
*Management and monitoring of shorebirds in the
Ashley-Rakahuri River during the 2015/16 season*



Pied stilts are one of the more common birds on the Ashley-Rakahuri river



Ashley-Rakahuri Rivercare Group, Inc.

Management and monitoring of shorebirds in the Ashley-Rakahuri River during the 2015/16 season

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(composition of Group given on last page – Appendix 4)

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Summary

Ledgard, N.J. *Management and monitoring of shorebirds in the Ashley-Rakahuri River during the 2015/16 season.* Unpublished report, Ashley-Rakahuri Rivercare Group Inc., Rangiora. 34 pp.

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 12th annual report from the Group.

The Group is now self-funded, with finances coming from a trap making and selling project, donations and local awareness initiatives, 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 (ngutupare), black-billed gull (tarapuka) and black-fronted tern (tarapirohe). To this end, the main actions undertaken involved on-going bird population surveys, predator control, population monitoring, habitat improvement, and improving awareness through advocacy to the public and river management decision-makers.

Bird surveys. The annual bird survey was carried out on 14 Nov 2015. Bird numbers generally continue to reflect the improvement of recent years. Nineteen wrybills were counted (record is 21). Black-fronted terns were average, while black-billed gull numbers were well below average, mainly due to the absence of a breeding colony. Numbers of most other species were similar to 2015, and similar to or above the long-term average. A highlight of the past year was the publication of a peer-reviewed paper 'Population trends of braided river birds on the Ashley River (Rakahuri)' by Eric Spurr and Nick Ledgard in *Notornis* (June, 2016, Vol 63, Part 2). This reported an upward trend in numbers for all the focus species from 2000 to 2015, with statistically significant improvements for wrybill, black-fronted tern, banded dotterel and pied stilt.

Predator control. There was an increase in trap numbers from 61 last year to 118. In total, 84 potential predators were trapped in 17,459 trap-nights, giving an overall trap-catch rate of 0.48 predators per 100 trap-nights (12-year mean is 0.98). Predators trapped consisted of 51 hedgehogs, 14 cats, 6 stoats, 10 weasels and 3 ferrets. The number of trap-nights was the highest ever, due to the recruitment of two new trappers, more funds for trap purchase, and additional work by regular trappers. Hedgehogs remain the most trapped predator, followed by cats (highest ever). Nineteen mustelids were caught, eight more than the previous highest number of 11, with the highest ever number of weasels and ferrets. The winter trapping period involved 119 traps set for 17,136 trap-nights, resulting in the capture of 66 hedgehogs, 16 cats, 2 stoat, 13 weasels, and 9 ferrets – giving a trap-catch rate of 0.61.

Monitoring of breeding birds. At least ten pairs of wrybills attempted to breed in the study area in the 2015-16 season - a record number and the same as in 2014-15. The 10 pairs raised 7 chicks, for a productivity of 0.7 chicks fledged per pair. This is just below the 12-year average (0.83) and well below last year's record figure of 1.3. Between 40-50 black-fronted tern pairs started nests, but a number of these were likely to be second-nesters. Approximately 5-10 chicks reached fledging age for a productivity of between 0.13-0.20, the lowest recorded in the last 11 years and well below the long-term average of 0.43. For black-billed gulls, the 2015-16 season was the second worst ever with just two nests recorded and one chick fledged. The reasons for the poor breeding success of terns and gulls are unknown. Productivity was not recorded for pied oystercatchers, pied stilts and banded dotterels, but obvious signs of breeding were noted at many sites.

Habitat enhancement. As there has been no major floods since mid-2014, the river is arguably as choked up with weeds as it has ever been. A 'new' weed problem is the establishment of willow seedlings in the wetter shingle areas. This appears to be the yellow-stemmed willow, *Salix vitellina* (or *Salix alba* var. *vitellina*), which will grow from seed, and once established will be much harder to eradicate than lupins. A bulldozer carried out weed clearance in seven sites in the winter of 2015, but they proved to be largely unattractive to birds.

Awareness / education. During 2015/16, thirty-four occasions were used to improve awareness. The Group's powerpoint presentation was shown on five occasions (including three schools) and displays were erected at three sites. Nine articles appeared in 'The Press' and local papers, plus our website and a Facebook page was maintained, with use well up on the previous (first) year. Assistance was given to DOC during their Conservation Week programme, plus the Group gave a presentation at a major braided river workshop on May 31. The Group remained closely associated with staff from DOC, the Waimakariri District Council and local Zone Committee, Environment Canterbury (ECan) and the Ashley-Rakahuri Regional Park.. 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.

Conclusion. The 2015/16 season was generally above average in terms of bird numbers counted, but below average relative to breeding success of wrybill, black-fronted tern and black-billed gull. However, analysis of long-term data gathered since 2000, shows that management actions by the Group have contributed to the increasing bird populations on the Ashley-Rakahuri river, and that continued management of birds breeding in the riverbed is justified. Looking into the near future, the major challenges involve maintaining/improving predator control (and improving record keeping and mapping), improving bird habitat (weed control and island creation), learning more about adult bird survival (more banding required), and the on-going challenge of maintaining public interest.

Recommendations for future management include:

- Continue predator control, annual surveys, monitoring activities and banding, focussing on the three key threatened shorebird species, with improved record keeping and mapping.
- Explore new technologies to reduce time and effort spent on controlling predators, and extend control into the lower river and estuary.
- Continue advocacy initiatives, particularly to schools, and through outside agencies such as DOC.
- Create and maintain improved habitat (eg., riverbed islands) for bird breeding.
- Utilise high public profile to maintain finances via local fund raising, donations and sponsorship, plus Group initiatives such as trap-making.
- 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 Canterbury Water Management Strategy's decision-makers, iwi and Fish and Game.

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



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). In 2009, declining bird numbers over the previous 25 years led to a reclassification of 'Regional' importance (Hughey *et al.* 2010).

The Ashley-Rakahuri Rivercare Group (ARRG) is a community group (see Appendix 4 for make-up) 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; Ledgard & Dowding, 2014 and Ledgard, 2015), 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 2015/16 season. An analysis of longer-term results since 2000 is given in the 2013-14 report, with a more recent paper by Eric Spurr and Nick Ledgard in *Notornis* 63(2), 2016.

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 three of the last five 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 earth-moving machines 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. There has been no major flood since May 2014, and currently the river is arguably as choked with weeds (mainly yellow tree lupins) as it has ever been (see photos below). Birds breed most



November, 2014



November, 2015

successfully on islands surrounded by good water flows (McClellan 2009). In the past some islands have been created by earth-moving machinery. More such work was carried out in 2015 and a further increase is planned for the late winter of 2016.

2.3 ADVOCACY

Advocacy and liaison, in the form of media articles, displays, talks (usually accompanied by the Group's PowerPoint presentation - to schools, service clubs, land administration agencies, two braided river workshops and the public), a web page and Facebook site, sales of a children's book and bookmarks, plus 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. The Group currently has a sub-committee looking into greater use of interpretation signs on the river. A peer-reviewed paper 'Population trends of braided river birds on the Ashley River (Rakahuri), Canterbury, New Zealand' by Eric Spurr and Nick Ledgard was published in *Notornis* (June, 2016, Vol 63, Part 2).

2.4 WALKWAY, BIKE TRACK, 4WD TRACK, RIVERBED ACCESS AND SWIMMING 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 2015 winter, but weed control was carried out around those already established. In September 2015, a digger was used to close all 4WD access ways into the core bird breeding area (except the major ones). Signs notifying closures and restricted vehicle access were erected at the major entrances. A few were vandalised, but most remained intact. In December, assistance was given to ECan in the location of swimming holes for the summer season,

although a rapidly drying river from the New Year on did not allow them to attract much use.

