RARE PLANTS AND BANKS PENINSULA

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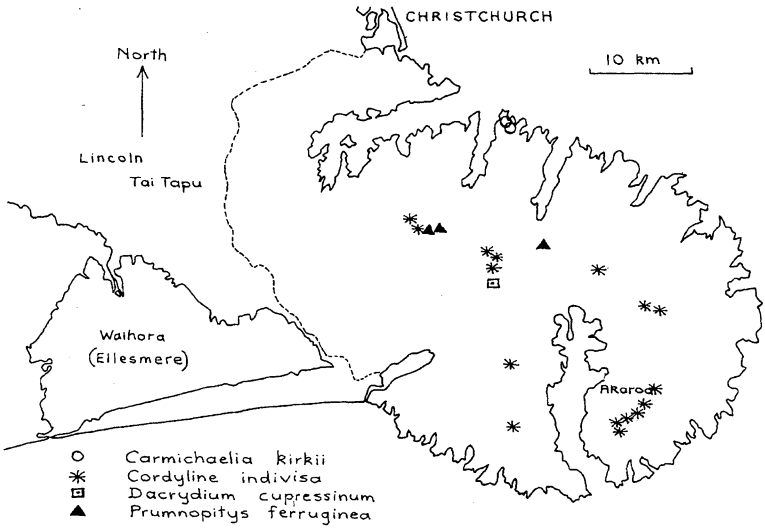
There is no denying that the native vegetation and fauna of Banks Peninsula has suffered a catastrophic savaging from our own come-lately species, *Homo sapiens*. Clear evidence of Polynesian impact starts about 700 years ago, with forest clearance, settlement sites, and faunal extinctions. Drastic changes ushered in by the arrival of Europeans span the last two centuries. The Peninsula now has less than 1% of the original old-growth forest cover, and many once abundant species of plant and animal are extinguished, or reduced to tiny remnant populations tottering on the brink of local extinction.

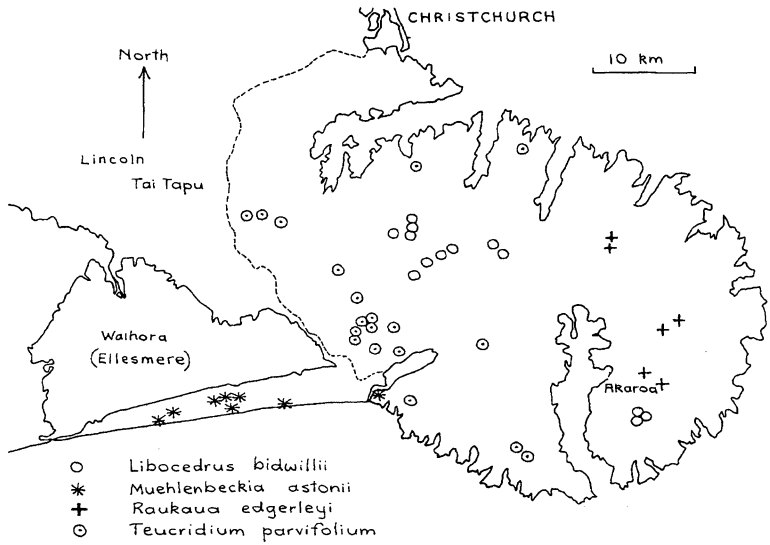
That's the bad news. But rarity is a concept with many perspectives. It is easy to think that we caused the scarcity of all those species now classified as rare, and are responsible for numerous extinctions. It is certainly true that the native fauna has fared very badly indeed; the birds alone lost nearly half of the species that were present here a thousand years ago. But native plant diversity on the Peninsula has perhaps fared better than many people fear. A look at some of the different kinds of rarity among the plants suggests that the really extraordinary thing is not what we have lost but what we have not lost, through all the vicissitudes of the last few centuries. There is room for optimism.

