

NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 40

JUNE 1995



NEW ZEALAND BOTANICAL SOCIETY
N E W S L E T T E R
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Subscriptions

The 1995 ordinary and institutional subs are \$14 (reduced to \$10 if paid by the due date on the subscription invoice). The 1995 student sub, available to full-time students, is \$7 (reduced to \$5 if paid by the due date on the subscription invoice).

Back issues of the *Newsletter* are available at \$2.50 each - from Number 1 (August 1985) to Number 39 (March 1995). Since 1986 the *Newsletter* has appeared quarterly in March, June, September and December.

New subscriptions are always welcome and these, together with back issue orders, should be sent to the Secretary/Treasurer (address above).

Subscriptions are due by 28 February of each year for that calendar year. Existing subscribers are sent an invoice with the December *Newsletter* for the next year's subscription which offers a reduction if this is paid by the due date. If you are in arrears with your subscription a reminder notice comes attached to each issue of the *Newsletter*.

Deadline for next issue

The deadline for the September 1995 issue (Number 41) is 31 August 1995.

Please forward contributions to: Bruce & Beverley Clarkson, Editors
NZ Botanical Society Newsletter
7 Lynwood Place
HAMILTON

Contributions may be provided on floppy disc (preferably in Word Perfect 5.1) or by e-mail (ClarksonB@Landcare.CRI.NZ).

Cover illustration

Eryiobotrya japonica (loquat) a tree up to 8 m tall belonging to the rose family is widely grown in warm temperate countries for its attractive appearance and edible fruit. Naturalised in the northern North Island. It flowers from autumn to early winter and in southern parts of its range successful fruit set seems to be limited by early frosts damaging flowers. This years mild winter in the Waikato allowed abundant production of the fragrant flowers. Drawn by **Catherine Beard**, Herbarium Keeper at the Biological Sciences Department, University of Waikato.

Regional Botanical Society News

■ Nelson Botanical Society

February field trip: Mt Murchison

We started out from the bottom on foot exploring the lowland forests, adding a vast number of species to the list from the previous trip (March 1991). The lower forests were quite species-rich red beech-rimu forests. Interesting finds included the dainty *Hydrocotyle dissecta* and a misplaced *Coprosma rugosa* on a ridge instead of in a gully or on a streamside. At the fog base, quite near the treeline, pink pine (*Halocarpus biforme*) and mountain toatoa (*Phyllocladus alpinus*) were encountered and a diversity of shrubs such as *Meliccytus alpinus*, *Leucopogon suaveolens*, *Cassinia vauvilliersii*, *Coprosma* "paludosa" and *C. "alpina"* were quite common. Out of the shrublands there were vast carpets of *Chionocholea australis* broken by the large daisy *Celmisia semicordata* and the tall flowering spikes of the giant spaniard *Aciphylla colensoi*. Flowers included gentians (mainly *Gentiana bellidifolia*), the large flowered *Hebe macrantha* and the pink-centred *Forstera mackayi*. As we were about to descend the fog finally lifted to provide views of the Buller Valley winding its way past the mountain.

March field trip: Thorpe Bush & Kaiteriteri

Well, Mt Arthur did it again! Bad weather meant hasty reorganisation which placed us at Thorpe Bush in Motueka. After a brief introduction to the problems of managing modified remnants such as this -the weeds, genetic purity in stock and the question of what is a native (pohutukawa and karo can be weeds!), the clouds opened up. We had long enough to get to see the effects of reduced mowing under tree crowns and the natural introductions of species such as *Coprosma areolata*, wineberry, and totara. In one place a row of totara seedlings shadowed a branch above. After traversing the residual matai stand we retreated to Lillian Turner's place.

After a prolonged morning tea the rain eased enough for a tour of the garden - as always a place of interest with its range of native alpenes. After lunch we headed for Kaiteriteri. This proved rather like a bomb site compared to the morning stop. For much of the first half of the track dense pines had recently been removed. Nevertheless, we saw hangehange and a wide range of ferns. The second half of the track wound its way through a stand of black and hard beech with a small pocket of kahikatea. Finally we sloshed our way across the estuary to the cars through glasswort and coastal rushes.

April Easter camp: Reefton

To get four fine days especially at Easter was exceptional and enjoyed by 19 1/2 people, with six keen Canterbury Botsoccers and one keen young 3-year-old, almost overwhelming the Nelson contingent. Their added expertise was frequently needed and very welcome.

The first day we headed for Mt Haast. The long ascent through the mountain and silver beech forest yielded a wide array of species including some interesting juvenile forms. Shoots of *Pseudopanax simplex* and the very dissected *Pittosporum rigidum* juvenile were revealed by reversion shoots on older plants. Cedar trees yielded *Hymenophyllum malingii* and in wetter places *H. rufescens* was seen. Further up the slope *Pseudopanax linearis* with large black fruits and alpine upper forest species such as *Archeria traversii*, *Dracophyllum traversii* and *Hebe vernicosa* became quite common. The forest gave way abruptly to carpet grass and narrow-leaved snow tussock. Here the robust, stalked *Gentiana montana* was still in flower and the most common *Celmisia* was *C. armstrongii*, distinguished by its orange midrib. The spaniard included the small bright green *Aciphylla similis* and the yellow mid-ribbed *A. colensoi*. The "jelly bean" plant (*Astelia linearis*) formed small mats in the wetter places and fascinated us with its huge red berries sitting singly on the turf. At the summit much of the party were entertained by the antics of rock wrens for nearly half an hour. Here vegetation was sparser and included *Ourisia macrophylla*, *Anisotome pilifera* and *Ranunculus insignis*. Special thanks on this day to Owen Dennis for his local knowledge and persuading us to go there.

The next day we visited the Garvie coal field. The road yielded a wide variety of ferns on the wet banks and quite a diversity of shrubs. At the morning tea stop we saw the first of several carpets of *Hymenophyllum malingii* on the ground, nearby plant fossils were easily uncovered. On the summit ridge the vegetation changed abruptly to yellow silver pine (*Lepidothamnus intermedius* and pink pine

(*Halocarpus biformis*) with some cedar and manuka. Along the track there were late flowering *Gentiana spenceri* and sundews. A steep descent brought us back close to the vehicles.

On Sunday we visited Alborne Coalfield and Merrijigs an area of kanuka shrublands and young red beech forests. Near the road the fascinating whorled carpet of *Juncus squarrosus* was quite common and there was a wide variety of hybrids between *Gaultheria macrostigma* and three other species, *G. antipoda* (the most common), *G. rupestris*, and *G. depressa*. The area was quite rich with bog plants such as *Thelymitra* species, *Sticherus cunninghamii* and *Gleichenia dicarpa*, and dense tufts of the comb fern (*Schizaea australis*).

On Monday we visited Giles Creek, an area of logged lowland forest. Here we were fascinated by the berries. Large black berries of *Pseudowintera colorata* with orange pulp, tasty orange berries on *Neomyrtus pedunculata*, *Coprosma tenuicaulis* with its black berries, *Coprosma* "taylorae" with deep pink berries, and mauve berries on weeping matipo *Myrsine divaricata*. Other plants of interest were the creeping tree fern *Dicksonia lanata*, *Rubus australis*, frequently growing alongside *R. cissoides*, and the long-petioled *R. squarrosa* var. *subpauperatus*. "Trap of the day" was juvenile *Pseudopanax anomalus* with well developed tri-foliolate leaves.

May field trip: Abel Tasman coast

A doubtful morning in which all evil was predicted with the weather that turned into a great day for the keen 21. We were taken in two trips by Niad to Torrent Bay and picked up at Anchorage at 3.30 pm. On a shaded face at the north of the beach was the first find. *Hymenophyllum minimum* on rocks just above high tide mark. In the township red and black beech hybrids took our attention and plants near their southern limits including kauri grass (*Astelia trinervia*) and hangehange. Further on *Grevillea rosmarinifolia* was seeding well, possibly on an old bach site. The next find was a large patch of *Bulbophyllum pygmaeum* on a warm rock. Near the lunch spot early *Metrosideros fulgens* was in flower. Along the track there were patches of *Pterostylis alobula* and *Acianthus sinclairii* just coming into flower and the first leaves of *Cyrtostylis oblonga*. By the time we reached Torrent River the fern count had reached over 40 (five still to come) when *Hymenophyllum atrovirens* was spotted on the bank of the river. Here we also saw *Hymenophyllum ferrugineum*, *Blechnum colensoi* and *Anaphalis keriensis*. Time was beginning to run out with still a third of the distance to go but as we hastened up the hill to Anchorage a pause in a small creek (searching for *Hymenophyllum endlicherianum*) *Lindsaea viridis* was spotted. Then at full sprint Les Moran spotted the tiny hoods of *Corybas cheesemanii* on the bank. On arriving at Anchorage we still felt there was much left to find in what was to have been very uninteresting Abel Tasman scrub!

Forthcoming trips

June 18 - Queens Gardens

July 16 - Cable Bay Walkway

August 20 - Kina/McKee

September 17 - Wairoa remnants

Graeme Jane, 136 Cleveland Terrace, Nelson

■ Waikato Botanical Society

This year the AGM and "Pot Luck" dinner of the society was held at the NIWA tearooms at Ruakura Agricultural Research Centre, Hamilton. As with the previous year 14 people attended and the meeting was conducted rapidly, partly through cunning strategy adopted by the committee viz. no one was allowed to eat until the meeting had concluded. The major moments of interest were the resignation of Peter de Lange from the role of President as the direct result of increased work-related responsibilities, and Paul Champion, Gabi Schmidt-Adam, and David Stephens from the committee. Good news was that society membership had increased by 10 and our continued financial stability. After some expansive talk and much wine the following were elected to the committee.

