

A Bird survey of the Upper Waimakariri River
November 5-8, 2012



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Abstract

A bird survey of 35km of the Upper Waimakariri River (from Bealey Bridge down to the Esk confluence at the top of the gorge) was carried out From November 5-8, 2012 by 14 members of Braided River Aid Inc. (BRaid), with support funding from Environment Canterbury (ECan). With the exception of the black stilt, all the more threatened braided river birds were observed. Previous surveys of the same section of the river were carried out in 1981 and 1995. Wrybill numbers have remained relatively stable, as have banded dotterel, which may even be increasing. Black-fronted terns numbers were lower than in 1995, but much higher than in 1981, while the population of black-billed gulls was much lower than in 1995 but only a little lower than in 1981. The only distinct trends over the three years were Canada geese (upward) and paradise shelduck and duck spp. (downward). Compared to survey results in the Lower Waimakariri, numbers/km of wrybills and banded dotterels were similar, but black-fronted terns and black-billed gulls were lower. In general, bird populations in the Upper Waimakariri were lower than in the upper catchments of the Rangitata and Waitaki (Godley River). However, the results confirm the continuance of the Upper Waimakariri as an important community of riverbed birds both in terms of numbers and diversity. In order to give greater confidence in bird population trends it is recommended that repeat surveys be carried out in 2013 and 2014.

1. Introduction

The Waimakariri River is one of a number of large braided rivers on the eastern side of the South Island that attracts a specialist avifauna adapted to the flood prone, variable and often extreme conditions of this habitat. Some of the species present are considered to be threatened with extinction (Miskelly et al 2008; Townsend et al., 2008) as a result of a combination of factors impinging on them. Flooding of nests, reduction in size of the habitat, reduction in quality of the habitat through weed infestation, and predation by both introduced mammals and some native avian predators, are the principal factors causing these declines (O'Donnell, 2004; Dowding and Murphy, 2001; Jolly, 2006).

Previous surveys (O'Donnell, 1981 and unpublished data, Department of Conservation, 1995) found that the expected range of braided river bird species were present in the Upper Waimakariri River including four key threatened species, wrybill (*Anarhynchus frontalis*), banded dotterel (*Charadrius bicinctus*) black-billed gull (*Larus bulleri*), and black-fronted tern (*Chlidonias albostratus*). On the basis of that survey, the river was rated as an outstanding habitat in terms of high species diversity, high population numbers, and breeding habitat for threatened species (O'Donnell, 2000).

There is clearly a need to update the earlier surveys, particularly as there were substantial differences between those surveys in the numbers of the key species recorded.

BRaid attempted a survey in 2011 but high flows in the river prevented any more than a reconnaissance. The expected range of riverbed species was recorded in that reconnaissance (Appendix) but it was not possible to assess numbers present in the Upper Waimakariri as a whole.

2. Methods

Birds were counted in a formal walk-through survey, a standard method on braided rivers (O'Donnell and Moore, 1983; Maloney et al, 1997). The survey commenced at the Bealey Bridge over the Waimakariri River and finished at the confluence of the Esk River at the top of the Waimakariri Gorge a total distance of 35 Km (Fig. 1). The survey was split into two

sections upstream and downstream of the Mt. White Bridge. Between 5 and 10 observers were present on each day of the four-day survey.