The figures don't leave us much room for complacency however. My estimate of the native flora around 1840 totals some 565 species (I doubt that any were lost during pre-European Polynesian times). About 20 species, or 3.6% of the flora, appear now to be locally extinct. About 100, or 18%, are currently rare. (I had better make an attempt to define "rare": during my detailed botanical survey of Banks Peninsula in the 1980s I spent 5 years intensively and systematically searching the whole Peninsula for plants; if I encountered less than 100 individuals or less than 20 areally restricted sites during this time, I count the species as rare.) However, of these 100 rare species I judge that a third of them might be naturally rare – that is, I suspect they were rare or in some cases absent on the pre-human forested Peninsula. Some of today's rarities are clearly just opportunistic waifs and strays taking advantage of disturbed bare ground provided by past and present human activity. Others, though, have obviously been significantly or drastically reduced by the same sorts of activity. I hope that the lists and notes that follow will elucidate some of this complexity and allow us to focus some assistance on those species that would benefit from conservation effort.

On Hinewai Reserve we are trying to do our bit. Hinewai harbours natural populations of rare species that are benefiting nicely from the removal of grazing, burning and other disturbance. Notable among them are *Cordyline indivisa*, *Raukaua edgerleyi*, *Cyathea medullaris*, *Dicksonia fibrosa*, *Pteris tremula*, *Myrsine nummularia*, *Pentachondra pumila*, and mistletoes. In addition we are growing some locally rare species in our arboreta and rock garden, among them *Libocedrus bidwillii*, *Myosotis* "australis var. lytteltonensis", *Dianella nigra*, *Bulbinella angustifolia*, *Carmichaelia kirkii*, and *Olearia fragrantissima*.



Map 1. Distribution of some rare trees and a shrub on Banks Peninsula.



Map 2. Distribution of some rare trees and shrubs on Banks Peninsula.

Symbols

National status according to de Lange et al. 1999:

1. critically endangered
2. endangered
3. vulnerable
4. declining
5. recovering, conservation dependent
6. naturally uncommon – sparse
7. naturally uncommon – range restricted
8. vagrant ("waifs and strays")

Status on Banks Peninsula
as above, plus:

9. local – good populations but not widespread
10. common – good secure populations, widespread on Banks Peninsula

[1] footnote
T? taxonomic status unclear
Hn natural population on Hinewai Reserve
Hp planted in arboreta collections or in rock garden on Hinewai Reserve from nearby sources, but not known to occur naturally within reserve boundaries.
* special conservation effort would be likely to result in clear-cut beneficial results

LIST 1 Plants present in 1840, now thought to be locally extinct

This is a tricky list! Firstly, some of the 19th century records are dubious and we don't have solid evidence for exactly what was here in 1840. So I have used my judgment and ignored records I can't believe if they are unsupported by specimens of certain origin. Secondly, some of the species in this list might still be lurking somewhere. Nick Head's splendid discovery of *Lepidium oleraceum* after an interval of 80 years underlines that! So does my discovery of *Lycopodium australianum*, reported by J. B. Armstrong in 1880 (as *L. selago*) and not discovered again until I found it on Mount Herbert in 1988. So does Susan Wiser's rediscovery of *Dolichglottis lyallii* on Mount Herbert in 1999, and of *Stenostachys gracilis* on Mount Bradley in 2000. I have looked very hard for the following species which I think were here in 1840, and haven't found them again yet, so even if extinct (keep all your fingers crossed) one could hardly find a more extreme measure of rarity. Where known, the date of the last certain record is given. Species still extant on adjacent Kaitorete (e.g. *Austrofestuca littoralis*, *Carmichaelia corrugata*) are not included in this list.