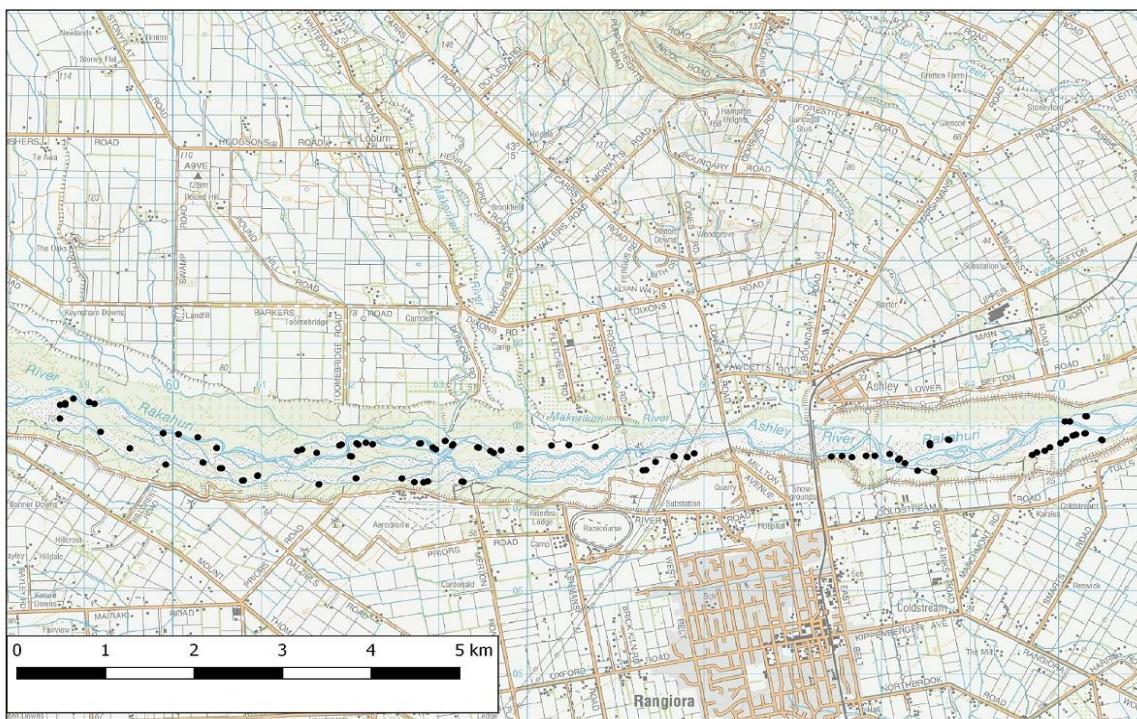


Signs and track blockages are used to deter vehicle access during the breeding season.

2.5 PREDATOR CONTROL

The area trapped was around the major bird breeding sites on the Ashley-Rakahuri river (see Map 1), extending over approximately 12 kms from the Tulls site in the east (NZTopo50-BW24; E157180, N510880) upriver to the Hillcrest Road site in the west (NZTopo50-BW23; E155920, N510820).

During the breeding season, eight trappers used 120 traps to target mammalian predators (mainly cats, mustelids and hedgehogs) from the Marshmont site up to Hillcrest – a distance of 9 kilometers. (see map – Figure 2). Trap types included cage, Bushby tunnel and PossumMaster, but the vast majority were Timms 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 every 1- 2 weeks. The last of the summer traps were removed in late February 2016, after the breeding season had finished. A post-season trapping period using fewer traps was started in March 2016.

Figure 2. Location of traps on Ashley-Rakahuri river as of winter, 2016

2.6 BIRD SURVEYS AND MONITORING

The annual spring survey of all resident birds was undertaken on November 14 from the Okuku river junction down to the SH1 bridge. It involved 21 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 (e.g., Dowding & Ledgard 2005, 2006, 2007), and began this season in August. Riverbed visits were undertaken at least 2 times every week until early February, with most efforts concentrated in the core bird breeding area between the Tulls Road site and Hillcrest Road. Breeding success (productivity) for each of these species was recorded as the average number of chicks fledged per pair. This season, DOC assisted in banding two adult wrybills (plastic colour bands) and one chick (single metal band). Birds are caught using a drop-trap placed over a nest; birds quickly get over this short disturbance. Banding is vital if we are to learn more about the long-term survival of individuals.

2.7 MEMBERS and MEETINGS

The group email list contains 86 people, who in the past have served as its membership. However, the Charities Commission now requires us to have 'registered members'. Thirty-nine



Monitoring occupies much time during the breeding season

members have requested to be placed on the formal membership list, and only they can vote at meetings. No subscription is charged.

During the 2015/16 season, the Group held meetings in the Department of Conservation's offices on River Road, Rangiora, on June 11, September 7 (AGM), December 3, February 25 and June 22. Fourteen members attended the AGM, with an average of 13 present at other meetings.

2.8 FUNDING and EXPENDITURE

Funding. Over the last year the Group's main finances have come from a mix of local sources. Most were obtained from making and selling DOC 200 traps, mitigation payments associated with the new Cones Road bridge, sales of bookmarks and the reprint of Jane Buxton's children's book 'Ria the reckless wrybill', plus a sausage sizzle outside the Warehouse. In addition, there were regular donations from the manager (Barbara Warren) of the Ohoka Friday market, plus smaller private donations.

Expenditure. Most expenses have been associated with buying materials for trap making, and reprinting the 'Ria' children's book. Smaller amounts have been spent on maintaining the website, advertisement and riverbed signage. The Group now has the funds to support more riverbed bird studies, and in the past year has supported two students; one exploring the potential for relocating kaki (black stilt) in the Ashley / Rakahuri area, and the other looking at social attractants (decoys, taped calls) to promote the breeding of black-fronted terns.

3 Results

3.1 HABITAT ENHANCEMENT

Riverbed birds require open shingle for breeding, and as there has been no major floods since mid-2014, the river is arguably as choked up with weeds as it has ever been. There was no hand-clearing of weeds on the river during 2015, but on September 3 we employed a Taggart's dozer to clear seven raised sites of weeds at locations where birds have favoured breeding in the past. These were not as successful as hoped, due to their small size and the proximity of rampant weed growth during the season. Support from DOC, plus more funding, has been secured for a more significant effort in August, 2016. A 'flash' flood of 400 cumecs in early December (Appendix 3) did little to clear weeds, but fortunately did not significantly disturb breeding birds. Over the past year, there were no other freshes greater than 50 cumecs, and by Christmas the river was mostly dry below the railway bridge, with shorter sections drying up between the new road bridge and Hillcrest road. An unexpectedly wet January, 2016, renewed flows for much of the river.

3.2 ADVOCACY During the 2015/16 breeding season, many opportunities were taken to ensure that the public were kept aware of the Group's activities in the riverbed. These are listed in Appendix 1. Eight articles appeared in local papers, plus we were featured in the Latitude Magazine 44 (Dec/Jan) and had a write-up in the international Waderquest Magazine (Jan issue). In October, Chair, Nick Ledgard, was invited to address Forest and Bird's national South Island meeting at Makarora in inland Otago. Our website (www.ashleyrivercare.org.nz) was maintained by the District Council's VisitWaimakariri office, while our Facebook page (<https://www.facebook.com/ashleyrivercare>) was maintained by Steve Attwood (see 4.3 for use details). Steve also presented a public Powerpoint in the Gables Arcade on the birds of the river and Ashley-Saltwater Creek estuary. These excellent photos were then displayed in the Rangiora library from Oct 25 – Nov 26. In December, three members were interviewed on the river by Radio NZ, while MP Nicky Wagner also inspected birds on the river (Dec 20).



David Ayers and Tim Barnett during Radio NZ interview on riverbed

A highlight of the past year was the publication of a peer-reviewed paper 'Population trends of braided river birds on the Ashley River (Rakajuri) Canterbury, New Zealand, 1963-2015' by Eric Spurr and Nick Ledgard in *Notornis* (June, 2016, Vol 63, Part 2). This reported an upward trend in numbers for all the focus species from 2000 to 2015, with statistically significant improvements for wrybill, black-fronted tern, banded dotterel and pied stilt.

During 2014-15, 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.

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 Ashley-Rakahuri Regional Park staff have continued to develop walking and trail bike tracks and grass areas in the berm alongside the river. This discourages people from recreating in the riverbed itself, as does the 4WD track (on the northern bank) and open 'dirt-bike' areas. In the spring, a digger was hired for two days to close off tracks running from the berm into the river. There is little doubt that this reduces vehicle use of the riverbed during the breeding season, but after blockages are removed in early Feb, it resumes in earnest during the remaining summer weeks and over winter. As in previous years, swimming holes were dug prior to Christmas, but attracted less use than normal due to rapidly decreasing water flow from Christmas on.

