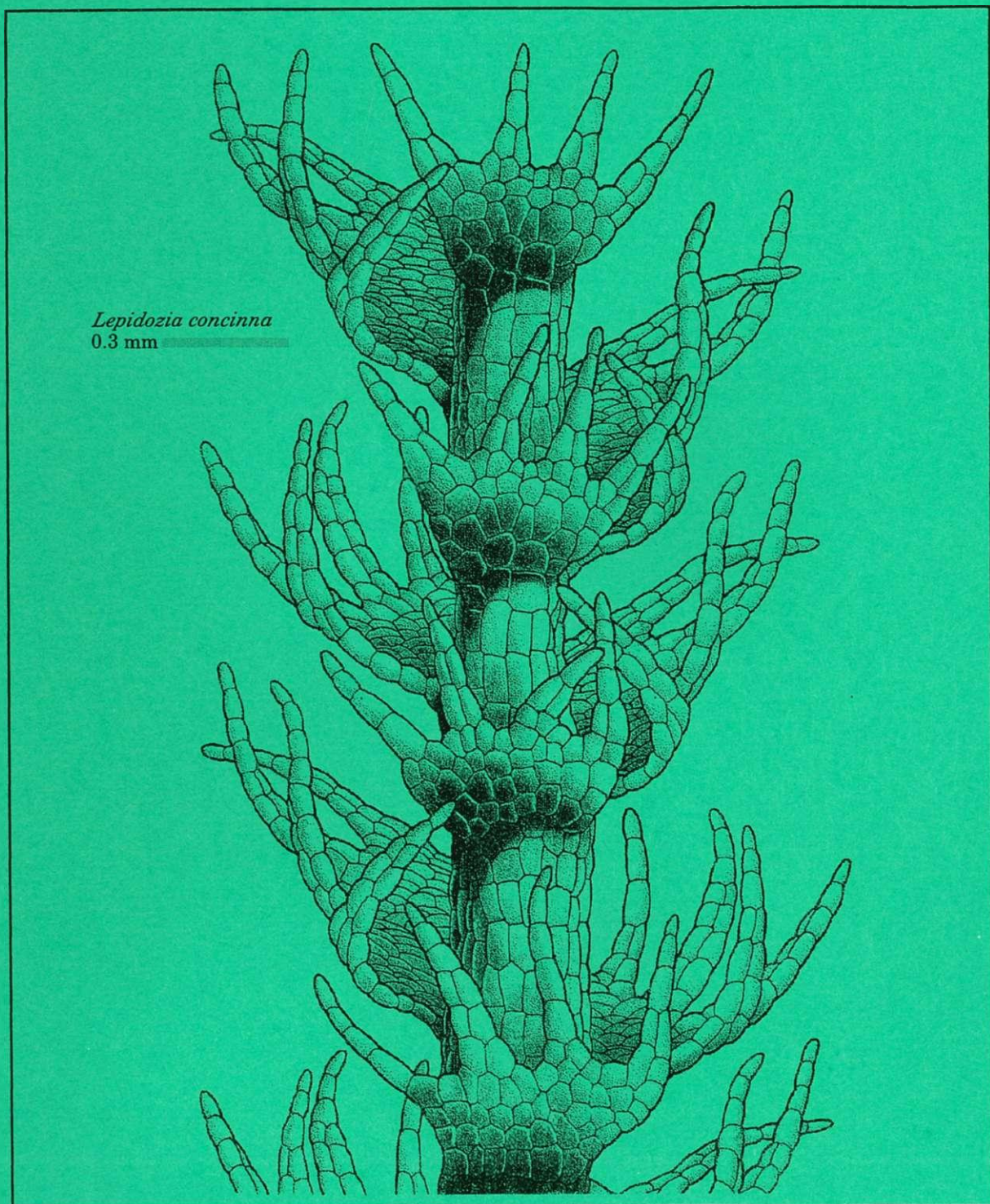


NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 61

SEPTEMBER 2000



New Zealand Botanical Society

President: Jessica Beever
Secretary/Treasurer: Anthony Wright
Committee: Bruce Clarkson, Colin Webb, Carol West, Joy Talbot

Address: c/- Canterbury Museum
Rolleston Avenue
CHRISTCHURCH 8001

Subscriptions

The 2000 ordinary and institutional subs are \$18 (reduced to \$15 if paid by the due date on the subscription invoice). The 2000 student sub, available to full-time students, is \$0 (reduced to \$7 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 46 (December 1996), \$3.00 each from Number 47 (March 1997) to Number 50 (December 1997), and \$3.75 each from Number 51 (March 1998) onwards. 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 28th February 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 December 2000 issue (Number 62) is 25 November 2000.

Please forward contributions to: Joy Talbot
23 Salmond Street
Christchurch 8002

Contributions should be sent by e-mail to m.king@irl.cri.nz Files can be in WordPerfect (version 7 or earlier), MS Word (version 6 or earlier) or saved as RTF or ASCII. Graphics can be sent as Corel 5, TIF or BMP files. Alternatively photos or line drawings can be posted. Macintosh files cannot be accepted so text should simply be embedded in the email message.

Cover Illustration

Lepidozia concinna A common liverwort in forests throughout New Zealand, *Lepidozia concinna* grows in thick mats on soil and tree trunks. It is one of a dozen species of the genus here. Its family the Lepidoziaceae is our second largest liverwort family, with 17 genera.

Drawn by **Bill Malcolm**, Box 320, Nelson.

[This drawing and the one in Newsletter No. 60 were drawn for the book "Mosses and other Bryophytes" by Bill and Nancy Malcolm. This has now been published - see flyer inclosed.]

NEW ZEALAND BOTANICAL SOCIETY
NEWSLETTER
NUMBER 61 SEPTEMBER 2000

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NEWS

New Zealand Botanical Society News

■ From the President

Award of Allan Mere

The Allan Mere, presented annually by the New Zealand Botanical Society for outstanding contributions to botany in New Zealand, is this year awarded to James Bruce Irwin.

Bruce was nominated for the award by Ian St George and Eric Scanlen, supported by the New Zealand Native Orchid Group. His contribution, as a botanical artist and a researcher on native orchids, dates back to the 1930's. Bruce had a long and fruitful collaboration with Lucy B. Moore (1, 2, 3), beginning with work for Volume II of the *Flora of New Zealand* and culminating in *The Oxford Book of New Zealand Plants*. His exceptional skills in observing and portraying the intricate 3-dimensional structure of floral parts are well displayed in this latter publication, and numerous others to which he has contributed. Examples include his section on 'The structure of orchids' in 'The New Zealand Orchids: natural history and cultivation' (4), and collaborative work with Dan Hatch (5, 6) Bruce Clarkson (7) and Brian Molloy (8). Nor have his observational skills been confined to the comfort of his work-room – field work has always been an integral part of his research (9). Dan Hatch describes him as having 'an eye for discovery' and refers to his 'genius with the pencil' (10).

Two species of *Pterostylis* have been named for Bruce Irwin. The name *Pterostylis irsoniana* commemorates both Bruce Irwin and Owen Gibson. The species was described in 1950 by Dan Hatch (11), who acknowledged 'the labours and enthusiasm of Messrs J.B. Irwin and O.E. Gibson, who between them have done much to elucidate the orchid flora of Mount Egmont'. *Pterostylis irwinii* D.L. Jones, Molloy & M.A. Clem., a species formerly known by the tag-name *Pterostylis* 'Erua', was described in 1997.

The presentation of the award to Bruce is to be made in association with the Auckland Botanical Society's Lucy Cranwell Lecture, at the Auckland Museum on Tuesday 3 October, 2000.

References:

- (1) Moore L.B. (1968) Taxonomic notes on New Zealand monocotyledons *N.Z. Journal of Botany* 6: 473-92.
- (2) Moore L.B. and Edgar E. *Flora of New Zealand*, Vol II. Wellington, Government Printer, 1970.
- (3) Moore L.B. and Irwin J.B. (1978) *The Oxford Book of New Zealand Plants*, Wellington, Oxford University Press.
- (4) St George I. and McCrae D. *The New Zealand Orchids: natural history and cultivation*. N.Z. Native Orchid Group, Dunedin 1990.
- (5) Hatch E.D. (1953) Further notes on *Pterostylis* R. Brown and *Thelymitra* J.R. and G. Forster. *Trans. Roy. Soc. N.Z.* 80: 323-327.
- (6) St George I., Irwin B. and Hatch, D. *Field Guide to the New Zealand Orchid*. N.Z. Native Orchid Group, Wellington, 1996
- (7) Clarkson B.D. and Irwin J.B. (1986) *Vegetation of Egmont National Park New Zealand National Parks Scientific Series No.5*. Wellington, DSIR.
- (8) Molloy, B.P.J. and Irwin, J.B. (1996) Two new species of *Corybas* (Orchidaceae) from New Zealand, and taxonomic notes on *C. rivularis* and *C. orbiculatus*. *N.Z. Journal of Botany* 34: 1-10.
- (9) Irwin, B. (1994) *Corybas rivularis* – one species or several? *Wellington Botanical Society Bulletin* 46: 48-53.
- (10) Hatch E.D. pers. comm. to J.E. Beever Sept. 2000.
- (11) Hatch E.D. (1950) The epiphytic orchids of New Zealand and a new species of *Pterostylis* from Mount Egmont. *Trans. Roy. Soc. N.Z.* 78: 101-105.

Jessica Beever, c/o Landcare Research, PB 92170, Auckland

■ From the Secretary/Treasurer

Brian Molloy has accepted the Committee's invitation to convene a working party comprising David Norton, Allan Fife and Bruce Clarkson to prepare the action plan for affecting better protection of New Zealand's threatened plants. The action plan will be communicated to members through the *Newsletter* in due course. Any members wishing to contribute to the working party's work could make a submission to Brian at 20 Darvel Street, Christchurch 8001.

Anthony Wright

■ From the Editor

Just before the last Newsletter was published, Eric Godley was awarded D.Sc. (honoris causa) by Canterbury University.

At the presentation **Colin Burrows** spoke on the background which led to this conferment; his talk is abridged below.

Born in 1919, Eric Godley trained as a teacher, then went on to graduate M.Sc with honours in Botany from Auckland University in 1942. During WWII he served as an anti-tank gunner in North Africa and Italy. When war ended he went to Cambridge University (Trinity College) and completed a PhD in Genetics.

Back in New Zealand he lectured for several years at Auckland University, then joined DSIR in 1951 as a senior geneticist at Lincoln Crop Research Division (involved with the breeding of crop plants). He became Director of the Division in 1952, but switched to the Directorship of Botany Division DSIR in 1958, and was Chairman of the whole DSIR facility at Lincoln from 1976 onwards. He retired in 1980, but continued as Chairman of the Lincoln Centre until 1984. He is now an unpaid Research Associate at Landcare Research, Lincoln.

His association with the University of Canterbury has been close at times. In the mid 1950's he was visiting lecturer in Genetics; he has helped with the supervision and examination of research students in plant systematics, morphology and ecology; staff of the Botany Department interacted with him in fruitful ways; and numerous students went on to careers at Botany Division.

During his time as Director from 1958-1980 Eric Godley presided over, and facilitated spectacular growth in the activities carried out within his Division. Among the major achievements were:

- Expansion of the facilities of Botany Division so that it became the principal research centre for the indigenous and naturalised floras of NZ, including setting up the National Herbarium.
- Development of regional DSIR Botany field centres throughout NZ.
- Enhancement of specialist research areas within the discipline, e.g. weeds, ethnobotany, pollen analysis, plant ecology. Botany Division was a dynamic and interesting place where visitors were welcome, publishing was encouraged and extensive databases were instituted for the various subject areas.
- Founding the New Zealand Journal of Botany, the main refereed local journal for publication of research articles on science relating to indigenous and naturalised plants (including fungi and lichens)
- Founding the New Zealand Botanical Society which provides a forum for botanists, both professional and amateur, and enables them to keep up to date with what is happening in the NZ plant world.
- Facilitating production of the *Flora of New Zealand* series, a tremendous resource for a range of botany disciplines. Canterbury graduates have been prominent among the team of scientists and associated support workers necessary to achieve this work. "(Eric) had the gift of being able to keep his staff contented - he is renowned for his strong but caring leadership. His example certainly must have helped to maintain inspiration and motivation."

"He has been one of the very best administrators in the Civil Service - a person with real, long-term vision."

"Eric Godley is a very unusual person - a scientist who became a senior administrator with onerous responsibilities, but who managed to keep researching and publishing on the botanical subjects which interested him." He has published in the fields of genetics and evolutionary theory; biogeography of the southern cool temperate zone; reproductive systems and systematics of NZ flowering plants, including kowhais and fuchsias. He has published about 60 research papers, a book and has edited revisions of two other books. Lately he has compiled biographies for nearly 40 early botanists (published in this Newsletter). And in the area of popular botany Eric wrote a series of articles about the life of plants for the *New Zealand Gardener*; these are to be published soon (as *A Botanist's Notebook*).

The recipient of many other awards including an OBE and the Hutton Medal of the Royal Society of NZ, "Eric John Godley is living proof that, like good wine, botanists continue to improve with age. At the age

of 80, he writes lucidly and cogently about his beloved subject. Today we salute a toanga of botanical science in New Zealand.”

Joy Talbot, Editor

Regional Botanical Society News

■ Auckland Botanical Society

June Meeting

While working towards her MSc and PhD, Auckland University student Michele Mills has been involved with iwi from the marae at Bastion Point and Mangere. During this time she has attempted to gain an understanding of Mātauranga Māori (Māori environmental knowledge) as she has drawn up plans to revegetate gullies and streams on their land, and to set up nurseries to provide plants and employment opportunities. The aim of her talk was to encourage her listeners to understand and respect the Māori world view, and the origins of Mātauranga Māori.

June Field Trip

Gumboots were the footwear, and “Wetland Plants in New Zealand” the accessory of the wise on this walk around Lake Pokorua, the largest dune lake on the Awhitu Peninsula. The wetland vegetation, dominated as it is by raupo, rushes and sedges, tested our knowledge of monocots, and there were areas of fringe vegetation with cabbage tree, manuka, *Coprosma tenuicaulis* and scattered pohutukawa. The bird enthusiasts spotted, swimming among the black swans, shoveller ducks, dabchicks and four species of shags. Farmers Leonie and Paul Sands have won an award for the ongoing work they are doing in fencing off the wetland areas on their farm, and neighbouring farmers are being encouraged to do likewise.

July Meeting

Mike Wilcox drew on his experience as a forester on several working assignments in China over the last 15 years to give an overview of China's trees and forests. The talk covered the different geographic regions, the uses of trees for forestry and for protecting the environment, and the botanical riches of the Chinese tree flora.

