Management and monitoring of shorebirds in the Ashley-Rakahuri River during the 2013/14 season



The critically endangered black-billed gull

Ashley-Rakahuri Rivercare Group, Inc.

Management and monitoring of shorebirds

in the Ashley-Rakahuri River during the 2013/14 season

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Prepared for: Ashley-Rakahuri Rivercare Group, Inc.

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Summary

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The Ashley-Rakahuri Rivercare Group was formed in 1999. Its main goal is to protect key shorebird populations in the lower reaches of the Ashley-Rakahuri River, between the Okuku river junction and the SH1 road bridge. In 2005, the Group became an incorporated society. This is the 10th annual report from the Group.

The majority of funding over the past year has come from a trap making and selling project, local awareness initiatives and donations, plus a share of royalties from sales of the children's book 'Ria the reckless wrybill'.

Activities were focussed on management to assist the breeding of three threatened species in the river, namely the wrybill, black-billed gull and black-fronted tern. To this end, the main actions undertaken involved on-going bird population surveys, monitoring and data analyses, predator control, and improving awareness through advocacy to the public and river management decision-makers.

Bird surveys. The annual bird survey was carried out on 16 Nov 2013. Counts of wrybill, banded dotterel, pied stilt and little shag were the highest on record, and numbers of black-billed gull the second highest. All the major species were above the 13-year average, with the exception of the S. Is pied oystercatcher. Data gathered since 2000 for the major species were statistically analysed. The trend lines are positive for the six core species, with numbers of black-fronted tern, banded dotterel and pied stilt increasing significantly, while those for wrybill, black-billed gull and S. Is pied oystercatcher are not statistically significant. None of these species showed a decline in numbers.

Predator control. In total, 37 potential predators were trapped in 5,786 trap-nights, giving a trap-catch rate during the bird breeding season of 0.65 predators per 100 trap nights. Predators trapped consisted of 28 hedgehogs, 4 cats, 2 stoats and 3 weasels. Both trap-nights and predator numbers were lower than in the previous season, with hedgehogs remaining the most trapped animal. Trap-catch data gathered since 2004 were statistically analysed, and showed a significant downward trend. A post-season trapping period was initiated over winter - 2680 trap-nights resulted in the capture of 8 cats, 1 stoat, 1 weasel, 1 hedgehog and 1 ferret, and a trap-catch rate of 0.48. Winter trapping appears the best time to trap cats, with 14 caught over the last 2 years, compared to 6 during the comparative breeding seasons.

Monitoring of breeding birds. Seven pairs of wrybills attempted to nest in the study area in 2013-14. This equals the highest recorded and is the same number as recorded in the previous three seasons. Only four chicks were fledged, for a productivity of 0.57 chicks fledged per pair, which is the lowest recorded and the same as in 2012-13. The estimated number of breeding tern pairs was 35, with a productivity of 0.52, which is above the long-term average of 0.41. There are no obvious leads as to why tern colonies can quickly establish and then equally quickly disappear. For the third season running, a good-sized colony of black-billed gulls was present on the river. At its peak it contained about 400 birds. Approximately 190 pairs fledged 115 chicks, for a productivity of 0.60. Breeding data gathered since 2004 for wrybill and black-fronted tern were statistically analysed. The trend line for chick numbers was positive for both species, but not statistically significant. The trend was the same for tern productivity, but not for wrybill, which was slightly negative. Colonies of breeding black-billed gulls have not been present frequently enough to allow such analysis of breeding trend. Productivity was not recorded for pied oystercatchers, pied stilts and banded dotterels, but obvious signs of breeding were noted at many sites.

Awareness / education. During 2013-14, twenty-nine occasions were used to improve awareness. A highlight of the year was a visit from Radio NZ's Alison Ballance followed by a later broadcast about the Group's activities on 'Our Changing World'. One hundred calendars were produced for 2014. The Group's website had 711 hits between July 1, 2013 and June 30, 2014. Eight articles appeared in the local printed media. One paper was published in the NZ Ornithological Society's 'Notornis' journal. Out on the river, customised Corflute signs were placed in managed areas during the season. These remain the most effective tool for minimising human disturbance. The Group continues to work alongside Environment Canterbury (ECan), the Ashley-Rakahuri Regional Park, the Waimakariri Zone Committee and DOC, and assisted BRaid Inc in raising the profile of braided river birds, particularly as a contributor to its braided river workshop held in May 2014.

Conclusion. Analyses of population and breeding data over 14 and 10 years respectively indicate that management actions by the Group have contributed to the increasing bird populations. It is concluded that this 'justifies continued management of birds breeding in the riverbed' - as stated by Monks et al (2011), writing in 'Notornis' about black-fronted tern population trends on the Ashley-Rakahuri river.

Recommendations for future management include:

- Continue predator control, annual surveys, monitoring activities and banding, focussing on the three key threatened shorebird species
- Explore new technologies to reduce time and effort spent on controlling predators
- Continue advocacy initiatives, particularly to schools, and through outside agencies such as DOC
- Create and maintain riverbed islands for bird breeding
- Utilise high public profile to maintain finances via local fund raising, donations and sponsorship
- Maintain collaboration with commercial shingle extractors and other riverbed users
- Continue full support to the BRaid group
- Support Environment Canterbury's Ashley-Rakahuri Regional Park.
- Maintain and improve collaboration with ECan's Biodiversity Programme, the Waimakariri Zone Committee and the Canterbury Water Management Strategy's decision-makers.



Figure 1. Map of lower Ashley-Rakahuri river, showing main breeding areas.

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1 Introduction

The braided rivers of the South Island are a unique habitat of outstanding importance to endemic wildlife (Cromarty & Scott 1996, Dowding & Moore 2006). In particular, they provide breeding habitat for a range of threatened shorebird species, some of which depend largely or entirely on braided rivers for their survival. Braided rivers commonly have large areas of bare, mobile shingle, multiple channels, and variable flows (O'Donnell & Moore 1983). However their ecological values are increasingly threatened; most have been invaded by weeds and introduced mammalian predators, and are further degraded by a wide variety of human activities.

The Ashley-Rakahuri is a medium-sized river located in North Canterbury. From the Ashley Gorge, the river flows east and enters the sea about 25 km north of Christchurch. Halfway to the coast it is joined by its major tributary, the Okuku river. In contrast to the larger snow-fed rivers, the Ashley-Rakahuri is fed by rainfall from the foothills and has relatively low flow rates. The estuary where the Ashley-Rakahuri drains into the Pacific Ocean has large areas of tidal mudflats, and is recognised as one of the best shorebird feeding sites on the South Island's eastern coastline.

The shorebird values of the Ashley-Rakahuri are well-recognised. The Ashley-Rakahuri River and estuary are included in a list of wetland sites which meet criteria prescribed to be of international importance by the International Union for the Conservation of Nature (IUCN) (Cromarty & Scott 1996). Following surveys of Canterbury rivers in the 1970s and early 1980s, the New Zealand Wildlife Service ranked their wildlife and conservation values; the Ashley-Rakahuri was one of five rivers given the highest possible ranking of 'Outstanding' (O'Donnell & Moore 1983). Declining bird numbers over the last 25 years have led to a more recent classification of 'Regional' importance (Hughey *et al.* 2010).

