A Bird survey of the Upper Waimakariri River

November 10 - 13, 2014

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On Behalf of BRaid Inc.

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Upper Waimakariri River from Paddys Bend to Poverty Flat

(photo taken from Woolshed Hill)

Photo: Nick Ledgard

Summary

This bird survey of 35 Kms of the Upper Waimakariri River was the second carried out by BRaid Inc. and staff of Environment Canterbury with support funding from Environment Canterbury. The survey from 10 – 13 November 2014 took place in generally good weather and river conditions for observing birds. The results of the survey indicated the Upper Waimakariri has a diverse avifauna including substantial numbers of the threatened species wrybill, banded dotterel, black-billed gull (critically endangered), and black-fronted tern. Compared with the 2012 survey, the 2014 counts were much higher for wrybill (94:49), black-billed gull (120:21), and black-fronted tern (401:238). Banded dotterel counts in 2014 were similar to 2012 (322:332). Counts of wrybill, banded dotterel, and black-fronted tern were much higher than counts from the two earlier surveys (1981 and 1995) and the counts of black-billed gull were higher than in 1981 but 65 less than in 1995. The results do not suggest a decline in numbers of these threatened species in the Upper Waimakariri over the last thirty years.

The numbers and diversity of the avifauna of the Upper Waimakariri compares very favourably with other major braided rivers in Canterbury. The numbers per kilometre of wrybill and banded dotterel were exceeded only in the upper reaches of some other alpine sourced rivers. The numbers per kilometre of black-fronted terns were as high or higher than in other rivers. Whereas, the numbers of black-billed gulls were much lower than those of the plains reaches of the Waimakariri and Rangitata Rivers.

However, another survey is recommended as the counts of each species vary considerably between years. We also recommend a poisoning operation on the very large nesting colonies of black-backed gulls (1101 birds) to relieve the predation pressure on the nesting of the threatened species.

1. Introduction

In terms of both numbers and diversity the braided rivers of the Eastern South Island are recognized as having a high habitat value for their specialized avifauna. The birds that nest there contend with frequent flooding, a harsh, montane climate together with exotic weed invasion and both native avian predators and introduced mammalian predators. 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 these factors impinging on them.

The avifauna of the Upper Waimakariri from the road bridge at Klondyke to the top of the Gorge at the confluence with the Esk River has been surveyed three times previously, in 1981 by the New Zealand Wildlife Service (O'Donnell, 1981), in 1995 (Department of Conversation, 1995), and in 2012 by Braided River Aid Inc (BRaid) (Jolly 2013).

These surveys found that the expected range of braided river bird species was present in the Upper Waimakariri River including four key threatened species, wrybill (*Anarhyncus frontalis*), banded dotterel (*Charadrius* bicinctus) black-billed gull (*Larus bulleri*), and black-fronted tern (*Chlidonias albostriatus*). On the basis of the early surveys, 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).

The 2012 survey (Jolly, 2013) re-confirmed the Upper Waimakariri as an important community of riverbed birds both in terms of numbers and diversity.

However, as would be expected with the long interval between surveys, there was considerable variation in the counts of each species. Repeat surveys are essential to compensate for variability in counts, particularly as some species are endangered. The current survey was intended to address this variability.

2. Methods

As with the previous surveys, 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 Road 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 7 and 12 observers were present on each day of the four-day survey.

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 wrybills) 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 wrybills and of breeding colonies of gulls and terns were recorded by GPS or by locality. These records are held on file by BRaid.

3. Results

The survey was completed over four days with 7 to 12 bird counters each day (Table 1). Birds in the section of river between the railway bridge and Mt. White Bridge were counted by telescope from Highway 73 (Paddys Bend area) (~4 km) as the river was not crossable in this section. For the same reason, birds on part of the true left bank from Broad Stream to the railway Bridge were counted from the true right of the main channel. The number of small waders would have been under-estimated in this section. The last 200 metres of the true right upstream from the Esk confluence was not counted - an area where wrybill were present in 2012.
Other than this, river conditions were generally favourable for the counts both during and for the weeks prior to the survey without any floods since early August (Table 1). Weather conditions during the survey were also favourable for counting birds except for the afternoon of the third day when a southerly storm and hail curtailed counting.