July Field Trip

Woodhill Forest, a pine forest planted on the dunes of the Kaipara South head, has patches of natural vegetation scattered among the pines. On a windy day, two of these patches were explored; in the morning the Lookout Bush and in the afternoon, Hodges Basin. The main impression was of the devastation caused by the deer which are present on the South head. Lunch was eaten beside the deer enclosure which has been fenced for 17 years. The contrasting areas inside and outside the fence were a fitting background for the talk given by visitor Peter Bellingham on the rarity, in New Zealand and worldwide, of dune-forests, and on the importance of protecting those that remain.

August meeting

Jane Fröhlich from Landcare Research, Mt Albert, spoke on using fungi as biocontrol agents to control weeds. Some of these fungal pathogens are naturally in the country and others need to be introduced. Jane is working on two projects, one to control gorse and broom, and the other to control mist flower (*Ageratina riparia*). She discussed these two case studies, highlighting the steps which have to be taken before foreign organisms can be introduced in to the country.

August Field Trip

Moire Park, Massey east, a gully leading down to a mangrove filled arm of the Waitemata Harbour, is a remnant of the tea-tree scrub which largely covered the Auckland isthmus in pre-European times. As in all urban reserves weeds and inappropriate plantings are present, and pines and wattles overtop the kanuka canopy. Gumland scrub plants such as *Lepidosperma laterale* and kumarahou (*Pomaderris kumeraho*) thrive where the light penetrates, the kumarahou buds ready to burst into soft golden flower in a month's time. The regionally scarce *Astelia grandis* is surprisingly common, and not only in swampy areas. Several large clumps of the exotic fern *Pteris cretica* grow on a steep bank, obviously discarded from one of the houses higher up.

Forthcoming activities

Evening Meetings

6 September Forensic pollen, Mark Horrocks

4 October Lucy Cranwell Lecture, Brian Molloy
1 November Great Barrier Island, Ewen Cameron & Bec Stanley

Field Trips

16 September Paremoremo & Albany Scenic Reserves, Rhys Gardner
13-15 October Ponui Island camp (to be confirmed)
18 November A wetland field trip (place to be confirmed)

Maureen Young, 36 Alnwick Street, Warkworth

■ **Rotorua Botanical Society**

Recent Activities

We had a stimulating field trip before the AGM to two natural areas very close to Rotorua. In the morning we visited a small tawa forest remnant above Te Ngae Road. This has been fenced for several years to exclude grazing animals, and it was interesting to note the recovery which has occurred. Several indigenous species have been planted in the remnant, including nikau, and it was disturbing to see an adventive kiwifruit vine growing happily in this environment.

In the afternoon we visited the Te Ngae kahikatea stand - this is the best remnant kahikatea stand in the Rotorua District and is currently a controversial subject with regard to a proposed extension to the Rotorua Airport. The forest is in very good condition, dominated by kahikatea with pukatea common. The usual weeds were present locally, including one specimen of *Clerodendron trichotomum*, a species which most of us had not seen naturalised in Rotorua.

This trip was followed by our AGM and a pot luck dinner. Our guest speaker, Ewen Cameron, gave an entertaining and informative address on "Weeds North of the Bombays - where things tend to happen first".

The new committee is *President*: Willie Shaw; *Vice-President*: Chris Ecroyd; *Secretary*: John Hobbs; *Treasurer*: Grant Milligan; *Editor*: Paul Cashmore; *Committee*: Barbara Spring-Rice, Helena Beeser, Chris Bycroft.

In July the Botanical Society visited Parimahana Scenic Reserve where there are some very good examples of geothermal vegetation. One of the highlights of this trip was the discovery of a new population of *Korthalsella salicornioides*, which is known from only a limited number of sites in the Bay of Plenty.

The August field trip to Mokoia Island was timed to coincide with conservation week, and was very well attended. Several nationally threatened species have been introduced to the island over the last few years (including *Rorippa divaricata*, *Dactylanthus taylorii*, saddleback, and stitchbird), and we were privileged to see several populations of *Rorippa*. One of the highlights of the trip was the diverse and plentiful birdlife; the stitchback and saddleback were of particular interest.

Our guest speaker for the annual joint evening meeting held by the Rotorua branch of the Royal Society and the Rotorua Botanical Society in July was Bruce Burns of Landcare Research. His address entitled "Hot boots and hot roots! the vegetation dynamics and botany of geothermal areas" was extremely interesting and relevant.

For information on the Rotorua Botanical Society you can visit the Wildlands website at www.wildland.co.nz.

In May 1999, Newsletter No. 34 was published with the following articles:

- Mt Tarawera Field Trip (W.B. Shaw)
- Putauaki Field Trip (W.B. Shaw)
- Checklist of Vascular Plants on Putauaki (Mt Edgecumbe) (Sarah Beadel)
- Matata Scenic Reserve Field Trip (Sarah Beadel)
- Notes on the Flora of the Forest Research "Central" Experimental Block, Mamaku Plateau (Paul Cashmore and Chris Ecroyd)
- Notes on the Flora of the Chatham, Bounty and Antipodes Islands (Paul Cashmore)

The current programme includes the following field trips:

- Sunday 3 September: Wairere Falls, Western side of Kaimai Ranges
Leader: Grant Milligan 07-349-4928 (work/home)
- Sunday 1 October: Waipahihi Botanical Reserve/Opepe Bush near Taupo
Leader: Philip Smith 07-378-5450 (work), 07-378-0571 (home)
- Saturday 4 November: Ottawa/Otanewainuku
Leader: Roger Crabtree 07-332-2326
- Sunday 3 December: Pukahunui Valley, Southern Kaingaroa
Leader: Willie Shaw 07-362-4315

Sarah Beadel, c/- Wildland Consultants Ltd, P.O. Box 1737, Te Ngae, Rotorua.
Email: wildland@wave.co.nz Website: www.wildlands.co.nz

■ Wanganui Museum Botanical Group

TRIP REPORTS

March: Westmere Lake

Some 15 members made the short trip to this reserve on the edge of the city. The main feature is a dune lake that is far less infested with exotic water weeds than many of the others in our district. This is almost certainly the result of the lack of access for boats and consequently reduced opportunities for introductions. Detached pieces of *Potamogeton ochreatus* and *Myriophyllum triphyllum* were observed in the shallows. On the periodically submerged turfs we saw regionally uncommon *Pratia perpusilla* in flower and, among others, *Callitriche petriei*, *Isolepis inundata* and *Glossostigma elatinoides*. The surrounding dunes are planted in large exotic trees, but there is evidence also of years of planting efforts by Forest and Birders and the local school. Some of their totara, kauri and rimu were well underway. The plantations have a well-established natural understorey of mahoe, hangehange and *Coprosma* species with many ferns providing groundcover. There was a patch of possibly self-established supplejack (*Ripogonum scandens*) but it took us a while to recognise a planted tawapou (*Pouteria* [= *Planchonella*] *novo zealandica*). Although there is further scope for the replanting of this reserve, there are many weeds that will need to be dealt to including *Tradescantia*, ivy, ladder fern (*Nephrolepis cordifolia*) and Japanese honeysuckle.

Keith Beautrais

Early April: Paengaroa Mainland Island

Five of us fitted in one car for the 1.5 hour trip to Mataroa. Most of us didn't have too much experience with divaricating shrubs, so we only progressed a few 100 metres in the first four hours, stopping and checking numerous shrubs on the way. Although we didn't find all the 'special plants' that we had hoped to see, we were generally satisfied with getting acquainted with shrubs as *Pittosporum obcordatum*, *Olearia gardneri*, *Meliccytus flexuosus* and *Coprosma wallii*. Other highlights were the dwarf mistletoe *Korthalsella clavata* at one of its few known North Island sites, and *Brachyglottis sciadophylla*. Until it was found recently in the Wairarapa, Paengaroa was the only known NI site of this daisy vine. Luckily there's a lot of information on the area, so we had some background material and history on treatment, plantings, etc. The identification guide to these small-leaved shrubs was also essential, in Colin Ogle's absence.

To cap off a good day we saw a NI robin or two on a rather belated and hurried ramble up the hill. Robins were re-introduced to the reserve last year, from near Raetihi.

Graeme La Cock

Late April: Moeawatea Gate (Ahoroa Scenic Reserve)

A group of 17 travelled inland about 30 km from Waveley to the edge of this reserve, which is virtually contiguous with the huge tract of lowland forest in the Matemateaonga area. Large works on the back country road alerted us to the sad reality that privately owned land in this area is being heavily plundered for native timber and sure enough we saw many rimu logs stacked beside the Moeawatea Road.

On a brighter note we were greeted by masses of heavily flowering eyebright (*Euphrasia cuneata*). The resulting increased interest rate at the banks revealed *Gaultheria antipoda* and *Nertera depressa* in fruit, flowers and fruit of *Pratia angulata* and distinctive foliage of *Ourisia macrophylla* ssp. *robusta* and *Elatostema*. Fallen trees created an orchid moment or two with *Drymoanthus adversus* and *Earina mucronata* noted and *Earina autumnalis* seen in flower. Closer looks into the bush revealed *Rhabdothamnus solandri* and several *Metrosideros* species but attempts to get far under the canopy met strong resistance from supplejack and revealed little other undergrowth.

The larger trees present included a strong emergence of rewarewa. Many of the podocarps were horizontal but there were some Hall's totara and miro. Further down the track we saw a vista framed by black beech, a very fine-leaved kowhai and a large *Carmichaelia* shrub. Fern lovers were rewarded with patches of kidney fern (*Trichomanes reniforme*), some very large-leaved *Hymenophyllums* and *Leptopteris hymenophylloides*. Others of us tried to improve our skills in distinguishing *Freycinetia*, *Collospermums*, *Astelias* and the robust sedge, tuhara (*Machaerina sinclairii*). Keith Beautrais

Early July: Native plantings around Wanganui schools [abridged highlights - Ed]

Aromoho School has a front shrubbery that replaced a lawn 10 years ago. A 4 m tall rewarewa had already been flowering for two or more years and there were healthy young lancewood, kohuhu, *Hebe parviflora* and others. Below the school's sports field a thicket of trees planted some 50 years included very large taupata (*Coprosma repens*), karo (*Pittosporum crassifolium*), akeake and ngaio. Some potentially serious weeds need attention though. Nearer the buildings we admired two isolated but fine trees, a kauri and a monkey puzzle (*Araucaria araucana*). Wanganui Girls College had mostly young native plantings in areas where gardens have been established following recent building work. Tussocks of NZ wind grass (*Anemanthele lessoniana*) and *Chionochloa flavicans* had been used effectively. Among young native shrubs we speculated about the origins and future of a 0.5 m shrub of supplejack! Near the road boundary are several very large trees of Norfolk Island hibiscus (*Lagunaria patersonia*) and we were intrigued to find 4 self-sown seedlings in the tussock gardens, the closest being at least 50 m from the parent tree. St John's School is on old dunes, but had the largest range of native trees that we saw. These are about 40 years old and, being part of the playground are fortuitously mulched with pine bark. Among the notable trees of this grove, mostly one of each, were totara, titoki, black and silver beeches, kawaka (*Libocedrus plumosa*), kauri, *Olearia albida*, *O. paniculata*, rewarewa, northern rata, pohutukawa (North Island and Kermadec species), kahikatea, rimu, puriri, and a large hinau covered in flower buds. Many of the trees branched from close to the ground indicating they had been planted at wide spacings in open ground. Rutherford Intermediate had disappointingly few natives left from a planting done about 10 years ago on a dune slope above the sports field. We arrived at Castlecliff School to find the gates locked, but from the fence we could see a developing shelterbelt of cabbage trees and coast banksia (*Banksia integrifolia*) and a block of shrubs that included tainui (*Pomaderris apetala*). Close to the sea and on relatively young dunes, this school has the greatest challenge of any in the city to establish plantings.

Planting natives is a common activity for schools these days, but is encouraging to see that some, initiated when such work was less fashionable, have persisted for 10 and up to 50 years. These are priceless assets now for their respective schools. Colin Ogle

Late July: Gower's Bush (Malvern Hills)

The stream which flows through the 10 ha bush had been flooded by recent rain and conditions, although fine, were very wet underfoot. On this occasion, a survey was made up the eastern edge of the bush, following a track along which stock are moved to and from the yards and woolshed but, being driven, the animals do not penetrate the bush to any extent. The only native plant found which was not previously listed was a hybrid lawyer *Rubus cissoides* x *R. schmidelioides*, although several plants of *Laycesteria formosa* (Himalayan honeysuckle) and elderberry were discovered. Randel Springer

PROGRAMME

Tuesday 3 October: Robyn and Colin Ogle will give an illustrated talk on their recent trip to Lord Howe Island

Tuesday 7 November: Dick Endt, Auckland, will talk on his interests including tree crops, South American plants and sub-tropical fruit

Tuesday 6 February 2001: Carlos Lehneback, Massey University on Chilean Orchids

Tuesday 6 March: Vonnie Cave will talk on her recent trip to the Antarctic and sub-Antarctic.

FIELD TRIPS

Saturday 2 September: Nitschke's Bush, Halcombe/ Waituna West. Leader: Colin Ogle, ph 343 3353

Sunday 1 October: Aird Garden, No. 2 Line, Fordell

Saturday 4 November: Waitotara Valley - jet boat trip. Leader: Jim Campbell, ph 348 7272

Sunday 3 December: Whitiāu Scenic Reserve, Whangaehu River mouth. Leader: Graeme La Cock, ph 345 3630. (Conservation area for *Sebaea ovata*.)

Saturday 3 February 2001: Waipipi Beach, Waveley. Leader: Randel Springer, ph 345 0488

Sunday 4 March: Taukoro Forest Conservation Area. Leader: Ian Bell, ph 343 7686

Secretary: Robyn Ogle, 7 D'Arcy Road. Ph 343 3353

■ Manawatu Botanical Society

PAST MEETINGS AND TRIPS

April Field Trip - Woodville area reserves

Ten members travelled to Kumeroa and Hopelands SE of Woodville to inspect two QEII covenant reserves. First stop was Awapikopiko Reserve a 28 ha tawa dominant podocarp-broadleaf remnant. The reserve was gifted to the QEII National Trust by David Druce and David and Josephine Druce met us at the reserve and told us of the history of the reserve and the family farm (of which the reserve was once a part). An hour and a half of walking along the track followed and four species were added to the existing species list. Unfortunately the introduced horsetail *Equisetum arvense* was also found near the stream.

