

URTICA LINEARIFOLIA AND *MYOSOTIS AUSTRALIS* VAR. *LYTTELTONENSIS*:
TWO THREATENED PLANTS

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Introduction

In June 1998 I was awarded the Peter Skellerup Plant Conservation Scholarship, administered through the New Zealand Institute of Horticulture. Its purpose is to 'assist with the conservation of the exotic and indigenous plant resource within New Zealand'.

On the advice of Nicholas Head (Department of Conservation, Canterbury Conservancy), I chose to concentrate on two threatened plants, *Urtica linearifolia* (Hook. f.) Cockayne, and *Myosotis australis* var. *lytteltonensis*, Laing et Wall which, in the International Union for the Conservation of Nature Red Data Book are classed in categories B (Vulnerable) and A (Endangered), respectively. The goals of this work were to:

1. Locate wild populations.
2. Quantify population size(s).
3. Assess the likely viability of the populations.
4. Propagate the species, artificially.
5. Re-establish populations in authorised sites, to help to ensure the continued survival of the existing wild populations.

Both species have had little or no recovery work carried out (at least in Canterbury), and the actual population sizes are largely unknown.

Urtica linearifolia

Urtica linearifolia, a slender perennial herb, is one of seven species in the genus in this country, five indigenous and two adventive (Webb *et al.*, 1988). Features which make it easily identifiable are its distinct scrambling habit, narrow linear leaves, and distinctive wetland habitat. It stings just as much as any other herbaceous nettle.

Based on specimens in the Landcare Research, Lincoln, herbarium (CHR), *U. linearifolia* occurs in the Wellington province, Marlborough, North Canterbury, South Canterbury, Otago and Southland (Lake Waipori). Its habitat is in lowland swamps, often in association with *Carex secta* or *Phormium tenax* (Johnson & Brooke, 1989).

The work carried out concentrated on populations in the Canterbury Low Plains and Ellesmere ecological districts. I visited most of the sites in North Canterbury and near Ellesmere that are recorded in the collections at CHR and, as far as possible, counted the numbers of *U. linearifolia* in each. In some, the populations were too numerous to count, and in one site (original observation by A.J. Healy), no plants were found. I also found some previously unrecorded sites for the species (marked (*) in the lists below).

Ellesmere ecological district

Halswell River (Tai Tapu township)(*);

L1. Stream (Lincoln) CHR 196884 (A.J. Healy 1970);

Boggy Creek (*);

Halswell River (east of Greenpark Huts) CHR 225263 (R. Mason 1971);

Taumutu, CHR 509317 (W.R. Sykes, D. Banks 1995).

One further site is near Coe's Ford, Lower Selwyn River (C.J. Burrows, pers. comm., 1999).

Low Plains ecological district

Amberley Beach, CHR 84356 (A.J. Healy 1954);

Amberley Beach – private reserve (*)

Leithfield Beach (pers. comm. A.J. Healy 1998) – (population unlocated by me);

Waikuku township, CHR 220007 (B.H. Macmillan 1971);

South of Waikuku township (N. Head, pers. comm., 1998);

Kaipohia Pa site, CHR 140368 (R. Mason 1964);

Woodend, CHR 169372 (R. Mason 1968);

Styx Mill river (*);

Seadown, Dominion Road, near Timaru, CHR 462404 (A.J. Healy 1989);

West of Waimate, CHR 174141 (A.J. Healy 1966);

Waihao Downs, South Canterbury, CHR 140401 (R. Mason)

Population Survey Results

Table 1 lists the estimated numbers of plants in each of 10 Canterbury locations.

Table 1 Numbers of discrete *Urtica linearifolia* plants present in some Canterbury locations (numbers given in rounded figures – tens, hundreds, or thousands)

Ellesmere ecological district

Halswell River, Tai Tapu township	300-500	Boggy Creek	< 10
L1 Stream, Lincoln	200-300	Taumutu	> 100
Halswell River east of Greenpark	> 1000	Cooper's Lagoon	< 500

Low Plains ecological district

Amberley Beach lagoon	< 50	South of Waikuku township	300-500
Waikuku township	< 50	Kaiapohia pa	< 50

Conditions Affecting the Viability of the *Urtica* Populations

The Kaiapoha pa site is protected and managed by the local Ngai Tahu runanga trust. The Boggy Creek site is currently under application to be made into a fish and game reserve which should protect the *Urtica* population. For many of the other sites further information is required on ownership and protection status.

