Lower Waimakariri River Braided River Bird Breeding Report

2021 – 2022 Season

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Contents

Introduction

The Waimakariri River is home to some very rare and unique braided river bird species, including the Wrybill (*Anarhynchus frontalis*), Banded Dotterel (*Charadrius bicinctus*), Black and White Fronted Terns (*Chlidonias albostriata* and *Sterna striata*) and the Black-billed Gull (*Larus bulleri*). These birds are all protected under the Wildlife Management Act 1953, which states that no one may kill or harm the birds, or have them in their possession without a permit. The Department of Conservation (DOC) is the lead agency for protection of these native species in New Zealand, however DOC tends to have limited involvement in the lower Waimakariri River. Environment Canterbury (ECan) has recognised the importance of the lower Waimakariri as a bird breeding habitat and engaged in management as the concerned landowner of this space, with some resourcing available to help DOC with the management of these rare and threated birds.

A River Values Assessment system (RiVAS) was applied to Canterbury's braided rivers in 2010, to determine the relative value of those rivers in terms of bird life (Hughey and Baker 2010). The Waimakariri River was assessed against a series of primary attributes and indicators including relative distinctness, habitat size, numbers of indigenous birds surveyed, number of Threatened or At Risk species present and whether or not it was a significant breeding site (determined by the number of Threatened of At Risks Species present in the river, proportional to the overall population numbers of those species). The Waimakariri River scored High for all of the indicators it was assessed against under the RiVAS, apart from a Medium score for diversity of foraging guilds. This assessment indicates that the Waimakariri is indeed a significant habitat for these birds species and warrants on-going protection and management.

Environment Canterbury has been involved in braided river bird management in the lower Waimakariri River for the past 13 consecutive years, this season inclusive. Management has evolved over the years; originally started by the Parks team within the bounds of the Waimakariri River Regional Park and primarily focusing on targeted trapping and monitoring of colonial nesting black-billed gulls due to limited resourcing. Works now also include some black-fronted tern, wrybill and dotterel monitoring, plus expansion of a range of management options. Management options over the years have included:

- Target trapping around identified colonies;
- River edge/berm trapping;
- Public advocacy campaigns, videos, stickers and social media promotions;
- Ranger patrols;
- Blockades and signage around colonies;
- Southern Black Backed Gull (SBBG) control.

A report was commissioned by Wildland Consultants Ltd in 2020, titled ***Braided River Bird Management Plan for the Waimakariri River Regional Park*** ("The Plan"), which outlines management recommendations and prioritization of expenditure to guide future bird habitat management in the lower Waimakariri. Recently, management of the bird program has also moved away from the Parks team which allows for a slight broadening of geographic management scope beyond the bounds of the Regional Park. Future management may move to include more landscape scale habitat management options as resources permit, rather than species specific monitoring and management, guided by the recommendations of The Plan.

Season Summary

Woodstock:

In November, Christchurch International Airport Limited (CIAL) hosted an aerial survey of the lower Waimakariri River to count Southern Black Backed Gulls (SBBG) for control. During that survey, a large colony of black-billed gulls were observed nesting at Woodstock, on an isolated area of shingle near the start of the Waimakariri Gorge (***Figure 1***). Woodstock is a popular river launching spot for jet boaters and kayakers with only one access in and out.

A subsequent visit to the site also revealed a large black-fronted tern colony, plus multiple wrybill pairs breeding in the general area. The site visit also revealed tyre tracks through the tern colony to an informal jet boat launching point. Signs were erected and a dazzle line painted on the ground to effectively split the shingle Woodstock area in half. People would still have room to park and launch boats at the northern end of the site while avoiding the birds. The head of Jet Boating NZ – Canterbury Branch was contacted and asked to put a message out to their members, which he agreed to do. There were also several other social media posts about the site (including via ECan channels) that reached a large number of people.

Canterbury anniversary weekend was coming up so Braided River Aid (Braid) and the Ashley Rakahuri Rivercare Group (ARRG) were approached, asking if they had members keen to volunteer up at the site over the long weekend and talk to people visiting the site about the birds. Four people volunteered their time and were overseen by Niall Mugan of Keystone Ecology over the weekend. The volunteers took turns sitting at the sole entrance to the shingle fan and talking to people accessing the site about the birds. They reported that most people already knew about the birds from social media and the information was well received. Niall also placed mammalian predator traps along the bush edge adjacent to the shingle that weekend.

A few days later there was a moderate fresh through the river. A nearby Outdoor Access camera meant the water could be watched in real time, with the black-bills and majority of the tern colony seen to survive the peak of the flood. Two days after the flood peak, a check of the Outdoor Access camera showed all birds had abandoned the site. Niall subsequently visited the site and confirmed all birds had gone and that there were three dead black bills on site. No firm counts on black-fronted tern nests had been gathered yet, but somewhere around 30 – 50 nests were estimated to have been present. The black-billed gull colony was estimated to peak at around 500 birds before it collapsed.

We believe a dog caused the disturbance as the dead birds were found quite a distance from the original colony location and hadn't been eaten, but had been thrown around and played with, with multiple broken bones. A dog running through the colonies disturbing birds would also explain the sudden collapse of the entire colonies. There was also a campfire nearby with a 100+ year old beach tree cut down and set on fire. It is likely that people camped on site and had a dog with them. The Outdoor Access cameras do not record data so could not be checked for confirmation. A contractor had been scheduled to install trail cameras on site to help monitor the birds but had been delayed due to the flooding.

It would have been unsafe to have volunteers or contractors permanently one site, primarily due to flood risk, isolation and limited cell phone reception. The flood water was still high at the time of the disturbance, so this type of event was not anticipated. Subsequent to this site abandonment a large group of black-billed gulls were found behind McLeans Island, some distance further downstream. There were also a number of banded dotterels at this site, plus a small black fronted tern colony (***Figure 2***). There is no way to determine if these were the same black-bills that abandoned the Woodstock colony, but they did appear very soon after the disturbance event.

