

## **Patea River Pa Wetlands Walkway**

Comments on a proposal by Patea Community Development Trust to develop a walkway through wetlands and to restore native vegetation on adjoining higher ground.

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### Introduction

Tidal reaches of the Patea River include several hectares of saltmarsh just upstream of the SH3 road-bridge on the true right (town) side of the river. It is centred on NZMS260/Sheet Q22/Grid ref. 370600. Although I have driven past this area countless times over many years, it was not until my visit with Trust members on 31 July 2003 that its regional significance as a natural area became apparent to me. The saltmarsh is the largest area of ribbonwood/sea rush vegetation between the Manawatu River and estuaries in North Taranaki, perhaps the Tongaporutu or even the Mokau or Awakino Rivers.

A perusal of inventories of natural areas compiled by Department of Conservation during the Protected Natural Areas surveys of both Foxton (sand country) and Manawatu Plains (marine terrace country) Ecological Districts (Ravine 1992, 1995), shows that the biological importance of the Patea Estuary has been overlooked in the past. Nor does the estuary feature in the Taranaki Regional Council's (TRC 2000) inventory of significant wetlands. These omissions are very surprising because of (a) the rarity and intactness of this wetland vegetation and, (b) the site is so conspicuous from SH3. It is these two features that combine to make the Patea Community Development Trust's project an exciting opportunity, viz. to show and interpret for visitors the area's special features, in a way that also protects the natural features for posterity.

### The inspection

A 'Statement of Intent' for the area, prepared by the Patea Community Development Trust in May 2003 included lists of introduced and native plants. Plant distribution was shown in four 'zones': Zone 1 = erosion-prone steep bank between the pa site and the river and covered in introduced weeds, Zone 2 = steep bank between the Trust's base and the wetlands and mostly in introduced weeds, Zone 3 = freshwater wetland with native and exotic plants, Zone 4 = salt marsh. A 5<sup>th</sup> zone was mentioned in the text, namely the tidal waterways. The four zones were adopted for a more detailed survey undertaken on 31 July 2003 and a combined list was made of the plants recorded in May and July 2003 (Appendix 1).

Methods of control for serious weeds were discussed on site, then researched by Jim Clarkson of Department of Conservation (Stratford Area Office) and reported by him separately to the Trust. Discussions occurred on some options for replanting and are listed below.

### Existing vegetation patterns

Saltmarsh ribbonwood (*Plagianthus divaricatus*) is the characteristic shrub of estuarine flats through much of New Zealand, especially south of the southern limit of mangroves, but it is

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notably absent between Waitara in the north and the Manawatu Estuary in the south, apart from Patea. The abundance of saltmarsh ribbonwood is sufficient reason to make the Patea estuary of regional significance, the more so because the areas with ribbonwood have several other native species largely confined to such habitats, including a scrambling sea celery (*Apium prostratum* ssp. *prostratum* var. *filiforme*). The saltmarsh also has few weeds or other evidence of human disturbance.

Between the saltmarsh and the foot of the steep slope that rises to State Highway 3 and Patea's urban area there is a zone of freshwater and brackish swamp, more weedy than the saltmarsh but again with plants that are uncommon in the district, including kukuraho (*Bolboschoenus fluviatilis*) which is a tall, summer-green, leafy sedge. Raupo, harakeke (NZ flax) and pukio (or purei) are common native species in the freshwater zone. The slopes above the wetland are dominated by weeds, but given the enthusiasm of the Trust members and adequate financial and physical resources, this area could be restored with appropriate native species to simulate the kind of vegetation that would have existed here in pre-European times.

There is an exciting opportunity to include species of coastal or semi-coastal habitats that have become extremely rare or endangered in South Taranaki, perhaps most importantly, wharangi (*Melicope ternata*) as discussed below.

