

bore abundant crops of ripe fruit at the time of our visit. Seedling regeneration near the parent trees was very sparse, however, as Chinese privet (*Ligustrum sinense*) has taken over. Other plants in this vegetation type included *Dicksonia squarrosa*, *Doodia australis*, *Haloragis erecta* and *Dianella haemata*.

Raised peat bog: Kaitaia Swamp, 129 ha, formerly under QEII management (Landcorp Sweetwater Farms), is an extensive raised peat bog at the northern end of Lake Tāngonge. Its vegetation is dominated by a very dense cover of tangle fern (*Gleichenia dicarpa*), bracken (*Pteridium esculentum*), wirerush (*Empodisma robustum*), *Schoenus brevifolius* and *Machaerina teretifolia*. *Dianella haemata* is also common, looking like miniature flax plants emerging above the tangle fern. Rushes seen on the road edge margins were *Juncus pallidus*, *J. acuminatus* and *J. tenuis* subsp. *dichotomus*. On previous visits here, Kevin Matthews and Bill Campbell have observed abundant *Thelymitra aemula*, and also the sundews *Drosera binata* and *D. spatulata*.

The Dismal Bog

At the southern end of the Lake Tāngonge basin is a privately-owned wetland known locally as the Dismal Bog. It was previously owned by Bob Fryer, and later purchased by Murray Lynn. It adjoins the area we were investigating and its vegetation and flora has much in common with the marginal shrubland type of Lake Tāngonge itself (Whaley et al. 2008, Beadel

2012). Some plants recorded there, but not seen in our Lake Tāngonge survey, were akeake (*Dodonaea viscosa*), mapou (*Myrsine australis*), *Coprosma propinqua*, *Carex vulpinoidea*, *Drosera hookerii*, *Gonocarpus micranthus*, and *Microtis unifolia*.

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Fig. 14. *Hypolepis distans* under manuka, western margin, Lake Tāngonge. Photo: Lisa Forester, 27 Mar 2014.

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Wild sea beet (*Beta vulgaris* subsp. *maritima*) on Waiheke Island

Mike Wilcox

Introduction

Wild sea beet (*Beta vulgaris* subsp. *maritima* (L.) Arcang.), Amaranthaceae, is a well-known coastal plant in the UK and Europe (Stace 2010; Biancardi et al. 2012). It is regarded as the ancestor of the various cultivated beets including *Beta vulgaris* L.

subsp. *vulgaris* – the root beets (beetroot, sugar beet, fodder beet or mangolds); *Beta maritima* subsp. *cicla* (L.) Alef. – the foliage beets, which comprise var. *cicla* L. (spinach beet or perpetual spinach) and var. *flavescens* (Lam.) Lam. (silver beet or Swiss chard).

Naturalised coastal beet

Beet is commonly found wild on seashores in New Zealand, with well-established populations at Napier (Ahuriri Lagoon) and in Wellington. Webb et al. (1988) referred such plants to *Beta vulgaris* subsp. *vulgaris*, and stated that they are derived from cultivars of silver beet. However, in Australia, wild coastal beets in New South Wales (Harden 1990) and Victoria (Walsh 1996) are recorded as *B. vulgaris* subsp. *maritima*.

Wild beet on Waiheke Island

The foreshore at Blackpool, Waiheke Island, has an extensive occurrence of wild beet. These plants grow in stony gravel mixed with shell fragments and sand on the shoreline, which is reached by the sea at high spring tides (Fig. 1). An associated plant is orache (*Atriplex prostrata*). There are scores of beet plants there, including young rosettes and large, tumbledown plants with heavy seed crops. It appears to be a perennial. The roots are cylindrically elongated and swollen (Fig. 2). The flowers are borne singly or in groups of two or three, along elongated and branched racemes with small leaf-like bracts most prominent at the base of the raceme (Fig. 3). The leaves are rather thick, and the petioles pinkish at the base, long (up to $1\frac{1}{2}$ × length of blade) and shallowly channelled. Basal leaves grow as rosettes (Fig. 4). The stem is strongly grooved, becoming quite woody with age. The leaf blade is rhomboidal, dull green in colour, and of a firm (but not fleshy) texture.