The Ashley-Rakahuri Rivercare Group (ARRG) is a community group formed in 1999 to assist with management of the lower reaches of the Ashley River. Its main aims are to protect shorebirds and their habitat in the riverbed, to monitor breeding success, and to promote these activities to the wider public, while at the same time recognising other sympathetic users. In 2005, the Group became an incorporated society. Since 2004, ARRG has received four grants to assist it in carrying out its aims. Initially, funding was supplied by the Pacific Development and Conservation Trust and the New Zealand National Parks and Development Foundation. During 2006/07, the principal sponsor was the Habitat and Protection Fund of World Wildlife Fund (WWF) - New Zealand. In June, 2007, a 2-year grant was approved by the Lotteries Environment and Heritage Committee. A partial extension was granted through to December 1, 2009. In July 2010, a further 2-year grant was approved by WWF-New Zealand. Currently, the Group supports itself by local fund raising and donations. The activities undertaken since 2004 have been described in the Group's annual reports (Dowding & Ledgard 2005, 2006, 2007, 2008, 2009, 2010; Ledgard & Dowding 2011; Ledgard, Spurr and Crossland, 2012; Ledgard and Mugan, 2013), which also record the results of bird monitoring, habitat enhancement, predator control, and advocacy, and make recommendations for future management. The present report documents the management activities and monitoring of birds that were undertaken during the 2013/14 season, and includes an analysis of longer-term results since 2000.

In the past, the river has provided breeding habitat for significant numbers of black-fronted terns and many hundreds of pairs of black-billed gulls. Over the last 20 years the number of gulls in particular has declined substantially (Dowding & Ledgard 2005), although a colony has been present for the last three seasons. The Ashley-Rakahuri is one of the most northerly rivers on which wrybills breed, following a southward contraction of the core range of the species over the

past century (Riegen & Dowding 2003). Wrybill have recently been recorded breeding as a few isolated pairs on the Waiau river, which is about 70 km north of the Ashley-Rakahuri. The Ashley birds remain the northern-most population which is known to have been stable for some time. These three key species have been the main focus of management activities of the Group; all are endemic, have declining national populations and are considered threatened.

The threat categories of all New Zealand birds were revised in 2012 and the results reported by Robertson *et al.* (2013). The most endangered species on the Ashley-Rakahuri River is the black-billed gull which is now classified as Nationally Critical (the same as the black stilt), and internationally as Endangered, making it the world's most threatened gull species (BirdLife International 2014). The next most threatened species on the Ashley-Rakahuri is the black-fronted tern, which is classified as Nationally Endangered, the second-highest ranking possible under the New Zealand scheme. The wrybill has a declining range and is classified as Nationally Vulnerable, as is the banded dotterel, which is considerably more common on the Ashley-Rakahuri River. Other shorebird species which breed on the river (such as the pied stilt, the South Island pied oystercatcher and the white-fronted tern) are listed as At Risk, or are not threatened.

2 Study area and methods

2.1 STUDY AREA

The study area consists of an 18 km stretch of the lower Ashley-Rakahuri river, from its confluence with the Okuku River to the State Highway 1 road bridge. It was described in detail in the Group's first report (Dowding & Ledgard 2005) and an updated Google-based map of the area is presented in Figure 1.

2.2 HABITAT MANAGEMENT

Early reports describe a combination of physical hand-pulling and machines (contracted from Taggart Earthmoving Ltd) which was used to remove weeds from specific sites in order to create potential bird breeding areas. However, experience has shown that these cleared areas can only be small and there is no guarantee that birds will use them. Hence, the reliance is on natural floods to clear away weeds (see 3.1), and no Group weed clearance was undertaken in the 2013-14 season. Birds breed most successfully on islands surrounded by good water flows (McClellan 2009). In the past some islands have been created by earth-moving machinery. None was carried out in 2013, but the Group intends to do more of this work in the future.

New bridge over Ashley-Rakahuri river. (*see photo*) In mid-June, 2013, a major flood (500 cumecs) washed away supports under the river bridge just north of Rangiora, and closed the bridge for 2 weeks. Work began on building a new bridge in March, 2014, and will continue until early 2015. This bridge is in the middle of the core bird breeding area. Discussions about the possible impact on bird breeding were had with the Waimakariri District Council and the contractors,



2.3 ADVOCACY

Advocacy and liaison, in the form of media articles, radio interviews, a desk-top calendar, talks (usually accompanied by the Group's PowerPoint presentation) to schools, service clubs, land administration agencies and the public, a web page, and advertising (both by Group members and local DOC officers) are used to raise public awareness of shorebirds in the river and of the Group's activities. During the breeding season, customised Corflute signs are placed in managed riverbed areas to inform the public of the location of breeding birds.

2.4 WALKWAY, BIKE TRACK, 4WD TRACK, RIVERBED ACCESS AND SWIMMNG HOLES

The walkway and bike track along the south bank and the 4WD track on the north bank between the end of Rossiter's Road and the Makerikeri River aim to encourage recreational activities away from the actual riverbed. No new planting of native species alongside the walkway was undertaken by the Group over the 2013 winter, but weed control was carried out around those already established. All tracks were blocked for periods by trees blown over during a major storm on September 10, with the bike track still closed some months later. Large floods in mid-April and particularly early June 2014 (see App 2), made the 4WD track impassable in places. In September-October 2013, a digger was used to close all 4WD access ways into the core bird breeding area (except the major ones). In December, assistance was given to ECan in the location of swimming holes for the summer season, although floods did not allow them to last for long.

2.5 PREDATOR CONTROL

A range of traps was used to target mammalian predators (mainly cats, mustelids and hedgehogs). They included cage traps, Bushby tunnel traps, Timms traps, PossumMaster traps and DOC 200 and 250 traps. After the winter trapping season, when the birds started to arrive in September, traps were concentrated at sites with a history of use by nesting birds and added or moved as required. Traps were baited with a range of baits, usually salted rabbit or hen eggs, and checked once or twice a week. The last of these traps were removed in early February 2014, after the breeding season had finished. A post-season trapping period was started in March 2014.

2.6 BIRD SURVEYS AND MONITORING

The annual spring survey of all resident birds was undertaken on November 16 from the Okuku river junction down to the SH1 bridge. It involved 20 members. There was no survey of the 22 km stretch between the Ashley gorge and the Okuku river junction, which was surveyed in 2011 (for the first time since 1981). Nor was there any survey of the Lees Valley section of the river (last undertaken by DOC in 2011).

Monitoring of wrybills, black-billed gulls, and black-fronted terns during the breeding season was carried out as described in previous reports (Dowding & Ledgard 2005, 2006, 2007), and began this season in September. With the exception of the period Nov 21 to Dec 17, riverbed visits were undertaken at least 2 times every week until early February, with most efforts concentrated in the core bird breeding area between Hillcrest Road and the Tulls Road site. Breeding success (productivity) for each of these species was recorded as the average number of chicks fledged per pair. In November/December, 2 adult wrybills were colour-banded at the Hillcrest and Rossiters/Pylons sites.

In May 2014, survey data from 2000-2013 and breeding results from 2004-2013 were analysed, the results being presented at the BRaid workshop on May 28 (see 3.5 and 3.6).

2.7 MEETINGS

During the 2013/14 season, the Group held meetings in the Department of Conservation's offices on River Road, Rangiora, on July 18, August 29, Sept 19 (AGM), November 4, and February 20. Twenty-one members attended the AGM, with an average of 14 at other meetings.

2.8 FUNDING

Over the last year the Group's main finances have come from local fund Most were obtained from raising. sausage sizzles (see photo), а percentage of royalties from the sale of Jane Buxton's children's book 'Ria the reckless wrybill', and from private donations – the largest being \$1500 from Taggart's Earthmoving Ltd.