After lunch we travelled back to Hopelands for a brief visit to Durslade, a 50 ha regenerating kanuka forest, which was gifted to the QEII National Trust by Josephine Druce and her father, the late Mr T C R Jackson. The oldest parts of the forest are about 50 years with some scattered patches of older trees. Regeneration has been through a succession of manuka and kanuka and a more diverse understorey and canopy is just starting to develop. Rewarewa and kamahi are established in patches and some podocarps are establishing from bird dispersed seed from some remnant trees on an adjoining property. Unfortunately there are a lot of goats in the area and wandering goats are having a significant impact on the regeneration of the more palatable species in the understorey. Additions were made to a preliminary species list which now includes 63 vascular species but this will increase as more of the reserve is surveyed.

Peter van Essen

May Meeting (with Forest & Bird) - In the footsteps of Colenso

Peter van Essen gave an account of his trips "In the footsteps of Colenso across the Ruahine Range". It was in 1945 that Colenso made his first attempt to cross the range with the intention of reaching a remote Maori village on the Rangitikei River, in the area known as the inland Patea. His first attempt failed but he did make it up into the alpine zone and made a hurried but extensive collection of what were then undescribed species. He was the first European to travel in these parts and made many botanical discoveries. In 1847 Colenso succeeded in crossing the range and in all made 8 successful but sometimes arduous crossings. His account of these crossings ("In memoriam and an account of visits to and crossings over the Ruahine Mountain Range and of the natural history of that region") published in 1884 is recommended reading especially when following his route across the range. The description of his delight at his first view of the diverse alpine flora is a gem and his account of some of the rigours of travel at that time are quite sobering in comparison with today's roads and tracks. These days the trip can be done in a 2-3 day tramp from the Makaroro River (at the end of Whakawara Rd on the eastern side of the range) to the road end at Mokai Station (at the foot of the Mokai Patea Range on the western side). There have been some significant changes in the vegetation during the 155 years since Colenso first travelled this route, mostly due to introduced animals, but many of the species that Colenso found and described are still encountered. The spear grass *Aciphylla colenso* is not as thick as it was in Colenso's time but there are still some good patches in which to relive Colenso's memorable experiences of travelling through it.

FORTHCOMING PROGRAMME

September 2 - Haukopua Scenic Reserve (6 km S of Woodville; 80 ha lowland forest remnant) Leader: Peter van Essen, ph 355 9076

October 14 - Forest & Bird trip along the Manawatu Gorge Walk. Leader: Alan Hawkins, ph 323 0583

November 2 - meeting - mystery speaker - this person has such an interesting topic that we can't tell you who it is in case too many people turn up for the seats available!

November 18 - Forest & Bird trip along the new Fern Walk, Totara Reserve. Leader: Allen Bloomfield, ph 357 2665

December 7 - End of year potluck dinner. Ph 355 9076 (Peter & Lesley van Essen)

Jill Rapson, Ecology, Institute of Natural Resources, Massey University, Palmerston North.
Ph (06) 356 9099

■ Nelson Botanical Society

May field trip: Pretty Bridge Valley

Very soon after leaving the cars, 16 people started a discussion about vines that were in the canopy of a *Lophomyrtus obcordata*. The majority of the vines were deemed to be *Rubus cissoides*, while others

were *Ripogonum scandens*, *Muehlenbeckia australis* and *Parsonsia*. Leaves studied from the ground litter helped us come to this conclusion. Then Julie led us up the creek, finding earth star fungus *Geastrum*, the ferns *Leptolepia novae-zelandiae*, *Trichomanes venosum* and others, as well as glow-worms along the way.

After lunch in the patchy sun-shower we went up the ridge and found pokaka with juvenile and adult foliage, also *Pittosporum rigidum*, sizeable *Coprosma linariifolia* and *C. microcarpa*. As we clambered down another ridge we passed a pokaka-hinau hybrid, saw a double rainbow and were back at our cars in good time before dark.

June field trip: Pepin Island

The combination of a lovely mild winter day and being able to botanise on a privately owned island only 20 mins drive from the city meant there was a large turnout - over 30 people.

Heading south from the boulder bank on a farm track, a ten minute walk brought us to the first remnant of coastal bush. It was good to see seedling kohekohe and tawa growing here as it is about a kilometre to the nearest adult trees - a sign that possum control and pigeons are having a positive effect. There have been extensive plantings of exotics and natives on the island in the last five years and we admired puka (*Meryta sinclairii*), some bearing fruit, kauri and, further on at the sandspit, pingao all growing well. As we continued around the farm track the ferns *Doodia australis* and *Cheilanthes distans* were found growing on the bank. We had a lesson on identifying rushes; *Juncus pallidus* - large and with continuous pith, *J. sarophorus* with gaps in the pith. After lunch the plants of interest on the spit were *Spinifex sericeus* with its large female tumbleweed heads and a prostrate form of matagouri at its only known site on the Tasman Bay coast. The introduced iceplant *Carpobrotus edulis* is spreading on the sandy foreshore hybridising with the native *Disphyma australe*. *Tetragonia trigyna*, *Einadia triandra*, *Lobelia anceps*, *Apium prostratum*, *Isolepis cernua*, *Senecio lautus* and *Linum monogynum* were all spotted on the coastal cliffs before climbing up through another remnant of bush. This forest of large matai, titoki and tawa trees has been fenced for several years and the regenerating kawakawa underneath is now two metres high. A patch of *Lastreopsis microsora* was a nice find.

Then it was up the hill and over the island heading for home, with exploration of the northern two thirds of the island waiting for another year.

July field trip: Moutere Remnants

A very interesting and varied day in lowland ecosystems around Mapua and Ruby Bay with a first stop at Stringers Rd to view the matai tree which Transit had moved 40 metres to avoid a new road. The tree is now doing well as are the 150 new totara and matai planted where the covenant was breached for the road.

The second stop was at Trafalgar Road to view the largest remaining flax swamp in Tasman Bay, and the third stop at Dominion Road to walk around in another wetland with *Carex secta* clumps, *C. virgata*, and *C. geminata* complex. Willows at the edge supported dozens of mistletoe plants. The fourth stop was to see incised gully remnants on Johnsons' and Sands' properties, again in Dominion Road. The main plants here were as you might expect, ferns, tree ferns, mahoe, fivefinger, coprosmas etc. Rather more unexpected was an *Olearia rani*.

In this area all the ridges have a steep south slope (earlier bushcovered, now with bush remnants or pine trees) and a gentle north slope (now horticulture or pasture). In between were once flax swamps which are now mainly drained. Landowners used to fill in gullies and wipe out original vegetation, but now some of them are proud of their small patches of bush, and in the newer rural-residential subdivisions native remnants are an asset even if small.

After lunch the group went on to the Ruby Bay Walkway. In the 1980s Harry van Beck cleared a large area of pines. Instead of bulldozing the trash into the deep gullies, he kept them as they were and they became a council reserve. Harry and friends worked over about 2 years building tracks and steps. The Walkway opened in 1995 now has nameplates for most of the trees and shrubs, a collaborative effort by DOC, Tasman District Council and the Friends of the Mapua Ruby Bay Walkway.

FORTHCOMING FIELDTRIPS

September 17: Delaware Bay, north along the coast - Cathy Jones

October 15: Whakamarina - Jocelyn Lewis

November 19: Serpentine Creek - Gay Mitchell

December 17: Parachute Rock - Sally Warren

Labour Weekend Camp: Marlborough Sounds

Nelson Anniversary Weekend Camp: Cobb Valley

CONTACTS

President: Cathy Jones, Flat 2, 5 North Rd, Nelson. Ph 03 546 9499. Email: cjones@doc.govt.nz
Secretary-treasurer: Jocelyn Lewis, 22 Coster St, Nelson. Ph 03 547 2812. Email: tjlewis@xtra.co.nz

■ Canterbury Botanical Society

March Field Trip

In the morning we visited the property of Naylor and Lorna Hillary on the Summit Rd, 400 m above Pigeon bay. They have fenced about 3 ha of forest which was on a farm once owned by the grandfather of Earl Duxbury, a member who was with us. The forest was recommended for protection by Hugh Wilson in 1992 and now has very attentive owners. Naylor and Lorna described the management of the forest, and after viewing the Bay and distant Kaikora Ranges from a rocky outcrop, we traversed the upper slopes under the varied broadleaved canopy. *Brachyglottis sciadophila* and *Streblus heterophyllus* are frequent, and the recognition of *Coprosma rubra* caused discussion. We dropped down slope to see a massive trunked totara, and emergent matai and a kahikatea. Following the moist spring and summer there has been a vigorous establishment of seedlings and saplings. The only weeds noted were scattered young elderberry and very few young male fern.

We had our lunch on the dunes at Le Bons Bay and then drove up along Hickory Ridge Road with spectacular views into Le Bons and Hickory Bays, by now hazy in the cloudless, windless midday. Near the summit we met Doug Hueston, who with his wife Pam, farms the steep south-facing slopes of Hickory Bay Valley bounded by Ellangowan Stream. Doug led a group down into his extensive covenanted forest. Here, with the number of mature kahikatea and matai, the closed canopy, and the numerous birds it was easy to imagine the pre-European forest of Banks Peninsula's deepest valleys. The ferns *Asplenium oblongifolium* and *Lastreopsis glabella* were noted. We boulder hopped through bush wiring of supplejack to reach a stand of mamaku (*Cyathea medullaris*), tall and elegant. Under kanuka at the forest margin a flock of fantails accompanied us and we saw a pair of tomtits, bellbird, a wood pigeon. Doug has seen rifleman. It was a relief that the heat of the day had abated when we came to climb out of the valley and rejoined those who had not risked the descent, still busy with their cameras. This day was planned and arranged by David Webster. Bryony Macmillian

June Annual General Meeting

Honorary Life Membership to the Society was awarded to Daphne and Miles Banks for their active support over a considerable period.

The new committee is: *President* - Peter Wardle, *Secretary* - Roger Keey, *Treasurer* - Mary Korver, *Committee* - Colin Burrows, Bryony Macmillian, Claire Newell & Chris Shaw.

July Meeting

Dr Henry Connor gave a welcome appraisal of *Flora of New Zealand Vol. 5 Grasses 2000* which he co-authored with Dr Elizabeth Edgar. The theme of the first part of his talk was "inclusiveness" - synonymy, typology, variation, descriptions of each tribe and genus, a line drawing for a representative of each tribe, and references to published work on the physiology, ecology and chemistry are all given. The importance of keys and their writing was discussed. The second part was a review of the history of the taxonomy of NZ grasses, in which Dr Connor anticipated our questioning the need for new names when so many earlier names are placed in synonymy. Improved taxonomic judgement is based on the greater knowledge of today about the plants. In each of the three periods of taxonomic research since David Solander's manuscript from Cook's voyage 1768-1770, about 50 new endemic species have been recognised. Those of the latest period are due to the assiduousness of collectors among whose names are Tony Druce and Margaret Simpson. Of a print run of 1000 books, 750 have been sold.

Bryony Macmillian

July Field Trip

About 15 members meet at the Armagh St bridge in central Christchurch to find whatever botany was offering. In the narrow gardens around the old provincial council buildings we saw native herbs (*Poa cita*, *Acaena novae-zelandiae*, *Libertia ixioides*, *Astelia fragrans*, *Carex virgata*) and weeds, including purplish heads of *Orobanche minor*, parasitic on *Hebe cupressoides* roots. Janet Moss suggested the probable origin of a mysterious sprawling small *Clematis* as a hybrid between *C. marmoraria* and *C. paniculata* (ex. Joe Cartman). The probable provenance of the kowhais present was explained by Eric Godley. Some were undoubtedly *Sophora prostrata* and some *S. microphylla* (and hybrids).

A big old *Pseudopanax crassifolius* at the south end of the buildings (7 m tall with a 30 cm diameter stem) had native seedlings beneath it, including *Coprosma robusta*, *Pittosporum eugenoides*, and

lancewood. Along the Avon are tall *Carex secta* and both *Dryopteris filix-mas* and *Athyrium filix-femina*, as well as native *Cyathea smithii*. A nice planted area near the Armagh St bridge has young *Dacrydium dacrydioides*, *Fuchsia excorticata*, *Pseudopanax crassifolius*, *Pennantia corymbosa* *Hebe salicifolia* and small-leaved *Coprosma*s.

Notable near the buildings was a fine, flowering *Pseudopanax arboreus* and some really old *Cordyline australis*. Murray parsons told us the importance of these, as markers of the Maori village of pre-1850 times. Another fascination was colonisation of stonework on some bridges and buildings by *Pteridium esculentum* and *Poa cita*. After well over two hours botanising, and a brief look at the good planted patch of bush in the northeast corner of Victoria Square (with beeches, kauri, kahikatea, and various other native trees, shrubs and herbs) we dispersed, feeling very satisfied at the opportunities for plant-watching in the city.

Colin Burrows

August Meeting

Dr Jack Heinemann of the Department of Plant and Microbial Sciences, University of Canterbury, gave us a most interesting and entertaining talk entitled "Cell Engineering, what happened to cells long before genetic modification biotechnology". One must say that Jack set many of our customary perceptions on their heads. Did you think that the possessors of most of the earth's biomass, including organic carbon, nitrogen and phosphorus, and that most of it's species and individuals were eucaryotes, i.e. organisms composed of cells that contain nuclei - all the plants and animals including ourselves? Wrong! In these respects procaryotes, i.e. bacteria and other microbes, exceed all the rest of us by orders of magnitude. Did you think that evolution mainly proceeded "vertically" through sexual reproduction and Mendelian inheritance? Wrong! Evolution through "lateral" exchange of genes, i.e. the kind of genetic change now being explored through biotechnology, is more ancient, more important in evolutionary terms, more frequent, and far more rapid. Through microbial genetics, we are becoming aware of exchange of genes among different species of bacteria, both directly by fusion and via infection by viruses, and it is now generally accepted that the various organelles of eucaryote cells, such as mitochondria and chloroplasts, arose through fusion with microbial cells. But only now is it becoming apparent that the "higher" forms of life are still being influenced by lateral transfers of genetic material, over and above the efforts of biotechnologists.

Peter Wardle

August Field Trip

The plantings maintained by Landcare Research at Lincoln include plantings related to present and past research projects and amenity plantings; the latter also extend to the grounds of the other Crown Research Institutes on the same campus. Different themes are developed in different areas. For instance, the buildings have bays that contain collections from different parts of the world, including Australia, South America, and China. There are also areas that concentrate, respectively, on plants from the mountains, plants from the Chatham Islands, and divaricating plants. Other beds concentrate on particular groups, such as hebes and kowhais. We also viewed the set of the national collection of harakeke that is maintained at Landcare, and an adjoining collection of cabbage trees. Both collections illustrate the wide range of forms that can be included within a single species.