3.4 PREDATOR CONTROL

This season saw an increase in trap numbers from 61 last year to 118. In total, 84 potential predators were trapped in 17,459 trap-nights. Hence, the overall trap-catch rate during the bird breeding season was 0.48 predators per 100 trap nights.

Predators trapped consisted of 51 hedgehogs, 14 cats, 6 stoats, 10 weasels and 3 ferrets. The number of trap-nights was the highest ever, due to the recruitment of two new trappers, more funds for trap purchase, and additional work by regular trappers. Hedgehogs remaining the most trapped predator, followed by cats (highest ever). Nineteen mustelids were caught, eight more than the previous highest number of 11, with the highest ever number of weasels and ferrets. Details of trap nights and trap catches since 2004 are shown in Table 1. It is pleasing to note the significant decline in catches/100 trap-nights over this period.

Table 1. Predator trap-nights and trap-catch from September 1, 2015 to January 31, 2016

Season	Trap nights	Cat	Stoat	Weasel	Hedgehog	Rat	Ferret	Other	Catch/100 trapnights
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
2014-15	7560	6	7	3	35	0	1		0.66
2015-16	17459	14	6	10	51	0	3		0.48
Mean	5773	5.0	3.4	3.0	36.3	0.92	0.65		0.98

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

A post-season trapping period was initiated in the winter of 2014. In 2016, the trap-lines ran from the Marchmont site up to Hillcrest (about 9 km) from February through to the end of August - when the spring bird breeding season trapping began. At the time of writing (June 24), 119 traps set for 17,136 trap-nights resulted in the capture of 66 hedgehogs, 16 cats, 2 stoat, 13 weasels, and 9 ferrets. Therefore, the trap-catch rate during this 2016 winter period was 0.61 predators per 100 trap nights.



Hedgehogs remain the most trapped predator

3.5 SPRING BIRD COUNTS

Survey figures from 14 November 2015 are given in Table 2, with results of earlier counts shown for comparison.

Bird numbers generally reflected the improvement of recent years. Wrybill numbers were the second highest, after last year's record of 21. Banded dotterels and pied stilts are also maintaining good numbers, well above the long-term average. Black-billed gull numbers were well down – this being due to the absence of any colonies. Numbers of other species were similar to the long-term average, with the exception of the spur-winged plover, which was the lowest ever recorded. Further details are given in the Discussion section (4.4).

One banded female wrybill deserves particular mention. WG-OR was not only the first seen in the spring (on August 20 at the Golf Links site), but it was also the first recognisably ‘non-Ashley’ bird seen on the river in recent times, having been banded in the upper Rakaia in 2011. Wrybills exhibit ‘natal site fidelity’ and it is unusual for birds to return to rivers other than that in which they were hatched. This bird stayed for about 1 month and then disappeared – presumably flying on to the upper Rakaia.

Also of note was a single white-winged black tern seen at Hillcrest with black-fronted terns on Sept 22.

Table 2 Results of the bird count undertaken in the Ashley-Rakahuri River (from Okuku junction down to SH1) on November 14, 2015. Counts from previous years, plus the 16-year mean, are shown for comparative purposes

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Ave
Black shag	18	3	nc	8	7	2	2	10	9	6	2	5	6	3	4	1	5
Little shag	3	6	nc	4	7	6	2	4	0	17	6	13	11	19	5	6	7
SI Pied oy’catcher	25	22	19	22	37	22	5	26	27	32	20	35	38	23	32	24	26
Variable oy’ratcher	0	0	0	0	2	0	0	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	230	217	168
Black stilt	0	0	0	0	2	1	1	1	1	1	0	0	0	0	0	0	1
Banded dotterel	199	130	115	169	213	245	84	237	198	233	260	250	248	301	263	276	221
Wrybill	17	7	6	16	9	7	5	9	8	13	18	15	17	19	21	19	13
Spur-wing plover	18	nc	16	13	27	149	37	116	11	39	15	89	55	65	37	9	47
Black-back gull	26	nc	11	10	27	3	5	12	10	19	19	2	11	17	7	13	13
Black-billed gull	314	3	5	0	10	1	213	13	16	2	41	425	202	364	23	13	103
Black-front tern	74	44	165	102	28	26	180	89	81	124	192	190	200	156	263	128	128
White-front tern	0	0	0	0	0	0	0	0	0	0	8	77	6	2	0	0	6
Caspian tern	0	0	0	4	0	0	1	0	0	0	0	0	0	1	0	0	1

nc – not counted

3.6 SHOREBIRD BREEDING

Locations of shorebird territories are shown in Figure 1. There were no major ‘nest-destroying’ floods during the 2015-16 breeding season (see Appendix 2).

Wrybills

Banded birds are identified by their colour-band 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

Ten pairs of wrybills attempted to breed in the study area in the 2015-16 season. This is the same number as in 2014-15, the previous best being seven for each of the years 2010 and 2013.

1. Male: UB Female: UB

This pair nested at the Smarts site on the north bank. A UB pair were first seen on Oct 6, when a nest was suspected. On Oct 13 a 2-egg nest was found. The nest was empty on November 7, and the parents were seen acting as if chicks were present. The adults were still present on Nov

20, but no juveniles were observed. By early December, a drying river had resulted in one large pool, which attracted many wading birds, including 7 adult wrybills and 4 flying juveniles, but the origin of the juveniles was not known. Hence, a result of no chicks fledged at this site must be concluded. In 2014-15, the female YO-RO nested for a second time at this site (see 2014-15 annual report). She was not observed on the river this season.

Result: No chicks fledged

2. Male: UB Female: UB

On Nov 7, a UB pair was noted at the Marshmont site, and on Nov 20 were observed acting agitatedly. A nest was suspected, but never found. The birds were not seen subsequently, and by Dec 8 this section of the river had dried up.

Result: No chicks fledged.

Geoff Swailes helping DOC to band RB-YB at Railway site

3. Male: UB Female: UB (banded RB-YB)

A UB female was first observed at the Railway site on Sept 9. On October 20, a UB pair was seen and a 2-egg nest found. The eggs were still being incubated when the female bird was banded (RB-YB) on Nov 5. The birds were seen with one chick on Nov 21, and the male bird was observed with a flying juvenile on Dec 8 - as the river was rapidly drying up.

Result: One chick fledged.



4. Male: UB Female: WO-WY

This pair were first seen off Groyne 1 site on Aug 30, with a 2-egg nest found on Oct 15. By Nov 6 the eggs had hatched and the adults were seen acting chick-like. An adult was observed with a chick on Nov 14 and 17. A lone adult was observed on Dec 10, but no fledged chicks were ever seen. Hence, even though a chick estimated to be 2 weeks old was located with its parents, it must be presumed that it never fledged. For the previous five seasons, WO-WY mated with WO-M, but this male bird was not seen in 2015-16.

Result: No chicks fledged.

5, 6 and 7. Males: BW-BW,UB, UB Females: UB,UB,UB

Three pairs nested off Groyne 2 (Aerodrome) in close proximity to each other. No nests were located, and it was difficult to sort out pairings and associated chicks. On Aug 30, five adults were observed, including BW-BW - a male bird which has been on the river since the 2010-11 season. A mix of birds were seen regularly thereafter, and on Nov 6 all pairs were acting chick-like and 3 chicks were observed (2 + 1). On Dec 5, there appeared to be five juveniles present - one UB pair had one fledged chick, and both the other UB pair and BW-BW and mate had two juveniles each. A female bird (OG-RY) nested at this site in the 2014-15 season, but was not seen on the river this season.

Result: 3 pairs fledged 5 chicks.

8. Male: UB (banded RB-YR) Female: UB

On Oct 19 a UB pair with a 1-egg nest was found about 800m upriver from Groyne 2 (Aerodrome). Two eggs were present on Oct 22. On Nov 5 the male bird was banded RB-



Newly hatched wrybill chick

YR, and a newly-hatched chick (photo) was seen in the nest on Nov 17. On Dec 5 one adult was observed acting chick-like, but no birds were subsequently seen in this area.

Result: No chicks fledged.

9. Male: UB Female UB

This pair was first observed on Oct 17. A nest was suspected but never found. Lone birds were present on Nov 8 and 14, and on Dec 7 and 23, but never observed to be acting chick-like.

