

## GIBRALTAR BUSH

On the Society's trip to Gibraltar Bush, on the 14th May, 1977, three plants, rare in other parts of the Port Hills, were seen and are worth recording. Lycopodium billardieri was growing in the fork of a tree. Rumohra adiantiformis, with some 10 fronds, found the trunk of a Dicksonia squarrosa to its liking. It was interesting to observe firmly attached to the trunk of a mature tree the yellow green stems and leaves of the semi parasite Tupeia antartica.

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## FLOWERING TIMES OF SOME CULTIVATED NATIVE PLANTS

B.P.J. Molloy

During the 1976-77 season I followed the onset and duration of flowering in a number of native species established in a five-year-old rock garden at Riccarton. The garden is S-shaped in outline, about one metre tall at its highest point, with its long axis running east-west, It lies about 9 metres (30 feet) above sea-level and is constructed on the site of a Taitapu silt loam soil. This is the main soil of Riccarton, including Riccarton Bush, and is noted for its massive and mottled subsoil which is poorly aerated and slow draining in winter, and tends to dry out with extensive cracking in summer.

Flowering times were recorded at half-month intervals, so that if a species had one or more flowers between say 16 to 31 October, then it was scored for that half month, and so on until flowering was completed. With most species this was not too difficult. With some, grasses and dwarf conifers for example, flowering was recorded when the anthers were visible or when the stigmas were judged to be receptive. Records began in September when the first flowers of the new season appeared (Cotula pectinata) and continued until June when flowering had ceased in all species except Hypoxis hookeri. The results are set out in Table 1.

### Garden Construction and Maintenance

The rock garden was built simply by excavating the soil completely to the free-draining sandy parent material. The hole was then back-filled with broken concrete, bricks and other rubble mixed with the excavated soil. Large natural stones were fitted in to add interest and variety and the surface was covered with coarse river sands to help reduce weeds.

The rock garden is well drained in winter, and a fine soak hose is used constantly throughout the summer to avoid unnecessary stress on the plants, many of which occur naturally in higher rainfall districts. Periodically an all-purpose pesticide is used to help control aphids, caterpillars, etc. Weeds are controlled by hand, which also permits close observation of all planted species. The main weeds, all

adventives, are Cardamine hirsuta, Poa annua and Sagina procumbens; lesser weeds, also adventives, are Crepis capillaris, Taraxicum officinale, Rumex acetosella and Veronica persica.

Nearly all the species listed in Table 1 were obtained as small seedlings in the wild (not from parks or reserves!) and transplanted into the rock garden with a small sod of their own soil. A few are greenhouse-grown plants given to me by colleagues from Botany Division.

#### Comments on Table 1

Several species, e.g. Cotula pectinata and C. serrulata, flowered twice in the same season while others flowered for a surprisingly long time. The latter fall into two groups: those that produced several generations of new plants during the season, such as Poa lindsayi, Lagenifera cuneata and Wahlenbergia albomarginata; and those with rapid vegetative extension such as Schizeilema hydrocotylioides and Hydrocotyle moschata.

Although flowering extended over a period of nine months, most species flowered during October, November or December. It is also interesting to note the coincident or overlapping flowering times of closely related species, e.g. the bulbinellas. Flowering times generally were earlier than those for wild plants.

There is a wide range of flower sizes among the species listed, with perhaps Celmisia coriacea being the largest and Hypoxis hookeri one of the smallest. The latter is also interesting in that it will flower from April through to October at a time when most other plants are winter dormant. There is also an attractive range of flower shapes and colours, especially among the cotulas, celmisias, senecios, hebes, bulbinellas, helichrysums, carmichaelias and pachystegias. From the list in Table 1 I would single out the following species for their particular appeal when in flower in a rock garden setting: Cotula pectinata, Hebe raoulii, Poa lindsayi, Claytonia australasica, Bulbinella hookeri, Leucogenes grandiceps, Celmisia morgani, Wahlenbergia albomarginata, Podocarpus nivalis, Celmisia spectabilis var. magnifica, Pachystegia insignis var. minor, Hebe pimelioides and Helichrysum parvifolium.