***Image 1**: The area known as Woodstock at the start of the Waimakariri Gorge, showing approximate location of bird colonies prior to collapse*

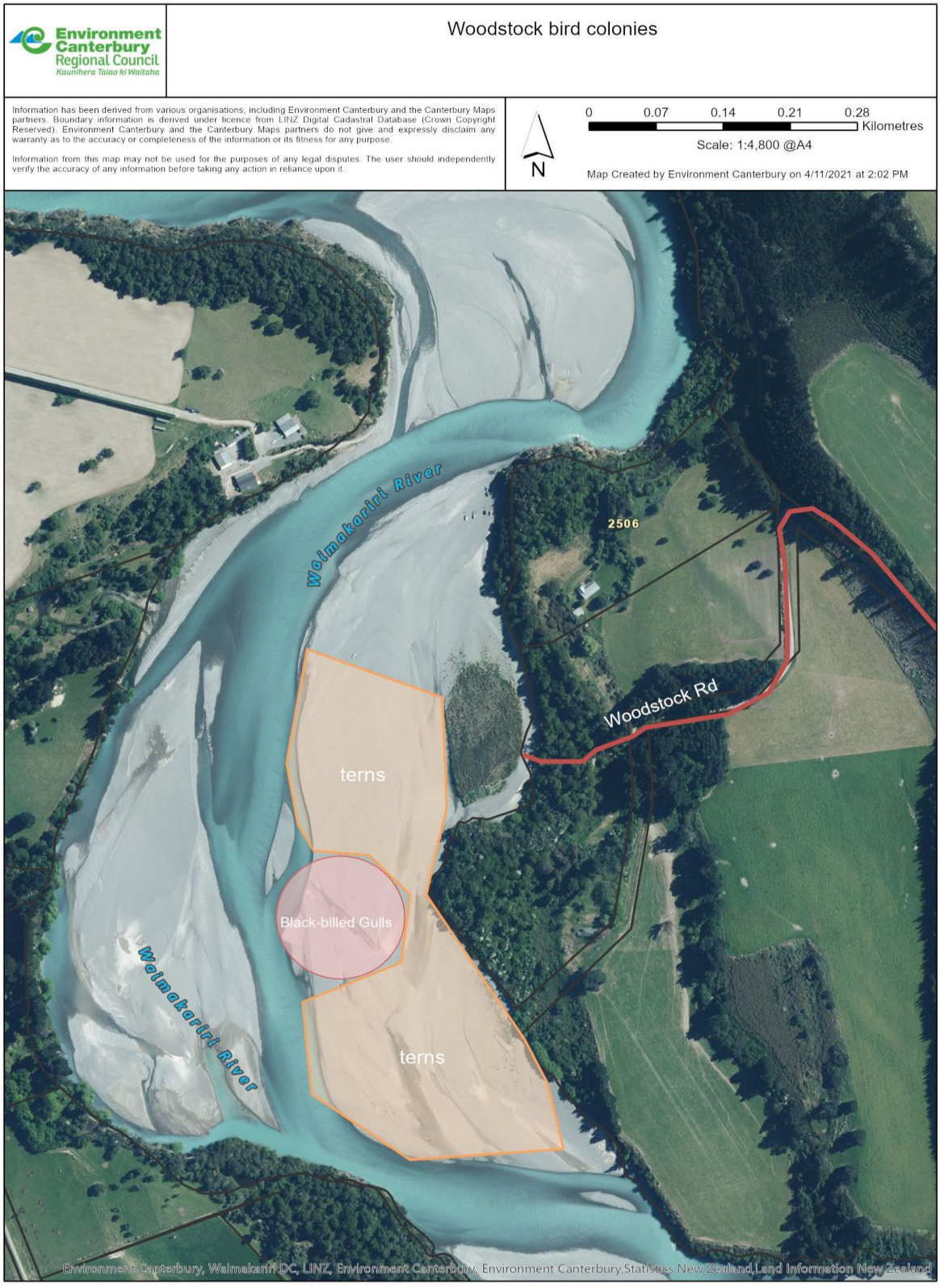
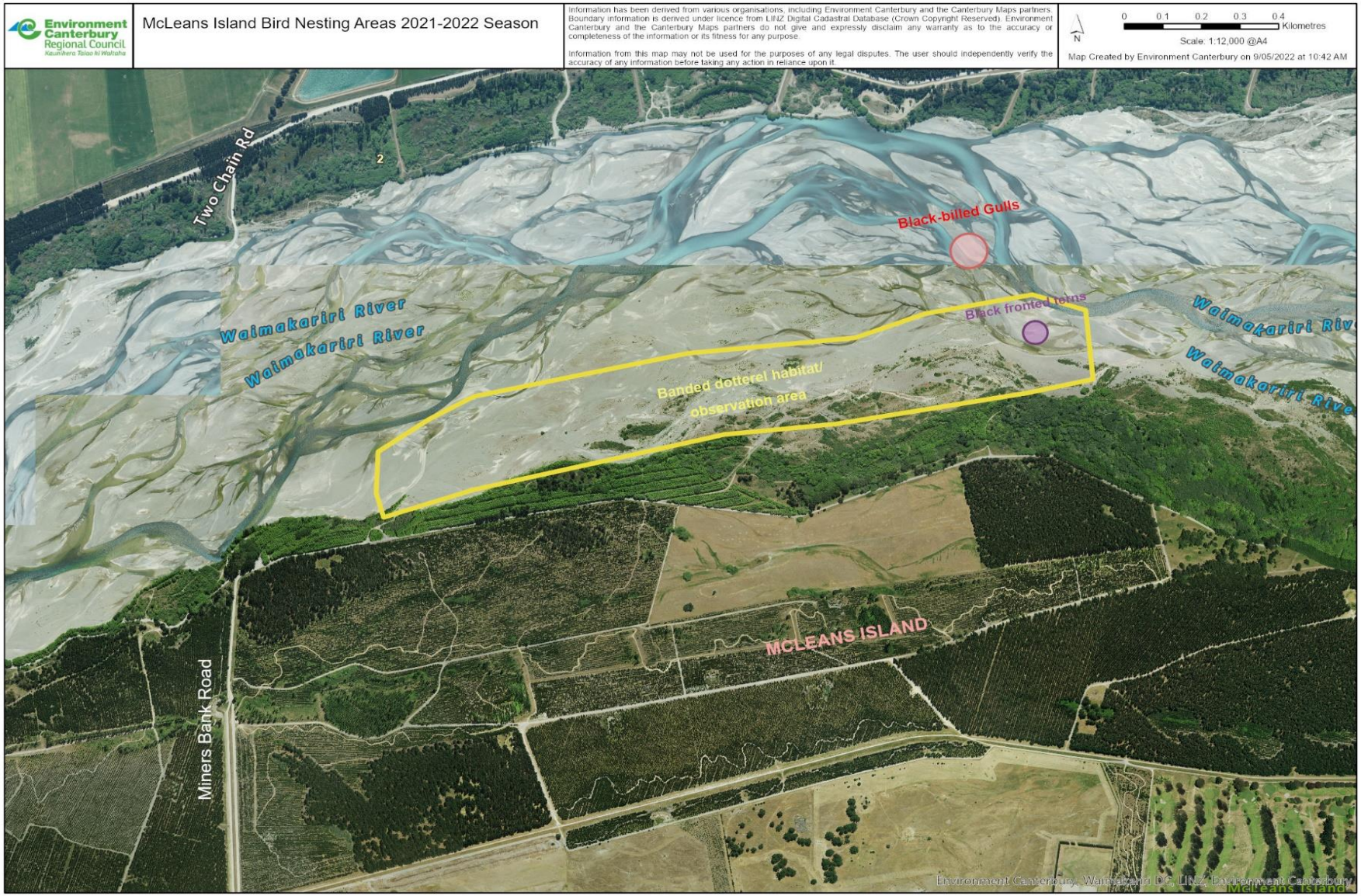


