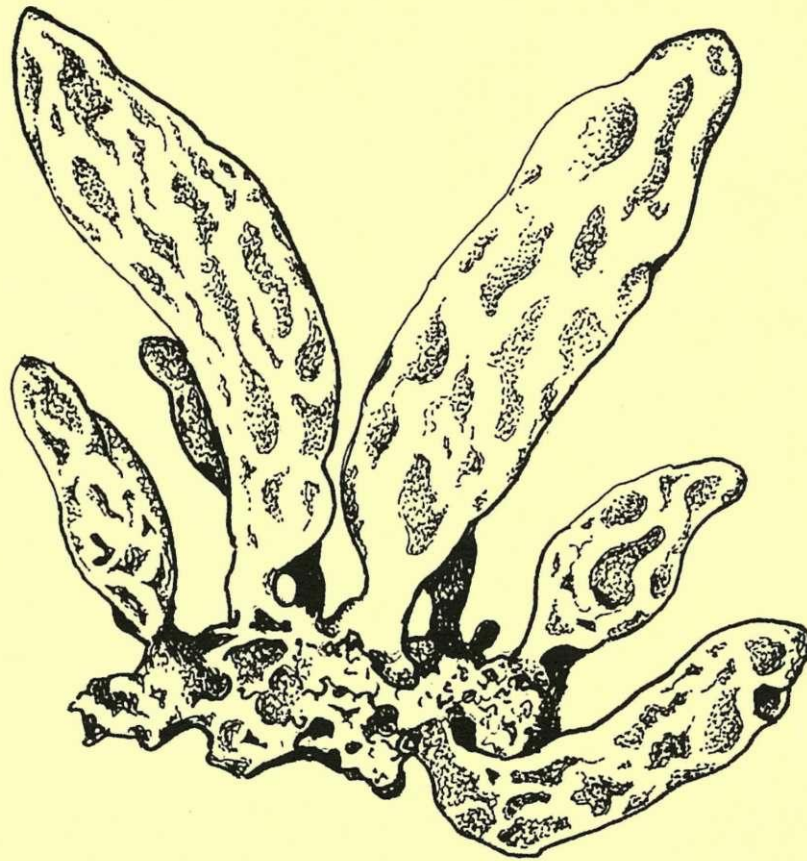


NEW ZEALAND BOTANICAL SOCIETY

# NEWSLETTER

NUMBER 26

DECEMBER 1991



NEW ZEALAND BOTANICAL SOCIETY  
**N E W S L E T T E R**  
NUMBER 26                      DECEMBER 1991

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## New Zealand Botanical Society

President: Dr Eric Godley  
Secretary/Treasurer: Anthony Wright  
Committee: Sarah Beadel, Wendy Nelson, Colin Webb, Carol West  
Address: New Zealand Botanical Society  
C/- Auckland Institute & Museum  
Private Bag 92018  
AUCKLAND

## Subscriptions

The 1992 ordinary and institutional subs are \$14 (reduced to \$10 if paid by the due date on the subscription invoice). The 1992 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 26 (December 1991). 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 March 1992 issue (Number 27) is 27 February 1992.

Please forward contributions to: Ewen Cameron, Editor  
NZ Botanical Society Newsletter  
C/- Auckland Institute & Museum  
Private Bag  
AUCKLAND

## Cover Illustration

*Colpomenia bullosa* (Phaeophyceae, Scytosiphonales) - an adventive marine alga. See article on p.12.

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## NEWS

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### Obituary

#### ■ John Stewart Turner 1908-1991

To learn of the death of Professor John Turner of Melbourne will revive student memories of some New Zealanders since he was, for over a decade, examiner in Botany for the University of New Zealand and thereafter for the University of Otago:

It was a sudden end to the life of "the unsung father of the conservation movement in Australia" who in his eighties was as mentally alert and as tireless as ever. He was even contemplating another New Zealand visit where, although mostly delighted by the landscape and vegetation, he was also appalled that there was so often no native plant in sight!

John Turner was not only a pioneer in nature conservation, but also a foundation member of the National Trust of Australia and other societies concerned with the preservation of vegetation, historic gardens, buildings and scenery. He was also an able landscape painter in watercolour.

As a teacher John Turner gave generously of his time in assisting colleagues and students. For the latter he was quick, kindly and penetrating in his assessments having remarked that "more harm is done by giving a first class man a second than giving a second class man a first".

He was himself a "first class man" in every respect.

Reproduced below is his response to the following examination question:

- Q. Discuss the evolution of the divaricate habit in some species of the antipodean genera; *Coprosma*, *Melicytus*, *Neopanax*, *Sophora*, *Pittosporum*, *Muehlenbeckia*, *Discaria*, *Myrsine*, *Carmichaelia*, *Hymenanchera* and *Pennantia*.

#### DIVARICATE or DESICCATE

I assure you I do not prevaricate,  
When I say that shrub-species divaricate,  
In New Zealand abound; where they cumber the ground,  
It is not at all easy to navigate.

Some claim that Moas, grazing,  
Have in the past eradicated,  
Those shrubs (hypothesis amazing),  
Whose shoots were not divaricated.

But then came Man,  
When first the Maoris settled in the place,  
They found another use for Moa, ----  
As protein for a martial race,  
To supplement the Bracken and the Toheroa.

But when alas! the Moa was no more,  
The rabbit came and Pakeha galore,  
Brought other grazers of the valley floor,  
So maybe divaricate habit,  
Is now due to grazing by rabbit,  
Or, it could be, by Bovines,  
More likely by Ovines,  
( In the Antipodes, less *Bos* than *Ovis* )

But, thinking it o'er, I discard as the mower,  
The rabbit, the sheep, the cow and the Moa,  
The divaricate shrub, where another plant fails,

Just thrives in the stress of the antarctic gales,  
Its blowing, not mowing controls the shoot's growing,  
Its pruning by salt or by sheer desiccation,  
And especially so in the coastal location,  
So that's why their leaves grow smaller and thinner,  
And their right angled branches turn inner and inner.

G.T.S. Baylis, Dunedin

## New Zealand Botanical Society News

### ■ From the Secretary

Nominations for Officers and Committee positions for the New Zealand Botanical Society received by the closing date of 20 November 1991 were:

President	Dr Eric Godley
Secretary/Treasurer	Anthony Wright
Committee	Sarah Beadel, Colin Webb, Carol West

As the number of nominations equalled the number of vacancies there was no need for a ballot, and the above are declared elected.

Committee meetings were held on 25 and 26 November 1991 with the following outcomes of interest to members:

- (i) NZBS is to write once more to the Royal Society of New Zealand expressing our very great concern over the total lack of response to our requests for membership information.
- (ii) Wendy Nelson's letter of resignation from the position of *Newsletter* editor was received with regret. Wendy was thanked for her editorship over the past two years.
- (iii) The Committee endorsed the need for an independent National Threatened Plant List Committee; agreed with the recommendations of the Threatened Plant Workshop held in Upper Hutt, 1-3 July 1991, that NZBS was the appropriate independent body to set up such a Committee; and appointed David Given, Peter deLange, Peter Johnson, Colin Ogle and Anthony Wright to be members of the Committee, noting that the Chair should be independent of Government Departments.
- (iv) Ewen Cameron was appointed *Newsletter* editor for 1992. Bruce and Bev Clarkson have agreed to take on the editorship for 1993.
- (v) 1992 subscriptions were set at the following levels; Ordinary \$14 (reducible to \$10 if paid by the due date); Student \$7 (reducible to \$5 if paid by the due date). If you pay promptly, subs remain at the same level as that set in 1986. An invoice for 1992 subscriptions accompanies this issue of the *Newsletter*.

Other matters discussed by the Committee are covered by the Minutes of the NZBS General Meeting printed below.

**Anthony Wright**, Secretary/Treasurer NZBS, Auckland Institute and Museum, Private Bag 92018, Auckland

### ■ Minutes of a General Meeting of the New Zealand Botanical Society held in the Conference Centre, University of Auckland, on 26 November 1991 at 4pm

PRESENT: Dr Eric Godley (President), Colin Webb (Chair), Anthony Wright (Secretary/Treasurer), Peter Austwick, Sarah Beadel, Catherine Beard, John Braggins, Ilse Breitwieser, Elizabeth Brown, Patrick Brownsey, Ella Campbell, Bev Clarkson, Bruce Clarkson, John Dawson, Peter de Lange, Chris Ecroyd, Lindsay Gibbons, Cathy Jones, David Lloyd, John Lovis, Wendy Nelson, David Norton, Matt McGlone, Murray Parsons, Barbara Segedin, Bill Sykes, Peter van Essen, Josephine Ward, Peter Wardle, Carol West, Barry Conn (Australian Systematic Botany Society Secretary), Judy West (ASBS President)

Colin Webb welcomed members and introduced the Agenda which had been created by the previous day's Committee Meeting.

## 1. STATEMENT OF MEMBERSHIP, FINANCES, ETC.

Anthony Wright presented a brief statement as follows:

Membership (i.e. *Newsletter* subscriptions) at 26 November 1991 was 341

Conference Income at 26 November 1991 was \$9026, and the conference has been budgeted to break even or provide a modest surplus.

Overall financial position of NZBS since 1988:

1988	C/fwd	\$2445.66	
1989	C/fwd	\$2313.00	
1990	C/fwd	\$2232.78	(+ \$504.41 LMC*) = \$2737.19
1991	est. C/fwd	\$563.96	(+ \$1351.29 LMC*) = \$1915.00

\* extraordinary donations from Dr Lucy M Cranwell Smith which the Committee have tagged within the accounts for as yet unspecified special purposes.

Subscriptions for 1992 have been set at: Ordinary \$14 reducible to \$10 if paid by due date  
Student \$7 reducible to \$5 if paid by due date

Officers and Committee for 1992 will be:

President	Dr Eric Godley
Secretary/Treasurer	Anthony Wright
Committee	Sarah Beadel, Carol West, Colin Webb

Newsletter Editor for 1992 will be: Ewen Cameron  
Auckland Institute and Museum  
Private Bag 92018  
AUCKLAND 1

## 2. MEMBERSHIP OF ROYAL SOCIETY OF NEW ZEALAND

Carol West reported the difficulties NZBS had experienced in obtaining a response from RSNZ regarding costs and benefits of member body status. The President would be writing to RSNZ expressing our very great concern.

## 3. NEW ZEALAND JOURNAL OF BOTANY

Patrick Brownsey reported the passing of control of DSIR Journals to the Royal Society of New Zealand and the abolition of the Editorial Advisory Boards. Matt McGlone, Carol West and Patrick had attended a meeting organised by SIR Publishing to discuss the nature and function of new advisory panels and editorial boards for the Journals. Members of the editorial board would be well respected scientists, one New Zealander of which would convene the Editor's Advisory Panel. It was AGREED that the Secretary should write to RSNZ nominating Dr Patrick Brownsey, Professor David Lloyd and Dr Peter Wardle to the Editor's Advisory Panel for the New Zealand Journal of Botany.

## 4. THREATENED PLANT LIST

Anthony Wright reported that the NZBS Committee had endorsed the recommendations of the Threatened Plant Workshop held in Upper Hutt from 1-3 July 1991, that NZBS form a National Threatened Plant List Committee. The committee needed to be independent of land management authorities, and to operate in such a way that a wider network of botanists could be involved in maintenance of the Threatened Plant List.

Several members protested at the recent circulation of proposals for editing the DoC Threatened Species Database by Dick Veitch. Members felt the setting up of a second national database in parallel to the DSIR

Land Resources database was unnecessary duplication, and would weaken the whole area of Threatened Plant Lists by diffusing people's inputs. Questions were raised as to who would be making assessments about use of the DoC database, and who would maintain quality control. It was agreed that for clear channels of communication there should be one database, properly authenticated, to which all land managers and botanists could focus.

It was AGREED that a letter of concern be sent to Dr Mick Clout, Acting Director, Protected Species Division, DoC, pointing out that Dick Veitch's activities were in contravention of the recommendations agreed upon by the July Threatened Plant Workshop.

It was further AGREED that NZBS write to DoC nominating a National Threatened Plant List Committee and asking for funding to service the Committee.

## **5. FUTURE DIRECTION OF THE SOCIETY**

Colin Webb outlined the history of the Society and reiterated the strongly expressed desire of the formation membership that *Newsletter* production be the primary function of NZBS. Although there had not been a great deal of lobbying or political action by the Society, the channel for such action and submission-making very definitely existed. The committee had powers to create subcommittees to act on particular issues and would be happy to do so. Any member wishing to draft submissions/letters on behalf of the Society was welcome to do so and submit it to the Secretary for speedy consideration by the Committee. Patrick Brownsey agreed to write a piece for the next *Newsletter* outlining the possibilities for political action by Society members. It was agreed that letters from the Society should go out over the President or Secretary's name.

Colin Webb suggested that representation on boards and committees (e.g. MORST, FRST) was the way to really influence decisions, but that the Society needed to prove its political mettle. Peter Wardle will write the bare bones of a submission to government for the Newsletter, asking members to submit information to flesh out the case. The committee was asked to keep a watching brief to ensure that a botanist ends up on the Board of the Land Environments CRI.

Any member wishing the Society to nominate members for boards or committees should contact the Secretary in the first instance.

Bruce Clarkson thought there was a need for more amateur involvement in any future NZBS meetings. It was suggested that the next meeting be held in Rotorua over a weekend, which might help make it more inviting for amateurs. There was a need to find a focus which required a meeting to be held rather than holding a meeting for the sake of it.

## **6. GENERAL BUSINESS**

A letter from Neville Moar to be published in the next *Newsletter* was tabled. The Society would write to the Minister of Science (DSIR) drawing attention to our concerns over science funding.