President:	Cathy Jones
Secretary:	Mark Thompson
Treasurer:	Adrian Walcroft
Newsletter Editor:	Catherine Beard
Committee:	Catherine Beard, Peter de Lange, Rob Dragten Merylyn Merrett, Eileen Reardon, Peter Rudolph

Our "Pot Luck" dinner was then consumed while we awaited the arrival of the guest speaker - who it appeared had become lost in a thicker-than-usual Hamilton fog. Upon his arrival we were entertained with a detailed account of the freshwater fishes of the Waikato Region, given by Jason Roxburgh (Department of Conservation, Waikato). Jason pointed out the remarkable similarities between the conservation plight of our fishes and those of our plants. His message was well received and beyond some esoteric questions over the merits of marmite vs vegemite in fish trapping we finished consuming the left-overs and departed.

Membership: Subscriptions remain at \$10.00 and should be sent to the Treasurer, Adrian Walcroft, C/- Department of Biological Sciences, University of Waikato, Private Bag, Hamilton.

Programme

As with previous years our activities are open to all who have an interest in the flora of the Waikato. The society has deliberately prepared a programme which works in with those of the Auckland and Rotorua Botanical Societies, and accordingly we would especially encourage members of either society to come along on trips.

Saturday July 1 - Midwinter "Pot Luck" dinner and slide evening at NIWA Tearoom, Ruakura. Starting 6.00 pm (finishing late).

Sunday July 2 - Herbarium Workshop, University of Waikato, School of Science, Hillcrest Road, Hamilton. Starting 10.00 am. Contact: Catherine Beard, phone: (07) 855-5479.

Saturday or Sunday, August 5 - Combined Rotorua/Waikato Trip, Karapiro Area. Trip Leaders: Lin Gibbons, Cathy Jones, phone: (07) 533-3657, (07) 386-0113.

Saturday September 2 - Combined Rotorua/Waikato Trip, Mangakowhiriwhiri Stream, Whakamaru. Trip Leader: Cathy Jones, phone: (07) 386-0113.

Sunday September 17 - Whatawhata AgResearch Bush. Trip Leaders: Jill Carter, Adrian Walcroft, phone: (07) 829-8862.

Saturday October 17 - Combined Auckland, Rotorua and Waikato Trip, Maungatautari mountain, Kairangi (western) end. Trip Leader: Marilyn Merrett, phone: (07) 855-0732.

Trip Assembly Point: School of Sciences Carpark, University of Waikato, Hamilton.

Trip Cancellation: If the weather looks dubious contact Peter Rudolph (Waikato Publicity Coordinator) on (07) 856-6977 for further details.

Peter J. de Lange, Science and Research Division, Auckland Conservancy, Department of Conservation, Private Bag 68908, Newton, Auckland

■ **Wanganui Museum Botanical Group**

5th March trip to Tunnel Hill Farm, near Koltia, Turakina

This was a revisit, and as expected, waterflow had diminished and we were able to examine more carefully the ground around and in the swamp. The swamp vegetation was made up mostly of flax/*Carex secta* with occasional *Coprosma tenuicaulis*, *C. propinqua*, *Olearia virgata*, scattered cabbage trees and toetoe. Some parts were heavily infested with grey willow. The edges were dominated by *Carex secta*, *C. lessoniana*, *Baumea rubiginosa*, swamp millet and short "tufts" of *Eleocharis acuta*, *E. gracilis* and Yorkshire fog. Gorse was locally common. Small areas of closely grazed pasture in damp hollows (ephemeral wetlands) have dwarf mazus, *Lilaeopsis*, *Pratia perpusilla*, *Schoenus maschalinus* and *Hypericum japonicum*. *Urtica linearifolia* was found on a few old bases of *Carex secta*.

A nationally threatened species is *Mazus novaezeelandiae* (status vulnerable). This is the only recorded site for *Pratia perpusilla* in the Wanganui Conservancy of DoC. Other regionally uncommon plants are swamp millet, *Hydrocotyle sulcata*, *Gratiola sexdentata*, *Sparganium subglobosum*, and *Hypolepis distans*.

30th April trip to Sutherland's Bush in the Turakina valley

This is Forest & Bird property, and the Rangitikei Branch of Forest & Bird have marked out a new track around the southern side of the Bush. This track took us further into the kanuka dominated area than the older tracks. A great variety of fungi were seen and we bemoaned our lack of knowledge of these 'plants'.

There were 14 plants to be added to A.P. Druce's list for Sutherland's Bush, three of which (*Parsonsia heterophylla*, *Urtica ferox* and *Tmesipteris elongata*) had not previously been recorded for bush in the lower Turakina valley. No doubt, further investigation will add yet more "new" plants to the plant list.

Evening Meetings

- 7 March - Ian and Jocelyn Bell gave a very interesting talk on their trip to the Stirling Range in Western Australia. It was well illustrated with colour slides and many reference books were tabled for us to look at after the talk.
- 4 April - Clive and Nikki Higgin talked and showed slides of their wide-ranging trip to the U.S.A., Britain, Italy and France. Clive's interest in trees and his considerable knowledge was evident and the slides were excellent.
- 2 May - Pat and Lou Robinson joined the "College for Seniors" trip to Israel, Greece and Egypt late last year. They returned home via California, where they visited the redwood forest and Yosemite National Park. They showed some highlights of their trip.

Forthcoming Trip

2 July - To Rahui (Pryce's Bush) at the edge of the Rangitikei River near Rata.

Meetings are held on the first Tuesday of each month in the Museum classroom, commencing at 8 pm (summer time) or 7.30 pm (winter time - April to September). Any queries to the Secretary, Robyn Ogle, 4 Brassey Road, Wanganui.

Alf King, 180 No. 2 Line, R.D.2, Wanganui

Obituary

■ Frederick S.C. Reed

The death has occurred of a noted Christchurch diatomist, Frederick Reed, at the age of 86. His passing marks the end of an era of dedicated New Zealand diatomists, who from late last century, used their brass microscopes to observe the wonderful intricacies of fossil diatoms, mainly from Upper Eocene and Oligocene deposits at Oamaru.

In 1949 two botanists from USA, Egbert Walker and Ray Fosberg, attending the 7th Pacific Science Congress at Christchurch, asked Fred Reed for help in obtaining corrugated aluminium driers. Fred was an engineer, and devised equipment to cut and corrugate standard sized driers. They were heavier than the US article, and the sharp corners inflicted some nasty wounds, but they were effective in drying plants over a source of heat. Fred supplied Botany Division and other herbaria at actual cost.

Fred Reed devoted his latter years to collecting, cleaning, mounting and identifying over 500 different species of diatoms, mainly from deposits at Oamaru. He was very skilled at making single cell mounts and also at positioning specimens in neat rows. Despite the advent of the TEM and SEM (modern tools for diatom research), diatom taxonomy is still based largely on light microscopy, and Fred excelled in this field.

The microalgal world in New Zealand has been enriched by the publication in A R Edwards' *Bulletin on Oamaru Diatomite* of 20 plates containing 279 light micrographs from slides prepared by Fred Reed. He corresponded with diatomists both in New Zealand and overseas, and his generosity with material and specimens will not be forgotten by those who knew him.

Publications by F. S. C. Reed

Reed, F.S.C. 1946: A new diatom from Oamaru Diatomite. *Transactions of the Royal Society of New Zealand* 63: 294.

_____ 1958: The Diatomite of Oamaru, New Zealand 1874-1958. *The Microscope* 12: 3-6.

_____ 1991: An atlas of Oamaru Diatomite Diatoms. 127-169. In: Edwards, A.R. (Compiler): *The Oamaru Diatomite*. Lower Hutt, DSIR, Geology & Geophysics. 260 pp.

Vivienne Cassie Cooper, Research Associate in Marine and Freshwater Microalgae, Manaaki Whenua-Landcare Research, Private Bag 3127, Hamilton

NOTES AND REPORTS

Plant Records

■ *Brachyglottis sciadophila* at Mataroa, Taihape: a new record for the North Island

The lianoid indigenous daisy, *Brachyglottis sciadophila*, has been found near the Hautapu River, in Paengaroa Scenic Reserve, Mataroa, north-west of Taihape. During an inspection of the reserve to monitor the status of nationally threatened plants on 21 April 1995, the authors discovered plants of *B. sciadophila* sprawling over a few square metres of forest floor. This species has a nationally local status (Cameron et al. 1995). The plants are mostly prostrate, rooting at stem nodes and with no evidence of flowers or fruiting heads. The substrate is stony clay-loam on the toe-slope of a consolidated slump. The site lies 540 m a.s.l. and is the typical podocarp-broadleaved forest of river terraces in this part of the Hautapu Valley, with kahikatea, matai, black maire, kowhai, and mahoe as the dominant trees over an understorey largely composed of divaricating shrubs. A small specimen of *B. sciadophila* was collected for CHR, and its identity confirmed by Bryony Macmillan (pers. comm.).

Previous records of *Brachyglottis sciadophila* have all been from the South Island (e.g., Allan 1961). Eagle (1986) specified the range as "South Island. East of the main Divide from Riwaka, Nelson to Southland, but local".