#### Other comments

Many species respond quickly to the extra care and attention they can get in a rock garden. Those that spread vegetatively do so vigorously, and while this can be informative it can also be troublesome, especially with hydrocotyles. "Layering" is also common on the sloping surfaces, especially among the hebes, and again a balance has to be maintained between interest and space for other species. This need applies even more to those species which throw seedlings regularly, e.g. hebes, Celmisia spectabilis var. magnifica, Luzula rufa, Wahlenbergia albomarginata, Poa lindsayi, Poa maniototo, Oxalis exilis, Lagenifera cuneata and Scleranthus uniflorus. For this reason I have eliminated some aggressive tussock species such as Notodanthonia setifolia, Poa caespitosa and Festuca novae-zelandiae from the rock garden.

Survival rates of seedlings transplanted from the wild are high, although there are the usual losses among celmisias and aciphyllas, possibly due to too much water collecting around the thick main stems and root stocks, especially in winter.

An interesting record during the season was the occurrence of the adventive root parasite, broom rape (Orobanche minor), on Schizeilema hydrocotyloides. Equally interesting were the occasional visits of a native copper butterfly (Lycaena sp.).

Three small ferns, Blechnum penna-marina, Botrychium australe and Cheilanthes sieberi thrive in the rock garden, suggesting that other small fern species may be useful subjects too.

Species that did not flower

Two species not listed in Table 1, Senecio monroi and Poa acicularifolia, did not flower at all last year but flowered profusely during the previous 1975-76 season. This same pattern was observed in Poa acicularifolia in the Castle Hill Basin.

The following species have been established for more than 12 months, but for physiological or other reasons have not flowered so far: Hectorella caespitosa, Dracophyllum pronum, Aciphylla monroi, A. similis, A. aurea, A. scott-thomsonii, Drapetes dieffenbachii, Anisotome lanuginosa, Hebe poppelwellii, Dacrydium bidwillii, D. bifforme, Phyllocladus alpinus (subalpine and lowland forms), Celmisia prorepens, C. sessiliflora, C. dubia, C. viscosa, C. lyallii, C. armstrongii, C. lateralis, C. mackau, Corallospartium crassicaule and Pygmaea pulvinaris - (some of these species flower tardily in nature). My single plant of Botrychium australe has set forth vegetative fronds now for 5 years, but so far no fertile frond. And previously I had grown a single rosette of Aciphylla aurea for 10 years and no flowers emerged.

The final list of species includes those transplanted into the rock garden within the last 12 months and which have not yet been conditioned by the local environment, or are still physiologically immature: Celmisia alpina, C. graminifolia, C. similis, C. hectori, C. dallii, C. densiflora, C. bellidioides, Hebe lavaudiana, H. hulkeana, H. macrantha var. brachyphylla, Aciphylla subflabellata, Helichrysum selago, H. depressum, Libertia ixiooides, Dracophyllum densum, Epacris alpina, Pimelea oreophila, Ranunculus enysii, Ourisia macrocarpa, Geum parviflorum, Carmichaelia uniflora, C. monroi, Wahlenbergia gracilis, W. brockiei, Leptospermum scoparium (Stockton Plateau form), Dacrydium laxifolium x intermedium (f), and an undescribed species of Raoulia from the Lawrence River valley.

Flowering among these species is awaited with interest.

