Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Braided River Projects
Annual Report 2017-2018

Canterbury's braided rivers are home to many threatened species and link the mountains to the sea – ki uta ki tai. A diverse group of partners, including landowners, catchment and community groups, government agencies, universities, and Environment Canterbury are working together to achieve the Canterbury Water Management Strategy targets and improve the ecosystem health of the braided rivers across the region.[1]

Key achievements this year

- Trials or testing of new technologies, including novel aerial survey methods and new predator trap types.
- A second season of successful breeding at the Clarence River 'Safe Island trials' providing further evidence that this approach can be effective for the suite of predators present.
- Commencement of a predator control programme in the upper Rakaia River, a stronghold for breeding wrybill and black-fronted tern.
- Completion of the lower Waitaki 'Safe Island Trials' in conjunction with the University of Otago and publication of results in a peer-reviewed journal (New Zealand Journal of Ecology[2]). Results demonstrated that in this type of river system[3] birds will readily take up the opportunity to use the islands for nesting.
- Weed surveys undertaken and strategic weed control plans developed/reviewed for the upper Clarence and Rakaia River catchments.
- Strong partnerships and support from community and landcare groups, other zone teams and committees, agencies (eg, DOC, LINZ), organisations (BRaid), and individual landowners.

New projects and programme progress

- A region-wide investigation and consultation was initiated on a strategy for southern black-backed gull control.
- Phase two of the robust grasshopper habitat and management trials in the Mackenzie Basin was launched. New monitoring protocols were tested using a transect method across six robust grasshopper populations, to be repeated annually to monitor population change.
- This was the third season of support for the Lower Waitaki mudfish habitat restoration programme and coordinator position. Projects undertaken included: mudfish habitat creation and maintenance, plantings and wetland 'seed bombing', and school outreach to 90 students.

[1] This report is only focused on the projects led or supported by the Environment Canterbury regional braided river funds. (See end of report for an overview of the budget). There are a host of other projects around the region led by community groups, zone committees, Environment Canterbury, and the Department of Conservation, not reported here.

[2] https://newzealandecology.org/nzje/3340

[3] Relatively stable with a shortage of open shingle for nesting.

Black-fronted tern
(photo by Nikki McArthur,
Wildlife Management International)

Clarence River black-fronted terns – safe-breeding project

For the second season in a row, the breeding success of endangered black-fronted terns was significantly better in the managed areas compared to unmanaged areas. (These results were despite the field work being significantly impacted by late heavy snows and flooding which reduced access and washed out the Clarence River bridge at Acheron).

Monitoring of hundreds of unmanaged nests in the upper Clarence catchment for six years (2012-2013 to 2017-2018) confirmed low breeding success (less than 0.2 chick surviving to flying age per nest). This compares to the number of chicks reaching flying age in the Clarence River management trial where chick survival has been more than five times higher (an average of over 0.7 chicks/nest once fully implemented from the 2016-2017 season).

