

MONITORING OF BRAIDED RIVER BIRDS IN THE LOWER REACHES OF THE RANGITĀTĀ RIVER DURING THE 2021-2022 BREEDING SEASON



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1. INTRODUCTION

Braided rivers in Aotearoa New Zealand are considered to be internationally important due to the high endemism of indigenous plants and fauna that rely on these environments and provide critical breeding habitat for indigenous shorebird species (Gray and Harding 2007). These shorebirds are classified as either At Risk or Threatened according to the New Zealand Threat Classification System (Robertson *et al.* 2021), including wrybill (*Anarhynchus frontalis*; Threatened-Nationally Increasing), South Island pied oystercatcher (*Haematopus finschi*; At Risk-Declining), black-billed gull (*Larus bulleri*; At Risk-Declining), black-fronted dotterel (*Elseyornis melanops*; At Risk-Naturally Uncommon), banded dotterel (*Charadrius bicinctus*; At Risk-Declining), and black-fronted tern (*Chlidonias albobriatus*; Threatened-Nationally Endangered). Braided river bird surveys have recorded populations of these species on the Rangitātā River, Canterbury. The Rangitātā River has been identified as an important bird area (IBA) (Forest and Bird 2016). Currently, there is limited knowledge on the breeding populations of indigenous birds in the lower Rangitātā below the State Highway 1 bridge. This report summarises monitoring undertaken during the 2021-2022 breeding season in the lower Rangitātā and provides baseline data for future monitoring and conservation actions. Illustrative site and nesting photographs are provided in Appendix 1.

2. PROJECT SCOPE AND BRIEF

Environment Canterbury provided the following brief:

- The section of river to be monitored is from the State Highway 1 bridge downstream to the river mouth (note that this was altered during the survey; see Section 3 below).
- The primary bird species for monitoring are:
 - Black-billed gulls.
 - Black-fronted terns.
 - Wrybill.
 - Banded dotterel.
- Specifications were provided for time to be spent undertaking the survey, requirements for the key species listed above, and for other species encountered during the survey (see below).
- In relation to southern black-backed gulls, identify accessible colonies that could potentially be subject to a separate mahinga kai egg harvesting study.
- Requirements for reporting.

3. METHODS

Transect counts were undertaken to identify the locations and numbers of braided river bird species, focusing on black-billed gull, black-fronted tern, banded dotterel, wrybill, and black-fronted dotterel. Of these species, black-billed gull were the main priority. Additionally, the nests of South Island pied oystercatcher and significant colonies of southern black-backed gull were recorded.

All bird observations were also recorded on the eBird website at <https://ebird.org/home>. Bird surveys were undertaken between 4 November 2021 and 23 February 2022. The survey area was visited once a week, and each visit consisted of approximately six hours of actual monitoring time in the riverbed and approximately three hours of travel time.

The monitoring area initially covered was approximately 18 kilometres of riverbed, from the State Highway 1 bridge and downstream to the river mouth. The survey area increased after 17 November to include approximately five kilometres of riverbed upstream of the State Highway 1 bridge (see Figure 1).

Several access points were used to enter the riverbed:

- The end of Old Main South and Wrens Roads on the river's true left and across private land (Rob Wilson property, north of SH1 bridge).
- From Dip Road and Badham Road on the true right side of the river.
- The Rangitātā Huts area (true left side).

Each monitoring survey consisted of walking slowly, noting the number of species, location, and breeding status, and recording GPS coordinates when applicable. The entire riverbed length was walked/surveyed at least once, and areas of potential breeding habitat for the target species visited repeatedly. Arowhenua representatives were present for several hours of monitoring on 4 November 2021.

Findings are set out below in the following order:

- Black-billed gull
- Banded dotterel
- Black-fronted dotterel
- Black-fronted tern
- Wrybill
- South Island pied oystercatcher
- Southern black-backed gull
- Other observations



Figure 1: Locations of breeding attempts by target species in the lower Rangitātā River.

4. BLACK-BILLED GULLS

Black-billed gulls (*Larus bulleri*, At Risk-Declining) were recorded breeding in a colony on a gravel bank immediately north of the Rangitātā mouth (S44.18485, E171.51595). The first survey (2 December 2021) recorded 2,694 birds, including 10 recently-fledged juveniles (Figure 1). Nest building, copulation, occupied nests and unfledged chicks were also observed. Counting birds in this colony was difficult because of the large colony size and due to birds constantly arriving and departing. To avoid disturbing the breeding birds, a sample section near the colony's edge was picked as being representative of the whole colony and were closely monitored. On 2 December 2021, there were 49 adult birds and 16 chicks (one near fledging). Four were adults sitting on nests, and five more were possibly nesting.