### Revegetation/Restoration

A suggested list of species is attached as Appendix 2. The list is not comprehensive and more exploration of remnants of semi-coastal native vegetation could suggest additions. It includes most of the species listed by the Trust as "plants to introduce". The Trust has already recognised the importance of using native vegetation sourced locally and a range of species suitable for the widely different habitats available.

#### 1. Native plants to exclude

- Not all native plants growing in a wild state around Patea are actually indigenous to Patea or indeed South Taranaki. Only those plants that are indigenous to the immediate district should be used in restoring vegetation that is intended to be representative of the Patea area. Obvious exclusions are pohutukawa and karo, species that have 'escaped' from cultivated plants, but there are also several listed for possible introduction in the Trust's 'Statement of Intent', including kohekohe, *Hebe elliptica* and *H. speciosa*. In addition, the species of kowhai identified for planting was *Sophora microphylla*, but quite recently this name has been shown to include more than one species (Heenan et al. 2001). True *S. microphylla* does not occur naturally near Patea although is probably planted within the township and hybridises with other species. The local kowhai is *S. godleyi* and, for the restoration project, it should be sourced from wild trees, probably from upriver, to ensure genetic purity.

#### 2. Wharangi

Two trees of wharangi are known in private land beside SH3 less than 1 km distant on the opposite of the river. This is now a regionally rare tree but was almost certainly a typical tree of semi-coastal forest in South Taranaki and Wanganui before human

clearing of the land. It is quite fast growing and forms a yellow-green, low, round-headed tree. However, it is frost-tender and survives naturally on mid-slopes mainly lying to the north, i.e. warm sites with cold air drainage. Beyond Patea, between Mt Taranaki and the Horowhenua, there is one wharangi tree known near Kakaramea, a grove of about eight just upriver of Waitotara village and two trees east of Putiki, Wanganui. Sloping ground of the Trust's area should be an excellent site for establishing a grove of wharangi.

### 3. Variety of plants

It is better to start with a small number of species that can be expected to do well rather than striving for too much variety in the first several years. Once a cover of shrubs has been established or at least shrubs have suppressed much of the grass and weeds then other native species can be introduced. These might include species that need or grow best with some shade, like karaka and kotukutuku. Small plants like native tussock-forming sedges (e.g. *Carex solandri*, *C. flagellifera*) can then be established also, when the risk of losing them in long grass is reduced.

### References

- Heenan, P.B., de Lange, P.J., Wilton, A.D. 2001. *Sophora* (Fabaceae) in New Zealand: taxonomy, distribution and biogeography. *NZ Journal of Botany* 39: 17-53.
- Ravine, D.A 1992. Foxton Ecological District. *Survey report No. 19 for the Protected Natural Areas Programme*. Dept. of Conservation, Wanganui.
- Ravine, D.A 1995. Manawatu Plains Ecological District. *Survey report No. 33 for the Protected Natural Areas Programme*. Dept. of Conservation, Wanganui.
- Taranaki Regional Council 2000. *Wetlands of Taranaki: priorities for protection and enhancement*.

**Appendix 1: Patea River saltmarsh and adjacent slopes on "town side" (true right bank) of river, upriver from SH3 road bridge.**

Wanganui Plant List No 158 (a)

C C Ogle and J Clarkson

List based on visit 31 July 2003, and earlier visits by CCO

The list includes all species seen on the river flats and the steep adjacent hill-slopes; it excludes those found only in lawns, gardens and waste areas beyond the top of the steep slopes. Those found on land managed by the Patea Community Development Trust are indicated; the others were recorded outside that area, mainly from an old foot-track that leads to the river off Street.

**Presence:** √ = seen by authors; (√) = listed in PCDT 'Statement of intent for management of natural areas' (26 May 2003) but not seen within PCDT area during our survey. The zones are as described in the PCDT statement, except that their zones 4 & 5 have been merged in this list. Zone 1 = 'sand & steep clay face between the Patea River Pa and the river'; Zone 2 = weedy bank between PCDT house and wetland; Zone 3 = freshwater wetland (at base of slope); Zone 4 = salt marsh and tidal waterways. Species not listed for any zone have been seen in the wetlands or adjoining slopes but outside the area managed by the PCDT.