Other species with disjunct distributions

Brachyglottis sciadophila is the latest in a series of biogeographically significant finds in the Taihape district. The botanical importance of Paengaroa Scenic Reserve was first recognised by A.P. (Tony) Druce through visits over the past 20 years. In 1978 he made the first North Island record of *Coprosma obconica*, a shrub still known in the North Island from only about five forest remnants within a 3 km radius. Mataroa, and the wider Taihape district, have a number of the other plants which have restricted North Island distributions. Some are otherwise only known to the east of the North Island's axial ranges e.g., *Olearia hectorii* and *Coprosma virescens*. *Acaena juvenca* has a similar range, except that it is also at Pukerua Bay near Wellington. In the North Island, *Melicytus flexuosus* is in the Mataroa area and to the north at Erua and Pureora. Others have very scattered occurrences (are disjunct) beyond Mataroa to both the north and east e.g., *Coprosma rubra*, *C. wallii*, *Teucrium parvifolium* and narrow-leaved lacebark (*Hoheria angustifolia*). Almost all of the species named above have very patchy distributions within their broad ranges and, for some, the Taihape district has the largest number of individuals in the North Island.

In 1991, Bill Fleury of the Wanganui Conservancy, Department of Conservation, found a seedling of *Pittosporum obcordatum* in Paengaroa Scenic Reserve. Subsequent searches revealed at least 35 trees and tall shrubs, in an area examined by almost all previous visitors. The *Pittosporum* trees are up to 8 m tall and one first found late in 1994 would have brushed the shoulder of each person visiting the reserve, as it grows on the edge of the main track. *P. obcordatum* joins the list of divaricating plants in the reserve, and is another of those with disjunct distributions, being found in scattered sites in New Zealand between Kaitiaki and Southland, mostly in the east. At Paengaroa Scenic Reserve, the range of divaricating shrubs and trees with divaricating juvenile stages is probably the greatest for any place of comparable area in New Zealand - about 30 species, all told (Druce 1978; Druce and Ogle 1991).

Divaricating shrubs comprise just part of the list of species which have disjunct distributions that include the Taihape district. The distributions of *Brachyglottis sciadophila* and *Coprosma obconica* are similar, in that both have their only North Island sites close to Mataroa. In 1991, one of us (CCO) found the dwarf mistletoe, *Korthalsella clavata* in Paengaroa Scenic Reserve, growing on *Coprosma wallii*. Its only previous North Island records were from near Waiouru. Growing at Moawhango, just east of Taihape, *Pseudopanax ferox* is otherwise known only in western Northland and east of Wellington.

Management of Paengaroa Scenic Reserve

Although only 102 ha, Paengaroa Scenic Reserve has the greatest number of indigenous higher plant species (229) and nationally threatened and local species (8) of the many forest remnants of the Taihape district. It has been fully fenced for many years, is outside the current ranges of deer and goats, and possum control is being maintained after a 1080 knock-down in 1992. However, a variety of woody weeds has established, mostly from bird-carried seed from Mataroa village which lies immediately across the Hautapu River from the reserve. Ivy has been regarded as the worst of these weeds. Beginning in 1991,

the Department of Conservation and various groups of volunteers removed ivy which covered the floor of about 14 ha of forest on river terraces and adjoining toe-slopes (Ogle 1991). Had ivy remained uncontrolled, it is probable that *Brachyglottis sciadophila* would have been an early casualty of its spread. As it is, the small area of *B. sciadophila* will need monitoring and perhaps active management to ensure its survival. The other weeds include elderberry, rowan, Chilean flame-creeper, gooseberry, red currant, plum, cherry laurel, spindle tree, sycamore and crack willow.

What's special about Taihape?

In the Taihape district, the coincidence of so many species with disjunct distributions suggests that there is some factor linking their presence. In discussing the distribution patterns for *Pittosporum obcordatum*, Bruce and Bev Clarkson (1994) identified the common features of its habitat as being affected by flooding, waterlogging, drought and frost. Geoff Rogers (1995) recognised that *Olearia hectorii* occurs on sites subject to frequent geomorphic disturbance by debris flows or flooding with deposition of raw mineral soil, that the soil parent materials are base-rich, and the sites have high summer insolation. Geoff Rogers (pers. comm.) points out that many, "if not most", of the special plants of the Taihape district demand moderate-to-high light and therefore need forest canopy gaps. According to Rogers, such gaps can occur through the following factors: edaphic (e.g., water-logging), disturbance (e.g., land-slip, wind-throw, or floods which deposit silt), or gaps resulting from forest architecture. This last factor is based on observations that certain tree species allow more incident light to the forest floor than others. Around Taihape, "light-wells" are created in the forest canopy by ribbonwood (*Plagianthus regius*), narrow-leaved lacebark and kowhai. Because it is deciduous, ribbonwood admits more light in winter; mahoe is semi-deciduous in the cold Taihape winters.

For land about 400-700 m a.s.l., the Taihape district has a lower rainfall than surrounding country because it lies in the rain shadow of the central North Island volcanoes. Enclosed valleys, such as that part of the Hautapu around Mataroa, can experience frosts any day of the year, and these are severe in winter. Sites with native vegetation and with this combination of conditions are rare in the North Island, especially west of the axial ranges.

Another factor in the survival of so many divaricating shrubs in the Taihape district is the absence of many of the broadleaved trees and shrubs which are usual through much of the North Island at such altitudes. Species which are absent from Paengaroa Scenic Reserve and much of the Hautapu Valley include tawa, hinau, northern rata, rewarewa, kamahi, beech species, titoki and kawakawa; rimu and miro are rare. On the Hautapu River terraces, broadleaved small trees and shrubs such as kotukutuku, five-finger and rangiora are almost confined to the river banks. After a severe frost in Paengaroa Scenic Reserve we have seen foliage wilt and fall from mahoe saplings in the forest understorey on the river flats.

Although the Taihape area is west of the North Island's axial ranges, in many respects the structure and species composition of its riverine forests are more like those of many river valleys of the eastern North and South Island. The major uplift of the Ruahine Ranges occurred in the Quaternary, i.e. less than 1.0 million years b.p. (Beu et al. 1981). Well into this mountain building period, forests of the present northern Manawatu-Rangitikei districts were probably continuous with Hawkes Bay forests. We propose that as the mountains rose above the climatic limits for forest species, certain species became "stranded" in the west. However, it is likely that they survived only in the Taihape/Mataroa area because, firstly, they could cope with the peculiar habitat conditions and, secondly, because many lowland trees and shrubs - potential competitors in mild and moist climates - are not present.

It is possible that those species of the Taihape district and eastern South Island but not the eastern North Island (e.g., *Brachyglottis sciadophila*, *Melicytus flexuosus*, *Korthalsella clavata*, *Coprosma obconica*) were once in the Gisborne-Hawkes Bay-Wairarapa regions. They may have been eliminated from the eastern North Island in prehistoric times or, more recently, during extensive clearance of lowland forest; searches might be made for such species in suitable sites.

On the other hand, there are species which can be regarded as "missing species" from the Taihape district. One is an unnamed *Coprosma*, informally named *Coprosma* species "v" by Audrey Eagle (1986). It is known from a few sites between Gisborne and the Wairarapa, and the eastern South Island. Such a species might be expected at Paengaroa Scenic Reserve or the greater Taihape district, based on the species' ecology and biogeography, and should be watched for.

Acknowledgements

We thank Bryony Macmillan of Landcare Research, Lincoln, for her rapid response to our request for checking the identity of *Brachyglottis sciadophila*; and also Dr Geoff Rogers of Landcare Research, Hamilton, for his very useful advice on a draft of this paper.

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■ *Triglochin palustre*: a new site at Moke Lake, Queenstown and the Cairnmuir site revisited.

The marsh arrow-grass *Triglochin palustre* (Juncaginaceae), is a rare plant which is classified as vulnerable in the Threatened Plants list (1995). It is widespread in the northern hemisphere but has only been collected from five sites in New Zealand, in inland Canterbury and Otago. Three populations known to survive occur near Lakes Clearwater and Coleridge in Canterbury and near Clyde in Otago (Wilson & Given 1989).

In February 1992, during a botanical survey with Tony Druce, a clump of *Triglochin palustre* was found in a patch of sphagnum moss *Sphagnum cristatum*, at the southern end of Moke Lake, near Queenstown. The upright flowering stems stood out from the surrounding *Schoenus pauciflorus* and *Carex* species. After a fruitless search for *Triglochin* at the Cairnmuir site in December 1994, it was thought worthwhile to return to the Moke Lake site when the plant was flowering to refresh memory of what to look for. A quick search was made in January 1995 without success. In February, with assistance from the Wakatipu Botanical group, a more thorough search found numerous plants scattered over about 100 square metres of a raised Sphagnum bog at the south-east end of Moke Lake. Initially it was found in a more open, mossy area in a generally thick *Schoenus* and *Carex* sedgeland but once more familiar, then it was found to be scattered all through this area and also in an adjacent raised moss bog (not sphagnum). The grey, dead stalks of last seasons flowers with their intriguing upcurled follicles were the first things to be noticed. They could be traced down to where a tuft of fine, rounded, grassy, yellow-green leaves protruded from the moss. These arose from a slightly bulbous base, rooted in the peaty soil below the thick sponge of sphagnum or other moss species. Flowering heads were also found, some capsules with a tuft of sort, white hairs on top. The tallest were a minor component and the ground cover was moss, *Gonocarpus micranthus*, *Drosera arcturi*, *Hydrocotyle montana*, *Leucopogon fraseri* and other small exotic species. The following are other plants found within the *Triglochin* area or nearby in the surround sedgeland - rushland or damp grassland (* = adventive species).