Result: No chicks fledged

10. Male: UB Female: UB

This pair was first seen at the Hillcrest site on Sept 8, and a 2-egg nest was found on Sept 30. By Oct 21 the eggs had hatched, and the parents were seen acting chick-like on Oct 23 and Nov 17, 21 and 23. A flying juvenile was observed on Nov 30. A UB pair double-nested at this site in the 2014-15 season and successfully raised 3 chicks

Result: 1 chick fledged

Overall result: At least 10 pairs raised a minimum of 7 chicks, for a productivity of 0.7 chicks fledged per pair. This is just below the 12-year average (0.83) and well below last year's record figure of 1.3.

Black-fronted terns

As in past years, this season was one of on-off starts by small colonies, with lone pairs scattered in between. Results were variable and often disappointing. Occasional birds were noted on the river over winter, with numbers starting to build up and courting flights seen during August.

On Aug 30, 23 birds were observed off Groyne 1, and at least 50 birds were seen at Hillcrest on Sept 8. A flock of 40 birds were gathered between the Tulls and Smarts site on Sept 19, and two nests were located on Nov 14. These were probably responsible for the two flying juveniles seen there on Dec 18. The Tulls/Smarts area was the site of a tern colony in the 2014-15 season.

As in the previous season, the next tern breeding site up-river was between the Cones road bridge and the pylons (Rossiters/Pylons in Fig 1). On Oct 15, twenty birds were showing interest in an island close to the south bank, and by early November it was estimated that 10 pairs had nests. On Nov 17, the number was down to 5 pairs, and three chicks were observed. However, on Nov 23 no birds were present.

Above Rossiters/Pylons, 50 birds were seen at Dalziels on Sept 13, and on Nov 8 two pairs were nesting. However, there was no sign of any chicks reaching fledging age.

The major nesting site was further up-river at Hillcrest, where 20-30 pairs nested in the 2014-15 season, fledging 10-15 chicks. This season, at least 100 birds were present at the western end on the south bank on Sept 22 (together with a lone white-winged black tern). These birds divided into nesting pairs, with 15 pairs (Nov 13) on a low mid-river island at the western end, and 5 pairs just up-river. Further downriver (2-300m) there were two low shingle areas with 5-10 nests each. By Nov 24, numbers had declined significantly, although 5 new nests were found just below the main western island (probably second nesters). These were soon abandoned. On Dec 6, numbers were down to 1 pair (western-most site), 2 pairs (main island) and 5-8 pairs (bottom islands) with 3 chicks seen (one close to fledging).

Result: Over all the sites, around 40-50 pairs started nests, but a number of these were likely to be second-nesters. Approximately 5-10 chicks reached fledging age for a productivity of between 0.13 and 0.20.

Black-billed gulls

Last season, a colony of 500 birds began nesting (26 nests got to the egg stage) close to the Cones road bridge, but abandoned the site on Oct 24. No large colony attempted to breed on the river during this 2015-16 season. During the season, random birds and groupings were observed, with the largest flock of 40 birds seen at Hillcrest on Oct 21. The only breeding noted was at Dalziels, where a flock of 25 birds had gathered on Nov 13. Closer observation located 2 nests, one with 2 eggs and the other with 1 egg and 1 small chick. By Dec 23, just one pair remained with a single fledged chick.

Result: Just 2 pairs nested, fledging 1 chick.



Black-fronted and white-fronted terns are commonly seen roosting together at the estuary

White-fronted terns

No breeding birds were recorded.

Pied oystercatchers

Birds were noted at most sites during the season, but were only seen to be obviously nesting between Groyne 1 and 2, and at Dalziels and Hillcrest (2 pairs). Chicks were observed at the latter two sites. Others could have attempted breeding elsewhere, as 24 were seen on the Nov 14 survey, and a flock of 16 birds were observed at Hillcrest on more than one occasion in mid-late December. 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 14 survey (276) was the second highest recorded since surveys began in 2000. Although no attempt was made to record productivity, nests were found and a number of chicks seen. The first banded dotterel was seen in early August, and by early Sept they were present at virtually all the sites. Good numbers were particularly noticeable at Marchmont/Smarts, Rossiters/Pylons, between Groyne 1 and Groyne 2, Dalziels and Hillcrest.



Banded
dotterel

Chicks of a range of ages were noted at most sites during the season, with concentrations of juveniles and adults around drying ponds from late December on. A flock of 22 flying juveniles was seen at Hillcrest on Feb 10.

Pied stilts

Many pairs of pied stilts bred in the study area. As with the banded dotterels, good survey numbers on Nov 14 indicated a potentially successful season. Pairs were fairly evenly spread from just above Tulls right through to Hillcrest, but the best breeding sites appeared to be at Marshmont/Smarts (30 adults and juveniles on Dec 8), Rossiters/ Pylons, off Groynes 1 (15 adults and juveniles on Dec 28) and Groyne 2 and at Dalziels and Hillcrest (flock of 15 on Mar 1). Four pairs were noted nesting close together at Hillcrest on Oct 23. Many juveniles were observed. Pied stilt 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

Numbers remain very low (13 on Nov 14 survey) and no breeding was observed.

Caspian tern

Lone Caspian terns were seen on the river during the season, but there was no sign of breeding.

Spur-winged plover

This species is most often seen in flocks on the riverbed over winter. Even though a few pairs could well have bred on the river, they are not a common species during the main part of the season, and no nests were located. A flock of 13 was seen at Smarts on Nov 7, with smaller numbers occasionally seen at other sites. Towards the end of the season numbers increased with a flock of 60 birds present at Hillcrest on Jan 20.

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

4.1.1. Weed removal. In the past, we have largely relied on natural floods to clear excess weeds from the riverbed. However, the lack of recent floods has allowed a significant increase in weed growth over the past year – mostly the yellow lupin, but also more scattered gorse and broom seedlings (most still

under 10cm tall). On the more



A new concern is a willow (*Salix vitellina*), establishing from seed

stony drier sites, drought over summer killed many lupins, but not before they had seeded. The lack of freshes means that the weed problem extends beyond the raised shingle (potential nesting) sites to the shallow water/shingle margins, where mats of herbaceous growth are submerging formerly open stone/water surfaces. These are very important areas for shorebird feeding, particularly where springs emerge within and along the side of the main riverbed. Another ‘new’ weed problem is the establishment of willow seedlings in the wetter shingle areas. This appears to be the yellow-stemmed willow, *Salix vitellina* (or *Salix alba* var. *vitellina* – see above photo), which will grow from seed, and once established will be much harder to eradicate than lupins.

As mentioned in 3.1 above a bulldozer carried out weed clearance in seven sites in the winter of 2015. However, their small size and subsequent vigorous weed growth, made them largely unattractive to birds. Funding has been obtained to carry out more substantial island weed clearance in the late winter of 2016, in conjunction with DOC who are involved with similar work on the Waitaki and Clarence rivers. If time permits, the bulldozer will also be used to clear weeds from water/shingle margins and within spring fed areas.

During 2015, shingle extraction in the lower Makerikeri riverbed, created a 2-3ha open area which contained a good body of water well into the summer. Good shallow water feeding habitat attracted a number of banded dotterels and pied stilts. A pair of paradise ducks nested nearby and raised their young on this lake. The situation demonstrated how formerly rank weed-infested riverbed could be transformed into attractive shorebird feeding (and possibly breeding) habitat. (see photo opposite).



Artificially created habitat – see text above

4.1.2 Vehicle access. Braided riverbeds are not only attractive to birds, but they also encourage greater use by off-road vehicles (trail bikes, ATVs and 4WDs), especially if access tracks remain open after summer riverbed operations - such as shingle extraction or stopbank repair. For this reason, the Group works with the Regional Park staff to erect appropriate signs and to block off all but the major access tracks early in the season. The Group also has an agreement with the Combined 4WDrivers Club, that their members will not use the bird-breeding section of the riverbed from Sept 1 to Feb 1. Without a doubt, these actions reduce vehicle access during the season, even though not all drivers are Club members and ways are found to negotiate barriers over time. Vehicle pressure is greatest to the east where there is ready access just above SH1, plus established tracks into the river bed at the end of Toppings Road and at the Tulls, Smarts and Marshmont sites. Interestingly, the increase in weeds has not helped the situation, as drivers tend to steer clear of weed infestations and opt for open shingle areas, which is where the birds nest.