**Abundance Ratings**

a = abundant; c = common; o = occasional; u = uncommon

l = local (species in small area, but can be common or abundant there)

\* = adventive species exotic species and NZ native species not natural to South Taranaki

Species	Common name	Presence		Abundance	Notes
		PCDT area	Zones		
<b>Gymnosperm trees</b>					
*Pinus radiata	radiata pine	√	1	u	Planted? (Plantation on opp. side of saltmarsh)
<b>Dicot trees and shrubs</b>					
Abutilon darwinii X A pictum	Chinese lantern		2	lc	Yellow-flowered
Coprosma propinqua <sup>2</sup>		(√)			
Coprosma repens	taupata	√	2,4	o	<sup>3</sup>
Coprosma robusta	karamu	√	2,3	o	
*Elaeagnus sp.	elaeanus	(√)	2		
*Ficus carica	fig	√	2	la	Spreading by suckering only
Hebe stricta ssp. stricta	koromiko	√		u	
*Lupinus arboreus	tree lupin	√	1	u	
*Lycium ferrocissimum	boxthorn	√	1,2	o	Being controlled

<sup>2</sup> Maybe error for *Plagianthus divaricatus*, a species not listed in PCDT statement.

<sup>3</sup> Natural to Patea, mostly on or close top sea cliffs – probably not natural to this site, but arriving by birds from gardens.

<i>Macropiper excelsum</i>	kawakawa	√	2,3	lc	
<i>Melicytus ramiflorus</i>	mahoe	√	2,3	c	
<i>Olearia solandri</i>	a shrub daisy	√	4	o	In saltmarsh; uncommon in district
* <i>Olearia traversii</i>	Chatham akeake	√	1	l	Planted hedge, not spreading
* <i>Pittosporum crassifolium</i>	karo		2,3		NZ native, but not to South Taranaki
<i>Plagianthus divaricatus</i>	saltmarsh ribbonwood	√	4	c	Dominant shrub of saltmarsh
* <i>Populus nigra</i> cv "Italica"	Lombardy poplar	√	1	o	
* <i>Rosa</i> sp. (unidentified)	rose	√		u	Planted shrubs?
* <i>Salix fragilis</i>	crack willow	√	3	c	
* <i>Salix matsudana</i> cv "Tortuosa"	tortured willow	(√)	3	u	
* <i>Ulex europaeus</i>	gorse	√	1,2,3,4	o	Being controlled
<b>Dicot lianes (woody vines)</b>					
* <i>Anredera cordifolia</i>	Madeira vine		2	la	
<i>Calystegia sepium</i> agg.	pohue, convolvulus	√	2,3	c	Flower colour not seen (pink striped ones native NZ)
* <i>Hedera helix</i>	ivy	√	3	u	
* <i>Lonicera japonica</i>	honeysuckle	√	2,3	c	
<i>Muehlenbeckia australis</i>	pohuehue	√	2,3	o	
* <i>Senecio mikanioides</i>	German ivy	√	1,2	l	A climbing daisy
* <i>Vinca major</i>	periwinkle	√	1,2	lc	
<b>Dicot herbs</b>					
<i>Apium prostratum</i> ssp. <i>prostratum</i> var. <i>filiforme</i>	sea celery	√	4	o	Slender saltmarsh species (not same as on coastal cliffs) – rare in region
* <i>Arctotheca calendula</i>	Cape daisy	√	1	u	
* <i>Aster subulatus</i>	sea aster	√	4	o	Sparse, in saltmarsh
* <i>Brassica napus</i>	wild turnip	√	2	l	
* <i>Conium maculatum</i>	hemlock	√	2	lc	
* <i>Conyza albida</i>	fleabane	√	2	o	
* <i>Galium aparine</i>	cleavers	√	2	c	
*? <i>Geranium</i> sp. <sup>4</sup>		√	2		
* <i>Foeniculum vulgare</i>	fennel	√	2	lc	
* <i>Fumaria muralis</i>	fumitory	√	2	o	
* <i>Hypochoeris radicata</i>	catsear	√	2	o	
* <i>Linaria purpurea</i>	purple linaria	√	2	u	
<i>Lobelia anceps</i>	NZ lobelia	√	4	u	
* <i>Malva ?neglecta</i>	creeping mallow	√	2	u	Needs flowers for positive identification
* <i>Oxalis articulata</i>	sourgrass	√	2	o	
* <i>Phytolacca octandra</i>	inkweed	√	2	u	
* <i>Silybum murinum</i>	variegated thistle	√	2	u	
* <i>Solanum nigrum</i>	black nightshade	√	2	o	
* <i>Sonchus oleraceus</i>	puwaha	√	2	o	
* <i>Stellaria media</i>	chickweed	√	2	o	
* <i>Trifolium repens</i>	white clover	√	2	o	
* <i>Tropaeolum majus</i>	nasturtium	√	2,3	la	

