

years: *arduanum*, *cita*, *oresbia*, *riguorum*, *spania*, *xenica* etc. - we might wish that the meanings of these unfamiliar words had been set out somewhere. How far should we pursue a *celsa* before turning back? What precaution should be taken before rushing over to an *uda*? When hunting for *lautumia* what kind of headgear should we wear?

How then to end this review? One has hardly earned the right to append a particularly baffling piece of fine writing, as the Preface amusingly does. But a Tolkienian analogy may not be out of place, that is, in this great work we can see a forging of the Fifth Ring of Power - the lineage, from Hooker to our time and beyond, is indeed secure.



Native sow thistle, *Sonchus kirkii*, rediscovered in the Auckland Region

E. K. Cameron

The rediscovery

On a beautiful March day (18 Mar 2000) Auckland Bot Soc gathered at Karioitahi Beach on Auckland's south-west coast for our monthly field trip. Some of the recorded 1901 botany of the area is reproduced by Steve Benham (2000). See Cameron et al. (1997: 258) for a general introduction to the Karioitahi area. We headed south from the surf club and at lunch time rested at the back of the beach by the consolidated dune cliffs where there was a seep down the cliff face. Side by side on the damp cliff were two different sow thistles at the flat, basal rosette stage. One with the strongly dissected leaves was clearly the introduced sow thistle, *Sonchus oleraceus*, the other had undissected leaves (cf. Fig. 1) which were glaucous and quite stiff. Was this the native sow thistle, *Sonchus kirkii*, which was considered extinct in the Auckland region (see de Lange et al. 1999a)? Flowering and fruiting specimens were soon found close by and also at other seeps further along the coast. Knowing that the seeds were diagnostic (see Webb et al. 1988: fig. 37) I collected a fruiting specimen to confirm the identity and as a voucher specimen (AK 245889).

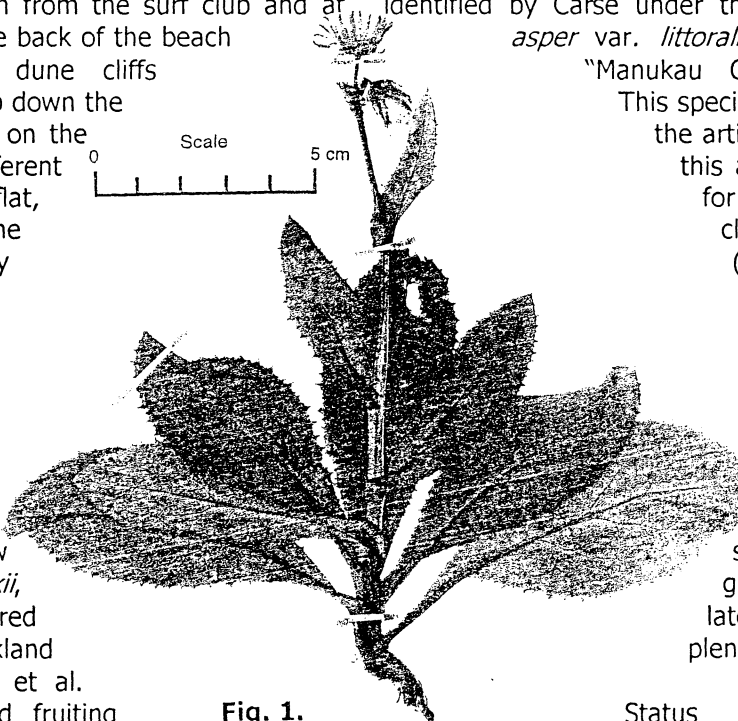


Fig. 1.

Back in the herbarium the identity was soon confirmed and then I looked through the *Sonchus* folders to see what other collections were held. There appeared to be no specimens for the Auckland region until I found a Carse specimen, collected March 1901, wrongly filed in the *S. oleraceus* folder, even though it was correctly identified by Carse under the earlier name of *S. asper* var. *littoralis*. The location was:

"Manukau County, west coast."

This specimen tied in nicely with the article by Carse (1901) of this area and his comment for this species, "Sea cliffs; plentiful." Carse (1901: 371) when discussing the Karioitahi (sic) sand cliffs mentioned also that "Where water drips I noted *Sonchus asper* var. *littoralis* [= *S. kirkii*] in great abundance, .." Exactly the same habitat it was growing in 99 years later, but not as plentiful.