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

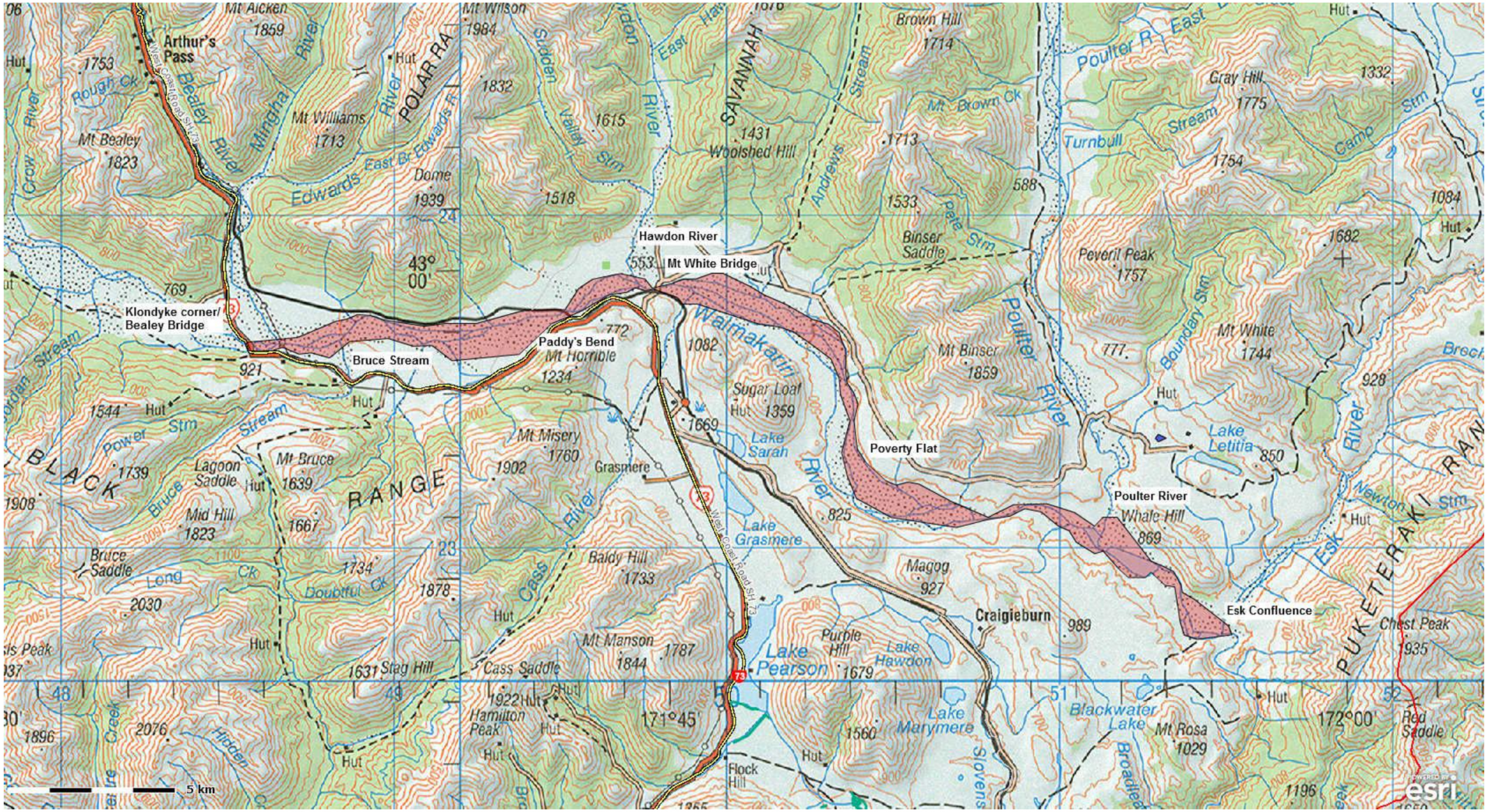

Table 1. Results of a Bird Survey of the Upper Waimakariri River

November 10 – 13, 2014

	Bealey Bridge to Mt. White Bridge	Mt. White Bridge to Esk River Confluence	Total
Kilometers	12 Km	23 Km	35 Km
Black shag	0	4	4
White-faced heron	0	1	1
Canada goose	41*	153*	194
Paradise shelduck	10	16*	26
Duck spp	3	4	7
Australasian harrier	2	0	2
S.I. pied oystercatcher	29*	34*	63
Pied stilt	0	0	0
Banded dotterel	102*	220*	322
Wrybill	3	91*	94
Spur-winged plover	20	8	28
Southern black-backed gull	527*	574*	1101
Black-billed gull	84*	36	120
Black-fronted tern	23	378*	401
Caspian tern	0	0	0
White-fronted tern	0	0	0
Total birds	**844**	**1519**	**2363**
* nesting recorded			
Number of observers	9 / 7	12 / 9	
River flow (Otarama)		100- 250 m3/s	
Previous fresh (Otarama)		524 m3/s 3 November	
Previous flood (Otarama)		715 m3/s 2 August	

Of the threatened and in decline species, South Island pied oystercatcher (*Haematopus finschi*) and banded dotterel nests were found both above and

below the Mt. White Bridge, all black-fronted-tern nesting colonies and wrybill nests were found below the Mt. White Bridge, and the only black-billed colony (23 nests) was found above Mt. White Bridge. After the survey, 120 black-billed gulls were counted from the jet boat in a colony together with black-fronted terns in the Waimakariri Gorge at Horseshoe Bend.

Black-backed gull (*Larus dominicanus*) nesting colonies were found above and below the Mt. White Bridge some with more than 100 birds. Canada geese also nested both above and below the Mt. White Bridge in substantial numbers.