Members of the Committee reiterated their concern at many matters relating to the future of botanical science in New Zealand, and made a plea for help in drafting letters from members of the Society.

The meeting closed at 5.20pm.

## **Regional Bot Soc News**

### **■ Auckland Botanical Society**

Programme, mid-December 1991 to March 1992:

The Society closes down, as far as organised activities are concerned, between the end of November and early March, apart from a five-day field trip to North Whangaroa Harbour (Northland) 16-20 January. There is a limit of 16 participants, but if you are really keen to join the trip, it may be worth contacting the organiser to see if there are any places still available after the bookings close on 23 December. Contact: Anthony Wright 09 579-2150 (home) or 09 309-0443 (work).

Our AGM will be held at 7.30pm on Wednesday 4 March 1992, followed by a talk by Annette Lees on the Tropical Rainforests of the Solomon Islands.

**Auckland Botanical Society Bulletin No.19 - "Index to the ABS Newsletter 1943-1987"**

Includes a straight index in chronological order, an author index, and a subject index. \$4 incl. p&p; available from the Secretary.

**Sandra Jones**, Secretary, Auckland Botanical Society, 14 Park Road, Titirangi, Auckland 7 (ph. 09 817-6102)

■ **Waikato Botanical Society**

The new committee for the Waikato Botanical Society is:

President	Paul Champion
Secretary	David Wardle
Treasurer/Newsletter Editor	Catherine Beard

Other committee members are Dieter Adam, Liz Humphries, Cathy Jones, Phyllis Leigh, Helen MacKay, Duncan Miers and Warwick Silvester.

Unfortunately (for us) our past president Cathy Jones took up a position with DoC in Turangi, so reluctantly I have taken over as president. Cathy is still an active committee member and regularly sends us reports from her new area for our newsletters.

We have had an interesting and varied programme over the winter and spring including field trips to look at native and adventive regeneration under gorse on Karangahape Mountain, the forests of the Western Mamakus off the Tirau-Rotorua Road and coastal scrub, wetland and shoreline vegetation along the northern edge of Aotea Harbour. In addition to these there have been combined trips with Rotorua to the Waitomo area and Auckland to the Whatipu end of the Waitakeres. Other activities included workshops to coincide with and compliment field trips, an extremely interesting but disturbing talk on the trials and tribulations of trying to protect rare and endangered members of our flora by Peter deLange and a highly successful working bee held at the Waikato Herbarium where we managed to clear about half the backlog of unmounted specimens, mounting, accessioning and filing these.

Our next event is a Christmas supper and slide evening where members may bring along a plate and slides. The venue is the Hamilton DoC Office at 7.30pm Tuesday 10th December.

Our programme for the coming year will include a weekend trip to the Manaia kauris and day trips to Pirongia, the Turangi area, the Awakino area, Colebaker Scenic Reserve near Port Waikato, Mapara, a boat trip around Lake Whangape and a mid-winter walk around the Waikato Riverbanks in Hamilton. There will also be workshops on lichens, waterplants and adventives, and several guest speakers. The full programme will be advertised in our Christmas newsletter.

Please note the change in our postal address.

**Paul Champion**, President, Waikato Botanical Society, c/- Ruakura Agricultural Centre, Private Bag, Hamilton

■ **Rotorua Botanical Society**

A joint field trip with the Waikato Botanical Society was held in August to Ruakuri Caves and Umutoatoa Scenic Reserve. A very enjoyable day was had with a few specimens of *Asplenium lyalli* seen near the entrance of the cave. Several orchids were flowering, including three species of *Corybas* (*C. trilobus*, *C. micranthus*, and *C. rivularis*).

The joint Auckland-Rotorua-Waikato field trip in October was again well supported, with a turnout of over 40 people. Auckland was the host this year and the Rotorua Botanical Society members enjoyed great hospitality, especially the name labels on each new plant species seen along the track.

Our most recent trip was a weekend spent in Rakauroa Scenic Reserve (566ha) near Matawai. This reserve contains a variety of habitats, silver beech forest and dense secondary forest and scrub that has developed



after fire. One of the highlights of the trip were the damp shady "grottos" festooned with *Blechnum colensoi*, *B. nigrum* and *Trichomanes colensoi*.

The August Newsletter (no.23) includes articles on:

Otupaka field trip	John Nicholls and Mark Smale
Rotoma Recreation Reserve	
Kahikatea Forest	Bruce Clarkson and Beverley Clarkson
Motiti Island Field Trip	Barry Spring-Rice
Vegetation of Taumaihi Island	Willie Shaw and Beverley Clarkson

Forthcoming field trips are:

Bog Inn Bog, 15 December - Leader Stewart Wallace (07 332-3097)  
Tongariro Forest Park, January 25-27 - Leader Cathy Jones (07 236-0113)  
Te Hopai Island, Tauranga Harbour, February 22 - Leader Sarah Beadel (07 362-4546)  
Lower Rangitaiki wetlands, March 15 - Leader Robyn Irving (07 332-2134)

Bruce and Christine Burns are due back in the country soon, Bruce having completed a doctoral thesis on the dynamics of monkey puzzle (*Araucaria araucana*) in Patagonia. We look forward to hearing all about his work and meeting their daughter Erica born whilst they were in America. Bruce is keen to pursue his interest in the biology of southern hemisphere conifers once back in New Zealand.

Mark Smale is studying montane forest dynamics on Mt Pureora.

**Sarah Beadel**, Secretary, Rotorua Botanical Society, RD 4, Rotorua (phone 07 362-4546)

#### ■ Wanganui Museum Botanical Group

Meetings are held on the first Tuesday in the month, starting at 8pm (during summer time) in the Regional Museum classroom. Outings take place on the first Saturday or Sunday in the month.

The Department of Conservation has an extensive and varied summer programme during January and there are several with botanical interest. There is usually a member of the group assisting with these. We were unable to visit the hilltop lake in September (but see below!) but instead visited salt flats at the mouth of the Whenuakura River. *Spartina anglica* occurs here and *Ranunculus acaulis* and *Cotula coronopifolia* were among the plants in flower.

Coming events:

Jan 3rd	Holiday trip to Stratford Mountain House, Mt Taranaki
Feb 1st	The hilltop lake we missed in Sept 1991.
Feb 4th	An illustrated talk by Ian Moore - Papua-New Guinea
Feb 6th	A Waitangi Day picnic in a member's garden
Mar 1st	The Tutaenui Stream valley near Bulls
Mar 3rd	A talk on "Protection of indigenous vegetation on private land", by Maggie Bayfield
Apr 4th	A trip to the York Road, Mt Taranaki
Apr 7th	A talk on some birds and flowers of New South Wales by Jocelyn and Ian Bell

We care for the native plant garden around the Regional Museum in the evening of the Thursday following the Tuesday meetings.

For further information contact Joan Liddell, 13 Moore Avenue, Wanganui, phone 06 345-7160.

**Reporter: Alf King**, 180 No.2 Line, RD 2, Wanganui

#### ■ Wellington Botanical Society

Programme: December 1991 - March 1992

Friday 6 - Monday 9 December: Field trip - Makino and Te Rangipai Scenic Reserves.  
Saturday 28 December - Wednesday 8 January: Field trip - Central Otago.  
Friday 17 - Tuesday 21 January: Field trip - Northwest Ruahine range.  
Saturday 1 February: Field trip - Te Marua Reserve, working bee.  
Monday 17 February: Evening meeting - "Life Styles of forest plants in the Wellington area", John Dawson.

Saturday 7 March: Field trip - Kaitoke.

Monday 16 March: Evening meeting - "Botany under the Microscope", Bill Malcolm.

**Carol West**, 9 Mamari Street, Rongotai, Wellington 3

### ■ Nelson Botanical Society

In August Shannel Courtney described for us some of the botanical wonders and landscapes of Jamaica. He covered areas of semi-desert and areas of high rainfall all within a few kilometres on the relatively small island. The area was shown to have a very diverse flora. In September Peter Williams took us on an armchair journey through the Kaikoura mountains. He covered areas from the limestones of the Sawcut Gorge to the Summit of Tapuae-O-Uenuku and showed us many of the rare and unusual plants of the area in their natural environments.

The August field trip was led by Martin Conway who guided us to two of the local protected areas, an uncovenanted one on Hamish Brown's property and a QEII covenant at Brian Boyker's place. In all 19 people turned up for a great day's botanising, preparing our own lists.

We visited Hamish Brown first. This small area stands out prominently on a river flat near the Neudorf road not far from Prices corner. The predominant rimu (*Dacrydium cupressinum*), matai (*Prumnopitys taxifolia*) and kahikatea (*Dacrycarpus dacrydioides*) form a distinctive canopy over black and silver beech (*Nothofagus solandri* and *N. menziesii*). We recorded 93 species from the area, quite a great diversity for such a small area. Of special interest was mistletoe (probably *Peraxilla colensoi*) on silver beech which was being severely browsed by possums. Other plants of interest were *Melicactus micranthus* and hybrids between it and mahoe, and two locally uncommon ferns of lowland terraces, *Diplazium australe* and *Lastreopsis microsora*.

In the afternoon we compiled a list for Boyker's covenant. Here we recorded 97 species. The area consisted of a river terrace of podocarp forest, not unlike the first area visited, except it had not been disturbed and so contained mature forest, and a steep slope of hard beech forest. It was interesting to see young miro (*Prumnopitys ferruginea*) there and the occasional large hinau (*Elaeocarpus dentatus*). Among the ferns *Botrychium bifforme* was an interesting find and *Tmesipteris elongata* was particularly prolific on the silver fern (*Cyathea dealbata*).

In October a group of 19 visited Mistletoe Bay. For those who stayed overnight there were additional walks to Anakiwa and around the peninsula and the Mistletoe Magic which wetted the evening.

We added over 40 species to the list, many exclusive to the two forested gullies. The highlights of the walk were the huge rimu (*Dacrydium cupressinum*) and pukatea (*Laurelia novae-zelandiae*) and the lonely karaka (*Corynocarpus laevigatus*) and kohekohe (*Dysoxylum spectabile*). The last two species being of limited distribution in the Sounds. Other highlights were the two orchids (*Pterostylis banksii*) and (*P. graminea*) both on full flower and abundant. Many thanks to Roger Bay for selecting this beautiful spot.

A lucky eleven had a great Labour Weekend of fine weather supported by a grand venue near Ward. The first day trip was up to the spectacular Sawcut Gorge in the Waima and then on to the hut. The vegetation changes from shrubland to patches hanging on the cliffs, including abundant *Clematis foetida* and *Hebe hulkeana* in full flower. Screes contained the uncommon small native convolvulus (*C. vercundus* sub species *waitaha*). At lunch we had the opportunity to see the very rare fern *Pleurosorus rutifolius*. The Isolation Creek Gorge has many alpines clinging to its walls including *Geranium sessiliflorum*, *Ranunculus insignis* and dense patches of *Carmichaelia astonii*, and *Parahebe catarractae*.

On Sunday we climbed Weld Cone and walked the shore from Ward Beach to the mouth of the Waima River. On Weld cone the highlights were the *Clematis foetida*, heavily perfumed and in full flower in the rubble screes below the summit and the masses of *Gentiana astonii* on the southern cliffs, soon to come into flower. On the summit the prostrate kowhai shorn into dense hedges by the wind was entwined by *Clematis forsteri*, also in flower.

After we were blown around The Needles we found abundant pingao (*Desmoschoenus spiralis*) along the shore with marram, all the way to Mirza Creek. South of Mirza Creek we encountered a stony "Desert" containing intriguing patterned stones. All that grew here were low clumps *Raoulia beauverdii*, *Pimelea urvilleana* and a few introduced weeds - the most common was *Carpobrotus edulis*.



Recently, Jenner (1987) reported unwittingly collecting seedlings of the species on a trackside in the Kaitaia area but subsequent visits to the presumed site by several botanists failed to confirm the finding. At least 5 botanists have visited one or more of the Awanui River forest remnants since the late 1970s but have not found heart-leaved kohuhu (D.R. Given & P. de Lange pers. comm.).

On 14 October 1991, in the company of P. Simpson, P. de Lange, I. Flux and T. Silbery, I visited a remnant of secondary kahikatea forest on the banks of the Awanui River, Kaitaia (NZMS 260 004 GR 324810), the property of Mr L.E. Foley. This remnant is perhaps within 10 km of where an H.B. Matthews and H. Carse collection of the species (cited in Cooper 1956) was made. The object of our visit was obviously to find heart-leaved kohuhu and within 5 minutes of entering the remnant the first individual, an 8 m tall male in full flower, was encountered. Further searching revealed another 17 individuals (Table 1). Heart-leaved kohuhu is clearly not extinct in the Kaitaia district and searches of other flood plain kahikatea forest remnants there would probably reveal other populations.

The confirmation of its presence near Kaitaia adds to a sequence of very widespread but local occurrences in the North Island, from Carterton in the south to Mataroa (near Taihape) in the central North Island, Wairoa to near Te Karaka on the East Coast, and near Whangarei and Kaitaia in the far north (Table 2). In all cases the species grows in kahikatea and/or matai alluvial terrace or colluvial toeslope forests and treelands in which the abundance and diversity of divaricating shrubs are a feature; for this reason it seems to have been often overlooked.

The largest North Island population is probably that in Wairua Wildlife Management Reserve near Whangarei where the population is perhaps in excess of 300 individuals. However, the IUCN classification "vulnerable" applied by Wilson and Given (1989) is appropriate, in that the species is clearly not in immediate danger of extinction but its populations have been severely depleted and their ultimate security is not yet assured.

Preliminary comparisons of the plants from Kaitaia with those elsewhere in the North Island suggest that the northern entity does not warrant separate taxonomic recognition. Apparent differences such as larger leaf size, greater leaf hairiness etc. suggest, rather, a morphological cline from south to north. Similar morphological trends are also apparent when comparing Kaitaia individuals of other divaricating shrubs eg, *Melicope simplex* and *Coprosma rigida* with those from central and southern North Island populations.

