*Bazzania adnexa*
*Bazzania tayloriana*
*Cheilolejeunea* sp.
*Chiloscyphus muricatus*
*Frullania aterrima*
*Frullania patula*
*Frullania rostrata*
*Harpalejeunea latitans*
*Heteroscyphus allodontus*
*Heteroscyphus lyallii*
*Lejeunea flava*
*Lepidolaena clavigera*
*Lepidolaena taylorii*
*Marsupidium knightii**
*Mastigolejeunea anguiformis*
*Metalejeunea cucullata*
*Metzgeria furcata*
*Metzgeria* sp.
*Plagiochila lyallii**
*Saccogynidium australe*
*Symphyogyna hymenophyllum*
*Telaranea patentissima*
*Telaranea tetradactyla*
*Trichocolea hatcheri**
*Trichocolea mollissima**
*Zoopsis argentea*

**Fungi** List provided by Petra White 16 Apr 05

*Calocera* sp.
*Cyclomyces tabacinus*
*Favolaschia calocera*
*Ganoderma* cf. *applanatum*
*Isaria sinclairii*
*Lachnum* sp.
*Podoscypha petalodes* ssp. *floriformis*
*Ramariopsis kunzei*

# A botanist follows a linguist through the New Zealand bush: origins of Maori plant-names

**Rhys Gardner**

## Introduction

The southwards-venturing Polynesians of a thousand years ago found in New Zealand a diverse and mostly novel flora. The ways in which they apportioned names to it has been set out in a notable essay by linguist and scholar, the late Professor Bruce Biggs (1990, 1991)[1]. Here I repeat his explanations, then discuss some names that still puzzle.

The core of the Maori's central-eastern Pacific Ocean (CEP) homeland is generally considered to be the Cook Islands (CI). Its plant-names, current and obsolete, have been compiled by Whistler (1990), and I have drawn on that invaluable work freely. New Zealand Maori plant-names, gathered up by Beever (1991) from a number of sources (including the Banks & Solander ms. NZ Flora); are nearly all to be found in the standard dictionary of Williams (1997). Other references are given where necessary.

Firstly, a simplification: a pair of names (say, in New Zealand Maori and Tahitian) are said here to be "the same" where a linguist would say they are "cognate". That is, they have a common source in some ancestral language — they resemble one other because of inheritance, not just by chance or through borrowing from some third language. Similarly, a biologist might say that particular structures or modes of development in two organisms are "the same" as a briefer way of saying "they correspond in an evolutionary sense" or "they are homologous".

The worlds of linguistics and biology are much alike. A language is a community of interacting words which are interrelated in their history. Words group together in taxa of varying degrees of size and distinctness, as seen for example in modern English, which has gained vocabulary from several earlier languages.

Words can be thought of as corresponding to biological species; a biological individual then would correspond to the use of a particular word in the lifetime of a particular human individual — a "word-individual". Phonemes, that is, units of sound/meaning in a particular word, are seen to be "the same as" an organism's genes, and they mutate, just as genes do. In fact, their rate of mutation is comparatively frantic — one only has to think of the Americanization of English to see that a "word-individual" can change in sound and shape considerably within its lifetime.

Linguists have found that parallelism is very common in language evolution. That is, as a language evolves it will generally undergo regular and widespread change in the sounds of its vowels and consonants. The recency of splitting up of the proto-Polynesian language, and the regularity with which its sounds did or did not change as today's Polynesian languages came into being, has made for good agreement on which words in these languages might be "the same".

## Modes of origin of Maori plant-names

One kind of origin was where the name of a CEP plant could be transferred directly to the New Zealand scene, because of the near identity of the plants involved. *Dodonea viscosa* here would have immediately been recognized as the homeland's 'ake, *Geniostoma ligustrifolium* as its 'ange, *Lepidium* spp. as nau, *Metrosideros robusta* as rata, *Solanum americanum* as poro, *Freycinetia banksii* as kiekie, *Astelia* spp. as whara (ie. *Pandanus* spp. in Polynesia), etc., etc.

Direct transference of a CEP name to the New Zealand situation however is often based on what a botanist would regard as superficial similarity. For example, pukatea (literally, the "white broad-leaf") applies to *Pisonia grandis* in the Pacific but to *Laurelia novae-*

[1] Pawley (2001) discusses Biggs's life and work, and gives a bibliography arranged by subject.

*zelandiae* in NZ, both simply being large columnar-trunked trees with pale smooth bark. Another example is pirita, in CI the name for two climbers with divided leaves (a yam and a jasmine) but in NZ applied to the supplejack (*Ripogonum scandens*) and mistletoes such as *Ileostylus micranthus*.

