

NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 125

September 2016



New Zealand Botanical Society

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

Address:	c/- Canterbury Museum Rolleston Avenue CHRISTCHURCH 8013
Webmaster:	Murray Dawson
URL:	www.nzbotanicalsociety.org.nz

Subscriptions

The 2016 ordinary and institutional subscriptions are \$25 (reduced to \$18 if paid by the due date on the subscription invoice). The 2016 student subscription, available to full-time students, is \$12 (reduced to \$9 if paid by the due date on the subscription invoice).

Back issues of the *Newsletter* are available at \$7.00 each. Since 1986 the Newsletter has appeared quarterly in March, June, September and December.

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

Subscriptions are due by 28 February 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 2016 issue is 25 November 2016.

Please post contributions to:
Lara Shepherd
Museum of New Zealand Te Papa Tongarewa
169 Tory St Wellington 6021

Send email contributions to editor@nzbotanicalsociety.org.nz. Files are preferably in MS Word, as an open text document (Open Office document with suffix ".odt") or saved as RTF or ASCII. Macintosh files can also be accepted. Graphics can be sent as TIF JPG, or BMP files; please do not embed images into documents. 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.

Cover Illustration

Senecio dunedinensis by Eleanor Burton.

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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 2017:

- President
- Secretary/Treasurer
- 3 Committee Members
- Editor

Nominations for all positions opened 1 September 2016 and close on 20 November 2016. 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*.

■ Award of Allan Mere Award for 2016

The NZBS Committee is pleased to announce Dr John Dawson as the recipient of the 2016 Allan Mere Award. Alan was proposed by the Wellington Botanical Society and supported by Katharine Dickinson (Professor of Botany, University of Otago) and Phil Garnock-Jones (Emeritus Professor, Victoria University of Wellington).

As an academic at the Victoria University of Wellington John's research focused on the taxonomy of Apiaceae and Myrtaceae, but he also contributed to biogeography and plant growth form research. In addition to his scholarly research, John wrote eight books on the ecology and identification of New Zealand plants (many with photographer Rob Lucas), several of which won awards.

John made a significant contribution to botany through his public outreach. The adult education classes he taught inspired many to become amateur, or even professional, botanists. He has been involved in many community projects and has supported Otari-Wilton's Bush through giving regular talks and tours.

John's supporter's write:

'John has a rare ability to engage the public and convey his knowledge, and he has never lost his enthusiasm to share.'

'I believe his books are the cornerstone achievement for which he richly deserves this award, especially the magnificent New Zealand's Native Trees (with Rob Lucas), but I want to draw attention also to his primary research on New Zealand *Metrosideros* and Apiaceae and Pacific Myrtaceae, his enthusiastic teaching and community outreach, and his generous support of students and visiting researchers.'

Arrangements are underway for me to present the Mere to John at a Wellington Bot Soc meeting.

Anthony Wright
President, New Zealand Botanical Society

Regional Botanical Society News

■ Auckland Botanical Society

June Meeting

Beginning with a very successful book auction, thanks largely to the donation of Alan Esler's comprehensive botanical library, a subject of great interest to us Northerners was broached by Dr

Willem de Lange. His subject was “ Mangroves and seagrass: indicators of estuarine health”. People become very incensed by the spread of both species, so it was interesting to hear about the interactions between physical processes within estuaries, and mangroves and seagrass, and consider the changes that have occurred in the distribution of these plants over the recent past. Some of our presumptions were challenged by Willem’s suggestion of possible causes.

June Field Trip

Waimauku was the setting for this outing, and two areas of bush were explored. A morning walk in a piece of privately owned bush that has been fenced for several years showed the value of such care, and it was pleasingly weed free. After lunch the Kerr-Taylor Forest and Bird Reserve, although in the early stages of regeneration, rewarded us with an interesting assortment of plants. *Gratiola sexdentata*, a rarity around Auckland, was an interesting find.

July Meeting

Mike Wilcox extended the Plant of the Month to cover three New Zealand plants that have become weeds in Britain. Brenda Osborne, Senior Ecologist, and Jonathan Boow, Principal Advisor, in the Biodiversity Team at Auckland Council, joined together to present the Council’s objective of conserving indigenous ecosystems. First, a standard classification of these systems has been chosen and applied to the local region. Once classified, the Council will commit to conserving the greatest number and most diverse range of ecosystems and sequences.

July Field Trip

Geoff Davidson gave his usual endearingly vague instructions for an Oratia botanical foray, much to be dependent on the wintery weather. Scepticism greeted his forecast of an hour’s exploration of the Auckland University Kelly Road Reserve, and indeed the regenerating kauri forest was so full of wondrous plants that no botanist could skim quickly through. The highlight was the presence of *Halocarpus kirkii*, with a pleasingly large population of seedlings and saplings. The photographers were absorbed with a huge population of the tiny greenhood orchid, *Pterostylis trullifolia*, and its broader-hooded cousin, *P. brumalis*, was also present. With time hurrying by, the bush behind the Oratia church was left unexplored in favour of lunch at the Oratia Native Plant Nursery, fortified by hot soup and mulled wine. A post-prandial exploration of the streamside plantings bordering the nursery revealed many treasures.

August Meeting – Lucy Cranwell Lecture

Having had Heidi Meudt speak to us once before, the audience was prepared for a treat with Heidi delivering the 31st Lucy Cranwell Lecture at the Auckland Museum, and we weren’t disappointed. Her present study, as a research scientist based at Te Papa, is to update the taxonomy of a confusing genus, the native forget-me-nots (*Myosotis* ssp.). She introduced the term “integrative systematics” and explained clearly the multiple sources of data used to identify evolutionarily distinct lineages. In discussing the previous research on New Zealand *Myosotis*, she paid tribute to the work done for *Flora* Vol. I by “the other” Lucy, Lucy Moore.

August Field Trip

Gittos Domain at Blockhouse Bay, is one of a string of reserves along the northern shore of the Manakau Harbour. The presence of pines and wattles does not detract from the need to preserve the gumland scrub species that thrive on nutrient poor soils. Umbrella ferns, mostly *Gleichenia dicarpa*, cover large areas, along with sedges, including *Machaerina sinclairii* and *Tetraria capillaris*. *Dracophyllum sinclairii* was common, and *Pimelea longifolia* sparse. Three species of *Pterostylis* orchids were seen, and a search later in the year should reveal some sun orchids.

FUTURE EVENTS

- 17 September Waikumete Cemetery gumland scrub
- 5 October Dan Blanchon, the lichen *Parmotrema*
- 15 October Otata Island, the Noises
- 21-24 October Labour Weekend camp to explore Ed Hillary Hope Reserve, near Raglan
- 2 November Catherine Beard “Honeybees on conservation land – a risk analysis”
- 19 November Off track, Mt Tamahunga

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

President: Ewen Cameron

Secretary: Vijay Soma
aucklandbotanicalsociety@gmail.com

■ Rotorua Botanical Society

June - Ruahine Springs Geothermal Areas, Tikitere

After a bit of confusion about location, we met up with a local bach owner at the edge of the plantation near a forest gate. More changes of plans and we were off through plantation to our first thermal area. The tall pines provided open walking through scattered spectacular large *Asplenium polyodon* and *A. flaccidum* and abundant tree ferns, especially wheki. At the fringes of the thermal area *Nertera depressa* and *Hypolepis distans* formed large patches under the pines, but the margins were dominated by kanuka, some obviously *Kunzea tenuicaulis* but many perhaps hybrids with *K. robusta*. Other plants included mingimingi (*Leucopogon fasciculatus*), gorse and manuka. The thermal area was a fuming flat and cliff barren of vegetation, with little temptation to explore.