Peter Wardle

Camps 2000/1: preliminary notice

Spring - Friday 3 to Sunday 5 November 2000. Based at the Edward Percival Field Station, Kaikoura: marine biology, Blue Duck and Mount Fyffe Reserves are possibilities. Clair Newell and Chris Shaw are co-leaders. To reserve your place send a deposit of \$20 per person to Roger Keey, PO Box 31080, Ilam, Christchurch 8030.

Summer - Monday 12 to Saturday 17 February 2001. Alpine Club Hut, Mount Cook, near the airport. The hut holds 35, and tents are another option. Leader: Colin Burrows.

Autumn - Friday 13 to Sunday 15 April 2001 at Hanmer Forest. Firs and fungi; flora survey of mixed planted and indigenous species in an area of scientific significance. Limited house accommodation. Leader: Roger Keey.

Programme for 2000

- Sept: Meeting - Nick Head, DoC on threatened plants in Canterbury.
Field trip - Plains Flora, Old West Coast Rd.
- Oct: Meeting - Nick Ledgard will talk on wildling spread from Craigieburn experimental plantings.
Field trip - Craigieburn experimental plantings
- Nov: No meeting; camp at Kaikoura
- Dec: Meeting - Students' evening, video on mistletoes and end-of-year function.
No field trip.

Secretary: Roger Keey, PO Box 8212, Riccarton, Christchurch. Ph: 03 364 2409
Email: wrtc@cape.canterbury.ac.nz

■ Botanical Society of Otago

February Trip Report

With clear skies heralding an unusually summery day, members of the Otago Botanical Society filled several cars and made their way to the very end of the Otago Peninsula, near Victory Beach. The day's agenda was to visit two sites, starting with Okia Reserve and ending up at Taiaroa Bush. Retired from grazing in 1991, the Dunedin City Council has acquired this land as a scenic reserve with high conservation values. Yellow-eyed penguins come ashore and nest in the dunes here, sharing the beachfront with a breeding colony of New Zealand fur seals, juvenile male Hooker sea lions and one breeding female sea lion.

After a pleasant 15 minute walk from the carpark to the Okia reserve gate, we entered a region of dune slacks recovering from grazing and still with considerable cover of pasture weeds (*Agrostis capillaris*, *Anthoxanthum odoratum* and *Dactylis glomerata*). Recent planting of *Desmoschoenus spiralis* (pingao), provide a bit of golden colour to this entry point. *Pteridium esculentum* (bracken) dominates this area, with emergent clumps of *Phormium tenax* (flax) and *Cortaderia richardii* (toetoe). Seasonally inundated regions are wetlands dominated with *Juncus gregiflorus*, *Juncus pallidus*, *Isolepis nodosus* and *Leptocarpus similis*. Small herbs such as the native *Geranium microphyllum*, *Ranunculus* spp, and *Nertera scapanioides* (which I didn't manage to spot) grow among the sedges. In areas subject to transient stream-flow, a dense cover of *Carex forsteri* tends to form a thick sedgeland.

Massive basalt columns form the spectacular Pyramids that Okia reserve is famous for, and Allison Knight found sheer delight in peering around these for elusive lichens (with elusive names!). Shrublands dominated by *Coprosma crassifolia*, *Olearia avicenniifolia* and *Coprosma propinqua* cover these drier outcrops.

With fine weather holding, we made our way to the beach for a very pleasant lunch, but not before passing through the recovering sequence of dune slacks. It is amazing how, after a century of grazing, small surprises have reappeared. Alongside the track, fruiting and flowering *Celmisia gracilenta*, *Helichrysum glomeratum*, *Gaultheria macrostigma* and *Leucopogon* aff. *fraseri* provide a bit of colour. However, the beachfront lacks native cover, having succumbed to the fate that all Otago beaches now suffer. *Ammophila arenaria* (marram grass), *Lupinus arboreus* (tree lupin) and *Senecio minimus* form an impenetrable cover in which penguins love to nest, but also occludes the pingao and *Coprosma acerosa* that would have once dominated these foredunes.

After lunch, we set off to the adjacent Taiaroa Bush. This is an exceptional remnant of lowland broadleaf/podocarp forest which is the most extensive patch left on the peninsula. Sadly, early logging has seen the removal of all of the old *Podocarpus totara*, and the odd roaming sheep, cow and a ravenous herd of feral goats continue to damage the vegetation.

Taiaroa Bush is a lowland forest dominated by *Melicetyis ramiflorus* (mahoe), *Fuchsia excorticata*, *Griselinia littoralis*, *Lophomyrtus obcordata*, *Hoheria angustifolia* (lacebark), *Myoporum laetum* (ngaio), *Pittosporum tenuifolium* and a lower shrub stratum of *Coprosma areolata*, *C. rubra*, *C. virescens*, *C. propinqua*, and *C. crassifolia*. These shrubs become divaricate on the bush margins and fill with berries in late autumn. These berries don't last long on bushes but are removed quickly by the hordes of bellbirds, riflemen and silvereyes that reside in this bird haven.

On the higher fringes of this remnant there is *Sophora microphylla* and *Kunzea ericoides* (kanuka). Both *Rubus cissoides* and *Urtica ferox* provide an interesting dimension to forest forays. Most impressively, this area of bush is bounded by high, igneous cliffs. These are still covered in an apparently intact cover of vegetation, including *Hebe elliptica* and *Poa astonii*. This site holds a lot to interest cliff-vegetation buffs, but abseiling skills are required.

I wish to thank Steve Owens, on behalf of local Maori landowners, for granting the Botanical Society access to Taiaroa Bush. Thanks are also due to Bastow Wilson, Barbara Anderson and David Burnett for accompanying this trek and being our botanical guides. Adrienne Markey

March Field Trip & Fungi Workshop

Welcome to all the new members who turned up for this interesting trip. We spent a very pleasant morning at Sullivans Dam peering round tree trunks and under rotting branches - or sitting by the dam in the sun.

Collectively we found quite an assortment of different fungi. The brightly coloured *Amanita muscari* (fly agaric), found under *Pinus radiata*, in all their stages of veil formation, were particularly striking. Some wished they had found fewer species, (and more specimens of the same species), by the time we got back to the lab after lunch and found out just what was involved in the identification process. First step was to start making a spore print, then to sketch the fruiting body whole and in transverse section while it was still fresh. Some very professional looking sketches emerged, to be put in the herbarium along with the dried specimens and the spore prints.

Further identification required searching through the wide selection of reference books and papers that were made available. The birdsnest fungus, *Nidula candida*, on *Leptospermum* twigs in the regenerating forest, stood out with its little nest filled with 'eggs' of spore masses. Identification of other specimens required the cutting of thin sections, then looking under the microscope at such features as gill formation and how the spores attached to the basidia. Some of these were quite spectacular, magnified on the big TV screen.

Many thanks to David Orlovich for sharing his interest with us, and to Peter Bannister for making the Botany laboratory available. Such a successful day deserves repeating. Alison Knight

April Field Trip

There was a good turnout on this trip to the Old Man Range, despite the threatening weather and the early Sunday morning start. Prof. Alan Mark handed out a detailed paper from the 1980's on the vegetation of the area and challenged us to update it. He stopped to show us representative vegetation zones, from montane and subalpine through to low and high alpine, giving us a very informative and entertaining botanical and conservation history of the area. Dr David Galloway pointed out some of the more interesting lichens. David has taken up the challenge to update by producing a preliminary list of lichens from the area, bringing the published number up from 5 to over 200! (See p. **)

Lunch was eaten in the shelter of some of the striking, lichen covered tors near the Obelisk, and then we explored along the summit ridge as far as Hyde Rock, where the bluffs were so full of unusual plants and lichens it would have been good to have had a whole day to explore there.

Many thanks to Alan Mark for leading the trip so well at such short notice, and to David Galloway for expanding our knowledge of the lichens so dramatically. Allison Knight

Barbara Anderson, c/o Botany Department, University of Otago, P.O. Box 56, Dunedin
Email: barbara.anderson@botany.otago.ac.nz Ph: (03) 479 5981

Obituary

■ **Lucy Cranwell Smith (1908 -2000)**

Internationally renowned New Zealand-born botanist Lucy Cranwell Smith FRSNZ died in the United States last week, aged 92. Born Lucy Cranwell, she was appointed the Auckland War Memorial's botanist in 1929 and founded the Auckland Botanical Society in 1937. Her research during that time included the fossil record of southern beech. In 1944 she became the second female to be elected a Fellow of the Royal Society of New Zealand and in 1954 she was awarded the Society's prestigious Hector Medal in Plant Sciences. During the war she married Major Watson Smith, an American serviceman and archaeologist, and moved to Phoenix, Arizona. In 1961, Dr Cranwell Smith became a research associate in palynology, the study of pollen and spores, at Arizona University and in 1983 was elected a Fellow of the Arizona-Nevada Academy of Science.

Since leaving New Zealand she remained in touch with friends in Auckland and with the Auckland Museum, which last year awarded her an honorary fellowship. Dr Cranwell Smith, who died on 8 June, is survived by her son, Ben Smith.

[Excerpt from the RSNZ newsletter courtesy of Carol West.]

NOTES AND REPORTS

Comment

■ Reply to : Naturalisation of *Banksia integrifolia* in New Zealand.

In Australia Banksias are pollinated by cute little marsupials called pygmy possums, the size of a mouse. Their only food is Banksia pollen and nectar which they gather by running across the surface of the closed inflorescence which then opens. This would suggest mice or lizards as possible pollinators. However, tuis are always busy on our Banksias. Tuis have probably learned how to brush across the surface of the flowering cone of Banksia to release the honey. Bellbirds may have also learnt to do this.

Judith Petterson, .24 Eruini St. Waikanae Beach

■ Comment on *Meryta sinclairii* (Araliaceae)

Ewen K. Cameron, Auckland Museum, P.B. 92018, Auckland and Peter J. de Lange, Science & Research Unit, Department of Conservation, P.B. 68908, Newton, Auckland.

In their account of the botanical history and biogeography of the New Zealand endemic puka (*Meryta sinclairii*), in the last *Newsletter* by Kirkham et al. (2000), there were several points that we would like to comment on.

1. The author citation of *Meryta sinclairii* must include Hooker: *Meryta sinclairii* (Hook.f.) Seem. This reflects that Hooker (1853) described it first as *Botryodendrum sinclairii*, and Seemann (1862) later transferred it to *Meryta*.
2. They record that Buddle's collections of puka from North East Island (Three Kings Islands) were "unfortunately, lost in embarking." Having both experienced the dangerous coastal surge on various Three Kings Islands we can understand how easily this may have occurred, but at least one of Buddle's specimens survived: AK 229894 (Auckland Museum herbarium voucher), which consists of two puka leaves, an infructescence and many fruit. Buddle (1948: 200) actually records "many [plants] were lost in embarking" and not that all plants were lost.
3. They describe who the first European was to discover the Three Kings Islands (Abel Tasman) but fail to mention the more relevant and well documented discovery of puka on that island group. They correctly note that Cheeseman did not record puka on Great Island (Three Kings Islands) after his brief visit (3-4 hours) in 1887, but they fail to mention that he did collect it on South West Island during his second trip to the Three Kings Islands in November 1889 (Cheeseman 1891). This discovery confirmed Kirk's (1870) earlier suggestion that there was "a slight probability" of it occurring on the Three Kings. Cheeseman's specimens: AK 6126, 6127, 230488 (presumably from South West Island, but actual island not stated). From the boat Cheeseman also saw plentiful puka on North East Island. Cheeseman (1891: 413) was so delighted by this discovery he wrote "All lovers of New Zealand plants must therefore rejoice that it [puka] has at last been found in abundance, and in a locality where it is not likely to be soon blotted out of existence." Note – based on the low numbers of puka known to Cheeseman on the Hen and Chicken Islands and fires on the Chickens he believed it would soon be extinct there. Cheeseman had already collected puka from Hen Island in May 1880 and on the label of a fruiting specimen (AK 6129) he wrote "*planta carissima!*"
4. There is confusion by the authors listing the Taranga Islands, and the Hen and Chicken Islands as separate island groups. Taranga is in fact the Maori name for Hen Island.
5. Our main comment relates to their unqualified statement that puka's native habitats are the Poor Knights Islands, the Three Kings Islands, and the Hen and Chickens Islands. Having just published a vascular flora for the Poor Knights Islands (de Lange & Cameron 1999) where we refuted past suggestions that this species grew there we were surprised to see it stated so categorically that it did. There are no herbarium specimens of *Meryta sinclairii* from the Poor Knights Islands and Cheeseman (1891: 413) doubted its naturalness there stating "Its existence on the Poor Knights is highly doubtful, and rests entirely on Maori authority." We therefore advise that the verbal record Kirkham et al. (2000) cite is better treated as unconfirmed. This is especially relevant when one considers that the original circumstances surrounding the species formal scientific recognition, relied on obtaining information and better specimens from a clearly reluctant and somewhat aggrieved iwi, who resented European interference with their strictly *tapu* plant (see Kirk 1870).

We are also surprised that Kirkham et al. (2000) accept without comment that puka grows naturally on the Hen and Chickens Islands, even though Atkinson (1956) and Beever (1984) discuss the pros and cons of this aspect at length. Atkinson (1956) in trying to account for the unique Three Kings - Hen and Chickens Islands distribution of puka, and low numbers of puka on the Hen and Chickens Islands in the late 19th century, suggested that it may be a Maori introduction to the Hen and Chickens Islands or that the small 19th century population was caused by disease. Beever (1984), encouraged by Atkinson, investigated puka and all its associated biota on the Chickens Islands in the hope that this would clarify puka's true status on the Hen and Chickens Islands. But Beever (1984), accepting that puka may have once been present on the Poor Knights Islands, concluded that a distribution of the Three Kings, Poor Knights, and the Hen and Chickens Islands "would not seem sufficiently unusual to warrant suggestions of Maori transfer."