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Table 1: Height class data for 18 heart-leaved kohuhu individuals found near Kaitaia

Height in Metres	No. of Individuals	Sex/Life Stage
0 - 2	10	Juvenile
2 - 4	0	
4 - 6	2	Adult (2)
6 - 8	5	Adult (2 & 3)
8 - 10	1	Adult (1)
<b>Total:</b>	<b>18</b>	

Table 2: Current records of heart-leaved kohuhu in North Island

Location (North to South)	No. of Individuals
Awanui River, Kaitaia	18 +
Wairua Wildlife Management Reserve, Whangarei [Clarkson, B.D. 1991]	300 +
Waikohu Station, Te Karaka [Clarkson, B.D. 1991]	39 +
Sunworth Station (14) and Shaw property (4), Ngatapa [Clarkson, B.D. 1991]	18
Te Aroha Station (55), Powha Station (14), Waikura Station (4), Pehiri [Clarkson, B.D. 1991]	73 +
Hurumua Nature Reserve, Wairoa [Shaw, W.B. 1988]	197 +
Paengaroa Scenic Reserve and vicinity, Mataroa [Clarkson, B.D. 1991]	31 +
Tukituki River, Hawkes Bay [G.Y. Walls pers. comm.]	1
Tauwhero River, Carterton [A.P. Druce Pers. comm.]	8
<b>Total:</b>	<b>685 +</b>

**Bruce Clarkson**, DSIR Land Resources, c/- FRI, Private Bag 3020, Rotorua

#### ■ Karo Invades Saltmarsh

Karo (*Pittosporum crassifolium*) is a well established adventive in the Wellington region, 250 km from the southern-most part of its range in north Taranaki. It is commonly found in coastal scrub on stoney soils, not unlike its natural situation, and in pine plantations and regenerating scrub inland. Also it is often found in gardens as an ornamental or a hedge plant.

Within the last ten years karo became established in the saltmarsh of the Pauatahanui Wildlife Reserve. Fortunately members of the reserve management committee recognised the potential problems of it invading the raised areas of marsh, and it is being eradicated.

The karo in the reserve appear to have come from two self-established trees, that were growing in the reserve when Wildlife Service handed management of the area to the Royal Forest and Bird Protection Society in 1985. The original two trees had established in ribbonwood (*Plagianthus divaricatus*) scrub along the levees of Pauatahanui Stream. By 1985, they were fruiting freely and had obviously built up a substantial seedbank. But only when a walking track was cut along the stream, did the invasive nature of karo become evident. Around the larger trees were dozens of smaller saplings, that were overtopping the ribbonwood, some of which had died under the karo canopy. Also, under these saplings and further out around the area were hundreds of small karo seedlings.

Since 1986 the karo have been removed from the saltmarsh, whenever they appear. This requires continual vigilance, as we still seem to be dealing with the original seedbank and we expect occasional seed to arrive from adjacent areas. Also when some saplings appear through the dense 1.5-2 metre ribbonwood canopy, they often have flowered once and have fruit setting. But the karo problem is now well under control, and this was made easier eradicating it as soon as we suspected its invasive nature.

The invasive nature of karo, with dense sapling establishment shading out other species, forming monoculture stands seems similar to the habit of the Australian *Pittosporum undulatum* in the highlands of Jamaica (P. Bellingham and S. Courtney pers. comm.). With the arrival of karo onto small islands in the Marlborough Sounds, such as Bird Island (pers. obs.), we may see the establishment of dense karo forests and the exclusion of native shrubs and herbs. It may be judicious for conservation staff and others to remove it before it becomes a problem in that locality.

**Mark Bellingham**, Royal Forest and Bird Protection Society, Box 631, Wellington

#### ■ Distribution of the adventive seaweed *Colpomenia bullosa*

In 1982 Murray Parsons (NZJBot. 20: 293) reported the occurrence of the brown alga *Colpomenia bullosa*, known then in New Zealand from one collection from the Leigh Marine Laboratory. This species was first described from California and is found along the Pacific coast to Alaska and also in Japan. The arrival of this northern Pacific species in New Zealand waters is thought to have been associated with shipping either from Japan (in a similar fashion to the Pacific oyster) or from North America.

Subsequently, collections of this saccate seaweed (illustrated on the front cover) have been made at Ahuriri, Napier (1986 - WELT A18093) and Pt Halswell, Wellington (1990 - WELT A19421).

On a recent collecting trip to the east coast, extensive populations of *Colpomenia bullosa* were found on the Mahia Peninsula. This species occupied a wide belt of the intertidal reefs occurring with *Hormosira* and growing amongst coralline turf. North of Gisborne at Pouawa and Tatapouri, *C. bullosa* was present although not in such dense stands as found at Mahia.

Nancy Adams (1983 - NZJBot. 21: 1-2) presented a checklist of marine algae adventive to New Zealand waters. In the past five years the Japanese kelp *Undaria pinnatifida* has become established and is now spreading along the east coast of the South Island, having been reported initially from Wellington Harbour (Hay, C.H. 1990, Brit. Phycological Jour. 25(4): 301-313). Another adventive brown alga *Chnoospora minima* has just been recorded from the Marlborough Sounds (Nelson, W.A. & Duffy, C.A.J. 1991, NZJBot. 29: 341-344).

The arrival in New Zealand and in some cases subsequent spread of species considered to be adventive, has been related to shipping, from the time of the early sailing ships of sealers, whalers and traders to the present day fishing vessels such as the Japanese and Korean squid fleets. In the future it is highly likely that additional adventive species will appear on New Zealand shores.

W.A. Nelson & N.M. Adams, National Museum, P O Box 467, Wellington

## Fieldwork

### ■ *Cordyline* Survey

During a car journey from Christchurch to Nelson on 26 September 1991 to attend the launching of Peter Wardle's book "Vegetation of New Zealand", my wife and I took the opportunity to continue our survey of roadside *Cordyline* trees for the dieback disease (cf. *Newsletter No.24*: 9-11). We travelled on State Highway 7, 65 and 6 via Lewis Pass, the Shenandoah and Murchison and returned on the same route. No dead trees were recorded and just one tree was noted showing moderately severe wilt and dieback symptoms, near the Hanmer Springs turnoff on State Highway 7. Elsewhere a few trees were noted with 1 or 2 individual branches with dieback like that often seen on trees in and around Christchurch city. Many fine large trees were noted in the region between Christchurch and Lewis Pass. In general the trees looked vigorous and appeared to have darker green leaves than many of the trees in Christchurch. The absence of the typical severe northern dieback symptoms, except for the solitary example, is most gratifying. Incidentally, in 1989 I recorded leaf yellowing and some dieback on a 20-year-old tree in our Christchurch garden (*BD Newsletter No. 124*: 10-12). The symptoms have not increased in severity on this tree, and a basal shoot has developed which appears normal. The cause of the unthriftness of this tree remains unresolved.

A.D. Thomson, Centre for Studies in N.Z. Science History, 5 Karitane Drive, Christchurch 2

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## BIOGRAPHY/BIBLIOGRAPHY

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### ■ Biographical Notes (4) Joseph Hobson McMahon (c.1874-1948)

J.H. McMahon was born at Kenepuru Sound, Marlborough, the province in which his botanical explorations were concentrated. His father, Patrick McMahon of "Taradale", Kenepuru, came from County Monaghan, Ireland, and had married Mary Blaymires. Of their four boys and six girls Joseph was the second son (1,2). Patrick McMahon is not mentioned in "The Cyclopaedia of New Zealand" (3). There is, however, an entry for a Peter McMahon who is said to have purchased "Taradale" at Kenepuru Head in 1860; and settled there permanently in 1863. Furthermore the birth-place and year of birth, maiden name of wife, and number of sons and daughters given for Peter McMahon are the same as those for Patrick. There seems no doubt that these names refer to the same person particularly as I can find no mention of a Peter McMahon in the electoral roll for those times.

"Taradale" was described as follows in 1906 (3). "It is situated in the Kenepuru, Pelorus Sound, has a south-easterly aspect, and is partly bounded by several miles of shoreline. There are several hundred acres of fertile level land, and about 1500 acres of more or less rugged country. It has been greatly improved and carries about 1500 sheep and a small herd of cattle. The homestead is picturesquely situated at the head of the bay and is surrounded by native trees." It was here that Joseph grew up and spent much of his life. That he was an intelligent and observant young man is clear; but he was also shy and isolated. Fortunately guidance was available from a widely read and older man. This was Joshua Rutland (c.1836-1915), a keen botanist and anthropologist who included Hutton and Thomas Kirk among his correspondents. Rutland lived some way up the Pelorus River opposite Canvastown, several hours away by boat, where he and his brother had cleared land.

In February, 1893, as Buick (4) relates, "Mr Rutland was informed by Mr Joseph McMahan that at Ferndale Kenepuru, there were a number of mounds or heaps of clay, supposed to be graves. Accordingly, accompanied by Mr McMahan and his nephew he visited the place mentioned". Excavation disclosed sepulchral mounds, the sites of cremations.

In January, 1894, Joseph gathered two novel mountain daisies on Mt Stokes, the 1203 m peak to the north of Kenepuru Head. They were named *Celmisia rutlandii* and *C. macmahoni* (sic) by Kirk (Tr. N.Z. Inst. 1895) who gave the collector as P.A. Macmahon (5). I cannot trace any such person. In any case the original gathering of *C. rutlandii* is labelled as collected by J. MacMahon (6).

In the Electoral Roll for 1896 Joseph is listed as "Taradale, Kenepuru, bushman, residential". And in January, 1896, Kirk visited Mt Stokes (7) doubtless guided by Joseph, who also supplied him with a chickweed from the mountain which Kirk described as *Stellaria minuta* in his Students' Flora (1899) and with material of *Hymenantha obovata* from Queen Charlotte Sound (Tr. 1896).

After Kirk's death in 1898 Joseph sent material to Cheeseman in Auckland. Some of this arrived in time to be incorporated in the body of the "Manual of the New Zealand Flora" (1906) e.g. the new species *Veronica rigidula* which Joseph discovered in the Pelorus and Rai Valleys, and on Mts Duppa and Maungatapu of the Bryant Range just east of Nelson City. But in the Appendix there are several records from a further five localities: Mt Richmond, on the Richmond Range between the Bryant Range and the Wairau Valley; Mt Stokes and the shores of Pelorus Sound; Mt Blairich on the north side of the Awatere Valley; the Awatere Valley itself; and near the mouth of the Awatere River. This north-west and south-east line, from the Bryant Range to the mouth of the Awatere defines the southern limit of Joseph's territory until 1931.

As with many another New Zealand botanist, Joseph McMahan had a second string to his bow. He corresponded with Charles Chilton, Professor of Biology at Canterbury College who wrote: "In 1902 Mr J. McMahan sent me numerous specimens of an isopod found in association with the nests of ants in the Rai Valley in Marlborough" - (Tr. 1909); and he also wrote: "Mr J. McMahan to whom I have been indebted for various specimens of *Crustacea* at different times thus describes the capture of the Kenepuru specimen. It was he says, 'taken alive at the entrance of a hole about half an inch wide in sand near low-tide mark; this hole was well formed, and went some depth into the sand, over which fresh water ran on its way to the sea, much of it percolating down the hole'" (Tr. 1907).

Joseph continued collecting for many years as shown by the following localities taken from W.R.B. Oliver's monograph on *Coprosma* (8).

1914: Tuamarina swamp near Blenheim (Oct); Mt Tokomaru (Nov); Mt Stokes (Dec). 1920: Kenepuru Valley. 1921: Mt Stokes (Feb). 1923: Mt Stokes (Sept-Dec); Kenepuru Valley (Nov). 1924: Rai Valley (Mar); Mt Freeth, Queen Charlotte Sound. 1926: Kenepuru Valley (Sept); Fuchsia Gully, Awatere (Dec). 1927: Pine Valley, Awatere (Mar); Picton (June); Mt Stokes (Dec). 1928: Mt Fishtail, Richmond Range (Jan); Fuchsia Gully, Awatere (Dec).

Professor Arnold Wall (9) collected *Celmisia macmahonii* and *C. rutlandii* on Mt Stokes under Joseph's guidance in November, 1922 (CHR 290005). Wall described Joseph as "an active and intelligent collector" and recalled that he "was only the cowman on a small dairy farm but had got together a good assortment of botanical books which he kept in his whare. He was an odd eccentric character living a very secluded life. On the outbreak of World War I the police supposing that he was of military age, made enquiries about him; one local resident said 'Don't bother about him. He's mad; he goes off into the mountains to collect flowers'." Presumably the gap between 1914 and 1920 above, was not due to military service.

An apparent novelty from this collecting period was *Carex McMahoni*, cited by Petrie (Tr. 1926) as gathered by McMahon in the Pelorus Valley and dedicated as follows: "I have pleasure in naming this fine species after Mr McMahon who has rendered me many valuable services." The type is now given as from Edgecumbe Point, Marlborough Sounds, collected by McMahon in January, 1924, and the species is classified as *Carex raoulii* (10,11).

In 1931 Joseph broke new ground by going south to the Maruia Valley. His collection included 7 species of *Coprosma* (8).

Mr A.J. Healy has drawn my attention to a specimen of *Uncinia divaricata* collected by McMahon in 1936 at Red Hills in the Wairau Valley (CHR 53619); and tells me that Joseph had worked on this run, which was owned by the Beech family who also owned Parahau Farm at Kenepuru Head. By 1939 Joseph was working for Mervyn Miles of Waitaria Bay, next to Kenepuru Head; and it was here that young Arthur Healy met him. Arthur was scrub-cutting on the Te Puru run (Hocquards) outer Pelorus Sound, during his vacation from Massey College, and would either walk over the summit of Mt Stokes to Waitaria Bay, or through the Kenepuru Saddle and via Kenepuru Head. His diary records day or overnight visits on 30 January and 24 November, 1938, and 2 January and 14 November, 1939; and he recalls their discussions on variation in ferns and *Coprosma polymorpha*, as well as Joseph's generosity in sharing his knowledge of the plants of Marlborough.