The next stage of our tiki tour was a bush bash, hopefully to our next target thermal area. We headed in the wrong direction, taking the easiest path but arriving at our next thermal area, decorated with old tyres, TV and other abandoned items. En route we traversed and skirted a pines wind throw area, mostly in waterfern or blackberry. We did see the odd patch of interest including a few mangao saplings and *Coprosma tenuicaulis*. At the thermal area the surrounding scrub was similar to earlier but the area was fringed by grass, especially very large narrow-leaved carpet grass.

From there we took the easiest route by firebreak and road to our earlier intended destination, while a few returned to retrieve vehicles. En route we passed another major rubbish dump! That provided many potential weed plants. At the spring we were greeted by signs of wheelies on a bare pan thermal outwash area, before finding a track in through kanuka scrub to view a large thermal spring. Here we settled for lunch amongst dwarf kanuka barely a few cm tall. No further plants of interest were found.

From there we drove around to a short track into a waterfall fed by a large thermal spring. The rough track was fringed by bracken, waterfern and typical coprosma scrub. Highlights included kamahi, tall *Paspalum urvillei*, and *Miscanthus nepalensis*. On our return we stopped to admire a large mud volcano, then watch a few keen members examine a *Macheriana rubiginosa*/*Carex geminata* wetland while the rest examined plants on the road bank behind which included *Gaultheria oppositifolia* and *Lycopodiella cernua*. Our final stop of our tiki tour was to inspect an old sulphur quarry. Here we were greeted by abundant heather and Spanish heath at the roadside.

July - Wairakei thermal Area and Lake Taupo margins

A heavy frost greeted us at the café at the start of the track. Initially we passed through an area of mixed garden and garden weeds into privet forest with tall radiata pine above. As the forest gave way to the thermal kanuka (*Kunzea tenuicaulis*) the path became lined with narrow-leaved carpet grass and other familiar adventives such as pampas, indian doab, lotus, flea bane, inkweed, ragwort and self heal. Shortly the path descended to the warm stream fed by several springs. Here we entered the thermal area proper with fewer adventives and began to see plants of natural vegetation such as *Lycopodiella cernua*, *Gleichenia microphylla*, *Dicranopteris linearis*, *Hypolepis dicksonioides*, minimingi, and *Dracophyllum subulatum* amongst the kanuka. We explored several tracks leading to the site of now defunct thermal features, killed off by the adjacent Wairakei geothermal power station, adding more weeds as we went, including heather, spanish heath. Scattered native trees such as kamahi, black matipo occurred near the fringes with quite a few ferns notably *Blechnum parisiæ*, especially vigorous *Asplenium polyodon*, *Deparia petersonii* and *Diplazium australe*. We knew we were approaching the end of the route when plants such as *Genista monspessulana* and jasmine, and a grape vine appeared and the low kanuka was replaced by pines.

After a warmup coffee at the café we headed to the Lake Taupo foreshore at Two Mile Bay to walk back to Waipahihi Bay along the shore past flash hotels and residences. The route was along a concrete path through a short-mown shore reserve. Here the main attraction was further thermal springs in the rocky parts of the shore where surprisingly there were quite a few native plants tucked away, including a *Glossostigma*, *Calystegia soldanella*, *Rytidosperma unarede*, *Blechnum vulcanicum* and *Cyperus ustulatus*. Along the low bank formed at high lake levels a wide variety of adventives also was present. Finally at our last thermal refuge, ferns included *Deparia petersonii*, *Adiantum*

cunninghamii and *Blechnum chambersii*. A fitting end to a very testing day identifying adventives.

August -Arahiwi Scenic Reserve Mamaku

A good-sized group of 14 headed out from the Mamaku cemetery into the reserve behind on a very cold morning. The reserve consists of a long strip of forest about 200m wide alongside the old railway screening the road and railway from the pasture behind. The forest showed signs of windthrow perhaps 10 years ago which meant the understorey was either quite dense with regrowth or in unaffected areas, almost absent. The canopy was mainly tawa with scattered rimu and miro and in the unaffected areas there were few other species with even the ground cover merely scattered clumps of *Blechnum discolor*, *Metrosideros perforata*, *Astelia fragrans*, or *A. solandri*. In the disturbed areas the main species were *Coprosma grandifolia*, *Dicksonia fibrosa* and *D. squarrosa*. *Raukaua edgerleyi* was particularly prominent as young ground-based trees and in one area near a larger parent tree was especially common. There was also a good representation of ferns, especially filmy ferns, including the usually less common *Hymenophyllum scabrum*. Climbers probably *Rubus schmedelioides*, *R. cissoides* and *Passiflora tetraptera* occasionally swung from the canopy high above. Epiphytes were rare on the tawa but where they had fallen out of rimu a *Pittosporum kirkii* was stumbled on and *P. cornifolium* seen. Barberray and cherry laurel, grasses and a few adventive herbs were noted along the margins of the stand where the diversity was higher. Here plants such as fuchsia, broadleaf, wineberry, five finger and tawari were much more apparent and ferns more common. By lunchtime we had traversed the first block and retired back to the carpark to thaw out.

After lunch a reduced group traversed back along the forest margin to a large wetland. Few new species were noted though. At the wetland young kahikatea, cabbage trees were scattered along the margin with blackberry and toetoe (*Austroderia fulvida*) impeding access to the margins. *Carex secta* and undetermined sedges and rushes emerged from what was clearly a high flood level from recent rain. This limited further exploration so all returned to the vehicles.

FUTURE EVENTS

October 9 Maungaongaonga Scenic Reserve, Waiotapu
October 28-29 East Cape Revisited #10
November 19 Matakana Is wetlands
December 4 Lake Hiwiroa, Kaimai-Mamaku Forest Park

President: Paul Cashmore 027 650 7264 pcashmore@doc.govt.nz

Secretary: Elizabeth Miller (07) 343 5013 rotorua-botanicalsociety@gmail.com

Web Page: www.wildland.co.nz/botanical.htm

■ Wanganui Museum Botanical Group

FUTURE EVENTS

October 4 Talk on plants seen in Spain, Austria, Germany and the Netherlands by Colin Ogle.
December 3 Trip to Paengaroa Scenic Reserve, Mataroa

President: Clive Higgie (06) 342 7857 clive.nicki@xtra.co.nz

Secretary: Robyn Ogle (06) 347 8547 robcol.ogle@xtra.co.nz

■ Nelson Botanical Society

Post-Easter Camp: Cape Campbell. Day 3

We drove a short distance along the coast to a small covenant set up to protect a population of *Muehlenbeckia astonii*. We looked at a few plants that were outside the covenant but were surviving in spite of being accessible to sheep. There were several of the original plants that were 2-3 metres across, nested in marram grass, which provides some shelter, but also needs watching to prevent over-encroachment. Associate species such as *Olearia solandri* and *Ozothamnus leptophyllus* have been planted in an attempt to improve the habitat for the *M. astonii*. We then headed towards Nelson and stopped at Pelorus for more botanising. We climbed down to the riverbank next to the bridge to find *Hebe rigidula* var. *rigidula*. It grows in cracks in the rock and suffers extremes of climate from hot baking sun to raging torrents. Also on the rocks and along the bank we found *H. stenophylla* var. *stenophylla*. We then botanised the northern loop track, enjoying black beech-rimu forest with areas

of tall tawa and totara. Divaricates included *Melicytus micranthus*, *Streblus heterophyllus*, *Raukaua anomalus* and *Melicope simplex*. We also saw *Libertia mooreae* and *Rubus australis*.

