

Lower Waimakariri River Southern Black Backed Gull Control

An Operational Review of the 2023 – 2024 Season

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INTRODUCTION

Southern Black Backed Gulls (SBBG) are a native species which has become super abundant because of changing human land uses, which has provided more resources for the birds to thrive on. Their increasing numbers in many braided rivers, including the Waimakariri, have resulted in SBBG becoming a threat to other native birds which they predate on and displace from prime nesting habitat throughout the river, along with creating an aviation hazard for air traffic. SBBG are not protected under the Wildlife Act (1953) and are controlled to mitigate the issues their large numbers cause.

SBBG numbers in the lower Waimakariri River (below the Waimakariri Gorge) have been controlled in earnest since 2016, led by Environment Canterbury (ECan) with the support of Christchurch International Airport Limited (CIAL). This work is undertaken both to protect other threatened bird species in the river, as well as to reduce the risk of bird strike to air traffic transiting CIAL. Prior to 2016, CIAL and ECan undertook separate and sporadic controls throughout the river without achieving any notable results. Combining resources post-2016 has allowed more co-ordinated and targeted efforts towards controlling the SBBG population.

The most common method for controlling SBBG has been through use of Alphachloralose, an anaesthetic compound registered for the control of birds. These controls initially followed a Technical Standard prescribed by the Department of Conservation (DOC), but over time were adapted to a Best Practice Technical Standard specific to the Waimakariri River. Some of the adaptations made to the technical standard included:

- The requirement for an independent ornithologist to be onsite and witness the pre-feeds and actual control, in order to watch out for any non-target bird species and to ensure the SBBG were displaying appropriate feeding frenzy behaviour;
- The DOC standard required much wider public notification, however we were able to refine these requirements slightly for the Waimakariri River;
- We have included more specific requirements for poisoned carcasses to be disposed of with an appropriate waste disposal company certified to deal with commercial waste.

Over time we have also had to adapt and trial new methods of control, as the layout of the birds changed in several locations and a “traditional” style of Alphachloralose control would no longer be suitable. This is particularly apparent in the lower reaches of the River where nests are less abundant and more loosely congregated (ie more than 5m apart) when compared with larger colonies in the upper reaches. We believe this change in nesting pattern is as a result of targeting those lower colonies with Alphachloralose (and shooting) for several years prior, which has taken out more dominant birds and “core” areas of colonies, leaving only sparse nests and more loosely congregated birds. Changing colony layouts needs to be factored in to planning for future controls.

We have also witnessed bait-shyness behaviour from the birds on several occasions, when the subsequent poisoning could not go ahead. This is possibly a learnt behaviour from birds having been targeted with poison in the past, or more likely as a result of birds gorging on an abundance of food on adjacent farmland particularly when irrigators are operating. In response, we have trialled various methods of shooting, as well as a new method of targeted hand-feeding of poisoned bread to SBBG nests for the past two years, with various levels of success. Our next goal is to document the various control methods that have been used for future reference.

To date we have not trialled egg oiling, pricking or similar egg tampering methods in the Waimakariri River as the adult gulls have been the main priority for resourcing, partly because they create the main issue for CIAL who input funding. However we have undertaken egg and nest destruction in an attempt to form a buffer and push SBBG back from other colony-forming species, with mixed success. We have also undertaken chick and fledgling shooting end-of-season on a colony that was poisoned earlier in the season, to further reduce that colony's productivity.

At the time of writing this report, we have engaged an external consultant to develop a Waimakariri River specific SBBG control and monitoring plan. This plan will include guidance on how many SBBG need to be removed each season to make a meaningful reduction in the local population of birds, plus recommendations for minimum monitoring requirements to ensure we are meeting our goals for long term SBBG population reduction within the river. Key to this work will be draft data currently being produced by a Lincoln University student (Wendy Fox) who is studying SBBG movements and productivity rates on both the Waimakariri and Ashburton/Hakatere Rivers, with the long-term goal to assess whether Mahinga Kai and cultural harvest can prove a viable tool for the control of SBBG populations.

Alongside the development of this Waimakariri specific plan, we are beginning internal works to document various methods that may be used for SBBG population control, including notes on when each of these methods may be useful. This will include both innovative methods that we have trialled in the Waimakariri River and other industry standard methods that we have not yet used but are still useful to document (for example, egg oiling and pricking). The aim for this work is to establish an operational handbook of the various control methods that will be made available for other parties undertaking SBBG control to reference.