* <i>Juncus articulatus</i>	* <i>Holcus lanatus</i>	<i>Carex diandra</i>
* <i>J. acuminatus</i>	* <i>Agrostis capillaris</i>	<i>C. gaudichaudiana</i>
* <i>J. effusus</i>	* <i>Hypochoeris radicata</i>	<i>C. "tenuiculmis"</i>
* <i>Ranunculus trichophyllus</i>	* <i>Anthoxanthum odoratum</i>	<i>C. coriacea</i>
* <i>Trifolium repens</i>	* <i>Cynosurus cristatus</i>	<i>Dracophyllum uniflorum</i> (few)
* <i>Myosotis scorpioides</i>	* <i>Phleum pratense</i>	<i>Corybas macrantha</i>
* <i>Prunella vulgaris</i>	* <i>Festuca rubra</i>	<i>Celmisia</i> sp. ("rhizomatous")
* <i>Hypericum perforatum</i>	* <i>Rumex obtusifolius</i>	<i>Gaultheria nubicola</i>
<i>Galium perpusillum</i>	* <i>R. crispus</i>	<i>Geranium potentilloides</i>

Hydrocotyle sulcata
Nertera balfouriana
Schoenus pauciflorus
Lichens

Luzula picta var. *limosa*
Lagenifera barkeri
**Stellaria graminea*
Fungi

Acaena novae-zelandiae
Microtis oligantha
Ranunculus glabrifolius

The *Triglochin* population here is not large and apparently confined to the raised bog area. Cattle trampling may pose a threat although they have been grazing here for many years and in places the *Triglochin* appeared to be growing in old hoof prints. The area is now conservation land and grazing should cease.

Cairnmuir Flats

Subsequently, the Cairnmuir Flats site was revisited. *Triglochin* was found higher up towards the head of a small stream bed choked with rushes, sedges and small herbs, mainly exotic species. Here *Triglochin* is much more robust (than at Moke Lake) with plants to 40cm tall and generally protruding above the surrounding vegetation which is about 25cm tall and consists of *Juncus articulatus*, *J. bufonius*, *Ranunculus repens*, *Trifolium pratense*, *Alopecurus geniculata*, *Holcus lanatus*, *Glyceria declinata*, *Myosotis scorpioides*, *Rumex crispus*, *Mimulus moschatus* all exotic species, and *Elaeocharis acuta*, *Epilobium chionanthum* and *Potentilla anserinioides* native species. Nearby *Carex* "tenuiculmis" was common (another plant on the Threatened Plant list - status insufficiently known). The bed of the gully here was squelchy and wet underfoot. No *Triglochin* was seen downstream, where the vegetation was taller with more grasses and larger sedges. It was damp but also drier and not wet to tread on at this time of a very dry February.

A further visit with lessee Alistair Campbell in March discovered that a good population of *Triglochin palustre* also existed in the next gully east. It was a similar situation to that in the first gully/stream. Alistair said that both streams tended to dry out in their lower sections which probably accounts for no *Triglochin* being found lower down.

The Cairnmuir Flats population looks healthy with plants spread at least 300m up both marshy stream beds, each up to 10m wide and extending up into the relatively gentle hillslopes north of the Clyde - Bannockburn back road.

Cattle and sheep graze this whole area, but the eastern stream has a thick surround of matagouri and brier which may give it greater protection. No marked difference could be seen in the population of either stream however. At this time it would seem that knowledge of the site by the lessee is sufficient protection, but in the longer term reservation or covenant is recommended. Fencing appears unnecessary, may even be detrimental in allowing the exotic species to take over. Monitoring of all populations would give useful information on their viability, increase/decrease and effect of grazing.

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Research Report

■ Primitive utricularias of New Zealand

Carnivorous plants have evolved different kinds of traps and a variety of strategies in capturing their prey (Juniper *et al.* 1989). Even in the family Lentibulariaceae, all three genera (*Genlisea*, *Pinguicula*, *Utricularia*) show distinctive trap structures and capture strategies. *Utricularia* L. ('bladderwort') may be the most flexible genus amongst carnivorous plants, in terms of morphological adaptation to various habitats.

Within *Utricularia*, the terrestrial species of the genus, e.g. those of section *Pleiochasia* Kamienski, are considered to be primitive (Taylor 1989). In New Zealand, section *Pleiochasia* is represented by *U. monanthos* Hook. f. and *U. novae-zelandiae* Hook. f. These species are closely related to the Australian *U. dichotoma* Labill. The taxonomy of these three species is difficult and has previously been based primarily on herbarium material (Taylor 1989).

Currently, I have been carrying out ecological and morphological studies on *U. monanthos* and *U. novae-zelandiae*. Preliminary results show a great variability within the species. Moreover, as *U. monanthos* and *U. novae-zelandiae* overlap in all characters studies, they should be treated as one species (as *U. novae-zelandiae* which is the older name, see Taylor 1989). On the base of herbarium and literature references, the distribution of *U. novae-zelandiae* sensu lato (including former *U. monanthos*) was evaluated. Eight sites throughout New Zealand were chosen for additional information about floral and vegetative characters.

Ecological investigations reveal preferences of *U. novae-zelandiae* s.l. for a permanent wet and open habitat. Once established in this environment, the plants seem to tolerate a nutrient rich soil. However, as a colonist, *U. novae-zelandiae* s.l. is more successful in a moist, sunny, and nutrient poor habitat. This is also indicated by a fast re-establishment of these plants after fire.

Under very wet conditions, even in longer periods of submergence, *U. novae-zelandiae* s.l. undergoes great vegetative growth. The development of the flower stalk on a stolon node seems to be induced by a decrease of the water level in the micro-environment. This may occur very quickly. The amount of water and plant sociological conditions (in respect to light competition) seem to be responsible for the ephemeral nature of *U. novae-zelandiae* s.l. The morphological variability of these plants may be related to dramatic changes of the habitat (e.g., water level). Some more stable characters within populations seem to be climate dependent, e.g. in connection with altitude and/or UV radiation.

Desiderata

I would appreciate to receive any further comments and information regarding the occurrence and ecology of *U. novae-zelandiae* s.l.

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Comments

■ Whale Island (Moutuhora) plant records

Mark Smale's paper in the last Newsletter (Smale 1995) on three additional records he has made for the listed flora of Whale Island (Ogle 1990) calls for some comments. Two of the species, *Coprosma lucida* and *Beilschmiedia tawa*, I do not accept as new records, as the plants seen by Smale were almost certainly planted specimens. The third, *Lilium formosanum*, has not been recorded before, although I have alternative suggestions on the means by which the lily reached the island.

Since I compiled an annotated list of the indigenous and exotic plants of Whale Island (Ogle 1990) the Department of Conservation has undertaken a revegetation programme on the island. This involved taking propagating materials from the island, especially of species represented by small numbers of individuals, growing-on in the Department's Matawhero nursery at Gisborne, and replanting. Species which were known to have been on Whale Island previously, and some others which were likely to have been present and which were still in the same ecological region, were also propagated on the mainland and taken to the island. Detailed records were kept of each step in this vegetation management (McGlynn 1987, 1988, 1989), and filed at both the Gisborne and Rotorua offices of the Department of Conservation. The Whale Island records are a model for other natural areas where planting is done. Not only do adequate records allow managers to measure the success of their plantings, they are also useful for biologists and other visitors. It is, of course, incumbent upon visitors to seek out and use the records when they study places that have undergone some assisted revegetation.

Coprosma lucida

Smale (1995) noted that his finding of a shrub of *C. lucida* on Pa Hill was the first record of this species since Still (1950). Smale is correct in saying that I cast doubt on Still's record. Still (1950) did not mention any other large-leaved *Coprosma* species, and there are no supporting specimens or other records of *C.*

lucida from the island. In 1984-86 *C. macrocarpa*, *C. robusta* and *C. repens* were the only large-leaved *Coprosma* species recorded (Ogle 1990), and Parris (1971) listed only *C. robusta* and *C. repens* (though she probably did not distinguish *C. robusta* from *C. macrocarpa*). Prior to 1977, any large-leaved *Coprosma* was at risk from goats, and it seems unlikely that Still (1950) should have seen a *Coprosma* which was not one of the three species which survived.

In noting the fruiting state of the *C. lucida*, Smale (1995) suggested *C. robusta* as a pollination source. Experimental germination of a sample of the fruit might be a test of this hypothesis, but Druce (1977) could find no evidence of this putative hybrid, based on his extensive field knowledge and a comprehensive search of New Zealand herbaria. An alternative source of *C. lucida* to the island might be bird dispersal of seed, but Smale did not suggest this possibility (though he offered it as a hypothesis for the new arrival of tawa). A number of bird species recorded on Whale Island have the capacity to carry *Coprosma* seed from the mainland.

Despite the above, the most likely source of the *C. lucida* plant seen by Smale is the revegetation programme. McGlynn (1988, 1989) notes that *C. lucida* were planted (from Whakatane sources) quite widely on the island, including five on Pa Hill in 1988, and 40 on Pa Hill in 1989.