3 Results

3.1 HABITAT ENHANCEMENT

There was no hand-clearing of weeds on the river during 2013. The 260 cumec flood of mid-June 2013, damaged the road bridge north of Rangiora, and resulted in major riverbed grooming to almost 1 km above the bridge. This cleared weeds and created islands which appeared to attract breeding birds later in the year (see 3.6). Another flood of 280 cumecs in mid-October 2013, disrupted the nesting of some birds and cleared areas where woody weed growth was light, but was not sufficient to remove larger weeds or vegetation on higher ground. Major floods after the breeding season ended (mid-April (480 cumecs) and early June, 2014 (260 cumecs)) cleared much larger areas.

3.2 ADVOCACY

During the 2013/14 breeding season, many opportunities were taken to make sure that the public were kept aware of the Group's activities in the riverbed. These are listed in Appendix 1. Highlights were a field visit by Radio NZ's Alison Ballance on October 23 (followed by a broadcast as part of the 'Our Changing World' programme on February 20), a visit from the new DOC Director General, Lou Sanson (see photo), twelve presentations of our PowerPoint address, and eight media articles published in local In June 2103, a scientific paper on papers. black-fronted tern population trends in the Ashley-Rakahuri river was published in the NZ Ornithological Society's journal 'Notornis'. In addition, a 2014 calendar was produced, our website (www.ashleyrivercare.org.nz) was



maintained District Council's (by the

VisitWaimakariri office), assistance was given to DOC during their Conservation Week programme (Sept 10-12), plus the Group was represented at a Conservation Inc conference of conservation NGOs in Dunedin on October 16-18, and made a submission to the Canterbury Conservation Strategy on October 25. Work continued towards producing a bookmark and a children's board game for use in schools.

During 2013, the Group remained closely associated with staff from DOC, the Waimakariri District Council and Zone Committee, ECan and the Ashley-Rakahuri Regional Park, representatives of which usually attend our meetings. ARRG also contributes actively in the running of BRaid Inc, a group which aims to improve the ecological welfare of all braided rivers in Canterbury. On May 28, a presentation of our 2000-2014 survey results (see App 2) was made at a BRaid workshop attended by almost 100 people.

A regular email update was sent to all Group members during the breeding season.

The Group keeps in close contact with Ashley-Rakahuri Regional Park rangers, who are not only well aware of the bird breeding situation, but go out of their way to assist with improving awareness, monitoring and minimising human disturbance.

3.3 WALKWAY, 4WD TRACK, RIVERBED ACCESS AND SWIMMING HOLES

The Mike Kean Walkway, which was officially opened on 23 April 2007, is now accepted by the public, and getting increasing use – as is the new mountain bike track opened during 2012. However, as mentioned in 2.4 above, use of these tracks and the 4WD track, was interrupted at times by storm damage (floods and wind-blown trees), and vehicles are still seen on the riverbed too often (*see photo*). Using a digger in the spring to close off access tracks did lessen vehicle access, although there are always attempts to



breach the blockages and some are successful. The swimming holes attracted less use than normal, due to filling in by a number of small freshes over summer, but certainly helped in focusing recreational use away from core bird breeding sites.

3.4 PREDATOR CONTROL

In total, 37 potential predators were trapped in 5,786 trap-nights. Hence, the overall trap-catch rate during the bird breeding season was 0.64 predators per 100 trap nights.

Predators trapped consisted of 28 hedgehogs, 4 cats, 2 stoats and 3 weasels. Both trap-nights and predator numbers were lower than in the previous season (6,373 and 50 respectively), with hedgehogs remaining the most trapped predator. Details of trap nights and trap catches since trapping began in 2004 are shown in Table 1. It is pleasing to note the significant decline in catches/100 trap-nights over this period.

Season	Trap nights	Cat	Stoat	Weasel	Hedgehog	Rat	Ferret	Other	Catch/100 trannights
	ingitis								trapingnus
2004-05	4092	4	4	6	46	1	0		1.5
2005-06	3834	8	2	0	62	0	0		1.9
2006-07	3445	3	2	1	45	1	0	2 mice	1.6
2007-08	3983	4	3	4	39	3	0	2 mice	1.4
2008-09	3980	7	5	1	17*	0	0		0.75
2009-10	3981	3	3	2	17	1	1		0.68
2010-11	3732	3	4	2	23	0	0		0.51
2011-12	5048	2	1	1	34	0	1		0.78
2012-13	6373	2	3	3	36	5	1		0.79
2013-14	5786	4	2	3	28	0	0		0.65

Table 1. Predator trap-nights and trap-catch between 2004 and 2014

*Major drop in hedgehog numbers probably due to large flood in Feb 2008

A post-season trapping period was initiated from the Marchmont site up to Groyne 2 (about 7 km) during March, 2013, and ran through to the end of August - when the spring bird breeding season trapping began. During that time, the 2680 trap-nights resulted in the capture of 8 cats, 1 stoat, 1 weasel, 1 hedgehog and 1 ferret. Therefore, the trap-catch rate during this winter season was 0.48 predators per 100 trap nights.

3.5 SPRING BIRD COUNTS

Survey figures from 16 November 2013 are given in Table 3, with results of earlier counts shown for comparison.

Table 2	Results of the bird count undertaken in the Ashley-Rakahuri River (from Okuku junction
	down to SH1) on November 16, 2013. Counts from previous years, plus the 13-year mean
	are shown for comparative purposes

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Ave
Black shag	18	3	nc	8	7	2	2	10	9	6	2	5	6	3	6
Little shag	3	6	nc	4	7	6	2	4	0	17	6	13	11	19	8
SI Pied oy'catcher	25	22	19	22	37	22	5	26	27	32	20	35	38	23	25
Variable oy'rcatcher	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Pied stilt	229	82	70	138	140	137	68	164	131	196	233	194	209	247	160
Black stilt	0	0	0	0	2	1	1	1	1	1	0	0	0	0	1
Banded dotterel	199	130	115	169	213	245	84	237	198	233	260	250	248	301	206
Wrybill	17	7	6	16	9	7	5	9	8	13	18	15	17	19	12
Spur-winged plover	18	nc	16	13	27	149	37	116	11	39	15	89	55	65	50
Black-backed gull	26	nc	11	10	27	3	5	12	10	19	19	2	11	17	13
Black-billed gull	314	3	5	0	10	1	213	13	16	2	41	425	202	364	115
Black-fronted tern	74	44	165	102	28	26	180	89	81	124	192	190	200	156	118
White-fronted tern	0	0	0	0	0	0	0	0	0	0	8	77	6	2	7
Caspian tern	0	0	0	4	0	0	1	0	0	0	0	0	0	1	19

nc - not counted

Bird numbers continue to reflect the improvement of recent years, with results of all surveys between 2000 and 2013 statistically analysed and presented at a BRaid workshop on May 28 2014. The trends since 2000 were positive for all species, with three showing a significant improvement and three showing no significant change. No species showed a decline in numbers. Further details are given in the Discussion section (4.4).

3.6 SHOREBIRD BREEDING

Locations of shorebird territories are shown in Figure 1. A minor flood of just over 100 cumecs in mid-September did displace a few nests, but many more were washed away during a more severe flood of 290 cumecs in mid-October (see Appendix 3).

Wrybills

Banded birds are identified by their colourband combinations, bands are recorded left leg first and top to bottom (possible colours are: O=orange, R=red, B=blue, Y=yellow, G=green and W=white). M=metal, UB=unbanded.

Breeding pairs

Seven pairs of wrybills attempted to breed in the study area in the 2013-14 season.



