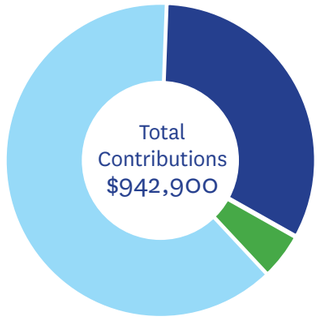
High Level Budget Information

The regional braided river programme has involved close collaboration with a wide variety of partners including the following: Kaikōura, Ashburton, Orari-Temuka-Opihi-Pareora, and Regional Water committees; local landowners and leaseholders; Department of Conservation; Wildlife Management International (WMIL); LINZ, Boffa Miskell; Upper Rangitata Gorge Landcare Group; Whitcombe Landcare Group; Lower Waitaki River Management Society, TrustPower, Coleridge Habitat Enhancement Trust; and Braided River Aid (BRaid).

Significant amounts of funding from other sources have been attracted as a result of these projects. For example, as a result of a total of $29,000 invested in habitat management trials for robust grasshoppers, an additional $108,500 was obtained from other sources as a direct result of the initial regional investment.



- Other contributions, $582,300
- Regional CWMS braided river programme, $319,100
- Zones (Immediate Steps) contributions, $41,500

Next Steps

- A repeat of the 2012 Rakaia catchment braided riverbed weed survey. The results from the repeat monitoring will provide information on any new weed species incursions that threaten braided river habitat, changes on distribution and abundance of key weed species, and the effectiveness of recent control efforts. Control of remote and scattered plants will happen at the same time.
- Safe breeding islands on other rivers.
- Support for braided river biodiversity strategies for other rivers.
- The start of predator control in the Upper Rakaia River.
- Phase 2 of the robust grasshopper habitat management trials.
- A survey of Clarence river catchment braided river weeds and development of control priorities/control strategy to maximise effectiveness while minimising accidental 'by-kill' of native plants.
- Southern black-backed gull control on the lower Waitaki River.

References:

[1] O'Donnell, C.F.J. and Hoare, J.M. 2011. Meta-analysis of status and trends in breeding populations of black-fronted terns (Chlidonias albostriatus) 1962-2008. New Zealand Journal of Ecology 35: 30-43.

[2] Collaborators include Wildlife Management International (on-the-ground work, but also contributing significant amounts of extra time and resources), the Kaikōura Zone Committee (funding support), Environment Canterbury (CWMS regional funding, project management) and the NZ Department of Conservation (funding, expert advice, project management).

E17/6286_3

Braided River Regional Projects Annual Report 2016-2017

Waimakariri River

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

Key Achievements for this Year

- Completion of three investigations which have increased our understanding of how to manage braided rivers for declining biodiversity, e.g. breeding black-fronted tern, black-billed gulls and robust grasshoppers – all dependent on braided river habitats.
- A breakthrough in black-fronted tern habitat management, which involves a combination of safe breeding islands and predator control, has resulted in significantly higher chick survival on the Clarence River.
- Successful management collaboration in the upper Rangitata and Rakaia catchments resulting in maintaining and increasing breeding habitat.
- Completion of the Ashburton River/ Hakatere shorebird habitat management strategy. Implementation is now underway led by the Ashburton Zone team.

Adult tern landing on nest upper Rangitata (photo via monitoring camera – DOC)

Clarence River black-fronted terns – safe breeding islands trial

Breeding success in the first fully operational season has been significantly higher compared with the past and non-managed areas (*Figure 3, page 3*) in spite of the 7.8 earthquake in November 2016 which disrupted access. Almost one chick per nest survived to flying in the managed area compared with only one chick per seven nests in the unmanaged area.

Progress of Overall Programme (multi-year)

Three investigations have been successfully completed.