Other examples of "transference by poetic licence" are:
a) neinei — tree daisy (*Fitchia* spp.) in CI and Tahiti, *Dracophyllum latifolium* in NZ; these have a candelabra-like habit but are very different florally.
b) pohutukawa —*Sophora tomentosa* and *Scaevola sericea*, in CI, the principal name for *Metrosideros excelsa* in NZ; these are all coastal trees or bushes with silver-hairy leaves but there the resemblances end.
c) ongaonga — in CI and elsewhere the common urticaceous tree *Pipturus argenteus* (oronga in CI, ro'a in Tahiti), but in NZ the name of our largest stinging nettle, *Urtica ferox*. In western Polynesia the stinging nettle trees belong to *Dendrocnide* and are generally called salato; this name, and tree-nettles are lacking from CI, but *D. harveyi* in Tahiti is known as halato there.
d) toatoa in CI refers to the native cress *Rorippa sarmentosa*. The name is not used for the NZ native cresses, but, oddly, appears to have been transferred to our podocarp *Phyllocladus toatoa* — because of the similarly lobed "leaves" one has to suppose.

Sometimes in the transference a prefix or suffix was added to the CEP name, or the name was reduplicated, such operations indicating a qualified level of affinity.

Examples are:
a) kanono or manono — NZ's *Coprosma grandifolia*, which resembles only in its leaves CEP's common small tree *Morinda citrifolia* (nono in CI and Tahiti, nonu in Western Polynesia);

b) kahikatea — NZ's *Dacrycarpus dacrydioides*, whose Maori name means "white *Syzygium*", a reference apparently to the reddish succulent fruits of both this podocarp (small fruit) and the Polynesian food-tree *Syzygium malaccense* (much larger fruit);

c) rengarenga — NZ's *Arthropodium cirratum*, was seen to resemble *Curcuma longa*, the turmeric (renga in CI, etc.), an aboriginal introduction throughout Polynesia; both have a rhizome and broadly strap-like leaves.

d) papauma — one of the lesser-known Maori names for the common NZ tree *Griselinia littoralis*, this perhaps derives from CI pauma, name of the forest mistletoe *Descaisnina forsteriana*. The two plants are unlike in habit and flowers but resemble one another considerably in their foliage. Note that the leafy NZ mistletoes have very different Maori names.

Two unusual cases of transference, in which the name-originating plant is absent from the Cook Islands today (although it may have been present in former times, and is present elsewhere in CEP today) are:

a) kanuka and manuka for the two NZ myrtaceous trees, *Kunzea ericoides* and *Leptospermum scoparium*. The plant originating the "nuka" part of this name would be *Decaspermum fruticosum*, also a member of Myrtaceae and much like our two species in its small, ovate, oily-scented leaves and regular white flowers. It has never been collected from CI, but it (and some very similar species) are well-known further to the east and west (Gardner 1998).

b) kowhai, for *Sophora* (Leguminosae) in New Zealand, is the same as the name for the similarly leguminous, woody and coastal *Sesbania* of Polynesia ('ofai in Tahiti and in Hawaii). *Sesbania* is not currently known in CI but is present, though generally uncommon, on atoll shores elsewhere in western and eastern Polynesia (Sachet 1987).

A third unusual case is presented by the NZ Maori name tawa for *Beilschmiedia tawa* (Lauraceae). This is not related to the widespread Polynesian tree *Pometia pinnata* (Sapindaceae) but both have a lofty habit and edible fruit. *P. pinnata* might have been taken through Western Polynesia by humans, and the name is uniform in this region (dawa in Fiji, tava in Samoa, Tonga, etc.). However, in CI the species appears to be a post-European introduction. Also, the "k" in the name kava recorded for *P. pinnata* in Tahiti (Whistler 1990) marks it as a borrowing - 'ava would be correct Tahitian) - so we can suppose that the plant was not an aboriginal introduction in Tahiti either. Where then did Maori get the name tawa from ?

Some well-known CEP plants are so unlike any in New Zealand that their names could not reasonably be transferred. There are many examples: toa (*Casuarina equisetifolia*), ava and mati (*Ficus* spp.), ngatae (coral tree, *Erythrina variegata*), ifi (*Inocarpus edulis*), etc. The reverse situation is where the NZ plant was so distinctive — here, a new name had to be provided, at least if the plant was common or useful in some way. Sometimes the name might be a completely new coinage, but more usually it would indicate some feature of the plant or have some other kind of naturalistic or historical relevance.