An operational handbook may be a useful tool to share within our SBBG Special Interest Group (SIG), that convenes several times a year to discuss the various SBBG controls happening around the region. This SIG was formed in 2022, following a recommendation in the 2019 Regional SBBG Strategy Document (*Bell & Harborne, 2019*) for a Regional Co-ordinator to be established, to better co-ordinate the various SBBG controls happening ad hoc around Canterbury. The SIG is seen as an interim measure for information sharing and co-ordination amongst agencies.

This report is intended to be read as an operational review of the control work undertaken in the Waimakariri River during the 2023-2024 season, with context of the wider Waimakariri control work to date, to refer to for future records and learnings. This report is not intended to be a rigorous and quantified discussion on control techniques used.

SUMMARY OF SBBG COUNT DATA SINCE 2016

Season	Date of Survey	Surveyed Numbers*	SBBG removed this season**
2023 - 2024	30 th October 2023	5,045 breeding pairs	275 SBBG, mostly adults, some chicks close to fledging.
2022 - 2023	26 th October 2022	4,223 breeding pairs	871 adult SBBG
2021 - 2022	3 rd November 2021	3,999 breeding pairs	2,100 adults 4-500 chicks
2020 – 2021	November 2020	3,375 breeding pairs	0 adults removed (although some nest and egg smashing)
2019 - 2020	31 st October 2019	3,810 breeding pairs	557 adult SBBG
2018 - 2019	2 nd November 2018	4,017 breeding pairs	1,167 adult SBBG
2017 – 2018	1 st November 2017	3,031 breeding pairs	1,345 adults SBBG
2016 - 2017	October 2016	5,015 breeding pairs	2000 adult SBBG

*Best estimate of breeding pairs based on aerial counts and imagery. There will be a margin of error.

** Best estimate of numbers removed. There are always some un-recoverable carcasses and birds that cannot be accounted for.

This table provides an overview of SBBG population counts and best estimate of SBBG numbers removed from the lower Waimakariri River since 2016. The surveyed numbers data is taken from an annual heli-survey when the birds are nesting, with an independent ornithologist contracted to complete the count. We have consistently performed the aerial surveys within a 4 week window between the end of October and mid-November of every season to try and improve the consistency of the data, comparing a similar stage of nesting each year.

The number of breeding pairs appears to be steady, if not increasing. This would indicate that control efforts to date have only been enough to slow the increase of birds present in the river and are not reducing the overall population. This has been the catalyst for seeking an external review of the Waimakariri River SBBG control program and developing a plan to guide future controls.

However this table also doesn't show the whole picture as the various control methods used each season are not included. In the 23-24 season, the 275 birds removed were all in the lower reaches where there are less SBBG present and we are only targeting remaining spread-out nests. The very large controls where 2000 or more SBBG were removed tended to be in the upper half of the river where we still find super-colonies with densely packed birds that are more readily targeted with traditional Alphachloralose controls.

CONTROLS

Pre-season shooting on farmland

Date of Control: Tuesday 26th September 2023

Control of SBBG in the time immediately before they begin nesting, or in the time immediately after they have fledged chicks, is referred to as "shoulder season control", which is recommended as a potential control option in the Karoro Strategy Document (*Bell & Harborne 2019*). The plan for this control trial was to shot gun SBBG swarming behind a tractor ploughing a field, before the main nesting season had begun in the adjacent Waimakariri River. SBBG have often been noted to swarm behind machinery working agricultural land and the option of shooting them in this situation has been discussed on many occasions, but to date we didn't know of any actual field trials.

Prior to this control, Courtney contacted a farmer on Ngai Tahu farmland near Downs Road on the north bank of the Waimakariri River, who agreed to the trial. Two shooters were used for this trial; Darryn Haffenden from the ECan Parks team who is an experienced firearms user and gamebird shooter, and Chris M¹, a volunteer who is also a highly experienced shooter with many years of gamebird shooting experience. Darryn led the trial shoot and his notes are recounted below:

"Good spot, few hazards within shotgun range. Map in red shows dwelling and likely people infrastructure. Orange where the paddock is:



Ben, Ngai Tahu Manager, put us onto Tom, that paddock farm manager, following H&S induction we followed tractor out to paddock which had been sprayed to kill all vegetation

¹ Full name not published for privacy reasons

Nearest hazard, except for tractor, 4wd irrigation maintenance? person to SW 500m & Team of Forestry planters working on foot to the South East, nearer to Downs road, were unaffected

DH 25 gulls, approx. 75 rounds

CM 31 gulls, approx. 90 rounds

Estimate overall, at least another 10 hit hard, unrecoverable.