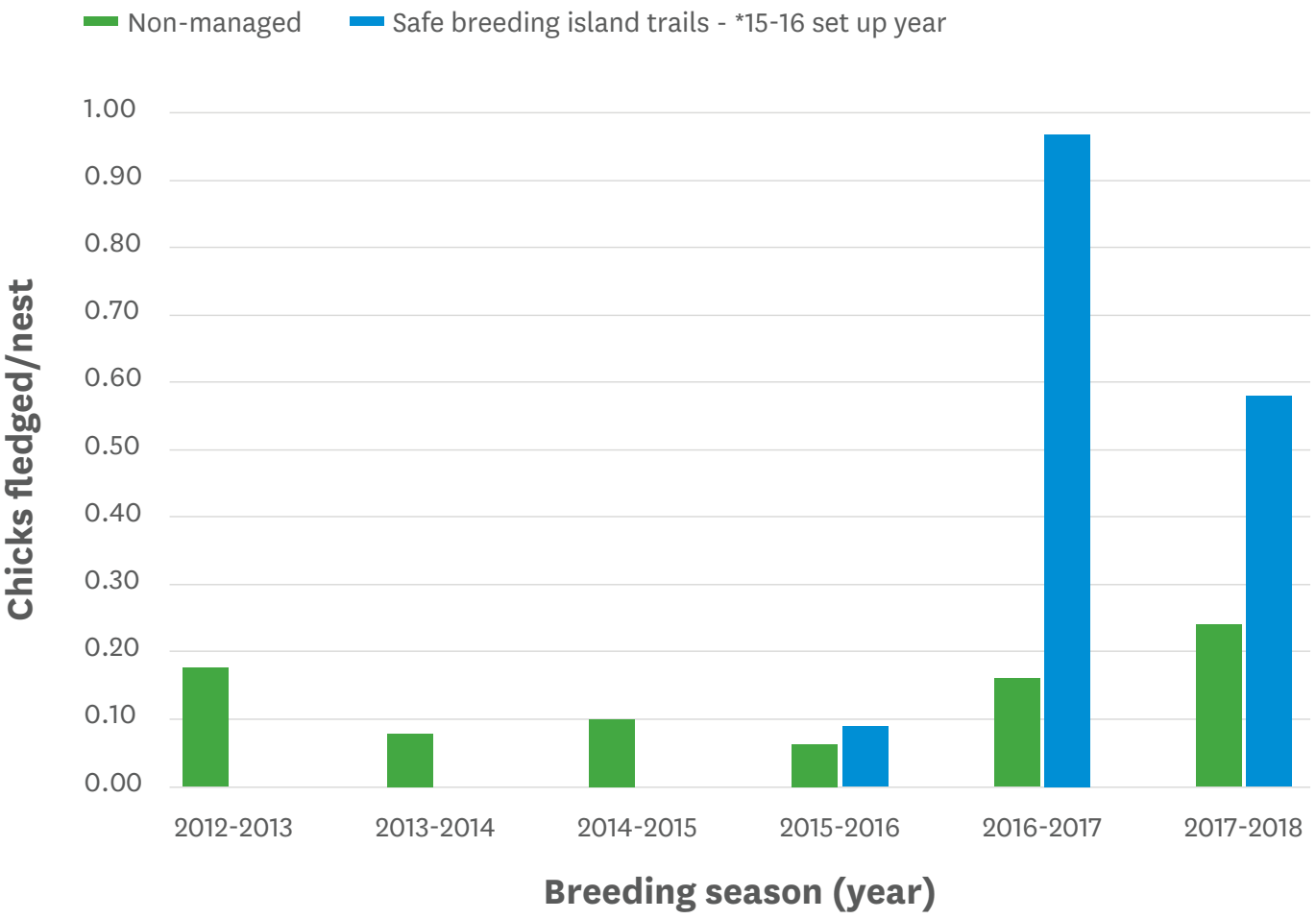
The predator control and island enhancements are helping an additional six to seven chicks survive to flying age per 10 nests.

The Clarence River trial began in 2016 and involved deepening channels around the islands to lessen predator pressure. The islands were then scraped to remove all weeds, improving the nesting habitat and removing cover for predators. Finally, the islands were mounded up higher to lessen the risk of flooding.

Some of the ongoing challenges include weather, flooding, and the expansion of woody weeds such as broom in some of the areas that harbour predators and makes trapping more difficult.

Black-fronted tern chick (photo by Frances Schmechel)

Breeding success of black-fronted terns Upper Clarence River



Impacts of weather events on the Clarence during 2017 - 2018


1 Bush Gully treatment colony prior to flooding.


2 Bush Gully treatment colony during Spetember flood.


3 Clarence River bridge at Acheron wash out September.


4 Heavy snow up to 1m thick at swimming hole site July 2017.

Lower Waitaki island trials – final results of Phase 1

Black-fronted terns established three colonies on islands immediately after the clearing of vegetation. Approximately half of the nests hatched with the primary cause of nest failure being predation. The southern black-backed gulls (Larus dominicanus) were the main predators of the nests.

Fewer mammalian predators were detected on islands compared to the adjacent riverbank. Mustelids (ferrets, stoats and weasels) appeared on approximately half of the vegetated islands. Mice were detected only once on one of the cleared islands.

Timing is everything – nesting success depended on the timing and size of the colony, with earlier established nests, and nest in larger colonies, being more successful. The islands will continue to be cleared and monitored by Department of Conservation staff in future seasons.

Species		Threat Classification	Usage	Island						
				1	2	3	4	5	6	7
Black-billed gull (larus bulleri)		Critically endangered	Roosting	✓					✓	
			Feeding						✓	
			Breeding						✓	
Black-fronted tern (Chlidonias albostriatus)		Endangered	Roosting	✓	✓	✓	✓			✓
			Feeding	✓	✓	✓	✓			✓
			Breeding		✓	✓	✓			
Wrybill (Anarhynchus frontalis)		Vulnerable	Roosting		✓					
			Feeding	✓	✓	✓	✓	✓		✓
			Breeding	✓		✓	✓	✓		✓
Banded dotterel (Charadrius bicinctus)		Vulnerable	Roosting	✓	✓	✓	✓	✓	✓	✓
			Feeding	✓	✓	✓	✓	✓	✓	✓
			Breeding	✓	✓	✓	✓	✓		✓
Pied Stilt (Himantopus himantopus)		Declining	Roosting	✓	✓		✓	✓		✓
			Feeding	✓	✓	✓	✓	✓		✓
			Breeding	✓	✓		✓			
South Island Pied Oystercatcher (Haematopus finschi)		Declining	Roosting	✓					✓	✓
			Feeding						✓	
			Breeding							