May Field Trip: Janet Blount's property Sunday Creek Road, Stanley Brook.

Most of the podocarp/beech forest on the property had formerly been heavily browsed by farmed deer with a resulting weed invasion. However, about half, on a very steep gravel escarpment, was protected by a deer fence. We made our way through the blackberry and old man's beard infested bush, but one of the most worrying weeds was *Dryopteris filix-mas*. Notable were the number of small-leaved shrubs; *Raukaua anomalus*, *Coprosma colensoi*, *C. crassifolia*, *C. dumosa*, *C. linariifolia*, *C. microcarpa*, *C. rhamnoides*, *C. rigida*, *C. rotundifolia*, and *C. x cunninghamii*. Other plants of note included: *Lagenophora pinnatifida*, *Elaeocarpus dentata* and *E. hookerianus*, *Parsonsia heterophylla* and *P. capsularis* var. *capsularis*, *Hebe stenophylla* var. *stenophylla* and *H. leiophylla*. Ferns included: *Notogrammitis billardierei*, *Polystichum neozelandicum* subsp. *zerophyllum*, *P. vestitum*, *Blechnum discolor*, *B. chambersii*, *Pyrrosia eleagnifolia*, *Hymenophyllum scabrum*, and *H. villosum*. After lunch we inspected some silver beech trees that were dripping with huge *Peraxilla colensoi* specimens and there were also *Alepis flavida* plants on the property. A stroll down the drive and along the road at the base of the escarpment provided a number of exotic species for the list including *Ilex aquifolium*, *Cotoneaster franchetii* and *Crataegus monogyna*. We also added *Adiantum cunninghamii* and *Acaena anserinifolia*, then *Carex flagellifera* and *Asplenium gracillimum*.

May Talk: The Snares, Auckland Islands and Campbell Island. David Grinsted

David and Elizabeth visited these islands in January this year with Heritage Expeditions and saw many of the megaherbs in flower. Along the east coast of the Snares' North East Island, *Stilbocarpa robusta* was in flower under *Hebe elliptica*, *Olearia lyallii* and *Brachyglottis stewartiae* scrub. Walking around Enderby Island *Bulbinella rossii* had nearly finished flowering but *Stilbocarpa polaris* and *Anisotome latifolia* were looking splendid. Carpets of pink and white *Gentianella cerina* covered large areas and southern rātā was starting to turn red. On Campbell Island flowering *Pleurophyllum criniferum*, *P. hookeri* and *P. speciosum* carpeted the hills. Vivid blue flowers of *Hebe benthamii* were present amongst dracophyllum and tussock. In a damp area was a large patch of *Ranunculus pinguis*. *Damnomenia vernicosa* was also in flower.

June Field Trip: Pelorus Bridge

Our group of 11 decided to concentrate on the river flat forest and sort out some of the filmy ferns: *Hymenophyllum demissum*, *H. villosum*, *H. sanguinolentum*, *H. scabrum*, *H. flabellatum*, *H. revolutum*, *H. rarum*, *Polyphlebium venosum* and *P. endlicherianum*. We then looked at *Tmesipteris elongata* and *T. tannensis*. The reserve contained a good number of divaricating shrubs including *Melicytus micranthus*, *Melicope simplex*, *Streblus heterophyllus*, *Raukaua anomalus*, *Coprosma areolata*, *C. linariifolia*, *C. microcarpa*, *C. rigida*, *C. rotundifolia*, *C. rhamnoides* and *C. dumosa*. It was interesting to find *Lophomyrtus bullata* occurring with *L. obcordata* and the hybrid, *L. x ralphii*, and we also found *Alseuosmia pusilla*. With so much to see close to ground level it was easy to overlook the majestic podocarps, tawa close to its southern limit, and all four lowland beech species.

June Talk: Camping in Guadalcanal's jungle, and other tales of Pacific fern exploration. Dr Leon Perrie

In September 2015 Leon joined a University of South Pacific expedition to the highlands of Guadalcanal. The Solomon Islands have approximately 370 species of ferns and lycophytes with about 10% endemic. Leon was collecting plants in triplicate for herbaria in Honiara, Suva and Te Papa but getting the plants dried and pressed was challenging due to the difficult conditions at their campsite on the foothills of wet and muddy Mount Popomanaseu. Leon showed some species from New Caledonia including *Araucaria*, *Agathis* and *Parasitaxus usta*, a parasitic conifer only found in New Caledonia. Large-leaved *Nothofagus codonandra* doesn't look anything like beech species in New Zealand, which is partly why it has been recently put into a new genus - *Trisyngyne*. Leon demonstrated how some of our familiar fern species are supposedly shared by the Pacific Islands, but there is some doubt that the populations are conspecific. Examples included: *Blechnum vulcanicum* in the Solomon Islands which has bigger, wider fronds compared to New Zealand plants, the rachises of Solomon Islands' plants are covered in fine hairs and *Gleichenia dicarpa* which in plants from New Caledonia has frond segments more deeply pouched than plants found in New Zealand.

July Field Trip: Adele Island



Pterostylis alobula on Adele Island
(Don Pittham).

Landing was easier than last year as the tide was further out, but we still had to wait for the water to drop enough to be able to make our way around to the track. We investigated beneath gorse on the beach fringe and a few little gems were discovered, including *Lobelia anceps*, *Luzula picta* and a patch of *Apodasmia similis*. We started up the steep track under a *Fuchsia excorticata* and on the way up this gully several ferns were seen including *Arthropteris tenella*, *Blechnum chambersii*, *Hymenophyllum demissum* and *Cardiomanes reniforme*. We headed on the northern loop and along this ridge which is mostly manuka/kanuka dominated with *Leptecophylla juniperina* subsp. *juniperina*, *Leucopogon fasciculatus*, and abundant *Hakea salicifolia* and gorse. Along the way there were patches of flowering *Acianthus sinclairii* and *Pterostylis alobula* in flower, *Dendrobium cunninghamii* and *Earina autumnalis* and *E. mucronata* were growing close together. The track dropped down towards the coast into taller coastal forest with less weeds present, which contained *Alectryon excelsus*, some large *Elaeocarpus dentatus*, and occasional juveniles of *Streblus banksii* but no mature ones were identified.