When Arthur returned north they corresponded and exchanged specimens. By 1940 Joseph had retired to Picton (where two of his sisters lived) and was living in a bach at the lagoon. Arthur visited him here in February, 1940, and September, 1941, when passing through on his way to Wellington after field-work in nassella tussock in North Canterbury and Marlborough. In May, 1943 Joseph was still living in Picton but away at "Taradale". And on 8 April, 1948 he died in a hospital at Nelson and was buried in the Picton cemetery 2 days later (1). He was 74, and is remembered by Arthur Healy as a courteous, quiet, kind, gentleman, generous in his help to a student botanist.

Joseph left his plant collection to the Dominion Museum (12) and there are also specimens at the Auckland Museum. Specimens at DSIR, Lincoln, either came from the Canterbury Museum or from Mr Healy's personal collection which together with Joseph's letters, he donated to DSIR.

I am very grateful to Mr A.J. Healy for his help with the note; and also thank Mr A. Elwood-Smith for information on the McMahon graves in Picton.

- (1) Registrar-General.
- (2) Tombstone inscriptions in the Picton cemetery.
- (3) Cyclopaedia of N.Z. Nelson, Marlborough and Westland, 1906.
- (4) Old Marlborough, T. Lindsay Buick, 1900.
- (5) "McMahon" was sometimes spelled "Macmahon", or "MacMahon". I have followed these spellings, when they occur.
- (6) D.R. Given, photo collection.
- (7) B.G. Hamlin, Rec. Dom. Mus., 1965.
- (8) W.R.B. Oliver, the genus *Coprosma*, 1935.
- (9) A. Wall, Long and Happy, 1965.
- (10) B.G. Hamlin, Tr. 1957.
- (11) L.B. Moore and E. Edgar, Fl. N.Z. 2, 1970.
- (12) W.F. Ponder, A Labyrinth of Waterways, 1986.

Correction: in Biographical Notes (3) the reference to A.D. Thomson should be 1979, not 1976.

Eric Godley, Research Associate, DSIR Land Resources, Christchurch

#### ■ Archibald Menzies (1754-1842): New Zealand's neglected bicentennial botanist

*Dracophyllum menziesii* and *Nothofagus menziesii* are two well-known New Zealand plants whose names commemorate their discovery by the Scottish surgeon-botanist Archibald Menzies who visited Dusky Sound two hundred years ago as naturalist on Captain George Vancouver's *Discovery* voyage of 1791-1795. The visit to Dusky Sound (2-22 November, 1791) although brief has an established and important place in New Zealand botanical history (see Godley 1960), and during that time Menzies



collected a wide range of specimens, lichen, bryophytes and flowering plants. But what sort of man was Menzies? and how does his short visit to the Fiordland coast of New Zealand 200 years ago fit into the wider perspective of his long life, his extensive botanical collections and subsequent botanical interests? I hope in this note to sketch in some of these missing details of our neglected bicentennial botanist.

Archibald Menzies, son of James and Anne Menzies, was born in 1754 at Styx House, in the parish of Weem near Aberfeldy, Perthshire, Scotland (he was baptised at Weem parish church on 15 March 1754) and died in London at his house in Notting Hill (2 Ladroke Terrace) on 15 February 1842. Although today widely remembered as the great pioneer of botanical collecting on the north west coast of America, Menzies also botanised in Hawaii, New Zealand, Tahiti, Sumatra, the Cape of Good Hope, Western Australia, Staten Island, Nova Scotia, St Helena, and the West Indies during periods of overseas service between 1782 and 1806.

As a boy he worked with his brothers William, Robert, John and James in the nearby gardens of Castle Menzies (seat of the Chiefs of Clan Menzies), part of the complement of 21 gardeners kept by Sir Robert Menzies the Third Baronet. Menzies followed his elder brother to Edinburgh and a job in the new botanic garden established there by Professor John Hope in 1763. Hope encouraged Menzies in botany and also counselled him to study medicine and surgery at Edinburgh University which Menzies did, although he never graduated from Edinburgh - he was later awarded M.D. *honoris causa* from Aberdeen University on 24 July 1799. In 1778 Menzies toured the highlands at Hope's request, searching for rare plants for the gardens of the notable London physicians, John Fothergill and William Pitcairn. During this tour Menzies collected his first lichens, establishing a breadth of interest in all plant groups that was to persist with him for the rest of his life, and which was to find such ample opportunity for expression during his later voyages round the world.

Leaving Edinburgh he became an assistant to a surgeon in Caernarvon in North Wales but very soon felt his horizons there to be stifled and he enlisted in the Royal Navy as an assistant surgeon in 1782, and was appointed to the *Nonsuch* under Captain Truscott and was present at the famous battle of the Saints in the West Indies. In early 1783 he joined the Halifax Station on *HMS Assistance* and until he returned to England in 1786 he made much of his opportunities for botanising in Nova Scotia, sending parcels of seeds to both Professor Hope in Edinburgh and Sir Joseph Banks in London. This initial contact with Banks, fostered at the outset by Hope, was to prove crucial to the development of the next phase of Menzies career...

On his arrival at Chatham in August 1786, Menzies wrote to Banks, "... I am informed that there is a ship, a private adventurer now fitting out at Deptford to go round the world. Should I be so happy as to be appointed surgeon of her, it will at least gratify one of my greatest earthly ambitions, and afford one of the best opportunities of collecting seeds and other objects of natural history for you and the rest of my friends ...". Banks wrote recommending Menzies to the owners, Richard Cadman Etches of 69 Watling Street, who were sending two ships, the *Prince of Wales* and the *Princess Royal* under the command of Lt James Colnett (a midshipman with Cook on the *Resolution* voyage) to the west coast of North America to trade for sea otter skins which they would later exchange in Canton for tea, and silks prior to returning home. Within two weeks Menzies was named as surgeon to this venture, which took him to landfalls in the Cape Verde Islands, Staten Island, Nootka Sound and many other anchorages from there to as far north as Montague Island in Prince William Sound, Alaska, Hawaii (twice to overwinter), China, Sumatra, the Cape and back to London. The voyage lasted from 15 October 1786 until the end of July 1789. Menzies made collections of both plants and animals from all of his landfalls, his lichen collections from Staten Island and the western coast of North America being particularly rich.

Menzies was keen to set out again on another long expedition and with Banks's help he was given a Royal Navy appointment as naturalist to the great *Discovery* expedition commanded by Captain George Vancouver between 1791 and 1795. Menzies' letter of thanks to Banks illustrates something of his enormous enthusiasm for possible opportunities of plant collecting in distant parts of the world, much as Banks himself had earlier done with Cook on the *Endeavour* voyage. "... From the first moment I had the honour of being your correspondent I found within me a particular desire of traversing unknown regions in quest of my favourite pursuit, and fondly looked for the enjoyment of that indulgence under your kind tuition and patronage, which I am happy now to have the pleasure to possess, in being entrusted by you with such a particular share of the present expedition, as will I hope, afford a free and liberal scope for its full exercise.

This principle has already bore me cheerfully up under the peculiar hardships of a long and tedious circumnavigation and is by no means yet extinguished: on the contrary, the present opposition it meets

with, serves only to add fuel to the flame. I need not therefore tell you Sir Joseph, how ready I am to undertake your instructions whatever they may be; or how cheerfully I will exert, on every occasion my utmost endeavours to the completion of their object; and what pleasure I shall enjoy in transmitting to you from time to time, an Epitome of our proceedings by a faithful and diligent correspondence. I know well I have been already on many occasions extremely troublesome to you, which I hope you will attribute in some measure to my long and tedious state of suspense more intolerable to me than the hardship and fatigue of traversing the wildest Desert; but be assured, I will not fail now to exert the only means in my power to repay in some measure your disinterested attention and friendship towards me by a diligent and persevering zeal in the promotion of that Science which you so liberally and indefatigably patronize."

Cape of Good Hope 1791 *AM.*

Dusky Bay N. Zealand 1791 *AM.*

Otaheite 1791 *AM.*

Bwyhee Sandwich Islands *AM.*

Monterrey, California 1792. *AM.*

Port Trinidad California 1792. *AM.*

Otaheite 1792. *AM.*

California 1793. *AM.*

Monterrey California 1793 *AM.*

S<sup>t</sup>. Helena *AM.*

**Menzies' Discovery voyage landfalls.**  
**Archibald Menzies' locality data written on the reverse of his octavo specimen sheets from his lichen herbarium preserved in the Royal Botanic Garden, Edinburgh (E).**

Nova Scotia 1704. *AM.*

Nova Scotia 1705 *AM.*

Ataten Land - Feb. 1707 *A. Menzies*

Ataten Land near Terra del Fuago - Feb. 1707 *AM.*

West-coast of North America. Sept. 1707 *AM.*

West-coast of N. America Oct. 1707 *AM.*

West-coast of N. America 1700. *AM.*

**Menzies' Prince of Wales voyage landfalls.**

The *Discovery* sailed from Falmouth on 1 April 1791 and did not return to Britain until 13 September 1795 after a magnificent voyage that allowed Menzies opportunities for collecting at the Cape of Good Hope, Australia (King George Sound), New Zealand (Dusky Sound), Tahiti, Hawaii and the west coast of North America. During this time, as he was charged in Banks's and the Admiralty instructions, Menzies kept a detailed journal, and he also kept Banks informed of his progress in detailed letters to Soho Square. On the return to England the *Discovery* anchored at Valparaiso and Menzies, along with the rest of the officers, made the overland journey to Santiago to meet the Chilean Emperoro, Ambrosio O'Higgins and during this visit Menzies obtained seeds of the Monkeypuzzle (*Araucaria araucana*), supposedly provided as nuts in a cream dessert at a state leve. These he germinated in his small plant frame on the deck of *Discovery* on the way back to England. Menzies is thus credited with the introduction of this famous tree into botanical and horticultural circles, as he was with so many other useful ornamental trees and shrubs from the west coast of North America, many of which have his name associated with them as specific epithet e.g. *Pseudotsuga menziesii*. Indeed, few other botanists have had their name bestowed on so many plants which find continuing use in parks and gardens.



*Sticta filicina* Ach.

A. Menzies specimen of *Sticta filix* (BM)

N. Zealand



*Stereocaulon ramulosum*  
Ach.

N. Zealand

A. Menzies specimen of *Stereocaulon ramulosum*

After a short period of service as a naval surgeon in the West Indies, Menzies married and set up practice as a surgeon in London, at 6 Chapel Place, Oxford Street where he remained until moving in 1826 to Notting Hill (then more or less in the country) and a retirement house at 2 Ladbroke Terrace. He lived on there alone, after the death of his wife Janet in 1836, until his own death on 15 February 1842, at the age of 88 (Galloway & Groves 1987).

As a field botanist Menzies was driven by "a diligent and persevering zeal" to use his own words, and in the two major circumnavigations of his life as well as in the earlier time in Nova Scotia and on the eastern American seaboard, he collected all plant groups including cryptogams which were his special favourites. Although publishing little himself, Menzies exchanged specimens widely and kept up extensive correspondence with botanists both in England and abroad, and encouraged younger botanists to travel and collect, following in his footsteps as he had those of Joseph Banks. Some examples of his handwriting (taken from the obverse of his beautifully prepared octavo specimens sheets) and of his lichen collection from New Zealand are illustrated herein.

#### References

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Godley, E.J. 1960: A note on Archibald Menzies. *Transactions of the Royal Society of New Zealand* 88: 63-64.

**D.J. Galloway**, Department of Botany, Natural History Museum, Cromwell Road, London SW7 5BD, England

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## DESIDERATA

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### ■ *Coprosma* Fruits Wanted

I am undertaking a comparative study of the fruit features of *Coprosma* species in New Zealand and would appreciate samples of 70 ripe, intact fruits taken from several bushes (note location and altitude) of the following species:

*C. acutifolia*, *C. arborea*, *C. atropurpurea*, *C. chathamica*, *C. ciliata*, *C. crenulata*,  
*C. dodonaeifolia*, *C. macrocarpa*, *C. microcarpa*, *C. niphophila*, *C. petiolata*,  
*C. pseudocuneata*, *C. serrulata*, *C. tenuicaulis*, *C. tenuifolia*, *C. "decipiens"*,  
*C. "oreophila"*, *C. "rimicola"*, *C. "violacea"*, *C. "whangaroa"*

Freshly collected samples travel well in a sealed, slightly inflated plastic bag. Please post to:

**Bill Lee**, DSIR Land Resources, Private Bag, Dunedin

### ■ Requests for information on two early collectors of New Zealand plants

*Archibald Menzies - Surgeon/naturalist (1754-1842)*

During a recent visit to the Natural History Museum, London, I had the good fortune to meet Eric Groves. Until he retired, Eric worked in the Department of Botany there and is known to a number of New Zealand colleagues. He is still a regular visitor to the Natural History Museum and is currently working on travels and collections of Archibald Menzies.

Menzies is a well known early collector of New Zealand plants and his name is attached to several species e.g. *Nothofagus menziesii*. He visited New Zealand in 1791 as naturalist on the *Discovery* with Captain George Vancouver. Eric would be delighted to receive any information on Menzies and his collections from New Zealand colleagues. His address is:

Eric W Groves  
C/- Department of Botany  
Natural History Museum  
Cromwell Road  
London SW7 5BD  
ENGLAND

George Bennett - Surgeon/naturalist (1804-1893)

George Bennett is a little-known collector of New Zealand plants who spent about two months here in 1829. In that short time he collected specimens of several native conifers as well as other trees and shrubs. He is perhaps better known for his discovery, also in 1829, of the Pearly Nautilus. Bennett's conifer collection is especially important since it contains several types of New Zealand species. I have recently studied this material in the UK and would be pleased to receive any information or references covering George Bennett's brief visit to New Zealand.