High pheasant no4 lead shot with fibre wads ammo. This has very good results at longer ranges, especially whilst high birds flight is hovering above.

CM had good spot in tall thick flax cover western edge of paddock with central to paddock flight path into the wind and first pass of tractor birds initially followed, with a couple of quick kills acting as decoys, gulls kept coming in on that line from south-west

DH on southern boundary with scrubby little cover but good camo. Gulls seemed to be focused on the paddock rather than avoiding people with guns. As opposed to pigeons or ducks, concealment didn't matter so much. Didn't use the laydown blinds (now safe and dry in Kainga office), though would've been useful if there had been no natural cover.

A bit like the riverbed when out fetching downed birds the movement somewhat attracted gulls in lower and closer. Balloons, black and white with helium, used as possible attraction, perhaps a good distraction to incoming gulls, twice a gull almost landed on them, but result inconclusive.

Overall there was certainly no flocks of gulls, most nearby in view at any one time about 15. Clearly once the tractor had finished the bird numbers dwindled, one and twos still coming in whilst packing up.

On arrival in the distance (1km?) to the Northwest there were large flocks of SBBGs. Not sure what they were being attracted to but it seemed like none of them came our way. Dead birds used as decoys made a big difference, they were definitely coming in on them, generally from the Southwest into the easterly moderate wind.

Learnt that decoys are important, making dead look realistic in the future may be helpful but suggest effort into obtaining realistic decoys a good idea.



Balloons in green paddock beside, to avoid tractor movement. Foreground is sprayed off low vegetation about to be worked."

Further comment from discussion with the farmer was that they would usually expect more birds to be around when the tractor was working, and the birds were possibly put off by the presence of the shooters.

The number of birds shot was comparable to what we would expect in a shot-gun control of SBBG in the riverbed during nesting season, indicating there is merit to further exploring this method. In theory, this work could be upscaled relatively easily and delivered on multiple farms adjacent to the Waimakariri River (and throughout the region) both leading up to and during the breeding season, provided shooting could be co-ordinated with farmers and guidelines could be followed by trustworthy suppliers.

Estimated Costings:

- Chris (volunteer) – No Charge
- Darryn, 6 hours (3 hours shooting, 3 hours planning/travel) @ \$63.25/hour (incl GST) = \$379.50
- Courtney, 2 hours planning @ \$80/hour (incl GST) = \$160
- Approx. 160 rounds of ammo used, estimated cost of \$200 (incl GST)

Total estimated cost, approx. \$739.50

Approx. 60 birds controlled, so estimate a cost of around \$12.32 / bird (incl GST).

This works out at a cheaper cost per bird compared with Alphachloralose control, however a portion of this relies on the use of volunteers. Obviously the control would be a lot more expensive if the work had to be contracted out and we couldn't use volunteers. These costings also don't take into account the likes of private firearms usage and compensation for general wear and tear.

Targeted Hand-feeding Method

In the bottom end of the Waimakariri River (approximately between McLeans Island and Harrs Road – *Map 1*), we have a situation where colonies of SBBG have been targeted using the “traditional” Alphachloralose control method in years prior to 2019, and with follow up shotgun controls in the years since. While these controls were successful in themselves, we believe this has resulted in taking out the dense core of the nesting colonies and over time we have been left with more spread out SBBG nests (>5m spacings) that would be very hard to target with a traditional Alphachloralose control.

2023-2024 was the second season we have trialled the idea of a targeted “hand-feeding” method of applying Alphachloralose baited bread directly to a small number of SBBG nests in the Waimakariri River (with the first tests undertaken in 2022-2023). The idea of this method is that a piece of baited bread can be placed directly in a nest with an egg, with only a few nests targeted at one time. A key aspect of this method is to avoid creating frenzy behaviour, so that the incubating bird settles quickly back on their nest and the applicator can move on to the next nest.