July Meeting: Our Native Cresses – Plants on the Edge. Shannel Courtney

Shannel covered all New Zealand's native cresses with particular attention to the coastal peppercress *Lepidium banksii*. The title "plants on the edge" alluded to the fact

that cresses are on the edge of habitats and many are also on the edge of extinction. Our five native genera are *Cardamine*, *Lepidium*, *Pachycladon*, *Notothlaspi* and *Rorippa*. Only 22 of the 42 *Cardamine* species are not threatened or at-risk and many of them are still to be formally described. *Lepidium* species are all endemic but *L. amissum* and *L. obtusatum* are already extinct, and others are on the cusp of extinction with ten Nationally Critical. *Pachycladon fasciarium* is a South Marlborough endemic confined to the Chalk Range and Mt Ben More. Only 37 individuals are known and one is at least 27 years old! Just as threatened is *Pachycladon exile*, confined to a few limestone outcrops in South Canterbury. *Notothlaspi* is a genus totally confined to New Zealand. An unnamed one is a cushion plant found on ultramafic rocks in the Red Hills. The other two species, including the *N. rosulatum* of greywacke screes, are biennial – producing seed in their second year and then dying. Of the three species of *Rorippa*, only *R. divaricata* is endemic to New Zealand. *Lepidium banksii* was rediscovered in 1988 and is known only from the Nelson coast. It has a basal rosette of leaves, which produce flowering side shoots, which die back at the end of the season but come away again in spring. It grows best where sea birds provide the fertility needed to establish growth. Threats to coastal peppercress survival include caterpillars of the white butterfly and of the diamond-back moth, aphids, white rust, turnip mosaic virus, and weeds such as tall fescue. It also has to contend with browsing by possums, deer, rabbits and hares. Also, storms have washed away whole coastal landforms along with long-standing translocations of peppercress and also resulted in burial of transplants by depositing rafts of flotsam onto them. Threat mitigation by DOC includes the use of insecticides, herbicides, fungicides and physical removal of weeds. Other recovery actions include habitat creation by building rock retaining walls, cages to protect against seal crushing, translocation and growing in cultivation. Transplanting requires good naturally functioning ecosystems and a good seed supply.

FUTURE EVENTS

Sept. 18 Wairoa weed busting, Wairoa Gorge. Shannel Courtney, 03 5469922
Sept. 19 Talk by Brian Patrick: "Lepidoptera and plant interaction".

President: David Grinsted, 03 5424384

Secretary: Don Pittham, 03 5451985, pittham@xtra.co.nz

Treasurer: Uta Purcell, 03 5450280, mupurcell@xtra.co.nz

■ Other Botanical Society Contacts

Waikato Botanical Society

President: Paula Reeves

Secretary: Kerry Jones

General contact: secretary@waikatobotsoc.org.nz

Website: <http://waikatobotsoc.org.nz>

Taranaki Botanical Society

Contacts: Barbara Hammonds 06 7597077; Email: barbara_ha@outlook.com

Janica Amooore 06 7520830. Email: waiongona@clear.co.nz

Manawatu Botanical Society

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

Wellington Botanical Society

President: Lara Shepherd, lara.shepherd@tepapa.govt.nz

Secretary: Barbara Clark, 04 233 8202 bj_clark@xtra.co.nz <http://wellingtonbotsoc.org.nz/>

Canterbury Botanical Society

President: Gillian Giller (03) 313 5315

Secretary: Alice Shanks **Website:** www.canterburybotanicalsociety.org.nz

Wakatipu Botanical Group

Chairman: Neill Simpson (03) 442 2035

Secretary: Lyn Clendon (03) 442 3153

Botanical Society of Otago

Chairman: David Lyttle dilyttle@ihug.co.nz www.otago.ac.nz/botany/bsoc/

Secretary: Allison Knight, P O Box 6214, Dunedin North. bsoc@otago.ac.nz

ANNOUNCEMENTS

■ Jubilee Award 2016 – Applications sought

The Wellington Botanical Society invites applications for an Award of up to \$2,600 to encourage and assist applicants to increase knowledge of New Zealand's indigenous flora, and to commemorate the Society's Jubilee in 1989.

Purpose of the award

The Award is open to anyone working in New Zealand. It will be granted for: fieldwork; artistic endeavour; publication; research; propagation or cultivation of NZ native plants for educational purposes and/or other studies which promote the better understanding of NZ's indigenous flora and vegetation. The interpretation of these conditions will be flexible, except that the main criterion will be the furtherance of knowledge or promotion of the intrinsic value of NZ's indigenous flora and vegetation. The Award may be used to defray costs such as travel, accommodation, materials or publication.

Applications for the Award

Applications should be made in typescript to: Secretary, Wellington Botanical Society, PO Box 10 412, Wellington 6143, or by e-mail to bj_clark@xtra.co.nz, by 20 September 2016.

There is no prescribed application form, but the following must be provided:

- the applicant's name,
- postal address, telephone number and e-mail address.
- any relevant position held
- a summary statement of the applicant's accomplishments in the field of botany – no more than one page
- an outline and timetable for the proposed project for which the Award is sought
- a proposed budget for the project

Selection

The Award will be made to one or more applicants selected by a subcommittee nominated by the general committee of Wellington Botanical Society. Award(s) will be made and applicants informed of the results in writing, by 6 October 2016.

Successful applicants will be required to provide, at an agreed time, a short report on what they have achieved, and an account of their expenditure of Award funds. The names of the Award recipients, the value of the Award(s), and a synopsis of the project(s) will be published in the Annual Report of Wellington Botanical Society.

NOTES AND REPORTS

■ A Miltonic solution to the divaricating plant problem

Matt McGlone, Research Associate, Landcare Research, Lincoln.
mcglonem@landcareresearch.co.nz

Despite the copious recent literature discussing the origin of divaricating plants (e.g. Lusk et al., 2016), there has been little attempt to explore older discussions of the theme. *Paradise Lost* (Milton, 1647) contains a brief, and admittedly in some ways incomplete, account of the creation of plant and animal life on this planet. However, it merits attention as the first description (albeit in blank verse) of the divaricating plant form:

*“...And [God] saw that it was good, and said, Let th’Earth
Put forth the verdant Grass, Herb yielding Seed,
And Fruit Tree yielding Fruit after her kind....”*

[there follows a description of the bare earth being covered by vegetation, including the following ‘putting forth’ of plant functional types]

*“.....; and the th’humble Shrub
And Bush with frizl’d hair implicit; last
Rose as in Dance the stately Trees...”*

(*Paradise Lost*: Book VII: verses 309-324)

[note: in 17th century English ‘humble’ also meant ‘low-growing’; and ‘implicit’ had the meaning of ‘tangled’. ‘Hair’ we can take as poetic license for ‘twigs, small branches’]

Three important points emerge from this account. First, vegetation preceded animal life, thus ruling out any role for selective pressure exerted by vertebrate browsing in the creation of a shrub with ‘frizl’d hair implicit’ (Greenwood and Atkinson, 1977; Atkinson and Greenwood, 1989; Bond et al., 2004). Second, the ‘frizl’d hair plant’ (FHP) form preceded trees, and thus trees with juvenile divaricating stages must have been created later, as suggested by Godley (1979). Finally, the FHPs arose in the ecological context of an environment described by Milton as a:

*‘...bare Earth, till then
Desert and bare...’*

(*Paradise Lost*: Book VII: 312-313)

This implies high levels of insolation, overnight frosts, persistent wind and low rainfall. Extreme climatic factors must therefore have influenced the development of this intriguing plant form, as has been long suggested (Diels, 1897; McGlone and Webb, 1981; Godley, 1979; McGlone and Clarkson, 1993; Lusk et al., 2016)

Given that John Milton was divinely inspired (see the introductory verses to *Paradise Lost*), we can accept this version of the origin of FHPs (aka divaricating shrubs) as the final word.

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■ **Obituary - Henry E. Connor CNZM, MSc (Hons), DSc, FRSNZ (4 August 1922 – 26 July 2016)**

Ilse Breitwieser and **Matt McGlone**, Landcare Research, Lincoln

Henry Connor was born in Wellington, and attended St Patrick's College Wellington. He joined the Plant Research Bureau in 1940 as a clerical cadet, and was later selected by Dr H.H. Allan as a technical trainee for Botany Division, DSIR in 1942. He attended Victoria University College where he completed his BSc as a part-time student in 1948 and his MSc 1st Class Honours in 1950. Henry used to highlight two points from his school and university time in Wellington: at St Patrick's College he learned about scholarship; and Dr Newman at Victoria University College gave him a proper foundation in Botany.