However, on the basis of the present evidence, we prefer to treat puka as a probable endemic species to the Three Kings Islands, which was introduced by Maori to the Hen and Chickens Islands, and that it never established on the Poor Knights Islands. We agree with Atkinson (1956) and Beever (1984) that the present distribution doesn't make sense unless you accept that it once occurred on the Poor Knights Islands or that disease was involved in its southern range. There are two main islands and several smaller islands/islets in the Poor Knights Islands group, and Maori clearances, fire and or disease is unlikely to have reached all individuals of a hardy coastal species such as puka with a wealth of remote localities to grow. In much the same way it survived on the smaller islands of the Three Kings Islands, during Maori occupation and feral goats on Great Island. Also birds move puka fruit around on the Three Kings (that is how it re-established on Great Island) and the Hen and Chicken Islands, thus had it been on the Poor Knights Islands it would be unlikely to have been wiped out from all the islands at the same time. All these islands are within bird movement of each other, and several of which, like the Three Kings, preserve their flora pretty much intact. It is documented that Maori did plant puka in remote areas (see Atkinson 1956, Kirkham et al. 2000) and in at least one area (the type locality at Whangaruru) treat it as *wahi tapu*. Atkinson (1956) documents that puka has shown a spectacular increase on the Hen and Chickens Islands during the 20th century, which is supported by Beever (1984) for Lady Alice Island (one of the Chickens Islands). This supports our interpretation that puka was introduced to this group by Maori, possibly in the 19th century, and has spread throughout the group since then.

Acknowledgement

We thank local iwi for agreeing with one of us (PJdeL) that Whangaroa Nga Puhi were more likely to hide the origin of their sacred tree than state categorically where it was.

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■ Puka and sheep

A.D. Thomson, Centre for Studies on N.Z. Science History, 5 Karitane Drive, Christchurch 8002.

The historical perspective on *Meryta sinclairii* on Great Island in the Three Kings and its demise by goats (1) reminded me that we once had a planted puka growing on our coast property on Ti Point in Northland. A few sheep were kept on the property and they found the puka leaves quite delectable. The sheep stretched up over the protective wire mesh to eat the leaves and would munch with alacrity detached leaves held in front of them. They eventually caused the death of the puka. Thus puka is palatable to sheep as well as goats.

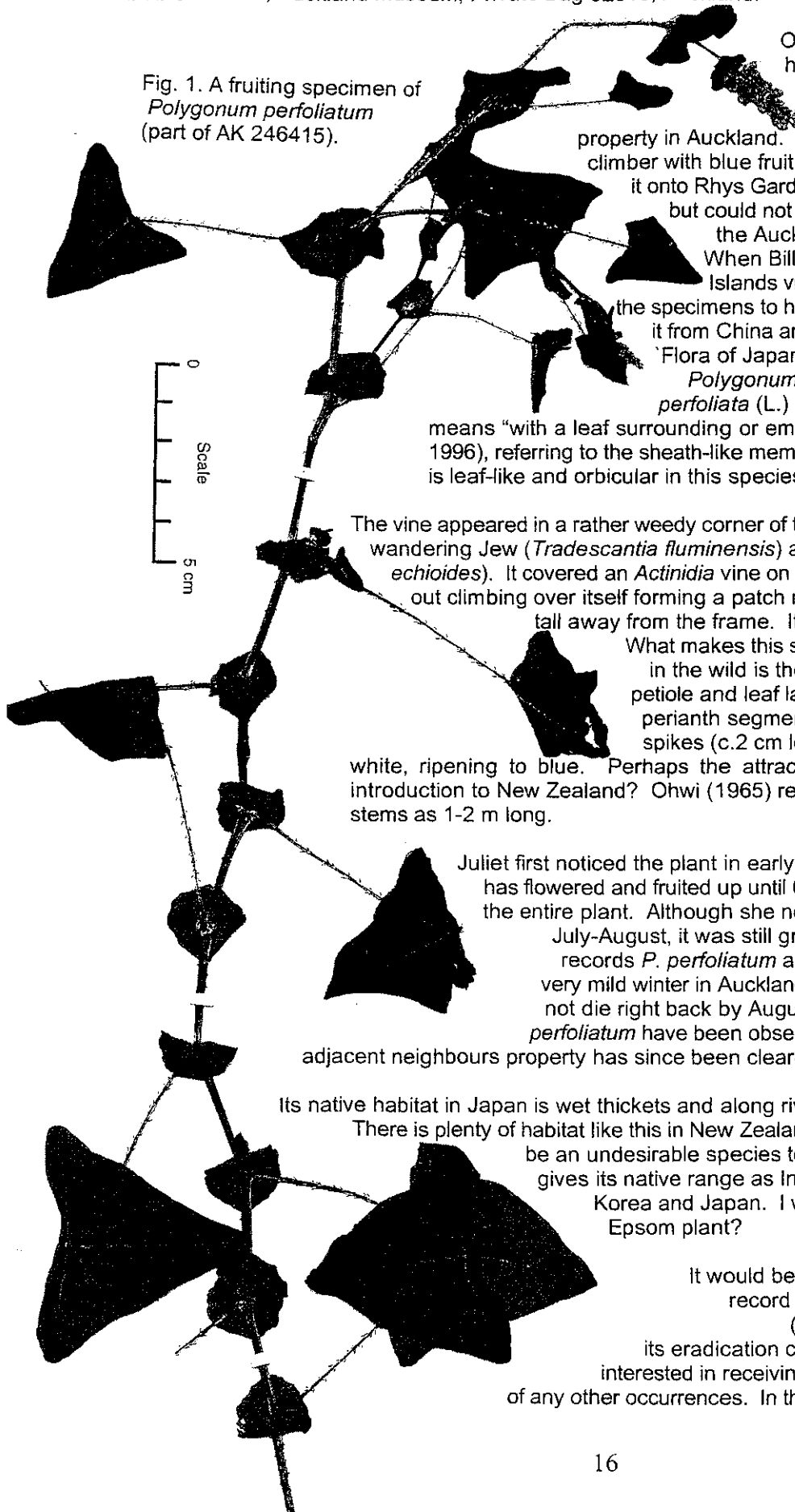
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Plant Records

- *Polygonum perfoliatum* – a new adventive species for New Zealand
E. K. Cameron, Auckland Museum, Private Bag 92018, Auckland.

Fig. 1. A fruiting specimen of *Polygonum perfoliatum* (part of AK 246415).



On 5 April 2000 Juliet Richmond handed me a specimen of a new plant that just appeared in the back of her urban Epsom property in Auckland. Although distinctive, this spiny climber with blue fruit was unknown to me. I passed it onto Rhys Gardner who placed it in *Polygonum* but could not match it with any specimens in the Auckland Museum herbarium (AK). When Bill Sykes returned from the Cook Islands via Auckland in August I showed the specimens to him. Bill immediately recognised it from China and after a short look through the 'Flora of Japan' (Ohwi 1965) determined it as *Polygonum perfoliatum* L. (syn. *Persicaria perfoliata* (L.) Gross). The name *perfoliatum* means "with a leaf surrounding or embracing the stem" (from Stearn 1996), referring to the sheath-like membranous stipule (ochrea) which is leaf-like and orbicular in this species (see Fig. 1).

The vine appeared in a rather weedy corner of the garden (west-facing) among wandering Jew (*Tradescantia fluminensis*) and ox tongue (*Helminthotheca echioides*). It covered an *Actinidia* vine on a frame (c.2 m tall) and spread out climbing over itself forming a patch nearly 4 m x 4 m and 1.0-1.4 m tall away from the frame. It appeared to be a single plant.

What makes this species particularly undesirable in the wild is the retrorse prickles on the stem, petiole and leaf lamina nerves (see Fig. 1). The perianth segments appear on short flowering spikes (c.2 cm long) and are initially greenish-white, ripening to blue. Perhaps the attractive fruit is the reason for its introduction to New Zealand? Ohwi (1965) records the branched, elongated stems as 1-2 m long.

Juliet first noticed the plant in early March 2000, and since then it has flowered and fruited up until 6 August when she mulched up the entire plant. Although she noted that it had slowed down in July-August, it was still growing at the tips. Ohwi (1965) records *P. perfoliatum* as an annual, but it has been a very mild winter in Auckland, perhaps explaining why it did not die right back by August. So far no other plants of *P. perfoliatum* have been observed at Juliet's property and the adjacent neighbours property has since been cleared by a bulldozer.

Its native habitat in Japan is wet thickets and along rivers in lowlands (Ohwi 1965). There is plenty of habitat like this in New Zealand, another reason why it would be an undesirable species to naturalise here. Ohwi (1965) gives its native range as India, Malaya Peninsula, China, Korea and Japan. I wonder what the origin is of the Epsom plant?

It would be good to know if this is the first record of this species in New Zealand (cultivated or otherwise) so that its eradication can be considered. I would be interested in receiving information and/or specimens of any other occurrences. In the meantime the Epsom site will

I be searched this spring for seedlings. Let's not let this one escape any further!

Voucher specimens: AK 246413-14 (*J. Richmond*, 5 April 2000) and AK 246415 (*E.K. Cameron 10173*, 20 April 2000, duplicate CHR).

Acknowledgements

Juliet Richmond for bringing the plant to my attention, and Bill Sykes and Rhys Gardner for the identification.

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■ *Hypolepis distans* (Dennstaedtiaceae) a casual introduction to Norfolk Island

P.J. de Lange, Science & Research Unit, Department of Conservation, P.B. 68908, Newton, Auckland,
M. Christian Australian National Parks and Wildlife Service, Norfolk Island National Park, PO BOX 310, Norfolk Island

The Australasian distribution of *Hypolepis distans* has been summarised by Brownsey & Chinnock (1984) and Brownsey (1998). Both accounts stress that this species is very uncommon in Australia, being known there only from King Island in the Bass Strait and one locality in Tasmania. Otherwise, these authors considered the species to be reasonably common in the northern half of the North Island of New Zealand.

In New Zealand the preferred habitat seems to be swamp margins (Brownsey & Chinnock 1984; authors *pers. obs.*), where following drainage activities or peat disturbance it can be extremely common, e.g., along the margins of the Torehape and Kopouatai Peat Bogs, in the Hauraki Depression. The species, along with *Pteridium esculentum* and *Histiopteris incisa* may also occur as a casual in some nurseries, e.g., Auckland Regional Council Botanic Gardens, University of Auckland Holding Compound. In these locations plants are frequently found where potting up is done, e.g., near stock supplies of potting media - most notably - bales of Hauraki Peat Moss. It is presumed that in the process of bagging up the peat, the spores of this weedy fern become incorporated into the bales. That this is a possible source of plants is further suggested from our own observations of the fern sprouting out of ruptured bales within commercial nursery stock piles, e.g., Kings Plant Barn, Mt Albert, Auckland. However, the possibility that this could also happen with peat bales exported from New Zealand was also demonstrated, when during November 1998, whilst conducting field work on Norfolk Island, a small population of *Hypolepis distans* (*P. J. de Lange NF124 & G. M. Crowcroft*, AK 237660) was identified as a casual weed in the gardens and shade houses of the Norfolk Island Forestry nursery.

After some inquiries it soon became evident that here too the *Hypolepis* had appeared following the importation from New Zealand of a pallet of Hauraki Peat Moss. On Norfolk the peat is imported for use in local gardens, and also by the Forestry Nursery to mix with local soils to provide a more suitable germination and potting-up medium. It was in the Forestry Nursery, from the vicinity of where pallets are stored that *Hypolepis distans* was first detected, although when exactly, no one seems certain (*M. A. Christian pers. comm.*). Interestingly, although the identity of the fern remained unknown until our visit, it was already suspected of originating as an impurity in the New Zealand peat (*M. A. Christian pers. comm.*).

Accordingly, as a precautionary measure, importation of Hauraki Peat Moss was temporarily halted in favour of using twice-sterilised cocopeat (*M. A. Christian pers. comm.*). In addition, an attempt to eradicate the species from the nursery and adjacent grounds was undertaken. However, eradication has only been partially successful, as new plants arise following periods of heavy rain wherever the ground has been disturbed (*M. A. Christian pers. comm.*). Furthermore, until our visit the identity and foreign origin of the fern was not confirmed, resulting in some reluctance to fully eradicate it from the nursery area (*M. A. Christian pers. comm.*).

Although this attitude may strike New Zealand people as a little odd, it is quite understandable. Many Norfolk plants are still poorly known, and some hitherto believed to be extinct have reappeared following disturbance, e.g. *Diplocyclos palmatus* subsp. *affinis* (Green 1994). Under these circumstances a naturally cautious stance toward any "new" discoveries has been adopted. As far as *Hypolepis distans*

is concerned, we now hope that having clarified its identity, and confirmed its presence on Norfolk as a casual New Zealand introduction, it will now be eradicated before it manages to spread further than the nursery area. This is particularly important, for at present the close proximity of fertile individuals of *Hypolepis distans* in the vicinity of rows of potted up Norfolk Island plants destined for local trade and restoration planting means that uncontrolled spread is likely. Although wetlands are scarce on the island, should this unpalatable fern reach for example, the extensive wetlands around Kingston, there can be little doubt that it will seriously impact upon the marginal turf communities of this virtually unique habitat.

While a direct link between the Norfolk Island *Hypolepis* appearance and imported New Zealand peat has been established, what of the Australian, King Island and Tasmanian occurrences? Although many New Zealand ferns are shared with Australia, comparatively few of these have primarily New Zealand distributions with only sporadic Australia occurrences (P. J. Brownsey *pers. comm.*). In this regard the apparently natural presence of *Hypolepis distans* on King Island, coupled with the subsequent discovery of it growing down wind of that island in the north-western extremity of Tasmania has always been viewed with some suspicion (R. J. Chinnock & P. J. Brownsey *pers. comm.*). So the possibility that similar Australian imports of New Zealand peat moss might also account for these otherwise anomalous King Island and Tasmania *H. distans* occurrences has been suggested (R.J. Chinnock *pers. comm.*). As *H. distans* was first discovered on King Island in 1973, and later discovered on Tasmania in 1987 (Brownsey 1998), the possible mechanism (R.J. Chinnock & P.J. Brownsey *pers. comm.*) is that the species might have been introduced to King Island, from where it spread to nearby Tasmania. However, we have been unable to ascertain if New Zealand peat has been imported to King Island, although it has been imported by Tasmanian's who use it for their gardens and as a potting medium for nurseries. One of these importers is Tasmanian fern botanist Mike Garrett, who refutes the suggestion that these Australian *H. distans* populations are exotic. Garrett (*in litt.*) states that on King Island *H. distans* occurs in a remote and relatively undisturbed site well away from areas of human occupation. On Tasmania the species is known from two sites; one - a small population - occurs within a logged forest, while the other - 5000 m² - is known from within "regenerated forest in a natural bushwalk part of a tourist garden". Garrett advises (*in litt.*) that while all these populations are very restricted this could be due to the amount of available habitat. Flat swampy habitat of the type favoured by this species is apparently only found in the extreme north west of Tasmania and King Island. Nevertheless, despite his firm views on the subject Garrett (*n litt.*) has also observed that on one occasion, which he concurs "may" have been around the time he was using New Zealand peat moss, he was mystified by the sudden appearance of *H. distans* plants growing around his nursery.