For example, there are no mangroves (except for recently planted ones!) in CEP — the NZ Maori manawa for *Avicennia marina* has no equivalent in CI names, nor does manawa resemble any of the West Polynesian names for mangrove genera (e.g., tongo). The NZ podocarps provide another example: they have mostly acquired invented names, either completely new coinages or, more often perhaps, names indicative of some particular feature of the plant. In fact, our forest trees mostly have novel names, e.g.

titoki (despite the family presence in CI), rewarewa, mangeao, kamahi (NZ's most common tree, the genus present in CI but without a name), mahoe, puriri, etc.

Sometimes, just by chance, an invented name could resemble a CEP one. I wonder whether hinau for NZ's *Elaeocarpus dentatus* only accidentally indicates the floral likeness between this tree and CEP's fau (*Hibiscus tiliaceus*). And Biggs saw in the NZ usage of kohekohe for *Dysoxylum spectabile* some resemblance between this tree and the tall grasses (especially bamboo) to which the name is restricted in Polynesia. My feeling is that we have here a coincidence (though I concede that, since there are no dysoxylums or other meliaceous trees in CI, it might just be that some aspect of bamboo, recorded perhaps in song or proverb, provoked a transfer of the name to *D. spectabile*).

**Notes and queries.**

*Aristotelia serrata* At first sight, the name makomako in NZ Maori seems a transfer from the generic mako, ma'o etc., found through much of Western Polynesia for small trees of the malvalean lineage (*Commersonia* and *Melochia*; in Fiji *Trichospermum* only), all having regularly serrated leaves. But CI lacks both the name and the trees. Perhaps the use of the mako shark tooth in Maori decoration provoked a revival of the name for *A. serrata.*

*Beilschmiedia tarairi* Use of taraire for the New Zealand tree suggests this naming was done by persons from the island of Mangaia in CI, where it refers to *Terminalia glabrata* — both are heavy-crowned forest trees with stiff obovate leaves. In other parts of CI *T. glabrata* is called kauariki, as it is in eastern Polynesia (recorded by Parkinson in 1773 in Tahiti as "aowiree", f. Whistler 1990). However, in Samoa and Tonga the structure of the former name can be detected (talie and telie respectively). Perhaps in NZ kauariki had already been co-opted for *Agathis australis*.

*Bidens pilosa* The NZ Maori koheriki for this weedy herb has no resemblance to its names in CEP, which refer generally to the prickly nature of the seed-heads (piripiri in CI and Tahiti). There are two other NZ plants which the Maori called koheriki, *Scandia rosifolia* and (sometimes) *Melicope ternata*, and these and *B. pilosa* do share a trifoliate leaf. But curiously, there would have been reinforcement from the Hindi-derived "cowage" (sometimes spelt "cowitch"), a word used by late 18th C. European writers first for some exotic plants with irritant hairs (*Mucuna* spp., Fabaceae) and then also for *B. pilosa*. The Bay of Islanders must have been surprised to hear sailors, traders and missionaries cursing in seemingly good Maori this nineteenth-century plague weed.

There seems to be no evidence that *B. pilosa* is native to New Zealand. I doubt it was a Polynesian introduction either. It probably arrived in NZ with the whalers and earliest settlers, as it seems to have done elsewhere in the Pacific — cf. the reference in an early Tahitian dictionary : "piripiri ... also a foreign plant, called by some cowhage, introduced to Tahiti, from Norfolk Island, in 1800" (Davies 1851). Archaeologists should be able to settle the point, by digging.

Our current grass flora (Edgar and Connor 2000) contains only toetoe (*Cortaderia*) and karetu (*Hierochloe*) as Maori grass names, but more have been recorded. New Zealand in earliest Maori times would have lacked the grassy swards of the Polynesian homeland villages, and the CEP generic matie for such grasses is almost lacking in NZ (but see below). The CEP generic mauku, for the taller taro-swamp grasses and weeds, is found in NZ Maori not for grasses but for a disparate set of plants (*Asplenium bulbiferum*, etc.). However, tarutaru apparently is a NZ Maori generic for the non-tussock grasses (Williams 1997).

Richard Taylor (1848) listed some unfamiliar grass names, including the only reference I know of to "mauti" and "moku" as NZ grasses — he does not state their botanical identity though. Just as puzzling is his entry for "pouaka", said to be "a fine grass, growing in great abundance at Kapiti, nearly resembling the meadow fescue, having a strong disagreeable smell. The latter characteristic would suggest correction to "puaka", that is, pig — cf. the Tongan use of this name for the strong-smelling grass *Melinis minutiflora* (Whistler 1991). As spelt "pouaka", however, this is indeed a grass name, one of several for the (not odorous) native *Austrofestuca littoralis*. Perhaps Taylor's informant was misidentifying a very early population of the adventive stink-grass *Eragrostis cilianensis*.

