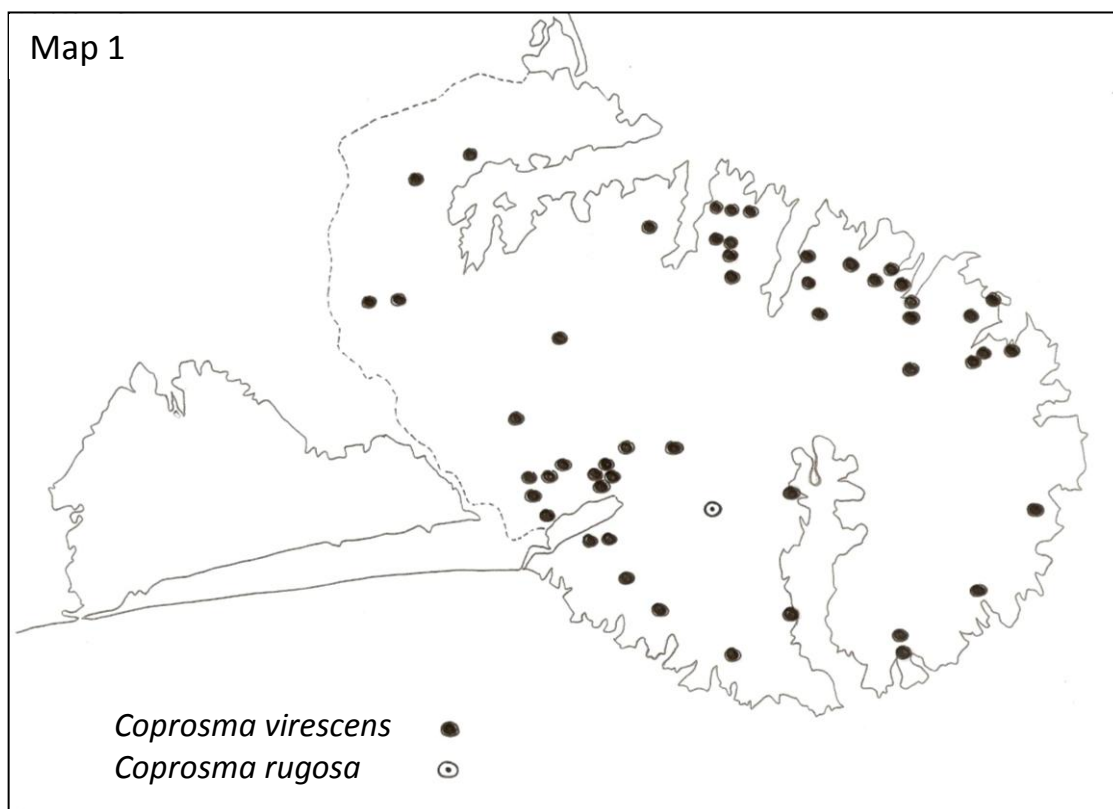
N, S, St, Ch

C. virescens (mikimiki), Map 1

49. Common. C, LCT

Shrubland, scrub and light forest.

N S



C. rigida (mikimiki)

48. Common. LCT, UCT

Shrubland, scrub and forest.

N, S, St

C. robusta (karamū)

42 Common. C, LCT, UCT

Forest, scrub, shrubland, streamsides, banks, forest edges. Readily eaten by sheep, cattle, goats, rabbits, hares, etc., so common only out of reach of these animals.

3K, N, S, Ch

C. areolata (mikimiki, net-leaved coprosma)

32. Common. C, LCT

Scrub, forest and shrubland.

N, S, St

C. lucida (karamū, shining karamū)

14. Uncommon. C, LCT, UCT

Forest, scrub, steep shrubland, banks; readily eaten and eliminated by grazing animals, becoming abundant again where animals are excluded.

N, S, St

C. linariifolia (yellow-wood)

8. Uncommon. C, LCT, UCT

Can reach the size of a small tree up to 8m tall.

Scrub and forest, commonest above 500m.

N, S

C. rubra (mikimiki), Map 2

8. Uncommon, and rather local. LCT, UCT

Scrub, forest and shrubland.