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	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
<i>Celmisia gracilentata</i>	.	.	x x	x	.	.	.	.	.	.
<i>Poa colensoi</i>	.	.	x x	x	.	.	.	.	.	.
<i>Bulbinella angustifolia</i>	.	.	x x	x	.	.	.	.	.	.
<i>B. hookeri</i>	.	.	x x	x x	.	.	.	.	.	.
<i>Helichrysum sel.v.acutum</i>	.	.	x x	x x	.	.	.	.	.	.
<i>Leucogenes grandiceps</i>	.	.	x x	x x	.	.	.	.	.	.
<i>Dichondra brevifolia</i>	.	.	x x	x x	.	.	.	.	.	.
<i>Hebe allanii</i>	.	.	x x	x x	.	.	.	.	.	.
<i>H. amplexicaulis</i>	.	.	x x	x x	.	.	.	.	.	.
<i>H. epacridea</i>	.	.	x x	x x	.	.	.	.	.	.
<i>Acaena caesiiglauca</i>	.	.	x x	x x	.	.	.	.	.	.
<i>Pimelea traversii</i>	.	.	x x	x x	.	.	.	.	.	.
<i>Celmisia allanii x discolor?</i>	.	.	x x	x x	x	.	.	.	.	.
<i>C. morgani</i>	.	.	x x	x x	x x	.	.	.	.	.
<i>Oxalis exilis</i>	.	.	x x	x x	x x	x x	x x	.	.	.
<i>Fuchsia procumbens</i>	.	.	x x	x x	x x	x x	x x	x	.	.
<i>Muehlenbeckia axillaris</i>	.	.	x x	x x	x x	x x	x x	x x	x x	x
<i>Celmisia coriacea</i>	.	.	.	x	x	.	.	.	.	.
<i>C. spectabilis</i>	.	.	.	x	x	x	.	.	.	.
<i>Hebe pinguifolia</i>	.	.	.	x	x	x	.	.	.	.
<i>Festuca matthewsii</i>	.	.	.	x	x	x	.	.	.	.
<i>Hydrocotyle novae- zelandiae</i>	.	.	.	x	x	x	x	x	.	.
<i>Lagenifera cuneata</i>	.	.	.	x	x	x	x	x	x	x
<i>Wahlenbergia albomarginata</i>	.	.	.	x	x	x	x	x	x	x
<i>Podocarpus nivalis (m)</i>	.	.	.	.	x	.	.	.	.	.
<i>Carmichaelia corrugata</i>	.	.	.	.	x	.	.	.	.	.
<i>C. petriei</i>	.	.	.	.	x	x	.	.	.	.
<i>Senecio haastii</i>	.	.	.	.	x	x	.	.	.	.
<i>Agrostis muscosa</i>	.	.	.	.	x	x	.	.	.	.
<i>Gonocarpus montanus</i>	.	.	.	.	x	x	.	.	.	.
<i>Hebe decumbens</i>	.	.	.	.	x	x	x	.	.	.
<i>H. 'Youngii'</i>	.	.	.	.	x	x	x	.	.	.
<i>Dracophyllum acerosum</i>	.	.	.	.	x	x	x	.	.	.
<i>Erythranthera pumila</i>	.	.	.	.	x	x	x	.	.	.
<i>Celmisia spect. v. magnifica</i>	.	.	.	.	x	x	x	x	.	.
<i>Hebe cupressoides</i>	.	.	.	.	.	x	x	.	.	.

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
<i>Senecio saxifragoides</i>	.	.	.	.	x	x	x	.	.	.
<i>Pachystegia insignis</i>	.	.	.	.	.	x	x	.	.	.
<i>Hebe pimelioides</i>	.	.	.	.	.	x	x	x	.	.
<i>Epilobium hectori</i>	.	.	.	.	.	x	x	x	.	.
<i>Helichrysum parvifolium</i>	.	.	.	.	.	x	x	x	x	.
<i>Pachystegia insig. v. minor?</i>	.	.	.	.	.	.	x	x	x	.
<i>Cassinia fulvida</i>	.	.	.	.	.	.	x	x	x	x
<i>Cotula perpusilla</i>	.	.	.	.	.	.	.	x	x	x
<i>Wahlenbergia gracilis</i>	.	.	.	.	.	.	.	.	x	x

#### MYOSOTIS OF BANKS PENINSULA

M.J.A. Simpson

In early December, 1976 Lucy Moore, Neville Moar and I accompanied classes Standards 3 and 4 from Lincoln Primary School on a nature study visit to Kaituna Reserve. Native forget-me-nots are not common on Banks Peninsula so that there was some excitement when the party studying plants of the forest floor found two patches of *Myosotis spathulata* var. *spathulata* in flower. Plants were growing on a gentle slope beside the track, not far from a stream that probably floods the area periodically. The small white flowers, each associated with a leaf, occur singly along a shaggy, lax flowering stem. Some flowers were four petalled, a feature noted by L.B. Moore on specimens of *M. spathulata* var. *radicata* held in the Botany Division herbarium.

*M. spathulata* is an insignificant plant, scarcely noticeable when not in flower and this may account for the scattered, though wide ranging, records for this species. Also, although described as a perennial herb, plants at Kaituna were shrivelled up and hard to find by mid-January when seeds were ripe: it could be of interest to determine the life span of individual plants. Apart from the type locality - Queen Charlotte or Dusky Sound - and a few localities in the North Island it is recorded only from Foxhill, near Nelson; Salt's Gully, Lyttelton; L. Manapouri and Chatham Is. However, E.F.L. Raoul collected specimens from "Presquîle de Banks" in 1843 (MEL 71186) and Mr. H. Talbot of Richmond, Nelson drew my attention a few years ago to a population in Snowdons Bush, Brightwater near Nelson. Here the habitat of lowland podocarp forest on alluvial river gravels is somewhat similar to that at Kaituna.