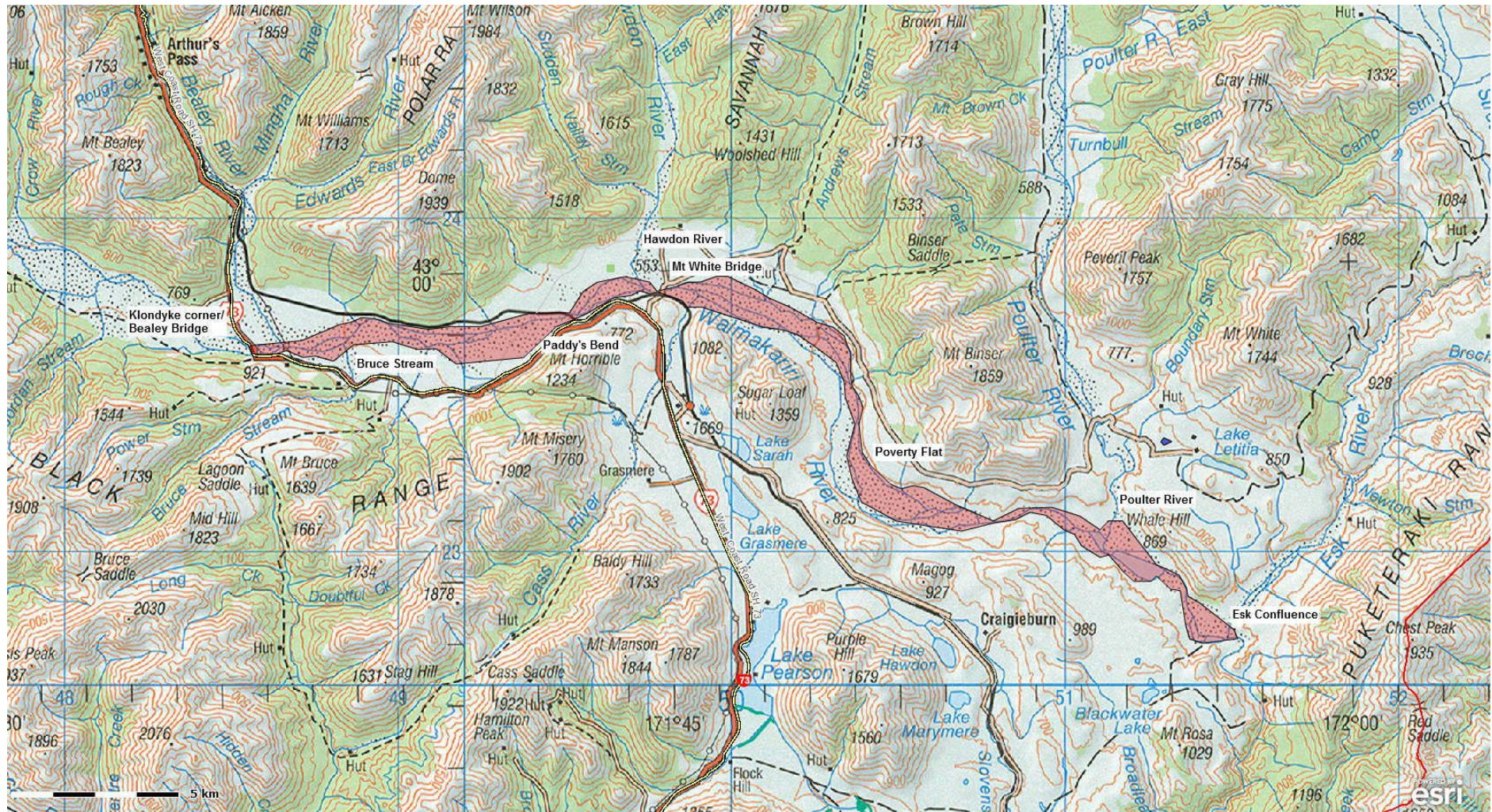
The weather during the survey was favourable for recording birds except for the first half-day which was extremely cold with a southerly wind blowing. River conditions were also favourable with clear water and moderate flows (150 m³/s at the Old Highway Bridge) and a three week interval since the previous flood (1500 m³/s on October 14).

A jet boat was used to ferry observers across the main channels downstream from the Mt. White Bridge, but all counts were made on foot to give the best coverage of the riverbed possible. However, because the riverbed widens to more than one kilometre in places not all habitat was covered. In addition some species are relatively inconspicuous (e.g. dotterels and wrybill) and are easily missed, and others, such as the terns, tend to fly up and down the river and can be double counted. Although all observers took steps to reduce these errors, the results should be treated as estimates of the relative abundance of the populations present, rather than as absolute numbers. Furthermore, comparisons in counts between rivers or over time should be made cautiously, and only major differences in numbers should be taken as being real or meaningful. In comparing counts between rivers or over time on the same river, the assumption is that the relationship between counts and the true number of birds is reasonably consistent within a species.

In addition to counts of all native species, the locations of wrybill and of breeding colonies of gulls and terns were recorded by GPS or by locality.

The measure of biodiversity of the bird community used follows that of O'Donnell (2000). Diversity is expressed in terms of guilds. The riverine guilds are: divers (shags), deep water waders (herons, stilts and oystercatchers), shallow water waders (wrybill and dotterels), dabbling waterfowl (ducks and geese) torrent specialists (blue duck), aerial hunting (gulls and terns), swamp specialists (bittern, crakes and rails). To this list, riparian species (spur-winged plover and welcome swallow) have been added.

Fig. 1. The surveyed reach of the Upper Waimakariri River (Bealey Bridge to Esk confluence)



3. Results

a. Counts

**Table 1. Results of a bird survey of the Upper Waimakariri River
November 5 – 8 2012**

	Bealey Bridge to Mt. White Bridge	Mt. White Bridge to Esk River confluence	Total
Kilometres	12 km	23 km	35 km
Black shag	2	7	9
White-faced heron	2	0	2
Canada goose	220*	214*	434
Paradise shelduck	18	7	25
Duck spp.	5	7	12
Australasian harrier	0	3	3
S.I. pied oystercatcher	13*	23*	36
Pied stilt	0	11	11
Banded dotterel	135*	197*	332
Wrybill	4	45*	49
Spur-winged plover	6	14	20
S. black-backed gull	145*	202*	347
Black-billed gull	21	0	21
Black-fronted tern	55	183*	238
Caspian tern	0	0	0
White-fronted tern	1?	0	0
Welcome swallow	2	1	3
Pipit	15	9	24
* Nesting recorded			
Number of observers	8 / 9	5 / 10	

b. Locations of wrybill and of colonies of gulls and terns

Map references (NZMG) are given where these were recorded. Elsewhere, the general area of the record is given.