**Brian Molloy**, Botany Institute, DSIR Land Resources, Private Bag, Christchurch

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## FORTHCOMING MEETINGS/CONFERENCES

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### ■ 8th John Child Bryophyte Workshop

The 8th John Child Bryophyte Workshop will be held at Mt Ruapehu from November 26th to December 1st 1992. Anyone who attended the last two workshops will receive the first circular. If you would like to receive the circular about the Workshop or require information please contact:

**Barbara Polly**, c/- Botany Department, National Museum, P O Box 467, Wellington

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## CONFERENCE/MEETING REVIEWS

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### ■ Systematic and Ecological Relationships of South Pacific Floras - a joint conference of the New Zealand Botanical Society and the Australian Systematic Botany Society

Over six days in late November some 80 botanists from New Zealand and Australia, with a smattering from elsewhere, gathered at Auckland University amongst the "fussy little hills" of the far north, for the first joint conference organised by the two Societies. The age range of participants spanned over 70 years, although I think the senior participants found the meeting of greater interest than did the youngest.

The first two days saw the dedicated few getting their teeth into the intricacies and complexities of cladistics, both in theory and in practice. Hands on experience with your own plant group is clearly an excellent way to explore the ins and outs of cladistics. The cladograms for at least two well known New Zealand plant groups didn't seem to match the participant's expectations: perhaps a little creative branch swapping was needed!

Sunday was spent on field trips, with my group exploring the mysteries of Rangitoto Island. It was an excellent outing, with only one brief spell of rain. The other group visited the Waitakere Range and also had an enjoyable day. Thanks to the organisers of the two field trips who obviously had put a lot of hard work into organising two excellent field trips.

On the Sunday evening we had a Maori welcome at the Auckland Museum and then the first serious socialising. The formal conference sessions followed over the next three days, with sessions on evolutionary biology, ecology of rarity and abundance, cladistics, general systematics, Australasian plants with Pacific affinities, and general botany. Highlights for me included Bruce Clarkson's papers on climatic and edaphic correlates of divaricating plants and on *Metrosideros* successions, David Lloyd's discussion on the origin of the angiosperms, Jo Ward's paper on generic limits in the Gnaphalieae, Judy West's discussion on taxic diversity and Brian Molloy on *Corynocarpus*. Matt McGlone, with the first paper of the conference (how did he get 60 minutes, when the rest of us only got 30?) was as entertaining as ever. My choice of highlights is, however, biased by missing most of the cladistics session in search of the elusive *Corybas carsei*, although I understand that Phil Garnock-Jones' introduction to cladistics was very good.

Two further excellent social events occurred on the Monday and Tuesday evenings, with a conference dinner at the Mekong Restaurant (a spicy experience) and a kiwi fare function hosted by the Auckland Botanical Society. The latter event included short speeches by Sir Rob Muldoon, Graeme Platt and Prof. John Morton. Each in their own way provided an entertaining insight into "things botanical".

Quote of the conference must go to session chair Judy West from Canberra who, when referring to one of Henry Connor's papers, said "oh, so that wasn't based on data?".

One sad aspect of the meeting was the general despondency that prevailed among many of the New Zealand participants as a result of recent changes within DSIR and the general lack of support for botanical research by New Zealand science funders.

All-in-all an excellent conference with the organising committee under the guidance of Anthony Wright deserving our full congratulations and warmest thanks. It was great to be able to spend three days indulging in the delights of real botany! I look forward to the next one.

**David Norton**, School of Forestry, University of Canterbury, Private Bag, Christchurch

## ■ Abstracts of papers presented at Joint NZBS/ASBS Conference, University of Auckland, 25-27 November 1991

### CABBAGE TREE: A THREATENED SPECIES?

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DSIR Plant Protection, Private Bag, Auckland

The New Zealand cabbage tree, *Cordyline australis*, has traditionally been regarded as long-lived and virtually indestructible. For trees in the North Island, the situation has changed. Since mid-1987 reports of dead and dying cabbage trees have become increasingly frequent. While initial reports of the disorder (termed Sudden Decline) were mainly from Northland and Auckland, reports from the Waikato, Bay of Plenty, Gisborne, and Hawkes Bay soon followed. Affected trees are now common around Turangi (Taupo), and Palmerston North (Manawatu). Occasional dying trees have been seen in Wellington city, and sporadically throughout the South Island.

The dynamics of the epidemic have been assessed by scoring samples of c. 50 trees at each of 34 locations from Whangarei (Northland, 35° 43' S) to Geraldine (Canterbury, 44° 06' S). Most trees selected were growing in modified sites visible from roads. The data set for the 16 northern survey sample sites (Whangarei to Taumarunui [38° 53' S]) indicates that the disorder has increased exponentially, with a mean proportion of dead trees by 1991 of 36% (SE 17%, range 6-60%). Extrapolation suggests that the epidemic in this region began in earnest in the mid 1980's, and that few of the surveyed trees will survive beyond 1995. Very few affected trees have been recorded at sample sites south of Taumarunui.

*Cordyline australis* is widespread and common throughout New Zealand - in swamps and scrub, along forest margins and roadsides, on farmland by streams and on sun-baked hillsides - and is widely cultivated as an ornamental. Limited observations indicate that death is most common in modified habitats (roadsides, farmland) and amongst cultivated plants, although significant numbers of sick and dying trees were observed in 1991 on Hen Island, a forested nature reserve off the north-east coast of northern New Zealand.

Is cabbage tree a threatened species? We suggest that it should be classified as 'vulnerable' as a feature of the North Island landscape, because a rapid depletion of the population is occurring over much of its range. It is premature to conclude it 'vulnerable' in the IUCN Red Data Book sense, because the wild population is still very large.

### THE DISTRIBUTION OF SOME NEW ZEALAND HEPATICS AND THEIR PACIFIC RELATIONSHIPS

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New Zealand has a rich hepatic flora and as most other taxa it shows a mixture of affinities. Particularly strong are the Gondwana affinities, shown best by the more stenotypic taxa with species or species pairs found in New Zealand and South America, Tasmania and the Australian mainland in various combinations.

Links through to New Caledonia are also strong but those to the rest of the Pacific and elsewhere are less well known at this stage. Gaps in our knowledge occur because of the regional nature of many taxonomic treatments and because the taxa involved often have not been intensively studied. Recent examples of extensions of ranges arising from new collections are frequent and often strengthen already recognised relationships. For example the recent collection of *Riccardia furtiva* in Tasmania previously regarded as an uncommon New Zealand endemic species. As with higher plants endemism is generally high and some taxa are known only from limited ranges or in some cases only from the type specimen.

### LEAF ANATOMY IN GNAPHALIEAE (COMPOSITAE)

Ilse Breitwieser, School of Biological Sciences, Victoria University of Wellington, PO Box 600, Wellington

Leaf anatomical studies were carried out on the tribe Gnaphalieae (Compositae) with the aim of clarifying the status and relationships of the New Zealand taxa.

Leaf anatomy was described and compared for 48 taxa. The anatomical features regarded as particularly distinctive include lamina type and grade of differentiation, position of stomata, relative thickness of epidermis and cuticle, shape of palisade cells, number of bundle-sheath layers and presence of sclerenchyma caps, water storage cells, secretory canals, abaxial collenchyma

and a protruding midrib. The data were also analysed numerically. It will be shown that leaf anatomy data do provide taxonomically useful characters for the classification of the Gnaphalieae.

#### **PLANT RESOURCE DATA - STANDARDS, VALIDATION AND USE IN SIS**

Arthur D. Chapman, Environmental Resources Information Network, Australian National Parks & Wildlife Service, GPO Box 636, Canberra, ACT 2601, Australia

Important environmental decisions are being made in many areas of the world with ever increasing urgency. In most cases those decisions are being made with insufficient knowledge of the systems involved, and are based on inadequate data. Databases of plant and animal data have existed for centuries, but it is only now, with the increased use of computers and their use in spatial information systems and environmental decision support systems, that the significance of much of this data is being realised. Many of the data collected in biological and ecological surveys and as a result of taxonomic studies are proving to be incompatible when combined in these systems. Historical data, collected with other uses in mind, are often inaccurately geocoded and require extensive validation before being usable. Survey data are seldom vouchered, and are often collected using varying polygon sizes and shapes and different recording methods. It is important that standards for the recording and transfer of data be developed now and implemented as soon as possible. Methods of validating both existing and new data need to be developed and used at early stages in the databasing process. The ERIN Unit in Canberra is taking a lead role in the development of Standards for recording biological data, and in developing methods of validating point records. The use of both survey and herbarium data in spatial information systems is demonstrated and the importance of using a site-based approach wherever possible emphasised.

#### **A COMPARATIVE STUDY OF METROSIDEROS DOMINATED PRIMARY SUCCESSION ON RECENT A'A LAVA FLOWS AT RANGITOTO ISLAND, NEW ZEALAND AND MAUNA LOA, HAWAII**

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J.O. Juvik, Geography Department, University of Hawaii at Hilo, Hawaii, USA

Closely related species of the genus **Metrosideros** (Myrtaceae) comprise the dominant colonising trees on recent basaltic lava flows at Rangitoto Island, New Zealand and Mauna Loa, Hawaii. **Metrosideros** forest development on recent a'a substrates at these locations are compared with respect to floristic relationships, colonisation and establishment patterns and the growth and population structure of **Metrosideros**.

The floristic similarity between colonising species in Hawaii and New Zealand is greatest during early succession where severe environmental and substrate conditions restrict the potential pool of colonising species.

Species colonisation, establishment and population structure during early succession reflect the interplay of both stochastic and deterministic factors. Growth habit differences (e.g. canopy shape) between Hawaiian and New Zealand **Metrosideros** produce divergent patterns of microclimate and substrate modification and result in quite distinctive successional pathways.

#### **CLIMATIC AND EDAPHIC CORRELATES OF DIVARICATING SPECIES IN CENTRAL NORTH ISLAND**

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Data collected from 128 central North Island sites ranging from Mt Taranaki in the west to Gisborne in the east was used to determine the climatic and edaphic correlates of the distribution of divaricating species.

Numbers of species are greatest on alluvial flats or colluvial toeslopes with significant climatic stress (e.g. wide temperature extremes) and/or strongly fluctuating water tables. Fertile alluvial flats with well drained soils or more favourable climates (e.g. adequate year round rainfall) tend to have more divaricating species than other topographic types (e.g. hillslopes), but fewer than the first-mentioned alluvial flats.

Numbers of divaricating species are low in mild moderately wet to wet climates and lowest on mild climate offshore islands.

Discussion of the results will focus on climatic stress, soil fertility and competitive interactions between broadleaved and divaricating species.

#### **RELATIONSHIPS WITHIN THE LAMIALES**

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A cladistic study of the Lamiales suggests a re-evaluation of the infraordinal relationships is necessary. The genera **Oncinocalyx** and **Teucrium**, currently circumscribed in the Verbenaceae, are probably better placed in the Labiatae. The genus **Spartothamnella**, currently circumscribed in the subfamily Chloanthoideae (Verbenaceae) should probably be placed in the subfamily Viticoideae (Verbenaceae). This study suggests that the subfamily Chloanthoideae should be included in the Labiatae, rather than in the Verbenaceae and not maintained as separated family (the Chloanthaceae). Within the Labiatae, the tribe Prostanthereae is monophyletic and its sister group is the non-Prostantheroid Labiatae (excluding **Teucrium**). It is suggested that **Teucrium** should not be included in the tribe Ajugeae (Labiatae). The relationships between the non-Prostanthereae tribes of the Labiatae have not been completely resolved.

## THE CONSTRAINTS OF FREEDOM - CALLISTEMON AND MELALEUCA IN AUSTRALIA AND NEW CALEDONIA

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The genera **Callistemon** R.Br. and **Melaleuca** L. (Myrtaceae) conventionally are distinguished on features of the androecium, the staminal filaments being free in the former while in the latter they are fused at the base and grouped into five fascicles. Strict adherence to this circumscription will result in several pairs of apparent sister species being separated, with one of the species classified in **Callistemon** and the other **Melaleuca**. Other characters are being studied in collaboration with P.F. Lumley and R.D. Spencer (MEL) and J.W. Dawson (WELTU) prior to a re-evaluation of generic limits.

The New Caledonian endemic species of the complex apparently fall into two groups, one of which may be allied to eastern Australian species. The closer relationships of the other group are unclear. However, separate identity at generic level for the New Caledonian taxa seems unlikely.

## CLADISTIC GENEALOGIES: AN ILLUSTRATED HISTORY OF PHYLOGENETIC SYSTEMATICS, 1864-1950

Robin Craw, DSIR Plant Protection, Private Bag, Auckland, New Zealand

Recent reference texts on biological systematics trace the origin of cladistics/phylogenetic systematics as a comprehensive theory and a precise method of the 1950 publication of Willi Hennig's "Grundzüge einer Theorie der phylogenetischen Systematik". In contrast to this widely accepted myth the basic axioms and methods of cladistics can be found explicitly stated and utilised by many systematists from 1864 on. Citation study indicates that much of this work was either known to Hennig or to an author cited by him. Cladistic methodologies developed by the palaeobotanist Walter Zimmermann, the ethologist Konrad Lorenz and the Australasian entomologist Robin J Tillyard were particularly influential sources.