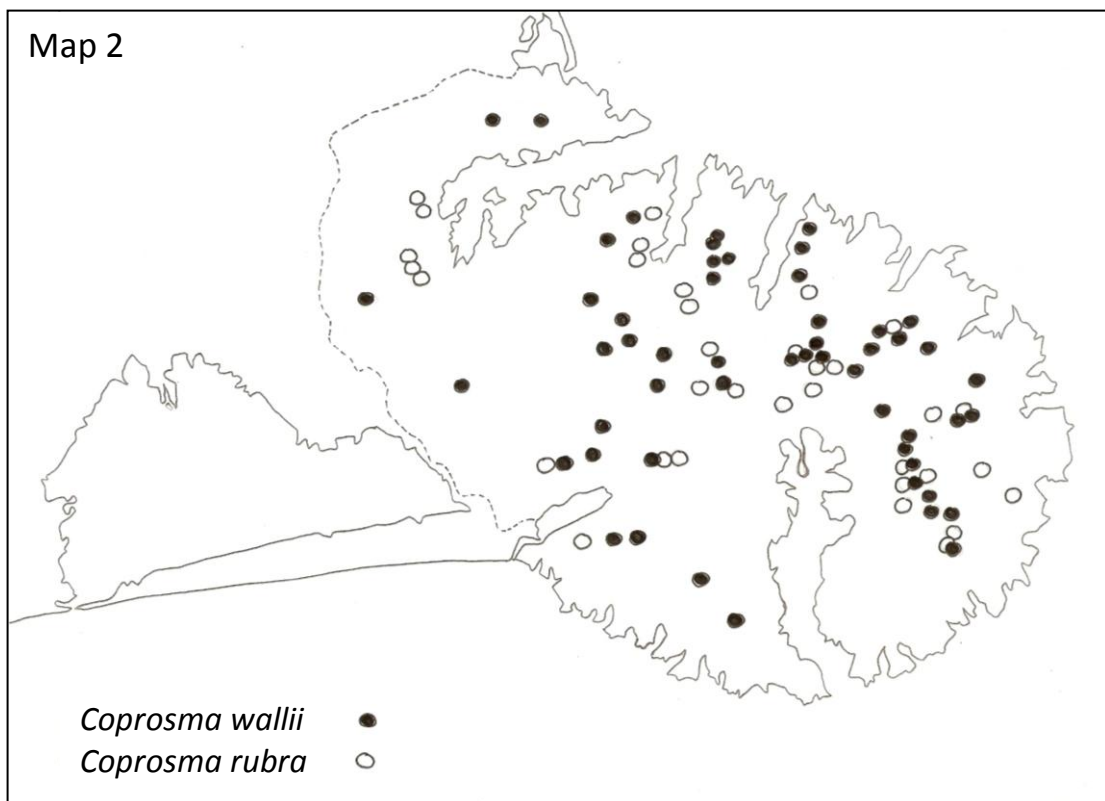
N, S

* *C. repens* (taupata)

2. Uncommon. C

Coastal banks, rock, and scrub.

K, TK, N, S. Southwards to Cook Strait and the northern end of the South Island, but naturalised to as far south as Stewart Island.



C. wallii (mikimiki), Map 2

1. Uncommon. LCT, UCT

Shrubland and scrub, often on ridges on Banks Peninsula in contrast to less fertile areas of New Zealand where it is often restricted to alluvial soils. It is listed nationally as a declining species in the 2004 watchlist of threatened and uncommon plants of New Zealand, but is relatively numerous on Banks Peninsula.

N, S

* *C. grandifolia* (kanono), Fig. 2, p. 55

Rare. LCT. Locally well-naturalised in forest, Garden of Tane, Akaroa, and possibly elsewhere, as an escape from cultivation.

TK, N, S. Southwards to about Harihari in the west and to near Conway River in the east.

C. acerosa

Rare. C, LCT, UCT

Known only from a few sites, some coastal, cliffs and open rocky ground.

N, S, St, Ch

C. rugosa, Map 1

Rare. Known from only one locality in the Okuti Valley; shrubland and scrub, 580m.