Status

Sonchus kirkii is a nationally threatened species ranked as Declining (de Lange et al. 1999b). Both Wardle (1995) and de Lange (1996) point out that it is uncommon throughout New Zealand and that it is currently undergoing a decline. Wardle (op. cit.)

Fig. 1. Young *Sonchus kirkii* from Western Chickens, Jan 1982 (part of AK 159701).

reported that recent searches failed to find it in some localities where it was collected several decades ago. This endemic New Zealand species occurs from the Kermadec Islands to Stewart Island and the Chatham Islands, on coastal cliffs and talus, rarely on sand or salt meadow (Webb et al. 1988). *S. kirkii* is strictly a coastal species of open wet sites, except on the Three Kings Islands where it also occurs within coastal scrub and forest clearings (de Lange 1996).

Localities in the Auckland Region

Apart from the Karioitahi records above, how many other Auckland records of *Sonchus kirkii* existed? Checking with other New Zealand herbaria and published references only turned up one additional specimen and three published records. The herbarium specimen was from a salt meadow at Anawhata (Auckland's west coast), collected by Lucy Moore in 1930 (CHR 40919). The specimen is only at the rosette stage but the identification looks correct (specimen det. by L. Boulos 1965). The published records were by Kirk (1894: 265) "maritime cliffs from Auckland to Stewart Island", Cranwell (1981: 145) listed it for the general Auckland area (probably based on the Carse record and AK specimen from the Karioitahi area), and

Gardner (1982) listed it for the Waitakere area. This general paucity of early Auckland records is a reflection on how local and generally scarce it is in the Auckland region, although it still occurs on the west coast, north and south of Auckland (see Fig. 2 & Appendix).

Localities in northern New Zealand

(see Fig. 2 & Appendix)

In northern New Zealand (Raglan - western Bay of Plenty northwards) it now appears to have only reasonable populations on the southern Kermadec Islands, Great Island (Three Kings group), on the cliffs in the Karioitahi area (S.W. Auckland), the northern Raglan coast and possibly the Tauroa Peninsula. On the northern, east coast the only collections are: Cape Brett (CHR 153609), where only two plants were seen in 1964; the Western Chickens group (AK 159701) where it was a "very rare plant" in 1982, this was the only location where it was seen at that time when the whole Chickens group was surveyed (see Cameron 1984); and by Waihi in 1906 (AK 10798, WELT 27956). All the other northern New Zealand sites are on the west coast, apart from the single 1927 collection from Spirits Bay (CHR 333690) (see Fig. 2). I presume this predominantly west coast distribution