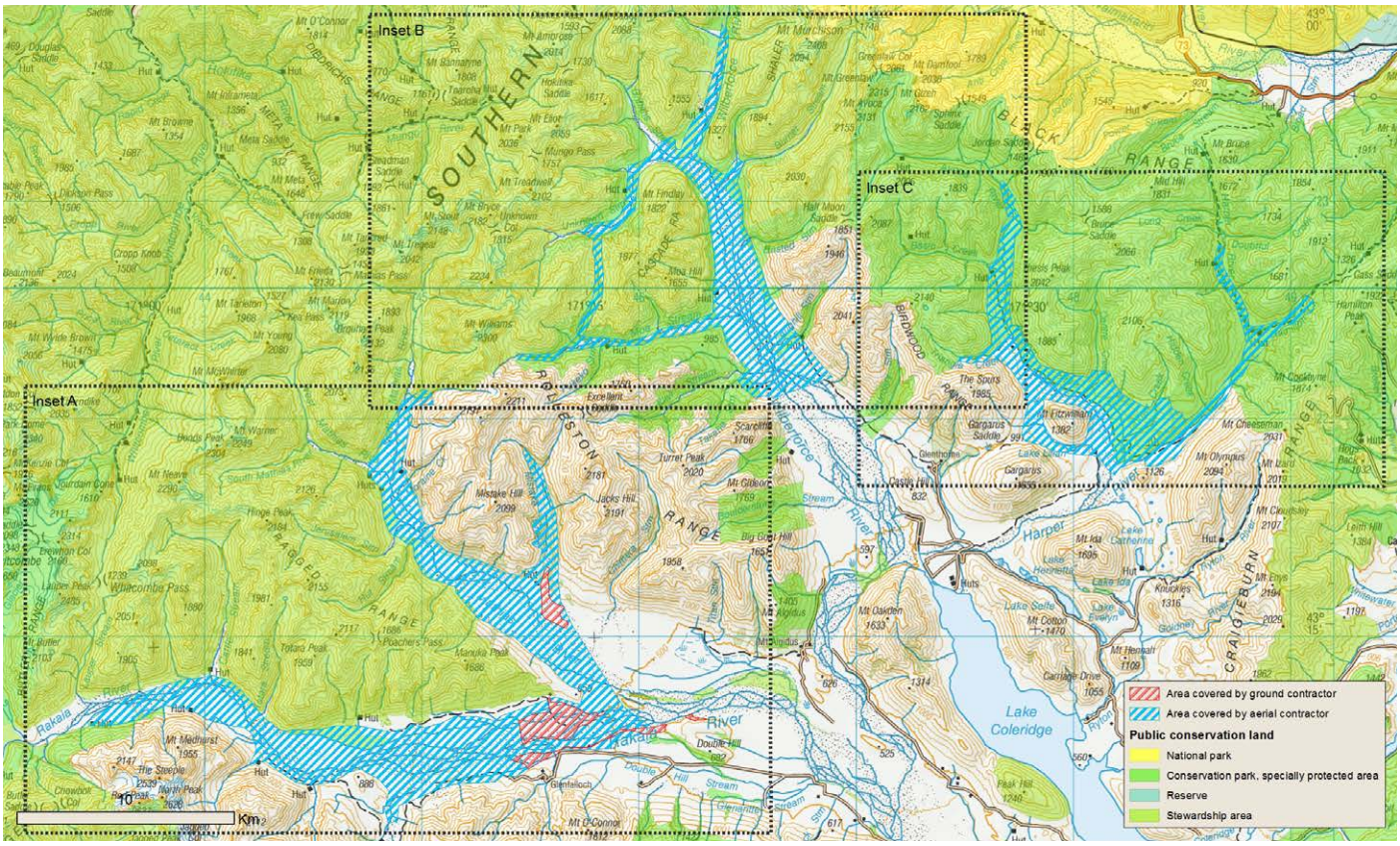
Upper Rangitata and Rakaia flagship programme

Three major projects are underway in the upper Rangitata and Rakaia catchments to protect the unique and vulnerable nesting birds and their breeding habitat, especially wrybill and black-fronted tern. This landscape work complements work being done in the Ashburton Lakes basin under the Ō Tū Wharekai and other programmes.

