

Schoenus maschalinus
Schoenus tendo
Spinifex sericeus
*Sporobolus africanus**
*Stenostaphrum secundatum**
Thelymitra longifolia agg.
*Tradescantia fluminensis** +

dwarf bog rush
kauri sedge
silvery sand grass
rat's tail grass
buffalo grass
sun orchid
(eradicated)

Typha orientalis
Uncinia banksii
Uncinia uncinata
*Zantedeschia aethiopicum**
Zostera muelleri
Zoysia pauciflora

raupo
fine hook grass
hook grass
arum lily
eel grass

Central Otago, 9–15 January 2010

Maureen Young (editor)

Introduction

The Auckland Botanical Society (ABS) South Island trip for 2010 was based at Bannockburn, a few kms south of Cromwell, where we stayed at the Abbotsford School Outdoor Education Camp. Four vans were hired to transport most of the North Islanders, and we were joined by several of our South Island friends. We were fortunate to have as our field trip leaders Neill and Barbara Simpson from Queenstown. Neill, formerly Lakes District Conservator for the Department of Conservation (DoC), then Field Centre Manager, later Otago Regional Botanist based in Queenstown, and now a botanical consultant (he was our Lucy Cranwell lecturer in 1998), planned the itinerary, and he and Barbara happily shared their intimate knowledge of the Central Otago flora. It was with pleasure that we welcomed fellow Bot Soccers from the Botanical Society of Otago; their president, David Lyttle, and lichenologist Allison Knight and her husband, John.

Participants: Chris and Noel Ashton, Enid and Paul Asquith, Catherine Beard, Jan Butcher, Lisa Clapperton, Pam Dale, Bev and Geoff Davidson, Gael Donaghy, Anne Fraser, Leslie Haines, Barbara Hammonds, Graeme Jane, Cathy Jones, Sandra and Bryn Jones, Allison and John Knight, David Lyttle, Christine Major, Julie McLintock, John Millett, Helen Preston Jones, Juliet Richmond, Stella and John Rowe, Betty Seddon, Barbara and Neill Simpson (field trip leaders), Val Smith, Claire Stevens, Alison Wesley, Diana Whimp, Anthony Wright, Maureen Young (camp mother), (Fig. 1).

With a very dry climate and having been much modified by human activity, the Central Otago landscape does not appear to be well endowed with indigenous vegetation. Indeed, with vast areas covered by wild thyme (*Thymus vulgaris*), sweet brier (*Rosa rubiginosa*), wilding conifers, and to a lesser extent, the yellow-flowered succulent, *Sedum acre*, we were indeed lucky to have been guided to the sites where the species that have adapted to these harsh conditions have been left largely undisturbed. It was noticeable that there is no tree-line as is usual in the mountains of the South Island, and apart from a half-day in the beech forest on the shores of Lake Wakatipu, we spent our time on hands and knees

admiring the tiny plants of the salt pans and mountain ranges.

Central Otago Geology

Christine Major

Metamorphic schist is the dominant rock in the landscape of Central Otago often out-cropping in the spectacular tors that characterise the region. Igneous rocks are scanty but a wide range of sedimentary rocks are present including siltstone, sandstone, conglomerate, coal and limestone alongside alluvial, glacial and lacustrine deposits. The Pisa Range, Dunstan Mountains and the Old Man Range typify the 'basin and range' topography that has resulted from the action of a series of north-northeast trending compressional faults, most of which are still active. The flat, broad mountain tops are ancient erosion surfaces (peneplain). A feature of the area is natural salt pans which have arisen where salts, derived from the weathering from schist, have been able to accumulate owing to the low rainfall and especially where water is able to pool.



Fig. 1. The Bannockburn bunch. Photo: by Noel Ashton (AW's camera). All photographs taken during the trip by Alison Wesley, Sandra Jones, Geoff Davidson or Christine Major, and acknowledged by their initials.

