Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

TECHNICAL REPORT Investigations and Monitoring Group

Opihi braided river bird survey 2011, 2013 and 2014

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Summary

Background

Braided rivers are a defining feature of Canterbury and provide important foraging and nesting habitat for a range of endemic ground-nesting bird species, many of which are also threatened. This report presents three years of spring breeding season bird-count data collected from the Opihi River catchment. This work is part of an ongoing region-wide braided river bird monitoring programme, led by the Department of Conservation (DOC), with support from community groups and Environment Canterbury.

What we did

The river was divided into nine sections and surveyed by teams walking downstream and counting all river birds. Locations of colonies were also recorded. Surveys were carried out in spring 2011, 2013 and 2014.

What we found

Counts for many species were relatively similar for the three years of the survey. This survey record provides a snapshot of relative presences of species on the river on any spring day. These counts serve as a benchmark when comparing future counts. Three years is a short period to be confident about potential trends estimated from these data. Repeating the survey in five-ten years will provide information on population trends.

The Opihi was only one of several rivers where counts were undertaken and our counts will contribute to the Department of Conservation's braided river bird database.

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1 Introduction

Braided rivers are a defining feature of Canterbury and provide important foraging and nesting habitat for many bird species. This report includes data from one river catchment and is part of a long-term Canterbury-wide project, conducted by the Department of Conservation (DOC), community groups and Environment Canterbury. Most of the rivers included are surveyed for three consecutive years, and are on a four-six year cycle.

The Opihi/Opuha is a relatively small braided river; it is an important breeding site for braided river birds, especially endangered black-fronted terns (*Chlidonias albostriatus*) and black-billed gulls (*Larus bulleri*). The coastal section is also important for white-fronted terns (*Sterna striata*) and banded dotterel (*Charadrius bicinctus bicinctus*).

The Opihi River begins on the eastern side of Burkes Pass and the upper catchment includes the eastern slopes of the Two Thumb range, and the Ben McLeod and Four Peaks ranges. The Opuha River drains a similar upper catchment and flows into the Opihi River at Raincliff Bridge, upstream of Pleasant Point. Once out of the gorge the river is confined between stop banks and passes Pleasant Point and Temuka townships. River berm vegetation comprises mostly exotic trees (willow and poplar) with blackberry being the most abundant understorey species. Adjacent land is mostly classified as High Producing Exotic Grassland or Short-Rotation Cropland (Landcare Research 2012).

Lake Opuha is situated in the upper catchment and was constructed as a reservoir for rural irrigation purposes. Water for irrigation is also taken from the Opihi River downstream of the Radcliff Bridge. Adjacent pasture is also irrigated with ground water.

2 Methods

Bird surveys are conducted by DOC, Environment Canterbury and community groups, and all follow a protocol set by DOC. Adhering to standard methodology allows larger regional and national data sets to be analysed and reported on.

The river was divided into nine sections. To reduce the probability of counting the same birds twice, and to make the counts under similar river and weather conditions, counts were carried out on the same day (except for the two Fairlie sections, which were counted in the same week). Prior to each survey, river flows were monitored to ensure that recent high flows had not flushed birds from the river. River flows also needed to be sufficiently low for surveyors to safely negotiate river crossings. For the Opihi River, this is generally less than 15 m^3/s at the State Highway 1 bridge.

The maximum width of the riverbed section dictated the number of people in each survey team. In each section, walkers spread out across the riverbed and slowly walked downstream, maintaining communication with adjacent walkers. Birds that were in flight were counted only if they flew upstream of the monitoring 'line'. All adult birds on the ground, or in the river, were counted. GPS location of colonial nesting species was also recorded, together with information on whether eggs or chicks were present. Data were collected (see Appendix for field sheet), collated and submitted to Department of Conservation (DOC) for inclusion in their regional database. Requests for data should be made to DOC.

Standard error of species counts were calculated as the standard deviation/square root of the number of counts (minus one).