Three main controls were undertaken using this method; twice adjacent to McLeans Island and once adjacent to Baynons Road (*Map 1*). The full methodology that was supplied for the Contractor to follow is attached as *Appendix 1*. While these controls were somewhat successful, with 235 adult SBBG removed, there are some learnings to be taken and refinements to be made if this technique is to be trialled again in future.

Some of the main learnings from trialling the targeted hand-feeding controls over the 2023-2024 season included:

- The Contractor suggested there is a window early in the nesting when both adults may be attached to a nest and therefore able to be targeted by placing a piece of bread both in the nest and then next to it. However it eventuated that finding this window was difficult and it appeared that the second piece of bread was usually eaten by the main bird, or not at all. I would recommend only attempting to target the main bird on the nest in future.
- Controls in the evening, when birds are more likely to settle quickly back onto the nest, is still the preferred method. However after a night control this season, we also trialled one control early the next morning, with the birds being collected before lunch time. The idea was to improve efficiency, as two “groups” of birds could be removed while the contractor is on site. If this morning control method is to be trialled again in future, we need to account for:
 - A daily forecast temperature limit, above which the controls should not proceed. *Fairweather et al, 2015*, report the efficacy threshold of Alphachloralose to be 18°C, above which the chances of a bird recovering from the poison are significantly increased).
 - A spotter being on site at all times, to ensure birds are accounted for within the control site, no non-target species are entering the control area, and also to monitor for public incursions to the work area.
 - The level of poison being used is appropriate for this style of daytime application.
- The signage and site management around these controls was inadequate this season. In future, the Contractor must ensure there is adequate signage at all relevant river access points and that the signage clearly states when and where the controls are happening (we had feedback from a member of the public this year that the signage was confusing as to where the controls were actually happening ie in the riverbed and not in the adjacent river-berm). In addition, the Contractor must be very clear about who from their team is in charge of the worksite, and that person must remain on site for the duration of the control work. That person’s number should be listed on the signage as the point of contact and they are responsible for the management of that jobsite. These

are high-risk works that require a good level of job and site management, so we expect a high standard from the Contractor delivering the work.

- Poisoning work must be targeted at the height of egg laying when there are no, or few, chicks present. Despite assurances this season that only nests with eggs would be targeted, it eventuated that there were some orphaned chicks remaining after the third control. If this happens, the Contractor must be prepared to immediately and humanely euthanise any remaining chicks with a sharp blow to the head or similar, and all staff on site should be briefed for this requirement.

Estimated Costs:

In total, 235 adult SBBG are estimated removed using this method.

The cost was \$17,754.25 excl GST, so we estimate a cost of around \$75.55 per bird (excl GST).

This cost includes:

- Contractor labour time;
- Contractor mileage;
- Gull disposal (poisoned gulls must be disposed of with an appropriate waste disposal company as per our best practice guidelines, and cannot be buried);
- GPS hire
- Any miscellaneous Contractor expenses.

This cost does not include:

- Contract manager expenses related to preparing and managing this work.

This control method works out far more expensive per bird than shotgun controls or even a traditional Alphachloralose operation (which is very roughly estimated around \$30/bird based on our historical information, but this fluctuates). However, when you are targeting less numerous birds on spread out nests that cannot be targeted using traditional methods, your costs are always going to increase as the time required increases and the kill rate decreases.

These birds were not targeted using shotguns as their spread-out nests over a large area can make shooting controls inefficient (it becomes harder to draw birds in to the shooting area). The third control in the lower portion of the river is also adjacent to a popular horse-riding destination on the riverbank and shooting can cause issues for park users. However in this instance it might be worth exploring further options for shooting or other methods of control, until the hand-feeding methodology can be further refined.

It is worth noting that there was some funding allocated for a larger "traditional" Alphachloralose control for the 2023-2024 season, however access issues and lack of contractor resourcing meant this work was not able to happen at the height of egg laying and therefore could not proceed.

End of Season Shooting

On the 25th of January 2024 we undertook a shotgun control of a SBBG colony roughly adjacent to the end of Harris Road (see Map). The purpose of this control was to supply SBBG carcasses to Landcare Research for the purpose of investigating the gulls as a potential indicator and transmitter of disease within a landscape (as opposed to controlling gulls for population control).

We wouldn't usually undertake a shoot this late in the season as chicks are very close to fledging which makes adults less attached to a site and more difficult to shoot. There are also ethical questions around shooting adults and potentially leaving chicks that cannot be readily dispatched. However on this occasion we judged that chicks were very mobile and close to fledging, if not already fledged, and it would be fair to target all birds present on site.