When the Plant Research Bureau, DSIR was formed in 1936, it was very much focussed on what was then called economic botany and this mission was in the fore during the war years and immediately after. Of great concern were the tussock grasslands, in particular those of the depleted, overgrazed high country of the eastern South Island, as sheep meat and wool production was an important part of the New Zealand economy. Vic Zotov had been a member of the Plant Research Bureau since 1928 working on both the taxonomy and ecology of the grasslands and in part Henry was recruited to assist with this effort. A pressing need, recognised as early as the 1930s, was a full taxonomic revision of the indigenous grasses.

Henry subsequently made grasses the focus of his lengthy 70 year career. They certainly provided him with all the challenges that a researcher of his talents could possibly want. Grasses, due to their relatively recent evolution and compressed and reduced floral parts, have been difficult to classify and the southern genera of the family were poorly known when he began his work. Botany Division definitively committed itself to this task of producing a grass flora in the 1950s but it was to take almost another 50 years before it became a reality.

In 1974, he became Assistant-Director of Botany Division, and head of the taxonomy section. In 1978 he was awarded a Doctor of Science from University of Canterbury. From 1980 - 1982 he was Director of Botany Division. Although this was only a relatively short appointment, he proved an able manager during a time of constrained resources.

As the head of the taxonomy section, he ensured that the Division's focus remained on producing comprehensive Floras, supported where possible with in depth investigations of other aspects of plant biology, ecology and physiology. He himself led the way, with investigations of the anatomical structure of grass leaves and grass stem growth, leaf chemistry (waxes, carbohydrates, terpenes), chromosomes, breeding systems, genetics, and ecology. Botany Division at Lincoln had a large experimental garden where Henry grew many problematic taxa and undertook a large number of crossing experiments. His life-long investigation of the grasses culminated with the production, in association with Elizabeth Edgar, of Volume 5 of the *Flora of the New Zealand, Grasses* in 2000 – a fitting way to usher in the new millennium.

While the initial motivation of many of his wide-ranging investigations was to support taxonomic studies, Henry's work provided valuable contributions in other fields. For instance, his studies of the eastern high country grasslands are still important ecological contributions in their own right but also, with the passage of time, provide essential historical documentation of change. Henry had a career-long concern with documentation of the poisonous plants of New Zealand. He began this work, part public service, part fascination, in the 1940s and over the years published many books, articles, and scientific publications on the topic. His early work on the state of the grasslands was followed by his appointment to the Interdepartmental Committee on Nassella Tussock, the North Canterbury Catchment Board and the Mount Cook National Park Board, all organisations where his deep knowledge of New Zealand grasses and grasslands was highly relevant.

The government service policy of compulsory retirement at 40 years' service meant that he left Botany Division at the relatively young age of 60, but he never contemplated easing off. He continued active research for the next 30 years completing many important contributions over that time. He was given a new research home first at the Centre for Resource Management, Canterbury University, and later at the Geography Department. There, besides continuing his taxonomic investigations and flora writing, he took a much appreciated part in the life of the university, mentoring and contributing to seminars.

Henry was well recognised by New Zealand and the scientific community. He was the Banks Lecturer in 1981, the Burbidge Memorial Lecturer in 1985 and the McCaskill Memorial Lecturer in 1992. In 1983, he was elected Fellow of the Royal Society of New Zealand, and in 2000 he was awarded, along with Elizabeth Edgar, the prestigious Hutton Medal for Contributions to the documentation and botanical classification of the New Zealand flora. He was appointed a Companion of the New Zealand Order of Merit in 2002 for services to botany.

Henry had a complex personality. He could be demanding and critical and this, when combined with an often cutting wit and a propensity to classify others in much the same way he classified grasses, led to uncomfortable interactions with some of his colleagues. On the other hand, there was also the bon vivant, highly social side to his personality; his love of literature, fine wine and food; and his unfailing willingness to share his scientific knowledge and insights. This latter side of his personality was far more evident during his long productive retirement at the University of Canterbury away from the management responsibilities of a government organisation.

Henry was well known for his scholarly, witty, well-researched speeches. So, we will finish in Henry style with Virgil:

Felix qui potuit rerum cognoscere causas.

Fortunate is he who has been able to learn the causes of things.

■ Obituary – Neville Taylor Moar BSc, MSc, PhD (Cant.) (31 July 1926-01 June 2016)

Matt McGlone and **Janet Wilmshurst**, Landcare Research, Lincoln.

Neville grew up on the family farm in the Pohangina Valley on the flanks of the southern Ruahine Ranges, just north of Palmerston North. The valley nurtured his early interest in the natural environment and as a boy he spent much time exploring the remaining patches of native vegetation. Only three million years before the land on which the farm sat had been part of the sea bed, and the presence of sea shells high in hills intrigued him, sparking an early interest in geology.

Neville was a pupil at Feilding Agricultural High School, an unusual institution which had its own working farm. It was fortunate in having as its inaugural headmaster, Dr Leonard Wild, who was a leading geologist and agricultural scientist of the time, as well as a dedicated and innovative educator. Dr Wild had as his assistant head, Dr Harry Allan, who in 1928 became the founding director of the Plant Research Station in Palmerston North – which in 1938 became Botany Division DSIR. Dr Vic Zotov, also attended the school and later joined the Plant Research Station in 1928 as a grass taxonomist. Dr Arthur Healy, a weed expert and ultimately assistant Director of Botany DSIR, also

was a pupil at the school in the 1930s. The school thus provided the perfect environment for Neville's growing interest in botany and earth science that was to become his life's work.

Neville's high school years (1940-1944) coincided with the Second World War and, although on leaving school he was in line for conscription and had done some initial training, the war was finishing. In 1945 he enrolled at Victoria University College for a double major degree in Botany and Zoology. Not many young men went to university in those days, and Victoria was regarded by many as a hot-bed of 'Red Radicalism'. Neville would talk about the ribbing he got on returning home for the holidays as to whether he had become a communist fellow traveller. He boarded at Weir House and had some illustrious fellow students including the historian and editor of the *Listener* WH Oliver, the poet and writer Alistair Te Ariki Campbell, geologist Paul Vella, and Ron Trotter, titan of New Zealand industry and chief executive of Fletcher Challenge.

In December 1947, having obtained his BSc degree, Neville taken on as assistant botanist at the newly formed Botany Division (then headquartered in Wellington) where he had been a vacation worker. His first role was to assist Dr Bill Harris (shortly to move to the Geological Survey) who was studying peat soils and developing the infant science of palynology, which had begun in New Zealand only a decade earlier with the pioneering publications of Lucy Cranwell. Neville's interest in wetlands was sparked by an early assignment to an investigation of flax swamps. When he enrolled for a part-time M.Sc at Victoria he continued this theme with a study of the ecology of the peat swamps extending along the coast north of Wellington to the Manawatu. Meanwhile he assisted Ruth Mason in a major survey of wetlands (1949-1960) taking part in surveys of Northland, Waikato, Nelson, Westland and Southland.