4. Discussion

Considerably more wrybill (94) and black-fronted terns (401) were counted in this survey than in any of the three previous surveys (Table 2). Black-billed gull counts were much higher in this survey (120) than in 1981 and 2012 (31 and 21 respectively) but less than in 1995 (185).

Table 2. Numbers of riverbed birds counted in 1981, 1995, 2012, and 2014 in the Upper Waimakariri River between the Bealey Bridge and the top of the Gorge (Esk confluence).

Species	**1981**	**1995**	**2012**	**2014**
Black shag	1	5	9	4
White-faced heron	4	1	2	1
Canada goose	158	291	434	194
Paradise shelduck	181	74	25	26
Duck spp.	28	23	12	7
S.I. pied oystercatcher	22*	64	36	63
Pied stilt	18	4	11	0
Wrybill	33	58	49	94
Banded dotterel	235	247	332	322
Spur-winged plover	40	64	20	28
Southern black-backed gull	424	465	347	1101
Black-billed gull	31	185	21	120
Black-fronted tern	69	303	238	401
Caspian tern	0	4	0	0
Total birds	**1244**	**1788**	**1536**	**2363**

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

South Island pied oystercatcher counts (63) were higher in 2014 than 2012 (36) and 1981 (22) but similar to 1995 (64). Banded dotterel counts in 2014 (322) were similar to 2012 but much higher than in the previous surveys (235 and 247). Pied stilts (*Himantopus* himantopus) were not recorded in this survey but were present in low numbers in previous surveys. Both paradise shelduck (*Tadorna variegate*) and counts of other duck species (mostly mallards) were much less in both 2012 and 2014 than in the 1981 and 1995 surveys. There were more than twice as many black-backed gulls counted in this survey than in any of the previous surveys (Table 2).

The results do not show any sign of decline in numbers of the threatened species, wrybill, banded dotterel, black-billed gull or black-fronted tern on the Upper Waimakariri River over the last thirty years.

As discussed in the report of the 2012 survey (Jolly,2013), the community of riverbed birds in the Upper Waimakariri compared very favourably in terms of diversity and numbers with the other major braided rivers of Canterbury. The numbers per kilometre of wrybill and banded dotterel were similar to those in the Lower Waimakariri and higher than those in the Lower Rangitata. They were exceeded only by the densities of these species in the upper reaches of some other major alpine sourced rivers. The numbers of both black-fronted terns and black-billed gulls were the most variable from year to year but the numbers per kilometre of black-fronted terns on the Upper Waimakriri in 2014 were as high or higher than most other rivers. Whereas, the number per kilometre of black-billed gulls on the Upper Waimakariri was higher than in 2012 but much less than the Lower Waimakariri or Lower Rangitata.

5. Recommendations

Variability in counts from year to year limits interpretation of the results. Better comparison between the avifauna values of braided rivers can only be made with repeat counts. I recommend another survey next year.

I also recommend that consideration be given to a major poisoning operation on the very large population of black-backed gulls. Black-backed gulls have been shown to be significant predators at the nests of other riverbed nesting species including black-fronted terns.

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7. References

Department of Conservation. 1995. Bird Survey of Upper Waimakariri River. Unpublished data. Waimakariri Field Centre, Department of Conservation.

Dowding, J.E. and Murphy, E.C. 2001. The impact of predation by introduced mammals on endemic shorebirds in New Zealand: a conservation perspective. *Biological Conservation 99*: 47-64.

Jolly, J.N. 2006. Statement of Evidence in the Environment Court: Rangitata Water Conservation Order.

Jolly, J.N. 2013. A bird survey of the Upper Waimakariri River November 5-8 2012. Unpublished Report of BRaid Inc. 10pp.

Maloney, R.F., Rebergen, A.L., Nilsson, R.J. and Wells, N.J. 1997. Bird density and diversity in braided river beds in the Upper Waitaki Basin, South Island, New Zealand. *Notornis 44*. 219-232.

Miskelly, C.M., Dowding, J.E., Elliott, G.P., Hitchmough, R.A., Powlesland, R.G., Robertson, H.A., Sagar, P.M., Scofield, R.P., Taylor,G.A. 2008. Conservation status of New Zealand Birds. *Notornis 55*: 117-135.

O'Donnell, C.F.J. 2000. The significance of river and open water habitats for indigenous birds in Canterbury, New Zealand. Unpublished Report UOO/37. Environment Canterbury. 73pp + Appendix.

O'Donnell, C.F.J. and Moore, S.M. 1983. The Wildlife and Conservation of Braided River Systems in Canterbury. Fauna Survey Unit Report No. 33. New Zealand Wildlife Service. 73pp.

O'Donnell, C.F.J. 2004. River Bird Communities. Pp. 18.1-18.19 in: Freshwaters of New Zealand. Eds. Harding, J, Mosley, P., Pearson, C., and Sorrell, B. NZ Hydrological Society and NZ Limnological Society.

Townsend, A.J., de Lange, P.J., Duffy, C. A.J., Miskelly, C.M., Molloy, J., and Norton, D.A. 2008. New Zealand Threat Classification System Manual. Department of Conservation. 35pp.

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