9 January: Cromwell Chafer Beetle Reserve

Maureen Young

After settling in to our accommodation and dining, the long summer evening allowed us time to head back towards Cromwell to visit the Cromwell Chafer Beetle Reserve. This unprepossessing dry sandy field was enclosed by a rabbit-proof fence to protect the

vegetation, but it was evident that the fence had been breached. Sweet vernal (*Anthoxanthum odoratum*) was the dominant plant, with very occasional clumps of silver tussock (*Poa cita*). The rare chafer beetles, for which the area has been reserved, live underground and feed on the roots of the tussock, and careful searching around the roots revealed a few beetle remains. The field was most notable for some of the exotic wildflowers (or weeds, according to your view) that are common in Central Otago; viper's bugloss (*Echium vulgare*), hare'sfoot trefoil (*Trifolium arvense*), Californian poppy (*Eschscholzia californica*), tussock hawkweed (*Hieracium lepidulum*), mouse-eared hawkweed (*H. pilosella*) and an Australian bidibid (*Acaena agnipila* var. *aequispina*). However, among these were growing a few native plants that are adapted to such dry conditions: scabweed (*Raoulia australis*), *R. parkii*, *R. apicinigra* (a hand lens showed the dark tips to the flower bracts that give the specific name), and a minute, rare and threatened *Luzula celata*. *Xanthoparmelia* (= *Chondropsis*) *semiviridis* was abundant all over the sandy soil. This species of lichen, which lies unattached on top of the ground in grasslands in areas of low rainfall in Central Otago & Canterbury (and also in southern Australia), opens out flat when moist, but when dry it curls up into little balls that blow along the ground.

10 January: Nevis Valley

Christine Major, Chris Ashton, Jan Butcher, Lisa Clapperton, Anne Fraser

With Duffers Pass at 1300 m, the road into the Nevis valley is the highest public road in New Zealand. The climate in this locality is characterised by extremes in temperature, both hot and cold, as well as low rainfall. The flora has been heavily impacted by introduced browsing animals and human activities, with the schist tors providing microclimates and relative protection from grazing.

The morning was spent going over Duffers Pass on the Old Woman Range down into the Nevis Valley, stopping at several points. The vegetation was dominated by matagouri (*Discaria toumatou*), sweet brier and thyme. At the first tor we enjoyed a view of the valley down to Lake Dunstan. Plants of note were: *Carmichaelia petriei* (c. 1 m tall), *Brachyglottis southlandica*, *Rubus schmidelioides* var. *subpauperatus*, blue tussock (*Poa colensoi*), blue grass (*Elymus solandri*) and a variety of divaricating shrubs including porcupine plant (*Melicytus alpinus*) and scented tree daisy (*Olearia odorata*). The tor was adorned with the beautiful brown and gold foliose lichen *Pseudocyphellaria crocata*. Nearby, *Bulbinella angustifolia*, with its characteristic narrow leaves, was in its last flower.

At our second tor further along the road we were stopped in our tracks at the sight of *Anisotome caudicola* lodged in a cleft. Here was also *Geum leiospermum*, *Scleranthus uniflorus*, *Celmisia*

densiflora, and *Montia sessiliflora* in an adjacent seepage. Cathy Jones made friends with a large black and white dragonfly that was duly admired.

Next, at the river flats which were modified by gold mining activities, we saw *Gaultheria nubicola*, *Hebe pimeleoides*, *Acaena buchananii* with its fleshy spines protruding so they were at first mistaken for coprosma stigmas, and *Microtis oligantha*, a diminutive orchid growing on mats of tiny *Coprosma petriei*.

Our last stop was south of the Ben Nevis homestead where we saw mats of *Carmichaelia vexillata* and flowering *Myosotis pygmaea* var. *glauca* growing in association with *Muehlenbeckia axillaris*. We then retreated in deference to a marked deterioration in the weather.

The cold, wet afternoon was pleasantly filled by David Lyttle's power-point presentation showing us some of the Central Otago plants that we were likely to see in the following days. As the weather later improved some took the option of hunting for fossils. At a site along the road following the Bannockburn inlet we excavated a number of well preserved plant fossils from the sediments of Lake Manuherikia including ferns, monocotyledons and dicotyledons.

Lake Manuherikia Fossils

About 19 to 15 million years ago most of the Central Otago region was covered by a shallow lake that extended from the Nevis Valley to Lake Hawea, east past St Bathans and south beyond Roxburgh. Many unusual fossils have been found in the sedimentary deposits of this Lake Manuherikia, including the remnants of crocodile and mice. A warmer climate than that of today is evidenced by fossilised palms, *Eucalyptus* and *Casuarina* existing alongside ferns, rata and *Nothofagus*.

11 January: Flat Top Rock & Butchers Dam, Chapman Reserve, Mahaka Katia Reserve

Sandra Jones

Plan A for the day was to explore the alpine plateau on top of Old Man Range, but when we arrived in the valley below and saw the unseasonable fresh snow covering the top of the range it was clear that we would have to resort to Plan B – visits to three small Department of Conservation reserves: Flat Top Hill Conservation Area, Chapman Road Scientific Reserve (both near Alexandra), and Mahaka Katia Scientific Reserve on the Pisa Flat, north of Cromwell. There are a number of threatened plant species to be found in these unique reserves which contain areas of saline soils. Many of the plants were so tiny that we relied heavily on the trained eyes of our local guides to point them out to us.