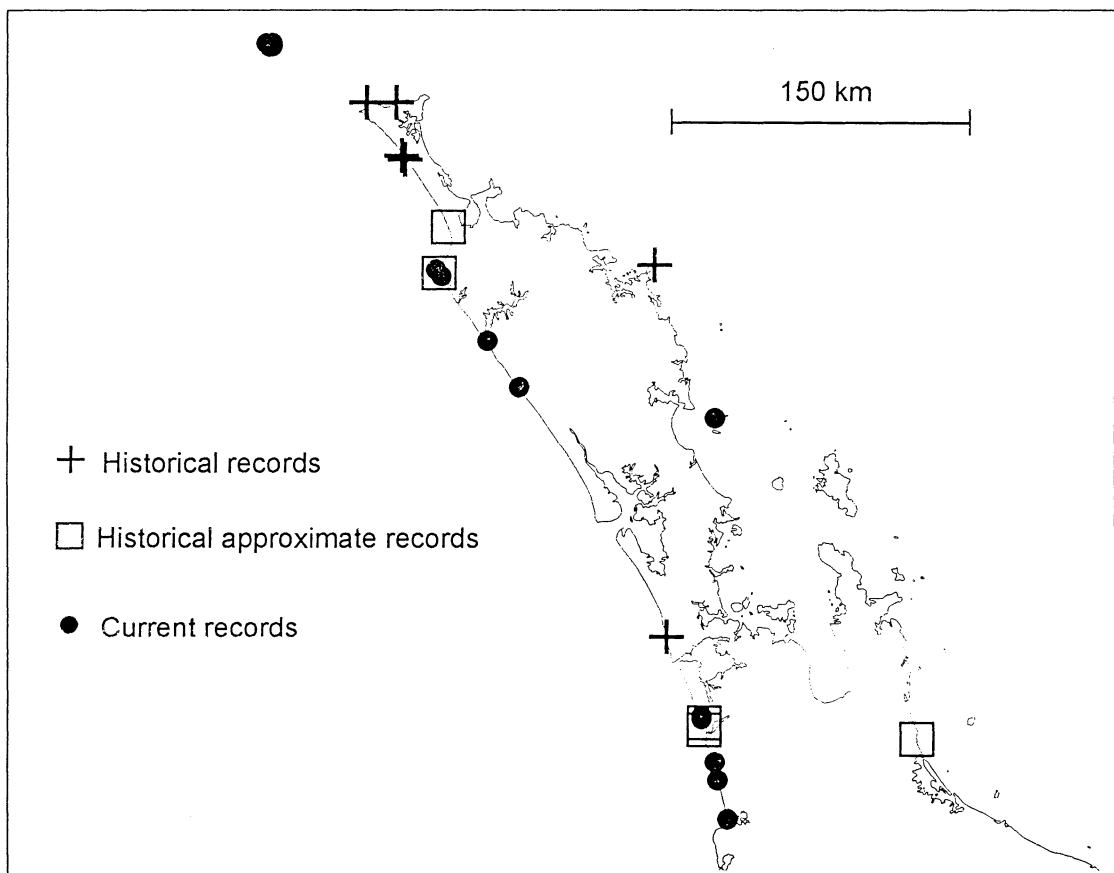


Fig. 2. Distribution of *Sonchus kirkii* for northern New Zealand (Raglan-western Bay of Plenty northwards) based on the records in the Appendix. (Note - the Kermadec records are omitted.)

is related to its preference for wet sites and that it suffers in the drier periods of the northern, east coast. However, based on herbarium records, it appears to be still fairly common in the East Cape region, but this area may have a different weather pattern from the northern portion of the North Island. The geology may also be important because *S. kirkii* relies on new surfaces; e.g., the wet sand faces slumping off at Karioitahi. But this slumping has to occur at the right speed so that *S. kirkii* has time to establish onto the new surfaces.

Competition with weeds and pests

Wardle (1995) highlighted the competition between the native *S. kirkii* and the two widespread, closely related exotic species, *S. oleraceus* and *S. asper*. From cultivating all three species in his Christchurch garden Wardle (op. cit.) postulated that because *S. kirkii* is slower to mature and heavier seeded that it cannot recover as quickly from habitat disturbances and grazing, as can the faster growing, shorter lived, lighter seeded (and therefore more easily dispersed) exotic *Sonchus* species. He also found possible sterile hybrids. At Karioitahi *S. oleraceus* was common and virtually always present at the *S. kirkii* localities. *S. asper* was present, but uncommon.

S. kirkii also has to compete with other naturalised species, e.g. at Karioitahi there was water celery (*Apium nodiflorum*) and alligator weed (*Alternanthera philoxeroides*) partially lining a small water course over the old dune cliffs. At one place adult *S. kirkii* plants were being partly smothered by

the water celery. Rabbits were also present at Karioitahi, and no doubt would eat all *Sonchus* species. Peter de Lange noted on one of his northern Raglan collections (AK 185355) that *S. kirkii* was "common out of reach of browsing animals." Many of the *S. kirkii* plants at Karioitahi were on vertical faces, out of reach of browsing animals.

Discussion

Direct competition with the exotic *Sonchus* species and other coastal weeds, and possible hybridisation, being browsed, all point towards a very bleak future for *S. kirkii*, which is already a threatened species. It is now possibly extinct on the east coast of the North Island, from the western Bay of Plenty northwards.

For the Auckland region it is exciting to know that *S. kirkii* is still present in the Karioitahi area. The coastline from the Manukau South Head south to Waikato Heads should now be surveyed to find the extent and size of this population. Even the Waitakere coastline may still support *S. kirkii*. There is plenty of potential here for another Bot Soc beach field trip! Because of the similarities, there is frequently confusion over the identity of *Sonchus* species in New Zealand, and for this reason *S. kirkii* may be under-recorded. Study Fig. 1 closely! Until more is known about the threats to *S. kirkii*, hand weeding of *S. oleraceus* and *S. asper* from *S. kirkii* sites, combined with the control of browsing mammals and coastal weeds could only assist *S. kirkii* to survive.