4.1.3 Island creation. 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. As a result of the intended 2016 weed clearance work outlined above (see 4.1.1), a number of weed-free islands will be created. In conjunction with this work, an MSc student, Courtney Hamblin, is going to use the islands for a ‘social attractant’ study on black-fronted terns. Decoy terns, together with audio calls, will be used to try to lure terns to islands where they can breed with less likelihood of disturbance by floods and predators.

Drying river. As in 2014, dry conditions over the 2015-16 season led to a rapidly reducing water flow from December on, mainly from the Railway bridge down to the Toppings Road access. The river would have dried up even more had it not been for a wetter than normal January. Such drying in the lower Ashley-Rakahuri has been documented as occurring every few years since records began. A drying river forces birds to feed around remnant pools, and may impact negatively on chick survival of late-breeding birds – in the form of insufficient food and increased opportunities for predation.

This can be by birds such as white-faced herons and black shags, not just ground predators.



Steve Attwood and MP Nicky Wagner inspecting a drying riverbed at the Smarts site in December.

On June 23, 2016, an ECan hydrologist, Matt Dodson, addressed the Group on historical river flows in the Ashley-Rakahuri, and the factors that influence flow rates. Although there is still much discussion about the impact of abstraction (particularly from adjacent aquifers), climate change with decreasing rainfalls for foot-hills fed rivers is almost certain, which means that there is little doubt we will see a decrease in flows in the future. Although the impact of variable flows on riverbed bird numbers and breeding remains largely unknown, the birds have evolved in a naturally very dynamic water flow environment, so can tolerate ‘normal’ flow variations. It is the extremes of high flow or ‘no’ flow which can have most impact, and on the Ashley/Rakahuri river it is the latter which is likely to be of most concern in the future..

4.2 PREDATOR CONTROL

The number of trap-nights during the 2015/16 breeding season (17,459) was more than double the number of the previous season (7,560) and by far the highest since regular trapping started in 2004. The reason for this was two more trappers in the volunteer trapping team (now eight), additional work by the regular trappers, and an increase in trap numbers from 61 last season to 120. The trap-catch rate of 0.48 predators / 100 nights (Table 1) was the lowest ever recorded (previous low was 0.51). This continues the significant downward trend over time (see App 2 in 2013-14 report). Hedgehogs remain the most trapped predator (51), followed by cats (14), which were almost double the previous highest number (8 in 2005-06). There was also a major increase in the number of weasels (10 - just 3 last season). The reasons for these changes are not clear (see further comments below).

During the 2016 winter trapping period, the trap-catch rate (0.64) was higher than during the breeding season (0.48), which was similar to that of the 2015 winter (0.46). The percentages of different predators roughly reflects that of the breeding season, with hedgehogs caught most often (even though hibernation meant few catches after May), followed by cats and mustelids. The reason for higher winter predator numbers is probably due to young animals being forced from parental territories, plus less food sources.

Most notable this past season, has been the number of ferrets caught – the highest ever during the season, and



Ferret numbers are increasing - a young ferret caught in a DOC 200 trap

much higher still over winter (9, which is more than the total caught previously over 12 years). The cause is probably due the cessation a few years back of annual Animal Health Board TB poisoning operations targeting ferrets, plus a noted increase in rabbit numbers early in the last season.

In the spring, many visitors reported seeing more rabbits (particularly young) than usual, but such reports declined steadily thereafter, with numbers appearing to be back to previous low levels by the autumn. This is where the Ashley-Rakahuri remains fortunate, in that there are few rabbits in the lower reaches of the river. They appear to have not recovered since RCD arrived and decimated them in 1998. This raises the question of why we catch so many cats, as they must have an alternative food source other than the occasional bird during the breeding season. The answer could be that the cat population is being maintained by the ‘dumping’ of urban cats from the likes of Rangiora, plus a constant source of domestic cats going feral / wild from urban areas and lifestyle blocks adjacent to the river.



Question: Has low rabbit numbers been a reason for low past predator populations?

On the Ashley-Rakahuri river we are also lucky in that we catch very few rats – an average of just one per year since 2008. In 520,000 trap nights since 2004, we have caught just 6 rats (0.02% of all predators caught). The reason for this is unclear, as in neighbouring Loburn, plenty of rats are caught about homes on lifestyle blocks.

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, more time-efficient predator control techniques being developed, and also to explore the possibility of employing professional trappers

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. This does not appear to be the case on the Ashley-Rakahuri river. On the lower reaches of the river, numbers of black-backed gulls have always been low. The long-term average number is just thirteen, and the survey figure for 2015 was the same (13). Swamp harriers (harrier hawks) are not counted in the annual surveys, but are common on the Ashley-Rakahuri. However, 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 44 occasions used to improve awareness, and these are addressed in more detail in the Results section above (3.2).

The long-term future of braided river birds will rest in the hands of today’s children. Therefore, it is pleasing to report that the Group is part of a Waimakariri District Council-assisted programme ‘Down the Back Paddock’, which aims to address all primary schools in N. Canterbury over a 4-year period. At all school visits, every child is given a ‘threat of extinction’ bookmark, specially designed and printed by the Group to highlight the endangered status of our braided river birds.

Over a 12-month period, our webpage (www.ashleyrivercare.org.nz) has had 1430 hits, up from the 1281 figure for the same period last year. 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. In late 2014, it was decided that we need to have a greater presence within todays' social media, and to this end a Facebook page (<https://www.facebook.com/ashleyrivercare>) was launched in September, 2014. Over the period July 1, 2015 to June 30, 2016, our linkman, Steve Attwood, has put up 184 posts and attracted 417 page followers. These include several other conservation groups, who when they "like" and or "share" a posting, are then forwarding the link to their members via their Facebook page. The average number of people reached per post is 484, up from last year's figure of 265, with the most popular single post reaching 3,159 people (last year 673). A total of 6,032 unique visitors have engaged with the site within the last year: The most number of people reached in a single post was 5,459. This was a post about off-road vehicles on the river and included photos of vehicles driving through sensitive areas. Comments (all of which were favourable), plus views and shares continued over an extended period of more than a week. The second most number of people reached by a single post was 3041. This was a post about a weed clearing day which was widely shared by other conservation groups to their members (including ECan). It should be noted that the above single post engagement statistics include many of the same people, so the most telling statistic is the 6,032 unique visitors. The challenge now is to turn more of the unique visitors into followers.

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 are placed in managed areas during the season. We are also in the process of making interpretation signs to be erected at the most visited parts of the river. These are essential to improve public awareness and to minimise human disturbance during the breeding season.

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. Over the past year, BRaid has organised two very successful public workshops on braided river ecosystems, particularly the birds. On November 3, 2015, 40 people attended a half-day talk on birds at the Lincoln Events Centre, and the same venue was used by more than 150 attendees on May 31, 2016, to present over 20 talks on braided river topics – including one on 'Future challenges in the Ashley-Rakahuri river'. Nick Ledgard (Group chairman) is currently BRaid Chairman.

The Group assists with swimming hole creation over summer



4.4 SPRING BIRD COUNTS

The 2015 annual survey of the lower reaches of the Ashley-Rakahuri took place on Nov 14. Survey results were generally good (Table 2), supporting the steady improvement of bird numbers since the Group was formed in 1999. Numbers of the braided river 'icon' species, the wrybill, averaged just 12 birds from 2000 - 2013. This year we counted 19 – the second best after last year's record of 21. Black-billed gull numbers (just 13) were well below the long-term average (103), mainly due to there not being a colony present – as was the case last season. The highest number recorded on any one occasion was 40 birds at Hillcrest on Oct 21. Black-fronted tern numbers were similar to the long-term average, as were numbers of other species.

The long-term trends in bird numbers since the 1960s were analysed and described in detail in a paper 'Population trends of braided river birds on the Ashley River (Rakajuri) Canterbury, New Zealand, 1963-2015' by Eric Spurr and Nick Ledgard, This was published in 'Notornis' (63/2),

the Journal of the Ornithological Society of New Zealand, and serves as a peer-reviewed recognition of the significant improvements in bird numbers on the river, particularly since 2000 (see Appendix 2 for graphed results). As stated by the authors in the article's Abstract 'We suggest that the Rivercare Group's management actions have contributed to these successes, and support continuation of their actions.'