Beilschmiedia tawa

Smale (1995) recorded finding a 0.5 m seedling of tawa near the summit of the main peak of Moutuhora, and suggested its arrival as a seed carried by New Zealand pigeon. Although this is a possibility, the planting records of McGlynn (1988) show that 30 tawa were planted around the summit in June 1988. Mike McGlynn (pers. comm.) says that most sites where tawa seedlings were planted were sub-optimal and it is likely that little growth has occurred. McGlynn also suggests that if one were to scratch around the base of the tawa seedling, it might be possible still to recognise the root ball of a cultivated plant in a pumice-based potting mix.

Lilium formosanum

At Boulder Bay in 1984, I was in the party which excavated about 15 kg of bulbs of *Amaryllis belladonna* and took them to the mainland (Ogle 1990). The presence of *Lilium formosanum* in the same place suggests that both species may have been relicts of plantings when the island was privately owned. The bulbs of *L. formosanum* break freely into thin scales which may float, but it is doubtful whether they would survive some hours immersion in sea-water. This could be tested experimentally. It also seems unlikely that the bulb scales would strand high enough on the shore of Moutuhora to become established (M McGlynn, pers. comm.). Another possibility is that the lily reached the island as wind-blown seed. *L. formosanum* has large capsules with many fine seed, each with a flat wing. It disperses and establishes freely from seed in urban gardens. As stated previously (Ogle 1990), other species have almost certainly reached Moutuhora by wind-borne seed, including moth plant (*Araujia sericifera*), pampas grass (*Cortaderia selloana*), an adventive willow-herb (*Epilobium ciliatum*) and various members of the family Asteraceae.

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■ Reply to Whale Island (Moutuhora) plant records

I thank Colin Ogle for drawing attention to the possibility that two of the three new plant records from Whale Island (*Coprosma lucida*, *Beilschmiedia tawa*) may be from planted rather than naturally-regenerated

individuals, and that *Lilium formosanum* may be a relic of an earlier planting, or may have arrived via wind-blown seed. (I should point out here that the lily was not present on my last visit in December 1990, not 1980 as stated in the earlier article). In regard to the first two species, apart from half-digging up the plants to search for the remains of potting mix amongst the roots - something this nature-lover was not keen to do, the possibility remains that they are naturally-regenerated, although I concede in the light of the additional information that planting seems the more likely source. It seems improbable that the lily, growing in the very spot that almost all visitors to the island arrive at, could have survived from an earlier planting for so long without being seen; recent dispersal from the mainland (or less likely, another still undiscovered population on the island) by whichever means seems most likely to me. The whole issue of restoration planting on grossly modified islands which have been set aside for nature conservation is an important and interesting one.

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■ Vagrancy within New Zealand threatened orchids: what are our conservation priorities?

Orchids have occupied a prominent place in recent lists of New Zealand threatened plants (e.g., Given 1981; Cameron et al. 1993). In the latest listing, Cameron et al. (1995) recognise 12 orchid species and four unnamed taxa as threatened, using IUCN Red Data Book categories. In addition, four species and two unnamed taxa are ranked as "Local" (not an IUCN category), giving a current total of 16 orchid species and six unnamed orchid taxa considered to be under some level of threat in New Zealand.

Out of this total, four orchid species and all six unnamed taxa are currently regarded as endemic to New Zealand and should be given first priority in the Crown's conservation strategy. In contrast, the other 12 species (Table 1) are shared with Australia where, with one exception (*Thelymitra matthewsii*), they are relatively common and not recognised as threatened (cf. Briggs & Leigh 1988). These 12 species (along with others in our orchid flora) are immigrants from eastern Australia as a result of periodic, long-distance dispersal of seed by the prevailing west to east winds. They are examples of a fluctuating element of the New Zealand flora *sensu* Lloyd (1985), and some are, by their very nature, ephemeral. Compared to successful orchid immigrants such as *Thelymitra carnea*, *T. pauciflora*, *Pterostylis foliata*, and *Genoplesium pumilum*, for example, these 12 species, especially those ranked in the higher categories of threat, have remained scarce in New Zealand through their inability to reproduce here, or to successfully utilise the range of habitats available (see especially Godley 1979; Lloyd 1985; Molloy 1990). The question is, should our limited conservation resources be channelled towards their protection. In our opinion the short answer is no. Rather, we suggest that unless such orchids are recognised as globally at risk, e.g. *Thelymitra matthewsii*, their conservation management within New Zealand is unnecessary and not a priority.

We would go further and suggest that all the species listed here in Table 1, with the possible exception of *T. matthewsii*, should be removed from the New Zealand threatened and local plant lists because they give a false impression of the true extent of our threatened flora, and detract from endemic orchids which would benefit from conservation management. Three of the orchids in Table 1, *Chiloglottis formicifera*, *Pterostylis nutans* (both inappropriately ranked as "Extinct"), and *Chiloglottis valida* are insect-pollinated and are constrained in New Zealand by the apparent absence of their specific pollinators. For this reason these three species (and no doubt others in the past) have failed to establish themselves beyond their points of introduction. We regard them as examples of a distinctive vagrant element in our orchid flora, and part of an on-going process of immigrant orchids arriving at different times, barely establishing a foothold, and disappearing at comparable rates.

Other species listed in Table 1, e.g., *Caleana minor*, *Pterostylis nana*, *P. tasmanica*, *Thelymitra matthewsii*, and the three species of *Calochilus* are not constrained by their reproductive biology but rather by their habitat requirements, more especially their respective mycorrhizal needs. Two of these species, *Caleana minor* and *Thelymitra matthewsii*, have barely established a foothold in New Zealand at different times in their recorded history here, while the others have had varying though limited success in extending their range. We regard these species also as vagrants.

Vagrancy is after all part of a natural process whereby the range of species is extended, and some vagrant terrestrial orchids dispersed from eastern Australia do become established over time. The New Zealand orchid flora, as already noted above, contains several examples, some clearly of long-standing. Two comparatively recent arrivals, *Cryptostylis subulata* and *Thelymitra malvina* (Table 1), are very good modern cases of vagrant species which have successfully colonised New Zealand. They demonstrate the contribution some immigrants have made to the diversity of our orchid flora. In summary, we note that

more than half the orchids recognised as threatened in New Zealand, especially those ranked in the higher categories of threat, are vagrant immigrants from Australia where, with possibly one exception, they are not known to be threatened. We accept that these vagrant orchids have a value in the lessons they can teach us about long-distance dispersal, colonisation processes, and so forth. While their protection is to be encouraged, we believe this should go no further than protecting the land on which they occur. In this way the natural processes of colonisation and establishment can be observed. The conservation management of such taxa should not be a priority unless the vagrant is known to be at risk internationally. Even then, the conservation of our endemic threatened orchids must be our first priority.

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Table 1 Conservation status of New Zealand threatened orchids shared with Australia (extracted from Cameron et al. 1995).

Orchid Species	Conservation Status
<i>Chiloglottis formicifera</i>	Extinct
<i>Pterostylis nutans</i>	Extinct
<i>Caleana minor</i>	Critical
<i>Pterostylis nana</i>	Critical
<i>Thelymitra matthewsii</i>	Critical
<i>Calochilus paludosus</i>	Rare
<i>Chiloglottis valida</i>	Rare
<i>Pterostylis tasmanica</i>	Rare
<i>Calochilus herbaceus</i>	Insufficiently Known
<i>Calochilus robertsonii</i>	Local
<i>Cryptostylis subulata</i>	Local
<i>Thelymitra malvina</i>	Local

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BIOGRAPHY/BIBLIOGRAPHY

■ Biographical Notes (18): Francis William Bartlett (1896-1979)

Frank Bartlett was born on 3 October, 1896. His birth certificate gives the place as Orewa (the nearest place of registration?) which lies on the east coast some 23 km north of Auckland; but he was probably born at his parents' farm at nearby Silverdale (then called The Wade) (1).

Frank's father, Henry William Bartlett, a carpenter, had arrived in New Zealand in 1891 via Sydney from Kingston-upon-Thames, Surrey. On the north bank of the Orewa River he purchased 67 acres of poor, sloping, clay land and called it Cromer Farm (1).

Frank's mother, Caroline Huntingdon Blake (born 1862), was the second daughter of John and Martha Blake, who arrived in New Zealand on 16 January, 1860, on the *Jura* with their first daughter, Mary Ann. By 1861 they owned 140 acres on the south side of the Orewa River (opposite to where Cromer was to stand). They built a thatched sod hut close to the river and constructed a seed-bed. Their type of farming is not known but over the years they certainly planted trees for shelter and timber. Martha died in 1886, and John in 1892. The property (now reduced to 97 acres) was left in equal shares to their two daughters (1).

In 1895 Caroline married Henry Bartlett and moved across the river to live at Cromer. From here young Frank walked the two miles to school at The Wade. He presumably attended from c. 1902 to 1908-10, and has recorded that one of his teachers, probably a Mr Judkins, was a keen botanist, taking the pupils on nature walks. Like his childhood teacher, Frank fostered an interest in plants at the local school, where he served on the Committee from 1930 to 1948 and was secretary for many years (1).

Mary Ann Blake did not marry. In 1909 she sold her half-share of the farm to Henry Bartlett and the Blake land now became the Bartletts' farm. They moved across the river from Cromer (later sold) and lived in the second Blake house, built in the 1880's; and on Christmas Eve, 1912, they moved into the present family homestead, built by Henry, with its view northwards over the estuary of the Orewa River and the town (1).

