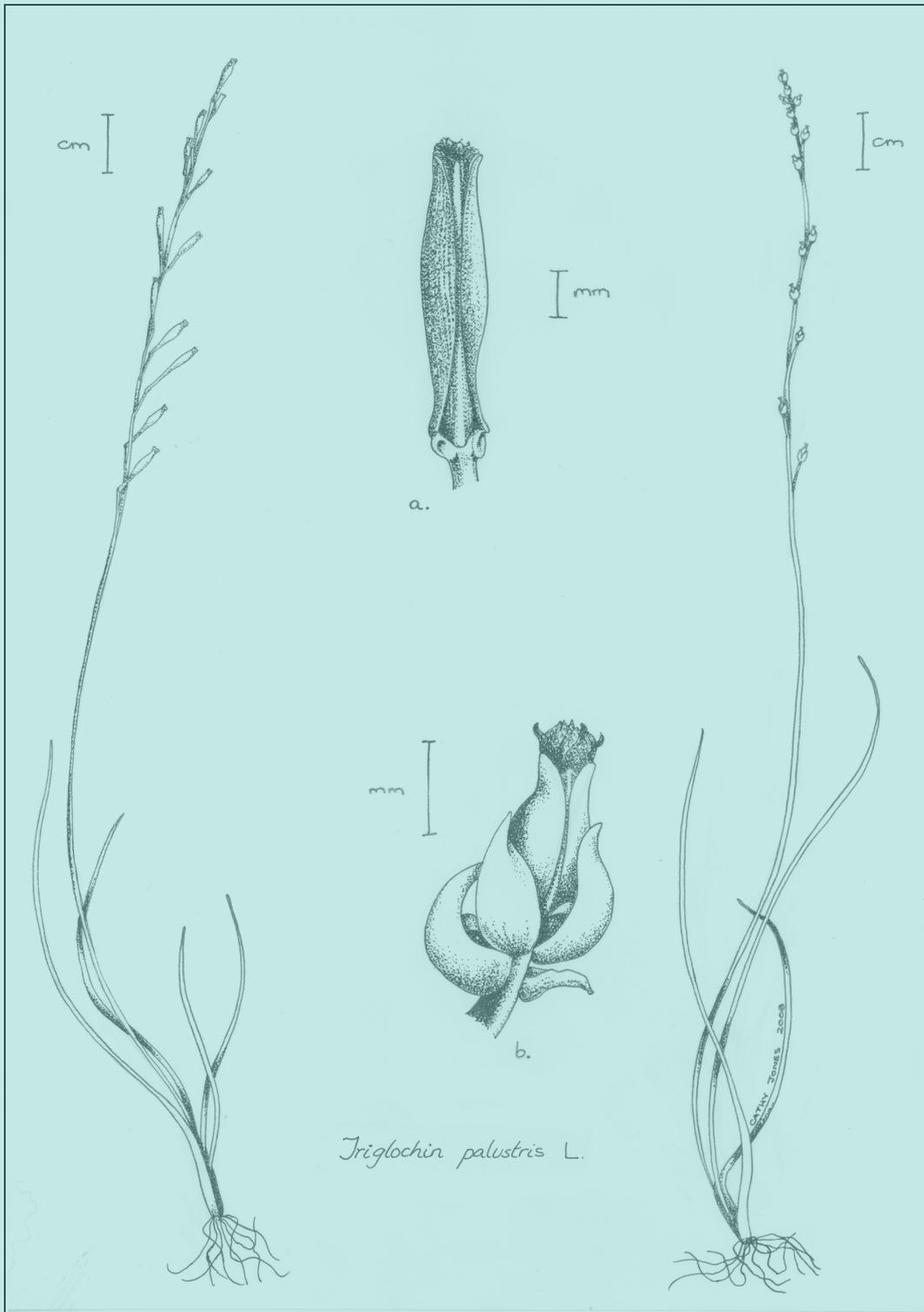


NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 93

September 2008



Triglochin palustris L.

New Zealand Botanical Society

President: Anthony Wright
Secretary/Treasurer: Ewen Cameron
Committee: Bruce Clarkson, Colin Webb, Carol West

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Subscriptions

The 2008 ordinary and institutional subscriptions are \$25 (reduced to \$18 if paid by the due date on the subscription invoice). The 2008 student subscription, available to full-time students, is \$9 (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), \$5 each from Number 51 (March 1998) to Number 72 (June 2003), and \$7 each for Number 73 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 years 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 2008 issue is 25 November 2008.

Please post contributions to:
Melanie Newfield
17 Homebush Rd
Khandallah
Wellington

Send email contributions to atropa@actrix.co.nz. Files are preferably in MS Word (Word XP or earlier), as an open text document (Open Office document with suffix .odt) or saved as RTF or ASCII. Graphics can be sent as TIF JPG, or BMP files. Alternatively photos or line drawings can be posted and will be returned if required. Drawings and photos make an article more readable so please include them if possible. Macintosh files cannot be accepted so text should simply be embedded in the email message.

Cover Illustration

Triglochin palustris L. Collected and drawn by Cathy Jones, from near Lake McRae on Molesworth Station, South Marlborough on 19 February 2008. a. fruit, b. flower.

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NEWS

New Zealand Botanical Society News

■ Call for Nominations

Nominations are called for the following positions of Officers and Committee of the New Zealand Botanical Society for 2009:

- President
- Secretary/Treasurer
- 3 Committee Members

Nominations for all positions opened 1 September 2008 and close on 19 November 2008. Nominations shall be made in writing to the Secretary, c/o Canterbury Museum, Rolleston Avenue, Christchurch 8013, and shall be signed by the Proposer, the Seconder, and by the Nominee to indicate their acceptance of nomination. If necessary, ballot papers for a postal election will be circulated with your December *Newsletter*.

Ewen Cameron, Secretary/Treasurer NZBS

■ Allan Mere Award 2008

The NZBS Committee is pleased to announce that this year's award of the Allan Mere is to Patrick Brownsey of the Museum of New Zealand Te Papa Tongarewa.

Patrick was proposed by the Wellington Botanical Society, and his nomination seconded by three other botanical societies (Auckland, Manawatu and Otago), and two individuals (Wendy Nelson and Peter de Lange).

A selection of comments below from the proposer and supporters indicate the breadth of admiration for Pat throughout the botanical community of New Zealand.

"Patrick is a meticulous researcher, an outstanding teacher and a proficient administrator.

Many enthusiastic members of the Wellington Botanical Society had their interest in native flora kindled, encouraged and deepened by first attending a WEA or Continuing Education course on ferns or mosses that Patrick taught.

Patrick saw the need for research on New Zealand's largest genus of flowering plants, *Hebe*, and successfully applied for funds which enabled a very large research programme to be carried out, resulting in a highly rated fundamental research and published papers, as well as a superb book. In this project, as with so many others, Patrick identified what needed to be done, and acted as a key facilitator throughout, enabling the work to be completed and targets to be met, but did not seek personal advancement or recognition.

He has assisted the greatest number of people with his definitive book on New Zealand Ferns, with John Smith-Dodsworth and line drawings by Tim Galloway.

He has managed the botanical collections at Te Papa for more than 30 years, overseeing the shift to modern premises, implementing databasing, supervising research, managing staff and covering for other managers for extended periods. He has contributed over an extended period to science administration and quality via FRST and Marsden Fund committees.

Patrick was instrumental in setting up the annual Australasian John Child Bryophyte Workshops. For over 20 years he has played a leading role in coordinating these, passing on his extensive knowledge and generously encouraging beginners. Many Botanical Society members have learnt the finer details of ferns and mosses through Patrick's 'hands on' approach at these workshops. His ongoing

commitment to, and encouragement of, botanical learning at all levels, is highly valued and respected.”

Pat is the tenth recipient of the Allan Mere since the NZBS was asked to administer the award in 1999.

Congratulations Pat! On your behalf, I will present the Allan Mere to Pat at the monthly Wellington Botanical Society meeting at Victoria University on Monday 20 October, when their speaker will be Peter Johnson on the subject of A Very Merry Mere – his talk to the Otago Botanical Society on the occasion of the presentation of the Allan Mere to him last year!

Anthony Wright, President, New Zealand Botanical Society

■ **Loder Cup 2008**

The winner of this year's Loder Cup was also recently announced by Conservation minister Steve Chadwick. The 2008 winner is Nelson botanist Shannel Courtney, who is best known for his outstanding plant conservation work in the Nelson/ Marlborough region.

Shannel first worked in the Nelson/ Marlborough Region on a vegetation survey in the Pelorus Bridge Scenic Reserve, for the Ecology Division of the DSIR. He worked on Protected Natural Area surveys in South Marlborough, East Cape and Taranaki. He joined the Department of Conservation in Nelson in 1987 (the year that DOC began) and has worked there ever since. During that time he has discovered 7 new plant species, lodged thousands of herbarium specimens, given numerous talks on plant conservation, written restoration guides for Nelson City and Tasman District councils, supported Nature Heritage Fund purchases and investigated plants growing in some of the most difficult-to-reach places in the region.

While Shannel's work has been based in the Nelson/ Marlborough region, he also contributes nationally, for example, as a committee member for the New Zealand Plant Conservation Network and on the national panel of botanists that reviews the threat status of New Zealand native vascular plants.

However botany has been more than a job to Shannel and he also devotes much of his spare time to plant conservation in the region. He has undertaken a massive task in purchasing and restoring 6 hectares of coastal limestone forest in Golden Bay. Those who know the area have probably noticed how many weeds grow there! Shannel has maintained an intensive weed control programme in this forest for 18 years.

Shannel co-founded the Nelson Botanical Society in 1989 and, showing that he is not someone to start something and walk away, he has served on the committee every year since. Many members of the Nelson Botanical Society have benefited from Shannel's vast knowledge on countless field trips, in particular on the groups that some people (i.e. me) have trouble with, such as grasses and small-leaved shrubs.