***Figure 2*:** *McLeans Island Bird Nesting Areas*



Black Billed Gulls:

Following the collapse of the Woodstock colony, blacked-billed gulls were located downstream of Miners Bank Road, behind Mcleans Island. The Miners Bank colony comprised approximately 790 nests, averaged from counts during the season. Chicks were first observed in the colony on the 20th of December, with the first fledgling observed on the 5th of January. A high count of 401 fledglings was recorded on the 27th January, indicating a moderate success rate of 0.5 chicks produced per nesting adult pair.

Miners Bank Road generally has reduced public access compared with other locations further up the river. The birds also had a reasonably high site that survived a moderate flood event in December. The reason for the success rate not being higher is unknown.

Table 1: *Black-billed gull chicks known to successfully fledge from monitored sites in the lower Waimakariri over previous seasons*

Season	**Nest Count (Estimate adult pairs present)**	**Estimate chicks fledged from site**	**Breeding success rate (chicks produced per nesting pair)**
2021-2022	790	401	0.51
2020-2021	417	282	0.68
2019-2020	600	20	0.03
2018-2019	792	291	0.37
2017-2018	1029	520	0.51
2016-2017	1120	738	0.66
2015-2016	804	339	0.42
2014-2015	1143	1550	1.1
2013-2014	243	121	0.5

Black Fronted Terns:

Black-fronted terns were monitored at three sites during the season, with data gathered on their breeding outcomes. The sites were near Weedons Ross Road, Thompsons Road and Miners Bank Road (***Figure 3***). Both Weedons Ross and Thompsons Road generally have higher public disturbance levels than Miners Bank Road, with higher levels of dog walkers and vehicle access in particular. The Weedons Ross colony contained five breeding pairs of terns but all nests were lost to a moderate flood on the 6th of December. The Thompsons Road Colony had three confirmed pairs which survived the same flood, but the nests were reported to be abandoned on the 20th of December, believed to be from human disturbance.