<u>Surveys dates:</u>
6-7 October 2011
21 November 2013
14-15 October 2014

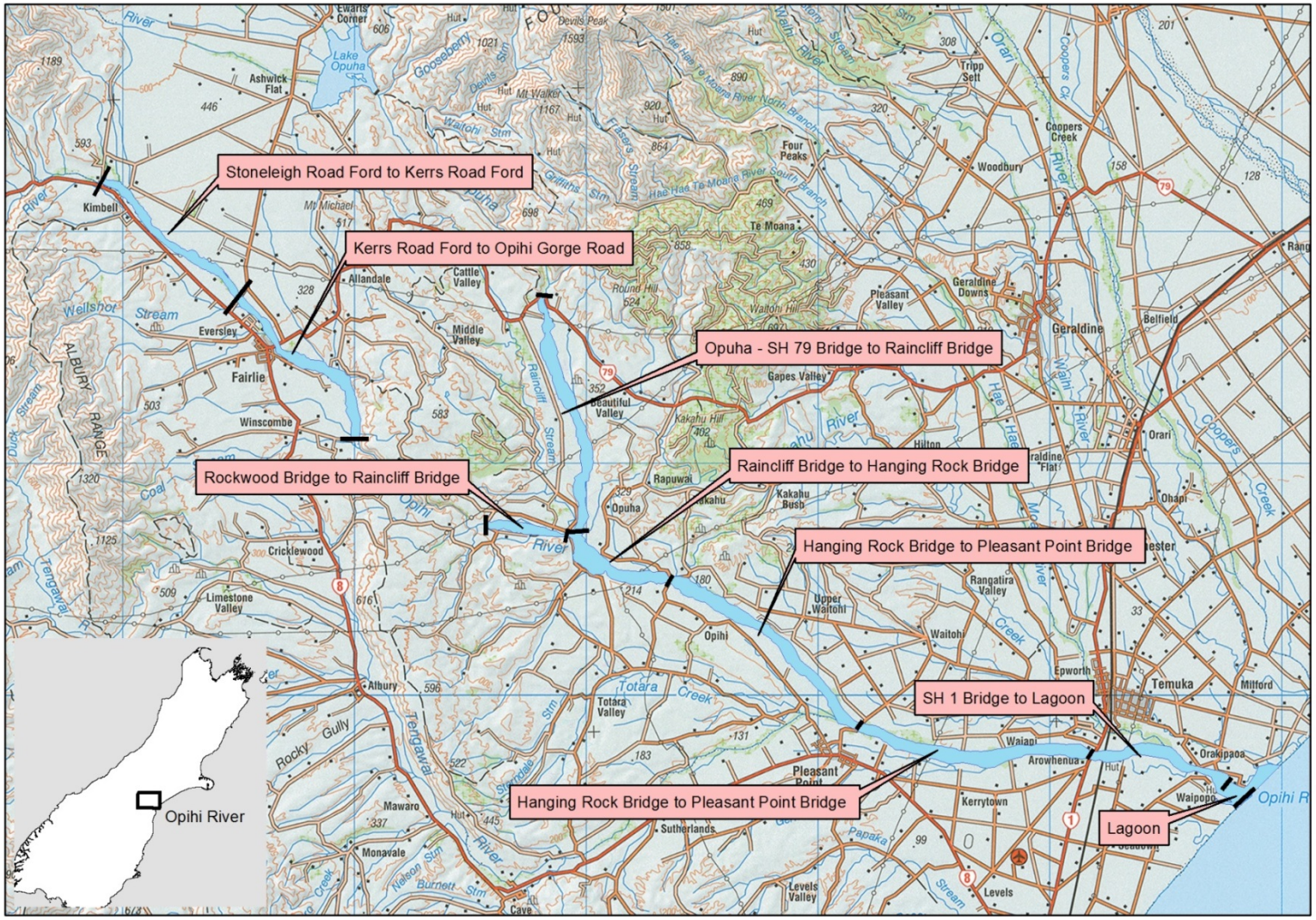

Figure 2-1: Location of Opihi River and sections

3 Results

Opihi River bird surveys were conducted in 2011, 2013 and 2014. All river sections were surveyed in 2011. Frequent high river flows meant that the survey was not conducted in 2012. In 2013, only sections below the gorge were surveyed (with the exception of the short Rockwood Bridge to Raincliff Bridge section). The entire river was surveyed in 2014, with the exception of the Opuha SH79 Bridge to Raincliff Bridge section. The Opuha River stretch was excluded in 2014 because, following previous surveys, it was found to be a single channel bound by willow and other exotic vegetation and not suitable habitat for braided river birds.