It may seem from his achievements that Shannel has done nothing but botany, but I can't leave this without mentioning that Shannel is also very involved with world music. Among other things, he founded the African marimba band Mweya, which played music that was mostly from the Shona people of Zimbabwe.

Gerald Loder donated the Loder Cup in 1926 to “encourage and honour New Zealanders who work to investigate, promote, retain and cherish our indigenous flora”. Shannel's professional and personal commitment to plant conservation exemplifies the values that Gerald Loder wished to honour. Congratulations Shannel!

Melanie Newfield

Regional Botanical Society News

■ Auckland Botanical Society

June Meeting

Barbara Paulus spoke on her post-doctoral research on wood decay fungi in forest ecosystems, and the important role they play in breaking down complex compounds in wood. Pictures of major groups of wood decay fungus were shown, many of them beautiful, and findings of recent research into their diversity was discussed.

June Field Trip

A large crowd visited the Ernest Morgan Reserve near Waimauku in hope of finding the “lost” and very puzzling *Parahebe* sp. that had previously been seen there. The nickname *Parahebe* “bamboozle” denotes the bewilderment of botanists that a plant of that genus should be found so far north of other occurrences, and that it does not match any known species. A short time into the exploration our sharpest-eyed member had relocated the little creeping plant - a joyous event to celebrate the winter solstice. Other plants were noticed, among them *Raukaua anomalus*, *Glossostigma elatinoides* and *Libertia micrantha*.

July Meeting

Dan Blanchon from Unitech spoke on his study of lichens in the Auckland area. Also studied were the lichens of Rangitoto Island (recorded for the Society’s “Natural History of Rangitoto Island”), and Motu Kaikoura in Port Fitzroy Harbour. Dan began by defining a lichen as a lichenised fungus, lichenised meaning that the fungus is intimately associated with a photosynthetic green alga or cyanobacterium which serves as the carbohydrate source for the fungus. He described the main growth forms, and reproduction, both sexual and vegetative.

July Field Trip

Rain in the early morning did not deter 14 people, and they were repaid with an almost dry walk along the Maungaroa Lookout Track at Piha. The first item of interest was a five-headed nikau, much photographed. Some small plants of mairehau (*Leionema nudum*) were seen, and late blooms of the tiny greenhood orchid, *Diplodium brumalum*, were flowering, as usual, near kauri trees. This coastal forest has been well botanised in the past, but even so a few more species were added to the list.

August Meeting

Karen Denyer, 14 years terrestrial and wetland ecologist with Environment Waikato, and executive officer of The National Wetland Trust, gave us a pictorial tour of wetlands in the Waikato, explaining along the way how peat domes are developed. The National Wetland Trust was established in 1999 to increase New Zealanders’ appreciation of these undervalued habitats, and has an ambitious project in the pipeline. This is to build an interpretation centre for educational purposes, so people can experience the special qualities of a range of different wet places all replicated in one area.

August Field Trip

Rain, fortunately not too heavy, did not deter 50 enthusiasts from exploring Puketutu Island, adjacent to the Mangere Wastewater Treatment Plant in the Manukau Harbour. Permission from the Kelliher Trust allowed us to admire the Kelliher Homestead and to learn about the work that has gone into maintaining the impressive gardens around it. Kingfern (*Marattia salicina*) grow there to impressive size, and were popping up in the free draining volcanic soil. Then followed a viewing of the quarry and a briefing on Watercare Services Ltd’s restoration plan, and a walk around the salt marshes and mangroves.

FUTURE EVENTS

- 3 September “Mangrove ecology & management”. Catherine Beard
- 20 September Ayrliies Garden, Whitford. Leader, Mike Wilcox
- 1 October Lucy Cranwell Lecture. “The origin of NZ’s flora:how much do we really know?”
George Gibbs
- 18 October Hauraki Gulf Island day trip. Leader, Ewen Cameron
- 24-27 October Labour Weekend camp, Waiheke Island. Leader, Mike Wilcox
- 5 November “Galapagos gallivanting”. Alison Wesley. “Wild flowers of Italy”. Mike Wilcox.

15 November Waiuku Forest. Leader, Tricia Aspin.

6 December End-of-year potluck dinner. Workshop on wetland plants, Paul Champion.

Auckland Botanical Society, PO Box 26391, Epsom, Auckland 1344

President: Mike Wilcox

Secretary: Leslie Haines lhaines@unitec.ac.nz

■ Wellington Botanical Society

June 2008: Kaitawa. Ridge and Ferry Road tracks, East Harbour Regional Park

This area, so close to urban Wellington, boasts a rich list of native botanical delights partly thanks to the efforts of MIRO, a local community pest control group that keeps the effects of goats, deer and possums to a minimum. Twelve of us set out from the kaitawa track end and along the stream was seen parataniwha, *Elatostema rugosum*, that is considered to have resulted from a garden escape. From regenerating kohekohe we move into a canopy of *Nothofagus truncata* that in turn gives way to a canopy of predominantly black beech, *Nothofagus solandri* var. *solandri*. Filmy ferns *Hymenophyllum demissum*, *H. bivalve*, *H. rarum* and *H. sanguinolentum* had rejuvenated after the long dry autumn. Freshly emerged were extensive areas of *Diplodium alobulum* and *Diplodium trullifolium*, and also sighted were a few heart-leaved orchids, *Acianthus sinclairii*. Barbara Mitcalfe 'spotted' the differences for us between *Drymoanthus adversus* and *D. flavus* attached to beech tree trunks near the track, and at two sites, another epiphytic orchid, *Ichthyostomum pygmaeum*. Ferry Road Track descends amid predominantly beech-kamahai forest interspersed with some large, terrestrial, northern rata, *Metrosideros robusta* and the lower part of the track opens out into an area of recently felled *Pinus radiata*. Here, though there are many adventives, the area is reverting to native scrub at an impressive rate. On an adjacent ridge, a mature beech stand appeared dead after being flattened by northerly gales since the pine removal. A new cohort is now apparent, but it served to illustrate the complexities involved in native forest management under disturbance that may appear unrelated.

June: Evening meeting

Speaker: Owen Spearpoint, Environmental Technician, Greater Wellington Regional Council described the monitoring of the 50,000 ha of managed lands comprising regional parks, forests, and water catchments. He outlined vegetation changes in plots established in the 1970s-era National Vegetation Survey, including photo points, and described fruit-fall monitoring of hinau and tawa as well as trends in bird numbers since the 1990s, and studies of piritā/red mistletoe, *Peraxilla tetrapetala*.

July: Evening meeting

Rodney Lewington summarised the floristic results of the March 2007 BioBlitz, and recapped the previous 100 years of botany in the natural area of Otari-Wilton's Bush.

August 2008: Grays Bush, Pauatahanui

We had intended a double-banger trip to Pauatahanui Inlet Reserve, then Grays Bush, but lots of earlier rain, plus high tide, made us cancel the Pauatahanui portion of the trip, save for presentations organised in advance. Wanda Tait, a well-known stalwart of the restoration project, provided with a brilliant account of the wetland history and Ros Batcheler summarised results of three major Ornithological Society (OSNZ) bird surveys in the Inlet. Despite a bad weather forecast, a cheerful group of twenty set off for the 2.5ha Gray's Bush owned by Alan Gray and Christine Stanley. Good fencing and seven possum bait-stations in the bush have resulted in the overall good health of this coastal forest remnant; a testament to the owners' foresight and effort. We managed to add a few species to a list prepared by Lesley Barnes during her 2004 survey. Kohekohe seedlings and karaka abound and a partial ring of large macrocarpas has helped to minimise the edge-effect. There were some nice podocarps, and splendid specimens of ewekuri, *Streblus banksii* and tūrepo, *Streblus heterophyllus*. The winter-flowering greenhood *Diplodium alobulum* was also putting on a nice show. The heavens opened up as we were ushered into Christine's and Alan's house for tea, coffee and beautiful food. We were most grateful for their hospitality and for allowing us to share their forest.

August: Annual General Meeting and AP Druce Memorial Lecture

Speaker, Dr Peter de Lange F.L.S., Threatened Plants Scientist, DOC gave a talk focused on aspects of the Chatham islands' flora, its evolutionary history and its conservation, and provided an update on

what we know about the islands' remarkable vegetation. His account also outlined the work being done preparing a new flora as a gift to the people of the islands, developing biosecurity measures, and increasing knowledge of the flora.

FUTURE EVENTS

Saturday 6 September: Field trip Dry Creek, Belmont Regional Park

Monday 15 September: Evening meeting Adaptations to moa: ontogenetic colour patterns in an unusual New Zealand plant. Kevin Burns.

Saturday 4 October: Field trip Coastal plants of Rocky Bay and Whitireia

Monday 20 October: Evening meeting. Dr Peter Johnson, a Dunedin botanist and the 2007 recipient of the Allan Mere Award.

Summer trip: Westport and Karamea: 16 - 26 January 2009

The summer trip in January 2009 will be based in Westport and Karamea. We arrive on 16/1/09 at Westport, move to Karamea on 21/1/09. and leave Karamea on 26/1/09. Details and booking form will be published in the September Newsletter available on our website <http://wellingtonbotsoc.wellington.net.nz/>. Those wishing to join us will need to indicate their intentions by October 31st.