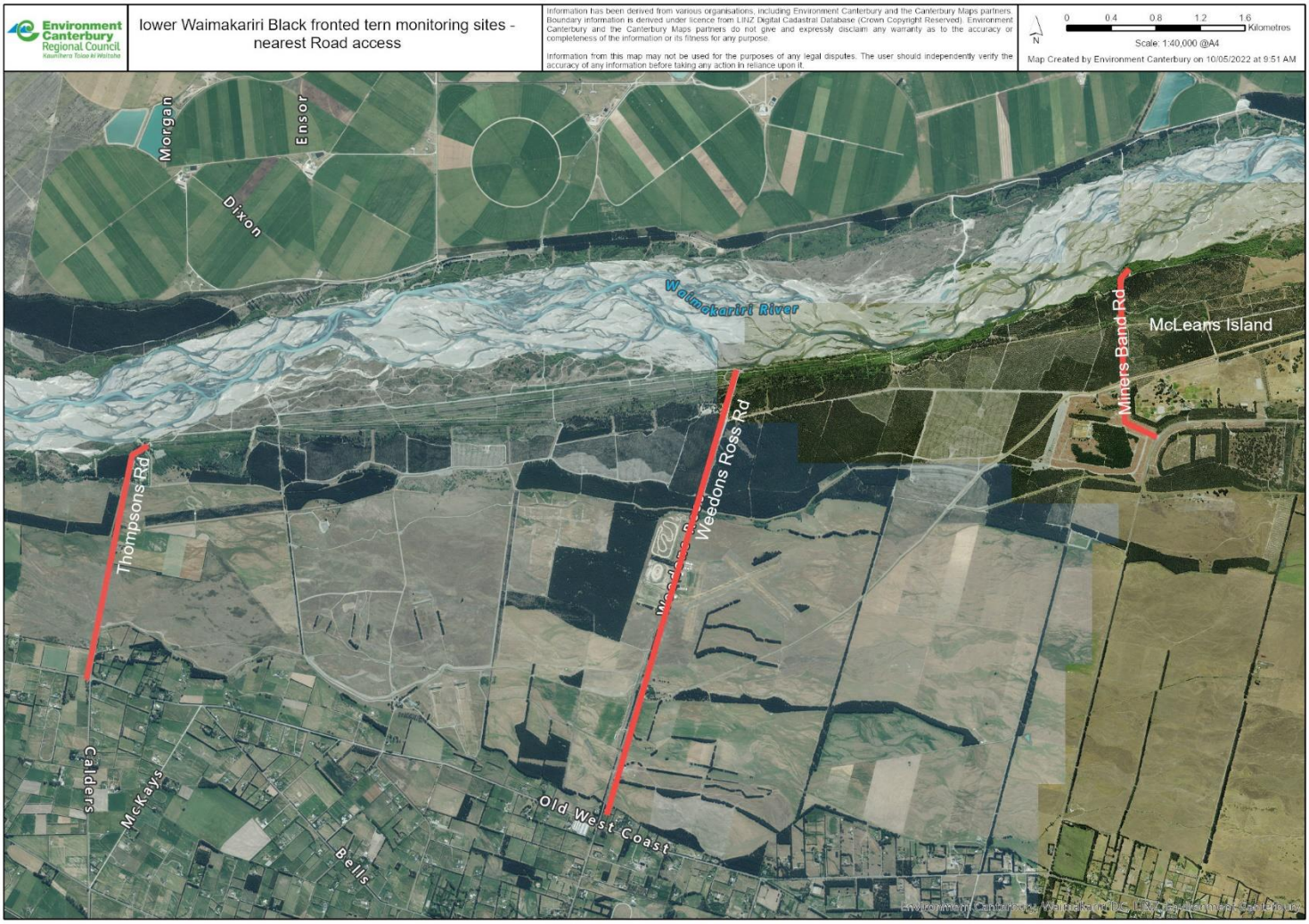
The Miners Bank Road colony survived the moderate December flood, with a maximum count of seven breeding pairs. These birds were nearby to the black-billed gull colony also being observed. Three of the tern pairs each had one chick fledge while the fourth pair had two chicks fledge, resulting in five fledglings from this colony. It is unknown why the remaining three nests were not observed to produce fledglings. Miners Bank Road is believed to have had higher success than the other monitored site due to surviving the December flood and from generally lower levels of public disturbance.

For clarity, there are highly likely to be other black-fronted tern nesting sites throughout the lower Waimakariri that also successfully fledged chicks. However due to limited resourcing and the terns being harder to locate as colonies can be spread out and geographically isolated in this large space, we are unable to regularly monitor the entire area and locate all nesting pairs. Tern nests are generally monitored where they are easier to locate or near to other birds being monitored (e.g. black-billed gull colonies). The success of these monitored pairs gives an indication of the overall success of the breeding population in the lower Waimakariri. This data should also be considered in context that the more accessible sites for monitoring may also likely to be more prone to human disturbance in particular.

Table 2: *Black-fronted tern monitoring data across three known nesting sites*

Site	Number of adult pairs	Chicks known to successfully fledge
Weedons Ross Road	5	0
Thompsons Road	3	0
Miners Bank Road	7	5

Figure 3: *Black-fronted tern monitoring sites over the 2021-2022 season*



Banded Dotterels:

Banded dotterel nests were also monitored in the vicinity of the black-billed gull and black fronted tern colonies behind McLeans Island, as shown in ***Figure 2***. There were a large number of dotterel nests present over the wider area, but obtaining a definite count was difficult without disturbing the other birds present.

Trail cameras were set up on several of the more accessible nests. Unfortunately, all but one nest failed due to unknown reasons (unable to ascertain from the camera footage). A harrier hawk was observed circling the area on several occasions, but it is unknown if the hawk contributed to the nest failures.

The remaining dotterel nest being monitored contained three eggs that were successfully incubated and hatched on the 3rd of January, with three chicks observed. Subsequent camera footage only revealed one chick, though the movement of chicks away from the nest makes their outcomes difficult to track.

The trail camera footage on the successful nest, as well as some of the other nests before they failed, showed that hares frequently disturbed the incubating adult off the nest. The disturbances were usually brief and the adult could return to incubating within a short time, but the frequency of the disturbances was cause for concern. This highlights hare control as an important factor in overall habitat management for future seasons.

Photo 1: *Banded dotterel sitting on three eggs near Miners Bank. Note: the time stamp is correct though the date should read 14/12/21.*

Photo 2: *Hare disturbing banded dotterel off their nest with three eggs near Miners Bank. Note: the time stamp is correct though the date should read 14/12/2021.*

Mammalian Predator Trapping

Traps were placed in the vicinity of the Miners Bank Road colonies, primarily between the colonies and adjacent edge vegetation. Hedgehogs were the main species removed, however there were also some stoat and rats removed as well as a cat. Full trap data is available in ***Appendix 1***.

Currently, traps are placed reactively as we identify bird colonies for monitoring and prioritisation of resourcing. The Plan recommends gradual implementation of landscape scale riparian trapping as a high management priority. There are already some permanent trap lines in the lower reaches of the river, which will be expanded on over time as funding permits.

Wildland Consultants Ltd undertook three months of predator monitoring in the lower Waimakariri River between McLeans Island and the river mouth, in October to November 2021. Monitoring included use of tracking tunnels, wax tags and camera traps to establish the makeup of the predator guild in this section of river. While the data revealed the usual suite of predators, it also showed a skew towards high rat numbers especially, which should be addressed.

Wildlands then used this information to produce ***the Lower Waimakariri River Pest Mammal Control Plan***, making key recommendations to improve predator control in this section of the riverbed. This plan makes recommendations around gradually increasing permanent trap lines that can be supplemented with reactive trapping around colonies as they are identified, as well as on-going predator monitoring that will help to guide future decision making.