Species and date last recorded		National conservation status	Local Banks Peninsula status	Footnote	Other Symbols
Adiantum fulvum				[1]	
Alepis flavida	1971	4		[2]	
Bolboschoenus fluviatilis					
Coriaria angustissima					
Deschampsia cespitosa					
Epilobium pictum	1953				

Euphorbia glauca		4		
Hymenophyllum malingii				[3]
Hypolepis distans				[4]
Iphigenia novae-zelandiae		3		
Ischnocarpus novae-zelandiae	1926	6		
Isolepis distigmatosa	1919			
Myosotis forsteri	1919			
Myosurus minimus subsp. *novae-zelandiae*		4		
Parahebe canescens				
Pimelea arenaria				
Pittosporum obcordatum	1840	5		[5]
Sebaea ovata		1		
Taraxacum magellanicum	1953			

LIST 2 Plants rare on Banks Peninsula and rare nationally

Species	National conservation status	Local Banks Peninsula status	Footnote	Other Symbols
Anemanthele lessoniana	6	3		
Anogramma leptophylla	3	6		
Carmichaelia kirkii	4	2	[6]	*, Hp
Desmoschoenus spiralis	5	3	[7]	
Isolepis basilaris	3	7		
Lepidium oleraceum	2	1	[8]	
Leptinella nana	1	1	[9]	*
Muehlenbeckia astonii	2	3	[10]	
Muehlenbeckia ephedroides	6	7	[11]	
Myosotis "australis var. lytteltonensis"	2	1	[12]	*, Hp, T?
Olearia fimbriata	4	3	[13]	Hp
Pleurosorus rutifolius	6	6		
Pterostylis foliata		6		
Ranunculus macropus	6	6		
Tetragonia tetragonioides		3	[14]	
Teucridium parvifolium	4	3	[15]	*

LIST 3 Plants rare on Banks Peninsula and rare in Canterbury, but more or less common in other parts of New Zealand

Species	National conservation status	Local Banks Peninsula status	Footnote	Other Symbols
Anarthropteris lanceolata		3	[16]	
Baumea rubiginosa		3	[17]	
Carex appressa		6	[18]	
Carex trifida		6	[19]	
Cordyline indivisa		3	[20]	Hn
Cyathea medullaris		3	[21]	Hn
Dacrydium cupressinum		1	[22]	*
Dicksonia fibrosa		2	[23]	Hn
Hymenophyllum dilatatum		2	[24]	
Hypolepis lactea		6		
Poa astonii		6		
Pteris macilenta		1	[25]	*
Pteris tremula		6		Hn
Pterostylis alobula		3	[26]	

Schoenoplectus tabernaemontani		3	[27]
Trichomanes endlicherianum		3	[28]
Uncinia banksii		6	

LIST 4 Plants rare on Banks Peninsula, but more or less common in other parts of New Zealand, including parts of Canterbury

Species	National conservation status	Local Banks Peninsula status	Footnote	Other Symbols
Asplenium trichomanes		6		
Botrychium australe		6		Hn
Botrychium biforme		6		
Brachyglottis bellidioides		3	[29]	
Bulbinella angustifolia		2	[30]	*, Hp
Caladenia aff. *carnea*		6		T?
Caladenia chlorostyla		6		Hn
Caladenia lyallii		3	[31]	Hn
Clematis marata		2	[32]	*
Coprosma acerosa		6		
Coprosma rugosa		8		
Dianella nigra		3	[33]	Hp
Dolichoglottis lyallii		3	[34]	
Earina mucronata		7		
Eleocharis gracilis		3		
Elymus multiflorus		3		
Epilobium macropus		3		
Epilobium pallidiflorum		3		
Epilobium tenuipes		6		
Eryngium vesiculosum		7		
Euchiton polylepis		3		
Euphrasia zelandica		6		
Gastrodia cunninghamii		6		Hn
Gastrodia cf. "long column"		6		T?
Gaultheria crassa		9		
Gentiana grisebachii		6		
Gentiana serotina		7		
Geum cockaynei		7		
Grammitis ciliata		2		
Hebe odora		7		Hp
Hymenophyllum atrovirens		3		
Hymenophyllum bivalve		3		Hn
Hymenophyllum cupressiforme		3		
Hymenophyllum minimum		3		Hn
Hymenophyllum peltatum		3		
Hymenophyllum rarum		3		Hn
Isolepis pottsii		6		Hn
Juncus caespiticius		2		
Korthalsella clavata		8?	[35]	
Korthalsella salicornioides	6	6	[35]	
Lastreopsis hispida		6		Hn
Libocedrus bidwillii		2	[36]	*, Hp
Lycopodium australianum		7		
Melicytus "Kaikoura"		7?	[37]	Hn
Microlaena polynoda		3		
Microseris scapigera		6?		
Muehlenbeckia axillaris		8		
Myosotis "pygmaea var. drucei"		6		T?