President: Carol West (04) 387 3396 cwest@doc.govt.nz

Secretary: Barbara Clark (04)233 8202 bj_clark@xtra.co.nz PO Box 10412, Wellington 6143

■ **Nelson Botanical Society**

May Field Trip: Lake Rotoiti Fungi

On a chilly Sunday morning, 24 local fungi fanatics gathered at Lake Rotoiti. At the same time, the National Fungal Foray was taking place in Dunedin, so no experts were available to direct our foraging. We began on the Honeydew Track to investigate the beech forest and 1 hour after starting, we had progressed only 20–30 metres from the car park, so many were the fungi species encountered. We continued until lunchtime, then returned to the sunny car park for some warmth. A group of four members opted to carry on botanising after lunch, while the rest switched to tramping mode and walked from West Bay to Rotoiti Lodge, then up and over Black Hill, returning to West Bay via the Moraine Track (and its dry manuka/kanuka scrub). Although the fungi we saw were mostly past their best, we did, however, see a wide range including: birdsnest fungi; many different bracket fungi; *Russula* spp. (flesh has a brittle texture, spores are white); purple pouch fungi (*Cortinarius porphyroideus*) and other *Cortinarius* spp.; disc-shaped species; cup-shaped fungi with upward-facing gills; *Armillaria* spp. (honey fungus); and a few specimens of *Amanita muscaria* (Fly Agaric) now growing in beech forest. A few specimens were collected (with permission from DOC) and spore prints made for the following evening's meeting. The photographers added to their image collections by spending much of the day in horizontal positions along the tracks. As we headed down the roadside at the end of the day, a long row of earthstars (*Geastrum* spp.) provided a suitable finish to the walk.

May Meeting: Otago Plants and Places – John Barkla

John, the botanist in the Otago Conservancy (Dunedin), talked about the South East (Catlins), Otago's coast and ranges, the Main Divide, and the West Coast (Mount Aspiring National Park), drawing the link between plants and geology and/or substrate. For example, in a wetland area near Tahakopa dune forest, *Mazus arenarius*, *Apodasmia similis* (jointed wire rush) and *Myosotis pygmaea* var. *pygmaea* thrive in the dune slack turfs. At Taiaroa Head, *Lepidium oleraceum* (Cook's scurvy grass) grows reasonably well, perhaps because of the recently-established nearby gull colony and the birds' feeding habits, guano and nest-building activities. Inland, the volcanic basalt of the Kakanui Mountains supports *Gingidia grisea* – this is the only place it grows. And around Sutton Salt Lake, *Crassula peduncularis*, *C. multicaulis* and *Lilaeopsis novae-zelandiae* occur. Guards Road limestone quarry nurtures *Carmichaelia hollowayi* and *Lepidium sysimbrioides*, *Gentianella calcis*, *Simplicia laxa* (a rare grass with its own fence) and, unfortunately, lots of *Hieracium* weed. The St Marys Range, of greywacke, is where *Gingidia* aff. *ensyii* grows. Old Woman Range has saline/alkaline areas and herbs growing here are a cress, *Lepidium kirkii*, and *Puccinellia rariflorens*, *Leptinella goyenii* and *Brachyscome* sp. It is also in this area that you find *Myosurus minimus*, *Myosotis pygmaea* and *Ceratocephala pungens*, very rare annuals that have been found in fossilized moa faeces. Examples of plant protection efforts were also highlighted. At Macraes Flat, DOC has built a predator-proof

fence around 20–30 ha to help to protect grand and Otago skinks (these skinks are 30 cm long). In the Dunstan Mountains, plants like *Myosotis cheesemaniae*, *M. albosericea* and *Phyllocladus alpinus* have required a rabbit-proof fence. And at the head of the Mueller Valley, pest control over 37 years has meant that regeneration was possible and now there is vegetation on the forest floor and in the sub-alpine zone.

June Field Trip: O'Neil's and Meade's Bridge reserves, Lee Valley, Brightwater

O'Neil's Reserve was ceded to the Tasman District Council as the reserve contribution for a lifestyle block subdivision across the river. Despite its small size, this reserve is species rich. Beyond the perimeter of the usual prickly weeds native, species abounded. *Dacrycarpus dacrydioides* (kahikatea), *Podocarpus totara* (lowland totara), *Prumnopitys ferruginea* (miro), *Prumnopitys taxifolia* (matai), and *Dacrydium cupressinum* (rimu) were all present with some interesting undergrowth that included *Astelia fragrans*, *Microlaena polynoda* (bamboo rice grass) and *Hymenophyllum demissum*. For many, the finds of the day were *Nestegis lanceolata* (white maire) and *Korthalsella lindsayi* (a coral mistletoe). The latter was growing on two hosts: *Coprosma crassifolia* and *Melicope simplex*. Meade's Bridge Reserve, on the other side of the Lee River, is also owned by the Tasman District Council and is a recreation reserve. Around the rocks above the river were *Pellaea caldirupium* (hot rock pellaea) and *Hymenophyllum cupressiforme*. Just over 120 species were noted.

June Meeting: The Field Season of a Plant Conservationist – Shannel Courtney

Shannel spoke of his field year, October 2007–June 2008, including various Nelson BotSoc trips where appropriate. The audience got to see that Shannel and his co-workers go to some amazing places to check whether seldom-seen endangered species still exist, and sometimes they find another to add to the ever-increasing list. At Labour weekend, BotSoc stayed at Te Rapa in the Waima/Ure Valley, and one of Shannel's beautiful plant studies was of *Senecio* "Marlborough limestone" yet to be described and limited to Marlborough. The status of *Parahebe martinii*, a threatened plant, contrasted that of *Melicytus* "Waipapa", which has been taken off the threatened plants list as it is turning up all over the place. At the end of October, Titirangi (Marlborough Sounds) was visited to check on a population of *Hebe speciosa*, a Maunganui Bluff (Northland) endemic. Apparently, it was planted in a few locations by travelling Maori. Local iwi are keen that DOC continues managing the species (down to 17 plants), so it is hoped that they may contribute. During November, at Mt Murchison, *Hebe societatis* was checked and found to be plentiful. This species was discovered by Graeme Jane during a BotSoc trip and named for the Society. At Six Mile River, *Melicytus flexuosus* had been ring-barked by hares, so an area with 150 tagged plants has now been fenced. In December, a trip with Colin Burrows looking for the previously discovered *Pimelea* "hidden" was unproductive. The Nelson BotSoc December camp at the Cobb was a bit late for the flowering of *Pittosporum dallii* growing by the accommodation, and since then we have heard that hares have attacked nearby plantings. In February, 200 *Pittosporum patulum* were counted in the Bryant Range and *Hebe gibbsii*, special to this area, was seen too. A March trip to Lake Henderson, west of the Peel Range, provided an opportunity to photograph an ephemeral lobelia (*Lobelia fugax*), the smallest lobelia in the world. Finally, in May, Editor Hill (between Tennyson Inlet and Okiwi Bay) was surveyed for *Hebe rigidula* var. *sulcata*. Also there were *Coprosma decurva* and *Chionochoa beddiei*. This is the only site in the South Island where the latter grows (usually found on coastal cliffs of the Wellington region).

July Meeting: The Other Botanist's Summer – Cathy Jones

Cathy spoke about her season's fieldwork and the efforts being made to record threatened plants, and in some cases make life a bit easier for them. In November at the Clarence Reserve, a survey was carried out for *Gingidia* aff. *enysii* which is endangered. The survey for *Myosurus minimus* at Molesworth yielded no plants. At the Chalk Range, *Pachycladon* "Chalk Range" and *Myosotis colensoi* – both plants are classified as nationally critical – were checked. Some of the *Pachycladon* plants have been caged to protect them from goats, possums and rabbits. A week at Kaikoura with Auckland BotSoc included a productive trip to Sawcut Gorge with *Carmichaelia glabrescens* and *C. astonii* in flower, and to Mt Fyffe with *C. crassicaulis* and *C. monroi*, the latter in flower. Fish & Game have gained control of a new area of Para Swamp at Tuamarina. Staff want to get rid of the willows there and requested a survey to see if there were plants that needed preserving. The regionally threatened *Rorippa palustris* was present, as were large patches of the native willow weed, *Polygonum salicifolium*. The February survey around Lake McRae on Molesworth Station yielded *Hoheria lyallii* and totara in the remnant forest and the small arrow-grass, *Triglochin palustris*, which is classified as nationally critical. It is found in Otago, Canterbury and on the North Island, but this was

the first record for Marlborough. At Mt Benmore, the survey for *Pachycladon* "Chalk Range" yielded one plant, bringing the total world population to 43 plants. This makes it rarer than kakapo by nearly 50%! Also on Benmore, a small population of the nationally endangered *Meliccytus* "cliff" was found. In March, the national stronghold (2000-strong) population of *Olearia hectorii* (also nationally endangered) was found to be in good health. Lastly, work on an ephemeral wetland (it fills about once a year) with seven threatened plants was presented. The threatened plants include *Craspedia* "tarn" found nowhere else in the world (nationally critical). The biggest problem is the introduced *Carex ovalis*, which overwhelms the small precious natives. Another problem has been the pugging of the ground by cattle. A combination of spraying, cutting, raking and fencing is being tried.

FUTURE EVENTS

Sept 21: Atua Stream Reserve, Riwaka–Sandy Bay Road. Leader Lawrie Metcalfe (03) 540 2295

Sept 22: 'A trip to Russia', a talk by Lawrie and Lena Metcalf.