Southern Black Backed Gulls

Introduction:

Southern Black Backed Gulls (SBBG) are a native bird to New Zealand but are not protected under the Wildlife Act. SBBG numbers have grown rapidly in recent years in correlation to more availability of food largely from agricultural intensification and are generally accepted as a pest species in their high numbers. SBBG are known to predate the chicks and eggs of other protected bird species and can take up prime breeding habitat in braided rivers, displacing other threatened species to less favorable habitat. Large SBBG colonies can also negatively impact local water quality through fecal contamination. SBBG in the lower Waimakariri River also pose a risk of bird strike to overhead air traffic transiting Christchurch International Airport (CIAL).

For these reasons Environment Canterbury (ECan), in conjunction with CIAL, make attempts to reduce numbers of SBBG nesting and breeding in the Waimakariri River over the summer months. ECan and CIAL have been working collaboratively for six seasons to reduce SBBG numbers in the lower Waimakariri River, with funding pooled and an ECan representative generally overseeing the control operations.

The main method for reducing SBBG numbers has been through targeted alpha-chloralose poisoning of SBBG in main breeding colonies, with all poisoning work closely guided by a best practice Technical Standard. In recent years, particularly in the lower reaches of the river, large alpha-chloralose controls of SBBG has become more difficult as birds become increasingly spread out and show a reluctance to eat plain bread pre-feeds. There is also a growing public awareness of these control operations and potential conflicts undertaking them in more publicly accessible areas of the river. We are increasingly relying on control methods other than traditional alpha-chloralose poisoning to target these birds, with some success.

Other supplementary control methods used include:

- shotgun control;
    - a site is pre-fed for several mornings with plain bread or rabbit meat. On the morning of the control, experienced gamebird shooters arrive before dusk, place decoys and bread throughout the target area and hide in adjacent shrub cover. Any shot birds are left on the shingle to act as additional decoys, which generally helps to draw in more birds. Shooting success can be very dependent on weather and wind conditions.
- egg and nest smashing;
    - physical destruction of eggs and nests to delay breeding cycles or attempt to dissuade a colony from setting up in a particular area.
- mahinga kai/egg gathering;
    - There has been some limited interest from Tūāhuriri rūnanga for collecting eggs in the lower reaches. Runanga members have collected eggs from recommended colonies and occasionally been supplied with adult birds following a shotgun control for use of feathers in particular. Developing a stronger partnership with Rūnanga should be a priority for future seasons.
- dispatching of chicks;

- Usually undertaken later in a season when chicks are present but not flying, shooters walk in a line through a colony with a dog. The dog can locate chicks hiding under scrub (as is usually the case) and flush them out for shooters to dispatch with an air rifle. This has proven to be very effective with a good dog, with low costs. Only two or three shooters have been required. Walking in a line through the colony also tends to herd the chicks in to a "creche". This technique is useful several weeks following a large alpha-chloralose control to further reduce the breeding success of a large colony, or where a large colony may be unable to be targeted using alpha-chloralose.

- small-scale targeted hand feeding of baited bread to nests;
  - A piece of alpha-chloralose baited bread is placed directly next to 10 – 12 SBBG nests at a time, late in the day. This baiting can occur over a series of nights to progressively remove 10-12 SBBG adults at a time, in a controlled way. All baited bread and controlled adults are easily accounted for on this small scale, with controlled adults removed the following morning. There seems to be much less disturbance without the general frenzy behavior created at larger scale controls, and adult birds seem to re-settle on their nests very quickly after eating the bread. This is a newly trialed technique this season and has proven very effective, particularly in the lower reaches where nests are very spread out and difficult to control using normal alpha-chloralose or shotgun controlling methods.

For the past six seasons, CIAL have sponsored an aerial survey of the lower Waimakariri to count SBBG nests and build a long-term picture of the overall SBBG population trends in this space. Surveys are undertaken at approximately the same time of year (late October or early November), at the same time of day (between 9am and 12pm) and ideally by an independent ornithologist or ecologist with experience in bird counts.

Undertaking the counts in late October generally ensures that all birds are present and have begun to nest. Counting at a similar time of day is also important, as visibility can change throughout the day with sun direction.

***Table 3**: SBBG counted in the Waimakariri Riverbed, from the river mouth to the gorge*

Date of Heli Survey	**Number of SBBG Counted**	**Comments**
3rd November 2021	3,999 pairs	The distribution of colonies was noted as similar to previous years, although with a slight increase in total nests counted. The larger colonies continue to be in the upper half of the monitoring area, with SBBG colonies and nests becoming smaller and more spread out in the lower reaches.
November 2020	3,375 pairs	This count was slightly later in the year and undertaken in-house by CIAL. SBBG colonies tended to be larger and more densely packed in the upper half of the survey area, from approximately Intake Rd west to the Gorge.
31st October 2019	3,810 pairs	Colonies were of smaller average size than in previous years. Birds were very sparse below Thompsons Road, but present in high numbers and dense colonies above this point.
2nd November 2018	4,017 pairs	A large group of over 6000 black-billed gulls was observed during the flight, although this colony did not successfully nest.
1st November 2017	3,031 pairs	Less birds counted this year was put down to the flight being flown in the opposite direction to the other years, with sunstrike causing sub-optimal

		viewing conditions (all subsequent flights will be flown east to west, before lunch time).
October 2016	5,015 pairs	The first annual survey conducted by Wildlife Management International Limited. Colonies were present throughout the river and had the highest average colony size of all surveys undertaken to date.

Summary of 2021-2022 season SBBG control:

LOCATION 1 – Approximately 5km Upstream Downs Road

Alpha-chloralose Control:

- 730 adult SBBG removed by Wildlands Consultants limited, with Courtney (ECan) and Niall (independent ornithologist) overseeing.
- Contractor Cost: $11,500 - including airboat to assist with clean up.
- Interwaste carcass disposal: $1,775.76
- Approximately $18/bird*
  *Niall and Courtney time charged separately and not included in this costing.