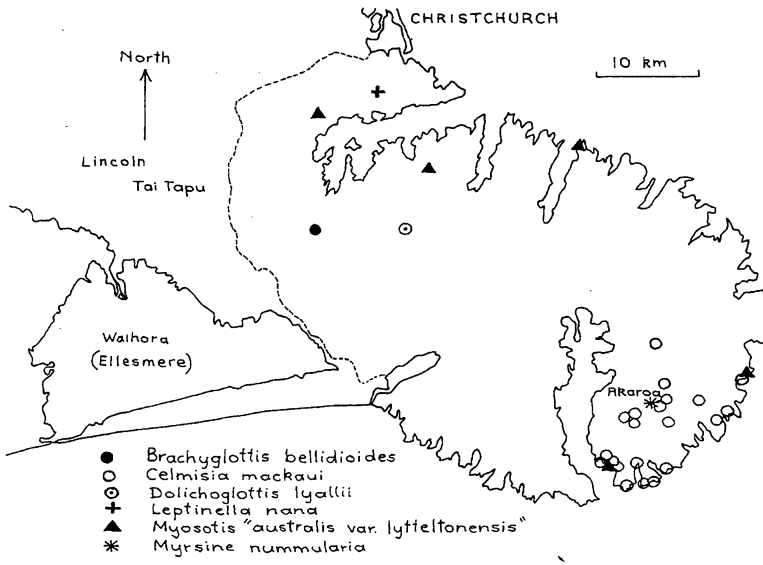
Myrsine nummularia	3	[38]	Hn
Neomyrtus pedunculata	6		Hp
Olearia arborescens	7		Hp
Olearia bullata	6		Hn
Oxalis magellanica	6		
Parahebe lyallii	3		Hp
Pellaea calidirupium	7		
Pentachondra pumila	3		Hn
Potentilla anserinoides	7		
Pratia perpusilla	7		
Prumnopitys ferruginea	2	[39]	*, Hp
Pterostylis tanypoda	6		
Pterostylis tristis	6		
Ranunculus acaulis	3		
Raukaua edgerleyi	3	[40]	*, Hn
Raoulia australis	8	[41]	
Raoulia hookeri	8	[41]	
Raoulia tenuicaulis	8	[41]	
Rumohra adiantiformis	6		Hn
Stackhousia minima	6		
Stenostachys gracilis	4		
Sticherus cunninghamii	2	[42]	*
Thelymitra nervosa	3		
Trisetum lepidum	6		Hn
Uncinia "affinis auct."	6		T?
Uncinia caespitosa	6		

LIST 5 Plants more or less common on Banks Peninsula (at least with some sizeable populations), but nationally rare