Flat Top Hill Conservation Area/Butcher's Dam

on SH8 along Butchers Gully-Fruitlands Rd, 7km south of Alexandra.

Two days after (and quite coincidental to) our visit, there were two items in the Southland Times. One records that this 813ha conservation area "was once dryland shrub and forest ... The idea is to revegetate with a little help from DoC with rabbit control and weed control." The same edition contained an article about a fire on 28 December in this reserve which destroyed 20ha of the dryland ecosystem which supports native tussock, skinks and geckos. "Several threatened spring annuals, a native forget-me-not and a species of tree daisy were found in the burnt area." Access to this visually unprepossessing semi-arid reserve is by way of a track that follows the edge of the reservoir and over the face of the dam into the reserve which rises up to the ridgeline of a very rocky hill. The main conservation value of the reserve lies in the spring flowering of native herbaceous plants, including the ephemerals *Ceratocephala pungens*, *Myosurus minimus* subsp. *novaezelandiae* and *Myosotis pygmaea* var. *minutiflora*, which are to be found in the sparse vegetation of open, saline west-facing toe slopes. As our visit was in high summer, part of the group chose to spend time botanising around the lower slopes and the edge of the reservoir while the more energetic took to the top of the hill, where from Butcher's Point they could look down into the Butcher's Creek gorge.

Prior to the designation of the northern end of Flat Top Hill as a Conservation Area in 1992, 150 years of grazing by sheep and browsing by rabbits had meant that little more than native scab weeds, lichens, the introduced weeds *Sedum acre*, thyme, sweet brier, broom (*Cytisus scoparius*) and gorse (*Ulex europaeus*) could survive. Nevertheless native species comprise 53% of the vascular flora of the area (211 species), mainly in the shelter of the schist rock outcrops. Rabbit control and the removal of sheep have allowed the native species to begin to recover, and in time it is hoped that Flat Top Hill will revegetate to a tussock shrub land system.

Melicytus alpinus (porcupine shrub), often with its roots embedded in the rock cracks and crevices, and *Coprosma propinqua* were the most common native shrubs scattered around the lower slopes and a number of specimens of the very attractive *Hebe pimeleoides* subsp. *faucicola* with its dark stems and contrasting pale grey leaves were noted. *Asplenium flabellifolium* was found hiding in rock fractures, safe from rabbit browse. The rock ferns *Cheilanthes sieberi* and *Pellaea calidrupium* (meaning, literally, 'hot rock') were also seen. Out in the open there was lots of the lichen *Xanthoparmelia* (= *Chondropsis*) *semiviridis* aka 'popcorn' or 'unattached lichen'. The introduced *Acaena agnipila* var. *aequispina*, which is distinguished from the native *Acaena* species by its flowers and fruits which are borne on spikes,

compared with the globular heads of the native species, occurs in relatively close proximity to the native *Acaena novae-zelandiae*.

Great interest, as always - everyone likes to tickle the stigma - was shown in a large population of *Glossostigma* sp. discovered outside the reserve boundary on the edge of the reservoir not far from the car park. Unlike many species in this area at this time of year, it was in full flower.

Other species of interest identified on our short visit included: *Aciphylla aurea*, *Bulbinella angustifolia*, *Colobanthus brevisepalus*, *Dichelachne crinita*, *Geranium microphyllum*, *G. sessiliflorum*, *Ozothamnus leptophyllus*, *Pimelea aridula*, *Rubus schmidelioides* var. *subpauperatus*, *Senecio quadridentatus*, and *Vittadinia australis*.

Chapman Road Scientific Reserve, Alexandra

If the previous reserve was unprepossessing, this one was even less so; from the road, it looked like a raw clay pit with some barren flat rocky bits (Fig. 2).



Fig. 2. Chapman Road Scientific Reserve, Alexandra; saltpan view. SJ.

But as one of twelve protected salt pan areas in Otago, it is a very special place. "These sites have one of the harshest environments for plants anywhere in New Zealand - they are sun-struck, wind-blasted, and drought prone, the soil is almost concrete-hard in mid summer and has a high chemical toxicity from the accumulation of salts. In winter, the ground can freeze, sometimes for weeks, and frost and snow are regular occurrences."