In 1908 Frank (aged 12) was paid wages by his father for help with building; and he also worked on the farm. During World War I he served in the New Zealand Rifle Brigade from 20 September, 1917, to 20 August, 1919, particularly in France. Soon after his discharge his father died and he inherited a half-share in the farm. In 1921 he was appointed to the Silverdale Domain Board (1,2) the first of many services to the local community. In 1925 he married Thelma Meldrum of Orewa, and when his mother died in 1927 he became owner of "Bankside", as it had been called since at least 1910 (1).

Frank Bartlett had not only inherited a dairy farm, but plantings of eucalypts, acacias, cypresses, and other trees, some dating back to the time of his maternal grand-parents (3). Already in 1925, he had begun to have these authoritatively named. We know this because from 1925 to 1979 Frank kept many letters from foresters and botanists, 214 in all, from 47 correspondents. Thus on 25 September, 1925, H.A. Goudie, Conservator of Forests, Rotorua, sent him identifications of eucalypt and acacia specimens, and followed this on 17 November with a consignment of experimental trees. Goudie's successor, W.T. Morrison, sent identifications of *Casuarina*, *Callitris*, *Cupressus* and *Pittosporum* on 25 June, 1926.

As for other plants Frank first turned to the Editor of "Farm Economy" at Wright Stephenson & Co Ltd, Wellington, who sent a list of 18 weeds on 11 October, 1926, identified by Esmond Atkinson of the Biological Laboratory, Department of Agriculture. Then followed identifications from T.L. Lancaster, Botany Department, Auckland University College (1928, '32, '40); L.M. Cranwell, Botanist, Auckland Institute & Museum (1932, '34); H.H. Allan, Systematic Botanist, Plant Research Station, Department of Agriculture, Palmerston North (1934, '35); and two of Lancaster's senior students, G.T.S. Baylis, Campbells Bay (1935) and L.H. Millener, Northcote (1935).

The correspondence between Frank and Lucy Moore began in 1934 when she was Demonstrator in Zoology at Auckland University College. From then until 1966 she sent him identifications and encouragement ("It would be better if more people had the keenness to observe and make notes as you do"); and Frank sent useful material. Thus he was in demand for material of *Eucamptodon inflatus*, now named *Pulchrinodus inflatus* by Allen (4), a moss of uncertain systematic position because the capsule was unknown (and still is). Lucy sent "Bankside" material to Holland in 1934, and to G.O.K. Sainsbury (Wairoa) in 1936, who, (she wrote) sent it on to "Mr Dixon the great English authority whom I was fortunate to meet last year". In 1941 and 1944 Frank sent further material of the moss to Sainsbury; and in 1948 to W. Martin in Dunedin. *Phylloglossum* was sent to J.H. Warcup in 1945 and '46 for teaching at Victoria University College.

Two important post-war contacts were E.D. Hatch, Laingholm, Auckland (1946-57); and A.J. Healy, Botany Division, DSIR, Christchurch (1949-70).

Dan Hatch recalls: "When I came out of the army in 1945 my urgent need was for living material of the rarer orchids in order to complete the studies that I had begun in 1941. Phyll Hynes, then herbarium assistant at AK, suggested I get in touch with Frank Bartlett, who lived on the gum clay at Silverdale, had a wealth of botanical rarities on his farm and was happy to help the genuine student. My wife and I accordingly made the pilgrimage to 'Bankside', got a royal welcome and an offer of all the help I could handle. We continued to visit at intervals for the next ten years, until in fact we began a family of our own, which put a damper on bush wandering". In 1949 he described *Caladenia carnea* var. *bartlettii* and wrote: "The writer is glad to acknowledge, in this new variety, the work of Mr Frank W. Bartlett, of Silverdale, whose knowledge of the gumlands flora has made his home the mecca of Auckland enthusiasts for many years". Dan also recalled that "on one occasion we took Bruce Irwin to make some of his fantastic drawings", and that on another occasion, "Frank and his young daughter Jean, came with us to Wellsford on the fabulous day [29 July, 1950] we discovered the single flower which became the holotype of *Corybas cryptanthus*" (5,6).

At Silverdale in November, 1950, Frank gathered *Moenchia erecta* (Caryophyllaceae) "the first collection of the species from the North Island" (A.J. Healy, CHR 81359). An instructive episode began in 1954 when Frank sent specimens from cultivated land at "Bankside". They were identified as Jamaican Vervain by Arthur, who wrote: "A number of plants appeared initially but subsequent cultivation killed all. It is feasible, as suggested by Mr Bartlett, that the fruits were accidentally introduced to New Zealand with Seychelles guano, this fertilizer being used to top-dress the particular paddock prior to appearance of *Stachytarpheta jamaicensis* (7). Six more tropical weeds (fortunately transient) later appeared and all evidence suggested a similar origin. (8).

In 1950, Frank, Neil Barr, and others, founded the Lower Northland Farm Forestry Association, a stepping-stone to the formation of the national body. During the 1961 Conference of the NZ Farm Forestry Association, an outline history of the plantings at "Bankside" was given, as well as an account of their utilization, particularly of *Eucalyptus pilularis*, *E. saligna* and blackwood, *Acacia melanoxylon* (3). Frank once remarked to Dan Hatch in his dry fashion that he made more money out of the trees than he did from the cows (5). By now "Bankside" had become a show-place for New Zealand and overseas foresters. Of particular interest was a spontaneous hybrid *Cupressus macrocarpa* x *lusitanica*, which Frank first noticed in the scrub at "Bankside" in 1924. Although it was blown down, its 35 year old descendants, derived from open-pollination, are still under observation (9).

In February, 1969, Alan Esler became Botany Division's Regional Botanist in Auckland and replaced Arthur Healy as the Division's contact with Frank. They corresponded until 1979, and after Frank died at "Bankside" in 19 May, aged 82, Alan wrote: "Frank Bartlett was a quiet, unassuming, well-read man with an incredible first-hand knowledge of plants of the gum lands, the forest, the roadside and the gardens. This interest is carried on by his family - Ken, Jean, Vera and Bob" (10).

Except for the "Bankside" homestead and garden the farm is out of family hands now; and the planned Northern Motorway will bring further change. Fortunately Dan Hatch, Frank and Jean made a list of the plants then growing at "Bankside"; and in AK there are more than 40 of Frank's gatherings, mainly orchids (11).

Acknowledgements

For help of this note I am particularly grateful to Frank Bartlett's daughters, Jean Smith (Coatesville) and Vera Bartlett (Silverdale), as well as Dan Hatch (Auckland) Alan Esler (Auckland), Arthur Healy (Christchurch), Martin Bannister (Rotorua), Ewen Cameron (AK), and Bryony Macmillan (CHR).

References

(1) Notes from Jean Smith; (2) *NZ Gazette* 32, 1921; (3) *NZ Farm Forestry Ass. Journal*, May, 1961 (4) *NZJB* 25, 1987; (5) Letter from E.D. Hatch; (6) E.D. Hatch *TRSNZ* 77, 1949; (7) A.J. Healy *TRSNZ* 84, 1957; (8) A.J. Healy in W.M. Hamilton, Report of the DSIR for the year ended 31 March, 1959; (9) M.H. Bannister, unpublished manuscript; (10) *Botany Division Newsletter* 46, 1979; (11) Ewen Cameron, pers. comm.

Additional note

Frank Bartlett was not related to the late John Bartlett (*Metrosideros bartlettii* etc) also of Auckland.

E.J. Godley, Research Associate, Manaaki Whenua-Landcare Research, P O Box 69, Lincoln.

■ An addition to knowledge about Leonard Cockayne's proposed book on evolution

In November 1972 while examining the Cockayne manuscript material at the Auckland Institute and Museum Library (MS74) I noted manuscripts by Cockayne relating to a proposed book on evolution, especially in relation to the New Zealand flora that he had been contemplating. The book seems to have progressed little beyond a synopsis. Cockayne in his letter of 12 February 1914 to Goebel in Munich (1, p.397) wrote about the proposed book, "It is very probable too the Cambridge University Press is going to publish a second work, to deal with Evolution viewed in the light of New Zealand Ecology. The idea was not mine but originated I understand with Prain, Scott, Seward and other British botanists. There would be several chapters on juvenile forms. I have drawn up a table of contents which has been approved by the Syndics of the Press. My only doubt is as to my ability to produce a good book".

Eric Godley in his 1974 Cockayne Memorial Lecture (2) provided more data about the proposed book and gives the titles of the chapters in a synopsis of the book. The tentative titles of the proposed book are recorded in MS74 at the Auckland Institute and Museum Library under "Suggested titles for proposed book". The suggested titles are related to evolution and New Zealand plants and Cockayne's annotation to the list especially emphasized "Evolution of Work in the New Zealand Vegetation" (3). Eric Godley also provided data about the book from Cockayne's letters to Sir David Prain at Kew who as indicated by Eric appears to have suggested the book after reading Cockayne's 1912 paper, "Observations concerning evolution, derived from ecological studies in New Zealand" (4). The Cockayne letters to Prain (2,5) trace Cockayne's initial enthusiasm for the work and how his work commitments prevented its completion. In his letter of 18 December 1912 to Prain, "It would be a splendid and congenial task, and should there be a chance to undertake it, I would do my best, and that is all that can be said". Evidence that the book was under way is given in the letter of 1 March 1916, "I am now hard at work at 'Evolution at work in the New Zealand Vegetation'". Then in the letter of 4 September 1917, "My evolution book, which was getting on fast, came to a standstill months ago...". And by 12 January 1920, "You speak of my evolution book. I would greatly like to finish it, but this economic work on the sheep pastures allows little else to be done, so I fear the book may never be written after all". Finally, on 29 June 1921, "At present the proposed evolution book is much in my thoughts. It should be recommenced about the beginning of March 1922, for I propose to conclude my tussock-grassland work on Jan. 31st".