Acknowledgements

To Steve Benham and Bec Stanley for organising the Bot Soc trip to Karioitahi; Peter de Lange for comments on a draft of this article and information on various *S. kirkii* localities; the staff of AKU, CHR, NZFRI, WAIK and WELT herbaria for their *Sonchus kirkii* records from northern NZ; and Doug Rogan for producing Figure 2.

References

- Benham, S. 2000: Harry Carse's observations at Karioitahi Beach. *Auckland Botanical Society Journal* 54 (1): 11-12.
- Cameron, E. K. 1984: Vascular plants of the three largest Chicken (Marotere) Island: Lady Alice, Whatupuke, Coppermine; north-east New Zealand. *Tane* 30: 53-75.
- Cameron, E. K., Hayward, B.W. & Murdoch, G. 1997: A Field guide to Auckland. Godwit, Auckland.
- Carse, H. 1901: On the flora of the Mauku District. *Transactions of the New Zealand Institute* 34: 362-368.
- Cranwell, L. M. 1981: The Botany of Auckland. Auckland Institute and War Memorial Museum, Auckland.
- de Lange, P. J. 1996: The vascular flora of Te Wakatehaua (The Bluff) Island, Ninety Mile Beach. *Auckland Botanical Society Journal* 51 (2): 54-60.
- de Lange, P. J., Cameron, E. K. & Stanley, R. 1999a: Threatened and uncommon plants of the Auckland Region and Kermadec Islands (2). *Auckland Botanical Society Journal* 54 (1): 37-41.
- de Lange, P. J., Heenan, P. B., Given, D. R., Norton, D. A., Ogle, C. C., Johnson, P. N. & Cameron, E. K. 1999b: Threatened and uncommon plants of New Zealand. *N.Z. Journal of Botany* 37: 603-628.
- Gardner, R. O. 1982: Native Vascular Flora of the Waitakere Range Auckland. *Auckland Botanical Society Bulletin* 13.
- Kirk, T. 1894: Remarks on the sow thistles, with description of a new species. *Transactions of the New Zealand Institute* 26: 263-266.
- Sykes, W. R. 1977: Kermadec Islands Flora. D.S.I.R. Bulletin 219.
- Wardle, P. 1995: The native sow thistle, *Sonchus kirkii*. *Threatened Plants News* 7: 8-10.
- Webb, C. J., Sykes, W. R. & Garnock-Jones, P. J. 1988: Flora of New Zealand. Vol. IV. Botany Division, D.S.I.R., Christchurch.

APPENDIX: Records of *Sonchus kirkii* in the northern part of the North Island (see Fig. 2).

These records are based on 30 herbarium collections (excluding duplicates) and several published records. When present, information on abundance is also included.

Historical sites (over 30 yrs old, or thought to be extinct)

Kermadec Ecological Region & District – Macauley Id, Jul 1966 (*W. R. Sykes 65/K, 91/K*, CHR 171166, 171182); Curtis Id, Jul 1969 (*W. R. Sykes 835/K, 874/K*, CHR 193791, 193783).

Te Pahi Ecological Region & District – Cape Reinga, Jan 1896 (*T.F. Cheeseman*, AK 10801-02); Spirits Bay, Jan 1927 (*H. Carse*, CHR 333690A & B).

Aupouri Ecological Region & District – Te Arai, Jan 1948 (*R.C. Cooper*, AKU 5590); near Awanui, wetland, Oct 1914 (*H.B. Matthews & H. Carse*, AK 222540, 227429); The Bluff (Te Wakatehaua), 1 plant Oct 1990, none Jan 1996 (de Lange 1996); near Ahipara [Tauroa Peninsula ?], west coast, Jan 1911 (*H. Carse*, CHR 333688A & B); vicinity of Kaitaia [Tauroa Peninsula?], Apr 1914 (*H. Carse*, AK 10799, 10800);

Eastern Northland and Islands Ecological District – Cape Brett, only 2 plants seen, Sep 1964 (*G.I. Collett*, CHR 153609).