The challenge for the future is to maintain (and hopefully improve) these increased numbers in the face of predators, greater presence of weeds, lower river flows and the climbing pressure of recreational use.



Possible relocation site for kaki – lower Ashley river, estuary and Tuhaitara reserve.

Kaki (black stilt) relocation. Over the past year, the Ashley-Rakahuri river has been evaluated as a potential site for the relocation of the kaki – arguably the country's most threatened species, the

last remnants of which are only

found in the Mackenzie Basin. The Group provided funds (see 4.6b below) for this study, which was carried out in association with DOC by a Dunedin Masterate student, Julia Nicholls. The report found that the lower river, combined with the Ashley-Saltwater Creek estuary and the Tuhaitara Coastal Reserve, compared very favourably with another potential release site in the upper Rangitata river catchment. It concluded that there were some management improvements (such as improved weed and predator control, and enforcement of disturbance regulations during the breeding season) which could be made in preparation for a possible release in 3-4 years time. It would be a real 'feather in the Group's hat' to have the kaki return to breed in the Ashley-Rakahuri river. A single bird last nested (with a pied stilt mate) in the river in 2009, and one or two kaki are usually present in the estuary during the autumn and over winter.

4.5 SHOREBIRD BREEDING

The Group has been monitoring bird breeding since 2004. During the later years of this period, breeding has tended to concentrate in certain stretches of the river – Tulls to Marshmont, Ashley bridge to Groyne 1, Groyne 2 and most recently, Hillcrest. These four areas stretch over about 12kms of the total 18km study area. If the concentration of breeding in these sites continues in future years, effective management in terms of weed clearing, trapping and monitoring will become easier.

Wrybills

At least ten pairs attempted to nest in the study area in 2015-16 – the same number as in the previous season, equalling the highest since records began in 2004. A minimum of 7 chicks were raised, for a productivity of 0.7 chicks fledged per pair. This is just below the 12-year average (0.83) and well below last year's record figure of 1.3. The figure could have been higher, as five of the ten pairs are recorded as not fledging any chicks, even though three of these were seen with young chicks. Most pairs could only be visited infrequently, which could account for the failure to observe fledging.

Most popular site. The most frequented area for wrybills remains the Groyne 2 site. At least four pairs attempted to breed in this vicinity, compared to six pairs in the previous season..

Banding and adult survival. Many NZ native birds depend on good adult survival for maintaining populations (as opposed to higher breeding productivity and shorter life spans). Therefore banding is vital if we are to learn more about the long-term survival of individuals. Results from wrybill banding since 2001 do not look encouraging. A total of 23 wrybills have been colour-banded, not counting the couple banded this season. The average survival ('seen again') period after banding has been just 3 years, with the longest



Banding is essential to monitor adult survival

being 10. Last season we had 6 banded birds with minimum ages of 8, 8, 8, 7, 4, 4 (presuming at least 2 years old when banded as breeding adults). This season, just 2 banded birds were observed. As 'natal site fidelity' for wrybills seems well accepted, and there are very few records of banded birds turning up on 'other' rivers, we must presume that non-returnees have perished. And it appears likely that most died off-river, as over the past 15 years just 6 (29%) of the 'missing' 21 banded birds have been noted as disappearing during the breeding season. Although we cannot monitor unbanded individuals, the number of returning juveniles also appears low. Since 2004 we have fledged 64 chicks, and even though breeding adult pairs have doubled in number since then, we are only seeing 20 present in the last 2 seasons. From other banding, it is known that wrybills can live to over 20 years. The oldest birds in our records were two adults (one male, one female) who were a minimum of 12 years old when they failed to return. In order to learn more about long-term survival, the Group needs to get more adults banded, and to push for more investigation into why the level of adult survival on the Ashley-Rakahuri river appears to be so low.

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, with this season's success being the second worst since records began in 2004 (when success was zero). The estimated number of breeding pairs was 40-50, although it is always difficult to determine if pairs establishing at one site later in the season are the same as those observed earlier at a different site. This number of breeding pairs is close to the 10-year average of just over 40, but well below last season's figure of 60-80. The productivity of 0.13–0.20 chicks fledged per pair was the lowest recorded in the last eleven years and well below the long-term average of 0.43 - which is probably below the rate needed to sustain a viable population over the long term. 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. Experience elsewhere, such as in the Tekapo river in the Mackenzie Basin, is that disturbance from predators (particularly at night?) is a major cause of nest abandonment. At that site, breeding success only improved when an intense trapping programme was started on a tight grid pattern. It also appears that black-fronted terns succeed best when there is a good



Black-fronted tern breeding success remains low

number of birds present with everything going for them. Terns can also benefit from breeding in close association with black-billed gulls which are larger and more vocal and aggressive when defending their nests and chicks from people and predators (see 2013-14 report).

The Group feels that its best strategy for improving tern productivity is to persuade them to nest in a weed-free site on a water-surrounded island, together with good predator control and adequate signage to deter human disturbance. Habitat creation along these lines is being attempted in the 2016 spring, together with the deployment of tern decoys and taped calls (see 4.1.3 above).

Black-billed gulls

Success with this species depends primarily on whether a colony chooses to nest on the riverbed. For the second year running, no gull colony established on the river in 2015-16 – although last season a colony of up to 500 birds got as far as laying eggs in a few nests before completely abandoning the site on October 24. Prior to last season, a colony of 100+ birds had been present for five of the previous ten years. The 2015-16 season was the second worst ever for black-billed gulls with just two nests recorded and one chick fledged. Last season was the worst, with just four pairs nesting and no chicks reaching fledging age. The reasons for the poor past 2 years are unknown.



After 3 years of successful black-billed gull colonies, none has been present on the river for the last 2 years

Other species

Breeding success or productivity was not recorded for S. Island pied oystercatchers, pied stilts and banded dotterels during the 2014-15 season, but obvious signs of successful breeding were noted at many sites. Hence, their populations appear to be holding their own. The kaki (black stilt), which bred on the river for three consecutive years through to the 2009-10 season, has not been seen since – although kaki in low numbers visit the Ashley-Saltwater creek estuary fairly regularly (at least one present for most of the



If kaki (centre) numbers are low, they will breed with pied stilts (left) to produce hybrids (right)

2016 winter). An investigation is underway for a possible kaki relocation attempt on the Ashley-Rakahuri in a few years' time (see 4.4 above)

The continual absence of breeding black-backed gulls on the Ashley-Rakahuri river appears unusual, considering the high numbers which breed on the Waimakariri river, only 20 km to the south. There is also a colony which breeds annually in the upper Ashley-Rakahuri in Lees Valley. The reason for their absence in the lower river is unknown, as the surrounding farmed land is very similar to that occurring alongside the Waimakariri, and good numbers of gulls can often be seen feeding in cultivated and irrigated paddocks close to the Ashley-Rakahuri river. Their absence on the riverbed is welcomed, as they can be major predators of eggs and young chicks on other rivers.

Spur-winged plovers were present in low numbers 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 INCOME and EXPENDITURE

a) Income. 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 World Wildlife Fund and Lotteries, which have supported ARRG since the early 2000s. Hence, since that time finances have come primarily from local sources, including a generous sum from the Waimakariri District Council (as mitigation for disruption caused by the building of the new Cones Road bridge), 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’. Most funds raised by the Group have come from selling DOC 200 traps assembled by the Group, and a sausage sizzle held outside the Warehouse in Rangiora (Dec 19). During the past year, a total of 115 traps have been sold. The demand for traps is growing, as is the amount of time spent in their construction, so the Group needs to decide just how far down this track we want to go. As a result of the above, the Group finds its finances to be currently in a very healthy state. Local fund-raising has not only been successful, but has the advantages of encouraging community participation and obtaining better public exposure.



Making DOC200 traps is a major source of Group funds

b) Expenditure. The main expense has been on materials for traps, but this is all recovered in sales. Two grants have been made to students carrying out studies on the Ashley-Rakahuri river. Julia Nicholls, a Dunedin University Masterate student was given \$1500 for her kaki relocation study (see 4.4 above), while Courtney Hamblin received approval for up to \$3,500 to assist her study of social attractants for black-fronted terns – starting in the spring of 2016. Courtney will use decoys and taped calls to see if they can attract terns to breed on islands created in the riverbed (see 4.1.3 above).