Marchmont, Smarts and Tulls sites. Although breeding pairs with nests have been present in these areas during most previous seasons, no breeding was observed at any of these three sites in 2013/14. A UB pair of birds was seen at the Smarts site on two occasion (Sept 16 and Nov 12), and individual birds on four other days (Oct 20, Nov 4 and 7, and Jan 3), but no wrybills were seen on a number of other visits.

Result: No nests found – no chicks fledged.

1. Male: UB Female: UB

This pair may have been present at the Railway site on Sept 16, when 3 birds were seen, and again on Oct 28, when two UB birds were observed with the banded male, BW-BW (which nested at this site the previous season). A UB pair with a 2-egg nest was found on Nov 8. Only one egg was present in the nest on Nov 21, and both adults were nearby. The nest was empty and an adult with one chick was seen on Nov 23. The chick had apparently disappeared by Dec 13, when both adults were seen foraging quietly a short distance upstream of the nest site. A UB pair was still present on Jan 4.

Result: No chicks fledged.

2. Male: UB Female: UB (OG-RY)

The first UB bird was seen at the Rossiters/Pylons site on Sept 16, and individuals or a pair were observed regularly thereafter. On Nov 19 a 2-egg nest was found and the female bird banded OG-RY. The nest had hatched by Dec 9, when the nest was empty and the female was defending nearby. On Dec 20, the pair were observed showing chick behaviour. OG-RY was seen in the same area on Jan 4, but no chicks were ever identified.

Result: No chicks fledged.

3. Male: WO-M Female: WO-WY

WO-M was first seen just above the Groyne 1 site on Oct 20. No nest was located, but on Nov 2 he was seen with WO-WY – both acting as if a chick was nearby. On Nov 17 they were seen with a single chick. WO-M and the chick, now flying, were seen foraging at Rossiters on Dec 9. All three were present on Dec 12 and 28 and on Jan 5, WO-M was observed harassing the chick – indicating the possibility of a second nesting. However, no wrybills were seen at this site

thereafter. This banded pair nested and raised a single chick a little further up the river (Racecourse site) in the 2012-13 season.

Result: 1 chick fledged.

4. Male: UB Female: UB

A UB pair were first seen at the Racecourse site on Nov 2 and again on Nov 17. A single male was present on Dec 11, and a scrape was found. No adults were present on Dec 12, but a fledged chick was present. Its origin was unknown, and no wrybills were seen thereafter.

Result: No chicks fledged.

5. Male: UB Female: YO-RO

A UB male bird was disturbed at the lower Groyne 2 site on Oct 3. A nest was suspected but not found. YO-RO and a UB mate, plus a nest with one egg and one recently hatched chick were located on Nov 2. Both birds were showing chick behaviour on Nov 21, and were seen with a flying chick in early December. YO-RO nested unsuccessfully at the Groyne 2 site in the 2009-10 season and at the Racecourse site the following year (1 chick fledged). For the last two seasons, she has nested at the Marchmont site (no chicks and one fledged chick), before returning to the Groyne 2 site this year.

Result: 1 chick fledged.

6. Male: BW-BW Female: UB

BW-BW was first seen just above the Groyne 2 site on Aug 13 – the first wrybill sighting of the season. He was then seen on Sept 24, before a 2-egg nest was found on an island just out from the south bank on October 3. By October 28, the nest was empty, with both adults present on the north bank. A well-grown chick was observed with both adults on Nov 16. The adults were last seen on Dec 11 with a fledged chick plus one other bird, which could have been a second fledgling.

Result: 1 chick fledged

7. Male: UB (OW-BY) Female: UB

This Hillcrest road site is the furthest upriver nesting location recorded since recent records began in 2004. The pair was first found on the south bank at the Hillcrest road site as part of a pre-gravel extraction inspection on Oct 23. No nest was located. On Nov 9 a 1-egg nest was located close by an active gravel-removal pit, and on Nov 23 the male was banded OW-BY. Despite frequent machine activity nearby, the birds continued to incubate 1 egg until a chick was seen on Dec 7. Hatching probably occurred on Dec 3 or 4. The chick was seen on Dec 12, and given a metal band on the left tibia on the following day, after which it moved to the north bank. A flooded river prevented close inspection, but an adult bird was seen chasing away other birds on Dec 26 and 31.

Result: 1 chick fledged

Overall result: 7 pairs fledged 4 chicks, for a productivity of 0.57 chicks fledged per pair.

Black-fronted terns

At and below the Railway site, black-fronted terns gathered in some numbers at times during the season (33 at Smarts on Oct 3 and 25 at the Railway site on Jan 4), but no signs of nesting were observed. Up at Hillcrest, there were 5



pairs on nests in early November, but none were seen to hatch or fledge chicks; one 2-egg nest found there on Dec 7 had been depredated by Dec 13. Similarly off Groyne 1, where on Dec 13 there were over 40 birds noted, some of which were on nests. But by Dec 24, there were just 3 pairs on nests, before all breeding finished after a 60 cumec flood in late December.

The main nesting area was just below the Rossiters/Pylons site not far above the Ashley road bridge. Around 40 birds were first seen there on Oct 1, and by the end of the month this had grown to over 50. On Nov 9, it was estimated that around 25 pairs were nesting on the first large island above the bridge. One egg was found hatching on Nov 19. A number of pairs in this area were displaced by breeding black-billed gulls in early November, which may have led to some renesting off Groyne 1 and others moving to below the road bridge. Two broods of two chicks each were found on the point of flying on Dec 9, and by Dec 28 there were around 20 chicks being fed just above and below the bridge. They were still present in early Jan., when most chicks had fledged and were flying, and all had disappeared from this site by the middle of the month. Small groups of adults with flying juveniles were observed later in the month further upriver between Groyne 1 and Groyne 2.

Over all the sites, approximately 35 pairs of terns nested, with 18 chicks known fledged, for minimum productivity of 0.52.

Black-billed gulls

For the third year running, a colony of black-billed gulls nested successfully on the river. Prior to this, colonies had been present only in 2000, 2006 and 2008.

The colony was located in the Rossiters/Pylons site, about 200m above the Ashley road bridge (see photo). The first two birds were observed on October 1, with 40 present on October 23 and 300 by Oct 28. These nested in two groups about 40 m apart - the smaller group had about 25 sitting birds by Nov 9, while the larger group nested slightly later. Counts from photographs taken on Nov 19 suggested a total of about 400 birds, with 90 in the smaller sub-colony, 260-270 in the larger, and 30-40 birds roosting



nearby or foraging in the area. On Dec 12 187 sitting birds were counted, and a few small chicks could also be seen. Soon after this, parents started moving chicks to running water about 100m above the road bridge – 21 chicks were at the new location on Dec 19. This had grown to 56 by Dec 24. On Dec 26, there were 92 chicks above the bridge, with another 50 still estimated to be further upriver at the nesting site. In addition, there were 20 new nests at the bridge site. These nests were wiped out by a 60-cumec flood on Dec 29. This flood also separated the 180 chicks into three groups. From then on, the combination of small river freshes and human disturbance (the area around the bridge attracts many visitors, especially on hot days) meant frequent disturbance, leading to lowering numbers, especially of the smaller, less mobile chicks. By Jan 7, it was estimated that there were 105 chicks immediately above the bridge and 45 just below. The majority were fledged and could fly, and by Jan 15 were all together in a creche of 125 birds below the bridge. On Jan 21, 115 chicks were counted in a group which was frequently moving around on a 200m stretch of river below the bridge. By the end of the month all were gone.

On Jan 15, a nest count at the nesting site revealed 290 nests, 245 in the larger sub-colony and 45 in the smaller. However, it is unlikely that all these were used, as on Dec 12 a total of 187 sitting birds were counted.