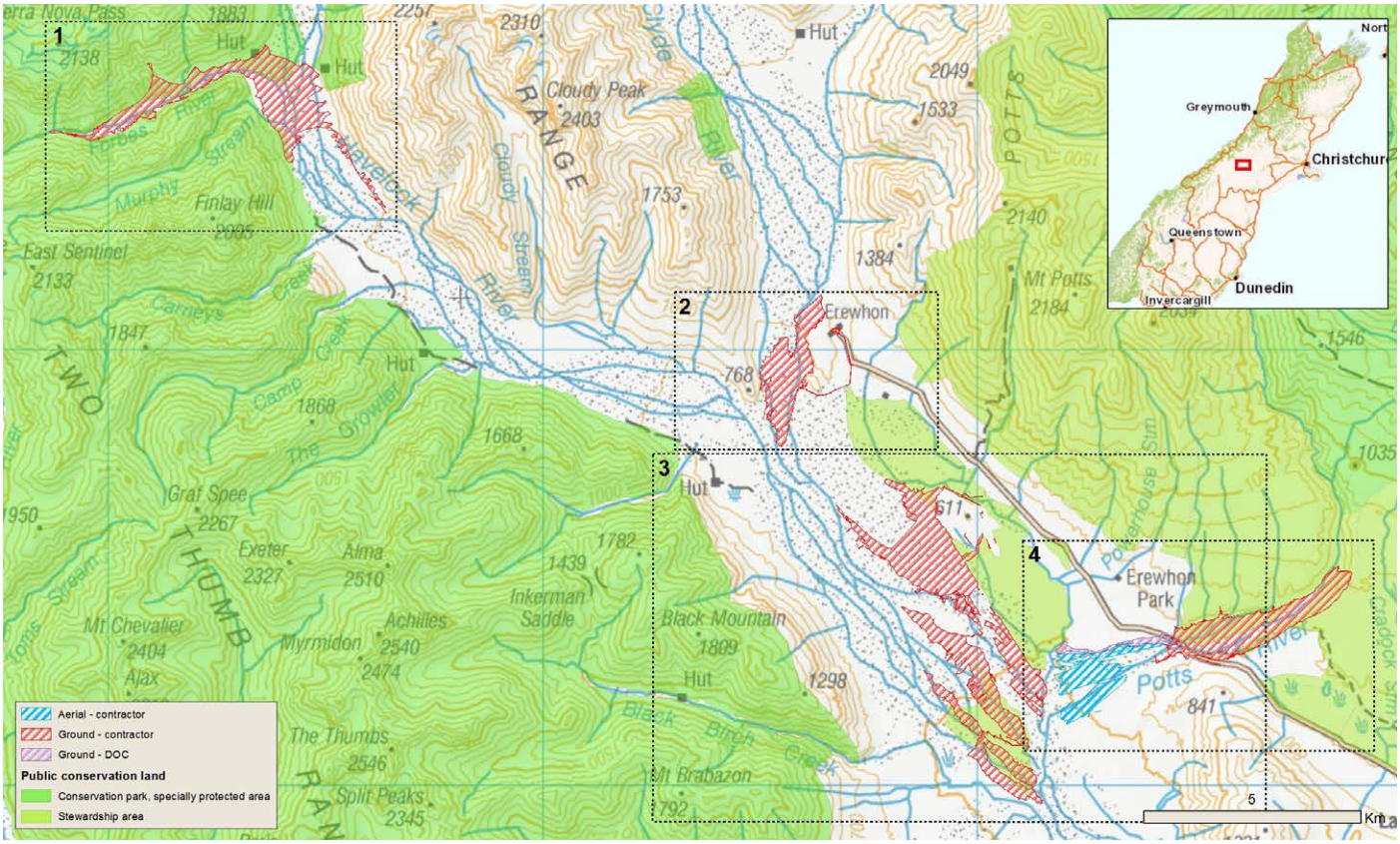
Upper Rakaia (photo Liz Gunning, DOC)