Oct 19: Killdevil Track. Leader Don Pittham 545 1985

Oct 24–27: Labour weekend camp, Punakaiki. Leader Julie McLintock (03) 545 0989

Nov 16: Clark River orchids. Leader Shannel Courtney (03) 546 9922

Dec 19–21: December camp, Canaan Downs. Leader Shannel Courtney (03) 546 9922

President: Cathy Jones (03) 546 9499. Flat 1 47A Washington Rd. Email: cjones@doc.govt.nz

Treasurer: Trevor Lewis (03) 547 2812. 22 Coster St. Email: tandjlewis@actrix.co.nz

■ Canterbury Botanical Society

June Meeting

Following the AGM, Bill Sykes gave a presentation on the flora of the Chatham Islands illustrated with photographs taken on the November 2007 Canterbury Botanical Society field trip. Unusual species included *Leptinella featherstonii*, *Olearia semidentata*, *Embergeria grandiflora* (a member of the *Sonchus* group of the *Asteraceae* family) and *Geranium traversii* with leaves to 10cm diameter! On coastal rocks *Hebe chathamica* and *Disphyma papillatum* displayed massed flowers. Bill could not resist showing us some of the naturalised plants he photographed growing well, including *Echium pininana* from the Canary Islands, *Melanoselinum decipiens* and *Geranium maderense* from Madeira and *Gazania linearis* and *Senecio elegans* from South Africa. Dean Pendrigh

July Meeting - When Good Plants Go Bad

Prof. Philip Hulme, Professor of Plant Biosecurity at the National Centre for Advanced Bio-Protection Technologies, Lincoln University, gave a general overview of alien plants in Canterbury and NZ. There are 1,119 recognised alien plants in Canterbury, the majority herbs - 21% monocot and 58% dicot. In NZ, 46.2% of species are alien, compared with 42.9% in the British Isles and 2.2% in tropical Africa. Some of these alien species have a significant detrimental effect on our economic production and on native biodiversity. Those species which can grow in a wide range of habitats are more likely to spread. After a species has been introduced, there is often a lag period before a rapid spread phase starts. Many additional plants are likely to become more widespread in the near future, the predicted climate change providing additional opportunities for plants to become weedy. The evident 'predictability' of various plants becoming weedy begs the question of why a more preventative approach by authorities is not more actively pursued. Gillian Giller

July Field Trip

At a comfortable 19 degrees the Christchurch Botanic Gardens' hot houses were a welcome contrast to the sleet and snow outside. Darren Tillet (plant propagator) began by introducing us to the only carnivorous bromeliad, from Venezuela. Insects land on the attractive silvery foliage which has detaching scales spread over the leaf surface. These loosen and slide with the insect into the well of the plant where secretions change all to food. We saw *Drosera* spp. from around the globe, *Pinguicula* (butterworts) and *Dionaea* (Venus flytrap). The latter are scarce in the wild due to their popularity with collectors and habitat destruction. We gazed at the pin-head sized 'bladders' of *Utricularia* on underground stems. These open to allow insects to enter, then close, pump out the water and digest the insect! There were many different species, large and small, of *Sarracenia* on display, the pitcher being a complex leaf extension. A recent import was a rare *Cephalotus*, or flycatcher plant, from Western Australia. Eleanor Bissel

August Meeting - Managing Biodiversity Values on High Country Farms

Dr. David Norton (School of Forestry, University of Canterbury) began with a pictorial overview of the scenic and biological values of the high country east of the Main Divide, then outlined the phases of modification that have occurred during pastoral use, particularly invasion by briar, *Hieracium* and wilding conifers. He then outlined the process of tenure review, whereby some 40% of pastoral lease has so far been returned to public ownership, with management by DOC; the balance becoming freehold. Two unwelcome consequences are, firstly, that many introduced species are benefiting from the removal of grazing (notably briar and pines) at the expense of native plants and, secondly, that some land converted to freehold is being used for purposes that totally destroy native biodiversity, notably intensive dairying and subdivision for holiday settlements. David discussed an alternative, whereby high country runs are left intact as economically productive units, but subject to management plans whereby, *inter alia*, areas with biodiversity values are recognized and subjected to site-specific, appropriate management.

Peter Wardle

FUTURE EVENTS :

October 3rd: Rolland Dale - Exploring Fiordland
October 4th: Field trip – Banks Peninsula Conservation Trust area – Kate Whyte. If Saturday is unsuitable the field trip will be on Sunday 5th.
November 7th: Trevor Partridge & Royal Society grant recipient.
November 8th: Field trip - Paul Maurice's native bush covenant – Port Levy Saddle
November 13th - 16th: Show weekend camp: Kaikoura
December 5th: Phillip Grove – subject to be confirmed
December 6th or 7th: Field trip – Mt Hutt

President: Bryony Macmillan 351 2886, or 351 9241 (for messages)

Secretary: Jodi Rees: mallotus@yahoo.com.au PO Box 8212, Christchurch 8440

■ Botanical Society of Otago

February Meeting: Prof. Ulf Molau on Cliff Ecology

Fresh from examining rock tors on the Rock and Pillar Range Prof. Ulf Molau, the Otago University William Evans Visiting Fellow from Gothenburg University, Sweden, gave a presentation on cliff ecology. Cliffs of course present special challenges both in survey and in mapping. Ulf introduced the audience to the Alpine Cliff Ecology (ACE) Programme which aims to assess biodiversity in a landscape where cliffs occupy 25% of the total surface area in a typical alpine watershed. His study site is the Latnjajaure Catchment in northern Swedish Lapland; a U-shaped glacial valley at c. 900 – 1500 m above sea level. Cliffs were summarised as being vertical miniature landscapes with unique microclimate, with naturally fragmented populations that were resilient to climate change. Prof Molau concluded by contrasting alpine cliffs with snowbanks which he described as being at the opposite extreme in the landscape. They have a short growing season, mild and stable ground temperature, sustainable water supply, many specialised plants and are extremely sensitive to climate change.

March Meeting: Peter Johnson talk on botany of the Chatham Islands

After 30 trips to the Chatham Islands Peter Johnson was well placed to talk about this island outpost 800 km east of mainland NZ. We soon learned that his first botanical treats, Chatham Island forget-me-not (*Myosotidium hortensia*) and *Astelia chathamica* are, ironically, more common in Chatham gardens than in the wild. The rather familiar scenario of fire, felling and farming has devastated the Chathams flora but has given rise to many of the iconic scenes we now associate with the islands; Moriori dendroglyphs on kopi trees, dead tree skeletons and lone wind-swept akeake (*Olearia traversii*). Many of the Chatham plants differ in some way from their mainland cousins. Peter told us about the world's most southern palm (*Rhopalostylis* sp.) and the largest member of the *Dracophyllum* genus (*Dracophyllum arboreum*). The main island is dominated by the large Te Whanga Lagoon and numerous freshwater lakes with turfy edges full of tiny wetland herbs. The Chathams have their weed problems too – the usual suspects of gorse, blackberry and Himalayan honeysuckle are there along with the more worrisome Chilean guava (*Ugni molinae*) with its predilection to peatland, and even Chilean flame creeper. Peter warned of three new weeds per year establishing on the islands. Peter also spoke of numerous conservation success stories including the

large-scale restoration programme on Mangere Island to provide more habitat for the black robin, and forest recovery following exclusion of stock in Henga Scenic Reserve on Pitt Island.

March Field Trip: Mount Watkin

Mount Watkin Scenic Reserve is owned by the Dunedin City Council who are currently going through the management plan process. Along the way to our final destination (a cliff overlooking the Waikouaiti River), we came across porcupine scrub (*Melicytus alpinus*), and indulged in berry eating from a leafless bush lawyer (*Rubus squarrosus*). We also 'discovered' an awesomely large cabbage tree (*Cordyline australis*) and native jasmine (*Parsonsia heterophylla*). Down in the valleys were numerous kowhai (*Sophora microphylla*) which must look stunning in flower. Kanuka (*Kunzea ericoides*) forms the dominant vegetation on the valley sides, with the odd manuka tree (*Leptospermum scoparium*) providing some variety. We did our part for conservation by pulling out *Dryopteris filix-mas* fern, and hanging them in trees to die. The saddest find was the Chilean flame creeper (*Tropaeolum speciosum*) which is currently rare and localised, but no doubt will be very prolific in the future. Several varieties of our friends the bidibids were also sighted. *Acaena novae-zelandiae*, *A. agnipila* (from Australia) and *A. juvenca*. One matagouri (*Discaria toumatou*) provided a prickly spectacle with two native nettles present to keep us on guard. After much botanising we arrived at the cliff top, which was about 250 metres above the largely waterless Waikouaiti River. This is where the most exciting botany find of the day was made when Alf's keen eye spotted rare native mistletoe (*Korthalsella salicornioides*) growing on kanuka.

April Meeting: Photographic competition

After the AGM a capacity crowd watched and listened entranced as our three expert judges, Peter Johnson, Rod Morris and Kelvin Lloyd presented and discussed the 59 entries in this year's photographic competition. The Plant Portrait section drew the most entries, 33, of which 29 contained 'reproductive stuff' mostly flowers, plus a few fungi and even a couple of fruiting lichens. Winner of the Portrait section, and also the overall winner, was Ken Allen, for his stunning portrait of *Celmisia verbascifolia*, in the Gertrude valley, which was almost as clear and precise as an Audrey Eagle drawing. Ecological Processes drew 9 entries, with the winning image telling a very graphic story of a rotting sheep in a barren landscape, its decay providing nutrient to a little ring of green moss. Congratulations to David Lyttle for 'Caught in the Last Muster'. The judges repeatedly emphasized how much they liked a photo that told a story. Of the 6 entries in Plant Community the winner was a very evocative Peruvian rain forest community 'Looking down' by Amelie Auge. Landscape drew 7 entries, and the winner was Gretchen Brownstein's, 'Turf Wars'. This showed clearly a story of a coastal turf community being invaded by clover, in a landscape full of other interesting coastal, agricultural and urban stories. There were only 4 entries in the Human Interaction section, and the one the judges thought told the best story was 'Lichen Tribute', by Allison Knight, which depicted a 'posy' of colourful lichens decorating a gravestone.

April Field Trip: Kurinui, North Otago

Armed with the plant species list compiled by Wildland Consultants we headed off on a circuit round the eastern side of the property. With stock removed in 2002, the 750 hectare property is now an Open Space covenant under the QEII National Trust. Steep sided ridge, rocky outcrops and small creeks and wetlands make for a really varied range of habitats. We enjoyed the structural leaves of *Celmisia hookeri*, fine spines of *Aciphylla subflabellata* and blue green softness of *Gingidia grisea* on our walk through the tussock and mixed woodland that made up the vegetation on the side of this valley. *Helichrysum intermedium* perched on rocky outcrops along the way, with stunted *Coprosma*. Looking out over the canopy of the trees, lancewoods, broadleaf and totara could be spied, along with the odd miro and matai. With a short break at the saddle, half the group headed off to a rocky outcrop, which had fantastic views to the coast. The drier kanuka forest below the house had large number of native tree seedlings emerging on the forest floor, but the highlight was the red berries of *Coprosma rhamnoides* glowing like jewels in the afternoon sunlight.