Many of the sites are grazed by cattle. This does not necessarily affect *U. linearifolia* directly, although ultimately the habitat can be severely harmed by grazing, pugging and nutrient enrichment.

Propagation

Cuttings were used as a means of propagation. Early attempts failed due to excess humidity causing the cuttings to rot. The cuttings must not experience humidity above approximately 80% for three days, post insertion, as this ultimately leads to rotting. Cuttings were watered in and covered and monitored without further watering for the

period until root establishment occurred. Root formation occurs within 30 days and potting can be done after 60 days. Horticultural pumice was used as the rooting medium. A bark-based tree and shrub mix was used as the potting medium. Potted plants must be strictly monitored for slug damage. Metaldehyde pellets (trade name Blitzem) were used with varying success to control the slug populations. By three weeks after potting, the cuttings will begin active growth, after which the stinging hairs have developed to a level that deters slugs.

Seed was sown, but did not germinate. However, this may have been due to factors other than lack of seed viability, for example choice of soil medium mix, and unsuitable moisture, temperature, or light conditions.

Re-establishment Into Field Locations

U. linearifolia plants were planted from 8 cm tubes initially into damp soil, which was found to be detrimental; many of the young plants died. Plants were then placed on mounds and rises and results consequently improved with between 70-80% of plants surviving and many thriving.

The main planting site up to now has been at Otukaikino Reserve (Wilsons Swamp) – administered by the Department of Conservation and funded with the assistance of Lamb & Hayward. The reasons for planting on this site are: the suitable habitat with vast areas of *Carex secta* on which the *Urtica* can establish; proximity to the source of the propagation material; it is a well-protected site; and *U. linearifolia* is likely to have occurred in or near this site in the past.

Preparations are being made to plant in several other wetland areas, namely Travis Wetland; Styx Mill Reserve; Janet Stewart Reserve; and Coutts Island Reserve.

Myosotis australis* var. *lytteltonensis

Myosotis is a genus with 34 indigenous and six adventive species in New Zealand (Webb *et al.*, 1998). *M. australis* var. *lytteltonensis* is a small, short-lived herbaceous perennial, endemic to the Banks ecological region (H.D. Wilson pers. comm.). The varietal name

indicates the type locality “Mt Pleasant, Lyttelton 1917, Robt. M. Laing” (Allan, 1961). This variety differs from *M. australis* var. *australis* in its “prostrate habit, lengthened style and pale nutlets” (Allan, 1961).

There are specimens at the CHR herbarium for the following localities:

Mt Pleasant, CHR 17636 & 17637 (type) W, (Robt. M. Laing 1917);
 Lyttelton Reserve, Port Hills, CHR 178294 (G.C. Kelly 1971);
 Buckleys Bay, Port Hills, CHR 178295 (G.C. Kelly 1971);
 Sugarloaf, Harbour side, CHR 344951 (G. Brownlie 1967);
 Governors Bay, CHR 290733 (M.J.A. Simpson 1975);
 Mt Evans (Purau), CHR 480453 (H.D. Wilson 1983);
 Pigeon Bay – “Cabbage tree knob”, CHR 479466 (H.D. Wilson 1984);
 Nikau Palm Gully (pers. comm) H.D. Wilson, 1998);
 Between Damon’s Bay and Flea Bay, CHR 107026 (H.D. Wilson 1986);
 Gough’s Bay, (pers. comm H.D. Wilson, 1998).

In each location the plants were found on south-facing rock outcrops. Many of these records have been for single plants. Two collections (Gough’s Bay and the one between Damon’s Bay and Flea Bay) were made with abseiling equipment (H. Wilson, pers. comm.).

Locating populations in the field has been difficult, particularly during the dry summers experienced in the past two years. The Mt Evans site contains the only population that I have seen to date. The plants are growing in a ‘V’ shaped cliff recess, inaccessible to sheep and goats, c. 475 metres above sea level. Note that other records of *M. a.* var. *lytteltonensis* appear in C.B.S.J. No. 2 (1969), p. 10 in a brief note by John Thompson: Lyttelton Reserve No 101; Governor’s Bay. A drawing of the plant is on the cover of that journal.

Population Survey Results

The Mt Evans site contains 58 accessible plants. Each plant has been tagged and weeded around. Other plants (an estimated 200-300) safely perch on the steep south face of the

crevice. The plants which are accessible have been monitored periodically. This work will be continued by the Department of Conservation.