The Group is keen to use ‘excess’ funds to assist studies which improve the prospects for birds on the river, with the proviso that at least \$7,000 is always kept in reserve for ‘emergency’ use.

5 Conclusions

Relative to the future success of rare and endangered shorebird species breeding in the Ashley-Rakahuri river, bird numbers in the 2015/16 season generally reflected the improvement of recent years. Wrybill numbers were the second highest (19), after last year's record of 21. Banded dotterels and pied stilts are also maintaining good numbers, well above the long-term average. Black-billed gull numbers were well down – this being due to the absence of any colonies. Numbers of other species were similar to the long-term average, with the exception of the spur-winged plover, which was the lowest ever recorded.

Breeding success (productivity) is only recorded in detail for the wrybill, black-fronted tern and black-billed gull, and during 2015-16 was poorer than usual. The productivity of the tern and gull was amongst the poorest ever recorded since recent records began in 2004. Wrybill productivity was better than for the gulls and terns, but still below the long term average. The reasons for the poor/reduced productivity of these species is unknown

The Group continues to maintain a high profile relative to public awareness and education, assisted by agencies such as DOC and ECan, particularly staff from DOC's Rangiora Field Base and ECan's Ashley-Rakahuri Regional Park. During 2015-16, the Group created thirty-four opportunities to improve awareness. Most involved media articles, presentations to schools and local groups, and displays at public events.

A highlight of the past year was the recent publication of a peer-reviewed paper by Eric Spurr and Nick Ledgard in *Notornis* (June, 2016, Vol 63, Part 2). This reported an upward trend in numbers between 2000 and 2015 for the all the focus species, with statistically significant improvements for wrybill, black-fronted tern, banded dotterel and pied stilt (see graphs in App 2). Numbers of other species, including the black-billed gull, have not changed significantly, in contrast to declining national trends. It is pleasing to note that the authors concluded 'We suggest that the Rivercare Group's management actions have contributed to these successes, and support continuation of their actions'

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 4 years, the Group has been able to survive on its own fund-raising projects, plus donations. The generosity of the latter is due to our improved public profile.

Looking into the near future, the major challenges involve maintaining/improving the control of predators, controlling weeds and improving bird nesting habitat (probably by the creation of raised, weed-free islands), and banding more adult birds (particularly wrybills). With water being the new 'gold' in Canterbury, a close watch must also be kept on river flows, how/if they are changing due to abstraction or climate change, and how such changes might be affecting bird numbers and breeding. To these challenges and opportunities can be added the ever-present challenge of maintaining public interest, and the involvement of the local community in bird management on the Ashley-Rakahuri River. This not only enhances fund raising opportunities, but also helps to reduce human disturbance in the riverbed during the breeding season.

6 Recommendations

- 1 Continue annual bird surveys and monitoring activities - focussing on the three key threatened shorebird species (wrybill, black-billed gull and black-fronted tern).

Justification

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.

- 2 Maintain / improve predator control and banding activity, plus improve record keeping and mapping.

Justification

Effective predator control will be essential if shorebird species, particularly the three key species, are to survive in the river. Banding provides information on adult survival and pairing, plus movements of individual birds. Good records and mapping are essential for effective monitoring over the long-term

- 3 Explore opportunities for increasing trapping effort and using new technologies for predator control. This effort needs to extend into the lower river and estuary.

Justification

Predator control occupies more of the Group's time than any other single activity. Improved finances allow for increased trapping effort, plus new techniques involving self-resetting traps and user-friendly poisons could reduce the level of this commitment considerably. The estuary is an essential part of the lower river eco-system, and integral relative to any relocation of the kaki (currently under consideration).

- 4 Create and/or maintain improved habitat (eg., islands surrounded by water) for bird breeding

Justification

Experience elsewhere has shown that bird breeding is most successful on islands surrounded by water. These should not be difficult to create or maintain using heavy machinery operated by the likes of shingle extractors, plus appropriate use of chemicals.

- 5 Continue advocacy initiatives both by members and other agencies such as DOC, making use of the website (including social media such as Facebook), 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.

- 6 Maintain funding via local sponsorship and Group initiatives such as trap-making.

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 not only further increases community exposure, but also lessens the time and effort spent securing funding from further afield. Trap-making not only adds to funds, but promotes effective predator control elsewhere.

7. Continue full support for BRaid Inc.

Justification

BRaid Inc aims to improve environmental awareness and management on all South Island braided rivers. It has become a recognised ‘umbrella’ group for maintaining braided river ecosystems. BRaid has a part-time Manager, and regularly organises advocacy workshops and training courses.

8. Maintain and improve collaboration with ECan’s Biodiversity Programme, the Waimakariri Zone Committee, the Canterbury Water Management Strategy’s Regional Committee, Fish and Game and local iwi/runanga.

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.

9. 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.

10. 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

We are particularly grateful for major past financial support from:

- World Wildlife’s Habitat and Protection Fund
- Pacific Development and Conservation Trust
- New Zealand National Parks and Development Foundation
- Lottery Environment and Heritage Committee of the New Zealand Lottery Grants Board

Local funding acknowledgement is also due to the Waimakariri District Council (especially its bridge building mitigation fund), Taggart Earthworks Ltd, the Ohoka Market and Rangiora’s Organic Food Shop, and Jane Buxton, author of the children’s book ‘Ria the reckless wrybill’.

Other agencies who have offered special assistance are the Dept of Conservation and Environment Canterbury, especially the Ashley-Rakahuri Regional Park and its staff, whose aspirations for the birds on the river mirror those of the Group. The Group also thanks its members and their friends and families for help with bird monitoring, participation in the spring survey, advocacy, and attendance at meetings. Particular acknowledgement must go to the small band of trap-makers, and the trappers who weekly maintain many traps over the full year.

Images in this report are courtesy of Steve Attwood, Lynley Cook and Nick Ledgard.

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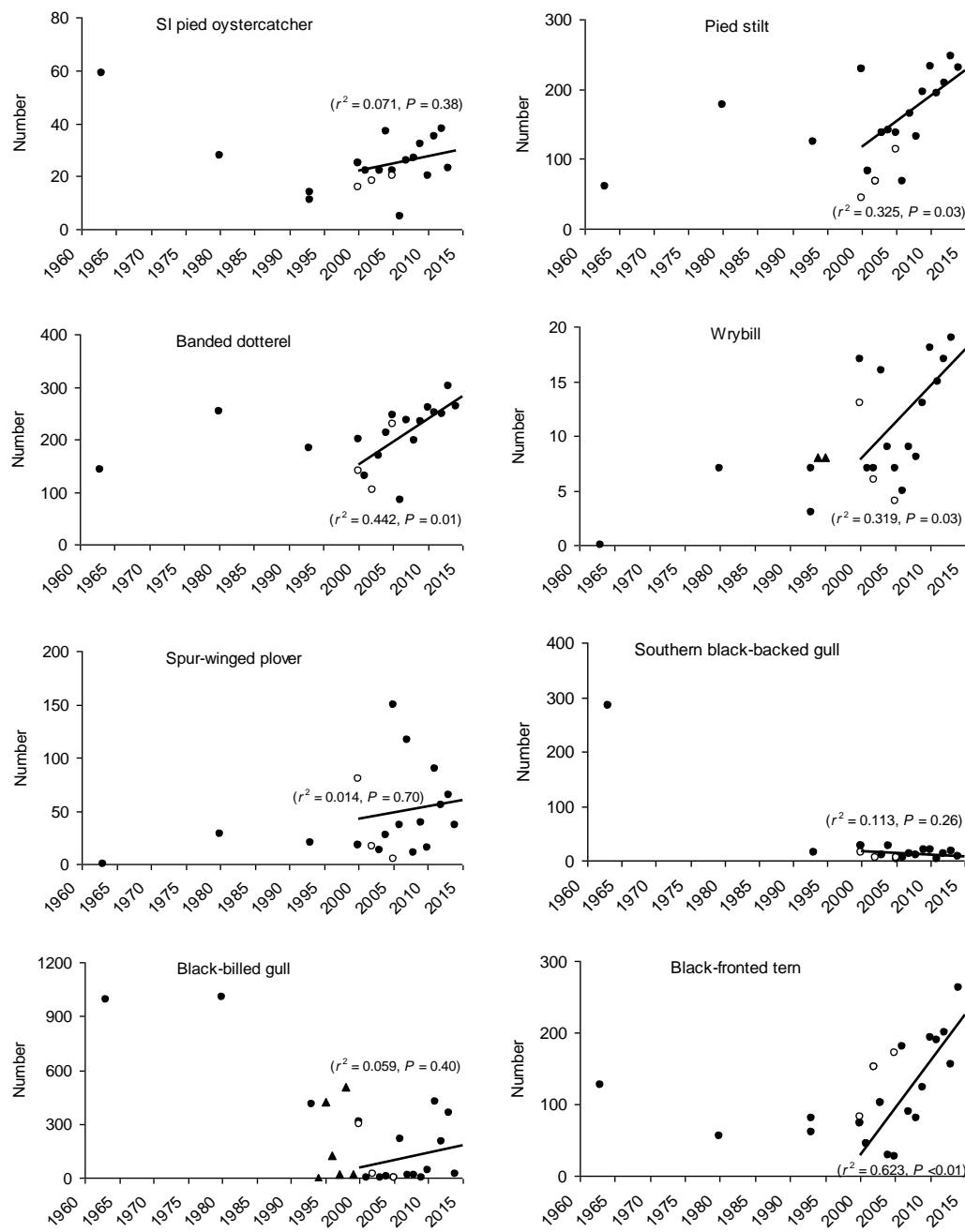
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9. Appendix 1. Promotional activities during 2015-16