<sup>4</sup> maybe a *Pelargonium*? Listed as 'wild geranium' by PCDT.

* <i>Vicia sativa</i>	vetch, tares	√	2	o	
<b>Monocot tree</b>					
<i>Cordyline australis</i>	ti kouka, cabbage tree	√	3	u	
<b>Monocot herbs (1) grasses</b>					
* <i>Bromus willdenowii</i>	prairie grass	√	2	c	
* <i>Cortaderia selloana</i>	pampas grass	(√)	3		
<i>Cortaderia toetoe</i>	toetoe	√	3	lc	Wetland sp., c.f. <i>C. fulvida</i>
* <i>Cynodon dactylon</i>	doab	√	2	lc	
* <i>Dactylis glomerata</i>	cock's foot	√	2	c	
* <i>Elytrigia repens</i>	couch		4	l	
* <i>Holcus lanatus</i>	Yorkshire fog	√	2	o	
* <i>Lolium perenne</i>	perennial ryegrass	√	2	o	
* <i>Pennisetum clandestinum</i>	kikuyu grass	√	1,2	la	
* <i>Schedonorus phoenix</i>	tall fescue	√	4	c	Also called <i>Festuca arundinacea</i>
<b>Monocot herbs (2) sedges</b>					
<i>Baumea rubiginosa</i> <sup>5</sup>		(√)	(4)		
<i>Bolboschoenus fluviatilis</i>	kukuraho	√	3	l	Tall sumer-green leafy sedge, rare in district
<i>Carex geminata</i> agg. (unnamed 'giant' species)	cutty-grass	√	3	lc	
<i>Carex lessoniana</i>	cutty-grass	√	3	lc	
<i>Carex secta</i>	pukio, purei	√	3	o	
<i>Carex virgata</i>		√	3	o	
<i>Isolepis cernua</i>		√	3	u	
<i>Schoenoplectus tabernaemontani</i>	kapungawha	√	3, (4)	lc	1-1.5 m tall sedge with round grey-green leafles stems
<b>Monocot herbs other than grasses &amp; sedges</b>					
* <i>Allium triquetrum</i>	wild garlic	√	2,3	c	
* <i>Crocasmia X crocosmiiflora</i>	montbretia	√	2	u	
* <i>Gladiolus natalensis</i>		√	2	u	Garden discard – collected for CHR in 2001
* <i>Hedychium</i> sp.	Listed as 'wild ginger' by PCDT	√	[2,3]		
<i>Juncus kraussii</i> ssp. <i>maritimus</i>	sea rush	√	4	la	The dominant salt marsh rush
<i>Phormium tenax</i>	harakeke, NZ flax	√	2,3,4	lc	Wetland sp. (cf. <i>P. cookianum</i> )
* <i>Tradescantia fluminensis</i>	wandering Jew	√	1,2,3	lc	
<i>Typha orientalis</i>	raupo	√	3 (4)	o	

<sup>5</sup> Possible error for *Schoenoplectus tabernaemontani*, as that species not listed by PCDT.