Waitakere Ecological District – Anawhata, Dec 1930 (*L.B. Moore*, CHR 40919).

Awhitu Ecological District - cliffs near mouth of Waikato River [north side of the river?], Mar 1901 (*H. Carse*, CHR 333689A & B); Manukau County west coast, Mar 1901, (*H. Carse*, AK 35259); near Karioitahi sea cliffs plentiful (Carse 1901).

Waihi Ecological District – Waihi, Nov 1906 (*D. Petrie*, AK 10798, WELT 27956).

Current sites (since 1970)

Kermadec Ecological Region & District – Macauley Id, Nov 1970 (*W. R. Sykes 1000/K*, CHR 211774), Dec 1988, Sep 1990 (*G. A. Taylor*, AK 247615-16, CHR 468553); Cheeseman Id, Nov 1970 (*W. R. Sykes 935/K*, CHR 211777); Curtis Id, Nov 1970 (*W. R. Sykes 917/K*, CHR 211776); fairly common on Macauley, Curtis and Cheeseman Is (Sykes 1977).

Three Kings Ecological Region & District – Great Id, Dec 1982, Dec 1983, Jan 1989 (occasional) (*A.E. Wright 5204, 5213, 6081, 8707*, AK 162630, 162598, 173011, 182941); frequently observed on Great Id within coastal scrub and forest clearings (de Lange 1996: 55).

Maungataniwha Ecological District – Tauroa Peninsula, uncommon, Dec 1985 (*P.J. Bellingham 536*, AK 175808); Tauroa Peninsula, north of Tanutanu Stream, small population (de Lange 1996).

Hokianga Ecological District – South Head near entrance to Hokianga Harbour, small population (de Lange 1996).

Tutamoe Ecological District – south end Maunganui Bluff, very few plants (de Lange 1996 and *pers. comm.*)

Taranga Ecological District – Maitaha Id (*W. Chickens*), very rare plant, Jan 1982 (*A.E. Wright 4518*, AK 159701 and grown from its seed: AK 159701, AKU 14570).

Awhitu Ecological District – Karioitahi, occasional, Mar 2000 (*Cameron 10113*, AK 245889).

Raglan Ecological District – Ngatutura Point, Jul 1992 (*P.J. de Lange 1386 & P.D. Champion*, CHR 478423); Otehe Point, local, Sep 1989 (*P.J. de Lange*, WAIK 11621, dup AK); Te Kaha Rocks, common, Feb 1989 (*P.J. de Lange*, WAIK 9682 A & B, dups AK, WELT).



Laurie Henry Millener, M.Sc. (N.Z.), Ph.D. (Cantab.), FRNZIH

E. J. Godley and A. D. Thomson

Laurie Millener lectured in Botany at the University of Auckland from 1940 to 1974. He helped develop the Botany Department from a staff of two and very small Stage I classes and he enthused generations of students with his love of plants both native and introduced. Zoologist Professor John Morton in his tribute at the time of Laurie's retirement recalled (8):

"When we first knew him, he was already a superb teacher. Without being classically formal, his lectures were elegant and clear-cut. For many of us they have continued to be a model. He still wore a master's black gown (white coat in the labs); he was confident in his craft, and he knew how to project it. He was a master of good, clear blackboard work, and of beautifully arranged and sub-headed notes. His lecture-room style was clean and functional; not quite classical, let alone baroque; but he did lecture with beauty, and finish of an artist's recital." We too recall his outstanding ability as a teacher and his

love of plants. Laurie was also a foundation member of the Auckland Botanical Society and both he and his wife Joan were very active members, leading field trips and participating in working bees. In 1940 he was Acting-Secretary and gave a talk on "The Evolution of a Land Flora". He was Vice-President 7 times from 1944-5 to 1962-3 and President in 1955-6 and 1956-7.

Laurie was born on 1 April 1914, at home in Princes Street, Northcote, Auckland, literally a stone's throw from the sea. From Northcote Primary School and Northcote Junior High (Stds.5&6), a Junior National Scholarship (1926) took him to Mount Albert Grammar. In the days before Takapuna Grammar School, boys from the North Shore went either to MAGS or AGS by ferry and tram, but when the Millener boys grew older they took their bikes on the ferry and rode to Mount Albert. At Mount Albert Laurie played soccer and was always very proud of