### Reference

Craw, R.C. 1992 (in press) Margins of cladistics: identity, difference and place in the emergence of phylogenetic systematics, 1864-1975, in P. Griffiths (ed.) **Trees of Life: Philosophical Problems in Evolutionary Biology**. Kluwer, The Netherlands.

## DISTRIBUTION PATTERNS IN METROSIDEROS

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According to one interpretation **Metrosideros** can be divided into 2 subgenera - **Metrosideros** and **Mearnsia**. **Metrosideros** is taxonomically uniform and is represented on the continental fringe islands of New Zealand, Lord Howe, New Caledonia and the Solomons as well as on a number of high volcanic islands ranging to the central Pacific. **Mearnsia** is more diverse and is restricted to continental islands and continents - New Zealand, New Caledonia, Solomons, New Guinea, Philippines, as well as one species each in South Africa and southern South America.

**Metrosideros** comprises shrubs and trees some of which are hemi-epiphytes, while **Mearnsia** comprises small trees, some of which are epiphytic, and root climbing lianes.

Both subgenera have small, almost thread-like seeds, which may be transported by gales and tropical hurricanes. Some species of subgenus **Metrosideros** are prominent as pioneers on lava flows, while those of subgenus **Mearnsia** are mostly found in moist mature forests.

## FRUIT ANATOMY AND SYSTEMATICS OF THE SIMAROUBACEAE

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The Simaroubaceae **sensu lato** is a pantropical to warm-temperate family of trees and shrubs. Its delimitation has often been sought with great difficulty because of the considerable variation within the family. Relationships among the approximately 30 genera remain poorly understood, and at least seven segregate families have been proposed.

In this study fruit anatomy was surveyed in 28 genera in an effort to broaden the data base in the family so that intergeneric and tribal affinities may be better assessed.

There is some variation in the exocarp especially in the thickness. Lignification of the outer epidermis is limited to three genera. There is also marked variation in the mesocarp particularly in the lignification of the inner layers, occurrence of crystals, presence of resin canals, distribution of sclereids and the position of the vascular bundles.

Nine endocarp types are recognised, the distribution of which correlates well with differences in floral morphology and gives some support to Engler's subfamilies. The Irvingioideae, Kirkioideae, Picramnioideae and Alvaradoideae each display unique endocarp types that are different from that which characterises all genera of the Simaroubaceae. The Surianoideae are diverse: **Suriana** and **Cadellia** share one endocarp type, while **Recchia** and **Guilfoylia** each have very different types.

The impact of these data on the taxonomy of the family is discussed.

## AN INTRODUCTION TO CLADISTICS, WITH EXAMPLES FROM HEBE (SCROPHULARIACEAE)

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Cladistics, or phylogenetic systematics, is a way of using character information in systematics, and does not necessarily use computers. Its aims are: 1, to produce branching diagrams (cladograms) which represent the historical pattern of character evolution in a group; and 2, to reflect this pattern in classifications. Many good classifications are inherently, if not explicitly, cladistic.



For cladogram production, only apomorphic (derived) states of characters are useful, because plesiomorphic (ancestral) states do not indicate shared ancestry. Character states are polarised as apomorphic or plesiomorphic by reference to the states represented in the outgroup, usually the sister group, which shares a common ancestor with the ingroup or study group. Species with synapomorphies (shared apomorphies) are placed together on branches of the cladogram in such a way that the fewest number of unique evolutionary events is assumed.

Cladists accept only monophyletic groups in classifications, rejecting paraphyletic and polyphyletic groups. Monophyletic groups contain all the descendants of an ancestor and exclude taxa not descended from that ancestor. Thus the nearest relative of each member of a monophyletic group is also a member of the group. Monophyletic groups can be reliably discovered only by cladistic analysis.

Paraphyletic groups include some, but not all, descendants of an ancestor. They occur when groups are characterised by shared plesiomorphic character states (symplesiomorphies) only. Thus the nearest relatives of some members of a paraphyletic group are to be found in other groups. Paraphyletic groups are a consequence of using both states of a character to define groups. Such phenetic analyses produce both monophyletic and paraphyletic groups, but cannot provide a means to distinguish between them.

Polyphyletic groups result when descendants of two or more separate ancestors are grouped together. Thus some members of the group are not related. They occur as a result of misinterpreting parallelisms or convergences as synapomorphies, and can occur as mistakes in both cladistic and phenetic analyses.

The application of strictly dichotomous hierarchical classifications, so that phylogeny can be precisely inferred from the classification, is not widely practised. In most cases, cladists accept only monophyletic groups and use sequencing conventions to imply phylogenetic information among equally ranked taxa.

**Hebe** and its relatives **Parahebe** and **Chionohebe** form a monophyletic assemblage, with most species in New Zealand. Generic boundaries in the group have always been unclear. New characters, and those which have been used traditionally to classify the group, have been used in deriving a cladogram, from which the monophyly of the genera may be examined. Traditional use of both plesiomorphic and apomorphic character states has resulted in taxa which are paraphyletic, and misinterpretations of parallelisms have led to taxa which are polyphyletic. A generic classification which accepts only monophyletic groups would probably need to recognise more genera, but **Hebe** itself would be largely unaffected.

#### REVISITING RARITY - A BOTANICAL PERSPECTIVE ON RARITY AND EXTINCTION

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Recent developments in conservation biology have focused on the processes that threaten the viability of small populations. In particular the concepts of minimum viable population (MVP) and population vulnerability analysis (PVA) have received considerable attention, and have recently been used as a basis for assessing extinction threats in a re-evaluation of IUCN threatened species categories. However, these ideas have been largely developed for vertebrate animals and their application to plants (and other biota) has not been critically examined. In this paper we review with reference to threatened plants what is meant by the concept of rarity and the reasons why it occurs. We then consider the factors that threaten small plant populations making them vulnerable to extinction and critically evaluate the usefulness of MVP and PVA concepts for threatened plant conservation.

#### GEOGRAPHIC RELATIONSHIPS OF THE RHYTISMATACEAE OF NEW ZEALAND

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Biogeographic relationships between the species of Rhytismataceae (discomycete fungi) occurring in New Zealand, and those found in other land masses are compared. Few species are widespread in both the northern and southern hemispheres. The only New Zealand species known from the northern hemisphere are **Hypoderma rubi** and **Laphodermium gramineum**. Sixteen other New Zealand species, or their vicariant partners, are known from elsewhere in the southern hemisphere. These 16 species have two distinct patterns of distribution within the southern hemisphere. Each pattern correlates with a distinct pattern of distribution within New Zealand. Fungi may be potentially as valuable for biogeographic studies as other organisms. At present their usefulness is limited by uncertainty about phylogenetic relationships and lack of distribution data from many areas.

#### EXTINCTION AND DIVERSITY IN TASMANIA IN THE PLEISTOCENE

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The current rainforest flora of Tasmania is very species poor, but reasonably diverse sclerophyll and alpine floras are present. Many rainforest taxa with affinities to extant species with Pacific distributions existed in Tasmania in the early and mid Tertiary. They became extinct during the Tertiary and early Pleistocene apparently due to progressively cooler, drier and less equable climates and increasing fluctuations in climate on a 10<sup>4</sup> year scale. Microfossil evidence shows that several of these taxa including **Nothofagus** subgenus **Brassospora**, **Quintinia**, **Dacrycarpus** and **Dacrydium** persisted into the Early Pleistocene in Tasmania. New microfossil evidence shows that other taxa with affinities to extant species of wet forests of more northerly parts of Australia also persisted into the Pleistocene, e.g. species of **Acacia**, **Rubus** and Myrtaceae subfamily Myrtoideae. Fossil evidence gives minimum values to extinctions in any period. Comparisons of diversity of leaves found in fossil and recent sediments suggest that wet forest diversity declined from the mid Tertiary to the mid Pleistocene. The presence of extinct species of sclerophyllous taxa in Pleistocene sediments, together with the huge habitat ranges of some extant sclerophyllous species suggest that there has been significant extinction of sclerophyll taxa during the Quaternary, although it is likely that speciation of some groups has occurred to take up some of the ecological slack caused by extinctions. There is no evidence of such speciation in Tasmanian rainforest taxa.

## STIGMATIC EXUDATE REWARDS AND SELF-INCOMPATIBILITY IN A PRIMITIVE ANGIOSPERM, PSEUDOWINTERA COLORATA (WINTERACEAE)

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Stigmatic exudate-eating chironomid flies (*Smittia*) and pollen-eating halodid beetles are the most common visitors to flowers of *Pseudowintera colorata*. Plants are self-incompatible, but after selfing pollen tubes penetrate the nucellus. Self-pollination followed by cross-pollination results in considerable seed set; the incompatibility reaction therefore occurs before fertilization. When pollen is applied to stigmas, the exudate dries rapidly and does not usually reappear. A review of angiosperms (angiosperms, gnetophytes, cycadeoids and Pentoxylales) suggests that their common ancestor was cosexual and pollinated by insects (possibly including flies) for whom nectar was an important reward. The angiosperm stigma may have evolved from a pollination drop mechanism via an adaxial stigmatic surface and a subsequent shift of the receptive area to the external surface of the carpel as it closed. The hypothesis helps to explain the anatropous, bitegmic ovules of primitive angiosperms. The unspecialised pollination mechanisms of New Zealand plants may be the closest approach to the pre-angiosperm pollination world that remains today.

## GENETIC AND ENVIRONMENTAL COMPONENTS OF LOCAL VARIATION IN TUSSOCK-FORMING FESTUCA

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*Festuca novae-zelandiae* (Hack.) Cockayne, is a long-lived out-crossing caespitose grass endemic to New Zealand. In pre-human New Zealand, *F. novae-zelandiae* would have been restricted to disturbed or stressed sites such as young river terraces and frost flats. However Polynesian and European deforestation coupled with burning and grazing has enabled *F. novae-zelandiae* to markedly expand its range such that it is now common particularly in eastern montane South Island.

This study aimed to investigate the patterns of variation among populations of *F. novae-zelandiae* in different environments and the degree of differentiation that has occurred both within *F. novae-zelandiae* and between it and *F. matthewsii*, a closely related species in higher rainfall areas. Genetic variation was estimated using isozyme electrophoresis and this was related to both morphological variation and the vegetation in which the plants occurred.

## GHOST STORIES: ADAPTATION OF THE NEW ZEALAND FLORA TO VERTEBRATE BROWSING

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Do New Zealand plants have specific adaptations which countered browsing by the extinct moa? Among suggested adaptations to browsing are: spines; mimicry; camouflage through colouring and leaf shape modification; the divaricating plant form; and certain tree juveniles which are either divaricating or have tough, low nutrient leaves.

Some tree and shrub juveniles have irregularly lobed, dark, or blotched leaves. These features may serve to camouflage young, vulnerable growth from browsers. We do not accept spinescence as being a browsing adaptation in New Zealand. The alleged cases of palatable plants mimicking unpalatable plants and objects are better explained by environmental factors, convergence or chance. Some divaricating plants and tree juveniles have a marked resistance to mammalian browsing. Nevertheless, moa browsing was probably not a significant factor in the development of the small-leaved divaricating form and tough-leaved juvenile foliage. Densely-branched, small-leaved shrubs and small trees are characteristic of many semi-arid or winter-wet areas in the world. Heterophyllous juveniles are also widespread. These growth forms are by no means confined to New Zealand, and therefore are unlikely to be a unique response to moa browsing.

Atkinson and Greenwood in 1989 suggested several tests which could be used to distinguish adaptation to browsing from adaptation to environmental stress. The geographic distribution test for plants with putative anti-browsing adaptations is inconclusive. The site preference test, in which it is assumed that plants resistant to browsing will prefer sites once heavily used by moa, and be uncommon on sites not at risk from browsing, is difficult to apply rigorously, but seems to support the strong influence of climatic/edaphic factors. The life cycle test, in which it is assumed that browsing adaptations should be best expressed in low-growing and juvenile plants, and lost with increased height, is not supported by our observations.

Our conclusion is that few of the suggested anti-browsing adaptations stand up to critical scrutiny. In particular, adaptation to edaphic and climatic stress is the sole reason for the development of divaricating and heteroblastic trees in New Zealand.

## CORYNOCARPUS: AN ISOLATED GENUS OF AUSTRALASIAN TREES

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The genus *Corynocarpus* is based on material collected in New Zealand in 1773 during Captain Cook's second voyage. Three years later the genus was formally erected by Johann Reinhold and Georg Forster, and the New Zealand species, *C. laevigatus*, was described. Over the next 200 years four further species were recognised: *C. cribbianus* 1897 (Australia, New Guinea), *C. similis* 1903 (Vanuatu, Solomon Islands, New Guinea), *C. dissimilis* 1903 (New Caledonia), and *C. rupestris* 1984 (Australia). In 1897 Engler gave the genus distinct family status.

Probably few genera have aroused as much debate or interest as *Corynocarpus*. On a global scale, the relationships proposed for this apparent misfit are many and varied. On a local scale, the origin of the New Zealand species, known as Karaka or Kopi, has been argued strongly by both Polynesian and Europeans. All five species have several features in common including an unusual combination of floral characters and the absence of growth rings. Equally all five possess a number of different characters in keeping with their native environments.

This paper gives a thumbnail sketch of the genus and its members, with particular emphasis on taxonomy, ecology, ethnobotany, and evolution.

#### SETTING PRIORITIES FOR THE CONSERVATION OF NEW ZEALAND'S PLANTS AND ANIMALS

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The Department of Conservation is responsible for ensuring the survival of New Zealand's plants and animals, and the communities and ecosystems of which they are a part. The Department's effectiveness in achieving this is dependent to a large degree on its ability to prioritise its work so as to maximise conservation gains.

While a process has been established for identifying nationally important communities and ecosystems through the Protected Natural Areas Programme, a similar process has not been developed to date to assist in setting priorities for the conservation of New Zealand's threatened species. The absence of such a system has led to higher order taxa frequently receiving more conservation effort than lower order taxa.