Of the 30 species recorded on the river over the three surveys, 24 species were recorded in 2011 and 2014 and 19 species in 2013. Eight species were recorded on only one of the three surveys. Five species were recorded on two surveys and 16 species were recorded in all three surveys (Table 3-1 and Table 3-2).

For seven of the 30 recorded species, no significant difference was found between counts in numbers of birds between two of the three surveys (overlapping standard error bars). Counts between at least two years differed for all species over the three surveys (i.e. no species had stable counts over the three surveys).

The most numerous bird species differed between years: black-billed gull in 2011 and 2013; and white-fronted tern in 2014. ‘Duck species’ were the second highest counted species in all years (range =167-251; any duck that was not identified to species level was included in ‘duck species’.

3.1.1 Notable species

One black stilt was counted in the costal lagoon section in 2011 and 2014. The band combination for the 2014 bird was Black on left and White on right.

A single Australasian bittern was counted on the Raincliff Bridge to Hanging Rock Bridge section, in 2011.

In 2011, three black-fronted dotterels were counted downstream of SH 1. In 2013, 34 were counted between Hanging Rock Bridge and the sea; in 2014, 14 were counted in 2014 between Pleasant Point and the sea.

3.1.2 Colonial nesting species

Black-billed gulls were the most numerous species counted in 2011 (n=332) and 2013 (n=1636). In 2011 they made up 26% of all counts, 69% in 2013 and 6% in 2014 (n=67). Colony counts made up 90% of black-billed gull counts in 2011 (n=300) and 86% in 2013 (n=1400). No black-billed gull colonies were found during the 2014 survey. However, a colony of 330 adult birds was recorded on the river near Pleasant Point, approximately two months later.

Black-fronted tern counts were significantly lower in 2013 (n=121) and 2014 (n=129) than in 2011 (n=165). In 2011 38% of counts were at a colony (n=62), 23% in 2013 (n=28) and 70% in 2014 (n=90).

White-fronted tern was the highest counted species in 2014 (n=283). All birds were on the coastal lagoon section and were beginning to form a breeding colony.

Southern black-backed gulls were not observed to be nesting in any of the three years.

Table 3-1: Survey counts

Species	Counts			
	2011	2013	2014	SE
Australasian bittern	1	0	0	0.3
Australian coot	1	0	0	0.3
Banded dotterel	0	16	3	4.9
Black shag	14	17	10	2.0
Black stilt	1	0	1	0.3
Black-billed gull	332	1636	67	484.9
Black-fronted dotterel	3	34	15	9.0
Black-fronted tern	165	121	129	13.5
Canada goose	6	6	1	1.7
Caspian Tern	0	0	1	0.3
Duck species	195	151	180	12.9
Grey teal	8	0	3	2.3
Harrier	1	5	3	1.2
Kingfisher	13	7	7	2.0
Little shag	9	7	8	0.6
Mallard	56	16	0	16.7
NZ shoveler	0	0	1	0.3
Paradise shelduck	66	44	63	6.9
Pied shag	0	0	1	0.3
Pied stilt	158	148	87	22.2
Pipit	6	2	0	1.8
Pukeko	2	7	0	2.1
Red-billed gull	2	0	0	0.7
Royal spoonbill	0	0	14	4.7
South Island pied oystercatcher	36	56	17	11.3
Southern black-backed gull	115	17	106	31.3
Spur-winged plover	44	36	20	7.1
Variable oystercatcher	0	0	1	0.3
White-faced heron	8	33	20	7.2
White-fronted tern	16	0	283	91.8
Total	1258	2359	1041	408.0

Table 3-2: Species rankings for the three survey years

	Rank		
Species	**2011**	**2013**	**2014**
Black-billed gull	1	1	6
Duck species	2	2	2
Black-fronted tern	3	4	3
Pied stilt	4	3	5
Southern black-backed gull	5	10	4
Paradise shelduck	6	6	7
Mallard	7	12	-
Spur-winged plover	8	7	8
South Island pied oystercatcher	9	5	10
White-fronted tern	10	-	1
Black shag	11	11	13
Kingfisher	12	14	15
Little shag	13	15	14
Grey teal	14	-	16
White-faced heron	15	9	9
Canada goose	16	17	19
Pipit	17	19	-
Black-fronted dotterel	18	8	11
Pukeko	19	16	-
Red-billed gull	20	-	-
Australasian bittern	21	-	-
Australian coot	22	-	-
Black stilt	23	-	20
Harrier	24	18	17
Banded dotterel	-	13	18
Caspian Tern	-	-	21
NZ shoveler	-	-	22
Pied shag	-	-	23
Royal spoonbill	-	-	12
Variable oystercatcher	-	-	24

4 Discussion

The Opihi was only one of several of Canterbury's rivers where counts were undertaken over the 2011-2014 period. These counts contribute to the Department of Conservation's braided river bird database, and serve as a benchmark for future surveys.

