



# The Styx

## Pūrākaunui

K McCoombs

Greenspace Unit  
Christchurch City Council

November 2003

Report: 2003/1  
CCCECO 03-11

**A Botanical Assessment and Weed Plan for the  
Styx River Banks between Spencerville Rd and Earlham St**



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## Introduction

A site visit was made on the 25 September 2003 with Arthur Adcock and Andrew Crossland along the true right bank of the Styx River, between Spencerville Rd and Earlham St (see Figure 1). Most of the river margin on the true-right is council-owned, although movement of the river channel complicates ownership in some areas.

The council is considering locating a track along the river and a site assessment was requested to determine which bank would be most suitable from an ecological point of view. Advice on weed control was also requested. This report covers plants in this location, with a separate report covering wildlife (see Crossland, 2003).

## Vegetation

A species list is attached, which includes both scientific and common names, see Appendix 1. Unfortunately the camera taken wasn't working, so no location/habitat photos are included in this report.

Almost all of the remnant native vegetation was along the true-right bank. The occasional pukio

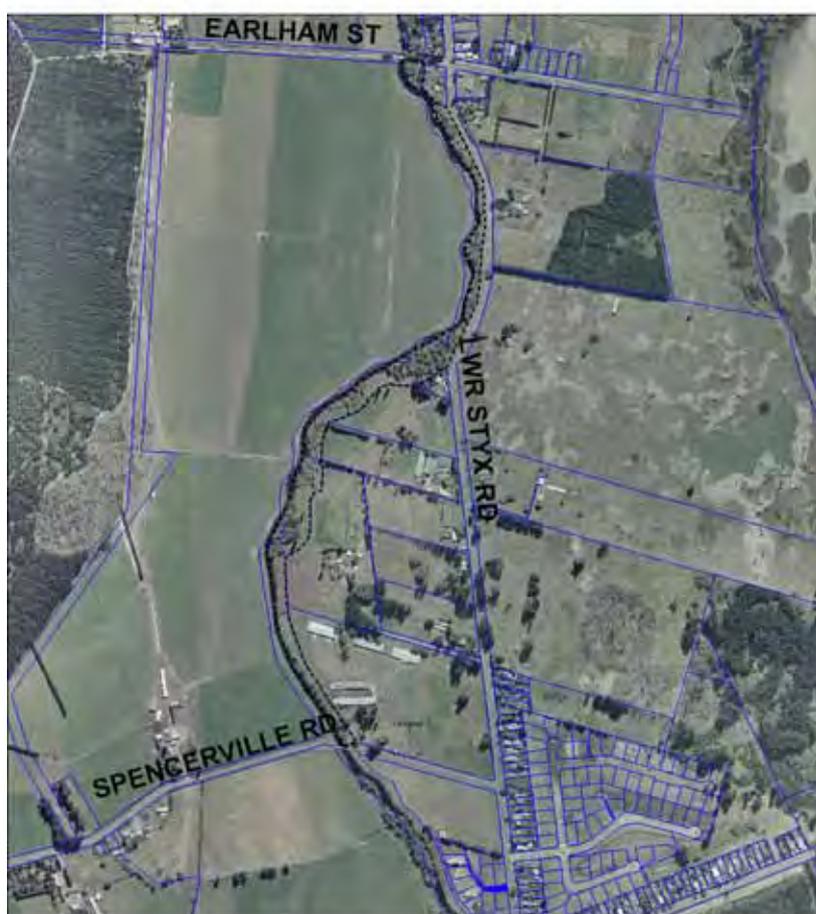


Figure 1. Study area is outlined with dashed black line.

(*Carex secta* and/or *C. virgata*) and ferns (swamp kiokio) were seen on the true left, but most of the bank is managed pasture, with occasional areas with shrub weeds (mainly gorse\* and broom\*).

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\* Exotic species are indicated with an asterix.

The remainder of this description refers to the true-right (eastern) bank unless otherwise indicated.

### **Pasture**

Many adjacent landowners are using at least part of the council land for grazing purposes. The stock present includes sheep, cattle and horses. Grazed areas are dominated by pasture grasses, with some shrub weeds such as broom\*, gorse\* and blackberry\*.

### **Un-grazed weedy areas**

Some areas are not currently grazed, but have been heavily modified/disturbed in the past. These areas are dominated by weedy species, including broom\*, gorse\*, bindweed\*, cleavers\*, hemlock\*, exotic grasses (e.g. tall fescue\*, prairie grass\*, cocksfoot\*) and blackberry\*.

The part of the river bank that runs adjacent to Lower Styx Rd (towards the Earlham St end) is particularly weedy, with people apparently dumping garden weeds over the bank (e.g. montbretia\*, arum lily\*, ivy\*). The canopy in this area is partly alder\*.