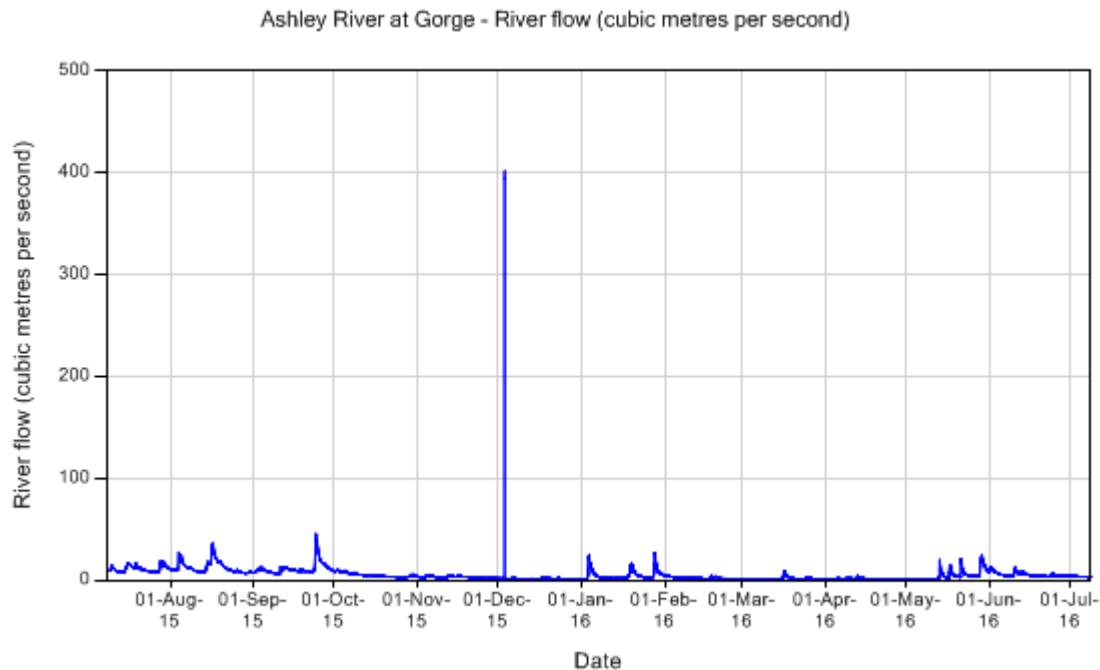
Promotion / activity	Date	Comment
Meetings		
	June 11, Sept 7, Dec 3, Feb 25, June 22	DOC offices, Rangiora: 13-14 participants
AGM and meeting	Sept 7, 2015	DOC offices, Rangiora: 14 participants
Annual bird survey	Nov 14	21 participants
Presentations/Representation		
Field representation	July 23	Enviroschools – L. Elesmere
Powerpoint presentation	Aug 17, 24 & 31	Pegasus School
Slide show to public	Sept 11	Gables Arcade, Rangiora
Funding Award	Sept 13	Cant'y Community Partnership Fund, Ch/Ch
Forest & Bird presentation	Oct 10	Makarora, Otago
Wrybill Bird of the Year promo	Oct 16	Ashley-Rakahuri river
BRaid predator workshop	Oct 17	DOC offices, Rangiora
Powerpoint presentation	Oct 20 &28	Fernside School
Braid predator workshop	Oct 31	DOC offices, Geraldine
Display at DOC field-day	Nov 1	Mt Thomas picnic area
BRaid workshop	Nov 3	Lincoln Events Centre (40 attendees)
Photo display (Steve Attwood)	Oct 25 – Nov 26	Rangiora Library
Display	Oct/ Nov / Dec	Ohoka Farmers Market (plus fund raising)
Radio NZ interview	Dec 18	Ashley-Rakahuri river
Nicky Wagner (MP) visit	Dec 20	Ashley-Rakahuri river
Public update	Feb 3, 2016	Waimakariri Zone Committee, Rangiora
Field presentation	Feb 10	Enviroschools
Zone committee talk	April 4	Update on ARRG activities
Powerpoint presentation	April 11	Okuku School
Display	April 16	Nut Point Art Gallery, W Melton
Zone Committee	May 18	Participation in Biodiversity group meeting
Powerpoint presentation	May 31	Braided river workshop, Lincoln
Media articles etc		
'Ria - wrybill' children's book	June, 2015	Second printing of 200 copies
Northern Outlook	July 25	'Kaki may return to N. Canterbury'
Hurunui News	Aug 27	'Compromise reached to protect rare birds'
Northern Outlook	Sept 2	'Driving restrictions on Ashley riverbed'
Hurunui News	Oct 8	'Predator workshop'
Northern Outlook	Oct 22	'Countdown begins to find Bird of the Year'
Northern Outlook	Oct 22	'BRaid trapping workshop popular'
Northern Outlook	Dec 2	'Birds endangered by 4WDs'
Latitude Magazine 44	Dec/Jan	/In focus: birds of Ashley-Rakahuri river'
WaderQuest Magazine	Jan issue	Community wader conservation action' Issue2(4)
WaderQuest Magazine	Apr issue	NZBRRP – BRaid group Issue 3(1)
Northern Outlook	June 8	'Braided river birds capture attention'
Fund raising / other		
Island creation in riverbed	Sept 3	Taggart's dozer for 4 hours
Sausage sizzles	Dec 19	Outside Warehouse, Rangiora
Swimming holes dug	Dec 21	Assist with site selection
Trap making	Mar 23,	For ARRG, DOC and F&B

10. Appendix 2. Bird counts on lower Ashley-Rakahuri river from 1963 to 2015.



Shows positive trends since 2000, with significant increases for wrybill, black-fronted tern, banded dotterel and black-fronted tern

11. Appendix 3. River flow (cumecs) at Ashley Gorge from July, 2015 to July, 2016 (from Environment Canterbury website www.ecan.govt.nz). The 2015/16 bird breeding season lasted from August, 2015 to February, 2016.



12. Appendix 4. ARRG office bearers and management structure

Chair: Nick Ledgard (nick.ledgard@xtra.co.nz)

Secretary: Joan Miles (k-jmiles@scorch.co.nz)

Treasurer: Sue Mardon (suemardon@xtra.co.nz)

Trapping organiser: Geoff Swailes (swailesgc@xtra.co.nz)

Committee: Office-bearers, plus Bev Alexander, Steve Attwood, Chris Martin, Linda Pocock and George Scott

The Group has 42 signed-up members, plus a greater number of interested people on our email list.

The Group has a website (www.ashleyrivercare.org.nz) maintained by the District Council's VisitWaimakariri office, while our Facebook page (<https://www.facebook.com/ashleyrivercare>) is maintained by Steve Attwood.