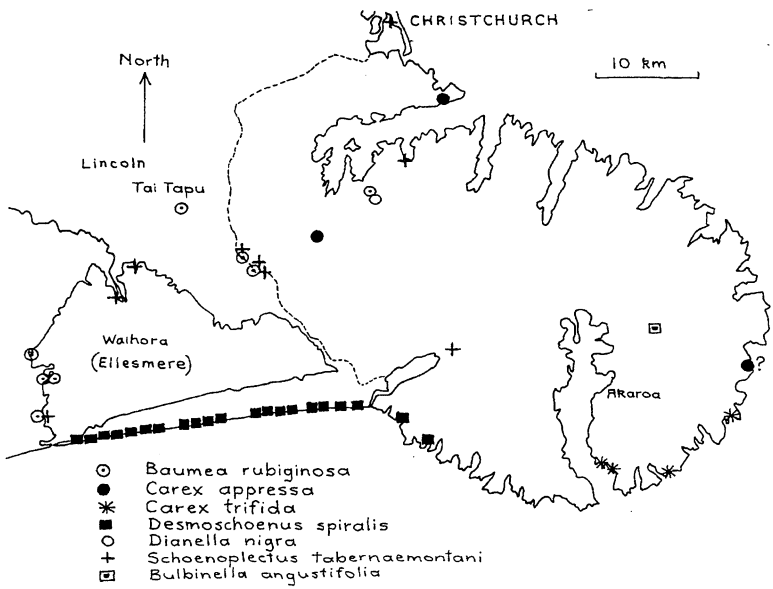
Species	National conservation status	Local Banks Peninsula status	Footnote	Other Symbols
Coprosma wallii	4	10		Hn
Ileostylus micranthus	4	10		Hn
Olearia fragrantissima	4	9		*, Hp
Sonchus kirkii	4	9		
Tupeia antarctica	4	10		Hn
Brachyglottis sciadophila	6	10		Hn
Pseudopanax ferox	6	10		Hp

LIST 6 Plants restricted to Banks Peninsula (Banks Peninsula endemics) but with more or less secure populations here

Species	National conservation status	Local Banks Peninsula status	Footnote	Other Symbols
Celmisia mackaui	7	9	[43]	Hn
Festuca actae		10		Hp
Hebe strictissima		10		Hn
Heliohebe lavaudiana		10		Hn
Leptinella minor		10		
Tmesipteris aff. elongata		3	[44]	*, T?
Wahlenbergia akaroa	7	7	[45]	Hp, T?



Map 3. Distribution of some rare dicot herbs and a subshrub on Banks Peninsula.



Map 4. Distribution of some rare herbaceous monocots on Banks Peninsula.

Footnotes

1. *Adiantum fulvum.* Banks Peninsula is the type locality for the species, collected and described by Raoul (1846). See Wilson (2000) for more detail.
2. *Alepis flavida.* See Wilson (1996) for more detail.
3. *Hymenophyllum malingii.* See Wilson (2000) for more detail.
4. *Hypolepis distans.* See Wilson (2000) for more detail.
5. *Pittosporum obcordatum.* Banks Peninsula is the type locality for this species, collected and described by Raoul (1844). Its alluvial forest habitat occupied accessible and desirable land quickly cleared by European settlers. Although diligent searching by botanists such as Bruce Clarkson (he included Banks Peninsula in his explorations) has turned up populations of this rare species in other parts of New Zealand, it has not been reported from Banks Peninsula since Raoul's discovery.
6. *Carmichaelia kirkii.* Earlier known from the Christchurch area but not recorded from Banks Peninsula until my surprising discovery of a population of about 20 individuals between Port Levy and Pigeon Bay in December 1987 (Map 1).
7. *Desmoschoenus spiralis.* A large population extends for most of the length of Kaitorete, but on Banks Peninsula pīngao is now known from only two sites on the Peninsula's southwest coast (Map 4).
8. *Lepidium oleraceum.* Until Nick Head's startling discovery last summer (2000–2001), Cook's scurvy grass was last reported from Banks Peninsula by Laing at Paua Bay in 1921.
9. *Leptinella nana.* Known from only one site, on the Port Hills. Probably always rare (Map 3).
10. *Muehlenbeckia astonii.* Kaitorete has a substantial population, but on Banks Peninsula the species is known only from one site nearby in steep, dry, near-coastal shrubland above Lake Forsyth.
11. *Muehlenbeckia ephedroides.* Kaitorete has a significant population, but on Banks Peninsula the species is known only from adjacent coastal shingle east of the outlet to Lake Forsyth.
12. *Myosotis* "australis var. lytteltonensis". Apparently a Banks Peninsula endemic, almost certainly a distinct species but not yet published at that rank. The only known substantial population is on Mount Evans, and even that is vulnerable (Map 3).
13. *Olearia fimbriata.* I knew of only one bush of this recently described species (earlier confused with *O. odorata*) until Geoff Walls' startling discovery of a substantial population near Okains Bay (Geoff Walls, pers. comm.). *O. fimbriata* is near its northern natural limit here.
14. *Tetragonia tetragonioides.* Far less common on Banks Peninsula than the climbing spinach, *T. trigyna.* Robust cultivars of *T. tetragonioides* are grown as a green vegetable in Peninsula gardens as elsewhere.
15. *Teucridium parvifolium.* Although local and uncommon on Banks Peninsula, this unusual small-leaved shrubby member of the Verbenaceae has reasonably substantial populations here, often in animal-modified second-growth forest and shrubland (Map 2).
16. *Anarthropteris lanceolata.* See Wilson (2000) for more detail.
17. *Baumea rubiginosa.* (Map 4).
18. *Carex appressa.* (Map 4).
19. *Carex trifida.* (Map 4).