Result: Approximately 190 pairs fledged 115 chicks, for a productivity of 0.60 chicks per pair.

White-fronted terns

Two birds were observed alongside the black-fronted tern and black-billed gull colonies on Nov 16, but no breeding was recorded. This species nested alongside black-billed gull colonies in the two previous seasons.

Pied oystercatchers

At least 6 pairs are known to have bred in the study area (Smarts/Colony (2), Railway, Rossiters/Pylon, Racecourse and Hillcrest), and chicks were observed at two of these. Others are likely to have attempted breeding elsewhere, as 23 birds were observed during the survey on Nov 16. However, no formal count of pairs or chicks was attempted.

Banded dotterels

Banded dotterels nested throughout the study area. The

number seen on the Nov 24 survey (301) was the highest recorded since surveys began in 2000. Although no attempt was made to record productivity, a number of nests were found and chicks seen. The first banded dotterel was seen on August 6, and the first nest (3 eggs) found at Marchmont on Aug 15. Good numbers were particularly noticeable at Smarts, Rossiters/Pylons, Groyne 1, Groyne 2 and Hillcrest. Chicks of a range of ages, including two that were flying, were present around the gull colony on Dec 9. In late January, small flocks of flying juveniles (6-14) were noted at all these sites.





Pied stilts

Many pairs of pied stilts bred in the study area. As with the banded dotterels, record survey numbers on Nov 16 indicated a potentially successful season. The best breeding site was at Smarts/Colony, where 12 adults were first observed on Oct 3, and a number of chicks seen in December. Many juveniles were observed elsewhere, with flocks of up to 18 birds observed in late January at Groyne 1, Racecourse and Hillcrest. Their productivity was not recorded.

Black stilt

The black stilt (GK-OW) which bred on the river (always with a pied mate) for many years up to 2009, has not been seen on the riverbed since.

Black-backed gull

The first pair for many years nested at the Smarts colony site. Three chicks were destroyed before they fledged.

Caspian tern and spur-winged plover

Caspian terns were occasionally noted on the river early in the breeding season (pairs seen at Smarts/Colony and Groyne 1 on Oct 2 and Nov 9 respectively) with just one present during the survey on Nov 19, but there was no sign of breeding. No spur-winged plovers were observed nesting, with only a few birds seen during the main part of the season. The usual flocks were present later on (35 at Marchmont/Smarts on Jan 27 and 35 between Groyne 1 and Groyne 2 on May 16).

Monitoring results for wrybills and black-fronted terns between 2004 and 2013 were analysed and presented at a BRaid workshop on May 28, 2014. Results are given in Appendix 2 and elaborated further in the Discussion section.

4 Discussion

The shorebird species in the Ashley-Rakahuri river face three main threats – the invasion of weeds (mainly yellow lupins, broom and gorse), reduced survival and productivity due to introduced predators, and disturbance by human activity. The Group's attention continues to be focussed on reducing impacts from these – with particular focus on assisting the wrybill, black-fronted tern and black-billed gull.

The success of management in reducing the above threats is assessed by an annual survey of bird populations, plus monitoring of breeding success, in order to determine productivity (number of chicks fledged per nesting pair of adults).

4.1 HABITAT ENHANCEMENT

No artificial weed removal is now undertaken, as the areas involved can only be small and past experience is that they have rarely been used by breeding birds. Floods are the only effective means of clearing large areas of weeds, and are best when they occur before the main breeding season gets underway in September. There were no major weed-clearing floods prior to the 2013 season. A 280 cumec flood in mid-October flooded a few nests, but was not strong enough

to clear many weeds. After the season had finished, a major flood in late April 2014, was the largest for many years – 490 cumecs in the Ashley-Rakahuri (see App 3) plus 290 from the Okuku river. This cleared large areas, although dead vegetation was widely strewn over the riverbed once the waters dropped (*see photo*). These clumps of flood-deposited dead weeds remain a common feature of the river, but it is not known how they affect bird feeding and nesting habits.



A weed-free riverbed is not only attractive to birds, but it can also encourage greater use by offroad vehicles (trail bikes, ATVs and 4WDs), especially if access tracks remain after summer riverbed operations such as shingle extraction or stopbank repair. For this reason, the Group advises on the blocking off of all but the major access tracks early in the season. Without a doubt, this reduces vehicle access for a while, but over time drivers find a way to negotiate many of them.

Research has shown how bird breeding success is greatest on islands with a reasonable flow of water surrounding them, as this restricts access for predators such as hedgehogs and cats. There was water around the major gull and tern colony at Rossiters/Pylons for much of the season, but it was not deep enough to deter all 4WD'ers, and once the chicks were mobile they moved onto sites more accessible from the river banks. The Group, in conjunction with commercial shingle extractors, could do more to create and maintain good island habitat.

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4.2 PREDATOR CONTROL

The number of trap-nights during the 2013/14 breeding season (5786) was 10% down on the previous season (6373). The trap-catch rate of 0.64 predators / 100 nights was the second lowest recorded since trapping began in 2004 (0.51 in 2010-11 – see Table 1), and continues the general downward trend over time. This trend is graphed in App 2b(2), which shows the drop in predator numbers over time to be significant, although minus hedgehogs the trend is only marginally down and probably not significant. Hedgehogs remain the most trapped predator, but are still lower than the numbers caught prior to the severe floods of 2008 and 2009 (peak flows of over 1100 and 500 cumecs respectively), which removed large areas of good cover. Second to hedgehogs are wild cats (4), which become even more noticeable if the winter trapping figure of 8 is added. More cats are being caught over the winter months than in the summer. The reasons for high cat numbers are unknown, but could be due to the proximity of rural dwellings, to which feral and free-ranging cats are attracted for food and mating opportunities. Compared to other predator control areas, stoat capture continues to be low (2), and just 5% of the total predators caught. They are closely matched by weasels - 22 over 10 years compared to 29 stoats. The overall numbers of predators caught (particularly mustelids) remain low when compared to catches in other braided rivers. The reasons for this are unclear, but a major cause could well be the low numbers of rabbits (a staple food for the likes of mustelids and cats), which have not recovered since the arrival of RCD in 1998. This situation may not remain for long, as resistance to RCD is rising elsewhere in the country, and more rabbits were seen in the Ashley-Rakahuri over the last year. If this trend continues, consideration should be given to reducing rabbit numbers – a practice used in quite a few other predator-control sites.

As in previous years, a post-season trapping period was initiated in March 2013. This resulted in a lower catch rate (0.48) compared to that obtained during the breeding season (0.64), but a very similar figure to that obtained over winter in 2012 (0.49). As stated above, winter seems to be the best time for trapping wild cats -14 over the last two winters compared to 6 during the comparative breeding seasons. Past experience indicates that cats may be slow to reoccupy the territories of trapped animals, so it is possible that winter removals may lead to lower cat numbers during the bird breeding season.

Despite the increased work, the trapping team remains small, and the Group continues to try to attract more volunteers. For this reason, the Group needs to keep well informed of new predator control techniques being developed - which could mean significantly less time and effort than needed for present-day trapping. Such techniques involve the use of self-resetting traps and user-friendly poisons.

Investigations into shorebird predation on other braided rivers, such as the Waimakariri (Dale McEntee, pers comm.) and Wairau (Steffens *et al*, 2011) rivers have revealed significant losses to avian predators such as black-backed gulls and harrier hawks. On the lower reaches of the Ashley-Rakahuri the numbers of black-backed gulls remain low. The survey number (17) was above average (13), and for the first time for many years a pair hatched 3 chicks at the Colony site. These were destroyed before they reached the flying stage. Swamp harriers (harrier hawks) are not counted in the annual surveys, but are common on the Ashley-Rakahuri. Even though they are frequently seen being chased away by breeding birds, no actual predation has been observed on the river in recent years.