Either way, from this story one thing is clear, based on the Norfolk Island experience at least, New Zealand peat moss is not entirely sterile. Should people wish to import it, they would be wise to take further precautions to prevent spreading alien ferns into their countries.

Acknowledgments

We thank Patrick Brownsey, Bob Chinnock, Alex Buchanan, and Mike Garrett for their comments on this article.

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■ Preliminary list of lichens from the Old Man Range, Central Otago, New Zealand **David Galloway**, Landcare Research New Zealand Ltd, Private Bag 1930, Dunedin. (From Issue 19 Botanical Society of Otago Newsletter)

Documentation of lichens on the Old Man Range, Central Otago dates from some 40 years ago when Prof. Alan Mark began his studies on the ecology and vegetation of the area, and it is thanks to Alan that the lichen mycobiota of the area is among the best known of any high-alpine site in the Southern Hemisphere. Alan's paper with his Duke University supervisor, Prof. Dwight Billings (Billings & Mark 1961) was the first to mention lichens (*Cetraria islandica* ssp. *antarctica* and *Thamnotia vermicularis*) in an ecological discussion of high-alpine vegetation, although the year previously James Murray

recorded *Solorina crocea* from the Old Man Range from a Dwight Billings specimen (Murray 1960). Alan Mark and Larry Bliss published a very preliminary list of lichens from the Old Man Range (prepared by me, and containing a fair number of errors!) as part of their documentation of the high-alpine vegetation of the Central Otago mountains (Mark & Bliss 1971). This then is the modest beginning of Old Man Range lichenology, and from that time Alan has guided a succession of overseas and local lichenologists to the slopes and broad-backed summit of the range. In more or less chronological order these were the following: Peter James (London), David Galloway, Larry Bliss (Canada), John Child, Peter Child, Colin Meurk, Hannes Hertel (Munich), Helmut Mayrhofer (Graz), Volkmar Wirth (Stuttgart). Hannes Hertel published on saxicolous lecideoid lichens collected from the Range (Hertel 1985, 1987, 1989), and more recently Peter Johnson has collected aquatic lichens from the Range for Patrick McCarthy (Johnson & McCarthy 1997). Last summer I accompanied Ingvar Kärnefelt and Patrik Frödén (Lund) in their search for alpine Teloschistaceae. Resulting from the collections and observations of all of these (many of their collections are housed in OTA) the following lichen list is offered as a working baseline to ongoing high-alpine lichen studies in Central Otago.

The Old Man Range is the type locality for two species: *Menegazzia castanea* (Galloway 1983) and *Verrucaria austroschisticola* (McCarthy & Johnson 1995). Of note is the pronounced bipolar aspect of the lichen mycobiota from the exposed summit (Galloway & Aptroot 1995; Galloway et al. 1998). It was fitting that our visit on 16 April 2000 was again guided by Alan. He can be justly proud that his devotion and enthusiasm over the years have led to the lichen mycobiota of the Old Man Range being so well known today.

In the list [*] refers to lichenicolous fungi, and [?] indicates a taxon known from other Central Otago mountains and likely to occur on the Old Man Range. 220 taxa from 87 genera are here recorded. It is hoped that this list will stimulate further lichen work on the Range and we will update the list from time to time as additional novelties are reported. Further information on many of the lichens mentioned in the list may be found in Galloway (1985). A supplement to this work (describing all taxa not mentioned in the 1985 lichen flora) is in preparation and is to be published in 2002.

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The List

<i>Acarospora schleicheri</i>	<i>B. insignis</i>	<i>Candelariella coralliza</i>
<i>Alectoria nigricans</i>	<i>Bunodophoron ramuliferum</i>	<i>C. vitellina</i>
<i>Arthrorhaphis alpina</i>	<i>Caloplaca amylacea</i>	? <i>Carbonea vitellinaria</i>
<i>A. citrinella</i>	? <i>C. biatorina</i>	<i>C. vorticosa</i>
<i>Aspicilia cinerea</i>	<i>C. cerina</i>	<i>Catapyrenium cinereum</i>
<i>Bartlettia fragilis</i>	<i>C. cinnamomea</i>	* <i>Cercidospora trypteliza</i>
<i>Bellemeria alpina</i>	<i>C. lutea</i>	<i>Cetraria aculeata</i>
<i>Brigantiaea fuscolutea</i>	<i>C. murrayi</i> ined.	<i>C. islandica</i> ssp <i>antarctica</i>
<i>Bryoria austromontana</i>	<i>C. olivaceobrunnea</i>	<i>Cetrariella delisei</i>
? <i>Buellia dunedina</i>	<i>C. tornensis</i>	<i>Cladia aggregata</i>
? <i>B. griseovirens</i>	<i>Candelaria concolor</i>	<i>Cladina confusa</i>

C. mitis
Cladonia aueri
C. bimberiensis
C. capitellata
C. cervicornis
? *C. ecmocyna*
C. fimbriata
C. gracilis ssp. *tenerreima*
C. scabriuscula
C. southlandica
C. ustulata
Coccocarpia palmicola
Collema durietzii
Cystocoleus ebeneus
Degelia neozelandica
Dermatocarpon luridum
Dibaeis arcuata
Diploschistes muscorum
 ssp. *bartlettii*
D. ocellatus
Flavoparmelia haysomii
Haematomma alpinum
Hypogymnia lugubris
H. kosckiuskoensis
H. lugubris var. *compactior*
H. lugubris var. *sublugubris*
H. subphysodes
Hypotrachyna sinuosa
Immersaria athroocarpa
? *Ionaspis lacustris*
Labyrinthina implexa
? *Lecanora bicincta*
L. cavicola
L. dispersa
L. epibryon ssp. *broccha*
L. epibryon ssp. *xanthophora*
L. farinacea
L. galactiniza
L. parmelinoides
L. polytropa
L. rupicola
L. swartzii
Lecidea atomorio
L. endochlora
L. fuscoatrula
L. lapicida var. *lapicida*
L. lapicida var. *pantherina*
L. lygomma
Lecidella cf. *euphorea*
L. schistiseda
L. sublapicida
? *L. wulfenii*
? *Lecidoma demissum*
Lepraria neglecta
? *Leproloma membranaceum*
? *L. vouauxii*
Leptogium laceroides
L. menziesii
L. propaguliferum
L. victorianum
Megaspora verrucosa

Menegazzia aeneofusca
M. castanea
M. globulifera
M. inflata
M. testacea
M. ultralucens
Micarea austrotemaria
M. isabellina
? *Miriquidica nigroleprosa*
? *Neofuscelia adpicta*
? *N. brattii*
? *N. depsidella*
? *N. glabrans*
? *N. imitatrix*
? *N. martinii*
? *N. peloloba*
? *N. pictada*
? *N. squamans*
? *N. squamariatella*
? *N. stgyiodes*
N. subhosseana
N. petriseda
? *N. verrucella*
Neuropogon acromelanus
N. antarcticus
N. ciliatus
N. subcapillaris
Omphalina ericetorum
Ochrolechia parella
O. xanthostoma
Pannaria hookeri
Paraporpidia leptocarpa
Parmelia saxatilis
P. signifera
P. sulcata
Peltigera didactyla
P. dolichorhiza
? *P. lepidophora*
? *P. malacea*
P. neopolydactyla
P. rufescens
? *P. ulcerata*
Pertusaria dactylina
P. gymnospora
? *P. leucodes*
? *P. lophocarpa*
P. otagoana
P. subverrucosa
Physcia adscendens
P. caesia
? *P. dubia*
P. tribacia
Placopsis clavifera
P. lateritioides
P. perrugosa
P. trachyderma
? *Poeltiara corralensis*
? *Poeltidea perusta*
Porpidia crustulata
P. macrocarpa
Protoparmelia badia

Pseudephebe minuscula
P. pubescens
Pseudocyphellaria corbettii
P. degelii
P. glabra
P. maculata
P. pickeringii
Psoroma buchanani
P. fruticulosum
P. hirsutum
P. hypnorum
P. hypnorum var. *paleaceum*
P. rubromarginatum
Punctelia subrudecta
Pyrrhospora laeta
Ramalina fimbriata
R. glaucescens
Ramboldia petraeoides
Rhizocarpon geographicum
R. grande
R. superficiale
* *Rimularia insularis*
R. psephota
Rinodina cf. *archaea*
R. conradii
R. olivaceobrunnea
R. thiomela
? *Siphula complanata*
S. decumbens
S. dissoluta
? *S. elixii*
? *S. fastigiata*
S. foliacea
S. fragilis
Solorina crocea
Sporastatia testudinea
Staurothele fissa
Steinera sorediata
Stereocaulon caespitosum
S. gregarium
S. ramulosum
Sticta martinii
Teloschistes fasciculatus
T. velifer
Tephromela atra
Thamnolia vermicularis
Toninia bullata
Trapelia coarctata
Umbilicaria cylindrica
? *U. cinereorufescens*
U. decussata
U. hyperborea
U. nylanderiana
U. polyphylla
U. subglabra
U. umbilicarioides
U. vellea
U. zahlbruckneri
Usnea contexta
U. torulosa
Verrucaria amnica

V. austroschisticola
V. margacea
V. rheitrophila

Xanthoparmelia mexicana
X. mougeotina
X. scabrosa

X. subnuda
X. tasmanica
Xanthoria elegans
X. novozelandica

Research Reports

■ What makes rare plants rare?

Although many rare plant species are intensively studied, one aspect that is not generally studied is the comparative ecology of rare and common species. Often there are both rare and common species within the same genus and it would be helpful for conservation managers to know why the rare species are rare. Do rare species form a distinct group, with traits that differ consistently from those of common species, or must causes and consequences of rarity be assessed on a case-by-case basis? We have tried to answer this question by growing both rare and common species under the same conditions and measuring their growth and reproduction. We used two New Zealand genera, *Acaena* (Rosaceae) and *Chionochloa* (Poaceae), both with several rare and common species.

The experiments used ten species of *Acaena* and nine of *Chionochloa*. We examined aspects of the species competitive ability, vegetative and reproductive growth, and their responses to a range of stress factors such as, nutrient limitation, drought stress, waterlogging and frost.

Acaena (bidibid) species are generally renowned for their tendency to attach hooked seeds to socks and clothing, however, it is less well known that the New Zealand species fall into three different taxonomic sections, and only one of these sections (sect. *Ancistrum*) contains species with hooked seeds. Some *Acaena* species are extremely common throughout New Zealand (e.g. *A. anserinifolia*) while others are common on one island only (e.g. *A. caesiiglauca* in the South Island) and others very local endemics (e.g. *A. rorida* in the central North Island). *Chionochloa* species, popularly known as snow tussocks, frequently form extensive grasslands over large geographical areas (e.g. *C. crassiuscula*, *C. rigida* and *C. rubra*), particularly in the montane and alpine zones, but some species are far more local (e.g. *C. ovata* and *C. spiralis*, two Fiordland endemics with patchy distributions).

We defined rarity and commonness according to the geographic range sizes of the species, measured as the number of 10 km grid squares occupied by each species in New Zealand. Distribution information was gleaned from herbarium specimen labels at the AKL, CHR, OTA and WELT herbaria, the National Vegetation Survey database administered by Landcare Research, lists compiled by the late A.P. Druce, the scientific literature and personal observations.

We looked for differences between rare and common species using correlations between a species' geographic range size (the rarity scale) and its traits (competitive ability, growth and reproductive ability) and responses to stress. The association of species traits with different types of rarity was also examined, although small sample size hampered interpretation.

In *Acaena*, very few significant differences were found between rare and common species. However the power of these tests was reduced because the *Acaena* species comprised two groups of closely related species, and these groups had to be considered separately to avoid confounding differences between groups with differences in phylogenetic relatedness. Regardless, some of the *Acaena* species appeared to be rare on account of recent speciation or colonisation, and there need not be any expectation that the biological attributes of such species should be related to their rarity.

In *Chionochloa*, common species differed significantly from rare species in several respects. Common species possessed attributes promoting wider dispersal, had faster growth rates and showed higher competitive ability. Additionally, there was a tendency for the common species to tolerate a greater range of abiotic stresses. Thus common *Chionochloa* species appear to achieve their large range sizes through the ability to disperse widely, grow fast and be competitive in a range of habitats. The rare *Chionochloa* species appeared to be specialised to habitats that are themselves relatively rare (e.g. *C. defracta* on ultramafic areas in the Nelson region, and *C. spiralis* on calcareous outcrops in Fiordland).

Across both genera, there were few strong associations between species' attributes and types of rarity, apart from significantly higher relative growth rate (RGR) in common species (species with a large

geographical range).

Rarity appears to be a complex phenomenon. This study showed that in some groups, there may be consistent differences between rare and common species, but in others, explanations for a species rarity may have to be sought on a case-by-case basis. More studies comparing the ecology of rare and common species in other groups are needed, to assess whether the patterns revealed in *Chionochloa* prevail, or whether rarity is an idiosyncratic phenomenon as appeared to be the case for *Acaena*.

Kelvin Lloyd, Dept. Of Botany, University of Otago, **Bill Lee**, Landcare Research New Zealand Ltd, Private Bag 1930, Dunedin & **Bastow Wilson**, Associate Professor of Botany, Dept. Of Botany, University of Otago. [From Issue 18 Botanical Society of Otago Newsletter.]

■ Dwarf mistletoes - *Korthalsella* species

Three species of *Korthalsella* occur in New Zealand. The most common of these is *K. lindsayii* which occurs in bush margins and small patches, usually on *Melicope simplex*. *Korthalsella clavata* is a rare species in the North Island occurring at only two sites, it is more common in the South island. In the North Island it is found on *Coprosma wallii* and *Coprosma propinqua*, also in a bush margin habitat. The third species, *K. salicornioides* is relatively common in the Wairarapa, but less common elsewhere. It has a wider distribution than the other species, Kaitiaki to Stewart Island, and occurs in a greater variety of habitats. These include swamps, dune ridges, estuaries, hill country and terraces. The most common hosts are kanuka and manuka. None of the three species are common, although they may be locally abundant. I was interested in why this might be so, given the decline in other species of mistletoe in the North Island. Most of my observations were made in the lower North island at Papaitonga near Levin, Lake Wairarapa and near Mangaweka.

In all the NZ species of *Korthalsella* the fruit is small enough to be dispersed by wind. My experience with *K. salicornioides* at Papaitonga suggests that it may also be animal dispersed, as on one occasion the fruit rained down on me, catching on my arms and in my hair. Small birds might be dispersal agents as well. In many of the patches I have examined, infected hosts tend to be widely dispersed, though in discrete patches. At Papaitonga, hosts are scattered through the swamp, as much as 50 metres apart.