### **Wetland remnants**

The wetland remnants have a canopy of crack willow\*. Native tree/shrub species present (mostly at the Earlham St end, and some of which may have been planted) include cabbage trees, flax, several coprosmas, koromiko, broadleaf, narrow-leaved lacebark.

Beneath the canopy are various ferns (swamp kiokio, little hard fern, pig fern, prickly shield fern, male fern\*, brittle bladder fern\*, rushes (*Juncus greigiflorus*) and sedges (*Carex virgata*, *C. secta*, sharp spike sedge). The only native herbaceous species seen were mudwort, bedstraw, and swamp nettle (a threatened species, see discussion).

Unfortunately the wetland areas are also treated as dumping sites in some places, with a mixture of rubbish visible, including hard fill. In addition, near one of the homesteads garden weeds, such as tradescantia\*, appear to have been dumped into the wetland. Yellow flag iris\*, bamboo\* and hydrangeas\* have been planted on the margins of the wetland.

### **Aquatic**

A thorough survey of the aquatic plants in the river was not carried out as part of this brief, however in several places they were easily visible from the bank. Species seen were Canadian pondweed\* and curly pondweed\*.

Adjacent to the bank were sharp spike sedge, floating sweet grass\*, yellow flag\*, monkey musk\*, watercress\*.

## **Discussion**

### **Swamp nettle**

The presence of several healthy looking patches of swamp nettle is a significant find. This species is nationally threatened, in the “chronically threatened” category of “gradual decline”. Swamp nettle is at risk of extinction because of “a predicted decline of 5-30% in the total population in the next 10 years due to existing threats, with the decline expected to continue beyond 10 years” (Molloy *et al.*, 2002).

The main threat to the swamp nettle is loss of habitat, and this is occurring even within Canterbury where swamp nettle has “all but vanished North of Christchurch” (N. Head, *pers. comm.*). The threats to swamp nettle are listed by Dopson *et. al.* (1999) as “habitat (wetland) loss, weed encroachment (after willow removal); lack of legal land protection; goats; duck shooters destroy swamp nettle when constructing maimais; grazing and trampling of wetlands; inappropriate weed spraying”. Many of these threats are relevant to this population.

Management of the wetland remnants to maintain the existing populations of swamp nettle should be given a very high priority.

The Department of Conservation has also expressed an interest in restoring swamp nettle to other sites locally, in which case this population could provide a valuable source of propagules.



Figure 2. Swamp nettle, a nationally threatened plant.

Some trial restoration planting of swamp nettle was done several years ago (Pender, 1999). However few of the planted sites appear to have been successful, which highlights the need to maintain the remnant existing populations.

#### **Walkway**

If a walkway is to be created along the true right, then any associated changes in management need to be carefully considered. If the area is fenced off from the adjacent farmland, then the effects of a change in grazing management will need to be taken into account, see below.

The walkway itself should mostly proceed along the outer edge (relative to the river) so as to minimise disturbance to the main areas of value, while also obtaining a view of them. An informal track would be more appropriate than a formed walkway track as it would cause much less disturbance. Boardwalks could also be used in some places, if sufficient funds were available.

#### **Management of the wetland remnants**

The removal of grazing is likely to result in a significant increase in weeds, with exotic grasses overtopping small native herbaceous species (including the swamp nettle), and a possible increase in shrub weeds. Nevertheless, removal of grazing would probably be beneficial overall to the remnant native species by reducing grazing pressure. Where grazing is removed it will need to be combined with ongoing weed control.

#### **Weed control**

Appendix 2 outlines a plan for control of the weed species noted at the site to date.

Of particular note is the presence of old mans beard (at the downstream end of the site) and of yellow flag on the riverbank. Both have a high weed potential, particularly given their location along a waterway, and should be eradicated from the site as soon as possible.

For the wetland remnants, it would be preferable \*not\* to remove the crack willow until a replacement canopy is established. Any removal of crack willow that is required (e.g. for safety reasons) should be done with great care (supervised by someone who is familiar with the swamp nettle) to ensure disturbance is minimised. Also note that any crack willow that is felled must not be left on site, as it will re-grow from stem fragments.

## Conclusion

In terms of vegetation, the true-right bank, with its pockets of remnant wetlands, is more varied and likely to be considered more interesting than the true-left.

Regardless of whether a walkway is ultimately formed at this location, improved management of the true-right bank should receive a high priority because of the presence of a threatened species. The management of the wetland remnants should include staged removal of grazing, combined with weed control and planting.