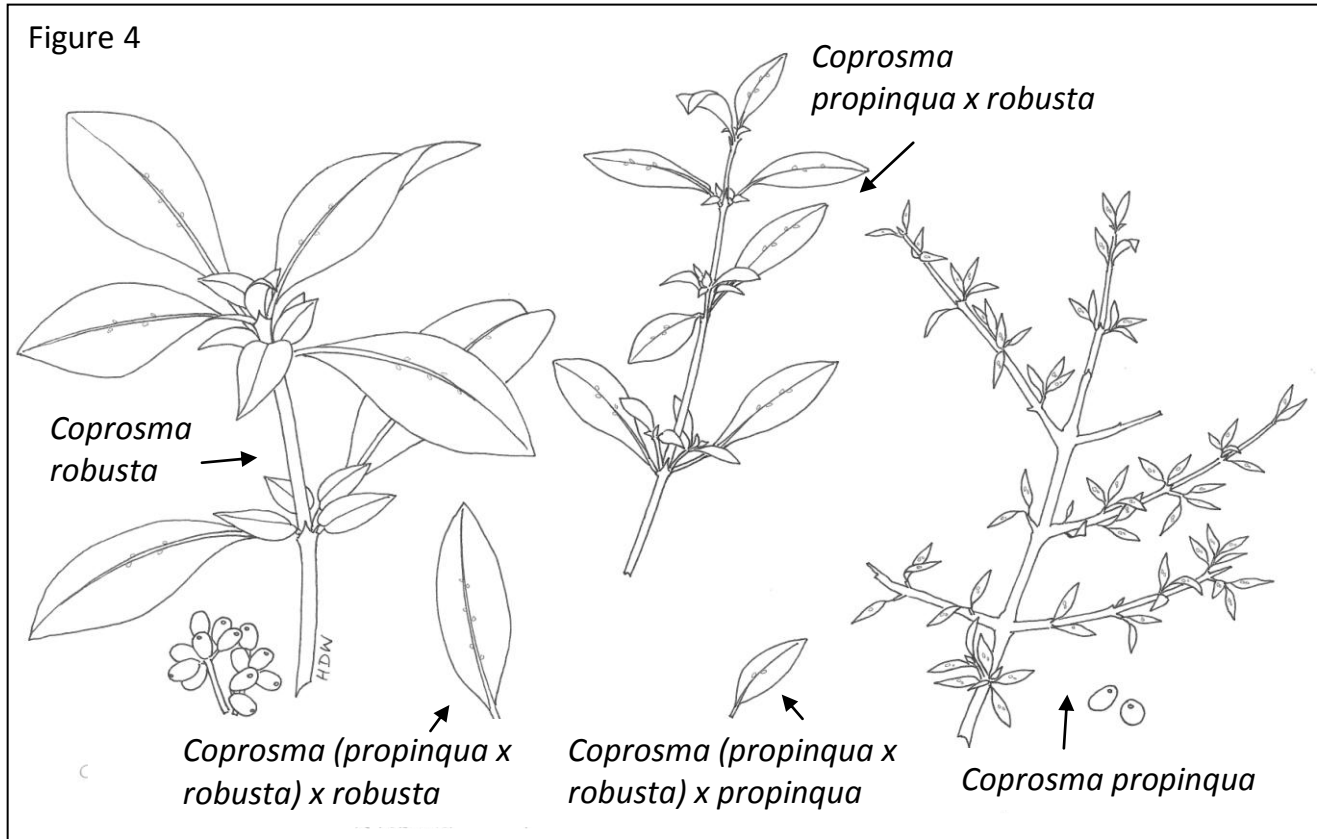
N, S, St

Hybrids

Only two *Coprosma* species commonly hybridise on Banks Peninsula, *C. propinqua* and *C. robusta* (Fig. 2). *C. propinqua* is a small-leaved divaricating shrub with white to blue fruit, and *C. robusta* is a very different, much larger-leaved, openly branched shrub with bright orange fruit. But the ease with which they hybridise suggests a close genetic relationship. F1 hybrids are uncommon, but by no means rare; they look intermediate between the two common to abundant parents. Fruit colour varies from white to pale blue to pale with darker flecks to pale orange. There must be considerable barriers to interbreeding because hybrids occur at a much lower frequency than either parent, and the two species maintain their highly distinctive populations. But the F1 hybrids are not sterile. At a much lower frequency there are plants intermediate between the F1 hybrids and either parent, obviously resulting from backcrossing. Thus hybrid swarms may confuse observers unaware of the situation.

During my botanical survey I collected only two other possible hybrids. I am fairly confident that one specimen represents the crossing of *C. linariifolia* and *C. propinqua*. A little more dubious is *C. rigida* x *rubra*,

although I can think of no other explanation for the mix of characters. The shrub in question grows on a roadbank between my gate and the Goughs Bay turnoff so if anyone wants to peruse it closely and offer an opinion I would be delighted.



Coprosma propinqua x robusta (hybrid karamū)

7. Uncommon. C, LCT, UCT, SA
Shrubland, scrub and forest.

Coprosma (propinqua x robusta) x robusta (hybrid karamū)

1. Uncommon. C, LCT, UCT, SA
Shrubland, scrub and forest.

Coprosma (propinqua x robusta) x propinqua (hybrid mikimiki)

Rare. C, LCT, UCT, SA
Shrubland, scrub and forest.

Coprosma linariifolia x propinqua

Rare. C
Coastal shrubland, Little Okains Bay.

Coprosma ? rigida x rubra

Rare. LCT
Roadside bank, Long Bay Road, Hinewai.

Dubious Records

Coprosma cuneata.

Armstrong, J.B. 1880. "abundant in Canterbury".
Presence on Banks Peninsula not likely.
Possibly confused with *C. linariifolia*.

Coprosma dumosa.

Jane, G.T. 2005. See comments under *C. tayloriae*.

Coprosma foetidissima.

Armstrong, J.B. 1880.
Martin (1963) considered the record might possibly be valid.
There is a Kirk specimen at AK, but no other records for Banks Peninsula.

Coprosma grandifolia.

Laing, R.M. (1919) regarded plants identified as *C. grandifolia* as probably luxuriant forms of *C. lucida*, though he left the question open. There are certainly luxuriant plants of *C. lucida* on Banks Peninsula ! On the eastern side of the South Island the Conway River area seems to be the present southern limit of this species, but see my comments under * *C. grandifolia* in the main list.

Coprosma microcarpa.

Armstrong, J.B. 1880. No other records.
Presence on Banks Peninsula would not be unexpected.

Coprosma spathulata.

Armstrong, J.F. 1870. Dry Bush, Mount Pleasant, Riccarton Bush.
He was possibly referring to *C. areolata*.

Coprosma tenuicaulis

Armstrong, J.B. 1880.
"Abundant in Canterbury". He was possibly referring to small-leaved plants of *C. areolata* or perhaps *C. virescens*.

Acknowledgements

All botanical drawings and maps are by the author.

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Mānuka, *Leptospermum scoparium*. Drawing Hugh Wilson