1. Weed control – maintaining breeding habitat and natural character

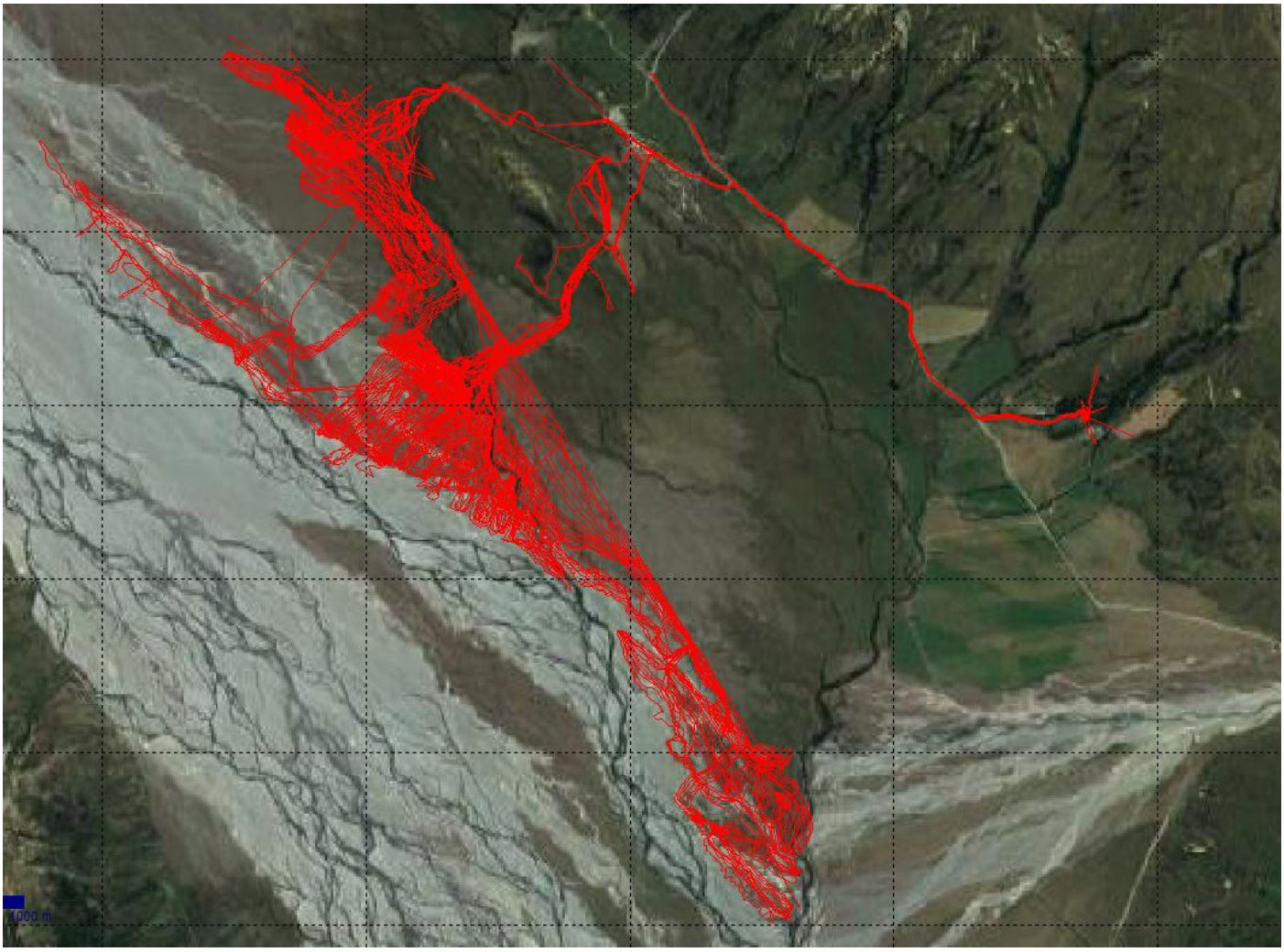
The aim is to protect the braided rivers from ongoing weed invasion and maintain both elements of natural character and breeding habitat for braided river birds and other species. This multi-agency project (including DOC, LINZ, and local councils) is being undertaken in partnership with local landowners and landcare groups to control a suite of invasive weed species (eg, broom, gorse, grey willow, false tamarisk, Russell lupin and grey willow). Control was undertaken by ground and air across nearly 2,000 ha of the upper Rangitata (December 2017 and January 2018) and more than 17,000 ha of the Rakaia catchment (April-June 2018).



Map of the weed control areas in the Rakaia River.



Map of the weed control areas in the Rangitata River



An example of the ground control gps tracks around Mount Sunday (Potts River fan to the right) in the upper Rangitata. Key weeds in this area are Russell lupin.

Pre and post control photos on the true right of the Potts River - pre 2017, post April 2018. (Photos - Liz Gunning, DOC)

Pre and post control in the lower Potts River looking up the valley with the Rangitata in the background. (Photos - Liz Gunning, DOC)

Large outlier buddleia found in the past season in the gorge and dead buddleia lower Little River above the Rakaia River.

In the Rangitata, in addition to agency-funded work, there has been weed control work undertaken by the Upper Rangitata Gorge Landcare Group worth more than $36,000 in funds and in-kind time. This included two community spray days (20 people attended, 80 hours of spraying), plus 70 hours of runholders spraying in front of their properties, equipment and vehicle use, and chemical. The group also contributed and/or sourced additional funds from the district councils.

A review and more detailed monitoring of the Rakaia was undertaken in the past season by an independent contractor to compare weed distributions between 2012-2013 and 2017-2018. At the same time as the monitoring surveys the areas were checked for any new weed invasions (surveillance), scattered plants were controlled, and the effectiveness of past control work was reviewed. A copy of the review is available here: https://api.ecan.govt.nz/TrimPublicAPI/documents/download/3504521

Key conclusions from the review were that there had been no significant increase in key riverbed weeds (eg, broom, gorse, crack willow, grey willow and tree lupin) since 2013 and in parts of the upper catchment there has been a noticeable reduction. Unfortunately, there had been a substantial increase in the distribution and abundance of a relatively new invader: false tamarisk and, to a lesser extent, stonecrop. The wind-dispersed seeds of false tamarisk appear to have enabled its rapid spread to new sites in the upper catchment. Stonecrop had also established at new distant sites; its spread apparently assisted by southern black-backed gulls.