## References

- Craw J (2000) *Weed Manager. A guide to the identification, impacts and management of conservation weeds of New Zealand*. Department of Conservation
- Crossland A (2003) *Report on site visit to Lower Styx River*. Christchurch City Council.
- Dopson SR, de Lange PJ, Ogle CC, Rance BD, Courtney SP, Molloy J (1999) *The conservation requirements of New Zealand's nationally threatened vascular plants*. Threatened species occasional publication No. 13. Department of Conservation.
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<http://www.doc.govt.nz/Publications/004~Science-and-Research/Biodiversity-Recovery-Unit/PDF/TSOP23.pdf>
- Molloy J, Bell B, Clout M, de Lange P, Gibbs G, Given D, Norton D, Smith N, Stephens T (2002) *Classifying species according to threat of extinction. A system for New Zealand. Threatened species occasional publication 22*. Department of Conservation.  
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- Pender R (1999) *Three locally threatened plants*. Peter Skellerup plant conservation scholarship.

## Appendix 1. Plant species noted on 25 September 2003

\* Indicates the species that are NOT native to New Zealand

SPECIES	COMMON NAME	SPECIES	COMMON NAME
<b>Ferns &amp; Allies</b>		<b>Herbs (Monocot)</b>	
<i>Blechnum minus</i>	swamp kiokio	* <i>Crocasmia x crocosmiifolia</i>	monbretia
<i>Blechnum penna-marina</i>	little hard-fern	* <i>Iris pseudacorus</i>	yellow flag
* <i>Cystopteris fragilis</i>	brittle bladder fern	* <i>Zantedeschia aethiopica</i>	arum lily
* <i>Dryopteris filix-mas</i>	male fern	<b>Rushes/Sedges</b>	
<i>Hypolepis ambigua</i>	pig fern	<i>Carex coriacea</i>	cutty grass
<i>Polystichum vestitum</i>	prickly shield fern	<i>Carex</i> spp.	sedge
<i>Pteridium esculentum</i>	bracken	<i>Carex secta</i>	pukio, swamp sedge
<b>Grasses</b>		<i>Carex virgata</i>	pukio, swamp sedge
* <i>Bambusa</i> sp.	bamboo	<i>Eleocharis acuta</i>	sharp spike sedge
* <i>Bromus willdenowii</i>	prairie grass	* <i>Juncus articulatus</i>	jointed rush
* <i>Dactylis glomerata</i>	cocksfoot	* <i>Juncus effusus</i>	soft rush
* <i>Festuca arundinacea</i>	tall fescue	<i>Juncus gregiflorus</i>	wi
* <i>Glyceria fluitans</i>	floating sweet grass	<b>Trees/Shrubs</b>	
* <i>Holcus lanatus</i>	Yorkshire fog	* <i>Alnus glutinosa</i>	alder
* <i>Lolium perenne</i>	ryegrass	<i>Coprosma lucida</i>	shining karamu
<b>Herbs (Dicot)</b>		<i>Coprosma propinqua x robusta</i>	
* <i>Bellis perennis</i>	daisy	<i>Cordyline australis</i>	ti kouka, cabbage tree
* <i>Capsella bursa-pastoris</i>	shepherd's purse	* <i>Cytisus scoparius</i>	broom
* <i>Cirsium vulgare</i>	scotch thistle	<i>Griselinia littoralis</i>	broadleaf
* <i>Claytonia perfoliata</i>	miner's lettuce	<i>Hebe salicifolia</i>	koromiko
* <i>Conium maculatum</i>	hemlock	<i>Hoheria angustifolia</i>	narrow-leaved lacebark
* <i>Elodea canadensis</i>	Canadian pondweed	* <i>Hydrangea</i> sp.	hydrangea
* <i>Galium aparine</i>	cleavers	<i>Phormium tenax</i>	harakeke, NZ flax
<i>Galium</i> sp.	bedstraw	* <i>Populus nigra</i>	Lombardy poplar
* <i>Hydrocotyle</i> sp.	waxweed	* <i>Prunus</i> sp.	
* <i>Lepidium africanum</i>	peppergrass	* <i>Rosa</i> sp.	rose
<i>Limosella lineata</i>	mudwort	* <i>Salix fragilis</i>	crack willow
* <i>Mimulus guttatus</i>	monkey musk	* <i>Sambucus nigra</i>	elder
* <i>Plantago major</i>	broad plantain	* <i>Ulex europaeus</i>	gorse
* <i>Potamogeton crispus</i>	curly pondweed	<b>Vines/Climbers</b>	
* <i>Prunella vulgaris</i>	selfheal	* <i>Calystegia silvatica</i>	bindweed
* <i>Rorippa microphylla</i>	water cress	* <i>Clematis vitalba</i>	old man's beard
* <i>Rumex acetosella</i>	sheep sorrel	* <i>Hedera helix</i>	ivy
* <i>Rumex obtusifolius</i>	broad dock	* <i>Humulus lupulus</i>	hop
* <i>Trifolium repens</i>	white clover	* <i>Rubus fruticosus</i> agg.	blackberry
<i>Urtica linearifolia</i>	swamp nettle	* <i>Tradescantia fluminensis</i>	tradescantia
* <i>Urtica urens</i>	small nettle		