Survey counts are not definitive, but provide an index of species presence and abundance on the river during the spring breeding season. Counts for many species were relatively similar over the three years of the survey; however, three years data is too short a period for assessing population trends. Repeating counts for three consecutive years after an interval of several years is recommended for this purpose.

Total counts were dominated by black-billed gulls. Significant between-year variations in counts of this colonial nesting species could be due to the survey being done when they had either not settled for breeding or had been forced off the river by floods or other disturbance (e.g. people, dogs, 4wd or predators). After the 2014 survey a black-billed gull colony of 332 adults was located (17/12/2014), near Mills Road (Pleasant Point).

There was variation between years for some other species too. These variations could be due to seasonal differences in bird migration and foraging patterns (e.g. gulls might be foraging off river on recently cultivated paddocks, and terns, gulls and dotterels might have not migrated inland from the coast or further afield). Another cause of variation in bird counts is that some observers might not recognise all species under all conditions. The zero count for grey teal in 2013 and mallard in 2014 is probably an example of this bias.

Black-fronted dotterels (*Elseyornis melanops*) have recently colonised from Australia and have been counted on the Opihi.

The Opihi is planned to be resurveyed in 2018-2021.

5 Recommendations

- The survey should be continued on the current cycle, so that long-term trends can be analysed
- Numbers of predatory Southern black-backed gulls were low and there was no evidence of breeding. Increases in their numbers could result in other species being excluded from nesting or foraging sites. For that reason their numbers should be monitored.
- Black-fronted tern and black-billed gulls have established breeding colonies between Pleasant Point and Mills road. In years between full river counts, it is suggested this area this section should be surveyed and colony locations numbers of adults/eggs and fledglings recorded.
- Recreational 4WD use on the river bed exerts large pressure on breeding birds. A management plan needs to be created and implemented that controls access to the river bed during the breeding season.
- Dogs are also a problem for ground nesting birds and should also be excluded during the breeding season.

6 Acknowledgments

The surveyors over all years: Frances Schmechel, Mimouk Hannan, Phillip Cochrane, Emma Coleman, Bruce Gabites, Nick Griffiths, Philip Grove, Zach Hill, Jim Jolly, Dave Kelly, Emma Kinnings, Michael Lester, Ognjen Mojsilovic, Tony Oliver, Mark Parker, Jen Ritson, Sam Shannon, Anita Spencer, Graham Sullivan, Jean-Marie Tompkins, and Manfred von Tippelskirch. Frances Schmechel reviewed and provided comments on the draft report.

7 Reference

Landcare Research 2012. Land Cover Database 4 (LCDB 4). New Zealand.

Appendix 1: Example of braided river bird survey field datasheet

River	
Section	
Date	
Observer	

Record all birds (individuals & colonies) in spaces provided.

Put full stops between numbers.

Circle colony and nest counts (see examples). Additional information must be recorded for all wrybill locations and any species nest or colony.

All wrybill location info & any other species nest/colony data			
SPECIES	Adults/Chicks	Northing	Easting
Wrybill	2A/1C	5173417	1453259
BBG	350A+eggs	5173417	1453259

Number (include All birds here) ALL BIRDS = individuals, nesting pairs& colonies Circle colony & nest numbers Enter location data for all wrybill locations and any species nest or colony overleaf	
Banded dotterel	Example: 1.2.1. .17 .1.2
Wrybill (record overleaf)	
Black-fronted tern	
Black-billed gull	
Southern black-backed gull	
Duck Sp.	
Paradise shelduck	
Spur-winged plover	
Canada Goose	
SI pied oystercatcher	
Pied stilt	
White-fronted tern	
WF heron	

OTHER BIRD SPECIES RECORDS	
SPECIES	NUMBER of INDIVIDUALS

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