We had three people on site; Darryn from the ECan Parks team again led the shoot, assisted by Chris M (Volunteer), George H (Volunteer) and a Labrador retriever. The shooters followed our usual structure of arriving at dawn, parking away from the general shooting site and then walking to find some cover amongst scrub in the general SBBG colony area (all shooters were wearing appropriate camouflage gear). Shooting generally starts off slow as the first few birds are hard to pick off, however once a few birds are killed they act as decoys to draw in more, so shooting tends to become easier. Darryn and Chris act as the main shooters, while George and Labrador retrieve shot birds and George has an air rifle should any birds need to be euthanised. Birds are moved back towards the shooters to act as decoys. We find that the commotion of a person or dog moving dead gulls also helps to attract other live gulls in.

40 SBBG were shot and recovered between 7am and 10am (with a small number unrecoverable), along with 12 pigeons. After 10am most SBBG had dispersed from the area. The number of rounds used for this work was approximately 100, so we can estimate 1.9 rounds used per bird (which we have found to be about our average strike rate with these experienced shooters). The SBBG were a mixture of mature and juvenile birds. Allowances did not have to be made for disposal on this occasion as Courtney delivered all carcasses to Landcare Research for testing.

40 SBBG was a higher number than we were expecting, which further highlights there may be value in shoulder season control outside the primary nesting timeframe. Our general shooting methodology will be documented prior to next season, which would also allow the work to be contracted out if required. Since the end of this season, there has been an internal stop-works notice on any use of firearms for any Environment Canterbury work while internal health and safety procedures are addressed. This may potentially complicate the use of staff and volunteers for future controls, so we need to have clear guidelines in place should the work need to be contracted out.

Estimated Costs:

- Chris, George and Labrador (volunteers) – No Charge
- Darryn, 6 hours (3 hours shooting, 3 hours planning/travel) @ \$63.25/hour (incl GST) = \$379.50
- Courtney, 4 hours planning (2 hours planning, 2 hours assisting with clean up on site and delivering birds) @ \$80/hour (incl GST) = \$320
- Approx. 100 rounds of ammo used, estimated cost of \$120 (incl GST)

Total estimated cost, approx. \$819.50

Approx. 40 SBBG controlled, so estimate a cost of around \$20.5 / bird (incl GST)*

*this cost would rise if we had to include disposal of the birds.

SUMMARY NOTES

We can take learnings from the 2023-2024 season and from previous years, especially around trialling new methods of control and shooting outside of the main nesting season. We may have had a small, localised impact on removing the sparse SBBG nesting in the very lower reaches of the Waimakariri River adjacent to Baynons Brake, however we realistically did not remove enough birds to impact the overall nesting population throughout the river (estimated at 5,045 breeding pairs as of October 2023, *Bennet 2023*).

It is worth noting that, while we removed lower numbers than usual this season, we were targeting sparse nests in the lower reaches where we believe we have made a local reduction in the population. Our intention is to keep pressure on the sparse nests and eventually completely remove them from this space, to create a large area of suitable habitat for other threatened species where SBBG are no longer a significant issue. In addition, the SBBG in the very lower reaches of the river may pose more of an immediate issue for overhead air traffic, as they are closer to the main flight path from CIAL.