The only CI name for *Paspalum orbiculare* is mata, (literally, face or eye, apparently referring to the neatly circular spikelets). I am not convinced of the antiquity of this name, if only because there is a very different name in Tahiti, nohu nohu (as recorded by Banks & Solander). The NZ Maori names recorded —taranui, tarakoi and tuhui, are different again. Linguistics then gives no help in judging whether this grass is a pre- or post-European introduction to NZ.

For the NZ species of *Cortaderia* tussocks, generally known as toetoe, there is the alternative name kakaho. This is widespread in CEP for *Miscanthus floridulus*, a strong-stemmed tall grass of dry burnt-over hillsides. Like our cortaderias, it has been used to line house-walls and roofs. In New Zealand, toetoe rather than kakaho appears to have been more usual name for the cortaderias. It is not a name for any CEP plant. Williams (1997) gives "to strip" as a meaning of the word, which does seem to connect with the loose tussocky habit of these grasses. Perhaps toetoe largely replaced kakaho for some cultural (avoidance taboo) reason.

In the case of *Hierochloe*, the holy grasses, the NZ Maori name is the same as that of the Austro-Pacific *Cymbopogon refractus* (in Tahiti, 'aretu). This grass is also sweet-smelling, though of lemon not coumarin. It is present in CI (Rarotonga) today but lacks a name there — presumably it has been forgotten.

*Sarcocornia quinqueflora* The name ureure, a reduplication of the Maori word for penis, has traditionally been applied in New Zealand (and in CI, one speculates) to the phalloid fruits of *Freycinetia*, but Solander got it for our glasswort, *Sarcocornia quinqueflora*. No other early botanist confirms such a usage — in fact, *Sarcocornia* apparently lacks a Maori name, proper or not (Beever 1991). It might have been an informant's joke on Solander — if so the joke has been revived by Crowe (1981).

*Sigesbeckia orientalis* The CI name for this weedy herb is kamika. Similarly it is 'ami'a or 'amiami in Tahiti and 'ami'a on Rapa. The name seems to occur even in the language of the western Polynesian outlier of Tikopia : "kamika ... bush with spiky flower, common on edge of cultivation (Firth 1985). The NZ Maori name however is punawaru, so linguistics gives no support to the idea that *S. orientalis* might have been an accidental Polynesian introduction to New Zealand.

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# Plant records from the Swansea Bay –Mt Taylor area, Kawau Island

**Mike Wilcox, Maureen Young, Gwenda Cruickshank & John Millett**

We visited Kawau Island on 9 March 2005 to explore the plants at the head of Bon Accord Harbour, taking in Swansea Bay, the Mount Taylor Stream valley, and Mount Taylor. This was a follow-up study to investigations in the North Cove – Vivian Bay area (Wilcox *et al.* 2004).

The sheltered estuaries have mangroves (*Avicennia marina*), with *Chenopodium ambiguum* common on the shell banks, and *Plagianthus divaricatus* forming marginal thickets. The dominant rush-like plants are *Apodasmia similis*, *Ficinia nodosa* and *Baumea juncea*, and with a colony of *Baumea articulata* - a new record. Low carpets of *Lilaeopsis novae-zelandiae* were a feature, and some of these also had populations of *Ranunculus acaulis* (another new record).

The Mount Taylor Stream valley is mainly open kanuka forest (Fig. 1), with an occasional puriri (*Vitex lucens*) but the lower reaches abound with various exotic plants, many of which are introductions or escapes dating from the early settlements in Bon Accord Harbour. Particularly prominent are ladder fern (*Nephrolepis cordifolia*), stinking iris (*Iris foetidissima*), agapanthus (*Agapanthus orientalis*), elephant's ear (*Alocasia brisbanensis*), taro (*Calocasia esculenta*), arum lily (*Zantedeschia aethiopica*), buttercup bush (*Senna semptemtrionalis*), kahili ginger (*Hedychium gardnerianum*), fairy crassula (*Crassula multicava*), Australian sedge (*Carex longebrachiata*), pampas (*Cortaderia selloana*), belladonna lily (*Amaryllis belladonna*) and Shasta daisy (*Leucanthemum maximum*). We also found several clumps of the large monocot *Furcraea foetida*. Tobacco (*Nicotiana tabacum*) grows wild under an area of open kanuka (Fig. 2). Beside the stream we also found *Scrophularia auriculata* (found on Kawau Island also at Mansion House Bay, E.K. Cameron, *pers. comm.*), *Myosotis laxa* and *Epilobium nerterioides.* Prominent native plants along the stream flats are *Carex virgata* and *Juncus sarophorus*, together with very extensive stands of three ferns – *Deparia petersenii*, *Diplazium australe*, and *Hypolepis ambigua*. The climbing fern *Microsorum scandens* is very prominent on tree trunks in the open kanuka stands (Fig. 3).