20. *Cordyline indivisa.* The Banks Peninsula population, estimated at around 100 individuals, is an isolated one; the nearest occurrence known to me otherwise is west of the Main Divide. It is vulnerable to possum attack, but is regenerating well on Hinewai Reserve (Map 1).
21. *Cyathea medullaris.* See Wilson (2000) for more detail.
22. *Dacrydium cupressinum.* Rimu is represented in the wild on Banks Peninsula by only two male trees, one adolescent, one moribund. I am soon to follow up a report by a long-time local farmer of a young rimu he distinctly remembers on Ōtānerito Station, now part of Hinewai Reserve. Another young rimu (which I have seen) is said to have appeared spontaneously near a farm driveway within a few kilometres of the location of the known wild male trees. Rimu trees from Westland and from other unknown origins, both male and female, are planted in gardens, parks, and at the Montgomery Reserve near Hilltop. The species was never common on Banks Peninsula, the generally fertile soils giving a competitive edge to kahikatea, tōtara, and matāi (Map 1).
23. *Dicksonia fibrosa.* This is the rarest tree fern on Banks Peninsula with only about 10 individuals known, 5 of them on Hinewai Reserve. See Wilson (2000) for more detail.
24. *Hymenophyllum dilatatum.* For more detail on this and other filmy ferns see Wilson (2000).
25. *Pteris macilenta.* For more detail see Wilson (2000).
26. *Pterostylis alobula.* This little greenhood orchid is known from Banks Peninsula only from the Garden of Tane Reserve in Akaroa, where it grows along trackside banks. It could represent a human introduction. If truly wild it represents the known southern limit for the species.
27. *Schoenoplectus tabernaemontani.* (Map 4).
28. *Trichomanes endlicherianum.* See Wilson (2000) for more details.
29. *Brachyglottis bellidioides.* The related *B. lagopus* (including *B. saxifragoides*, not regarded as distinct) is common on Banks Peninsula, but *B. bellidioides* is known from only one locality near Gebbies Pass, on volcanic rock, but close to where sedimentary basement rock is exposed due to erosion of overlying volcanics (Map 3).
30. *Bulbinella angustifolia.* Reported in the past from a few localities (e.g. Mounts Herbert and Sinclair), but now known in the wild from only one population of around 100 plants near the Summit Road above Le Bons Bay (Map 4).
31. *Caladenia lyallii.* Currently known only from a few plants in Hinewai Reserve.
32. *Clematis marata.* Banks Peninsula is the type locality for this small clematis. It is now known from one small population on Mansons Peninsula, Lyttelton Harbour. There is a fairly recent, probably reliable report from Okains Bay. Wall (1953) records it from the New Brighton dunes.
33. *Dianella nigra.* Reported by Wall (1953) from 'Rocks, Port Hills', and also reported by Thompson (1973) in the Cashmere Valley. The only population currently known is at Big Rock, Orton Bradley Park, on the east side of Lyttelton Harbour (Map 4).
34. *Dolichoglottis lyallii.* Wall (1922, 1953) reported the yellow snow groundsel from Mount Herbert, and several specimens at CHR supported this record. I searched for the species without success during my botanical survey in the 1980s. Susan Wiser rediscovered it just where Wall said it was (from the upper tier of rocks between Herbert and Trig ZZ) in 1999 (Map 3).
35. *Korthalsella clavata* and *K. salicornioides.* See Wilson (1996) for more detail.