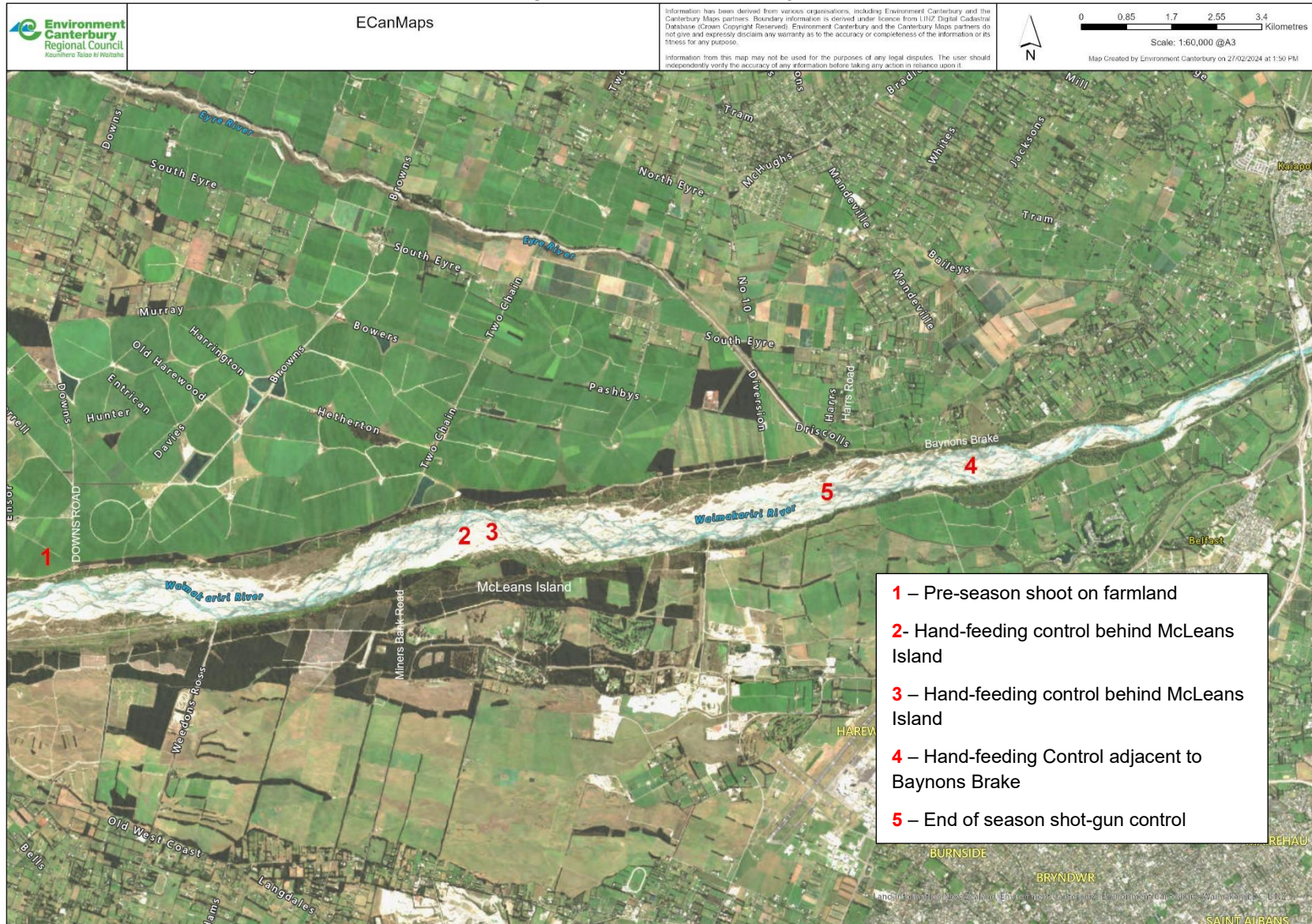
Further notes and learnings to take from the 2023-2024 season include:

- We continually see the role dead SBBG play as decoys when undertaking control shoots. Shoots are more efficient when there are controlled birds on the ground, luring in other birds for a look. However, targeting the first few birds can be slow until the pile of controlled birds grows. The idea of decoys needs to be further investigated to increase the early-stage efficiency of control shoots, including the possibility of getting a few SBBG taxidermied as realistic decoys.
- It is worth noting that, while we successfully undertake shotgun controls within the riverbed, “sniping” of SBBG using a rifle is generally not accepted as safe in the lower Waimakariri River. .22 calibre bullets are known to ricochet badly especially in the riverstones, and generally you must get quite close to the birds (ie within 50m) to have an effective kill shot, after which the rest of the birds take to the air (even at night). Anything higher calibre is not safe as the potential for the bullet to travel to the adjacent riverbank where there may be people is too high. There are frangible centrefire ammunition options becoming more available (projectiles disintegrate on impact), and also .17hmr options that may be safe if used correctly, and could be worth exploring as future options.
- There may still be some merit to the hand-feeding methodology, but refinement of the technique is required.
- We are investigating requirements and rules around disposal of gull carcasses. Any birds controlled using poison must be properly disposed of at a registered landfill or with an appropriate waste disposal company certified to deal with commercial waste. However a question was raised at a SBBG SIG meeting this year around the disposal of birds in offal holes. We are waiting for clarification around these rules to present at the next SIG meeting prior to next season, which could impact how we dispose of shot carcasses (which at present tend to be buried at a suitable off-site location).
- Runanga notification and consultation requirements need to be confirmed before next season. We are currently seeking input from Runanga on how best to go about this, and are awaiting a response.