Only 1ha in area, this reserve hosts a number of species that one would normally expect to find on the sea shore. These include *Apium prostratum*, *Atriplex buchananii* (Fig. 3), and the salt grass *Puccinellia rariflorens*. The latter is so tiny that we walked over/around it without a second glance just inside the entrance gate and it was only located by our guides on our return to the cars. *Myosurus minimus* subsp. *novae-zelandiae*, of the Ranunculaceae, was larger

than most other specialised species in this environment, with very attractive seed-bearing heads. *Lepidium kirkii* (salt-pan cress) has also been found here, but concerted efforts to locate it proved fruitless, which wasn't really surprising because it hibernates below ground when the summer heat burns off its leaves and stems.



Fig. 3. *Atriplex buchananii*. The pale whitish bits are the plants. The rest is the rabbit poo. SJ.

Other species recorded on our brief visit included *Chenopodium ambiguum*, *Raoulia australis*, *R. apicinigra*, and, among the rocks, *Asplenium flabellifolium* and *Cheilanthes sieberi*. Rabbit droppings were abundant. We idly wondered if this indication of a high rabbit population may have something to do with the presence of the lichen *Xanthoparmelia scabrosa*, which is reputed in some parts of the world to have an aphrodisiac quality.

Lunch at Alexandra

While we dilettante Aucklanders headed for the cafes and the lure of a hot coffee in Alexandra, Graeme and Gael chose to have their lunch on the river's edge. On the way down the rough track, Gael's eye was caught by a dishevelled looking plant tucked away in a rock crevice; whereas many of us might dismiss it as a half dead weedy species, she recognised it as the very hairy blanket fern *Pleurosorus rutifolius*. As this fern is not known from the northern half of the North Island, the rest of us were keen to visit the site. While the photographers formed an orderly queue, from a tree nearby John Millet collected cherry plums which, back at the camp, were boiled and served up for dessert and breakfast.

Mahaka Katia Scientific Reserve, Luggate-Cromwell Rd (on the Pisa Flat north of Cromwell)

This small DoC Reserve (26ha) was a "Paddock with a view". On an old river terrace at the foot of the Pisa Range (still with snow along the tops) and on the bank of Lake Dunstan (a man-made reservoir formed on the Clutha River following the construction of the Clyde Dam), the reserve is a relatively safe haven for

a number of threatened plant species and also for nesting banded dotterels and South Island pied oystercatchers (Fig. 4). Again, from a distance, and despite its beautiful setting, it seemed unlikely that there would be any interesting plants to find, let alone the botanical gems we were about to see on both saline and non-saline soils.

A number of mat/cushion-forming plants scattered about were the most obvious native vegetation. *Colobanthus brevisepalus* was quite common, sometimes surrounded by mats of *Raoulia australis*, forming a strong contrast in colour. The relatively large and pale open seed capsules of the *Colobanthus* set amongst its bright green leaves provided a further contrast. Unfortunately for us, the *Myosotis uniflora* (a forget-me-not species) had gone to seed. The closely packed narrow leaves of this plant are tiny, but it has a central tap root around which a compact rounded cushion is formed. In spring it is covered in spectacular yellow flowers. *Agrostis muscosa* (pin cushion grass) with its more or less recurved leaf blades, and *Raoulia monroi* (fan-leaved mat daisy) were recorded, the latter identified by the unusual orientation of the leaves which give the appearance of standing on edge. *Scleranthus uniflorus* was also present; it has a single flower, unlike the paired flowers of the coastal *S. biflorus* with which we northerners are more familiar.



Fig. 4. Botanists in the field. Mahaka Katia Reserve, Pisa Flats. SJ.

Small cryptic species with Threat Status classifications ranging from 'Nationally Critical' and 'Nationally Endangered' to 'Declining', included *Lepidium sisymbrioides* (Kawarau/schist cress) which wasn't easy to find with its dark grey leaves and its habit of tucking itself away in cracks in the ground; *Leptinella conjuncta* with its densely hairy leaves and long terminal pinna; and *Convolvulus verecundus*, a very unlikely-looking convolvulus - think of a very small herb with the leaves of *Coprosma arborea* and you might be somewhere close to it.

A patch of *Vittadinia australis*, of the Asteraceae, was found in flower in a sheltered depression on the sloping river bank. Its white flowers distinguish it from its introduced weedy cousins which have purple flowers.

Limited time in the reserve meant that we were able to locate only a small number of the very interesting but hard to find species that appear to thrive - or at least exist - in this harsh environment.