Shotgun Control 1:

- 106 adult SBBG removed
- Ammo: $387.99
- Bread: $12
- 2 ECan staff, 2 volunteers.
- Approx. $4/bird*
  *doesn't include staff or volunteer time

Shotgun Control 2:

- 116 adult SBBG removed (plus chicks and smashed eggs)
- Ammo: $398.26
- Bread: $20
- 2 ECan staff charged to work code, 4 volunteers no expense.
- Approx. $3.60/bird*

*doesn't include staff time

LOCATION 2 – Approximately 5km Downstream Gorge Bridge

Colony 2 is a "super colony" of over 2000+ adult SBBG, one of the largest colonies in the lower Waimakariri. This SBBG colony occupies a significant river island that could otherwise provide prime nesting and breeding habitat for other bird species, above normal flooding levels.

Alpha-chloralose Control:

- 1100 adult SBBG removed by Keystone Ecology, with Courtney (ECan) overseeing.
- Contractor Cost: $12,000
- Jet Boat support including driver (internal ECan plant and staff): $6,000,

- Enviro Waste carcass disposal: $887.50
- Approx. $17/bird

Chick Dispatch:

The alpha-chloralose control at Colony 2 successfully removed a good number of breeding adults. However due to the large size of the colony, a number of adults still remained and produced chicks later in the season. To keep pressure on this colony, two shooters and a dog visited the island later in the season (dropped off by jet boat). The dog located chicks (often hiding under scrub) and the shooters were able to humanely dispatch chicks using air rifle and shotgun, along with a number of adult birds.

- 2 staff with air rifles and dog walking through Colony 2, dispatching chicks/fledglings
- Between 4-500 chicks dispatched and approximately 20 adults
- Cost for jet boat/air boat to access the site: $1,350
- Air rifle pellets approx. $30
- Approx. $3/chick*
  Staff time charged separately and not included in this costing.

LOCATION 3 – Miners Bank Road to Motorway Bridges

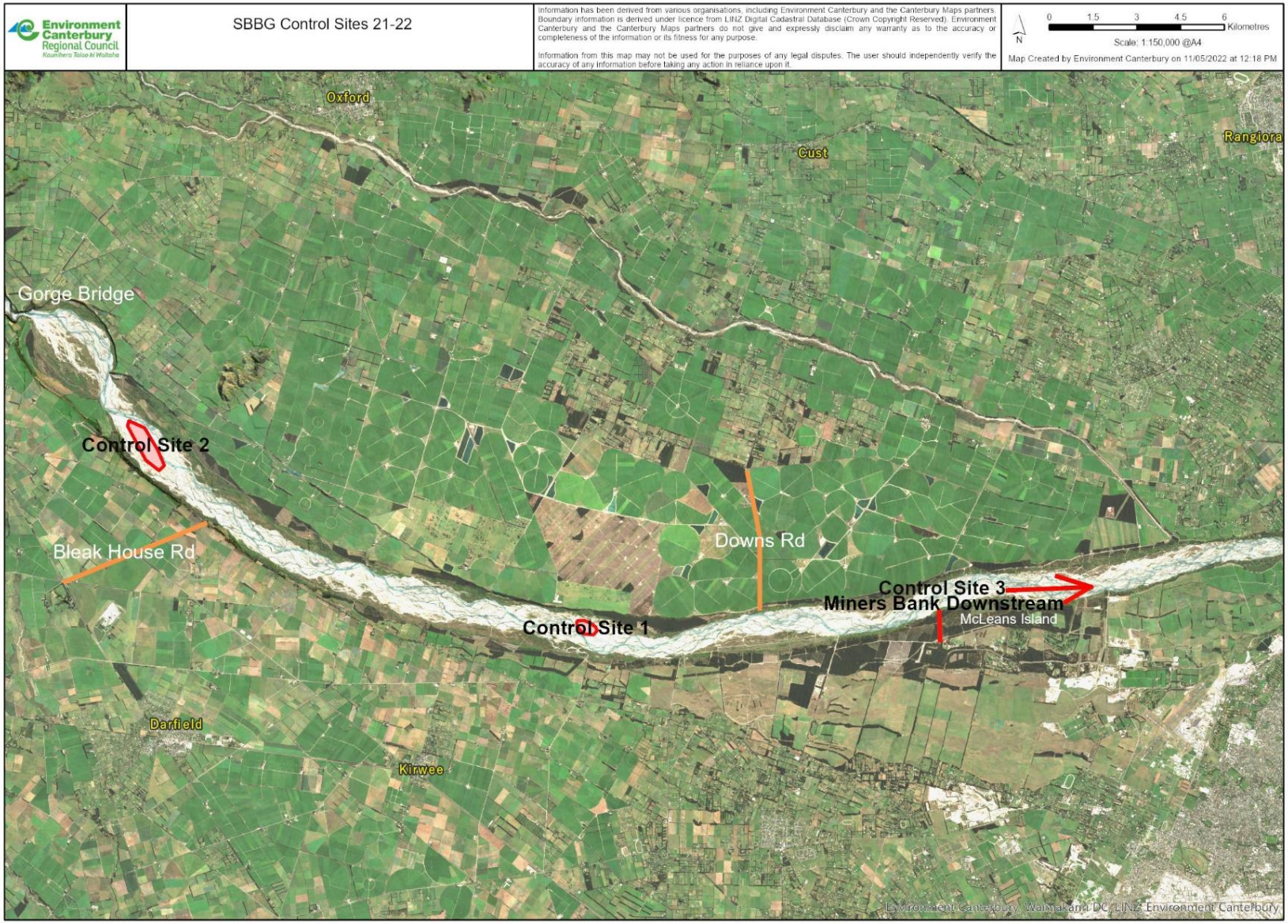
Targeted egg and nest destruction to try and dissuade birds from nesting in this area, particularly the ones close to the black-billed gulls and black fronted terns behind McLeans Island. These SBBG could not be easily removed using normal alpha-chloralose or shooting methods. Egg and nest smashing proved to be very labour intensive and ineffective over a large scale so trialing handfeeding baited bread to 10-12 SBBG at a time to remove them was undertaken. This proved to be an effective way of creating a buffer around the black bill and black fronted tern colony.