He began his pollen analytical studies with several peat profiles from the Ruahines (with Norm Elder), from the subantarctic Auckland Islands as a resulting of taking part in the 1954 Falla expedition, and on the Chatham Islands. Between 1956 and 1961, he published 8 papers on botany, vegetation history and palynology. This was quite an achievement for those years, as scientific papers were regarded as a secondary priority well behind the main mission of floras and surveys. In 1950 he began what turned out to be a 26 year association with the Nassella Tussock Boards serving on the North Canterbury and later Marlborough Boards.

In 1954 Neville moved with the Division from Wellington to Christchurch. In 1961, with DSIR support, he began his PhD at Cambridge University, England, studying the vegetation history of south-west Scotland, Shetland and Orkney Islands (the latter the Moar ancestral home). On his return in 1964, he began his core scientific mission: a detailed, systematic and ground-breaking study of the changes in Quaternary vegetation and climate of the South Island. Neville's main scientific contribution was to show how the major fluctuations in climate were reflected in the ever-shifting composition of the vegetation in particular in relation to the millennial scale pulses of the glaciers in the Southern Alps. He was fortunate to be joined in this enterprise by New Zealand's preeminent glacial geologist, Dr Pat Suggate of the Geological Survey. They forged a productive scientific partnership and friendship that lasted from the 1960s right up until the last few months of his life when he was working on their latest manuscript.

After many years of painstaking work he completed a comprehensive atlas of pollen grains of New Zealand which has remained the key reference work in New Zealand palynology. The Honey Industry also has him to thank for a comprehensive analysis of the pollen content of honeys, allowing them to certify nectar sources. He never informed the bee keepers taking part in the study that only a few grams of honey were necessary, not a 1 kg tin and, because of this uncharacteristic slip, the whole laboratory enjoyed a plentiful, varied supply of honeys over several years.

Botany Division Directors recognised that Neville was a safe pair of hands and someone who would follow a project through to the end. So he was invariably involved in planning for buildings and acquisition of major new equipment. He also ran a small science group which besides Quaternary studies included plant anatomy and the electron microscope unit. However, administration was definitely not something he enjoyed and he was never tempted to abandon his passion for pollen and vegetation history.

After his retirement in 1987, Neville continued on as a very active research associate and valued member of the palaeoecology laboratory at the successor scientific organisation, Landcare Research.

He produced a stream of scientific papers and book chapters and mentored staff and students over his nearly 30 years of retirement. He was working on a new Quaternary publication right up until the week before his death. Neville was also a keen amateur local historian and published a very well received history of Lincoln in 2011, his home since 1964.

Neville's scientific associates from New Zealand and elsewhere in the world are unanimous in describing him as a gentleman, generous to a fault and considerate of others. At Landcare Research he was our much loved kaumātua, supporting us right up until the end.

BIOGRAPHY / BIBLIOGRAPHY

■ Biographical Sketch – George Osborne King Sainsbury (1880 – 1957)

Val Smith, 80 Mill Road, New Plymouth 4310.



Fissidens taylorii* var. *sainsburyanus

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Born in Napier, New Zealand, on 1 June 1880, George Osborne King Sainsbury was the third surviving son of lawyer George Edward Sainsbury and his wife Edith Ashfield King, both from southern England. George, from a family of brewers and wine merchants in Bath, had practiced as a solicitor in Corsham, Wiltshire, before immigrating to New Zealand in the early 1870s, encouraged perhaps by his older sister Mary (Susanna) and brother-in-law Purvis Russell, who several years earlier had established a sheep run in central Hawkes Bay. George Sainsbury, aged 26 and already trained, was admitted to the Bar in the Supreme Court at Napier in 1875 and opened an office in Tennyson Street. In 1883 he was joined in partnership by fellow Englishman Francis Logan and in 1900 by a second generation New Zealander, Heathcote Williams from the Bay of Islands.

After several visits to England on his own, ostensibly for health reasons, George Sainsbury and his family lived there for six years and the two older boys did their primary schooling there. They arrived back in New Zealand on 11 February 1889 on the *Doric*. Osborne may have been taught at Napier before becoming a student at Wanganui Collegiate School (probably as a boarder) from 1892 to 1897. He excelled academically, passed with credit the New Zealand University Junior

Scholarship papers, went on to study law and was called to the Bar in about 1903. He practised as a barrister and solicitor at Gisborne until 1911, and made three further trips to Europe with his parents before the outbreak of war in 1914. In Gisborne on 15 December 1908 he married Edith Alice Sherratt, the third daughter of Alice and William Grice Sherratt, co-founder of the local mercantile firm Bennett and Sherratt. Osborne Sainsbury and his brother Claud joined forces in a farming venture near Nuhaka from 1911 to 1917 and then resumed their legal professions in partnership at Wairoa, practising there until their retirement in 1947.

With the coast, bush remnants and forested Te Urewera nearby, "G O K S" became seriously interested in botany in the early 1920s. His rediscovery of the rare New Zealand shrub *Pittosporum obcordatum* and his subsequent first paper published in 1923 brought him to the notice of the botanical world. However, it was the bryophytes, especially mosses, which interested him most, resulting in over thirty years of collecting (mainly in the North Island), studying and writing. In



Typical habitat for *Fissidens taylorii* var. *sainsburyanus*.

collaboration with the English bryologist Hugh Neville Dixon he described many new species, and he also described some himself. In 1941 Dixon named *Sainsburia novae-zealandiae* (now *Fissidens taylorii* var. *sainsburyanus*) in his honour, noting that its collector "has not only done much to add to our knowledge of the highly interesting moss flora of New Zealand, but has stimulated interest in its study among many new workers". A distinctive liverwort *Radula sainsburyana* (now a synonym of *Radula helix*), collected by Sainsbury from the Ruapehu area, was named by his colleagues Amy Hodgson and Kenneth Allison in 1944. Collections made by Hodgson, Allison and William Martin helped Sainsbury's compilation of a list of indigenous mosses, and *A Handbook of the New Zealand Mosses*, with illustrations by Nancy Adams (1955), was highly acclaimed in New Zealand and abroad. In December 1955 Sainsbury moved from Wairoa to a smaller house at Havelock North to continue his work on the mosses of Tasmania and Victoria, Australia, but suffered a stroke the next year and died on 22 July 1957 at the age of 77. His wife and two married daughters Rosalie Giblin and Beryl Harper survived him. Their only son Popham, a Royal Air Force officer, had been killed in operations over North Africa during the Second World War.

George Osborne King Sainsbury shared his family's passion for cricket, he loved music and was an inspirational writer "who neither rushed into print nor ever sought to air his knowledge unless asked for a critical opinion", and his fondness for mountaineering and photography complemented his dedication to bryology. He was elected a fellow of the Royal Society of New Zealand in 1956, and at his death was described as "New Zealand's foremost bryologist".

■ ***Fissidens taylorii* var. *sainsburyanus***

Fissidens is a very large moss genus with some 450 species worldwide on all continents except Antarctica. The generic name, from *fiscus* 'split' and *dens* 'tooth,' refers to the split teeth that make up the peristome. The epithet *taylorii* honours the 19th century Irish cryptogamist Thomas Taylor. *Fissidens taylorii* var. *sainsburyanus* was originally described as a monotypic genus owing to its peristome in which the teeth are not split. It occurs on bare soil, shaded or semi-shaded, often under exotic trees in urban settings such as cemeteries and parks, occasionally in indigenous vegetation. It was collected by Sainsbury at Waikaki Lagoon near Wairoa on 23 July 1939 and has since been found in other areas of New Zealand, Tasmania and mainland Australia.