4.3 ADVOCACY

The Group's advocacy efforts over the past years continue to improve local awareness of the problems faced by riverbed birds, and of the Group's activities to protect them. Appendix 1 lists 29 occasions used to improve awareness. In the previous year, the Group wrote to all local schools, resulting in eight requesting presentations. Such written approaches appear important, and perhaps should be repeated annually, as none were made in 2013, and only one school

requested a talk. In October, a talk was given about riverbed birds to 35 students representing 10 schools during an event organised by Enviroschools at the Ashleyestuary. Saltwater creek After а presentation on the Group's activities at Sefton School – see photo), two students organised a local fair and raised \$355 for the Group. The 2014 desk-top calendar went out for sale in January, making use of the hand-drawn posters made by Ashgrove School in the previous year. One hundred were produced, and this appears to be about as many as the Group can readily sell. Over a 12-month period, our webpage



(www.ashleyrivercare.org.nz) has had 711 hits. This is good news, and the Group goes out of its way to keep the site current, utilising the assistance of the Promotions section of VisitWaimakariri. During 2013-14, eight articles appeared in the local media (Northern Outlook, Hurunui News and the Press). High-lights of the year was a scientific paper published in the NZ Ornithological Society's journal 'Notornis', describing a positive trend in black-fronted tern numbers on the Ashley-Rakahuri river, and attributing that to Group management, and a visit from Radio NZ's Alison Ballance with the later broadcast about the Group's activities on 'Our Changing World'.

All these promotional activities take considerable time and effort, but if awareness is to be continued at a high level, such effort must be maintained on an annual basis.

Out on the river, customised Corflute signs were placed in managed areas during the season. These are essential to minimise human disturbance during the breeding season, and are probably the most effective tool for that purpose.

There is a rising national interest in the use of water, particularly for irrigation. One consequence has been that braided rivers are the target of increasing attention. In October, two presentations were made to committees involved in implementing the Canterbury Water Management Strategy.

The Group remains actively involved in the running of BRaid Inc, a group which aims to improve the ecological welfare of all braided rivers in Canterbury. Nick Ledgard (Group chairman) is currently BRaid Chairman. BRaid ran another successful training course at the Glentui Meadows Conference Centre in Sept 2013, plus a major workshop on braided river bird management on May 28, 2014. This was attended by almost 100 people. The Group presented the results of its survey and monitoring activities since 2000 and 2004 respectively (see 4.4, 4.5 and App 3).

In February 2014, a report 'New Zealand Seabirds' was produced by BirdLife International for Forest and Bird (Gaskin, 2014). In this, it is proposed that most of Canterbury's braided rivers, including the Ashley-Rakahuri, be given Important Bird Area (IBA) status. IBAs have legal recognition for conservation protection in many off-shore countries.

4.4 SPRING BIRD COUNTS

The 2013 annual survey of the lower reaches of the Ashley-Rakahuri took place on Nov 16. Table 2 shows that the 2013 counts of wrybill, banded dotterel, pied stilt and little shag were the highest on record, and numbers of black-billed gull the second highest at 364, which is well above the 13-year average of 115. All the major species were above the 13-year mean, with the exception of the S. Is pied oystercatcher, which was just one below the average.

The good survey numbers for 2013 reflect the overall improvement since surveys were undertaken annually in 2000. In early May 2014, the data for the major species were statistically analysed for a presentation given to the BRaid workshop on May 28. Results are graphed in Appendix 3. The trend lines over 14 years are positive for all six species, with numbers of black-fronted tern, banded dotterel and pied stilt all having increased significantly, while those for wrybill, black-billed gull and S. Is pied oystercatcher are not statistically significant. It is pleasing to note that none of these species show a decline in numbers. These results suggest that the birds are at least 'holding their own' on the Ashley-Rakahuri river. In a paper, 'Population trends in black-fronted terns on the Ashley river, N. Canterbury', Monks et al (2013), wrote 'in the recent period of regular monitoring and management (2000-2011) tern numbers increased significantly on the Ashley River'. The authors go on to say that actions by the Ashley-Rakahuri Rivercare Group may have contributed to the increasing tern numbers on the river over the last 11 years, and concludes with 'This is a better situation than in other low-flow rivers and justifies continued management of birds breeding in the riverbed.' Our 2014 analyses of other data indicate that the same could be said for five other threatened species on the Ashley-Rakahuri river.

4.5 SHOREBIRD BREEDING

Chick numbers and productivity (number of fledged chicks /pair) for wrybills and black-fronted terns were also statistically analysed for the period 2004-2013 (Appendix 2). The trend line for chick numbers is positive for both species, but not statistically significant. It is the same for tern productivity. The trend line for wrybill productivity is slightly negative, due to higher numbers of breeding pairs over the last few years but lower average productivity over the same period. Colonies of breeding black-billed gulls have not been present frequently enough to allow such analysis of breeding trend. However, indications are that this could be changing, as gulls have bred on the river for the last three seasons.

Wrybills

Seven pairs attempted to nest in the study area in 2013-14. This equals the highest since records began in 2004 and is the same as the number recorded in the previous three seasons. However, as in the previous season, only four chicks were fledged, for a productivity of 0.57, which is the lowest recorded (the next lowest was 0.6 in 2008). The reasons for this below-average productivity (average = 0.79) are unknown. Nests were found for five of the seven pairs, three of which were known to raise one chick. At another site (Groyne 1), the nest of WO-M and WO-WY was not found, but the pair fledged one chick, as they did at the same site in the previous season. Another regular breeder was the male bird BW-BW, first banded in 2010. He nested at Groyne 2 for the second time with a UB female, and they fledged one chick. A new breeding site was located at Hillcrest Road, about 3km west of Groyne 2. This is the furthest upriver that wrybills have bred since regular recording began in 2004. The pair were first

located close to a shingle extraction site, and only laid one egg. The site was clearly marked to minimise immediate disturbance and despite frequent digger and truck activity nearby, they managed to fledge one chick

Amongst the fourteen birds (7 pairs) that did breed, only four were banded at the start of the season. Later, a female was banded (OG-RY) at the Rossiters/Pylon site, plus the male bird at Hillcrest (OW-BY). A pair of banded birds (M-R and B-O) present just below Groyne 2 in both the 2011-12 and 2012-13 seasons season were not present in 2013-14. B-O (formerly BO-YO) was the longest surviving banded bird on the river, as she was first banded as an adult in 2002. Three of the banded birds present at the start of this



season (WO-M, WO-WY and YO-RO) were banded in 2009, while the fourth (BW-BW – *see photo on previous page*) was banded in 2010. None of the other 21 birds banded since 2001 were seen on the Ashley-Rakahuri in 2013-14. Nine of the 21 were not seen again after the year of banding, and four of these were fledglings when banded. All the above does not indicate high adult survival, which is essential for long-term wrybill success. Like many of this country's native birds, their survival strategy is to have a long life and not to rely too much on regular breeding success. This strategy can only succeed if adult mortality is low. There needs to be more investigation into the low level of adult survival.