May Meeting: Members night

Our first BSO members night was full of surprises, as people brought along an extraordinarily wide range of botanical treasures to share. First off was a wonderful burst of song and botanical images 'Which Plant is Which' an audiovisual extravaganza compiled by Adi. Next John Barkla gave us a visual tour of a newly acquired parts of the DOC estate in Otago, including the Hawkdun and St Bathans Ranges, the Ahuriri and Dingle valleys. He showed and described the distribution and

management some of the rare and threatened plants in these parts of our 'backyard', including *Pittosporum patulum* and *Leonohebe cupressoides*. Audrey Eagle talked enthusiastically about the amazing collection of treasures she had brought along: three of her recently framed oil paintings from the 1960s, a display on the rare, elusive *Thismia*, which flowers under the leaf litter, another display of *Dactylanthus*, which parasitises roots, is pollinated by bats and threatened by possums, and several good-sized 'vegetable caterpillars' parasitised by the *Cordyceps* fungus. Alf Webb showed his precious historic Cheeseman Flora, all 3 volumes leather-bound into one, with annotations and pressed specimens from prominent early Dunedin Botanist George Simpson. David Lyttle filled a whole table with his pots of rare and threatened plants grown mainly from cutting, but also from seed. He talked knowledgeably about their provenance and propagation. There were two boards displaying lichen photos by Allison Knight – the first steps towards a beginners Field Guide to Lichens. Ken Allen had two photos of the Pagoda fungus from under the eucalypts at Orokonui and was keen to know more about it. David Orlovich obliged, and showed his own 'ask and tell' – a rock from Mt Burnett in North-West Nelson containing leaf fossils. Chuck Landis also had a query about a fossil – a root uncovered from a development in Wanaka, which had been buried in silt and covered in loess. He estimated it was 7-10 thousand years old, and was curious to know what it might be, and why it was so laterally compressed.

FUTURE EVENTS

24 Sept 7th Annual Geoff Baylis Lecture – A talk by Dr Brian Molloy
28 Sept Field trip to Berwick bogs and bits of bush
18 Oct Fungal Foray to Knight's Bush, Tuapeka West
22 Oct A talk by Robin Mitchell on Ecosystem diversity in Bolivia

Chairman: John Barkla, jbarkla@doc.govt.nz

Secretary: Allison Knight, P O Box 6214, Dunedin North.

More information available on website: <http://www.botany.otago.ac.nz/bsol/>

■ Other Botanical Society Contacts

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Secretary: Andrea Brandon abrandon@doc.govt.nz

Our newsletters are available on <http://cber.bio.waikato.ac.nz/Waibotsoc/WaikatoBotSoc.html>

Rotorua Botanical Society

Address: c/- The National Forestry Herbarium
Ensis, Te Papa Tipu Innovation Park
Private Bag 3020
Rotorua 3046

President: John Hobbs 07 348 6620 jffhobbs@paradise.net.nz

Secretary: Jenny Lux: 07 348 1539 jenny@wildlands.co.nz

Wanganui Museum Botanical Group

President: Vonnie Cave, Seafield Road, RD 4, Wanganui.

Ph. (06) 435 8326; vonniecave@xtra.co.nz

Secretary: Robyn Ogle, 22 Forres St Wanganui. Ph (06) 347 8547; robcol.ogle@xtra.co.nz

Manawatu Botanical Society

Jill Rapson: Ecology Group, Institute of Natural Resources, Massey University, Palmerston North. Ph (06) 350 5799 Ext 7963; Email: G.Rapson@massey.ac.nz

Wakatipu Botanical Group

Chairman: Neill Simpson (03) 442 2035

Secretary: Lyn Clendon (03) 442 3153

ANNOUNCEMENTS

■ **Koiata Botanical Trust**

The Koiata Botanical Trust was established in 1988 with the aim of supporting botanical research and making the public more aware of our flora and vegetation. It was established entirely from donations, with the initial aim of supporting Hugh Wilson in particular. At that time Hugh was a freelance botanist with a strong research background and flair for communicating the delights of our flora with everyone he interacts with, but without any steady funding support.

Over the last 20 years, it has been challenging for the Trustees to adequately support Hugh in his work while retaining the capital base of the Trust. We have only been able to do so as a result of the ongoing generosity of New Zealand botanists.

However, the Trust's funding has enabled Hugh to complete significant research projects - the Small-leaved Shrubs Guide, the revised editions of the Mount Cook and the Stewart Island Guides, and the completion of the draft Banks Peninsula book, as well as innumerable talks, popular articles and the ongoing scientific documentation on Hinewai Reserve.

We remain completely dependent on donations, and are now having difficulty maintaining Hugh's "smell of an oily rag" stipend. Ideally, we would love to be able to support other botanists as well.

Every donation helps, so I encourage you to support the Trust. A flier containing further details and how to make a donation is enclosed in this issue of the Newsletter

We are now registered as a Charitable Trust so donations are tax deductible.

Dr Colin Webb

Chair, Trustees, Koiata Botanical Trust, C/- Hooker Associates, Chartered Accountants, PO Box 4415, Christchurch 8140

■ **National Pollination Survey**

The 2008 National Pollination Survey is underway. The purpose of the survey is to measure the health of bird-plant mutualisms throughout New Zealand. We are using the pollination service for tree fuchsia as an indicator of the health and wellbeing of our native ecosystems. This is part of ongoing research jointly run by Landcare Research, Department of Conservation and University of Canterbury.

We need your assistance. We need people to complete the survey from locations all over New Zealand this spring and summer. Please help by completing the survey for a tree fuchsia population near you.

A major issue we had last year (2007) was people not taking part in the survey because they couldn't find enough fuchsia trees. Any area, with even a few tree fuchsia plants can be surveyed. Even if there are only 2 or 3 trees near you the data you collect is valuable.

For more information and the survey forms visit: http://www.biol.canterbury.ac.nz/pollination_survey/

While there you can also check out the 2007 survey results.

■ **Hand Lenses**

Hand lenses for sale - \$20 each plus P & P - but orders for 5 or more are free of P & P. The lenses are approx. 40 mm by 35 mm, with two lenses folding into cover. These lenses are the type used by members of the Canterbury and Nelson Botanical Societies.

Contact Ron Close E-mail closer@plantwise.co.nz
38 Hinau St, Fendalton, Christchurch 8041, phone 03 3489231.

NOTES AND REPORTS

■ *Hibiscus richardsonii* – the rediscovery of a native hibiscus in New Zealand

In May 1981 while on a field trip to Tuhua (Mayor Island) I saw for the first time the so called “native hibiscus” (*Hibiscus trionum*) in the wild. It wasn’t flowering then, so I collected some seed to grow. Later that year my seed-grown plants flowered and I was perplexed to see that unlike the typical form of *H. trionum* then (as now) so widely cultivated in New Zealand, Tuhua plants had smaller paler flowers, and more importantly the petal bases lacked the distinctive dark maroon-black blotching seen in the garden grown *H. trionum* plants (here after called “blotched”). There were other subtle vegetative differences too, and collectively these led me to write to Bill Sykes (then of DSIR Botany Division) to ask his opinion on the status of Tuhua plants. Bill replied saying that Tuhua plants were not that unusual, and that similar plants occurred elsewhere in northern New Zealand, further that as part of his treatment of the Malvaceae for the upcoming Volume IV of the New Zealand Flora series he was going to treat *H. trionum* as naturalised. Well at 14 years of age I was hardly one to argue with the expert though I still thought that the “unblotched” as I came to call it Tuhua plant was very distinct. So for some years I played about with hybridizing it with “blotched”. It crossed readily, the progeny was fully fertile and the F_2 and F_3 selfed progeny gave the typical Mendelian pattern suggestive that flower colour and size was a doubly recessive trait. However, beyond lodging vouchers of these dabbings at the University of Waikato Herbarium (WAIK) I soon forgot all about it.

Late in 1991 I again found the “unblotched” plant I had first seen at Tuhua, this time on the rocky crags of the Pinnacle, Unuwahao Bush, Te Pahi. Interestingly, in discussion with the then Conservation Advisory Scientist for the Wanganui Conservancy, Department of Conservation, Colin Ogle, he mentioned his dissatisfaction over the status of “unblotched” *H. trionum*. It transpired that at about the same time that I was writing to Bill Sykes, so was Colin, having seen the same form wild near Tom Bowling Bay, Te Pahi. Colin too thought that “unblotched” was distinct from “blotched” *H. trionum*. By this time the Malvaceae treatment had now been published in Flora IV (Webb et al. 1988) and neither of us could reconcile the description offered there for *H. trionum* with the plant we knew from remote northern North Island locations. So I began a world wide search of *H. trionum* plants to determine if similar “unblotched” plants occurred elsewhere. Apparently it seemed that they didn’t. As a result in 1993 both of us successfully put “unblotched” *H. trionum* forward to the New Zealand Threatened Plant Panel, as a potentially new and as yet undescribed endemic *Hibiscus*. It has remained listed as “Taxonomically Indeterminate” in various versions of the New Zealand Threatened Plant list ever since (see Cameron et al. 1993; de Lange et al. 2004).