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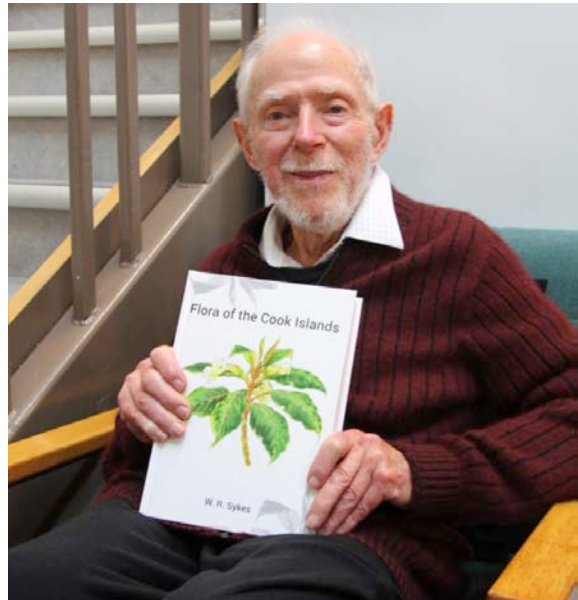
PUBLICATIONS

■ Flora of the Cook Islands published

Judy Grindell, Landcare Research

Research Associate Bill Sykes has worked on the 'Flora of the Cook Islands' for the last 20 years. The book has just been printed in the USA by Sheridan Books and published by National Tropical Botanic Gardens Hawai'i, with the help of the International Association of Plant Taxonomists, Landcare Research, Canterbury Museum, and Smithsonian Institution. The book has 950 pages, 185 colour illustrations, and 256 black and white drawings and is an important landmark in our knowledge of Pacific Island plants.

In May, an advance copy was flown out from the States to Bill at home. Bill resisted the temptation to open the parcel there and then, but instead he and Peggy drove out to Lincoln so he could open the parcel with his friends and colleagues in the Allan Herbarium. It was a simple but heart-felt acknowledgement of their help and support in producing the Flora. Ines Schonberger, Katarina Tawiri and their colleagues organised an impromptu little party with nibbles and a glass of bubbly to mark the occasion.



- **Book review – "Alien Plants", by Clive A. Stace and Michael J. Crawley. New Naturalist Library, William Collins. London, 2015. Paperback ISBN 978-0-00-750214-1 xiii + 626 pp. €35.**

Rhys Gardner, Auckland War Memorial Museum, Private Bag 92018, Auckland 1142, rhysogardner@hotmail.com

Introduction

The New Naturalist series was started in 1945, its aim being to revive nature study in a war-weary Britain. Seventy years on, no need to mention the war; its volumes (132 so far) are still "eagerly awaited" and, with their striking covers and copious colour illustration, are irresistible to book-lovers and biologists alike.

The first New Naturalist, *Butterflies* by E.B. Ford, was a ground-breaking integration of field-work and genetics, and in 1951 a copy would be given to young specialist Clive Stace, age thirteen, as a reward for having learnt a hundred plant names. Fortunately for us he stayed with botany, and we can suppose that ten years later he and perhaps his co-author too would have acquired another classic in the series, Sir Edward Salisbury's *Weeds and Aliens*. This is a kind of a forerunner to the book being reviewed here, but with an emphasis on observation, counting and experimentation in the Charles Darwin tradition.

Not that *Alien Plants* neglects science. Two of its chapters concern ecology *sensu stricto* (how to establish; how to be abundant) and two are genetical (including the important subject of hybridisation). But its focus is on quantitative nature study: when did such and such a foreign plant appear, and as a result of which particular human activity, and of course, who saw it first?

New Zealand, Australia and North America group together in this book as "neo-Europe", a reference to how climatic similarities and shared histories of trade etc. have made for shared modern elements

in their floras. The first photograph, for example, might have been taken anywhere in our North Island; in it, butterfly bush (*Buddleia davidii*) and pampas grass (*Cortaderia selloana*) flank a grassy clearing perhaps of sweet vernal and Yorkshire fog.

It tempting then to fill this review with quotes about badly behaving neo-European taxa (c. 40 from New Zealand; fewer from Australia). But because that might take something from the pleasure of discovering *Alien Plants* for oneself I will instead concentrate on its first and last chapters, which concern terminological matters, and management and conservation.

Something of the flavour of the nature study and human interest aspects of the work can I hope be got from the reproductions here (Figs. 1, 2) of two of its photographs; their originals are in colour.

First, an overview:

— Treated are alien vascular plants, freshwater algae, marine algae (an excellent contributed 12 pp. account), bryophytes (can't resist here: NZ's *Campylopus introflexus*), ferns and fern-allies, and conifers. Lichens are not included: see another New Naturalist volume (Gilbert 2000; reviewed by Gardner 2002).

— In the British Isles (hereafter BI) of Britain, Ireland, the Isle of Man and the Channel Isles, alien vascular plant species are now more numerous than natives (c. 2100 spp. versus c. 1560); cf. New Zealand's figures, where the numbers are similar in size and proportion.

— Two appendices list alien plants with their census data: date of introduction, region of origin, possible vector, present abundance. Quite a few of the generics are unfamiliar (but may appear one day in New Zealand, in the flesh): *Acroptilon*, *Aremonia*, and *Astrantia*, to *Lathraea clandestina* (purple toothwort, which grows mainly on willows and poplars; this would brighten Hamilton's gloomy gullies), to *Tristagma*, *Xerochrysum* and *Yushania*.



"The spectacular Purple Toothwort (*Lathraea clandestina*) grows in wet ground as a root parasite on various woody plants, especially willows and poplars". Photo by Philip Oswald.

— Further discussion on the history and biology of BI aliens will often be found in the online publications of the Botanical Society of the British Isles. See for example Clement (2010) on the possible nativity of *Haloragis* (*Gonocarpus*) *micranthus* and *Juncus planifolius* to western Ireland.

The terminology: native versus alien status

The authors define the "alien flora" of a country, region or smaller locality as consisting of those

taxa whose immigration has been aided (intentionally or not) by humans; and also, those that have migrated *without such aid* [my emphasis] but from an area in which they are or were an alien.

Native plants are subdivided similarly: they are taxa that have originated in the particular area without human involvement, *or*, taxa that have migrated there, again without human involvement, from an area in which they are or were native.

It would take a very imperturbable reviewer not to feel a bit quibbly here. If a recently arrived species' homeland is unknown, how do we decide if it is alien or native? If the homeland is known, but not its alien/native status there, how often might we expect an infinite regress? And to the legal profession and its advisors, including, it has to be said, the rare-plant industry, questions that involve the likelihood of human involvement must be more stimulating than cocaine.

The special scientific value of BI's alien plants is said to be due to their having evolved outside BI: as newly arrived taxa they are largely or entirely without their coevolved species (from soil mycorrhizae to pollinators and pests). In contrast, BI's native plants, at least, those that have been there for a relatively long time, have evolved "with roughly the same set of plants and animals" as they interact with today.

These statements are true enough but do not sit well with the elaboration that follows: "that despite claims to the contrary ... native taxa do not need to have been present in the area for a long time; theoretically, a new native plant could arrive next year, e.g., if it were brought here from [the plant's native region] by a bird". That is, without its coevolved companions — so, where does the biological specialness of aliens go to?