Fruit dispersal mostly appears to be from scattering with wind assistance. I have found germinating seeds stuck to leaves, dead branches, capsules, case moth cocoons, and other mistletoes; clusters of seeds also occur at these sites sometimes on top of each other. Plants appear to take at least three seasons to fruit. Most first season plants fruited in their 3rd season and died after their 2nd fruiting season. However, some plants produced new shoots from the haustoria.

Many of my tagged plants died either because of the host branchlet dying, or because of flowering. Other causes of death included death of the tree, broken branches, and bark abscission. Grazing and disease also resulted in shoot death. In one instance shoots of mistletoe incorporated by a case moth onto its cocoon recovered by sending new shoots out of the haustoria.

At most of the sites I examined, the number of seedlings was much greater than the number of plants either ready to fruit, or in their second season of reproduction. Haustoria size distribution showed a similar pattern, many small plants, and few large plants. However, at most sites there was a range of patterns, in some hosts the numbers were increasing, in others numbers were declining, probably as the plants finished flowering and the number of potential infection sites decreased. At all sites the number of infected plants increased.

The biggest threat to these species appears to be human induced. Over the last four years, three populations have either been damaged by fire or by clearance. Two of these sites were reserves. Given that both the dwarf mistletoes and their hosts are short-lived, some form of disturbance which allows new hosts to develop close to infected trees and shrubs is probably required to keep the populations viable.

David Havell, Ucol (P.N. Polytechnic), Palmerston North [From Manawatu Botanical Society Newsletter, No. 25, July 2000]

Herbarium Report

■ Auckland Museum Herbarium (AK) report for 1 July 1999 to 30 June 2000

General

The first half of the year concentrated on completing the botany component for the Maori Natural History gallery 'Te Ao Tūroa' which opened 18 December 1999. Apart from label writing this gallery also involved digging up ti kouka rhizomes (for the hangi display), collecting typical leaves of each New Zealand *Cordyline* taxon (for a ti display), kumara and taro tubers, and tropical fruit (breadfruit, coconuts) for what the Polynesians would have brought to New Zealand. The gallery was coordinated by Dr Mere Roberts.

Doug Rogan completed re-boxing the native dicots, which involved separating the Cheeseman collection (which are on larger sheets), re-labelling all boxes and updating the scientific names.

Education

During the year herbarium staff led five field trips and gave eight talks to various Auckland groups. Telephone and email inquiries now average over 20 per week, and specimens sent in for identification average one package per day. Although time consuming some of these specimens make interesting additions to the collection.

Lottery Board Grants

The algae were databased last year and the Lottery Grants Board agreed that the left over balance of the algae grant could be used to complete databasing the native dicots. Some 5,000 dicots were databased, completing the databasing of all the New Zealand native specimens in AK. This leaves undatabased only foreign vascular specimens accessioned pre-1989, or angiosperms cultivated or casual (main weedy ones already databased) in New Zealand, accessioned pre-1989.

A new Lottery Grant was obtained to accession four gifted herbaria. Claire Miller and Kerry Bodmin, working part-time, have so far accessioned 2.5 of these collections: subantarctic (circumpolar) lichens (and a few bryophytes), 1,935 specimens with many duplicates, collected in the 1960s and gifted (plus some on exchange) by Michigan State University (MSC) during 1994-96; herbarium of W.L. Townson (1855-1926) containing 684 specimens gifted by his granddaughter in 1995; and the herbarium of the Ministry of Agriculture and Fisheries (LEV) gifted in 1998 -- to date just over half the specimens are accessioned, totalling 3,121 specimens. Accessioning has just begun on the 4th collection: the herbarium of Margaret (Peggy) E. Sexton (1911-1995), gifted by her brother in 1995. The Townson collection complements the 1,000 Townson specimens that are already in AK, mainly as part of the Cheeseman herbarium. The recent Townson collection also contains specimens from Carse (139), Petrie (56), R.H. Matthews (18), and a few from B.C. Aston, T.F. Cheeseman and A. Thompson.

Fieldwork/Research

Rhys Gardner returned to Papua New Guinea (September-February) and collected 700 vascular plant specimens from the Schrader Range. In May Doug Rogan spent five days at Ruapehu assisting the Auckland University taxonomy course and collecting lichens. Most of Ewen Cameron's collecting was carried out during holidays at Houhora, Coromandel and East Cape areas.

Various articles were published by herbarium staff on weeds, native plants including threatened species, natural areas around Auckland, intertidal marine flora, Poor Knights flora, mural Auckland flora, Queensland kauri and three book reviews. Volume 37 of *Tane* was edited, printed and circulated.

Acquisitions and donated specimens

Staff collecting numbers total: 532 by Ewen Cameron, 58 by Doug Rogan and c.1,000 by Rhys Gardner. Specimens were also received from: Jessica and Ross Beever, Steve Benham, Gillian Crowcroft, Pat Enright, Alan Esler, Peter de Lange, Lisa Forester, Max Goodey, Dan Hatch, Steve McCraith, Colin Ogle, Wayne Parr, Barbara Parris, Wendy Patterson, Graeme Platt, Karen Riddell, Nick Singers, Bec Stanley, Graeme Taylor, Alan Tennyson, Mike Thorsen, Phil Todd, Mike Wilcox, George Wilson, Anthony Wright, Shane Wright, Maureen Young and Biosecurity Officers of Auckland and Northland Regional Councils. Some 3,000 duplicate specimens were received from Landcare Research, Lincoln (CHR).

Staff

Curator	Ewen K. Cameron
Honorary Botanist	Lucy M. Cranwell (sadly passed away 8 June 2000)
Honorary Research Associates	Rhys O. Gardner, Jeanne Goulding
Technician/IT	Douglas B. Rogan
Technicians (contract)	Maree Johnston (part-time until December), Claire Miller (part-time), Kerry Bodmin (part-time since August)

Volunteers

Chris Ashton, Wenbin Chen (October-December), Joan Dow, Colleen Foster, Kay Haslett, Vic May (until November), Wendy Patterson contributed over 1300 hours. We depend on the volunteers for all specimen mounting, assisting with filing and proofing of computer generated labels of backlog specimens. Rhys Gardner and Peter de Lange assisted with difficult vascular plant identifications, Jessica Beever and John Braggins with bryophytes, and Wendy Nelson with algae.

Visitors

There were 24 visiting researchers and seven interest groups including 20 members of the British Fern Society and 21 senior taxonomy students from the School of Biological Sciences, University of Auckland.

Statistics

5,740 of the new specimens were part of the gifted herbaria, leaving 3,041 specimens as actually recent collections. Of the 6,495 backlog specimens databased, most of these were the completion of the native dicots. 151,773 specimens databased means that 61 % of the herbarium is now databased. We look forward to accessioning our 250,000 specimen later this year!

New accessions:		(1998-1999)
30 June 2000	248,196	
30 June 1999	<u>239,415</u>	
	8,781	(3,549)
Records on AKILLES database:		
30 June 2000	151,773	
30 June 1999	<u>136,497</u>	
	15,276	(8,991)
Loans of specimens		
Inwards:	18[750 spec] from 13 institutions	(18[972] from 16)
Outwards:	51[1,069] to 24 institutions	(46[1,216] to 19)
Exchange specimens		
Inwards:	1,798 specimens from 6 institutions	(175 from 4)
Outwards:	974 specimens to 8 institutions	(780 to 7)
Total number of specimens out on loan =	8,348 to 40 institutions	(7,183 to 36)

E.K. Cameron and D.B. Rogan, Botany Department, Auckland Museum, Private Bag 92018, Auckland.

■ **Notes from the Otago Herbarium (OTA), May 2000**

Herbarium Activities:

A second successful herbarium workshop was held in late February. More than 20 participants, mainly post-graduate students, were instructed on collecting and mounting techniques for both vascular and non vascular plants. It was noted at the workshop that adventive species are under-represented in the collection. Herbaria can contribute much to the study of invasions by systematically collecting adventives and recording their habitat and abundance. We would like to build up OTA's regional adventive collection to provide a better resource for identifying new adventives and documenting their spread, so bring in those weeds!

The fungal collection is receiving much needed attention and additions owing to the enthusiasm of David Orlovich and his post-graduate students. We are very fortunate to have such an active mycologist on the staff.

Farewell to a past curator:

Herbarium staff have been busy over the last few months packaging and returning the extensive bryophyte loans of Dr Ray Tangney. Ray was the curator of OTA for a number of years and during that time he worked on many members of the Lembophyllaceae and Polytrichaceae and their allies. In February of this year he left New Zealand to take the herbarium curatorship at the National Museum in

Cardiff. We wish him well in his new position. His contact details are: Department of Biodiversity and Systematic Biology, National Museum and Gallery Cardiff, Cathay's Park, Cardiff CF10 3NP, U.K.

Dr Janice Lord, Botany Dept., University of Otago, <http://www.botany.otago.ac.nz/staff/lord/>

Conferences

■ 14th New Zealand Fungal Foray and Australasian Mycological Society Conference.

The foray in Fiordland was one of the most awesome weeks ever! There were about 50 participants based at Te Anau from the 6th – 13th May. People came from all over New Zealand, from Australia, the USA and Switzerland. We split into groups and spent most of the week collecting fungi at different sites in Fiordland.

The group I was with spent the first full day collecting at Te Anau Downs on the road to the lake. It was a mixture of *Nothofagus* forest on one side and *Leptospermum* on the other. One of the most common and diverse genera we found was *Cortinarius*. This is the largest genus of mushrooms in the world and people estimate that there are probably 300-odd species in New Zealand – most of them undescribed! They ranged from small pure white mushrooms with a slimy cap and stipe to huge purple, yellow, green and brown ones. The thing they have in common is that they're all mycorrhizal, they all produce a rusty brown spore print, and the spores have a rough ornamentation. It seemed for a time that every mushroom collected was going to be a *Cortinarius* but there were plenty of others to find. We found a relatively rare relation of *Cortinarius* that has a rooting stipe – it went down about 10 cm below the ground – called *Phaeocollybia*. Each day we came back with far more collections than we intended. People were collecting everything from lichens to caterpillar fungi (*Cordyceps* sp.) to leaf endophytes and everything in between. Collection sites also included Milford Sound, Lake Gunn, the Kepler Track, Borland nature trail, Borland Saddle and the Grebe Valley Lookout.

Each night we had dinner (catered for by Laure Taylor) and then relaxed with a beer for a slide show or talk put on by some of the participants. Don Horne has just produced a new book called *Mushrooms and Other Fungi of New Zealand* (Reed New Zealand Nature Series) and this was launched on one evening. Don gave an inspiring practical talk on how to photograph fungi in the field and showed us how he does it with a minimum of equipment. On another night the Australian botanical artist Katie Syme gave a talk on painting and dyeing. After the talks the keenest people then retired to the "lab" we set up in a disused restaurant. Many people were up till well after midnight each night trying to identify as many of the day's collections as possible. The organisers ran a competition for the biggest, the smallest, the smelliest and the 'most anatomically-correct' mushrooms. Alison Stringer from the University of Otago and Wang Yun from Invermay won a prize for the most anatomically-correct fungus with their collection of a *Cordyceps* species with a big caterpillar attached.

Some of us were lucky enough to be able to participate in a workshop with Dr Egon Horak who was visiting from Switzerland. We spent the best part of a day learning how to collect and describe fungi for taxonomic study. Some important points we learnt included: making collections of no less than three fruit bodies at different stages of development; being very careful not to touch the upper part of the stipe (there might be little 'hairs' (caulocystidia) there that can be damaged easily); cleaning off any dirt from the specimen in the field; and recording the colour and shape of the mushroom as soon as possible after collection.

The Australasian Mycological Society conference was held for the first time in New Zealand on Monday 8th May and this was a very interesting day too. Topics of talks included edible mushrooms (by Wang Yun from Crop & Food at Invermay), pathogenic polypores (by Peter Buchanan from Landcare in Auckland), mycological history (by retired veterinary mycologist Peter Austwick), lichen phylogenetics by Otago student Nina Hesom-Williams, biosecurity by Geoff Ridley from FRI at Rotorua and insects that eat slime moulds by Rich Leschen from Landcare Auckland. Otago University honours student Anne-Maree Oliver won the prize for best student presentation for her talk on *Gymnopilus* in New Zealand.

All in all it was a fantastic week. I for one am inspired to be a fungal taxonomist! The organisers (Peter Buchanan and Peter Johnston at Landcare Auckland and Geoff Ridley at FRI Rotorua) should be congratulated for organising such a great week. I can't wait for the next one!

David Orlovich, Botany Dept., University of Otago.

Biography/Bibliography

■ **Biographical Notes (39): Garth Brownlie B.Sc. M.Sc. D.Sc. (Cantuar) (1920–1986)**
E.J. Godley, Research Associate, Landcare Research, PO Box 69, Lincoln

Garth Brownlie, University teacher, pteridologist, and Flora-writer was born at Westport on 6 February, 1920. His parents lived at the coal-mining settlement of Denniston, some 2000 ft above the coast north of Westport, and here Garth attended Primary and District High School. In 1938–39 he was at Christchurch Teachers Training College and began a part-time arts course at Canterbury University College. During his probationary year (1940) he taught at the small 2-room primary school at Burnetts Face, inland from Denniston, with a little relieving at the latter. Then at age 21 he was called up and spent 1941–45 in the Pacific theatre during WW2. This took him to Fiji, New Caledonia, and Green Island (Solomons). For some of the time he worked in intelligence and mapping; and he contracted malaria (1,2).

After demobilisation Garth took advantage of the Government's rehabilitation scheme and switched to a full-time science course at Canterbury. He completed his B.Sc. in 1948 and M.Sc. in 1950 with a thesis on the embryogeny of *Podocarpus totara*, *P. hallii*, *P. acutifolius*, and *P. nivalis* (published 1953) (1,2,3).

Garth's thesis was supervised by C.E. Foweraker, Senior Lecturer in charge of the Botany Section of the Biology Dept (headed by Professor Percival). While doing his M.Sc. Garth worked as a Demonstrator helping Foweraker, and on 1 February 1951 he was appointed Assistant-Lecturer in Botany. His first room was in a prefabricated Army hut off Hereford Street. In 1951, too, Foweraker retired and was succeeded in 1952 by W.R. Philipson. In 1954 Biology was divided into two Departments with Percival Professor and Head of Zoology, and Philipson Senior Lecturer and Head of Botany. Brownlie was promoted to Lecturer in Botany on 1 February 1955, and in 1956 Philipson to Professor. (1,2,3,4).