However, the book on evolution was not completed and some of the likely reasons have been suggested (2). I have discussed aspects of the proposed book in part 2 of the Cockayne Letters (5, p.424) and the link Cockayne had established with E.C. Jeffrey (1866-1952) at Harvard University. Jeffrey had also contemplated publishing a book on evolution and Cockayne was to provide data on hybridisation in the New Zealand flora. Though not published, the manuscript of Jeffrey's book is retained in the Harvard University Archives (5, p.424;6) and was examined by Dr David Lloyd in 1980 but he could find no direct reference in the manuscript to Cockayne's work (7).

In later years Cockayne was pleased the book on evolution was not published (8). Incidentally, it appears that Cockayne had contemplated publishing a book on evolution long before 1912 because in MS74 there is a two-page manuscript by Cockayne entitled "Notes for Evolution Book. 18/5/1904".

Through the kindness of Dr Lucy Cranwell Smith, some new knowledge about Cockayne's proposed book has become available. Dr Cranwell Smith during her recent visit to New Zealand passed on to me via Anthony Wright a copy of a letter of 15 October 1913 to Cockayne from A.R. Waller of the Cambridge University Press: The Press received from Seward and Arber the scheme for Cockayne's book "Evolution at Work in the New Zealand Vegetation" as transmitted by Cockayne to Sir David Prain, and Waller has placed the scheme before the Syndics of the Press,

"The Syndics wish me to tell you that they are interested in the suggestion, and, if you will be so good as to send me the MS, when completed, they will be happy to consider it and to inform you whether they can undertake the publication and upon what terms. The Syndics note that the Government of New Zealand will be willing to lend half tone blocks for the work and, in view of the fact that the sale will probably be of a limited nature, the Syndics suggest that it might be possible to obtain financial assistance from the New Zealand Government in case the expense of the work should prove to be greater than they could provide from their own resources. As to this, perhaps you will let me know your views when you send the MS".

Acknowledgements

I thank Dr Lucy M. Cranwell Smith of Tucson, Arizona and Mr A.E. Wright of the Auckland Institute and Museum for providing a copy of the letter from Cambridge University Press to Cockayne.

References

(1) Thomson, A.D. 1979: Annotated summaries of letters to colleagues by the New Zealand botanist Leonard Cockayne - 1. *N.Z. Journal of Botany* 17: 389-416; (2) Godley, E.J. 1979: Leonard Cockayne and evolution. *N.Z. Journal of Botany* 17: 197-215. (3) Thomson, A.D. 1984: Evolution. *Botany Division Newsletter No. 96*: 14; (4) Cockayne, L. 1912: Observations concerning evolution, derived from ecological studies in New Zealand. *Transactions of the N.Z. Institute* 44: 1-50. (5) Thomson, A.D. 1980: Annotated summaries of letters to colleagues by the New Zealand botanist Leonard Cockayne - 2. *N.Z. Journal of Botany* 18: 405-432; (6) Thomson, A.D. 1976: Hybridisation and evolution. *N.Z. Genetical Society Newsletter No. 1*: 9-10; (7) Thomson, A.D. 1980: Aspects of the early history of genetics in New Zealand 3. An appraisal of Leonard Cockayne's views on cytogenetics and evolution. *N.Z. Genetical Society Newsletter No. 6*: 26-28; (8) Letter of 26 November 1928 from Cockayne to W.R.B. Oliver retained at the Museum of New Zealand, Wellington.

A.D. Thomson, Centre for Studies on New Zealand Science History, 5 Karitane Drive, Christchurch 2

PUBLICATIONS

■ *Tane*

Tane, the former Journal of the Auckland University Field Club, is to appear again, and you are invited to contribute a paper to it!

The Offshore Islands Research Group, (OIRG), founded by ex-Field Clubbers to continue their offshore island research interests, has agreed to take over the administration and publication of the journal from the deceased AUFC. OIRG has appointed an Editorial Committee of Ewen Cameron, Bruce Hayward and Anthony Wright, who will invite specialists to referee papers as required.

OIRG intends to publish volume 35 of *Tane* before the end of 1995, subject to sufficient papers being received. We already have enough material for two-thirds of a volume, but need some half dozen additional manuscripts.

The Journal's scope covers studies in all branches of natural history together with archaeology, with a focus on the northern North Island and its adjacent offshore islands. In keeping with *Tane's* origins, we particularly encourage graduate and undergraduate student authors.

You are invited to contribute a paper to the 1995 volume of *Tane*. Please feel free to contact one of the Editorial Committee at the telephone number below to discuss a proposal. Instructions for authors appear inside the back cover of the 1990 and 1993 issues. Manuscripts (single paper copy and preferably also on disk) should be submitted to the address below by 31 July 1995.

Anthony Wright, President OIRG, C/- Auckland Museum, Private Bag 92018, Auckland (Phone: (09) 309-0443, Fax: (09) 379-9956)

■ Journals received

Auckland Botanical Society Journal Volume 50, No.1, April 1995

1. The Lucy Cranwell Lecture. The Natural Community: Forest and Shore, 5 October 1994 by John Morton
2. The Whau Creek by R.O. Gardner
3. Flora and vegetation of Taitomo Island and Nun Rock, South Piha, West Auckland by E.K. Cameron, G.A. Taylor & J.E. Beever
4. Botanical Society trip - Kaukapakapa Scientific Reserve by Fran Hintz
5. Additions and comments on the flora and fauna of Motukahakaha Island, Hauraki Gulf, Auckland by P.J. de Lange & I. McFadden
6. *Lantana camara* warning for northern New Zealand by R.O Gardner
7. Tropical seeds found on Rangatira Beach, north-west Auckland by Barbara Waller
8. Waipareira Bay, Upper Waitemata Harbour by Marjorie Cutting & Ewen Cameron
9. Some seeds in *Meliclytus* (Violaceae) by R.O Gardner
10. *Astelia grandis* (swamp astelia) in the Waikere Ranges by Sandra Jones

11. Additions to the flora of Laingholm by E.D Hatch
12. *Selaginella martensii* at the Whangarei Falls by R.O Gardner

Newsletter of the Hawaiian Botanical Society, Volume 34 Number 1, April 1995

1. Decline of invasive faya in Hawaii by B.K Duffy & D.E. Gardner
2. Native ecosystem regeneration project celebrates its first anniversary by Deborah Ward
3. Update of critical habitat for Hawaiian threatened and endangered plants by Camille Barr

The New Zealand Native Orchid Group Journal Number 54, June 1995

Orchid expeditions

1. *Spiranthes sinensis*, *Prasophyllum* aff. *patens*, swamp, garlic and alpine blues by Eric Scanlen
2. Comment A, on *Prasophyllum* "aff. *patens*"
3. Comment B, on *Prasophyllum colensoi*
4. Comment C, on *Thelymitra* "Whakapapa"
5. Comment D, on *Corybas trilobus*

Close relations

6. *Prasophyllum* species, *Native orchids of Australia* by David Jones

Historical reprints

7. 1887 *Gastrodia hectoria*: was it really *Prasophyllum* "aff. *patens*" by J Buchanan
8. 1946 *Prasophyllum suttonii* (now called *Prasophyllum* "aff. *patens*") by Dan Hatch

Notes

9. Obituary Ken Wilson
10. *Pterostylis linearis* self-pollinating at Rangataua wetland by Ken Wilson
11. *Thelymitra pulchella* pollen granules. Swamp orchids at Kuraponga Lakes by Ruth Rudkin
12. Request for New Zealand native orchids from Germany. Largest Wellington Botanical Society *Bulletin* has two papers on native orchids. John Williams finds *Gastrodia* "long column" at his house near Wanganui.
13. Cynthia Aston remembers the orchids of old Wellington. Betty Seddon on subantarctic island orchids.
14. *Acianthus viridis* on Ruapehu. Australasian Native Orchids Society of New Zealand makes a successful start.
15. *Microtis oligantha* in Wellington by Pat Enright. Field Trip: The elusive *Corybas cryptanthus*

Orchid artist

16. William Henry Nicholls

Australian notes

17. Species, subspecies, siblings species, cryptic species & Microspecies by Bob Bates
18. Orchids of the Australian and New Zealand Sub-antarctic islands by Bob Bates
19. Back to Basics: Iwitahi 1995. *Prasophyllum colensoi*.

Editors

FORTHCOMING MEETINGS/CONFERENCES

■ 1995 John Child Bryophyte Workshop

The 10th John Child Bryophyte Workshop was held at Waipoua Forest, Northland, New Zealand, 24-29 November 1994. The meeting was well attended, with 27 participants, including two from Australia.

Waipoua forest is home to New Zealand's largest tree the kauri, *Agathis australis*, and on the first day we visited several of the larger kauris which are popular tourist attractions. We were all greatly impressed by these trees which are exceeded in girth only by the giant Californian redwoods. The kauri forest and its associated forest types provided a variety of interesting collection sites ranging from sealevel to about

500m altitude. Relief from the closest forest was provided by open 'gumland' scrub (open areas with young kauri saplings or 'rickers') and visit to coastal habitat at Kawerua Beach.