Southern Black Backed Gulls will continue to be one of the main threats to other at-risk birds nesting in the Waimakariri River, as well as creating an aviation risk for overhead air-traffic, for the foreseeable future until we can start to make meaningful reductions in the local population. The development of a plan to guide these works is an exciting prospect and we look forward to seeing what changes that may bring for future control works.

MAP

Indicative locations of the various SBBG controls undertaken for 23-'24 Season in lower Waimakariri River



REFERENCES:

Bell, M.D.; Harborne, P. 2019. Canterbury Southern Black-backed Gull/Karoro control strategy discussion document. Unpublished Wildlife Management International Technical Report to Environment Canterbury.

Bennet, D. 2023. Southern Black-backed Gull Survey of the Ashley Estuary and Lower Waimakariri River 2023. Unpublished Wildland Consultants Limited Report to Environment Canterbury.

Fairweather, A.A.C.; Booth, L.; Morriss, G. 2015: Alphachloralose Pesticide Information Review. Version 2015/1. Unpublished report docdm-124983. Department of Conservation, Hamilton, NZ. 37p.

APPENDIX 1:

Hand-feeding control methodology

Bait Application:

- The Supplier should select a series of approx. 20 nests for poisoning at a time. There is no minimum number of nests that can be controlled at once, but for these purposes, a maximum of approximately 20 nests is recommended (the Supplier may seek written approval from the Contract Manager to remove more birds in certain situations).
- Selected nests should be close together, ie within an approx. 200m radius of each other.
 - *Nests must be within a reasonable distance that a spotter can attempt to retrieve any uneaten bait or scattering birds.*
- The Supplier must take all reasonable steps to avoid harm to these other species, including when driving in the riverbed.
- Two approaches may be taken to laying the toxic bait:
 - 1 - Toxic bait may be laid in the evening, as close to dusk as possible, to ensure adults return to their nests and are quickly affected by cooling weather conditions. Controlled birds must be removed early the next morning following toxic baiting.
 - 2 – Toxic bait may be laid early in the morning, 6am or earlier, with controlled birds removed by 12pm at the latest. This method requires a spotter on site at ALL TIMES to observe birds and keep control of the site.
- Application rates should be sufficient to ensure the birds have a quiet and fast death.
- Baited bread should be placed next to each of the selected nests, with the person doing the baiting retreating from the area as quickly as possible (to ensure birds re-settle on nests).
 - *Pre-feeds are not required when following this method.*
 - *The Supplier should watch from a distance to ensure baited bread is eaten and birds re-settle on nests.*
 - *Any uneaten bread should be removed from the site immediately.*
- Any surviving, drowsy birds should be dispatched with a sharp blow to the head, or neck dislocation. Any eggs present in nests where the adults have been removed must be smashed.
- The Supplier must GPS all controlled nests to provide a map of the control area on completion of works.
- The Supplier may select a new group of up to 20 birds to control over progressive nights/mornings, with a slightly different nesting area selected each time and all controlled birds removed as soon as practicable.
- Controlled carcasses should be disposed of with an appropriate waste disposal company certified to deal with commercial waste, e.g. Interwaste. This is to be arranged by the Supplier at their expense as part of this contract.
 - *Poisoned carcasses cannot be buried in the riverbed.*

Timing of Operation:

- Alphachloralose poisoning should be timed for when birds are sitting on eggs, before chicks are present, and as early in the season as possible.
- Toxic baits should be laid during calm weather. Windy conditions can cause birds to scatter after ingesting poison.

Notification

Environment Canterbury are the primary landowner in the immediate area where control is required. For small-scale, contained control operations, the supplier is not required to notify adjacent landowners prior to planned control (only the Contract Manager on behalf of ECan).

If poisoned birds are found to scatter beyond the immediate control area, the supplier must notify the contract manager immediately and contact any landowners where birds are believed to have scattered.

Signage

Signage must be placed at access points to a control site, or at logical points at either end of a control point, prior to any poison being laid. Signage must not be removed until all poisoned birds are removed from site and all toxic bread is accounted for.

Equipment

All equipment necessary for this control is to be provided by the Supplier as part of their contract price. Notification signage for any poisoning will be provided by ECan.