i. Bealey Bridge to Mt. White Bridge

Wrybill: Only four wrybill were recorded upstream of the Mt. White Bridge; two were adjacent to Bruce Stream and two were recorded between Bruce Stream and Mt. White Bridge.

Black-backed gull colonies: 47 birds at 2397379: 5792957. 55 birds adjacent to Paddy's Bend.

ii. Mt. White Bridge to Esk River Confluence

Wrybill: 2410652: 5799370. 2413458: 5736078 (nest). 2410564: 5795662. 2411678: 5798366. 6 adults South of Mt. Binser. 4 adults + 1 juvenile opposite Poulter River. 1 adult downstream of Poulter River. 2416542: 5752457 (nest with 1 egg). 2 adults (banded metal left) Esk delta. 1 adult Esk confluence west side of Waimakariri (nest with 2 eggs).

Black-backed gull colonies: 55 birds between Poverty Flat and Esk Confluence. 70 birds between Poverty flat and Esk Confluence. Exact locations not recorded.

Black-billed gulls: 0 colonies

Black-fronted tern colonies: 7 adults +nests at 2410008: 5793370 (between Hawdon River and Andrews Stream). 4 adults + nests at 2411373: 5798826 (near Andrews Stream). 10 adults + nests at 2415876: 5793370 (adjacent to Poverty Flat).

c. Diversity

Neither torrent nor swamp habitats were present in the surveyed area but the remaining six guilds were well represented. However, the diver guild is represented by one species, the black shag (*Phalacrocorax carbo novaehollandiae*) which is naturally uncommon (9 individuals recorded).

The remaining five guilds were each represented by more than one species and a substantial number of individuals:

Deep water waders;	3 species and 49 individuals
Shallow water waders:	2 species and 381 individuals
Dabbling waterfowl	3 species ¹ and 471 individuals
Aerial hunting gulls and terns ²	2 species and 250 individuals
Riparian species	2 species and 23 individuals

¹ Mallard and grey duck were not separated in this survey. 37 native individuals and 434 Canada geese

² black-backed gull numbers not included

4. Discussion

The results confirm the continuance of the Upper Waimakariri as an important community of riverbed birds both in terms of numbers and diversity. With the exception of black stilt (*Himantopus novaehollandiae*), all the more threatened river bird species were recorded.

Considerably more of the Nationally Vulnerable species, banded dotterel, wrybill and the Nationally Endangered black-fronted tern were counted in the section downstream from Mt. White Bridge than in the section from The Bealey Bridge to Mt. White Bridge (Table 1). However, the endangered black-billed gull was not found below the Mt. White Bridge (21 above the bridge). The At Risk (in decline) species pied stilt (*Himantopus himantopus leucocephalus*) and the naturally uncommon black shag were also more numerous below the bridge (11:0 and 7:2 respectively). The At Risk South Island pied oystercatchers (*Haematopus finschi*) were encountered with similar frequency above and below the bridge (13:23) given the longer reach surveyed below the bridge.

The same species were recorded above the Mt. White Bridge in 2011 as in 2012 but, as expected in the high flow conditions in 2011 which restricted counts to one side of the main channels, fewer of all species (except harriers (*Circus approximans*) and spur-winged plovers (*Vanellus miles novaehollandiae*) were counted in 2011 (Appendix).

The comparison of bird counts in 1981, 1995 and 2012 are shown in Table 2.

Table 2. Numbers of riverbed birds counted in 1981, 1995, and 2012 in the Upper Waimakariri River between the Bealey Bridge and the top of the Gorge (Esk Confluence).

Species	1981	1995	2012
Black shag	1	5	9
White-faced heron	4	1	2
Canada goose	158	291	434
Paradise shelduck	181	74	25
Duck spp.	28	23	12
S.I. pied oystercatcher	22*	64	36
Pied stilt	18	4	11
Wrybill	33	58	49
Banded dotterel	235	247	332
Spur-winged plover	40	64	20
Southern black-backed gull	424	465	347
Black-billed gull	31	185	21
Black-fronted tern	69	303	238
Caspian tern	0	4	0
Total birds	1244	1788	1536

* The original figure reported (O'Donnell 1981) was 222 but checking of the section additions indicates a typographical error.