- Approx. 64 adult SBBG were removed using this method,
- 10-12 birds removed at a time over 6 different nights,
- Carcasses were able to be disposed of as Contractor had bins available from a separate bird control job – this cost would have to be factored into future work.

An estimated 2,100 *adult* SBBG were removed from the lower Waimakariri this season.

Photo 3: *An example of signage used at main entrance points to an alpha-chloralose control site*

Figure 4: *Waimakariri River SBBG Control Sites, 2021-2022 Season*



Discussion

This season has again highlighted the difficulties in attempting to find and effectively monitor bird species in a very large space with limited resourcing. The Plan for the lower Waimakariri recommends continuing the current level of monitoring for black-billed gulls and black fronted terns as a minimum, but also building on data for wrybill and banded dotterel. Attempts to monitor both wrybill and dotterel this season proved difficult as nests were hard to locate and then failed between visits for unknown reasons.

Next season we are planning to choose an area for monitoring, most likely the area behind McLeans Island which has proven to be a productive nesting ground for multiple species over previous years, for some targeted monitoring including with the use of cameras. We anticipate there will be banded dotterel return to this area, where we can concentrate camera efforts to monitor the outcome of nests more effectively and determine the cause of nest failure (or success).

During the course of their season monitoring, Keystone Ecology identified the area behind McLeans Island as having the potential to provide particularly good banded dotterel and wrybill nesting habitat. However, the area would greatly benefit from some enhancement work including weed clearance, targeted predator trapping in the adjacent berm and work to reduce hare numbers prior to bird nesting season. We will be working to implement these recommendations over the coming winter and spring to improve the nesting space for next season.

We will also be looking at options to begin implementing the recommendations of the Lower Waimakariri River Pest Mammal Control plan, building on the permanent trap lines already in place in the very lower reaches of the river. The lower section of the Waimakariri River, downstream from McLeans Island, generally has the lowest presence of SBBG as well as some level of controlled public access adjacent to the Regional Park infrastructure areas. Increased mammalian predator trapping would further enhance the suitability of this area as nesting and breeding space for protected species, with the goal of incrementally increasing this level of protection further up the river (excluding Regional Park infrastructure).

The trials of hand feeding alpha-chloralose baited bread directly to 10 SBBG nests at a time this season were very successful and something we hope to build on next year. This could be an efficient and cost-effective method to apply sustained pressure and gradually remove the remaining SBBG downstream of McLeans Island, which are very spread out and hard to target with traditional alpha-chloralose and shotgun control methods. This new hand-feeding method has the potential to be undertaken in a discreet and controlled way to remove nuisance birds, even when they are quite close to non-target species.

The recent reclassification of black-billed gulls from “Nationally Critical” to “At Risk – Declining” brings with it management implications for this species especially in terms of funding prioritisation. We still need to provide a level of monitoring data for these birds in the lower Waimakariri River, however they will likely shift from being the priority species to being more in-line with the other monitored species. Black-billed gull population trends could still give an indication of the overall health and issues faced in the lower Waimakariri River as nesting habitat, with an established nine years of data to continue building on. Additionally, there may also be merit in still focusing some effort on at At Risk species, to prevent a species decline before it comes too late.

Our management and monitoring has historically been very black-bill focused primarily due to limited resourcing, with other species benefiting where there has been an overlap in nesting space. However The Plan clearly sets out recommendations to move to more landscape scale habitat enhancement,

which will benefit a number of species in the long-term rather than only one or two species each season. There may still be a level of reactive trapping around colonies once they are established, however this will be assessed on a case-by-case basis and resourcing priority may instead go towards establishing permanent trap lines.

Prior to previous seasons, we have held a Technical Advisory Group (TAG) meeting to open our management options for the lower Waimakariri for objective discussion. Generally the TAG has at least included ornithologists, ecologists and members of the Department of Conservation, who have been able to give feedback on management proposals and help guide decisions for the upcoming season. Convening a TAG meeting prior to next season could be a very useful forum to discuss management options, especially in light of the changed black-billed gull threatened status.

Along with habitat enhancement, advocacy and education remain a key management priority for braided river bird species. The events at Woodstock again showed that, despite best conservation efforts, it can still take only one or two people to cause significant damage to nesting bird populations. Education may have prevented the events at Woodstock, had the people known about the importance of that nesting site or the potential destruction an un-controlled dog can cause. These events were frustrating to all involved, but some consolation was taken from the fact it was early enough in the breeding season for the birds to re-nest elsewhere.

Public advocacy and education also come with their own issues to be navigated. While the publication of the birds' location at Woodstock on several Facebook pages proved well received and reached a wide audience, it also attracted people to the site who specifically wanted to see the birds. On one occasion, a couple were observed walking through the black-fronted tern colony with several birds noted to be off nests and displaying distress behavior at the disturbance. The couple admitted they had come specifically to see and photograph the black-billed gulls and were adamant they knew a lot about the birds, however they weren't aware of the black-fronted terns or the disturbance they were causing.

Luckily in this instance there were staff on site who could speak to the people and prevent any further disruption to the nesting colonies. Publicising the location of nesting birds can be a balancing act, navigating the potential benefits of doing so with possible negatives. In this instance, the benefits from sharing the location of the birds at Woodstock outweighed the potential negatives.