Black-fronted terns

Although always present on the river (one of the few native species remaining, albeit in low numbers, over winter), breeding success for this species remains variable and appears to be low. The estimated number of breeding pairs was 35, just below the 10-year average of 39, and the productivity of 0.52 chicks fledged per pair was above the long-term average of 0.41. The reasons for the low



success rate remain unclear, with no obvious leads as to why colonies can quickly establish, build nests and lay eggs, and then equally quickly disappear. During the 2013-14 season, the end result after the failure of four small colonies was the relative success of a larger colony at the Rossiters/Pylons site not far above the Ashley road bridge. Birds first started concentrating there in early October, and by early November around 25 pairs were on nests. Terns often breed in close association with black-billed gulls. They benefit from the gulls being larger, more vocal and aggressive when defending their nests and chicks from people and predators, but the gulls can also disturb tern breeding and take eggs. For example, by the time all the gulls had settled on nests at the end of October, they had occupied a portion of the tern area and displaced a number of nesting pairs. Also, being close to the road bridge, where there is ready public access, the terns were exposed to considerable human disturbance during the day, especially over weekends in the Christmas / New Year period. Most chicks hatched on a central river island, but as they began to fly, they often ended up on the banks where people could walk and drive vehicles.

It appears that black-fronted terns succeed best when there is a good number of birds present (maybe just terns, but gull presence helps) with everything going for them. To that end, the Group needs to ensure a weed-free site on a water-surrounded island, good predator control and adequate signage to deter human disturbance.

Black-billed gulls

Success with this species depends primarily on whether a colony chooses to nest on the riverbed. Although colonies since



2004 have not been regular (only in 2006 and 2008), they have now been present for the last 3 seasons (since 2011), and it is hoped that this is the start of regular annual breeding. For the last two seasons, the colony has been in the stretch of river immediately above the road bridge. In

2012, it was at the upper end of this stretch by the power pylons, while in 2013 it started slightly lower - only 150 m above the bridge. As the chicks hatched and became mobile, they moved downriver until they were both above and below the bridge, and by the season's end in late January, the crèche of chicks (see photo on previous page) was always below the bridge, usually within 200-300 m of it. As with the terns, human disturbance in this popular area was a problem, and at times this split the chicks into small groups. However, one could only be impressed by the defence of adult birds, and their persistence over many hours until the groups were reunited. This took less time once the chicks became more mobile, but it was noticeable that the later hatching and less mobile chicks were those which were the first to go missing. Signs notifying visitors of the birds' presence certainly helped to keep the majority of riverbed visitors at a distance, but they had to be moved almost daily as the crèche of chicks moved about. Another negative of having breeding birds so accessible to the public was fact that 'safe' predator trapping becomes more difficult, although the numbers of predators is most likely to be lower in such well used sites. On the other hand, a definite positive of this readily accessed bridge site was the opportunity to give people excellent views of rare native species breeding in their original habitat (see photo). In the future, more effort needs to go into making use of such opportunities.

Colonies of gulls comprise a mixture of breeding and non-breeding birds, making it difficult to estimate actual numbers of breeding pairs. At the season's end a total of 290 nests were counted, but not all of these were 'active'. On December 12, 350 birds were present but only 187 sitting birds (57%) were observed. For this reason, the figure of 190 pairs was used to calculate end-of-season productivity.

Other species

Breeding success or productivity was not recorded for S. Island pied oystercatchers, pied stilts and banded dotterels during the 2013-14 season, but obvious signs of breeding were noted at many sites. Hence, their populations appear to be holding their own. Over the last two seasons, white-fronted terns have attempted to breed alongside the black-billed gulls. Two birds were seen by the gulls on early November, but no attempt to nest was observed. The black stilt, which bred on the river for three consecutive years through to the 2009-10 season, has not been seen since.

Spur-winged plovers were present throughout the season. No breeding was observed on the riverbed, although nests in such sites are always hard to find. Sizeable flocks were most obvious at the end of the season and through into the autumn and winter. This is a pattern observed for the species in the post-breeding season on many Canterbury braided rivers (Andrew Crossland, pers. comm.).

No doubt, all these other species would have benefitted from the lower predator numbers and less human disturbance associated with the management targeted at wrybills, black-fronted terns and black-billed gulls.

4.6 FUNDING

In 2012 the Group felt that it had a sufficiently high profile to raise funds locally and to 'wean' itself from national funding agencies such as the WWF and Lotteries, which have supported ARRG since the early 2000s. Hence, during the last season finances have come primarily from local sources, including a generous donation from Taggart Earthmoving Ltd,



public donations taken by Barbara Warren at the Ohoka Market and her Organic Food Shop in Queen Street, Rangiora, plus royalties from the sale of Jane Buxton's children's book 'Ria the reckless wrybill'. The Canterbury Federation of the Women's Institute have donated finance for four traps. Most funds raised by the Group have come from selling DOC 200 traps (built by the Group using 'seeding' money supplied by DOC for purchasing materials – *see photo*), and from sausage sizzles held outside the Warehouse in Rangiora on July 20 and December 22. Local fund-raising has the advantages of encouraging community participation and obtaining better public exposure.

5 Conclusions

Relative to the future success of the three key shorebird species (wrybill, black-fronted tern and black-billed gull) in the Ashley-Rakahuri river, the 2013/14 season was above average in terms of numbers counted in the annual survey, but below average in terms of breeding success (productivity). Wrybills, the best known and icon species of the river, had another moderate breeding season – the same as in the previous year. There was no obvious cause for this, so, hopefully it just represents a down in the natural ups and downs which occur over the years. Black-billed gull and black-fronted tern numbers are increasing, but breeding success, particularly for the terns, could be improved. Numbers of other species, such as pied oystercatcher, banded dotterel and pied stilt were also above average.

Analyses of survey data taken since records began in 2000, show upward trends for the all the focus species, with statistically significant improvements for black-fronted tern, banded dotterel and pied stilt. The positive trend for wrybill was not quite significant, while the trend for black-billed gull and S. Is pied oystercatcher showed no significant change. Breeding data since records began in 2004 was also analysed for wrybill and black-fronted terns, but not for black-billed gulls as colony presence on the river has been so variable. Although the numbers of wybill chicks have increased (not significantly), productivity (fledged chicks per pair) has declined slightly due to the increased numbers of pairs breeding. The productivity trend for black-fronted terns has been positive, although this is not statistically significant. This is probably due to a record year for tern chicks in 2006, which has not been approached since. The pleasing overall conclusion from these analyses is that management actions by the Ashley-Rakahuri Rivercare Group is most likely to have contributed to the increasing bird populations on the river over the last 14 years. As concluded by Monks *et al* (2011), writing about the positive black-fronted tern population trend on the Ashley-Rakahuri river, this 'justifies continued management of birds breeding in the riverbed.'

The Group continues to maintain a high profile relative to public awareness and education, assisted by agencies such as DOC and ECan. During 2013-14, the Group created twenty-nine opportunities to improve awareness. Six written articles appeared in local media outlets. Highlights were an interview broadcast on Radio NZ's 'Our living world' programme, and the analyses and presentation of population and breeding results from 14 and 10 years (resp) of data recording at the BRaid braided river workshop in late May, 2014. Along with BRaid Inc, ARRG also keeps a close watch on decisions surfacing from the Canterbury Water Management Strategy (CWMS) and its component Zone Committees. Even though the CWMS has 'environment' as a first order priority, ahead of 'irrigation' (a second order priority), the pressure is on to cater for farming first. Hopefully, it will not be forgotten that the option of water use for irrigation will be with us for decades to come, but if we lose our braided river birds they will be gone forever.

During all its initial years, the Group relied on outside agencies (eg. Lotteries, WWF) for funds, requiring considerable time and effort in writing applications and supplying reports. Hence, it is pleasing to record that for the last 2 years, the Group has been able to survive on its own fundraising projects, plus donations. The generosity of the latter is due to our improved public profile.