There was little difference in wrybill counts between years. The highest count of banded dotterels was in 2012. The highest counts of South Island pied oystercatchers black-billed gulls and black-fronted terns were in 1995 but the 2012 count of black-fronted terns was much higher than the 1981 count. The 2012 count of black-billed gulls was a little less than in 1981 (21:31). The only distinct trends over the three years were Canada geese (*Branta Canadensis*) (upward) and paradise shelduck (*Tadorna variegata*) and duck spp. (downward).

The numbers of birds counted in 2012 can be compared with counts in the Lower Waimakariri (Gorge Bridge to McLean's power lines: Jolly, unpublished data, 2006) (Table 3). Counts are expressed in numbers/km to adjust for the different survey lengths. Banded dotterel and wrybill counts were similar (9.5:8.4/km Upper: Lower for banded dotterel and 1.4:2.0/km Upper: Lower for wrybill). Black-billed gulls were in much higher numbers in the Lower Waimakariri (10.2/km) than the Upper River (0.6/km). Black-fronted tern counts were also higher in the lower River (8.5: 6.8/km).

Table 3. Comparisons of bird numbers/km between upper and lower river sections

	Upper Waimakariri	Lower Waimakariri	Upper Rangitata	Lower Rangitata	Upper Waitaki (Godley)
Wrybill	1.4	2.0	18.1	0.3	14.0
Banded dotterel	9.5	8.4	19.1	2.5	27.0
Black-fronted tern	6.8	8.5	12.3	17.8	10.0
Black-billed g	0.6	10.2	5.8	8.3	1.0

Counts in the Upper Waimakariri can also be compared with other high country rivers (Table 3). Banded dotterel and wrybill counts were much higher both in the Upper Rangitata (Jolly 2003) and in the Godley (Maloney et al, 1997) than in the Upper Waimakariri. As in the Waimakariri, black-billed gull and black-fronted tern counts in the Lower Rangitata were much higher than the Upper Rangitata. Black-billed gull and black-fronted tern counts were higher both in the Upper Rangitata and the Godley than the Upper Waimakariri.

4. Recommendations

It would be preferable to repeat the survey of the Upper Waimakariri River in the following years to give greater confidence to the interpretation of trends in the bird populations. The Department of Conservation and Environment Canterbury are attempting repeat surveys in most other major braided rivers in Canterbury. Private organisations such as the Ashley/Rakahuri Rivercare Group, Forest and Bird Ashburton, and the Orari River Protection Group have already surveyed birds of those smaller braided rivers repeatedly. Repeat surveys of the Upper Waimakariri would fill a gap in an increasingly comprehensive coverage of Canterbury's braided river bird communities. I suggest three surveys in consecutive years as a minimum target. I also suggest that 8-10 observers are needed each day of the survey.

5. Acknowledgements

The survey was only possible with a strong team of volunteer observers: Nick Ledgard, Jan Walker, Peter Howden, Jim Jolly, Val Clemens, Edith Smith, Geoff Swailes, Marie Goldring, Marion Boyd, Francis Schmechel, Lyndsey Husband, Jane Demeter, Mimouk Hannan, and Jean Tompkins. Jet boat support was provided by Waimak Alpine Jet including a generous subsidy. Environment Canterbury provided staff members on three of the four days plus a substantial grant to cover expenses without which the survey would probably not have taken place. Mimouk Hannan and Nick Ledgard for comments on the report.

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Appendix. Results of a Reconnaissance Survey of Birds of the Upper Waimakariri River November 2011.

	Site 1	Site 2	Site 3	Site 4	Total
Kilometres	5	3	5	2	15
Species					
Black Shag	1				1
Little Shag					0
White-faced Heron			1		1
Canada Goose	6	24 +6c	66	38 +16c	134
Paradise Shelduck	2		11	2	15
Mallard (Grey duck)		2		2	4
Grey Teal					0
Australasian Harrier	5		1	2	8
California Quail					0
Peafowl					0
S.I. Pied Oystercatcher	1	5	1	8	15
Pied Stilt		1?		11	12
Banded Dotterel	20	33	39	49 +3c	141
Black-fronted Dotterel					0
Wrybill				16 +4J +1c	20
Spur-winged Plover	8		5	2	15
Black-backed Gull	60	8	60	9	137
Black-billed Gull	2		1		3
White-winged Black Tern					0
Black-fronted Tern	7	6	21	17	51
Caspian Tern					0
White-fronted Tern					0
Welcome swallow					0
pipit	8			4	12
Total					569

Site1: Lower Bealey from Railway Bridge to Waimakariri confluence
(3 observers)

Site 2: Bealey Spur to Broad Stream (3 observers)

Site 3: Broad Stream to Railway Bridge (3 observers)

Site 4: Farm Stream, Mt. White Station to 2Km downstream (2 observers)

Flow: 500 - 800 m³/s