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

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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.

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Kangaroo grass (*Themeda triandra*) on Browns Island, Hauraki Gulf

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Kangaroo grass (*Themeda triandra* Forrsk., syn. of *Themeda australis* (R.Br.) Stapf), is native to Australia, Africa, Asia and the Pacific. It is very common and widespread in Australia, where it thrives best where there is little or no grazing. It is tolerant of fire.



Fig. 1. *Themeda triandra*, Browns Island (Mike Wilcox, 20 Dec 2007).

On 20 December 2007 when visiting Browns Island with Ranger Steve Benham of the Department of Conservation I found a patch of kangaroo grass on the northern slopes just below the summit. The dominant grass there and over much of the island is tall oat grass (*Arrhenatherum elatius*). The plants of kangaroo grass, numbering 20 or so individual clumps, stood out with their bronzy-reddish colour, and large, long-awned flower heads.

A sample was collected from Browns Island from a patch of numerous plants near the summit (AK 301455).

Edgar & Connor (2000) record *Themeda triandra* from several places in the South Island, and in the North Island from Rangitikei and Auckland City (early record only). The Auckland record is by T.F. Cheeseman, with numerous samples collected from St Johns College, Purewa, 1870s and 1880s. Thus, the recent collection from Browns Island seems to be the first for at least 130 years from the Auckland region.

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Japanese Holly Fern Invader - *Cyrtomium falcatum* (L.f.) C.Presl

Steve Benham

Background

New Zealand has a very rich and diverse native fern flora with over 194 indigenous species of which 89 species are endemic (Brownsey and Smith-Dodsworth 2000). With such favourable conditions for these pteridophytes it is hardly surprising that there are currently at least another 32 species that have become adventive and naturalised here. A few familiar fern adventives that spring to mind and all too often to be found in and around the Auckland Region are the ubiquitous tuber ladder fern (*Nephrolepis cordifolia*), royal fern (*Osmunda regalis*), Cretan brake (*Pteris cretica*), the two maidenhairs *Adiantum capillus-veneris* and *Adiantum raddianum*, and ferny azolla (*Azolla pinnata*).

Another invader to New Zealand and elsewhere in the world is the Japanese holly fern also widely known as the Asiatic holly fern (*Cyrtomium falcatum*). This species is indigenous to Japan, Korea, India, Vietnam and China. Japanese holly fern has been familiar to me since my botanical training, 40 years ago in England, where we grew it as a very tolerant pot plant under cold glasshouse conditions. This species is still grown today for sale throughout Europe as a houseplant. In Auckland it is freely available and sold as a hardy outdoor fern through garden retail centres.

Etymology

Cyrtomium from Greek arch alluding to the pattern of netted veins, *falcatum* Latin from falx, falcis, sickle "like a small sickle" alluding to the pinnae shape.