36. *Libocedrus bidwillii.* Norton and Molloy (1986) report on the threatened status of this species on Banks Peninsula following widespread death of wild trees in the 1950s and the disastrous Armstrong Reserve fire in June 1984, which destroyed about 400 saplings. Currently one live adult about 300 years old, and about 150 saplings, several of which have reached reproductive age, maintain this species' precarious hold on the Peninsula (Map 2).
37. *Melicytus* "Kaikoura". Populations of this apparently distinct taxon are known in and near Hinewai Reserve, but because of earlier confusion with *M. alpinus* its full distribution on Banks Peninsula is yet to be ascertained.
38. *Myrsine nummularia.* Known from one locality only: rock bluffs on Stony Bay Peak in Hinewai Reserve, where it is represented by a few plants. Margaret Bulfin (1972) reported it here. Armstrong (1880) listed it for Banks Peninsula (Map 3).
39. *Prumnopitys ferruginea.* Like rimu, miro was probably always uncommon on Banks Peninsula because kaihikatea, tōtara, and mataī have a marked competitive edge on the fertile soils. Most of the 10 or so trees, including some regeneration, are in the upper Te Kawa Stream Valley above Port Levy (on the eastern side of Mount Herbert). There is a single female tree in the Hay Reserve, Pigeon Bay. A tree (CHR 185380, Macmillan) at the head of the Purau Valley cannot be located now and was probably destroyed in a fire. Quite often on Banks Peninsula reports of miro turn out to be based on mistaken identification of adolescent mataī. (Map 1).
40. *Raukaua edgerleyi.* William Martin (1932) was apparently the first to mention this species for Banks Peninsula, so it has probably always been rare here. The current known population comprises about 15 adult trees and about the same number of saplings, all within Akaroa Ecological District and including Hinewai Reserve (Map 2).
41. *Raoulia australis*, *R. hookeri*, and *R. tenuicaulis.* All three species occur on Banks Peninsula only as chance "waifs and strays" on open ground, from much bigger populations to the west. So it is curious that the genus was published by Hooker in Raoul (1846) based on specimens collected by Raoul on the hills above Akaroa (Ward 1998). There is a large population of *R. australis* on Kaitorete.
42. *Sticherus cunninghamii.* See Wilson (2000) for more details.
43. *Celmisia mackaui.* (Map 3).
44. *Tmesipteris* aff. elongata. Three taxa occur on Banks Peninsula, *T. tannensis, T. elongata*, and a third more or less intermediate between the first two, with twice as many chromosomes as either of those two species. Its status awaits clarification. So far it is known only from Banks Peninsula. None of these *Tmesipteris* could be regarded as common on the Peninsula.
45. *Wahlenbergia akaroa.* Described as a distinct species by Petterson (1997). Although populations appear to represent a distinct taxon, with robust, firm, fleshy leaves and large blue or white flowers, there seems to be continuous variation between such plants and other forms of *W. gracilis* s.l. which are abundant on Banks Peninsula. Even if regarded as a distinct species, plants that appear to be conspecific occur at other coastal localities such as the Cook Strait area. I suspect that *W. akaroa* is better regarded as an ecotype of *W. gracilis*.
46. *Gratiola nana* has been reported in recent times from Lake Forsyth but I have yet to find it.

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