Part A: Wetland classification, wetland condition, pressure indicators

Wetland name: Muriwai (Coopers Lagoon) **Date:** July 2007
Region: Canterbury Plains ER, Low Plains ED **GPS Ref. (NZTM):**
Altitude: <5 m **No. of plots sampled:** Overview only
Field team: Kate McCombs

A.1.1 Wetland classification

Classification: I System	IA Subsystem	II Wetland Class	IIA Wetland Form
Lacustrine	Near-permanent	Shallow water	Coastal lagoon
Lacustrine	Near-permanent	Marsh	Coastal lagoon
Palustrine	Permanent	Swamp	Floodplain
Estuarine	Non-tidal	Saltmarsh	Coastal Lagoon

Shallow coastal lagoon and associated margin wetlands. Although located immediately behind beach barrier, the lagoon is mostly a freshwater wetland habitat because of the volume of fresh surface and groundwater inflows. Approximately 10% of mapped vegetated wetlands are estuarine saltmarsh vegetation types – mostly along the edge of the lagoon's NE corner.

A.1.2 Recording wetland condition

Indicator	Indicator components	Specify and Comment	Score 0– 5[1]	Mean score
Change in hydrological integrity	Impact of manmade structures	All of the waterways in and out are manmade and cleared periodically, except for Youngs Creek. There is also a culvert to the sea. Periodic input of water from the sea into the estuarine area occurs naturally.	1	2.7
	Water table depth	Apparently the site is overall wetter than in the last ~ 15 years, though this may not be the case compared to pre-European times. Occasionally completely drained.	3	
	Dryland plant invasion	Mainly along drain margins and the stopbank. Some tall fescue in the estuarine part.	4	
Change in physico-chemical parameters	Fire damage	None has been reported	5	3.3
	Degree of sedimentation/erosion	Sedimentation within the water body is high, and there is little aquatic vegetation.	2	
	Nutrient levels	Several of the species present imply a relatively high nutrient status (e.g. raupo, retoreto, starwort, soft rush, floating sweet grass).	3	
	Von Post index	N/A		
Change in ecosystem intactness	Loss in area of original wetland	The beach has retreated inland making the wetland smaller. Some areas possibly wetter than previously.	3	3
	Connectivity barriers	Still connected to Youngs Creek upstream. Drains isolate the site to some degree.	3	
Change in browsing, predation & harvesting regimes	Damage by domestic or feral animals	Stock grazing with a lot of trampling in some parts and nutrient inputs.	3	3.3
	Introduced predator impacts on wildlife	No reports found, but some likely.	3	
	Harvesting levels	Low level harvesting reported.	4	
Change in dominance of native plants	Introduced plant canopy cover	High in the freshwater parts, very little in the saline parts.	2	2.5
	Introduced plant understorey cover	Some in the freshwater parts.	3	
Total wetland condition index /25				14.8

[1] Assign degree of modification as follows: 5=v. low/ none, 4=low, 3=medium, 2=high, 1=v. high, 0=extreme

Main vegetation types:

Palustrine	Approx. area in hectares
• *Juncus articulatus – Eleocharis acuta* rushland	17
• *Salix cinerea – Salix fragilis* / *Phormiun tenax* forest	10
• *Juncus kraussii* / *Agrostis stolonifera – Juncus articulatus – Eleocharis acuta* rushland	6
• *Schedonorus phoenix – Juncus gregiflorus* grassland	5
• *Agrostis stolonifera* grassland	4
• *Typha orientalis* reedland	3
• *Schedonorus phoenix – Juncus* spp. – *Carex* spp. grassland	2
• *Carex secta* / *Juncus articulatus – Eleocharis acuta* rushland	1
• *Ulex europaeus* / *Schedonorus phoenix* grassland (along stopbank)	1
Total Palustrine	**50**
Estuarine	
• *Juncus kraussii* / *Sarcocornia quinqueflora – Selliera radicans* rushland	3
• *Sarcocornia quinqueflora – Selliera radicans* herbfield	3
Total Estuarine	**6**
• Open Water (Very little aquatic vegetation is present.)	37
Total Open Water	**38**
	TOTAL ~94 ha

Native fauna:
Nationally significant habitat for birdlife (O"Donnell, 2000); 78 bird species are noted to use the lagoon, riparian wetlands and the adjacent ocean beach. Several species are significant: (a) NZ's largest wild breeding population of Mute Swan (protected species), (b) NZ's largest wintering population of White-winged Black Tern, (c) Important coastal wetland for migratory and native waders, (d) Important coastal site for swampbirds, (e) Important coastal site for native waterfowl (A Crossland, in McCombs 2007).
The lagoon "supports the common native fish species, *Galaxias maculatus*, and inanga/whitebait species, tuna/eel (*Anguilla* sp.), common bully (*Gobiomorphus cotidianus*), common smelt (*Retropinna retropinna*) and lamprey (*Geotria australis*) a rare species" (Steven & Meurk 1996).