12 January: Remarkables Ski Field

Bev & Geoff Davidson

After the high winds and drought breaking rain of the previous days our day on the Remarkables can best be described as 'remarkable' - one out of the box - a pearly. The sun shone, the wind blew itself out and we were mostly above the mists, although to the west many of the peaks were wreathed in cloud.



Fig. 5. Distracted botanists on their way to Lake Alta. GD.

The ski field road has more than its share of bends and corrugated corners, but our fleet of vans coped amazingly well, following our leaders' 4 wheel drive. Stopping at a 1200 m. lookout was fortuitous as overheating engines were beginning to complain. Peering down, we could follow the jet boats on the Shotover River, and it was here that the first *Vittadinia australis* caught our eye.

On and ever upwards, we paused at Rastus Burn to allow the sun time to melt the higher altitude, unseasonable snow. At 1500 m. a.s.l. the *Chionochloa rubra* tussocks dominated the scene, punctuated by

Aciphylla aurea and a form hybridised with *Aciphylla* "Lomond". The only shrub of significance was *Ozothamnus vauvilliersii*. Rather more obscure were the diminutive species that drew shrieks of recognition. Chris shouted, "*Prasophyllum colensoi*" and attracted the orchid lovers; while Anthony's authoritative "*Ophioglossum coriaceum*" gathered in the rest of us. Without the Otago element among the botanists we Aucklanders would have struggled with the *Colobanthus* species (*C. apetalus*).

From there the vans slushed their way through snow to the ski field at 1600 m. a.s.l. and we dispersed rapidly. The objective was to reach Lake Alta. Many tried but some got distracted by the myriad species revealed as the snows melted. *Hectorella caespitosa* stopped the photographers in their tracks.

For those who made the ascent to Lake Alta (1800 m. a.s.l.) it was a case of following in the footsteps of our great leader, Anthony, the snow being knee-deep in places. The objective achieved, we enjoyed the alpine experience under the peaks of Double Cone (2319 m. a.s.l.). As the sun warmed us it melted the snow, creating flushes, and expanded rocks caused a brief but noisy avalanche across the lake.



Fig. 6. A vegetable hedgehog? *Chionochloa macra*, Double Cone. GD.

By the time we started the return the melting snow was fast revealing all the cryptic treasures we had come to see. *Leptinella goyenii* with its clusters of diminutive reddish flowers and *Leptinella pectinata* ssp. *villosa* were tucked between clumps of *Poa colensoi*. The fleshy *Brachyscome montana* melted a hole in the snow to push its emerging yellow flower head out into the world, while mats of *Raoulia grandiflora* and *R. hectorii* struggled to throw off their white blankets. *Chionochloa macra* bristled in the deeper drifts, each culm vibrating in its own view shaft. The downward trip revealed many more alpines too numerous to identify, but all were caught on camera to await the evenings discussion and identification. At a seepage during a quick stop on the way down the mountain a *Montia* species caused

much debate, with the determination being that it was *M. calycina*.

Once down the mountain we followed our guides, Neill & Barbara Simpson, to their home on the road to Kelvin Heights. Their garden was originally a steep vacant section dominated by a large rock the size of a bus. Now the rock is enhanced by plantings of native trees around it and cliff hugging species on it. The local form of *Hebe pimeleoides* was joined by *Pachystegia insignis* and *Hebe (Heliohebe) hulkeana*, both last seen by Auckland Bot Soc at Kaikoura two years ago. Elsewhere in the garden an array of native plants have thrived and colonised any vacant space. So successful have they been that Neil has had to adopt a wonderful rocky roadside berm across the road, and his seedlings have formed a dense plantation extending a couple of hundred metres along the roadside. If only every vacant roadside wasteland could be converted to a similar display of the diverse forms of native plants. Most notable was a strikingly upright specimen of *Pittosporum patulum* in full adult foliage. Many other rarities from all over the country kept us guessing.

Returning to camp at Bannockburn we had a hot and delicious meal before adjourning to our lecture theatre to listen to entomologist Brian Patrick, Director of the Alexandra Museum. His topic was the Samoan swallow-tail butterfly and he explained his involvement in a programme to reintroduce it to Western Samoa from neighbouring American Samoa. After nightcaps we retired to bed very happy campers.