The Department, with assistance from the Department of Scientific and Industrial Research, and the Forest and Bird Protection Society has developed a set of criteria which assess the relative priority of each threatened species for conservation action. The criteria used are applicable to any animal or plant which occurs in New Zealand.

#### RESPONSE OF IRIS LACUSTRIS, A THREATENED NORTH AMERICAN SPECIES, TO DROUGHT

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The reproductive ecology of *Iris lacustris* was investigated in permanent quadrats along a gradient of canopy conditions from 1987 through 1990. A record drought in 1988 had a significant impact on production of vegetative ramets ( $P < 0.05$ ), floral ramets ( $P$ ) and mature fruit ( $P$ ). In addition, responses to the drought varied with canopy conditions. During the drought 46% and 68% of the vegetative ramets died on the open and the densely-shaded sites respectively. Through 1990 there was no recovery in the density of vegetative ramets on either site type. In contrast, the drought had little impact on the density of vegetative ramets on partially-shaded sites. Although the drought had little effect on sexual reproduction in 1988, flower production in 1989 declined significantly ( $P$ ) on both the open and partially-shaded sites. Within only one year, however, flower production recovered significantly ( $P < 0.01$ ) to 38% and 82% of predrought levels on open and partially-shaded sites respectively. Fruit production over the 1988 to 1990 period followed the respective pattern of flower production on each site type. Sexual reproduction did not occur on densely-shaded sites even during periods of favourable soil moisture. These differences in response to drought pose important implications for the management of this threatened species.

#### MARINE ALGAE OF THE CHATHAM ISLANDS

Wendy Nelson, Nancy Adams and Cameron Hay  
National Museum of New Zealand, PO Box 476, Wellington

The geological history of the Chatham Islands, their distance from the New Zealand mainland as well as their position straddling the Subtropical Convergence provides a situation of considerable interest. The Chatham Islands are the type locality for a number of species of New Zealand marine macroalgae collected last century. A compilation of the flora was published by Lemmerman in 1906. It has taken a further 85 years for another account of the algae from these islands to be published (Nelson, Adams & Hay 1991). The algal flora of the Chathams contains both northern and southern elements as well as endemic species and genera. The absence of a number of species that are common on the mainland in similar habitats at equivalent latitudes is noteworthy. It is clear, however, that the relationships of this flora to that of offshore islands and mainland New Zealand as well as other island groups in the South Pacific will only be fully understood when taxonomic and revisional studies are completed.

#### GRAMMITIDACEAE OF THE SOUTH PACIFIC

B.S. Parris, 16A O'Neills Avenue, Takapuna, Auckland 9, New Zealand

About 87 species of Grammitidaceae (c. 15% of the family), belonging to 18 species groups, occur in the South Pacific. Their distribution is as follows: Australia, 22 (13 endemic); New Zealand, 10 (3 endemic); Solomon Is., 17 (2 endemic); Vanuatu, 16 (4 endemic); New Caledonia, 11 (5 endemic); Fiji, 18 (6 endemic); Samoa, 17 (7 endemic); Tonga, 1 (0 endemic); Cook Is., 2 (1 endemic); Society Is., 12 (8 endemic); Tubai (Austral) Is., 2 (2 endemic); Marquesas Is., 3 (1 endemic). Fifty-two species (c. 60%) are endemic to a single island or an island group, 14 (c. 16%) occur in two island groups, 3 (c. 3%) are on three island groups, 1 (c. 1%) is on four island groups and 17 (c. 20%) extend westwards to Malesia.

Three distinct phylogeographical elements can be distinguished. The South Temperate element comprises a single species group (12 species) which includes the 7 Australian species occurring in New South Wales, Victoria and Tasmania and 1 on Lord Howe I., the 10 New Zealand species and the 3 temperate South American species, all of which also occur in New Zealand. The Malesian element is the largest, consisting of 15 species groups (71 species) and ranging from tropical Australia and Melanesia to Tubai Is. and Marquesas Is., with its greatest diversity in the West Pacific. Four species occur throughout Malesia and the Pacific while 11 species occur throughout Malesia, but only reach the West Pacific, and 2 species are found only in Papua New Guinea and the West Pacific. The African/American element is the smallest and contains 2 species groups. Three species of *Grammitis* subgenus *Grammitis*, a group known from tropical Africa and tropical America but absent from Malesia, occur in Vanuatu, Fiji, Samoa and Tahiti. One species of *Lellingeria*, a genus occurring in tropical Africa, tropical America and the Hawaii Is. but absent from Malesia, is known from Tahiti.

## CLADISTIC ANALYSIS OF THE TRIBE EPACRIDAE (EPACRIDACEAE)

Jocelyn M. Powell, National Herbarium of New South Wales, Royal Botanic Gardens, Mrs Macquaries Road, Sydney, NSW 2000, Australia

Recent cladistic work on the family Epacridaceae (Southern Heaths) has focused on the higher level relationships of this family: firstly, whether or not the family was monophyletic and secondly, whether the tribal relationships suggested by earlier workers could be confirmed by using cladistic analyses.

The analyses indicate that the Epacridaceae is monophyletic if it includes *Lebetanthus* and *Prionotes* considered as a distinct family by Hutchinson and others and that the family is probably derived from the Rhododendroideae subfamily of the Ericaceae, rather than the Ericoideae, as suggested by Smith-White. Within the family two main clades and four sub-clades are present; taxonomically these are best considered as subfamily and tribal groupings respectively. The composition of these groups differs somewhat from those of earlier workers such as Drude and Watson.

Once these higher level relationships were established, analysis of the monophyletic sub-groups began. Study of the tribe Styphelieae has been completed, and has resulted in some reassessment of generic limits. The results of the preliminary work on the tribe Epacridae will be presented in this talk, with emphasis on the characters used and the problems involved in attempting to establish homologies.

## SYSTEMATICS OF THE PACIFIC GARDENIEAE (RUBIACEAE)

Christopher F. Puttock, School of Biological Science, University of New South Wales, PO Box 1, Kensington, NSW 2033, Australia

The Gardenieae is a tribe of tropical and subtropical shrubs and small trees, centred on two large, poorly differentiated but nonetheless heterogeneous genera: *Randia* and *Gardenia*. Due to the proliferation of new genera from the ensuing dismemberment of these two taxa, the Gardenieae now has the largest number of genera of any tribe of the Rubiaceae. Without exception the revisions have taken place on a regional basis, initially in Africa and more recently in Asia, and have resulted in a plethora of small or monotypic genera. The Australian and Pacific taxa have remained essentially uninvestigated.

Cladistic analyses based on 110 binary and multistate characters of 37 species of the Australian Gardenieae demonstrate six robust taxonomic groups which can be recognised at the generic level. The six Australian genera are assigned to *Aidia* (2 spp.), *Atractocarpus* (7 spp.), *Gardenia* (19 spp.), *Kailarsenia* (3 spp.), *Rothmannia* (1 sp.), and a new genus (5 spp.). The relationships of these genera to the Pacific and Asian species currently included in *Randia* s.l. and its segregate genera (*Aidia*, *Atractocarpus*, *Kailarsenia*, *Kochummenia*, *Neofranciella*, *Pelagodendron*, *Porterandia*, *Rothmannia*, *Sukunia*, *Sulitia* and *Trukia*) have been investigated. Although a sizeable number of undescribed and poorly known taxa in New Caledonia, Vanuatu, the Solomon Islands and beyond require further investigation, it is apparent that some of these genera do not warrant recognition: *Pelagodendron* (= *Aidia*), *Neofranciella*, *Sukunia*, *Sulitia* and *Trukia* (= *Atractocarpus*), and two others remain in doubt: *Kochummenia* and *Porterandia* (= ?*Atractocarpus*).

## BRACHYLOTTIS COMPACTA: ECOLOGY AND CONSERVATION OF A SPECIALISED, RESTRICTED ENDEMIC, SHRUBBY DAISY

G.L. Rapson<sup>1</sup> and Alice de Nys<sup>2</sup>

<sup>1</sup>Department of Botany & Zoology, Massey University, Palmerston North, New Zealand

<sup>2</sup>Department of Horticultural Science, Massey University, Palmerston North, New Zealand

*BrachyloTTis compacta* is a shrubby member of the Asteraceae, and is one of a number of New Zealand species with extremely restricted distribution, in this case to the limestone cliffs at Castlepoint, on the eastern Wairarapa coast. Conservation techniques need to be evaluated with an understanding of its ecology.

Investigations are continuing into the demography and ecology of the Castlepoint tree daisy. Studies show that its habitat is restricted to steep, exposed areas, where soil development is poor. Populations vary in structure, and some show indications of past disturbances resulting in failure of recruitment. Growth rates are low. Flowering is prolific and continues throughout the year, while peaking in summer. Small plants do not flower at all. Seed production is reduced by inflorescence predation, and seedling establishment is infrequent, tending to occur in disturbed areas.

A popular holiday spot, most visitors to Castlepoint and Castle Rock are unaware of presence of a rare plant. Though vigorous its restricted distribution places the species at risk. One way to lessen this risk is to take the species into horticulture, though it is not easy to grow. A hybrid form is readily available under the name of *Senecio* 'Sunshine', but nomenclatural confusion can be a disadvantage, and genetic dilution will occur.

**Acknowledgements:** Jean Garman, Lynda Dixon, Jo Snow, Cathy Foster, Jonathan Miles and Kathryn Whaley assisted with data gathering and processing. Muriel Fisher and Keith Hay provided propagation information, while Bruce MacKay assisted with analysis.

## PLEUROTUS IN THE SOUTH PACIFIC

Barbara P. Segedin, 16A Landscape Rd, Auckland, 4, New Zealand

Although fifteen species of *Pleurotus* have been recorded for New Zealand, mainly from material collected by Colenso last century, much of this material is either missing or in poor condition or has been transferred to other genera. Recent studies indicate that there are almost certainly six species of *Pleurotus* s. str. in N.Z.: *P. australis*, *P. parsonsii*, *P. rattenburyi*, *P. opuntiae*, *P. aff. dryinus* and possibly *P. pulmonarius*, some of which are conspicuous components of the mushroom flora. Some are also recorded from South Pacific islands. Although the Pacific coastal regions of Australia and S. America have records of pleurotoid fungi, few or none of these appear to be true species of *Pleurotus*. The identity and distribution of some of these other pleurotoid fungi will be discussed.

## THREATENED PLANT RECOVERY PLANNING - A NEW ZEALAND CASE STUDY

W.B. Shaw<sup>1</sup> and D.R. Given<sup>2</sup>

<sup>1</sup>Department of Conservation, PO Box 1146, Rotorua

<sup>2</sup>Botany Institute, DSIR Land Resources, Private Bag, Christchurch

Although formal species recovery plans have no basis in New Zealand legal statutes, they provide a mechanism for carrying out co-ordinated recovery planning for threatened plant taxa. Draft plans are sent to the New Zealand Conservation Authority and the relevant Conservation Board for checking and approval, before final approval by the Minister of Conservation. No recovery plans have yet been approved for New Zealand plants. One is being written in an *ad hoc* fashion, with co-ordination provided by the Threatened Species Unit for the Department of Conservation, and recovery plans have been recommended for several species on the Chatham Islands.

A draft plan has been written for *Clianthus puniceus* (common names kowhai ngutukaka or kaka beak). Kowhai ngutukaka is a well-known plant, being widely cultivated for its showy red, pink or white flowers, and commonly used as an image of New Zealand character on tourist souvenirs and other memorabilia. It formerly occurred over a large area of eastern lowland North Island and on offshore islands. Around 200 individuals remain in the wild, and these populations are classified as endangered (i.e., in danger of extinction if the causal factors continue operating). Extensive habitat destruction and the depredations of introduced animals are the main causes of decline. Active management is required to stop the otherwise apparently inevitable decline to extinction of wild populations. Active management must be prefaced by good planning, and a sound understanding of autecology and ecosystem processes.

The draft recovery plan contains sections on the current state of taxonomy, and information on distribution, ecology, biology, genetics, threats, research and management goals. A workplan, and research and management recommendations are included.

## THE ADVENTIVE FLORA OF THE COOK ISLANDS

W.R. Sykes, Botany Institute, DSIR Land Resources, Private Bag, Christchurch

The indigenous flora of the tropical Pacific is threatened by the invasion of alien plants and as the 20th century draws to a close the danger seems to be increasing in many islands. The number of adventives now often exceeds that of the indigenous species. This paper discusses the impact that adventive plants have made in the Cook Islands. The composition of the indigenous flora is now well catalogued although little has been published except for the islands of Rarotonga and Aitutaki. Much less has been written on the adventive flora although large areas of the larger islands are now dominated by such plants. Most adventive plants entered the area via the main island Rarotonga and many have got no further. The outer islands have varying numbers of adventives, reflecting the amount of agricultural and horticultural developments which have occurred there. Certain species present on the outer islands seem to have almost disappeared from Rarotonga, probably because of later invasions there of more aggressive species. Most disturbing is the apparent fairly recent spread of aggressive adventives into more or less undisturbed indigenous vegetation. Most of these weeds are escapes from cultivation.

## GENERIC LIMITS IN NEW ZEALAND GNAPHALIEAE

J.M. Ward, Department of Plant and Microbial Sciences, University of Canterbury, Private Bag, Christchurch, New Zealand

Problems with the classification of the New Zealand species of Gnaphalieae will be discussed. Early classification of Australasian Gnaphalieae relied heavily on technical characters used to distinguish Northern Hemisphere genera; not surprisingly, the outcome has not proved to be satisfactory.

Attempts to achieve an understanding of relationships among New Zealand taxa are hampered by overlapping groups of correlated characters, and by ignorance of the evolutionary history of the group which makes useful cladistic analysis difficult.