In 1954 Brownlie announced the first of his four research themes. In New Zealand terms it was a virgin field. He had embarked upon "a cyto-taxonomic investigation of the New Zealand ferns which it is hoped will eventually cover almost all of the native species. The work is a long-term project and correspondence on the subject is being carried on with Professor Manton of Leeds." (Professor Irene Manton's influential book on "Problems of Cytology and Evolution in the Pteridophyta" had appeared in 1950). In this introductory paper Brownlie gave chromosome counts for 30 species, and followed it with 11 sp. (1957), 42 sp. 1 var. (1958) and 30 sp. (1961). He concluded (1961) that "the number now examined is approximately three-quarters of the total fern flora." Counts for a further 7 species and 1 variety were published in 1965. All this was important new knowledge about southern ferns. The counts often confirmed trends already identified by Manton; but there were new discoveries such as the hexaploidy in *Asplenium trichomanes* that brought John and Valerie Lovis to New Zealand for a year in 1955 (5) and eccentric numbers in *Hymenophyllum* or *Lindsea* that led to Brownlie's interest in the taxonomy of these genera. His scattered counts have recently been collated by Murray Dawson and Patrick Brownsey and made more widely available (7).

In 1956 Garth married Jean Stevenson of Christchurch and in 1957–58 they spent some 8 months overseas when Garth took his refresher leave at the Herbarium, Royal Botanic Gardens Kew, but with visits to Professor Manton and to the Natural History Museum, Stockholm (1,3)

During his chromosome studies Brownlie had inevitably become interested in questions of naming and distribution; and matters such as these occupied his time at Kew. Four papers resulted. The first (1959) corrected several New Zealand records in Christensen's "Index Filicum" and listed new names for New Zealand ferns. In the other 3 (1960, 1960, 1961) he gave critical attention to the small, serrate-margined filmy ferns of New Caledonia, Samoa, Fiji, and Lord Howe Is., and critically examined *Lindsea* and its allies, particularly in New Caledonia. He also gave notes on 6 other South Pacific genera. On his return to Christchurch he turned to the ferns of Pitcairn Is. (1961) mainly describing a collection brought back by his colleague, Howard Lintott.

In 1961 after a decade of lecturing on bryophytes, pteridophytes, gymnosperms and fossil botany (and

cytogenetics in 1955-56 when B.C. Arnold was on sabbatical leave) Brownlie was promoted to Senior Lecturer (3,6). During this time he had also published 10 research papers. His next decade was to be dominated by work on the ferns of New Caledonia, but he also found time to write about the biogeographical relations of the ferns of New Zealand (1962) and the South Pacific Islands (1965).

Brownlie's analysis of the geographical relationships of the New Zealand fern flora was:

1. "On the specific level slightly more than 50% of the fern flora of New Zealand is found also in SE Australia suggesting dispersal in the manner postulated for many of the orchids."
2. "A small group of species is widespread around the cool parts of the Southern Hemisphere with extensions into eastern Polynesia."
3. "A few species in unique distribution within NZ but widespread in Polynesia may be Maori introductions."
4. "The greatest degree of endemism is exhibited in the Hymenophyllaceae."

As for the many South Pacific islands — large and small, high and low, old and young — Brownlie's account is necessarily very much an overview with brief discussions on the larger islands including New Zealand, and accounts of the factors such as distance and diversity of habitats that control the size of island floras. He suggested 4 groups: ancient primitive families; an intermediate period flora; a recent Malaysian section; and a recently evolved southern element.

The invitation to write the fern volume of the Flora of New Caledonia took Brownlie to the island in December 1961 – February 1962 and May – June 1963, as well as to Paris on an Erskine Fellowship in April – September 1966 (3). During his field work he also collected material for chromosome counts of 27 species of New Caledonian ferns (1965). His text was translated into French by Mme Tardieu-Blot, illustrated by Mme Godot de Maury, and published in 1969. It described 301 species (by my count), 8 of which were new.

Brownlie's pteridophyte Flora of Fiji was "the result of a private venture by Pacific Gardens, Hawaii" (2). Field work was more extensive than in New Caledonia. There were visits in May 1968, July–August 1969, and June–July 1970 (3), and in 1971 Brownlie spent his study leave in Fiji. He took his family and the 3 children went to school in Suva. The Flora was published in 1977 with illustrations by Héléne Mulder. By my count 352 species are described as compared with the 230 in Copeland's "Ferns of Fiji" (1929).

Garth was promoted to Reader in 1967 and awarded a D.Sc. in 1970. He retired in January 1978 and died in Christchurch on 25 July 1986 at the early age of 66. He was a devoted teacher, and his work on ferns has placed him in the front rank of Pacific botanists.

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Acknowledgments

I am very grateful to Mrs Jean Brownlie (Wellington) for help with details of Garth's career and the bibliography. Thanks also to Basil Arnold and Mrs Valerie Lovis for their recollections; and also to Wendy Weller for her typing.

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■ Notable women botanists in agriculture and a tribute to Joan Radcliffe (1938-1997), a pioneer in agricultural botany

A.D.Thomson, Centre for Studies on New Zealand Science History, 5 Karitane Drive, Christchurch 8002

Few women have held senior positions in agriculture in New Zealand which in general has been a male preserve. As pointed out by Eric Godley in an obituary to Lucy Moore (3,p.51), botany over the years has provided women with a method for their entry into the science community in New Zealand, and so it has been with agriculture and horticulture where some of the pioneer women scientists in these fields were trained in botany. Included in this group of scientists are Dr Kathleen Curtis (Lady Rigg, 1892-1994, 10) and Dr Joan Dingley (b.1916, 12) in plant pathology, and Dr Margot Forde (1935-1992, 13) in agricultural botany. In addition, the research of Professor Elizabeth Williams (b.1943) in plant science in New Zealand included a major component of research relating to agriculture. Professor Williams was a graduate in botany from Victoria University of Wellington. Emeritus Professor Margaret Loutit (b.1929) formerly of the Department of Microbiology in the University of Otago initially graduated in botany from the University of Adelaide and agriculture was a component theme in her microbiological researches at Otago.

Dr Joan Elizabeth Radcliffe (1938-1997) researched for more than 30 years in plant science in relation to agriculture and had no peer in field agricultural research by a woman scientist in New Zealand. Her research was primarily ecological in its theme.

Joan was born in Wellington and had her early education there at Khandallah Primary School and Queen Margaret College. At the age of 17, Joan was recorded as one of the top scholars for 1955 in Wellington (1) and was House Captain of Queen Margaret College. Her interests were given as fencing, music, tennis, and basketball.

With regard to her career in agriculture, Joan commented (9), "I had no farming experience when I entered agriculture but liked plants and thought that forestry or agriculture offered a useful and worthwhile career. In those days women were not acceptable in forestry [cf. Mrs Mavis Davidson and Miss Mary Sutherland, 11] but somehow I slipped into agriculture and never regretted it".

Joan's University education was in Canterbury and she initially graduated B.Sc. (1959) in botany from Canterbury University College. Her first appointment in agriculture was at the former Department of Agriculture's Seed Testing Station at Palmerston North in 1959. She then moved to the Department's Field Experimental Section under the noted agriculture field experimentalist P.B. Lynch (b.1915) in Wellington where she was involved in pasture ecology work (1959-60) concerning the administration of pastoral field experiments conducted by the Department throughout New Zealand. Summarising and disseminating experimental results and field surveys of pasture condition and composition were part of her work schedule. The Field Experimental Section was then relocated to Rukuhia near Hamilton.

With her experience of work in the Department of Agriculture and a period of overseas travel to Europe, Scandinavia and the United Kingdom, she decided to continue her University education at the University

of Canterbury's Department of Botany. She completed an M.Sc. (1966) with Second Class Honours and her thesis was entitled "Soil and vegetation conditions on tracked hillside pastures on Banks Peninsula, Canterbury"(4). Joan returned to the Department of Agriculture at the Ruakura Research Centre, Hamilton (1966-69) as a pasture scientist and her research involved hill pasture productivity, sampling and measurement studies on vegetation (e.g., 22), and the effects of the grass-grub pasture pest on a range of important pasture plants (e.g., 5). From 1969-75 Joan was stationed at the Ministry of Agriculture and Fisheries at Lincoln where she was researching sheep and pasture productivity studies on different aspects of hill country and pasture and climate relationships (e.g., 19).

From 1975-79 Joan had study leave at Lincoln College where she completed her Ph.D. (1979) with a thesis entitled "Climatic and aspect influences on pasture production in New Zealand". Her Ph.D. research was supervised by Dr D. Scott (b.1934) of the former DSIR's Grasslands Division at Lincoln and Professor K.F. O'Connor (b.1926) at Lincoln College. Her Ph.D. involved analysing data from throughout New Zealand (e.g., 6,17), "...and resulted in a series of papers which became the benchmark references for any discussion on pasture production and its variability in different regions of New Zealand" (2, p.45).

In her later research in the Ministry of Agriculture and Fisheries, Joan was one of the first to research the effectiveness of goats in gorse and scrub control (8) and the integration of goats with sheep for maximum livestock productivity from pastures (21,18). Joan's research showed that gorse can be eradicated by goats alone or in combination with sheep and that gorse has a role as a renewable farming resource. Her research in this field resulted in the award in 1986 of the Coopers Farm Management Award.

The problem with goats has been in their escape from confined farming locations and this has been a widespread problem in New Zealand. This aspect of goat farming is of special concern to many botanists. On Banks Peninsula, for example, Hugh Wilson who has examined the problem of the damage to native species by feral goats commented (14), "Even 'farmed', they can wreak havoc, botanically-speaking; they are often grazed on large, rough blocks where a diversity of native species has survived until now. They are 'smorgasbord feeders', and although certainly having preferences they sample a wide range of species. Grasses are not high on their list; mahoe, fuchsia, broadleaf, Hebe and Pseudopanax are tops. They love gorse and broom, but this is part of the problem because farmers run them across their least-tamed blocks as weed-eaters, in just the places that botanical values are highest. They eat the bark of both young and more mature trees; on Banks Peninsula five-finger, mahoe, kowhai and ribbonwoods are among those species widely damaged and killed. Ordinary sheep-fencing is like no fencing at all to them, and steep bluffs that have been completely out of reach to sheep and cattle are an ordinary part of their feeding range". Hugh has emphasized the need to keep goat herds properly confined. Joan was aware of the danger of uncontrolled goats on Banks Peninsula and supported a public statement on this aspect (15).

The evaluation of shrubs and trees as fodder for animals, especially tagasaste (tree lucerne) (20) and the effect of wind shelter on the growth of grassland (7) were other themes in Joan's research.

Joan's research in agriculture had an ecological theme throughout and she contributed substantially to field agriculture in New Zealand where women have not been strongly represented. Her ability to conduct her research in conditions which require co-operative research with a wide range of people was a notable achievement. Another achievement in her research was her ability to effectively record her research in New Zealand agriculture and science journals where she showed unusual diligence in this important facet of her research. Joan published in total some 73 research papers in New Zealand journals and has one video entitled "Goats and Gorse" to her credit. A complete bibliography of Joan's publications is retained at my Centre and is available on request. At the age of 30, which I use as a measure of the age at which a scientist becomes active in research she had published eight papers.

In commenting on her research in agriculture, Joan in 1993 made the following point (2, p.46), " I always took a broad approach to research and I suspect this was more difficult than concentrating on one specialist area." On looking back on her career in agricultural research Joan noted that very few older male scientists took her seriously or bothered to ask her opinion though she considered the attitudes had changed and it is now easier for women starting out today in a career in science (2).

Acknowledgement

Miss B.H. Macmillan kindly provided the article from The Evening Post of 1955. This paper in the series

on pioneer women botanists is part of a larger account of notable women in all branches of science in New Zealand which has been supported by the Suffrage Centennial Trust.

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Publications

Book Reviews

Kantvilas, G.; Jarman, S.J. 1999 *Lichens of rainforest in Tasmania and south-eastern Australia*. 212 pp. p/back. ABRs Publications, Canberra. \$A39.95.

A difficulty of providing for the specialist and ardent enthusiast is a common problem for writers of authoritative works in any field. Kantvilas and Jarman have overcome this admirably in their recent book on the macrolichens of Tasmania and South Australia. Descriptions of over 120 species accompanied by 240 excellent colour photographs by B.A. Fuhrer, provide ready assistance to those less familiar with lichen identification.

The Southern Hemisphere has a rich diversity in its lichen flora, with many species shared among the rainforests of Tasmania, New Zealand and South America. This book gives a broad introduction to their distribution, structure, classification and identity and the photographs are often used to highlight the terminology which can be quite daunting for some. A key, glossary and bibliography are also there for those wishing to take their study further. For me, the strength of the book lies in the superb photography, already enabling me to make sense of many of those strange and beautiful plants, the identity of which I have had to ignore through lack of time or (more usually!) expertise. A thoroughly delightful, browsable and usable book!

John Steel, University of Otago. [From Issue 18 Botanical Society of Otago Newsletter]

New Publication

■ Endemic plants of the Chatham Islands

The New Zealand Department of Conservation has published a new colour book describing the 42 endemic vascular plant species of the Chatham Islands. The book is intended to raise awareness of the unique elements of the Chatham Island flora that are not found growing naturally in the wild anywhere else in the world.

Two and a half years ago Wellington Conservancy began a strategic approach to protection and recovery of the Chatham Island flora. The book is one product of that strategy and includes distribution maps and colour photographs of each endemic species. It was written by Phillipa Crisp, Colin Miskelly and John Sawyer and edited by Peter de Lange. Many other people on the Chatham Islands and around the country have helped in the preparation of the book including Amanda Baird, Geoff Walls, David Given and Graham Jane. The book was designed and produced by Jeremy Rolfe.

The book will be used to promote conservation of the Chatham Island endemic vascular plant species (and their associated plant and animal communities) and to monitor changes in their condition and status. Copies of the book are available from the Wellington Conservancy office (price \$20).

John Sawyer, Biodiversity – Technical Support Officer, DoC, Wellington Conservancy, P.O. Box 5086, Wellington. Tel: (04) 470 8427; Fax: (04) 499 0077; Email: jsawyer@doc.govt.nz

Journals Received

■ **New Zealand Native Orchid Group Journal 73**

September 2000. Edited by Ian St George. 44 p.

Original papers in this issue are:

Chromosome counts of the New Zealand orchids. ED Hatch

An outline of the native orchids of New Zealand. ED Hatch

Threatened and uncommon indigenous orchids of New Zealand. PJ de Lange

Eric Scanlen is indexing issues 21 to 75 of the Journal by multiple keywords. This will be an extremely good reference source for those studying orchids

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