As poor as the outcomes of the bird colonies at Woodstock were, there are still positive learnings that can be taken from these events. The buy in and support from volunteers was encouraging and something that may be expanded on in future seasons to help monitor and advocate for colonies, especially in more public areas. The extensive media coverage this colony received was also encouraging, with the story of both the birds nesting and failure due to human interference reaching a wide audience. The support from Jet Boating New Zealand and respective kayak clubs was also positive. These clubs readily helped to spread the message about the presence of the birds and the need to protect them to their user groups.

We will continue to offer braided river birds in the lower Waimakariri River the best level of protection we are able to in future. Management will continue to include a range of options from education to pest control and weed management. Moving to more landscape scale habitat enhancement is an exciting prospect, with the chance of greater long-term benefits to the wider river environment. We also hope to provide more robust monitoring data on a wider range of species in future seasons, to continue building a long-term picture of the lower Waimakariri River as nesting and breeding habitat for our Braided River Birds.

Acknowledgements

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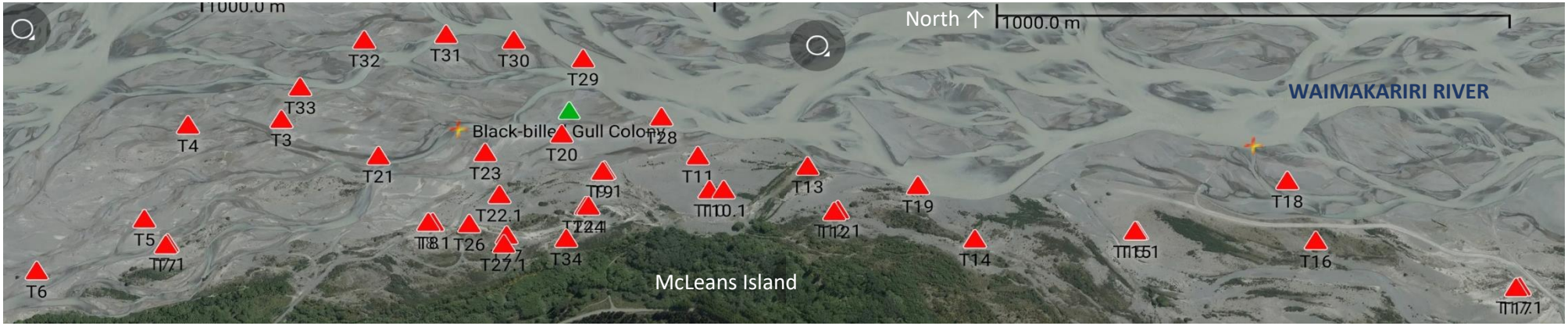
APPENDIX 1

Predator Trapping data around Miners Bank/McLeans Island Colonies



Trap	Placed	8/12/2021	21/12/2021	7-Jan	19-Jan	2-Feb
T1	24/11/2021	Moved due to Flood	-	-	-	-
T2	24/11/2021	Moved due to Flood	-	-	-	-
T3	24/11/2021	SS	SS	SS	SS	SS
T4	24/11/2021	SS	SS	SS	SS	SS
T5	24/11/2021	SS	Missing	-	-	-
T6	24/11/2021	SS	SSBE	SS	SS	SS
T7	24/11/2021	SS	SS	SS	SS	SS
T7.1	24/11/2021	SS	SS	SS	SS	SS
T8	25/11/2021	SS	SS	SS	SS	SS
T8.1	25/11/2021	Cat	SS	SS	SS	SS
T9	25/11/2021	SS	SS	SS	SS	SS
T9.1	25/11/2021	SS	Hedgehog	SS	SS	SS
T10	25/11/2021	SS	SS	SS	SS	SS
T10.1	25/11/2021	SS	SS	SS	SS	Hedgehog
T11	25/11/2021	SS	SS	SS	SS	SS
T12	25/11/2021	SS	SS	SSBE	SS	Hedgehog
T12.1	25/11/2021	SS	SS	Hedgehog	SS	SS
T13	25/11/2021	Lost in Flood	-	-	-	-

Legend	
SS	Trap Still Set
SSBE	Trap Still Set - Bait Eaten
SE	Trap Sprung Empty
Moved due to Flood	Nov-21
Lost in Flood	Nov-21
T	DOC200
T#.1	Timms Trap
All traps removed from field	2-Feb

T14	25/11/2021	SS	SS	SS	Stoat	SS
T15	25/11/2021	SS	SS	SS	SS	SS
T16	25/11/2021	SS	SS	SS	SS	SS
T17	25/11/2021	SS	SS	SS	Hedgehog	SS
T17.1	25/11/2021	SS	SS	SS	SS	Hedgehog
T18	25/11/2021	SS	SS	SS	SS	SSBE
T19	25/11/2021	Lost in Flood	-	-	-	-
T20	25/11/2021	SS	Returned from field - too close to colony			
T21	25/11/2021	Moved due to Flood	-	-	-	-
T22.1	25/11/2021	SS	SS	SS	SS	SS
T23	8/12/2021	Placed	SS	SS	SS	SS
T24	8/12/2021	Placed	SS	SS	SS	SS
T24.1	8/12/2021	Placed	SS	SS	SS	SS
T25	8/12/2021	Placed	SS	SS	SS	SS
T26	8/12/2021	Placed	SS	SE	SE	SE
T27	8/12/2021	Placed	SE	SS	SS	SS
T27.1	8/12/2021	Placed	SS	SS	SS	SS
T28	8/12/2021	Placed	SS	SS	SS	SSBE
T29	8/12/2021	Placed	SS	SS	SS	SS
T30	8/12/2021	Placed	SS	SS	SS	Rat
T31	8/12/2021	Placed	Washed Away	-	-	-
T32	8/12/2021	Placed	SS	SS	SS	SSBE
T33	8/12/2021	Placed	SS	SS	SS	SSBE
T34	8/12/2021	Placed	SS	SS	SSBE	Stoat