13 January: Old Man Range

Cathy Jones

Wednesday dawned grey but dry and breezy with the mountain tops clear, so we headed for the Old Man Range with an assorted cavalcade of 4WDs, vans and a car, all of which managed to negotiate the road safely in spite of some slippery patches and remaining snow on the tops. Our first stop was where water from a seep tinkled down to the roadside, providing habitat, in the general background of *Celmisia viscosa*, for all sorts of little plants including *Plantago lanigera*, *Nertera balfouriana*, *Ranunculus gracilipes*, *Dracophyllum muscoides*, *Anisotome flexuosa*, *Psychrophila obtusa*, *Gentianella amabilis*, *Geum leiospermum* and occasional cushions of *Celmisia sessiliflora* and *Phyllachne rubra*. We stopped next at the top of the range, realising, as the wind began to increase, why there was no vegetation higher than about 60cm above the ground. Here the most common plants were again *Celmisia* species, this time *C. brevifolia* and *C. ramulosa*. Amongst these daisies were *Hectorella caespitosa*, *Kelleria childii*, *Raoulia hectorii*, *Abrotanella inconspicua* and *Phyllachne rubra* with *P. colensoi*. By lunchtime the wind had become very strong, which didn't prevent Anthony from

posing for a photo balanced on one leg on top of the tor above us (Fig. 7).

After eating our lunch in the little shelter provided by a group of tors, we botanised the lunch spot and found some very beautiful clumps of *Myosotis pulvinaris* in full flower, as well as *Chionohebe thomsonii*, a wonderful woolly *Anisotome lanuginosa* and striking lichens which were recognisable even by the lichen-illiterate amongst us: *Rhizocarpon geographicum* and *Thamnolia vermicularis*. Catherine found a fascinating and less well known lichen with curled up orange margins, *Solorina crocea*.



Fig. 7. Anthony imitating Nureyev, Old Man Range. AW.



Fig. 8. A Toast to ABS, Old Man Range. AW.

The next tor stop was primarily to partake of gin and tonic, iced with snow and decorated with lime slices, provided in time-honoured fashion by Anthony (Fig. 8). Of course we had to botanise there as well and found *Pachycladon novae-zelandiae*, *Ourisia caespitosa*, *Coprosma niphophila* and the native dandelion, *Taraxacum magellanicum*. Our last stop was at a snow-bank area which gave birth to a seep. Under the edge of the snow was a very lovely *Ranunculus pachyrrhizus* in flower. In the wetter area we found the small grey-green threatened sedge, *Carex hectorii* with *Ourisia glandulosa* and *Myosotis*

pygmaea var. *drucei*. A second snow bank provided habitat for another buttercup, *R. enysii*.

As we drove slowly down the hill on the way back to camp we were distracted by various phenomena - a falcon landing on a tor, wonderful *Aciphylla aurea* flower heads (some males still in full flower, some drooping after completing their pollination duties, and females bursting with wondrous heavy dark fertility), Mitchell's cottage with its wonderful dry stone walls....all in all a great day.

Maureen Young

On the drive down the hill David took a small group to where he had previously found plants of a small multi-flowered greenhood orchid previously in the genus *Pterostylis*, now *Hymenochilus*. Where the tussocks gave way to small areas of exotic grasses we found several plants, but as the flowers were passed their best, we were unable to ascertain whether they were *H. tristis* or *H. tanypodus*.

14 January: Pisa Range

Gael Donaghy & Graeme Jane

After some indifferent weather, a relatively fine day dawned and the group headed over the Crown Range to the Snow Farm access to the Pisa Range. Botanist Mike Thorsen joined us for the day. Our first stop was around a wet area by the ski field facilities. Here a range of *Ranunculus* challenged us - the creeping *R. gracilipes* with its dark green compound leaves, a bit like *Anisotome aromatica*, *R. maculatus* with a yellow green hairy leaves and sessile flowers, and *R. reflexus* which was larger and tufted. *Craspedia lanata* var. *lanata* with its bright yellow flower and silver, woolly tomentum covering all parts of the plant was very photogenic. In the wet string bog the abundant *Euphrasia dyeri*, with small white flowers marked with purple and yellow was the most prolifically flowering plant. On the slope back up to the vehicles, the small *Myosotis* 'Pisa' (*M.* aff. *pygmaea*) was in flower. Another local plant, *Pimelea* 'Pisa' (*P.* aff. *sericeovillosa*) was common on this slope. Also similar sized plants of the small tussocks *Poa colensoi* and *Festuca matthewsii* ssp. *pisamontis* provided an interesting comparison.