- **Black-billed gull monitoring** - three years of baseline monitoring have established the following in Canterbury;
  - Canterbury now has between a third and half of the national population,
  - the Ashburton and Rangitata rivers appear to be the two most important rivers for breeding in the region,
  - the lower elevation stretches of the braided rivers provide the most important breeding habitat (about 75%).
- **Robust grasshopper habitat and management trials** – as a result of the project funding, the first successful translocation of a threatened grasshopper in New Zealand was undertaken into enhanced gravel habitat.
- **Attracting black-fronted terns to safe areas** – successful trials were undertaken to test whether black-fronted terns (nationally endangered, braided rivers breeders) can be attracted to managed areas (e.g. islands, areas of predator control) using decoys and sounds.

Black-billed Gull (Photo: Steve Attwood)

Robust Grasshopper, Mackenzie Basin (Photo: J.Schori)

Progress of Other Multi-year Projects

All other multi-year projects are progressing well and include the following:

- **Creating/ enhancing breeding islands for birds (Waitaki and Clarence).** This is being tested with and without predator control depending on the level of flows, with the successful project providing models for others to follow. Environment Canterbury river engineers have developed a guide to creating islands for breeding birds in braided rivers. This last season's monitoring led to the discovery that southern black-backed gulls (not to be confused with black-billed gulls) were a significant predator of nests in the lower Waitaki River.

- **Predator control in the upper Rangitata** - key breeding habitat for endangered black-fronted terns and endemic wrybill (which breed almost exclusively in Canterbury). Over the two seasons since predator control started (2015/16 and 2016/17), wrybill fledgling success has been significantly higher than for the four years pre-control. This last season, predation was observed at more than 80% of black-fronted tern nests in the unmanaged area compared with 11% inside the predator control area.

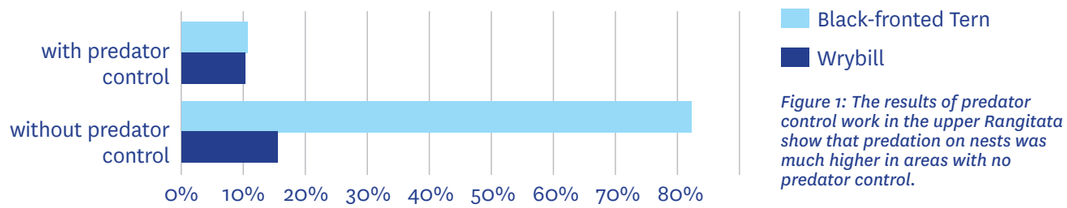


Figure 1: The results of predator control work in the upper Rangitata show that predation on nests was much higher in areas with no predator control.

Black-backed gull predation on a black-fronted tern nest

Wrybill chick, Upper Rangitata River (DOC)

- **Weed control in the upper Rakaia and Rangitata riverbeds** to maintain and increase habitat (open gravels) for breeding braided river birds. This successful, landscape scale, multi-agency project (including LINZ and the Department of Conservation) has, with community support and leadership, carried out weed control across 15,550 ha between April and June 2017.
- **Ongoing investigations -** to determine the movements and site fidelity of braided river birds to inform management across the region.
- **Braided river ecosystems health -** protection and enhancement of wetlands, spring-fed streams, and native vegetation associated with the upper Rangitata and Rakaia through management actions such as fencing and weed control.
- **Mudfish habitat enhancement and community engagement** along the lower Waitaki River via support of the Lower Waitaki Management Society and mudfish coordinator.

One of the newly discovered population of mudfish along the lower Waitaki.

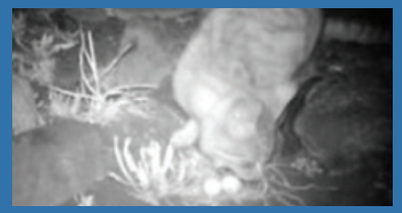
Clarence River black-fronted terns – safe breeding islands trial

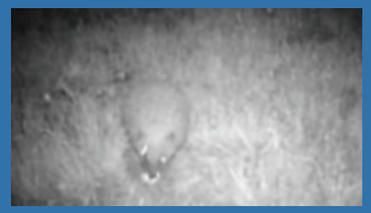
Black-fronted tern, a nationally endangered species, is a specialist braided river bird which has proven difficult to manage. This is due in part to the variety of predators they face (both ground and aerial), loss of breeding habitat to woody weeds, and the fact that they nest in small scattered colonies.