Waiheke beet as a vegetable

I harvested considerable quantities of young leaves and cooked them up, as for silver beet or perpetual spinach. The texture was firm, and flavour delicious. Here are two testimonials about sea beet:

Hugh Fearnley-Whittingsall, UK of "River Cottage" fame (Fearnley-Whittingsall 2013): "Sea beet, or sea spinach, is the genetic ancestor of beetroot, chard and perpetual spinach, and shares similar thick, pointed leaves and firm stems. As the name suggests, it's usually found by the coast, and at pretty much any point around our shores. It has glossy, fleshy leaves – sometimes red-tinged – and, in summer, waving flower-spikes will probably be a familiar sight if you've ever spent any time walking near the sea. The leaves are an excellent vegetable and can be served in just about any recipe that calls for cooked spinach. Picked young, juicy and glossy, you may well decide it's the best spinach you've ever tasted."

Robert Lewellen, beet researcher, California (Biancardi et al. 2012): "Variety is great, but I don't think we have ever improved on the original. You can really taste its pedigree if you boil, blanch, steam, wilt or eat raw the succulent leaves. They have



Fig. 1. *Beta vulgaris* subsp. *maritima*, Blackpool, Waiheke Island, distribution along the beach strand. All photos: M. Wilcox, 18 March 2014.



Fig. 2. *Beta vulgaris* subsp. *maritima*, Blackpool, Waiheke Island, rootstock and rosette leaves.

superior flavour, texture and nutrient content to any of their progeny. If you like spinach, you will absolutely *love* sea beet. Leaves are at their best in spring, but remain delicious pretty much throughout the year. Careful cropping of a few leaves per plant, and still further restraint during winter, should allow for a steady supply."



Fig. 3. *Beta vulgaris* subsp. *maritima*, Blackpool, Waiheke Island, inflorescence.



Fig. 4. *Beta vulgaris* subsp. *maritima*, Blackpool, Waiheke Island, leaf rosettes.

Morphological features of *Beta vulgaris* subsp. *maritima*

Blamey & Grey-Wilson (1988): Rather fleshy; leaves leathery, untoothed, sometimes with a heart-shaped base.

Hutchinson (1955): Perennial with a tough narrow carrot-shaped rootstock; stems and branches coarsely ribbed; flowers sessile, single or clustered; bracts below flower clusters small and narrow, the lower ones larger and leaf-like.

Walsh (1996): Biennial to 60 cm, basal leaves rosetted; lamina ovate to rhombic, mostly 5-10 cm long by 3-6 cm wide, petiole slender, half to about as long as lamina; cauline leaves smaller, becoming sessile towards inflorescence. Flowers solitary or in clusters up to 4. Fruit perianth with corky segments. Cultivated beets have up to 8 flowers in a cluster.

Identity of the Waiheke beet

It could be either spinach beet (*Beta vulgaris* subsp. *cicla* var. *cicla*) that has gone wild, or naturalised sea beet (*B. vulgaris* subsp. *maritima*). Comparison of the morphological features of the Waiheke plants with those in published descriptions and Auckland Museum (AK) herbarium samples from Europe, plus their strict maritime occurrence, strongly indicates that they are sea beet. Herbarium specimens from New Zealand of *Beta* at AK fall into two groups: leafy silver-beet-like plants from inland localities, and plants from strictly coastal collections, as follows:

Bethells Beach, *A.E.Wright 1750*, 24 Jan 1977, AK 141118;
 Karamuramu Island, inner Hauraki Gulf, *A.E.Wright 4676*, 6 Mar 1982, AK 159092;
 Makara, Wellington, *P.J. de Lange 735*, 31 Mar 1991, AK 200992;
 Cape Campbell, Marlborough, *E.K.Cameron 14884*, 9 Jan 2008, AK 306043;
 Waiheke Island, Blackpool, *E.K.Cameron 15385*, 20 Jan 2012, AK 309215;
 Waiheke Island, Blackpool, *M.D.Wilcox*, 18 Mar 2014, AK 350002, 350179.

To these can be added:

Napier, West Shore, *M.J.A.Simpson & R.B.Allen*, 24 Mar 1983, CHR 404210.

These are all typical *Beta vulgaris* subsp. *maritima*, which herein is recorded and recognised as an addition to the New Zealand naturalised flora.

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