After lunch we headed higher for another wet area at Meadow Glen. On the way, the tight silver mats of *Anisotome imbricata* stood out on the drier areas above the road, and *Hebejeebie densifolia* flourished along the road line disturbance. One of the group remarked that this plant also grows on Mt Kosciusko in Australia. *Montia sessiliflora* was another plant that benefited from disturbance; its white starry flowers were in evidence in the wheel ruts of the road wherever there was sufficient water. In a wet spot we practised identifying some of the cushion plants we had seen on the Old Man Range.

The final stop to the Kirtle Burn hut was fore-shortened as the road became too rough for non-4WD vehicles, resulting in a hike cross-country for some people. There were fewer plants than usual in flower in the turfs here - it seems as though spring was very late this year.

The group spent quite a bit of time on the dry slope on the way down to the wet turfs around the Kirtle Burn. Here we found the extremely tiny *Schizeilema exiguum*, with leaves only 2mm in diameter and dark green, mossy-looking patches of *Raoulia haastii*. In the turfs a patch of *Ranunculus pachyrrhizus* (so named for its root as thick as your little finger) with its sessile flowers, presented an attractive photo opportunity. Some of the creeping coprosmas were in flower here, with their outsized stigmas held well above the cushion of leaves. One of them was *C. atropurpurea* with its signature dark wine-red fruits embedded in the mats. Another one could be identified as *C. niphophila* because its orange fruits had two seeds (the other non-hairy leaved *C. perpusilla* has three seeds.) A much-photographed plant at this spot was the small leaved *Ourisia caespitosa* with its delicate white flowers that moved in the slightest breeze (and there was more than a breeze!)

After dinner, and despite our long day, Neill managed to squeeze in a shortened version of his Wellington Bot Soc Tony Druce Lecture, and he was persuaded that when he is next in Auckland, our Bot Soc would appreciate hearing the full talk.

15 January: Bobs Cove

Maureen Young

After packing and cleaning up, those who weren't flying out until mid afternoon set off to the shores of Lake Wakatipu to explore Bobs Cove. After days of botanising in the cushion fields of the mountain tops and salt pans, it was a contrast to be in red beech (*Nothofagus fusca*) forest, with tall trees towering overhead. The Moonlight Fault passes near the cove, with outcrops of limestone on one side of the fault line. In the past eucalypts were planted nearby to use as fuel to fire lime kilns, and some of the beech trees had also been felled for this purpose. However, many large trees still remain, and thickets of seedlings grow wherever there are light gaps. Mountain beech (*N. solandri* var. *cliffortioides*) is also present in one area. Now that the reserve is being cared for there is regeneration of species that were rare in the past - matai (*Prumnopitys taxifolia*) is one of these, as are various tree ferns. Two mistletoes were seen, plentiful *Ileostylus micranthus*, growing mainly on *Coprosma propinqua*, and one plant of *Peraxilla tetrapetala* hosted by red beech. Other trees were abundant *Pittosporum eugenioides*, *P. tenuifolium*, kaikomako (*Pennantia corymbosa*), *Fuchsia excorticata*, *Hebe salicifolia*, *Pseudopanax colensoi* var. *ternatus* and to the delight of us northerners,



Fig. 9. *Anisotome cauticola*, Nevis Valley. AW.



Fig. 10. *Acaena buchananii*, Nevis Valley. AW.



Fig. 11. *Lepidium sisymbrioides*, Mahaka Kahia Reserve. CM.



Fig. 12 *Raoulia monroi*, Mahaka Kahia Reserve. AW.



Fig. 13 *Hectorella caespitosa*, female flowers, Old Man Range. AW.



Fig. 14. *Hectorella caespitosa*, male flowers, Old Man Range. AW.



Fig. 15. *Euphrasia dyeri*, Pisa Range. AW.



Fig. 16. *Craspedia lanata*, Pisa Range. AW.



Fig. 17. *Ranunculus pachyrrhizus*, Pisa Range. AW.



Fig. 18. *Ourisia glandulosa*, Pisa Range. AW.



Fig. 19. *Myosotis* "Pisa", Pisa Range. AW.



Fig. 20. *Hebejebie densifolia*, Pisa Range. CM.

several flowering southern rata trees (*Metrosideros umbellata*) growing on the lake's edge. Ferns were plentiful and lush; *Asplenium hookerianum*, *A. richardii*, *A. appendiculatum*, *A. gracillimum*, *A. flabellifolium*, *Blechnum procerum*, *B. novae-zelandiae*, *B. discolor* *B. fluviatile*, *B. chambersii*, *B. vulcanicum*, *Adiantum cunninghamii*, *Polystichum vestitum* and *Ctenopteris heterophylla*. Keen eyes spotted five half-grown plants of the potato orchid, *Gastrodia cunninghamii*. On the trackside were

Arthropodium candidum in flower, *Leptinella squalida*, *Libertia ixioides* and the cliff form of *Poa colensoi*. Neill showed us a couple of plants of the rare *Pachycladon cheesemaniae* (= *Ischnocarpus novae-zelandiae*), growing from a steep bank. This wispy cress certainly would have escaped our notice if it hadn't been pointed out to us. High in the tops of the red beech trees a flock of brown creepers was flitting about, and tui and bellbirds were busily at work in the rata flowers.