Nationally the greatest declines in tern breeding populations have been on rivers classed as 'low-flow' (less than 30 cumec), including the Clarence River. Predictions are that black-fronted terns will decline by a further 90% on these low-flow rivers within the next 25 years if current trends continue.[1]

Five years of monitoring of hundreds of unmanaged nests in the upper Clarence catchment between 2012/13 and 2016/17 confirmed this with only about one chick per 5 to 17 nests surviving to flying age (a productive of 0.06 – 0.18 fledglings/nest). The key predators on eggs detected by video monitoring were cats, ferrets and hedgehogs (*Figure 2*).

Adult Tern in flight (by Alastair Wilson/ Wildlife Management International)





Adult tern with leg bands (Nikki McArthur/Wildlife Management International) / Camera monitoring results - feral cat and hedgehog at black-fronted tern nests.

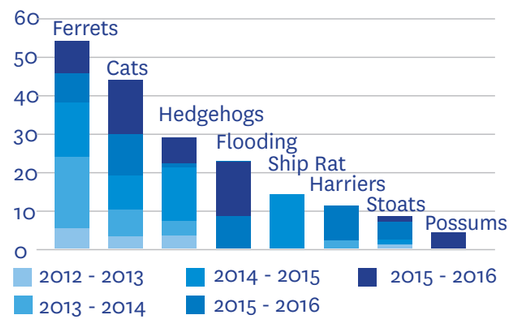


***Figure 2** - causes of nest loss on the Clarence and Acheron Rivers (Clarence Catchment) based on five years of camera monitoring.*

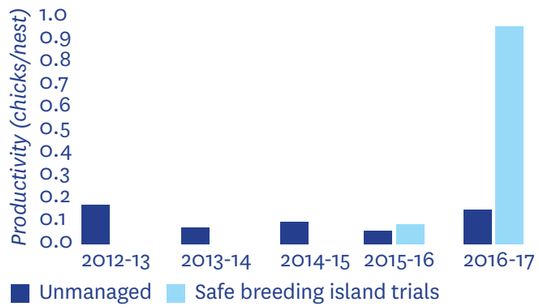


***Figure 3** - breeding success (chicks surviving to flying age per nest) of unmanaged and the safe breeding island trial area.*

A five-year collaborative approach is being tested to improve breeding success. This involved deepening channels around the islands, thereby lessening predator pressure. The islands were then scraped to remove all weeds, improving nesting habitat and removing cover for predators. Finally, the islands were mounded up higher to lessen the risk of flooding.

Breeding success in the first fully operational season has been significantly higher compared with the past and non-managed areas (*Figure 3*) in spite of the 7.8 earthquake in November 2016 which disrupted access. Almost one chick per nest survived to flying in the managed area compared with only one chick per seven nests in the unmanaged area.

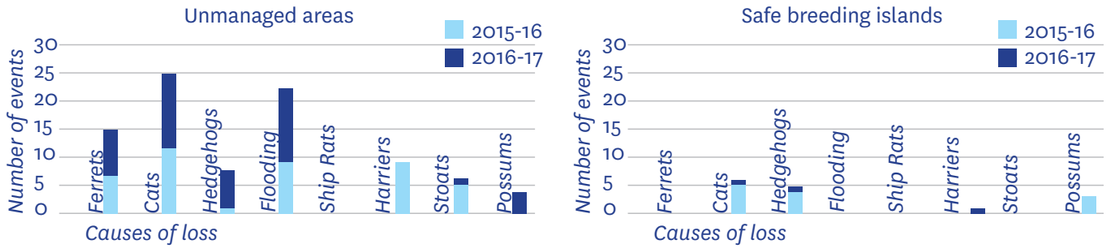


***Figure 4** - comparison of nest losses by predator species in the unmanaged areas versus the safe breeding islands (monitored by video cameras) over two years (note that there is almost none in the 2016/17 year when full management was implemented).*

In summary, breeding success was 5 to 10 times higher last season in the managed 'safe breeding island' trails than in the unmanaged areas over the last five seasons. The combination of enhanced islands and predator control appears to be a successful and effective management technique. Future seasons will hopefully confirm this initial result.