Mazus pumilio site revisited

Maureen Young & Mike Wilcox

New Zealand was long considered to be the home of two species of *Mazus* – the endemic *Mazus radicans* (Hook.f.) Cheeseman, and *M. pumilio* R.Br. this latter also shared with Tasmania (the type locality) and the Australian mainland. The genus was formerly placed in the Scrophulariaceae, but with the disintegration of that family, *Mazus* is now placed in the Phrymaceae (Olmstead et al. 2001; Beardsley & Olmstead 2002), which includes *Mimulus* and *Glossostigma*.

It was later decided that the entity known as *M. pumilio* in New Zealand was not the same as that in Australia, and *M. novaezeelandiae* W.R.Barker was described (Barker 1991). *M. novaezeelandiae* has further been subdivided into two subspecies and two forms: *M. novaezeelandiae* subsp. *novaezeelandiae, M. novaezeelandiae* subsp. *impolitus* f. *impolitus,* and *M. novaezeelandiae* subsp. *impolitus* f. *hirtus* (Heenan 1998). A rare sand dune species from southern New Zealand, *M. arenarius* Heenan, P.N.Johnson & C.J.Webb, has also been added to our flora (Heenan et al. 1996).

In 1996 a Department of Conservation (DoC) worker, Nigel Miller, found a small population of the true *Mazus pumilio* growing at Whananaki South, in eastern Northland. Heenan & Forester (1997) subsequently concluded that it should be an addition to the New Zealand flora, rather than being a new naturalised plant record.

On 12 December 2007 we and Andrew Townsend (DoC botanist for Northland) were taken to the site by Lisa Forester (formerly DoC botanist, now with the Northland Regional Council). In a gully inland from Pitokuku Point, Sandy Bay, is a small patch of bush and after some searching at the lower edge of the bush, we were pleased to find that the species is still surviving, though in smaller numbers than previously noted. The bush has been fenced by the owner in an effort to protect the population, and the grass has become rank in the more open areas. The *Mazus* was found growing quite strongly at the edges of the grassy patches, mostly where the grass was becoming shaded out.

M. pumilio has horizontal rhizomes with the leaves in closely packed terminal rosettes, as has *M. novaezeelandiae*, but whereas the latter has more or less entire, glabrous leaves with margins that are glabrous or hairy, the leaves of *M. pumilio* have hairs on the upper lamina, midrib and petiole, and are distinctly serrate-dentate at the base. The plants were fortunately flowering, and the pale mauve flowers contrast with the white flowers of *M. novaezeelandiae.*

Fig. 1. *Mazus pumilio*, Whananaki South (Maureen Young, 12 Dec 2007)

Fencing is a necessary tool for protecting bush, but the conservation of small, herbaceous plants presents a problem for land managers. Once grazing animals are excluded, the growth of grass and rank herbs can overwhelm the small plants. In Northland the all-enveloping kikuyu grass is an added hazard, though fortunately for this *Mazus* population there was no kikuyu present. Maybe the answer is occasional grazing by sheep.

References

Barker, W. R. 1991: A taxonomic revision of *Mazus* Lour. (Scrophulariaceae) in Australasia. *In:* Banks, M. R., Smith, S. J., Orchard, A. E., Kantvilas, G. *eds*. Aspects of Tasmanian Botany - a tribute to Winifred Curtis. Roy. Soc Tas., Hobart, pp 85-94.

Beardsley, P.M.; Olmstead, R.G. 2002: Redefining Phrymaceae: the placement of *Mimulus*, tribe Mimuleae, and *Phryma*. *American Journal of Botany 89*: 1093-1102.

Heenan, P.B. 1998: *Mazus novaezeelandiae* (Scrophulariaceae): taxonomy, distribution, habitats, and conservation. *New Zealand Journal of Botany* 36: 407-416.

Heenan, P. B., Webb, C. J., Johnson, P. N. 1996: *Mazus arenarius* (Scrophulariaceae), a new, small-flowered, and rare species segregated from *M. radicans*. New Zealand Journal of Botany *34*: 33-40.
Heenan, P. B., Forester, L. J. 1997: *Mazus pumilio* (Scrophulariaceae), an addition to the indigenous flora of New Zealand. *New Zealand Journal of Botany 35*:437-440.
Olmstead, R. G.; De Pamphilis, C. W.; Wolfe, A. D.; Young, N. D.; Reeves, P. A. 2001: Disintegration of the Scrophulariaceae. *American Journal of Botany Botany 88*: 163-212.

The conifer Swamp Cypress, *Taxodium distichum*: a new naturalised record for New Zealand

Leon Perrie and Richard Perrie

Taxodium distichum (swamp cypress; also called bald cypress) is native to south-eastern North America (Watson 1993). It is a medium-sized, monoecious and deciduous conifer (Watson 1993; Salmon 2000), in the family Cupressaceae (which has been broadened to include the Taxodiaceae; Gadek et al. 2000).

Swamp cypress is thought to have been brought to New Zealand early in European settlement as a specimen tree (Salmon 2000). Although widely cultivated in parks, reserves, and gardens (Salmon 2000), swamp cypress has not previously been recorded as adventive in New Zealand. However, seedlings of this species were recently seen at two sites within the Waikare Golf Club, at Te Kauwhata in the northern Waikato.

Fig. 1. Three adult swamp cypress trees, bordering the pond alongside the 13th fairway of Te Kauwhata's Waikare Golf Club.

The first site is beside the dammed pond neighbouring the 13th fairway (Fig. 1). Nine seedlings were present as at 29th December 2007, with one of these collected as a voucher: AK 301850. These seedlings occurred directly under or in the immediate vicinity of three, approximately 25 year old trees (another two adults were recently removed), either in shallow water (Fig. 2) or marginally onshore. All extended approximately 10 to 15cm above the surface, although some in the water had even longer shoots; the shoot of the seedling collected as a herbarium voucher measures nearly 25cm. At this site, seedlings have also been seen some 40m away, amongst a floating mass of decaying waterlily roots in the middle of the pond, but they are no longer extant.

Fig. 2. Seedling of swamp cypress at pond's edge.

The second site is beside the 16th fairway, where several swamp cypress seedlings used to be present under a weeping willow, some 10m from two adult swamp cypress trees. However, these seedlings were away from standing water and did not survive a dry spell.

These observations suggest *Taxodium distichum* should, following the criteria of Heenan et al. (2004 p.797), be regarded as a casual naturalisation, because it is "passively regenerating only in the immediate vicinity of the cultivated parent plant". It will be interesting to track the fate of these swamp cypress seedlings at Te Kauwhata and monitor further spread, particularly given the proximity of the Whangamarino Swamp, as well as looking for evidence of naturalisation of this species elsewhere in New Zealand.