The only known infestation of highly invasive buddleia in the upper Rakaia River is being controlled with the aim of eradication. This was due to the dedication and leadership of the local landowners with funding support from Environment Canterbury. In addition to control on and adjacent to their land they also have done wider surveillance and control work at their own time and expense.

2. Upper Rangitata River Predator Control Programme

This was the third season of the programme which involved trapping across 35km from Mt Sunday to White Rock. Hedgehogs, a surprisingly effective nest predator, were by far the most common, followed by mustelids and rats, with cats the least common. Control of southern black-backed gulls (predators that target other birds and farm stock; not to be confused with the smaller, endangered black-billed gulls) was led by the local landcare group with support from the Department of Conservation and Environment Canterbury. The aim was to reduce the population to low numbers in the upper catchment.

In the predator control area about one-third (35%) successfully hatched eggs. The remainder failed, attributable mainly to predation (38%) or for unknown (19%) or other causes (8%). In comparison, in the lower Rangitata, in an area with no predator control, no eggs hatched, attributable primarily to predation (96%).

Nests monitored by cameras in the management area (upper river) recorded predation by southern black-backed gull (despite the control work done to date) and hedgehogs. Hedgehogs were thought to be responsible for a significant number of losses around the Forest Creek confluence eventually causing the entire colony to fail at that location. In the lower river (no management area) camera monitoring recorded a total of five incidents – three by stoats and two by southern black-backed gulls.

In the lower river, “suitable habitat for nesting… was rare, primarily due to heavy weed growth and black-backed gull dominance”.

A picture is starting to emerge across the region that trapping can be effective for most mammalian predators. Hedgehogs may be the exception and are possibly more deterred by river flows – making islands effective for lessening the impacts of hedgehog predation. Aerial predators, such as southern black-backed gulls, are the other key component. As a result, control of aerial predators is being incorporated into these programs.

Of the wrybill nests monitored a total of 11-15 chicks surviving to flying age (fledging) in the upper Rangitata (0.61-0.80 fledged chicks per pair). This is similar to previous seasons under predator control (average of 0.7 fledged chicks per pair), and higher than the average from the pre-control monitoring which was between 0.45-0.50 chicks surviving to flying age per pair between 2008-2009 and 2012-2013.

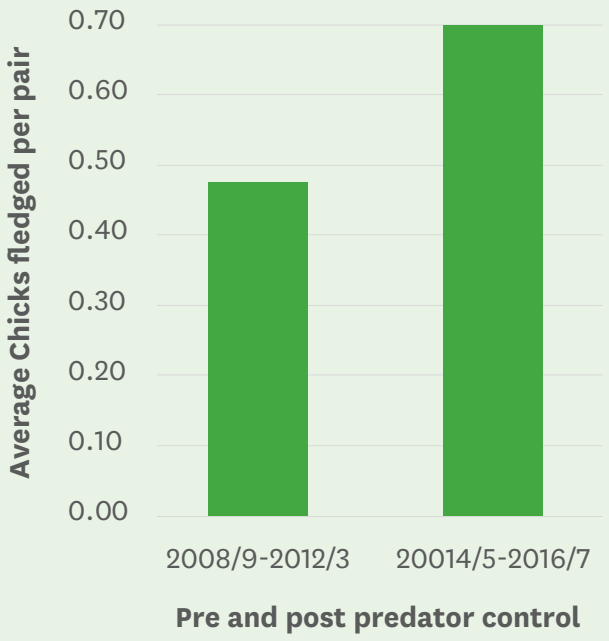
Wrybill with chick
(Photo by Lauren Buchholz, DOC)