Although this may be one of the few large populations remaining, it seems likely that there may be many plants on south facing cliffs in other places around Banks Peninsula. However, survey of most of these sites is likely to require experience in abseiling. For this reason an information sheet is being prepared to inform climbers and abseilers of this plant, so that such populations may be located in the future.

Conditions Affecting the Viability of the *Myosotis* Population

From my observations, *M. a. var. lytteltonensis* is not a competitive plant, particularly when in contest with vigorous introduced grasses, such as cocksfoot (*Dactylis glomerata*). For the Mt Evans population to remain viable, regular weeding may be needed as part of its management. Further spread of the *Myosotis* by seed is unlikely as the surrounding pasture is heavily grazed. Prevention of broom (*Cytisus scoparius*) spreading further down the slope is a priority also. Growth records about twice a year will provide information which will assist future management. This population could be crucial for the long term survival of the species. Observations have proven *M. a. var. lytteltonensis* to be drought tolerant. In summer, plants at Mt Evans wilted back to small rosettes. It is also apparent that each plant produces a large amount of seed. While weeding, many seedlings were located among the introduced grasses and they now appear to be thriving.

The plants flower profusely during October-December, after which flowering reduces over the summer with seed ripening from February onwards.

Propagation

Propagation is by seed germination, although cuttings can be struck (J. Cartman pers. comm.). Single vegetative rosettes are the norm, each with several flower-bearing stems rising from the base of the rosette. Removal of this vegetative rosette is likely to kill the parent plant although in my experience, many will re-shoot from the base. Germination occurs readily with the plants almost becoming weed-like in cultivation (J. Santos pers. comm.). Behaviour of the seeds during germination pointed to the imposition of a delay

period. Seeds sown in February lay dormant until April when the first of them germinated. However, a set sown in April germinated within a week of sowing. The delay may be effected by a requirement for after-ripening. Delay of germination until autumn (possibly controlled by temperature and day length changes) ensures that the seeds sprout when conditions are likely to be moist.

Seed from a single set, sown in February, germinated over a span of 30-50 days. The seedlings establish well under cool conditions, although they may require protection from slugs, particularly over the two weeks following pricking out.

Once established the plants form lush rosettes in cultivation, flowering from October to April, allowing a vast quantity of seed to be collected. Seed were hand harvested every 14 days.

Re-establishment into Field Locations

To this point (July 1999), no plants have been re-introduced to the wild as the plants in cultivation are too small to survive. A better strategy may be to sow seeds in good sites in the wild. Plans are in consideration to establish populations in reserves on the Port Hills. Careful site selection is required in this instance, particularly in regards to aspect, proximity to walking tracks and the abundance of introduced weeds in the planting sites.

Conclusions

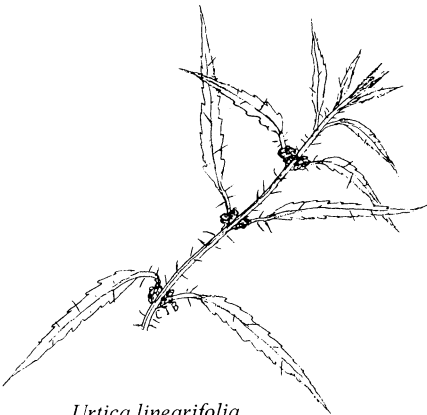
The two taxa examined differ very markedly in habitat and many aspects of their biology. Each is threatened, mainly by habitat modification. Each poses distinctly different conservation problems. This study has shown how propagation may be effected, and that re-establishment of plants into the wild is likely to be feasible.

Urtica linearifolia is more common in Canterbury than has been previously realised. Although it is somewhat difficult to propagate artificially, this can be done, with care. Knowledge of the rather specific habitat conditions in which it grows naturally (at the edges of wet areas, and particularly on the bases of *Carex secta* plants) is important for successful return of propagated plants to the wild.

Myosotis australis var. *lytteltonensis* has been difficult to find in the wild, although more populations than are known almost certainly exist. Their cliff face habitats make them difficult to observe. However, it is easy to maintain in cultivation, using seed. So far there is no experience to gauge how easily it can be re-established in the wild. Tests are required to discover how this may be accomplished. Careful study of the preferred conditions in which existing populations live is needed before extensive attempts to return it to the wild can be attempted.

References

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Urtica linearifolia



Myosotis australis var. *lytteltonensis* (del. Cecil Dunne)