*Zantedeschia aethiopica	arum lily	√	2,3	c	
<b>Ferns</b>					
Asplenium polyodon	sickle spleenwort	√	3	u	
Blechnum novaezelandiae	kiokio	√	2,3	o	
Hypolepis ambigua				lc	Under pine plantation
Cyathea medullaris	mamaku	(√)	3		
Dicksonia squarrosa	wheki	√	3	o	
Pteridium esculentum	bracken	√	2,3	l	

**Appendix 2: Suggested species for planting in the Patea Community Development Trust's area between SH3 and Patea River**

The zones are as described in the PCDT statement, except that their zones 4 & 5 have been merged here. Zone 1 = 'sand & steep clay face between the Patea River Pa and the river'; Zone 2 = weedy bank between PCDT house and wetland; Zone 3 = freshwater wetland (at base of slope); Zone 4 = salt marsh and tidal waterways.

Common name	Species	Zones	Notes
<b>Gymnosperm trees</b>			
Kahikatea	<i>Dacrycarpus dacrydioides</i>	(2) - 3	Base of slope
<b>Dicot trees and shrubs</b>			
Karaka	<i>Corynocarpus laevigatus</i>	1, 2	Needs shade to establish – plant under other shrubs or trees
Hangehange	<i>Geniostoma rupestre</i> subsp. <i>ligustrifolium</i>	2 – (3)	Foot of slope
Kaikomako	<i>Pennantia corymbosa</i>	2	Foot of slope
Kanuka	<i>Kunzea ericoides</i>	1, 2	Maybe hard to get plants – not easily transplanted
Karamu	<i>Coprosma robusta</i>	1, 2, 3	
Kohuhu	<i>Pittosporum tenuifolium</i>	1, 2	
Koromiko	<i>Hebe stricta</i>	1, 2, (3)	
Kotukutuku	<i>Fuchsia excorticata</i>	(2) – 3	Needs shelter from wind; use part shade
Kowhai	<i>Sophora godleyi</i>	1, 2	See notes in text
Mahoe	<i>Melicytus ramiflorus</i>	1, 2	
Manuka	<i>Leptospermum scoparium</i>	2	Plant densely in clumps
Ngaio	<i>Myoporum laetum</i>	1, 2	The hardiest tree/shrub for dry exposed sites
Poroporo	<i>Solanum aviculare</i> & <i>S. laciniatum</i>	1, 2 – (3)	Fast-growing, short-lived shrubs. Not too dry.
Rangiora	<i>Brachyglottis repanda</i>	1, 2	
Saltmarsh ribbonwood	<i>Plagianthus divaricatus</i>	4	
Shrub daisy	<i>Olearia solandri</i>	3, 4	
Wharangi	<i>Melicope ternata</i>	1, 2	



<b>Monocot trees</b>			
Ti kouka, cabbage tree	<i>Cordyline australis</i>	(2) - 3	Not too dry
Nikau	<i>Rhopalostylis sapida</i>	2	Base of slope -- needs shelter & some shade when young
<b>Non-woody monocots</b>			
Harakeke	<i>Phormium tenax</i>	3	
Mariscus	<i>Cyperus ustulatus</i>	2	Foot of slope
Pingao	<i>Desmoschoenus spiralis</i>		Around buildings (natural to dunes on coast nearby, but will grow in 'garden beds')
Toetoe (dryland species)	<i>Cortaderia cookianum</i>	1, 2	Also around buildings as low shelter
Toetoe (wetland species)	<i>Cortaderia toetoe</i>	(2) - 3	
Wharariki	<i>Phormium cookianum</i>	1, 2	Also around buildings as low shelter