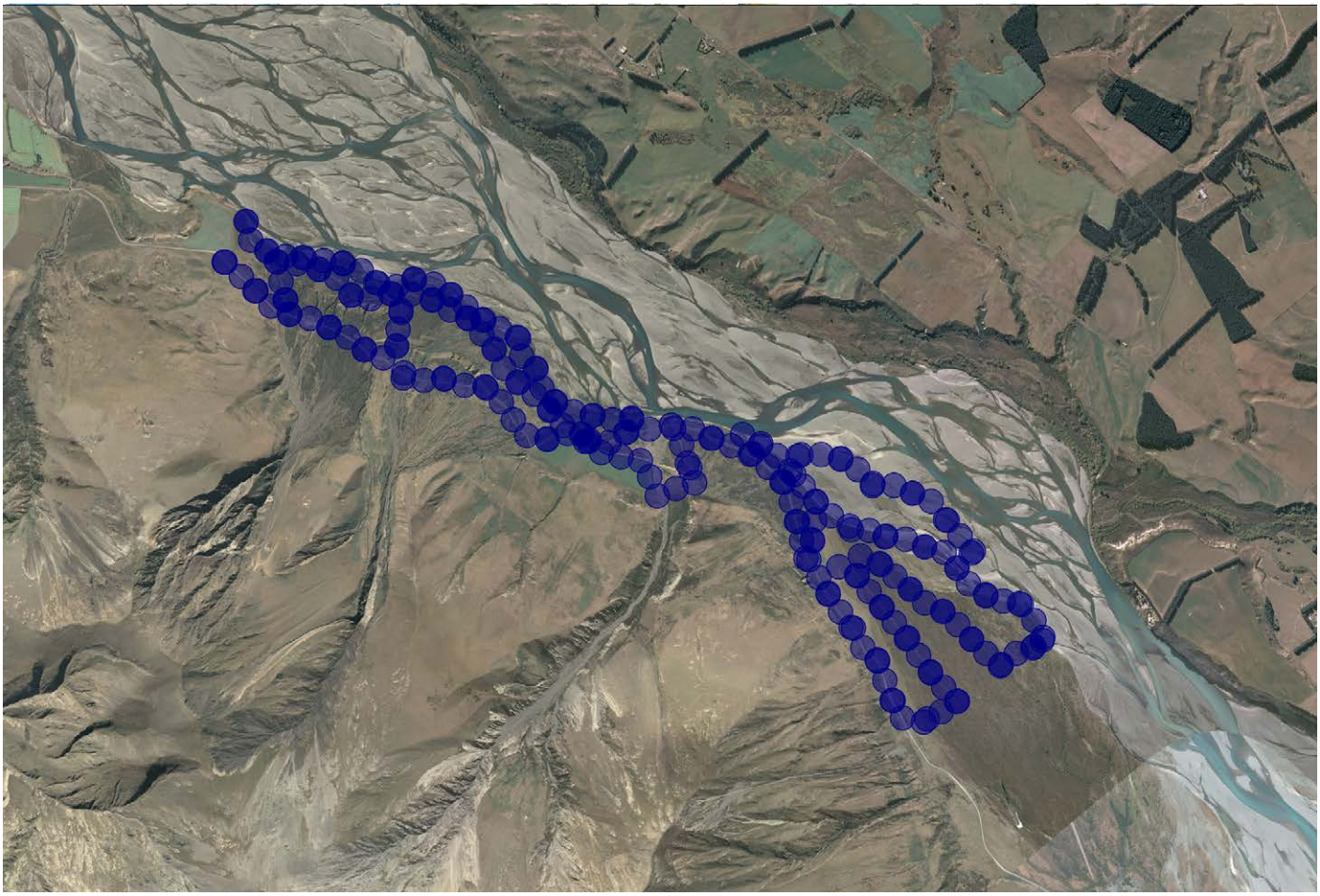
3. Upper Rakaia predator control

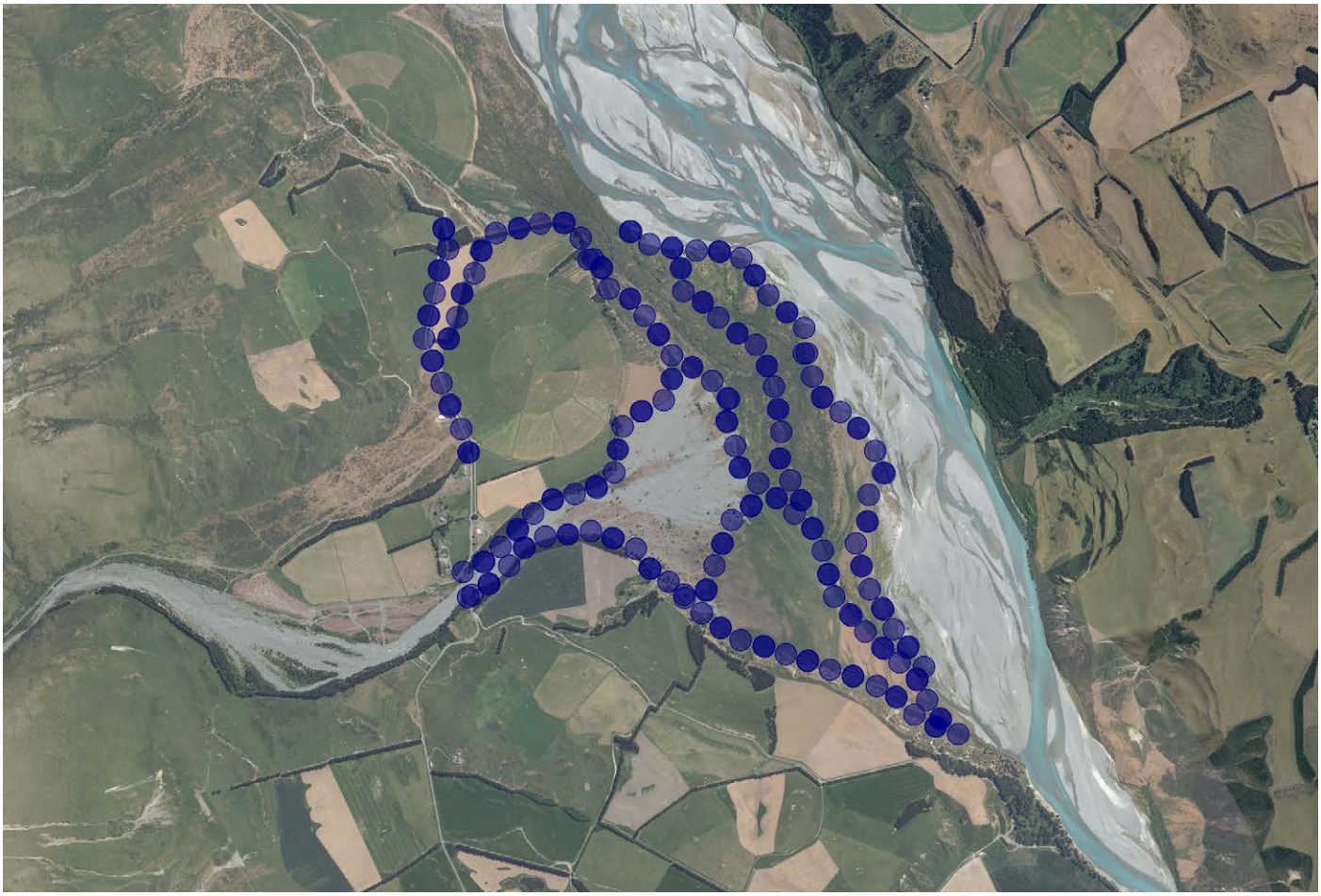
A new trial in the upper Rakia was launched this year which aims to increase survival and breeding success of wrybill and black-fronted terns. This project is a proof-of-concept using high flow channels on one side and a network of traps on the other to create secure breeding areas. The trial is intended to run for six years and is a joint project between the Department of Conservation and Environment Canterbury with financial support from the Rakaia Environment Enhancement Fund.

This is one of the first trapping programmes to employ SA Kat Traps which have only recently passed the National Animal Welfare Advisory Committee. They are proving effective and are significantly easier to use than older trap types.

Average number of wrybill chicks surviving to flying age per pair







Maps of the trapping areas on the true right of the Rakaia River showing traps in blue.

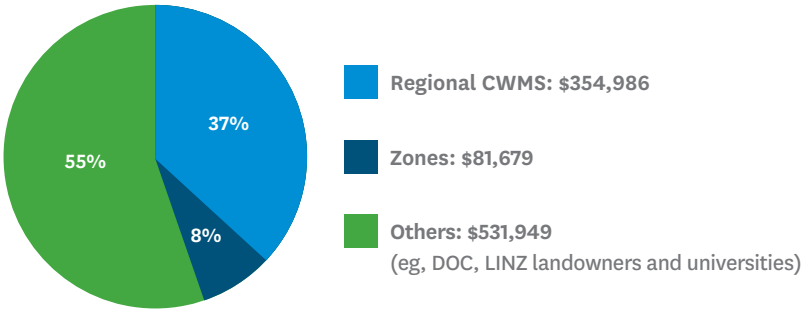
Black fronted-tern tern returning to nest captured on field monitoring camera (Photo - Dept of Conservation)

Southern black-backed gull nest predation captured on a monitoring camera (Photo - Dept of Conservation)

Budget information

Approximately $2 was contributed from other sources for every $1 of regional CWMS braided river funding invested. This estimate includes some in-kind time, but will be an underestimate of the other contributions, especially those provided by other organisations (eg, Braid and Ashley-Rakahuri Rivercare Group) and agency staff such as DOC, LINZ/ Boffa-Miskell, and university staff. Several of the projects involve collaboration between the regional and zone teams. Landcare, community groups and individuals have also led and contributed significant amounts of time and funds – some of which will not be captured in this data. fold increase in mudfish habitat area, which could then function as a save nursery for future projects.

Total spend 2017-2018: $968,614



What's next?

- Package of small projects designed to determine how to best target management in braided river ecosystems for invertebrates, plants, and lizards, mahinga kai and other cultural values.
- Develop an access management plan for the Ashburton/Hakatere River mouth in conjunction with stakeholders.
- Conduct a survey of freshwater springs along the Ashburton River.
- Provide funding to support the BRaid coordinator position.
- Develop a joint work programme of braided river projects between the Department of Conservation and Environment Canterbury.

Facilitating sustainable development in the Canterbury region

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