Bryological highlights, particularly for those of us from the deep south, included a variety of mosses and liverworts either confined to or more common in northern New Zealand. *Pyrrhobrym paramattense*, epiphyllous *Distichophyllum adnatum* and *Adelanthus bisetulis* were found in the lower elevation kauri forest, and *Tayloria callophylla* in open gumland scrub on the first day, and *Plagiochila obscura* in higher elevation towai (*Weinmannia silvicola*) - makamaka (*Ackama rosifolia*) forest on the second day. A forest stop at Ohae Stream returning from the bryophyte depauperate, but nevertheless very pleasant, Kawerua Beach provided several interesting *Fissidens*, *F. stricutus* and *F. integerrimus* in a waterfall and *F. oblongifolium* var. *capitatus* on a roadside bank, as well as *Dawsonia superba* and masses of *Mittenia plumula* on a shaded clay bank. The last day of the workshop saw us back in the kauri forest which yielded a notable four species of *Zoopsis*.

As was the case last year, the evening provided a range of presentations. The two Australian participants, Pina Milne and Emma Pharo, spoke about their PhD research. Pina has been working on the reproduction and population dynamics of *Dicranoloma billardierei*, *D. dicarpum* and *D. platycaulon* in the Melbourne area and Emma spoke about her work comparing bryophyte and lichen richness in logged and unlogged and forests in eastern Australia. Allan Fife reviewed the recently published generic monograph of the Pottiaceae by Richard Zander and Jessica Beever gave us more details of the nomenclatural changes in *Fissidens* resulting from her work in that difficult genus. Bastow Wilson outlined some work on dominance-diversity relations in bryophyte communities and Ray Tangney showed slides of his trip to subantarctic Campbell and Auckland Islands collecting bryophytes and lichens for bioactive natural products research. Lisa Forester gave us an insight into management of the kauri forest, detailing her vegetation monitoring programme and the impact of poison bait drops in reducing possum numbers.

From the time we were welcomed to Waipoua by Lisa Forester and the local Department of Conservation Field Centre Manager Glenys Molloy, the workshop was enjoyed by all. The customary good-natured humour of previous forays was also present at this the 10th John Child Bryophyte Workshop, an occasion celebrated by the cutting of a cake. Previous workshops were recalled over an album of photographs compiled by Jean Espie. For the success of this workshop, our thanks are due to Lisa Forester of the Department of Conservation, Whangarei, for organising the workshop and to Jessica Beever and John Braggins for their knowledge of the local bryophyte flora.

The next John Child Bryophyte Workshop will be held at Hokitika, 23-28th November, 1995, and will be organised by Ray Tangney and John Steel from Otago University. To have your name put on the mailing list, write to the address below.

Ray Tangney, Department of Botany, P.O. Box 56, Dunedin

■ Lichen Workshop

The next lichen workshop will be held at Victoria University in Wellington from 10 to 13 November 1995. In the previous three forays we've covered field identification and laboratory techniques, including thin-layer chromatography and spot-tests. In this workshop we will review those topics for any newcomers, but in addition we will (1) exhibit several new taxa and new records which have been discovered since the last workshop in 1993, (2) list the most difficult groups remaining in the New Zealand lichen flora such as *Psoroma* and *Placopsis* to encourage their systematic collection, (3) discuss some promising new analytical techniques such as DNA sequencing and cladistics, and (4) collect in several areas of Wellington (weather permitting).

The workshop's venue is the well-equipped laboratories of the School of Biological Sciences at Victoria University. Nearby rooms are also available for slide-shows. Expected among the participants are Dr David Galloway, who recently returned to New Zealand after spending 20 years at the British Museum in London, Professor Jack Elix (Canberra), Mr Heinar Streimann (Canberra), and Dr Volkmar Wirth (Stuttgart).

The cost of the workshop *without* accommodation is \$40 - that includes transport for fieldtrips, plus other expenses. Accommodation in university hostels will cost another \$40 per day (for 1-person room) or \$36 per day (for a 2-person room) - that includes a bed plus cafeteria-style breakfast and dinner at the hostel as well as a cut lunch. Anybody who prefers a motel please ask for a list of such alternative accommodation. We can book your motel room for you if you wish, but you'll have to pay the motel

directly. We are planning an informal catered dinner and get-together for one of the evenings-it will be optional and cost extra.

Everybody who participated in one of the previous three forays is being contacted by *Lichen Link*. Numbers for this workshop are limited, and it soon will be advertised in the newsletters of botanical societies around the country, so if you are interested in attending, you should promptly either post or fax the following preliminary registration form to Barbara Polly at the Museum of New Zealand. However, if you prefer, you can telephone or e-mail her instead. Contact details are on the form.

Barbara Polly, Museum of New Zealand, Box 467, Wellington

LICHEN WORKSHOP		
<i>PRELIMINARY REGISTRATION</i>		
NAME:	
What title would you like to be addressed by?	
ADDRESS:	
	
PHONE:	
<i>Please circle your preferences:</i>		
Do you wish to stay in a university hostel (bed & cafeteria-style meals)?	yes	no
If yes, what kind of room?	1-person (\$40/night)	2-person (\$36/night)
If no, do you wish to stay in motel-style accommodation instead?	yes	no
If yes, do you want us to send you a list of such accommodation?	yes	no
If yes, do you want us to book your room for you?	yes	no
Do you wish to attend the optional dinner get-together? (it costs extra)	yes	no
 Please either post or fax this preliminary registration form to Barbara Polly at the Museum of New Zealand. Alternatively, you can phone or e-mail her. The necessary numbers are:		
Fax:	(04) 385-7157	
Postal address:	Museum of New Zealand, P O Box 467, Wellington	
Telephone:	(04) 385-9609 extension 668	
E-mail:	barbarap@tawera.monz.govt.nz	
 Closer to November, you'll receive a final registration form and you'll be asked to pay in full if you can, but at least a \$40 deposit (anybody booking a motel room should pay the motel directly).		

■ **Third Australasian Native Orchid Conference**

This conference will be held at the Flinders University Adelaide, South Australia 26-30 September 1996. The cost of registration is A\$100 if you register prior to 31 March 1996 and a special Qantas Airways fare at 45% off normal cost may be obtained depending on booking class availability. Address correspondence to Hon. Secretary, NOSSA, P.O. Box 565, Unley, South Australia 5061.

Editors

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BOOK REVIEW

■ The moss and fern plants of Europe

Written in German and entitled "Die Moos-und Farnpflanzen Europas", this is Volume 4 in the series "Small Cryptogamic Flora of Europe". It was published by Gustav Fischer, Stuttgart in 1995. The authors are W. Frey (liverworts and hornworts), J-P Frahm (mosses) and E. Fischer & W. Lobin (ferns). It has 426pp. with 149 plates; price DM 78.

As mentioned in the Preface the only complete European moss and fern flora for over 50 years has been that of Helmut Gams. It has passed through several editions with the last being published in 1973.

The new book, hard-bound and measuring 21 x 15 x 2.5cm is much smaller and is suitable for taking into the field. It contains a brief survey of all the European fern and moss plants, the term Farnpflanzen including ferns, horsetails, lycopods, *Psilotum* and *Isoetes* and the term Moospflanzen including mosses (Laubmoose) liverworts (Lebermoose) and hornworts (Hornmoose).

The boundary adopted for Europe generally follows that accepted in Index Muscorum except that Iceland and the Arctic Islands (Spitzbergen, Jan Mayen, Bear Island and Novaya Semlya) are included while only for the ferns are Georgia and the Caucasus, Turkey and Cyprus as well as the Canary Islands, Madeira, and the Azores admitted.

Owing to the small size of the book the descriptions of the species are brief and their distribution broadly given, but compensation for this is provided by a comprehensive reference list of Regional Floras, Checklists and Endangered Species lists.

The book is well provided with keys at various levels and with excellent black and white drawings showing distinguishing features of many species along with a few high-power photographs of *Riccia* and of moss leaves and peristomes.

It is anticipated that an English version of the book will be available about 1997. In the meantime most people with little knowledge of German could follow the text fairly easily with the aid of M. A. Pearman 1979 "A short German-English Bryological Glossary". (*Bulletin British Bryological Society* 33: 7-18) or R. E. Magill 1990 "A multilingual glossary for bryology (Glossarium polyglottum bryologiae)" published by Missouri Botanical Gardens.

I have found the book useful in identifying horsetails and some mosses such as *Brachythecium* introduced to New Zealand and have noted the adoption of some name changes.

Ella Campbell, Massey University, Private Bag 11 222, Palmerston North

Acknowledgements: Thanks to Antoinette Nielsen and Ewen Cameron who produced the camera-ready copy for the printer.

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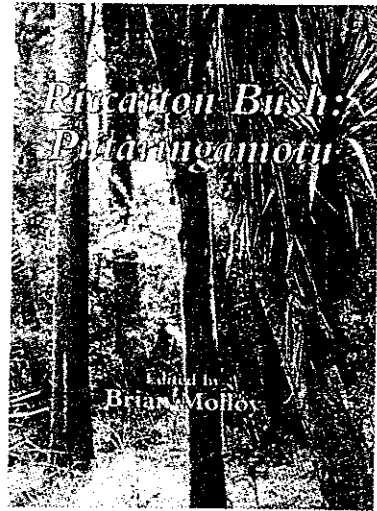
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