## **Appendix 2. Weed plan for the Styx River banks, from Spencerville Rd to Earlham St**

### **Schedule of work**

Schedule of recommended weed control work, in order of priority:

1. old mans beard (in wetland near homestead, where Lower Styx Rd starts running along the river)
2. yellow flag (on the true-right river bank, at the Spencerville Rd end)
3. blackberry
4. gorse
5. broom
6. alder (where river runs along Lower Styx Rd)
7. tradescantia (near homestead, where Lower Styx Rd starts running along the river )
8. bindweed
9. montbretia (where river runs along Lower Styx Rd)
10. yellow flag (near homestead, where Lower Styx Rd starts running along the river)
11. ivy
12. elder
13. male fern
14. gradual removal of crack willow **with supervision** by someone who knows swamp nettle, and **only** after an alternative canopy has been established

### **Control methods**

Most of the suggested methods listed below come from Craw (2000). Weeds are listed alphabetically here, by common name.

#### **Alder**

In autumn either:

- Make 1 cut / 100 mm diameter and squirt with 2 g Escort / cut
- *or*, cut and paint with Escort at 5 g / L

Follow up control of suckers is required, difficult to kill.

#### **Bindweed**

- Apply Banvine in spring-autumn.
- *or*, cut and paint with Escort 1 g / L
- *or*, cut and paint with glyphosate 10%
- *or*, cut and paint with Banvine 20%

Repeated applications are likely to be required. Could cut and paint stems with herbicide – dispose of the cut material carefully as it will re-grow given the chance.

#### **Blackberry**

- Dig out small patches, any time of year.

- *or*, apply Escort at label rates, summer-autumn (before leaves become brittle).

#### **Broom**

- Dig out small plants, any time of year
- *or*, cut and paint with Grazon / Escort / Stump Stick at label rates, any time of year.

#### **Crack willow**

- 1 cut /100 mm diameter, squirt with 10 ml glyphosate, summer-autumn

Where practical, poison and leave standing - otherwise it is difficult to dispose of, and any live **cut material will re-grow if left on the ground.**

#### **Elder**

- Dig out small plants, any time of year.
- *or*, cut and paint with Escort at 1 g/L, any time of year.

#### **Gorse**

- Cut and paint with Grazon at 10% any time of year
- *or*, cut and paint with Escort 2 g/L any time of year

#### **Ivy**

- Cut and paint stump with Escort 5 g/L, any time of year (for vines growing up through trees)
- *or*, spray with Escort 5 g/10 L + penetrant, summer (for vines growing along the ground)

Where the ivy is growing through on trees, leave the material in the canopy to die. If material is on the ground, take care to thoroughly dry/burn/compost all of the stems.

#### **Male fern**

- Dig plants out and compost thoroughly – bag any plants before shifting them around, as spores will easily spread.

Confirm identification before removing these plants as they are easily confused with some of the native ferns that are present as well.

#### **Montbretia**

- Apply Escort 1 g + glyphosate 100 ml + 20 ml penetrant / L water when in full leaf stage
- *or*, glyphosate 1% + Escort 4 gms /10 L + penetrant

Follow up 6 monthly as required.

#### **Old mans beard**

‘Containment Control Plant Pest’ under the Regional Pest Management Strategy and an ‘unwanted organism’ under the Biosecurity Act. Given the amount and location of old mans beard in this case, the rules require **eradication**.

Cut at ground level and at 1 m high and paint both cuts with either:

- Escort 1 g/L
- *or*, Tordon BK 10%
- *or*, Banvine 20%

Leave stems in canopy to die. Take care in disposing of any cut material, as it will readily re-grow. Don't try to mulch the material – apply herbicide or deep bury. Follow-up is likely to be required, especially of seedlings.

**Tradescantia**

- Apply Grazon or Hydrocotyle Killer 6 ml / L water with penetrant

Re-apply soon after (within 2-3 months), several times, until full control is achieved.

Take great care not to spread any pieces, as tradescantia will easily grow from dropped fragments. Do not try to compost the material.

**Yellow flag**

- Spray with glyphosate at gorse rates with a penetrant, spring-autumn
- *or*, inject 5 ml undiluted glyphosate into stem base, any time of year