The devil here is not in the details but in the larger, real world coal-face picture. If the newly arrived plant is "native" we might reasonably be expected to make efforts to conserve it, and, if it is uncommon in its region of origin this may be no more than neighbourly courtesy. But what if becomes wilder than wild? What if BI's worst weeds, like Japanese knotweed (*Fallopia japonica*) and New Zealand pygmywort (*Crassula helmsii*) had been judged as "probably having arrived from their native land on the feet of ducks"?

Similarly, I would ditch the book's category "neonative", a coinage for taxa that have originated through hybridism between two BI aliens or a native and an alien, or, "as the result of evolution from an alien or neonative taxon". This is bending over too far backwards, particularly in light of the book's own chapter on hybridisation as a common and effective way of rejuvenating a taxon. For example, biological control for Japanese knotweed is being worked on, but new hybrids between it and members of related genera (including *Muehlenbeckia australis*) are beginning to appear, and their spread could undo more than a decade of preliminary work. (In discussing this work Stace and Crawley note that "the principal novelty of the project was in the challenge of navigating European and national legislation that had not been designed with the release of biocontrol agents in mind ..." So far, this project which began in 2003, has produced no viable control agent).

Better in my opinion then just to have three lists: natives (their identities long known); dubious natives (in New Zealand things like *Veronica plebeia*, our northern-hemisphere disjunct *Carex* spp., Maori weeds like *Bidens pilosa*, and others to be wrangled over until the archaeologists and palynologists sort them out); the rest are aliens, to be viewed through a rose-tinted sniperscope and, until the fateful day, which might never come, to be studied and enjoyed.

Environmental and economic impacts of aliens

The opportunities for doubt and dismay in this chapter are legion, the fault of the subject not the book. I think it becomes very clear, for example, that we will never be able to calculate objectively the cost to native biodiversity or ecosystem services of any particular alien (especially the ones with lag phases in their colonisation, or those whose effects might depend on earlier-arrived aliens); we simply have to react to each species according to consensus. Or just follow the experts, despite their "risk assessments" being of little value unless the plant exhibits a character like "fruit dispersed solely by the toucan/elephant/dodo". And why worry about the effects of climate change on flora composition, given that Britain's borders are completely pervious; any new plant seems to be able to wander in there, on the feet of ducks, sports teams, or refugees in lorries from Gdansk, on the wheels of aeroplanes, or by hitchhiking in containers of horticultural imports from Neo-Europe.

It is extraordinary too that in BI until recently just a handful of biocontrol projects have been started. Stace and Crawley suggest this is because "invasive problems in BI are so much less severe" than in countries elsewhere. This could be true with respect to native communities, but not so for the man-made environment, including, I would think, sites undergoing restoration of their native communities. The second reason they give seems truer: "we [responsible agencies] tend to be so risk-averse; no-one wants to be the person who gave permission for the introduction of an alien species that turned

out to be a disaster". Well, the clearing of Japanese knotweed from the 2012 Olympics site in east London cost a very uncool €70 million; this would have bought a lot of biocontrol, maybe with some left over for a Witness Relocation option in the remuneration packages of senior staff who might anticipate being at risk of making themselves feel unsafe.

Another example of the difficulties of achieving anything in this field: owners of railways and other infrastructure, and of buildings (especially brick ones, many of which are no doubt historic) spend vast amounts in physically getting rid of *Buddleia davidii*. But in New Zealand a weevil from China has been tested, and absolutely decimates the plant. However, Stace and Crawley say there is no chance of it being released in Britain, since the buddleia is such an important food-plant for butterflies. I like butterflies very much but didn't they feed on anything before the buddleia arrived?

The last item to be related here contains a much better outcome but is none the less an exemplar of legislative folly. It concerns the successful biocontrol in BI of the waterfern *Azolla filiculoides*. In contrast to the Japanese knotweed project, this work was carried out expeditiously, because the insect found to do the work was classed as "ordinarily resident in the UK" and so was available to be reared, starved, and sent out to multiply. This is despite its having been found in the wild in BI just once: "a single adult of [the North American weevil *Stenopelmus rufinasus*] ... found by Oliver Janson on a visit to the Norfolk Broads to look for aquatic insects"q. Darwin save us!

So I can't whole-heartedly agree with the book's last paragraph: "for aliens that we really cherish ... let's look after them and their habitats just as carefully as we would if they were natives" - any consulting ecologist would reply "But what is the base-line? Was it a bare field, or a meadow of native bluebells?" Having said this, in view of the intricacy of alien plants' relationships with humans and with other plants and wildlife too, I concede that such a proposal does make for a reasonable short-term strategy, and certainly, reading and absorbing the science and case-studies in this expertly presented book is a very enjoyable way of becoming aware of the variety of things one should know about before tossing one's report into the ring.

Concluding notes

The text is complemented by clear diagrams and tables and has a good number of photographs (many by Clive Stace). The book's cover is by Robert Gillmor, who has done them for the New Naturalist since 1985: on it a Japanese knotweed slants up above a poppy, cornflower and ragwort of some kind, and a Himalayan balsam, this showing every likelihood that it will, as the text suggests, grow to 3 m tall and put out new roots wherever possible.

I saw only one slip among the botanical names: on p. 26, in the discussion of plants introduced to BI from the Mediterranean region in late medieval times (e.g., saffron, chives, hollyhock and sweet majoram) there is "Monterey Cypress, *Cupressus macrocarpa*", instead of, I presume, *Cupressus sempervirens*.

To end with some fact-based special pleading. Biosecurity policy-writers can be reassured that (at least in BI) botanic gardens and herbaria are not portals for "terrorists" and "preverts": only two of these from Kew have been documented, *Galinsoga parviflora* (in 1861) and California brome, *Ceratochloa carinata*, a grass "which escaped in 1919 and is now widespread by the Thames, from Chiswick to Twickenham". Like everything else in this book (except those New Zealanders), very satisfying to be informed of.

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"Alien grass-widows ? Mrs Dorothy Lousley (left) and Mrs Christina Dony (right) posing in a Brussels Sprouts (*Brassica oleracea*) field treated with shoddy at Maulden, Bedfordshire, in 1965. The grasses seem mostly to be *Ceratochloa* species." Photo of Ted Lousley, in possession of Chris Boon. Reviewer notes: Wool-aliens, favourites of connoisseurs of historical botany, are the plants found around the mills of the Scottish Border and Yorkshire, and on the farms there that were "topdressed" with wool waste, this full of spiny-fruited composites, grasses, etc. The photo evokes simpler times, when plant-hunters had rich fields near home to explore, without having to endure the attentions of land developers, security guards or "health and safe tea" time-wasters.

■ Publications Received

Wellington Botanical Society Bulletin June 2016 Bird-plant mutualisms, Aro St bus terminus significant trees, Sydney Parkinson (botanical artist), plant eco-sourcing, history of Wellington Botanical Society overnight fieldtrips, Arapawa Island fieldtrip.

New Zealand Orchid Journal (141) August 2016 *Thelymitra formosa*, orchid tag names, variability in amphidiploid thelymitras and their parents, poor fruit set in *Pterostylis brumalis*, *Corybas* 'round leaf'.

Canterbury Botanical Society (7) July 2016 Upcoming talks and fieldtrips, AGM report, meeting report on Riccarton Bush.

Canterbury Botanical Society (8) August 2016 Upcoming talks and fieldtrips, meeting report on Patagonia, applications for Brian Molloy doctoral research scholarship sought.

Canterbury Botanical Society (9) September 2016 Upcoming talks and fieldtrips, fieldtrip report on Port Hills walk featuring *Anogramma leptophylla*.

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