Looking into the near future, two new challenges come to mind. The first is to improve predator control, most likely utilising new trapping and poisoning technologies. Predator control is not only vital for continued bird breeding success, but every year it takes up more of the Group's time than any other single activity. The second is to improve bird nesting habitat, probably by the creation of raised, weed-free islands where it is known that breeding success can be enhanced. To these two new opportunities can be added the traditional challenges of maintaining public interest and the involvement of the local community in bird management on the Ashley-Rakahuri River and reducing disturbance in the riverbed during the breeding season.

6 Recommendations

1 Continue predator control, annual bird surveys, monitoring activities and banding - focussing on the three key threatened shorebird species.

Justification

Effective predator control will be essential if the three species are to survive in the river. Collection of information through surveys and monitoring is vital, as it indicates if the Group is attaining its goal of improved bird numbers, as well as providing vital data for future management and decision-making. Banding provides information on adult survival, pairing and movements of individual birds.

2. Explore new technologies for predator control

Justification

Predator control occupies more of the Group's time than any other single activity. New techniques involving self-resetting traps and user-friendly poisons could reduce the level of this commitment considerably.

3. Create and/or maintain islands surrounded by water for bird breeding

Justification

Experience elsewhere has shown that bird breeding is most successful on islands surrounded by water. If consent can be obtained, these would not be difficult to create or maintain using heavy machinery operated by the likes of shingle extractors.

4. Continue advocacy initiatives both by members and other agencies such as DOC, making use of the website (including social media), the Powerpoint presentation and printed material such as handout fliers, posters, bookmark and a calendar. Particular attention should be paid to schools.

Justification

Although awareness has improved significantly since the Group was formed in 1999, it can only be maintained and improved by continued effort, plus the utilisation of appropriate modern technologies. Children are excellent advocates for influencing adults, and future management will be in their hands. 5. Maintain funding via local sponsorship.

Justification

Obtaining funding from traditional sources such as the Lotteries Board and World Wildlife Fund involves considerable time and effort both in applications and reporting (all carried out by volunteers). The Group now has a sufficiently high profile to seek local sponsorship, which would not only further increase community exposure, but should lessen the time and effort spent securing funding from further afield.

6. Continue full support for BRaid Inc.

Justification

BRaid Inc aims to improve environmental awareness and management on all South Island braided rivers. It now has a part-time Manager, and runs an annual training course on riverbed birds and their management. BRaid has become a recognised 'umbrella' group for maintaining braided river ecosystems, and is currently applying for major funding. The end result is that more braided rivers should receive the same local community-based attention as is presently focused on the Ashley-Rakahuri River.

7. Maintain and improve collaboration with ECan's Biodiversity Programme, the Waimakariri Zone Committee and the Canterbury Water Management Strategy's Regional Committee.

Justification

Decisions on the future use of water from braided rivers rests with these agencies and committees. Too much water taken from braided rivers for hydro generation and irrigation will adversely affect bird numbers. These agencies also dispense considerable funds for river management.

8. Maintain and improve collaboration with commercial shingle extractors.

Justification

Gravel (shingle) extractors are the major commercial users of the Ashley-Rakahuri river, and have opportunities to create weed-free sites and islands surrounded by water that encourage successful bird breeding.

9. Support management of Environment Canterbury's Ashley-Rakahuri Regional Park.

Justification

A major objective of the Park's plan is the long-term maintenance of key shorebird populations on the Ashley-Rakahuri River.

7. Acknowledgements

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9 Appendix 1. Promotional activities during 2013-14

Promotion / activity	Date	Comment
Meetings	July 18, Aug 29, Nov	DOC offices, 13-20 participants
	4 & Feb 20	
AGM and meeting	Sept 19, 2013	DOC offices, 21 participants
Annual bird survey	Nov 16, 2013	20 participants
Presentations/Representation		
Powerpoint address	August 8, 2013	Probus, Ashley Combined
Powerpoint address	August 27, 2013	Citizens Advice Bureau, Rangiora
Talks and Powerpoint address	September10-12, 2013	Conservation week - Oxford and Rangiora
Powerpoint address	October 7, 2013	Waimak Zone Committee
Powerpoint address	October 8, 2013	Ecosystem Health and Biodiversity Working Group of CWMS's Regional Committee
Powerpoint address	October 9, 2013	N. Canty Fed of Womens Inst (70 present)
Conference presence	October 16-18, 2013	Conservation Inc (NGOs) conference, Dunedin
Field talk	October 24, 2013	Enviroschools, Waikuku estuary, 35 school students representing 10 schools
Submission	October 25, 2013	Submission to Canterbury Conservation Strategy at local DOC office
School visit	November 7, 2013	Presentation of donation at Sefton School
Expo presence	November 10, 2014	Stall at Womens Institute Expo, Amberley
Presentation	November 13, 2013	Rangiora cubs
Field talk	November 14, 2013	Ashley-Rakahuri estuary talk to visiting tour group
Powerpoint address	April 23, 2014	Kainga Rural Womens Inst (12 present)
Powerpoint address	May 28, 2014	BRaid workshop (ARRG results 2000-2013)
Powerpoint address	May 30, 2014	DOC group, Rangiora
Media articles etc		
Ashburton Guardian	August 13, 2013	'Viewing birdlife in own habitat' – promoting BRaid training course
Radio NZ field interview	October 23, 2013	Alison Ballance interview about ARRG
The News	October 24, 2013	BRaid helps endangered birds
The Press	December 9, 2013	'Bird expert warns public about special gulls'
The News	December 12, 2013	'Quad bikes seen driving through prohibited area'
ARRG 2014 Calendar	December, 2013	2014 ARRG calendar printed for selling
Northern Outlook	December 18, 2013	'Rare birds calling Rangiora home'
The News	December 19, 2013	'Vehicles causing distress'
The Press	December 23, 2013	'Threatened birds found in Ashley'
Radio NZ interview	February 20, 2014	Alison Ballance broadcast ARRG interview 'Our Changing World'
The News	June 5, 2014	'Human intervention needed to save unique birds'
Fund raising		
Sausage sizzles	July 20; Dec 22, 2013	Outside Rangiora Warehouse
Trap making	Aug 24, 2013; Jan 15 and Feb 5, 2014	Member's work shed; 90 DOC 200 traps made

Appendix 2a. Graphs of bird populations and trends

Bird numbers and population trends using data gathered from annual surveys (2000-2014) over 18 kms from Okuku river junction down to SH1 bridge. (Red line is mean and black line is trend; p-values represent the linear relationship over time, and need to be <0.05 to be significant)



Black-fronted tern Trend p=0.02



Black-billed gull Trend p=0.16



Appendix 2a (cont). Graphs of populations and trends







Trend p=0.03



S. Island Pied Oystercatcher Trend p=0.28



Appendix 2b. Graphs of bird breeding and predator trapping

1) Breeding productivity (fledged chicks/pair) and trends between 2004-2013. (Red line is mean and black line is trend; p-values represent the linear relationship over time, and need to be <0.05 to be significant)



Black-fronted tern Trend p=0.247



2) Trapping results (predators/100 trap-nights) between 2004-2013. (Red line is mean and black line is trend; p-values represent the linear relationship over time, <0.05 is significant). Trend p=0.0022



Appendix 3. River flow (cumecs) at Ashley Gorge from July, 2013 to June, 2014 (from Environment Canterbury website <u>www.ecan.govt.nz</u>). The 2013/14 bird breeding season lasted from August, 2013 to February, 2014.