Other comments
At least one threatened plant species occurs – *Mimulus repens*. A second threatened plant, *Ranunculus macropus*, was also noted. However flowers need to be found to confirm the identification.
Also present are several locally rare plant species, i.e. they are rare within the Canterbury Plains Ecological District (C Meurk, *pers. comm.*). These are *Baumea rubiginosa* and *Potentilla anserinoides*.

A. 1.3 Wetland pressure indicators (catchment)

Pressure	**Score**[2]	**Specify and Comment**
Modifications to catchment hydrology	3	Catchment has many artificial drains, cleared periodically.
Water quality within the catchment	3	Farming, including cropping and some dairying, are likely to be affecting water quality.
Animal access	4	The immediate surrounds are mostly grazed. No known predator control occurring.
Key undesirable species	3	Grey and crack willow present in the catchment, providing an ongoing source of propagules. Pest animals also likely to be present.
% catchment in introduced vegetation	4	Mostly farmland. Some riparian and wetland vegetation e.g. along Youngs Creek.
Other pressures	2	Potential for dairy conversion, or increased water extraction for cropping, or damage to saltmarsh by off-road vehicle use.
Total wetland pressure index /30	19	

[2]Assign pressure scores as follows: 5=extreme, 4=very high, 3=high, 2=moderate, 1=low, 0=none/very low

Part B: Ecological significance assessment

B. 1.1 Assessment of Ecological significance

Criteria	Rank	Notes
Representativeness	High	Plains wetland that retains hydrological values and supports native wildlife; vegetation is mixed native/exotic. The saline part of the lagoon probably retains much of its original character.
Rarity / Distinctiveness	High	Native vegetation cover has been reduced to <20% of their former area in this land environment. Several species present are listed on the current national list of threatened species. They are lamprey (*Geotria australis*), native musk (*Mimulus repens*) and swamp buttercup (*Ranunculs macropus*). Also present are several locally rare plant species, i.e. they are rare within the Canterbury Plains Ecological District (C Meurk, *pers. comm*.). These are baumea sedge (*Baumea rubiginosa*) and silverweed (*Potentilla anserinoides*). The site also supports NZ's largest wild breeding population of Mute Swans (a protected species) and the largest wintering population of white-winged black tern.
Diversity and pattern	Moderate	Moderate diversity of habitat; rushland, herbfield, grassland, willow forest and open water.
Naturalness	Moderate	Spread of exotic plant species and stock reduce naturalness. Occasionally artificially opened to the sea.
Ecological Context	High	Muriwai is part of a complex of riparian areas and pockets of wetland between Rakaia River to the south and Lake Ellesmere to the north. Muriwai has riparian connections important to both fresh and saltwater fish species. The wetland is used by significant numbers of migratory and native waders.

The site is assessed against criteria developed for the Proposed Canterbury Regional Policy Statement (Wildland Consultants Limited, 2011)

Coopers Lagoon is assigned an overall ecological significance ranking of **High**.

References:

Clarkson BR, Sorrell BK, Reeves PN, Champion PD, Partridge TR, Clarkson BD (2004) *Handbook for monitoring wetland condition. Coordinated Monitoring of New Zealand Wetlands*. A Ministry for the Environment Sustainable Management Fund Project (5105).

(Describes the assessment method generally. In particular, Table 5 was used to determine the indicator scores and Table 6 for the pressure scores)

O'Donnell CFJ. 2000. The significance of river and open water habitats for indigenous birds in Canterbury, New Zealand. Environment Canterbury Unpublished Report U00/37.

Steven JC, Meurk CD (1996) *Low and High Plains Ecological Districts, Plains Ecological Region, Canterbury. Protected Natural Areas Survey Report xx (Draft).* Department of Conservation & Landcare Research.

Wildland Consultants (2011) *Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna and wetlands in Canterbury*. Wildland Consultants Contract Report No. 2289c. Prepared for Environment Canterbury.