Current research includes assembling a large data base from direct investigation of the species, calculation of a measure of phenetic similarity between all pairs of species and attempts to define monophyletic groups through evidence of hybridisation. Cladistic analysis is planned once monophyly is established and enough characters can be polarised.

Results obtained so far will be compared with recently published work on the classification of Gnaphalieae.

## EVOLUTION OF ENDEMICS WITHIN FIJI: ALLOPATRIC OR SYMPATRIC SPECIATION?

Anni Watkins, School of Pure and Applied Sciences, University of the South Pacific, P. O. Box 1168, Suva, Fiji

Diversity on island groups must be considered to be a balance between invasion, speciation and extinction. The classic evolutionary story for archipelagoes is that of relatively recent rapid allopatric speciation due to fragmentation of invading populations across a series of islands of lesser or greater physical isolation. The Fiji islands are, however, continental in origin, which prompts investigation into whether the evolutionary patterns differ from the classic model. This paper marks the beginning of a much bigger project to collate biogeographic and evolutionary information on the distribution of the Fiji flora within the island group. Data will be presented on the distribution of certain endemic species groups showing the degree of present day isolation by geographic location, altitudinal range and ecology. At present insufficient data exists on temporal isolation. Thus it is hoped to give a broad view of which isolating mechanisms have featured most in the evolution of the endemic flora of Fiji.

## TAXIC DIVERSITY - USEFUL OR TOXIC?

Judy G. West, Australian National Herbarium, Division of Plant Industry, CSIRO, PO Box 1600, Canberra ACT 2601, Australia

Biologists and managers around the world are under great pressure to protect our biological diversity with limited resources. In these circumstances it is critical that we have effective means of measuring biodiversity, and especially to be able to compare

local biodiversity. Instead of relying on indices of species richness and relative abundance and differentiation along habitat gradients, we consider a system of priorities that reflect taxonomic diversity.

It has been proposed by Vane-Wright et al. that to set priorities on species and area conservation we need to develop measures of species differences, which can be made in terms of genealogical relationships between species. These relationships are best inferred from classifications constructed through cladistic methodologies. In this paper different measures of taxonomic diversity are compared, so that areas for the conservation of biodiversity can be prioritised.

While it is important to put more resources into phylogenetic analyses and to further understand the evolution and relationships of our biota, a balance is needed. We should be careful that the use of measures of taxonomic diversity do not hijack vital resources needed for conservation of critical areas. We need to determine whether cladistic methodologies are really necessary in this conservation process.

#### ■ Council of Heads of Australian Herbaria (CHAH), Brisbane, October 1991

The heads of all Australian Federal, State and Territory herbaria gathered for their 19th annual meeting in Brisbane on 8-9 October 1991. I attended as the New Zealand observer, along with Robert Kiapranis from Papua New Guinea.

Major points of interest from a New Zealand perspective to emerge from the meeting included the following:

- i) Tony Orchard (HO) is maintaining a register of photographs of type specimens held in overseas herbaria. He is keen to include details of photos held by New Zealand herbaria and will send a copy of the register on request.
- ii) Loans from Australian herbaria are running at about 50,000 sheets per year, mostly related to *Flora of Australia* projects. ABRS has now agreed to subsidise the cost of sending loans for *Flora* projects at the rate of \$2.00 per specimen. This represents approximately 50% of the total cost of loaning and returning a specimen, and will be of particular benefit to the smaller herbaria.
- iii) The *Census of Australian Vascular Plants*, and the *Australian Plant Name Index* have now both been published. The first is a list of recognised vascular plant taxa and their authorities for the whole Australian region with some distributional information about each. The second is a list of all published names of vascular plant taxa from genus downwards which are thought to occur in Australia. The list is supported by bibliographic and type information, and nomenclatural comments. CBG now has the responsibility for the development and maintenance of these databases.
- iv) Philip Short (MEL) is currently the Australian Botanical Liaison Officer at Kew.
- v) CANB has recently completed the compilation of a database of Rare or Threatened Australian Plants (ROTAP). The information will be published in 1992.
- vi) NSW is planning to host another workshop for Herbarium Technicians in August 1992. Anyone interested in sending staff to this workshop should contact David Bedford at the National Herbarium of NSW.
- vii) CHAH reaffirmed its policy of loaning material only to member herbaria within Australia. It does not recommend loaning material to individuals or university herbaria in Australia.
- viii) The NSW Department of Agriculture at Rydalmere (DAR) is to be invited to attend as an observer at future CHAH meetings to represent the interests of Australian mycological collections.
- ix) Two volumes of the *Flora of Australia* (35 & 50) will be published this year and two more (27 & 54) early next year.
- x) There was general agreement that wherever possible the holotype or isotype (or at the very least, a photo) of new taxa should be deposited in the main herbarium of the State from which the taxon originated.
- xi) Annual Reports from the herbaria show that all have now initiated databasing of their collections. Grants to purchase equipment and technical assistance have been obtained from the Environmental Resources Information Network (ERIN) in return for data on specified families of plants. In some cases, further databasing is dependent upon continued funding from ERIN, and this is currently being reviewed. Only BRI has databased its entire collection.

The meeting concluded with a two day visit to the Lamington National Park.

The next meeting will be in Perth in October 1992 at which the New Zealand representative is scheduled to be Dr Murray Parsons (CHR).

**Patrick Brownsey**, National Museum, P O Box 467, Wellington

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## BOOK REVIEW

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### ■ Painting Plant Portraits: A step-by-step guide

Keith West, the Herbert Press, 46 Northchurch Road, London, N14EJ *in association with* The Royal Botanic Gardens, Kew. 1991, 112 pages and numerous colour plates. UK 14.95.

In his Introduction to this beautifully produced book Keith West tells us that "the portrayal of plants using the medium of transparent watercolour is an exciting adventure. Your productions will be attractive permanent records of favourite flowers. You will develop your artistic skills and find an enhanced appreciation of plant structure through the close attention needed in drawing." Few can speak with more authority concerning plant illustration. During his 20 years as Botanical Artist at Botany Division, DSIR, Keith illustrated a variety of works including books on weeds, alpine buttercups, New Zealand and Australian willow-herbs, National Parks, as well as many scientific papers. Much of this experience was distilled into an earlier book entitled "How To Draw Plants; the techniques of botanical illustration", which he wrote as a free-lance artist from his home in North Wales. The present book should be just as successful.

After a concise account of equipment, materials and techniques, and a glossary (note that regular flowers are radially symmetrical, not radically symmetrical) the plan is to take twelve subjects and give a step-by-step illustrated account of how the printing was built up. "The models chosen from this book are from readily available species flowering through the seasons, from winter to early autumn. Starting at any point, you may continue step by step with twelve subjects through the year." The subjects are: snowdrop (*Galanthus nivalis*), daffodil (*Narcissus* cultivar), windflower (*Anemone blanda*), iris (*Iris sibirica* cultivar), pink (*Dianthus* cultivar), field poppy (*Papaver rhoeas*), sweet pea (*Lathyrus odoratus* cultivar), rose (*Rosa Super Star*), harebell - bluebell in Scotland (*Campanula rotundifolia*), sunflower (*Helianthus* cultivar), fuchsia ('Billy Green' and 'Major Heaphy') and peruvian lily (*Alstroemeria* 'Sovereign').

Taking the iris as an example, a brief introduction giving etymology etc is followed by two preliminary half-page pencil drawings. These are followed by two half-page paintings in colour showing shading and the first green coat. Then follow five superb full-page paintings showing Flower Blues, Flower Venation (general and more detailed), Additional Flower Colours, and Second Green Coats and Finishing Touches. All plates are supported by a clear economically written text giving a brush-stroke by brush-stroke account of how everything was done, and including things that were awry and how they were circumvented.

A fine book, full of good advice, and beautiful to look at. Definitely 5 stars.

E.J. Godley, Research Associate, DSIR Land Resources, Christchurch

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## MISCELLANEOUS

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### ■ Letter from W.B.D. Mantell to James Hector

Letter from W.B.D. Mantell (Acting Director of Museum) from Wellington dated 8 April 1876 sent to James Hector, then Special Commissioner for Philadelphia Exhibition in U.S.A., 1876. Mantell took over Hector's mantle while the latter was away. The letter and newspaper clippings referred to in this extract were brought to light by Juliet Hobbs (Research Associate, National Museum).

"We have had a great fuss about a copulation case in the Botanic Garden. Crawford gave the culprits a month hard labour each, but the man had an influential draper on his side who got hold of the newspaper hounds - so there was a petition for mitigation and daily bulletins until the result was [known] in the reduction of the sentence to a week without hard labour - which was quite enough. Another pair caught a few days before bolted out of the colony - the extracts covering this important affair form a strip two yards long which now hangs out behind the door. We shall have to get one or two more cases yet. The place had become infamous, and unsafe for decent people not bent on copulation, and to Bramley's indignation that divine service was performed openly by the pathsides and frequently on his young trees - one *Senecio Hectori* has been quite flattened by fornication. From our present point of view this is very horrible and disgusting - yet 'while memory lasts' we must own that few more charming places for the purpose could be anywhere found than the Wellington Buchanical (sic) Garden."

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## LETTERS TO THE EDITOR

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### ■ Dr Wendy Nelson, The Editor, NZ Botanical Society Newsletter, 21 November 1991

Dear Wendy

I was interested to read the account of the Threatened Plant Symposium in Newsletter 25, September 1991. The recommendations published on page 6 were useful and must have been encouraging to those involved with the problems discussed; that was how I felt when I read the account.

On Thursday 14 November, I went back to that account and after a second reading concluded that high hopes do not translate into political awareness - at least that brand which could lead to positive action. I refer to the recent rounds of redundancies in DSIR. Redundancies not related to quality of work, but to changing priorities and reduced funding. How otherwise could leading figures in conservation and other areas of science have been declared surplus to requirements? Perhaps because it was desirable to clear the decks before the new Research Institutes, complete with directors and chairmen, take over from DSIR. But we were assured by the Minister that this would not be the case.

It is my view that we have not seen the last of redundancies in science, and further, I believe that all scientists are at risk. For the sake of the plant sciences in particular, but for science generally, it would be good to know how the New Zealand Botanical Society views the present situation, and whether it would make its position known publicly.

Five years ago I suggested that the changes then beginning to affect the scientific community be debated in our newsletter. Perhaps this might happen now, but in any event it may be time to join forces with other science societies in an effort to speak with a stronger voice than those who traditionally have been our advocates.

Yours sincerely,

Neville Moar, 8 Maurice Street, Lincoln.

### ■ Response from N.Z. Botanical Society Meeting Auckland November 26th

At the recent general meeting of the New Zealand Botanical Society in Auckland, it was suggested that the Society should take a more pro-active role in promoting the interests of both its members and its science. In particular, the prospect of further staff redundancies and reduced funding for botany, and the need for a professional body representing botanical scientists, were discussed. The committee of the Society felt that, as individuals, they had insufficient time to become involved in active politicking of all issues affecting other members. However, it was agreed that any members who wished to draft letters on specific matters on behalf of the Society could submit these to the committee for approval and have them sent out over the President's name. Such letters should be sent to **Anthony Wright**, Auckland Museum, Private Bag 92018, Auckland for actioning.

### ■ Letter from NZBS to Hon Denis Marshall, Minister of Science (DSIR), 3 December 1991

Dear Minister

News of the recent redundancies within DSIR was received by the New Zealand Botanical Society with great concern. We understand that these redundancies are a direct result of policy and administrative changes brought about by your government in its restructuring of government science. Decisions have been made by Cabinet on your advice and that of the Ministry for Research Science and Technology on the priority areas for government funding of research. The Foundation for Research Science and Technology has been responsible for the allocation of funds within the limits assigned by Cabinet and MORST. The decisions that you made in the last financial year to take funds out of the Resource output areas, particularly those relating to the environment, land and flora, have had the inevitable consequence of leaving areas previously supported by the government now to be without FRST funds. The combination of this shift in perceived priority areas as well as the constraints that DSIR now works within under the Public Finance Act has been to force DSIR divisions to declare staff to be surplus due to inadequate funds to pay salaries.



The New Zealand Botanical Society is particularly concerned by the following aspects of the redundancies: (i) loss of scientific positions in botanical science; (ii) the short term of the funding base with FRST funded projects and the lack of flexibility for the DSIR Divisions under the Public Finance Act; (iii) the probable future redundancies that will result from continued application of your policy and administrative changes.

Prior to the current round of restructuring of government science, the scientific community was assured that there would be no redundancies resulting from the transfer from DSIR/MAF to Crown Research Institutes. The government has also made a number of statements on the importance of caring for our flora and fauna indicating its commitment to "green" policies. The Society seeks reassurance that the government is going to honour the statements it has made. We would appreciate hearing from you about the role that you see for botanical science in the future, and an explanation of how the government justifies a priority shift in science funding which see projects on endangered flora and plant ecology reduced to critically low levels.

Yours sincerely

Dr E J Godley  
PRESIDENT

*Acknowledgements: As this is my last issue as editor, I would like to thank all the contributors to the Newsletter over the past two years for providing interesting material on a wide array of topics. For this issue I would particularly like to thank Lee Ratapu for typing the text so rapidly and accurately.*

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## PUBLICATIONS

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# A DICTIONARY OF MAORI PLANT NAMES

by James Beaver

Most of the Maori plant names in this dictionary have been found in the lists compiled by explorers, missionaries, botanists and others during their work among the Maori people in the 19th century and earlier. The names are mainly traditional but there are also more recent words that arose from the introduction of exotic plants, especially the food plants, potato, turnip, cabbage and better yielding forms of kumara.

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75 pages

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C/- Botany Department  
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Private Bag 92018  
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