The next step – determining the taxonomic status of “unblotched” was going to be more complicated. An indigenous status could be inferred from the fact that “unblotched” was the only form present in gatherings older than c.1860, after which “blotched” plants showed up, first – it seems - near Whangarei (where it is still locally common) and much later (1894) near Kaitia, after which it became the dominant form collected by New Zealand botanists. It seemed safe to assume that “blotched” – which is the form described in Flora IV (see Webb et al. 1988) was naturalised, and “unblotched” wasn’t. The next phase involved counting their chromosomes. Worldwide counts had already indicated that *H. trionum* was tetraploid ($2n = 56$) perhaps “unblotched” wasn’t (though of course I had forgotten about my early hybridisation experiments). Here I soon got a surprise – both “blotched” and “unblotched” New Zealand plants were diploid ($2n = 28$) (de Lange & Murray 2002) – which of course, explained why the hybrids could be fully fertile. Perplexed I left the study alone – after all world literature showed that *H. trionum* was now distributed world wide, and further there was some ambiguity over where the type had actually come from. It transpires that while most botanists agree that *H. trionum* s.s. originated from Africa, the type seems to be a garden plant, and the exact source of that plant is unclear. At this stage a chance meeting in 2003 with Lyn Craven (CSIRO, Australia) revealed that he was actively revising *H. trionum* in Australia, and that he too was most dissatisfied with the Australian view that their plants were all introduced. Lyn had seen the published New Zealand chromosome counts, so he asked if I could do the Australian ones as well, and then perhaps we could work together on a revision of the Australian – New Zealand members of the complex. I agreed, and together with Brian Murray of the School of Biological Sciences, University of Auckland, we worked on the Australian plants. Lyn also asked for representative samples of the New Zealand forms, and when he grew these on I was most surprised to find that the “blotched” plant of New

Zealand did not match anything in Australia either. Further Lyn was surprised to discover that our “unblotched” plant matched one herbarium gathering from New South Wales they held at Canberra (CANB). A quick search of that area revealed the unblotched plants were still present, so seed of these were sent back to us in New Zealand. Our chromosome counts revealed that all the Australian material except the “unblotched” plant from New South Wales were tetraploid. “Unblotched” New South Wales plants were, like their New Zealand counterpart, diploid. Further they were an exact match for New Zealand “unblotched” plants. So at least we now knew that “unblotched” was not endemic but shared with Australia. The results of this investigation have now been published in the *New Zealand Journal of Botany* (Murray et al. 2008).

That left the final stage of this research – the actual revision – to complete. This work depended largely on Lyn’s superior expertise of the genus and species. All was progressing well until late 2005 when Lyn was diagnosed with a serious terminal illness. Without his input Brian Murray and I soon realised that any revision, in isolation, in New Zealand, seemed unlikely to work. However, miracles do happen and Lyn went into remission and he is still working on the complex. In the process a few weeks ago he found that the Australian and New Zealand “unblotched” plants already have a name – they were described from Australian material in 1825 by John Lindley as *Hibiscus richardsonii*.

As for the “blotched” diploid form of *H. trionum* we still have no idea where it has come from. It is apparently not present in Australia, and the few African forms of *H. trionum* we have seen don’t match this plant either but it does seem to be the form widely cultivated in Europe. Oddly, based on our chromosomal evidence (see Murray et al. 2008) one could suggest it is indigenous to New Zealand as well, simply because all other world published counts for the “species” are tetraploid. However, based on its sudden appearance near a port town in the 1860’s and subsequent rapid spread through Northland, we suspect that it has come to New Zealand as a cultigen from somewhere else in the world, most probably Europe. Further study is needed to resolve this issue.

As for *Hibiscus richardsonii*, because it is the only species present in New Zealand prior to 1860, and because the collections came from what are even by today’s standards still very remote parts of northern New Zealand, we see no reason whatsoever to regard it as naturalised. This view is also supported by the fact that it is this species, not “blotched” *H. trionum*, that was mentioned by early New Zealand based naturalists such as Richard Taylor and William Colenso. It is also the one illustrated in early works of the New Zealand flora – like for example Fanny Osbourne’s painting of it from Great Barrier Island (Goulding 1983).

It is ironic though that it is the “blotched” form of *H. trionum* that has come to supplant *H. richardsonii* in people’s minds as indigenous. For example, it is this plant which is described by Allan (1961) in Flora I, and it is the “blotched” form which is also illustrated by Audrey Eagle (Eagle 1975, 2006) as “native”. Matters are also complicated by the fact that it is this plant which is still widely sold by garden centres as our native species (despite the comments that it is a weed in Flora IV (Webb et al. 1988)).

Acknowledgements

Thanks to Colin Ogle who re-activated my interest in the problem of our “native” *Hibiscus*, and both Brian Murray and Lyn Craven for their help, encouragement and comments on a draft of this short note. Also my gratitude to Bill Sykes who stimulated my interest in this problem all those years ago and who, ever since then has always been more than happy to discuss the problem of *H. trionum* in New Zealand and abroad.

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Peter J. de Lange, Ecosystems & Species Unit, Department of Conservation, Private Bag 68908, Newton, Auckland (pdelange@doc.govt.nz).

■ **Auckland Museum Herbarium (AK) report: 1 July 2007 to 30 June 2008**

September 2007 saw the arrival of a new Director, Dr Vanda Vitali from the Natural History Museum of Los Angeles County, and the retirement of Dr Rodney Wilson to Banks Peninsula. Discussions of major staff restructuring began in February and were progressively implemented from the top down. In April the herbarium accession number reached 300,000 without the usual celebration for such a landmark accession.

Public Relations

During the year the herbarium staff answered nearly 800 enquires, and Ewen Cameron led 4 field trips, was on the organising committee for *BioBlitz* 2008, gave 11 lectures, including the Auckland Botanical Society *Lucy Cranwell lecture*, and the Wellington Botanical Society *Tony Druce lecture*, and invited guest lectures for two stage III University of Auckland courses. Requests for large amounts of specimen data were received from: Department of Conservation (DOC) and Auckland Regional Council (weeds and threatened plants), two MSc students (weeds), NIWA (wetland weeds), liverworts (Landcare Research), Awhitu plants (private researcher), and Great Barrier lichens (Otago University). For Auckland's fourth 24-hour *BioBlitz*, this time at Smiths Bush on Auckland's North Shore, herbarium staff assisted by Auckland Botanical Society members coordinated the vascular plants which totalled 244 species (45% native). The grand total of biota for the 24-hour period was 946 species. Other involvement included contributing to two exhibitions (*Darwin, Secrets*), participation in the Threatened Vascular Plant Panel funded by DOC, and writing the foreword for the *Natural History of Rangitoto Island* book.

Caring for the collection

Contract technician Frances Duff, funded by the Lottery Grants Board, started a 14-month project in May working 4 days/week transferring the 22,000 donated vascular plant specimens of the Auckland University herbarium (AKU) into the Museum herbarium – this involves checking the electronic record, printing and attaching new labels, cutting down sheets, adding flimsies and filing into the main herbarium run. The herbarium requires Containment status to continue to operate as it has been doing – an application has been submitted to MAF.

Fieldwork/Research

Fieldwork for Ewen Cameron included trips to Ohinaiti (1 day Feb), two smaller islands of the Poor Knights Group (2 days Mar), Whatipu (3 days Apr), and the Kaikoura area (8 days, Jan) with the Auckland Botanical Society. Herbarium staff and research associates published 19 articles/papers – topics included vascular floras of several Hauraki Gulf islands, checklists, native and naturalised vascular species, sex of flowers, grasses of the central Pacific, early botanical collecting in the central Pacific, and two book reviews.

Acquisitions and donated specimens

Staff and research associates collecting numbers totalled: Ewen Cameron (535), John Braggins (359) and Rhys Gardner (30). Specimens were also received from: Tricia Aspin, Jessica and Ross Beever, Paul Champion, Pat Enright (51), Graeme Jane, Peter de Lange (998), Lisa Forester (33), Tim Martin,

Colin Ogle, Barbara Parris, Jeremy Rolfe, Matt Renner (214), Bec Stanley, Mike Wilcox (149), Anthony Wright, Maureen Young (66), and Biosecurity Officers of Auckland, Northland and Bay of Plenty Regional Councils, and DOC staff of Northland and Auckland. Totals for the year: lichen (130), moss (300), liverwort (971), alga (181), pteridophyte (191), gymnosperm (18), and angiosperm (dicot 867, monocot 406). The liverworts were mainly collected by: John Braggins from throughout New Zealand (326), Peter de Lange from Chatham Islands (298) and Matt Renner from the North Island (205). Over 100 of the algae specimens were collected by Mike Wilcox as part of his marine seaweed survey of the Auckland region, many of them rarely collected previously from the region. Thirty-five angiosperm potting-mix contaminants suspected to have originated from imported Sri Lankan coir fibre, grown on AgResearch at Ruakura, were vouchered – most of them new adventive records for New Zealand.

Staff

Curator	Ewen Cameron
Honorary Research Associates	John Braggins, Rhys Gardner
Technician	Mei Nee Lee
Contract staff	Frances Duff (May-Jun)

Volunteers

Chris Ashton, Jan Butcher, Jocelyn Day, and Meryl Wright all worked 0.5-1.0 day/week for another year; Mahesh Baidya (Jul-Sep), Morg Macdonald (Feb-), Shelley Heiss-Dunlop (Jun) joined the team; and Wyne Johns (Jul) and Pat Jenner (Jul-Dec) sadly resigned, giving a total of 852 volunteer-hours for the year. Rhys Gardner, Peter de Lange, John Braggins, Jessica Beaver, Dan Blanchon, Wendy Nelson and Mike Wilcox all assisted with difficult or specialist identifications.

Visitors

There were 29 visiting researchers; 55 Auckland University Pacific Biogeography students mapped mistletoe distributions; and 124 members of the public, including eight special interest groups. Overseas visiting researchers included Elizabeth Brown (NSW, liverworts), Steve Cafferty (BM, Banks & Solander), Carrick Chambers (NSW, *Blechnum*), Art Whistler (Hawaii, Polynesian flora), and Karen Wilson (NSW, sedges).