The DOC Alphachloralose calculator can be supplied by the Purchaser to use as a reference for recommended bait application and sowing rates if required.

Reporting requirements

Upon completion of works, the Supplier must produce a brief report outlining the control works completed during the contract. Please ensure the report includes the following information:

- Dates of control operations,
- Number of birds targeted in each round of control,
- Number of adult birds dispatched (if different to above),
- POISONING RATES USED, including the total weight of poison used and the number of birds controlled for that weight of poison.
- Any notable events (e.g., weather) that may have influenced delivery or effectiveness,
- Map and waypoints outlining the locations where birds have been removed (the contractor must GPS each nest site where a bird is removed),
- Any significant observations.

APPENDIX 2

Karoro Control in the Ashley/Rakahuri Estuary 2023-2024 nesting Season

Author: Greg Stanley – Regional Lead, Braided River Revival

In general, Papatipu Rūnanga are cautious around the control of Karoro as it is a Taonga species. Different Rūnanga voice different opinions on the matter with Ngati Kuri and Te Rūnanga o Moeraki opposing control of Karoro and Te Rūnanga o Arowhenua actively participating in control. Furthermore, Rūnanga are generally in opposition to the use of poisons in the environment and have concerns around our notified alphachloralose operations, as well as with use of herbicides and pesticides. In the 2023 breeding season, manual control of Karoro eggs and nests was undertaken in the northwestern side of the Te Aka aka estuary within and adjacent to the Fenton reserves and Nohoanga entitlements. Estuarine populations of Karoro had been observed to dramatically increase in the seasons following 2020 according to the regular observations of the Ashley Rakahuri Rivercare group and PhD student Eleanor Gunby who had been observing avian populations over that period.

Following conversations with Rūnanga staff around our 2023 operations and the concerns around proximity to Īnanga harvest areas, it was agreed that all controls in the estuary will be manual. The methods used were nest disturbance, cultural harvest of Karoro eggs and egg destruction. The eastern and southern flanks of Te Aka aka and Ashworths beach were worked by 'Keystone Ecology' while the western flank between the Rakahuri and Saltwater estuary were monitored and controlled by Mātua Nick Rupene, a member of Tūāhuriri recommended by members of the Fenton trust.

Monitoring of birds by Mātua Rupene began in the week of August 14th 2023. A twice weekly pass through the area was performed without much hassle, given Whānau were camped nearby and exercising nohoanga rights at the time. By the end-of September, Karoro numbers had significantly increased and by early October, nest construction and egg laying had begun.

“I was shocked at the numbers of karoro eggs. The first colony I came across 137 nests. Every nest on colony 1 contained three eggs. There were 34 nests without eggs.

Colony 2 had 17 nests with eggs. 12 nests had 3 eggs, 3 nests had 2 eggs and only 2 nests had 1 each. 14 nests with no eggs. This site was flooded out a couple of weeks prior. And a number of nests were washed away along with low nesting areas of colony 1 as well.

When I returned to the first colony I sat and observed the birds for some time and noticed the possible site of a 3rd colony. When I got to the site, I discovered that there was a new colony starting up. I found 9 nests all with 3 eggs in them and 7 nests without.

I harvested some eggs and smashed all the rest and half the nests. The time of laying is between 11th of October and the 23rd of October. The river was in flood and missed a week unable to check.”



Colony 1	411 eggs	34 empty nests
Colony 2	38 eggs	14 empty nests
Colony 3	27eggs	7 empty nests

Following Mātua Rupene’s work, we were able to firm-up of the control regime, the locations to target and the suitable timing of works. We anticipate being able to perform a much more ‘honed’ operation in the coming season.

In addition to the works performed, Karoro populations in the estuary were under observation by PhD student Eleanor Gunby as already mentioned. It is anticipated that any effective reduction in Karoro population or predatory behaviour within Te Akaaka in the 2023 season will be observed and reported on in her research. This could further-inform operations in the coming seasons should holes in coverage or recommendations on timing be made. Also, if there was a noticeable impact on lowering predatory behaviour by Karoro then that would support further control of this nature.

Control was performed in the areas as shown in the following map.



Figure 1 The areas where Karoro control was performed by Mātua Rupene. The two central polygons indicate the area referred to as “colony one”, the first two areas worked. The areas to the north and south were where the subsequent colonies were established later in the season.