Some botanical highlights

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The reduced plants that engaged our attention for the week grow either on the mountain tops in the harshest of weather conditions, or lower down where, as well as the semi-arid conditions that prevail, salt is an added deterrent to growth. Some that particularly caught our eyes were:

- *Atriplex buchananii* (Amaranthaceae). This naturally uncommon plant is primarily a coastal species, growing at, or near, the high tide mark. In Central Otago it grows on salt enriched soils. One's first thought was that there was a grey scurf on the bare sandy, stony ground in the Chapman Reserve, but on closer inspection it proved to be a covering of tiny creeping plants covered with silver/grey mealy tomentum.
- *Convolvulus verecundus* (Convolvulaceae). This tiny bindweed is naturally sparse and declining and is only found in widely scattered populations in semi-arid areas of the eastern South Island. By careful searching in the Mahaka Katia Reserve we located a few silver rosettes with arrow-shaped leaves. No flowers were present, but photographs show that the white flower is comparatively large for such a small plant.
- *Lepidium sisymbrioides* (Brassicaceae). This, a dioecious cress that is nationally endangered, is found in north and central Otago, growing in sparsely vegetated semi-saline soils. Careful searching revealed a few cryptic rosettes growing in the Mahaka Katia Reserve, one male plant being nicely in flower.
- *Raoulia monroi* (Asteraceae). Also in the Mahaka Katia Reserve we had pointed out to us something that looked like black hieroglyphs squiggled on the dry gritty soils. The squiggles proved to be minute plants of an anomalous *Raoulia*. Instead of the usual tight rosettes of leaves, this species has leaves that are arranged in two rows that lie in one plane. Even with a hand lens one would swear that the plant was dead, but back at base a microscope revealed the faintest flush of green under the fine cobwebby cover of hairs.
- *Acaena buchananii* (Rosaceae). In the Nevis Valley we were shown this unusual bidibid growing in closely grazed poor pasture. On first viewing it looked as if it was growing intertwined with a prostrate coprosma, with the stigmas of the coprosma standing upright through the milky green bidibid leaves. Neill pointed out that these were in fact the fruit spines of the *Acaena*, as the fruiting heads are sessile and the cupules buried among the leaves. A lens proved that the creamy coloured spines had tiny soft barbs on the end of them.
- *Hebejeebie densifolia* (Plantaginaceae). This prostrate plant has had many names, including *Pygmaea tetragona*, *Veronica densifolia* and *Chionohebe densifolia*. Although it is not a threatened plant, it created quite a bit of interest among us, maybe helped by the newish and fanciful name of *Hebejeebie*. Our first viewing was of a plant without flowers and the decussate, imbricate leaves looked so like the *Hebe buchananii* that was growing close by that we had to pick a small branch of the latter to compare them. By this means we could see that the *Hebejeebie* had more triangular shaped leaves than the rounded ones of the *Hebe*. When we later came across *H. densifolia* in flower we were delighted by the large showy white flowers.
- *Hectorella caespitosa* (Portulacaceae). Again, not a threatened plant, but one that captured our collective imagination, this time because it is an endemic monotypic genus that used to be in its own family, Hectorellaceae. We soon learned to differentiate it from the myriad of tiny rosette plants in the cushion-fields, by the glabrous leaves with a thin red line around the margins, and when in bloom, a ring of white flowers, either male or female.
- *Dracophyllum muscoides* (Ericaceae). Far from being threatened this plant was noticeable for being one of the commonest plants of the mountain tops, especially on the solifluction terraces on the summit of the Old Man Range. These minute terraces, or undulations, form where waterlogged sediments move slowly down slope, due to frost heave and small scale slippage, where soil is underlain by winter-frozen ground. The specific name, meaning moss-like, describes its growth-form, so unlike the usual form of dracophyllum shrubs and trees, and it is only when in flower that its membership of the Erica family is obvious. The long root acts as an efficient anchor in the harsh conditions prevailing.

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