Statistics

New accessions:		(2006-07)
30 June 2008	302,840	
30 June 2007	<u>299,776</u>	
	3,064	(2,645)
Records on Vernon database:		
30 June 2008	212,084	
30 June 2007	<u>208,939</u>	
	3,145	(2,709)
Total records linked to images:	3,235	(2,892)
Loans of specimens		
Inwards:	5[99 spec.] from 5 institutions	(13[340] from 11)
Outwards:	37[1002 spec.] to 12	(50[713] to 17)
Exchange specimens		
Inwards	158 specimens from 1 institutions	(339 from 6)
Outwards	168 specimens to 4 institutions	(478 to 6)
Total number of specimens out on loan:	6,282 to 38 institutions	(5,399 to 34)

E.K. Cameron, Botany Department, Auckland Museum, Private Bag 92018, Auckland

BIOGRAPHY / BIBLIOGRAPHY

Biographical Notes (71) : Theodore Percy Arnold (floruit 1879–1886)

E.J. Godley, Research Associate, Landcare Research, P.O. Box 40, Lincoln

In 1906 T.F. Cheeseman listed 11 “other recent workers” in the historical introduction to his *Manual of the New Zealand Flora*. One of these was “T.P. Arnold”, and a search for further information about him disclosed the following.

A. Specimens in the Cheeseman Herbarium (Auckland Museum).

- AK 6604: *Aciphylla dissecta* (Kirk) W.R.B. Oliv. Tararua Mountains; T.P. Arnold; [no date]
- AK 10088: *Raoulia rubra* J. Buchanan. Tararua Mountains, Mount Holdsworth; T.P. Arnold; Jan. 1882.

B. Locality citations in Kirk's *Students' Flora* (1899).

- p.9: *Ranunculus geraniifolius*; Tararua; *Arnold!*
- p.49: *Pittosporum rigidum*; Tararua Ra. *Arnold!*
- p.202: *Ligusticum dissectum n.s.*; Mt Holdsworth; *T.P. Arnold!*
- p.270: *Olearia excorticata* Buch.; Mt Holdsworth; *Arnold!*
- p.306: *Raoulia rubra* Buch. Mt Holdsworth, Tararua Ra., 4500 ft.; *Arnold and Beck!*
- p.311: *Helichrysum loganii* T. Kirk; Mt Holdsworth, Tararua Ra.; *Arnold and Beck!*

C. Locality citations in Cheeseman's *Manual* (1906)

There are 11 of these as follows, all collected from the Tararua Range or Mount Holdsworth, Tararua Range: *Ranunculus geraniifolius!* (13); *Pittosporum rigidum!* (56); *Epilobium chloraefolium!* (178); *Ligusticum dissectum!* (218); *Olearia excorticata!* (287); *Raoulia rubra!* (334); *Helichrysum loganii!* (340); *Ourisia caespitosa!* (551); *Uncinia filiformis!* (805); *Agrostis muscosa!* (864); *Poa kirki!* (910).

It seemed fair to assume that all these specimens were collected during the one expedition to Mount Holdsworth in January, 1882 by T.P. Arnold accompanied by a Mr Beck; and that this expedition was made from Wellington or thereabouts. But this was not easy to confirm because the name Arnold also turned up in Christchurch in relevant contexts. However, a check of the *G.R. Macdonald dictionary of Canterbury biographies* at the Canterbury Museum showed that a T.P. Arnold had also taught at the Boys' High School; and this, in turn, led to his account of the Tararua expedition in the school magazine, and to his full name in his marriage notice.

Theodore Percy Arnold's grandfather was Dr Thomas Arnold, the famous headmaster of Rugby School in England; and his father was Dr Arnold's second son, Thomas Arnold jnr (1823–1900) usually known as “Tom”. Tom Arnold emigrated to New Zealand in Nov. 1847 on the *James Wickliffe* which was taking settlers to the new Presbyterian settlement at Otago. During his brief stay in New Zealand — from March 1848 to Nov. 1849 — he first tried breaking in a section near Wellington followed by teaching in Nelson. He then went to Hobart to become Inspector of Schools, and there he met Miss Julia Sorell. They were married at Hobart in June, 1850, and here Theodore Percy was born c. 1855, their third or fourth child. In 1856 the young family returned to England (1,2,3).

After taking his BA at Oxford young Theodore came out to Wellington, probably arriving in late 1879. Whether his father's land, bought 30 years earlier, was still in the family we don't know. In any case Theodore was a teacher, not a farmer, but if he taught we don't know where. I cannot find his name in Wellington College histories. What we do know, because he published an account of it, is that he climbed Mount Holdsworth in the Tararua Range, and his story begins as follows (4).

“At Christmas 1881, I had been settled for more than a year at ‘windy Wellington’, and having a strong taste for mountain climbing, had often cast longing glances at the Tararua Range, which blocked the view to the northward at the upper end of the Hutt Valley. I had a particular ‘chum’ B—, whose tastes

were very similar, and this Christmas we had determined to combine business with pleasure by an ascent of the range, the particular business on hand being the collection of alpine plants.” It is clear that Arnold’s chum “B—” was the “Beck” mentioned in Kirk’s locality citations. All that we know of him is that “B— was very busy reading up for an examination, and could only spare a week just at the end of the year —” (4).

24 Dec. 1881

The two friends left Wellington by the afternoon train for Masterton, the chief town in the Wairarapa Valley, just east of the Tararua Range. On their way over the Rimutaka Range Arnold noted that “the rata was in full flower, and its crimson masses along the sides of the bush-covered gorges through which the train passed had a splendid effect.” That night they lay at Masterton.

Christmas Day 1881

After an early start and a “steady pound of some eight or ten miles along a dusty road” they reached the bush and “soon stood on the bank of a river coming down from the range” (probably the Waingawa). Rather naively they had burdened themselves with a rifle and “a tremendous weight of shot and bullet”, hoping to get a little beef, but, luckily for them, they saw no wild cattle, and only shot “three or four kakas”. They also carried a quantity of paper for drying plants strapped between two boards. All that day they followed the river, crossing and recrossing, until they called a halt about six o’clock, pitched their tent, boiled the billy, and “after tea turned in on a luxurious bed of twigs and fern fronds”.

Boxing Day, 1881

Setting out about 6 they ascended a spur which took them to about 4,000 ft and the beginning of the subalpine scrub. But then they descended, continuing up and down, “with the track generally pretty distinct” until sunset, when they reached an old survey camp in a saddle at about 2800 ft. “Above us now towered the object of our ambition, Mt Holdsworth, 4840 feet, with a steady ascent all the way from camp”.

27 Dec. 1881

Cloud over the mountain and steady rain all morning kept the friends in camp. However, “after dinner, as it seemed likely to be fine, we climbed up the hill to a height of about 4,000 feet, where the bush came to an end, and was succeeded by a belt of shrubs, many of them with handsome flowers, among which we had time to do a little collecting before starting down again.”

28 Dec. 1881

An early start was made on a fine and clear morning. After crossing the scrub belt they “got out on the open hillside, which was carpeted with alpine flowers. Here we began collecting in earnest, keeping still, however, steadily upward, till we reached the highest point”. During the ascent Beck’s hat was blown down a gully and while retrieving it he collected “the most interesting find of the trip. It was a new plant and belonged to a group which up to that time had not been found north of Cook Strait, being supposed to be restricted to the Southern Alps.” At the summit they carved their initials and the date on a post and then, with cloud closing in, they retreated to the bush line “from which point a well marked track led down to the camp.”

29 Dec. 1881

As rain had set in the friends started back, crossing the river to the Masterton side in the afternoon and camping there.

30 Dec. 1881

In the morning they arrived back at Masterton in good time “feeling all the better for our trip, and on the whole pretty well satisfied with the results.”

Beck’s special find was named *Raoulia rubra* by John Buchanan who wrote (5): “This is the first occasion on which the vegetable sheep, as this and other species of *Raoulia* and *Haastia* are popularly named, have been collected in the North Island, affording an additional link in connecting the alpine floras of both islands.” Buchanan cited “Mount Holdsworth, Tararua Range, 4500 ft alt., 1882” [which should be 28 Dec. 1881]; but he does not mention Beck or Arnold.

On 26 Aug. 1882 T.B. [sic] Arnold BA was elected a member of the Wellington Philosophical Institute (6); but in January, 1883 Arnold was appointed an assistant master at the Boys High School, Christchurch, at a salary of £225 p.a. (7), and on 2 August, 1883 he was elected a member of the Philosophical Society of Canterbury (8). In the school history (9) (where he is erroneously called "Thomas") he is described as "— a popular cheerful teacher who remained but three years. A grandson of Thomas Arnold of Rugby and a keen botanist, he was an indifferent teacher—" Nevertheless, on 17 October, 1883, Arnold married Marion Griffith at the Registrar's Office in Christchurch (3, 10).

In May, 1885, Arnold and two friends made an expedition into the valley of the Wilberforce River in inland Canterbury to collect plants and seeds. They described themselves as "the first party of botanists who had visited these remote ranges" (11). Arnold's companions were Robert Brown, the 40-year-old cobbler and bryologist, who had come out to Christchurch from Scotland 9 years before (12), and a Mr F.N. Adams, of whom I know nothing except that he wrote an excellent account of the expedition and the plants seen (11).

4 May, 1885

The botanists took the train to Springfield in deteriorating weather and then set out to walk the 60 miles to the Moa river, a tributary of the Wilberforce, where there was a camp of surveyors, prospectors and quartz miners. They reached the top of Porter's Pass at 5.30 and by sunset, when driving rain changed to snow, they were a mile round Lake Lyndon. With the help of their bull's-eye lantern they finally reached Lake Coleridge where a squatter loaned them a whare, but with no means of making a fire they "shivered in their bags all night."

5 May, 1885

They walked from Coleridge past Lake Georgina, and Lake Selfe and then, after crossing the Harper, stayed the night at "Fisher's whare."

6 May, 1885

Up the bed of the Wilberforce to where the Moa River comes in from the west, and then up the Moa to the Moa Creek Camp near the junction with North Creek. The cook "put before them a substantial meal" and they "slept like tops in comfortable camp beds."

7 May, 1885

In the morning Mr Slater, a prospector, took them over the Moa and showed them the habitats of *Gleichenia cunninghamii* and *Dracophyllum traversii*. Adams also mentions "the prevailing timber tree", *Libocedrus bidwillii* and the ribbonwood *Plagianthus betulinus*. In the afternoon the botanists split up, with Slater taking Adams up North Creek into the Cascade Range to find *Ranunculus godleyanus* on Mt Williams. They found some, "covered with snow and ice" at c. 5,000 ft, and with "hands and feet so benumbed with cold as to be almost useless" they dug the plants out of the shingle slide with a prospector's pick. "Some very fine specimens of this rare plant were collected, but as the sun was going down and it was freezing hard we decided to commence the descent". They arrived back at 7 p.m. "heavily loaded with plants and about 20 varieties of seeds." Despite the lateness of the season – the last month of autumn – and the high altitude far inland, several species were seen in flower. They were: *Ourisia macrocarpa*, *O. macrophylla*, *Ranunculus lyallii*, *R. godleyanus*, and *Veronica macrantha*.

8 May, 1885

A good day's collecting in Happy Valley and Rebel Creek near the camp. Further species seen in flower were *Veronica linifolia*, *Sececio lyallii*, and a gentian; and 9 species of ferns were listed from the bush.

9 May, 1885

A nor'-wester in the night brought heavy rain and it rained all day.

10 May, 1885

Rain until the afternoon.

11 May, 1885

Left for home on a fine sunny day. The cook lent them his horse to carry their swags to Fisher's whare near the Harper where they spent the night.

12 May, 1885

Started at day-break, crossed the Harper with difficulty, and arrived at the head of Lake Coleridge at dusk. At Lake Lyndon one of the miners caught up with them and helped carry their swags. They reached the hotel at the foot of Porter's Pass at 7 p.m.

13 May, 1885

A lift in a dray to Springfield and thence by train to Christchurch, arriving at 7.40 p.m. "thoroughly knocked up, but satisfied with the result of our ten days' trip to the district of the quartz reefs of Canterbury."

As we saw, Adams brought back live plants and seeds from the Moa catchment. And he also reported that "Mr Brown, who devoted himself to the collection of mosses, found several new species of *Andreaea* (sic), *Weissia*, *Tortula*, *Orthotrichum*, *Eremodon*, and a *Polytrichum* with flat ovate capsules. *Dicranum clathratum* a rather scarce variety was abundant in this district. Of Hepaticas there were *Gottschia* (sic) *ciliata*, *Madotheca stangeria* and *Tricholea* (sic) *tomentosa*." This might have sounded exciting in 1885, but when Brown began to publish it became clear that he had a most unorthodox idea of what constituted a species, creating new ones on the basis of very small differences. Thus in his 1892 study of the moss genus *Andreaea* (13) he described no less than 10 species from his Moa Creek collection, 9 of them new. (Incidentally he gives the collection month wrongly as "June", 1885). As for Theodore Arnold I do not know of any specimens that he collected at Moa Creek, or anywhere else in South Island. He taught at the High School until 1886, then took up farming, and eventually went to Italy. He can be seen in a photograph of some of the masters in the first 4 years of the school, published in the School History (9).

Eponymy

1894: *Phascium (Cycnea) arnoldii* a moss. "Hab. Moa Creek (one of the tributaries of the Wilberforce) growing on rocks together with *Andreaea* and dark-brown Hepaticae. Specimen plants deposited in Christchurch Museum". Robert Brown *Trans NZ Inst.* 26: 303–304 [no further citation].

Acknowledgments

I am very grateful to Mr Ewen Cameron (Auckland Museum) for information on Arnold specimens; to Mr Michael Warr, archivist, Christchurch Boys' High School, for a copy of Arnold's Tararua article; and to Dr Brian Molloy (Christchurch) for showing me Adams's Wilberforce narrative. I am also indebted to Ms Tanja Webster (lately Research Librarian, Landcare Research, Lincoln) and Ms Elizabeth Jensen (Christchurch) for help with literature searches, and also to Mrs Wendy Weller for her typing.

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PUBLICATIONS

■ Book Review

Galloway (2007) *Flora of New Zealand Lichens*, Revised Second Edition, Manaaki Whenua Press, Lincoln, New Zealand, 2262 + cxxx pgs. Hardback Volumes 1 and 2. ISBN 9780478093766. Price NZ\$79.99

Dan Blanchon, School of Natural Sciences, Unitec New Zealand - Te Whare Wananga o Wairaka.

The *Flora of New Zealand Lichens* (1985) created a heightened interest in the investigation of New Zealand lichens, and certainly helped spark my own enthusiasm for them. Since the first edition of the Flora, a great deal of literature has been produced pertaining to New Zealand lichens. Some updating has occurred since 1985, with revised checklists appearing in 1992 (Galloway 1992) and 1997 (Malcolm and Galloway 1997). For a number of years, David Galloway has been working on a revision of the Flora, drawing together all of these taxonomic changes and new discoveries into one place. The long-awaited revised *Flora of New Zealand Lichens* does not disappoint, bringing together 310 lichen-forming and 44 lichenicolous genera of fungi, containing 1706 taxa, around 70% more than the 1985 version and according to David notes in his preface that it is “probably only about 75-80% of the lichens to be eventually found here.”

Of particular value, is the inclusion since the original Flora and later checklists, of more lichenicolous fungi. Lichenicolous fungi are not lichens, but the fungi which grow upon them. These fungi are often encountered by lichenologists, and including information on how to identify them is most helpful.

The revised Flora includes up to date treatments of genera and species, incorporating most of the recent changes to generic limits generated through the use of molecular studies. There have been a number of changes to common taxa between 1985 and 2007. Some species placed in *Parmotrema* in the 1985 account were placed in *Rimelia* in the 1992 and 1997 checklists, and are now back in *Parmotrema* in the revised Flora. Species which were in the olive-brown genus *Neofuscelia* in 1985, 1992 and 1997, are now in *Xanthoparmelia*. The same has happened to *Chondropsis*, which anyone who has used the key to foliose lichens in the original Flora will remember as the lichen that is described as “curling up into balls when dry”. Other changes brought about through the use of molecular data include the incorporation of *Neuropogon* in *Usnea*.

It is important not to forget the value of bringing together into one place all the disparate papers and monographs that name new species, so all the most recent changes can be viewed together. For many genera, the number of species recognized for New Zealand has increased dramatically. For example, *Ramalina* had nine species in 1985, ten in 1992, 16 in 1997 and 17 in 2007. *Cladonia* had 42 taxa in 1985, climbing to 74 in 2007 with the addition of new species and the inclusion of species formerly placed within *Cladina*.

Unfortunately such a large work also has some flaws. The most obvious one is its utility in the field. The two volumes are the size of small concrete blocks, which does reduce the possibility of taking the set into the field, which was one of the benefits of the 1985 version. To be fair, this is hardly the fault of the author.

Also problematic is the necessity of referring back to the first edition. Descriptions are often not given in the 2007 version, instead referring the reader back to the first edition, which can be somewhat frustrating. This is offset by the free inclusion of the first edition when ordering the second.

A minor quibble is the lack of distribution maps. The lichen volumes of the Australian Flora include maps at the end, which is rather useful. However, the Australian lichen families are spread over a number of volumes, which does make the inclusion of maps easier. Similarly a lack of images in the printed volumes reduces their value for less-experienced users. Again, it could be argued that inclusion of more images would have made the flora even more unwieldy. This could be offset by including more images in the online version.

There are a few problems where specific names disappear between 1985 and 2007, and it is not clear from the Flora where collections identified under 1985 name should be referred. An example of this is *Cladonia calycantha* Delise ex Nyl., which was listed in 1985, but was then no longer included for New Zealand. It would seem that specimens should be referred to *Cladonia cervicornis* subsp. *verticillata* (Hoffm.) Ahti, but this is not mentioned in the revised Flora.

There are some errors or omissions in some of the keys – e.g. In the *Strigula* key it is not possible to get to the couplets 11 to 23 and in the *Porina* key it is not possible to get to the couplets 9 to 13 due to errors in the key. There are a number of typos and spelling mistakes throughout the text. These errors are more fully covered elsewhere (Malcolm 2008) and one imagines they can be rectified in the online version.

The online versions of the keys are useful, although some of the links do not appear to work. For example, in the fruticose lichen key, clicking on a number of the genera does not lead to the generic descriptions, instead depositing the user back at the beginning of the key.

Despite the flaws detailed here and elsewhere, this should not take away from the huge achievement these two volumes represent. Overall this Flora will again give a much needed boost to the lichenological exploration of New Zealand.

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■ **New Book**

A Flora of the Liverworts and Hornworts of New Zealand. Volume 1 by John J. Engel and David Glenny, published by Missouri Botanical Gardens Press, 2008.

This is an illustrated guide to an important component of New Zealand's green plant flora. The liverworts and hornworts, together with the mosses, make up the bryophytes. Liverworts are morphologically a more diverse group than the mosses in that they have both leafy and thallose forms, the leafy forms at times being mistaken for mosses. This volume, the first of three, deals with leafy liverworts, as will Volume 2; Volume 3 will deal with the remainder of the leafy liverworts together with the thallose liverworts and the hornworts.

Volume 1 provides keys and descriptions to 211 of the 595 liverwort species, and provides a key to all genera of the largest order, the *Jungermanniales*. Detailed notes are provided on distribution and habitat, and discussions under the family and genus descriptions place the New Zealand flora in the context of the world liverwort and hornwort flora. To complement the descriptions, 172 black-and-white plates illustrate details of many of the species and 101 colour images illustrate almost all of the 60 genera in this volume.

Volume 1 includes a detailed Introduction, which presents a history of exploration of the New Zealand flora; provides a detailed overview of the region's climate, geology, and vegetation; and includes a special contribution on endophytic fungi associates in New Zealand liverworts and their ecological and evolutionary significance.

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■ **Publications Received**

Auckland Botanical Society Journal No. 63 (1) June 2008, 59 pp.

Auckland Botanical Society Index to Newsletters and Journals, volumes 1 to 62, 1943-2007, 75 pp.

Botanical Society of Otago, Newsletter No. 54, June 2008, 19 pp.

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