On 8 December 2021, flooding prevented access to the representative section, but an estimated 1,800 birds were present in the colony overall. On 16 December 2021, heavy rain and wind made counting difficult, with an estimated 1,800 birds present. The representative section had 12 adults, two birds on nests, and two juveniles close to fledging. Overall, the colony was more spread out as the chicks/juveniles became more mobile and were followed by their parents. On 23 December 2021, heavy rain and wind again made counting difficult. The representative section had 24 adults, two recently-fledged juveniles (Table 1), one adult on a nest and some courtship behaviour between adults. An estimated 2,400 birds were present in the whole colony. Many fledged juveniles were observed, including a “club” of 46 juveniles by themselves, indicating a successful breeding season overall. Nest building, unfledged chicks and juveniles begging for food were all observed throughout the colony. On 13 January 2022, there were 1,083 birds in the colony, with a further c.750 birds roosting in the river delta about 600 metres away. There were no birds in the representative section. However, there were no signs of disturbance, and many juveniles were observed in the general area. This is probably a natural reduction of the colony as it progresses.

On 20 January 2022, the breeding colony had only 70 black-billed gulls roosting in it, with c.1,000 birds roosting nearby in the river delta. There were 50 carcasses of juvenile black-billed gulls in the colony area, but they were not fresh. The number does not point to a mass disturbance or mortality event, and this is likely the natural end of the colony for the season. On subsequent visits to the river mouth (27 January 2022, 8, 17, and 23 2022), there were 1050, 459, 300+, and 515+, respectively, roosting in the delta. Other than these observations, black-billed gulls were largely absent from the rest of the riverbed. Two juveniles were observed at the end of Badham Road on 20 January 2022 (presumably dispersing from the colony at the river mouth), and birds were seen feeding in various patches of farmland near the river.

5. BANDED DOTTEREL

Banded dotterel (*Charadrius bicinctus bicinctus*, At Risk-Declining) were recorded at four distinct locations in the survey area:

- At the river mouth.
- At the end of Badham Road.
- At the end of Old Main South Road.
- The two kilometre stretch of riverbed immediately downstream of the SH1 bridge.

One non-breeding adult was seen feeding at the river mouth on 17 November and 23 December 2021, while seven birds were seen at the same location on 8 February 2022. An adult and juvenile (13 January 22) and three adults (8 February 22) were seen at the end of Badham Road. A lone adult exhibited a distraction display at the end of Old Main South Road (S44.06190, E171.42652) on 4 November 2021. At the same location on 25 November and 2 December 2021, a nearly fledged chick was seen with an accompanying adult, potentially the same adult seen on 4 November 2021. It is highly likely that this chick fledged successfully as there was no evidence to indicate otherwise (Table 1, Figure 1).

Table 1: GPS coordinates and nest success of breeding attempts detected by banded dotterel, black-billed gull, black-fronted tern and wrybill in the lower Rangitātā River.

Breeding Event	GPS Coordinates	Nest Success
Banded dotterel chick	S44.06190 E171.42652	Successful
Banded dotterel chick	S44.05230 E171.40923	Successful
Black-billed gull colony	S44.18485 E171.51595	Successful
Black-fronted tern nest	S44.11854 E171.48637	Unknown
Wrybill nest	S44.06264 E171.42691	Failed

Three adults were seen together in the riverbed below the SH1 bridge on 4 November 2021, but they were not exhibiting nest behaviour (S44.05230, E171.40923). At the same location on 13 January 2022 (two months later due to time constraints and high water levels), a post-breeding flock of 163 banded dotterel appeared to be half juveniles and half adults. There was also an unfledged chick and an accompanying adult. On 27 January 2022, at the same location, the post-breeding flock had reduced to 83 birds, including a very recently fledged juvenile, probably the chick from 13 January 2022 (Table 1, Figure 1).

6. BLACK-FRONTED DOTTEREL

Black-fronted dotterels (*Elseyornis melanops*, At Risk-Naturally Uncommon) were recorded at three separate locations in the survey area:

- Upstream of the SH1 bridge.
- At the end of Old Main South Road and at the river mouth.

Two birds were seen flying upstream at the extreme upstream end of the survey area on 25 November 2021. A single bird was seen at the end of Old Main South Road (S44.06242, E171.43057) on 4 November 2021. The presumably same bird was observed on 2 December 2021, where it performed a broken wing distraction display. Despite observing this nesting behaviour, no nest could be found. Heavy rains flooded this area over the next two weeks and likely destroyed any nest. On each visit, two birds were seen at the river mouth in the same area (17 November 2021, 23 December 2021, 27 January 2022 and 8 February 2022; S44.18936, E171.50350). Despite an extensive search of this area, there was no evidence of nesting.

7. BLACK-FRONTED TERNS

Black-fronted terns (*Chlidonias albobriatus*, Threatened-Nationally Endangered) were observed throughout the survey area, feeding above the river as individuals, pairs, and small groups. Breeding was only observed in one place, near the end of Badham Road (S44.11854, E171.48637), and two eggs were found in a single nest (13 January 2022). During subsequent visits, two chicks were fed by adults until 8 February 2022.

A black-fronted tern roost was also observed near the end of Badham Road (a few hundred metres away from the nest) on the 13, 20, and 27 January 2022, consisting of

102, 128, and 74 birds, respectively. Thirty birds were also seen roosting in the riverbed a few hundred metres south of the SH1 bridge on 13 January 2022.

8. WRYBILL

Wrybill (*Anarhynchus frontalis*, Threatened-Nationally Increasing) were recorded at four locations:

- Immediately downstream of the SH1 bridge.
- At the end of Old Main South Road.
- At the end of Badham Road.
- The river mouth.

Several lone adult birds were seen feeding just below the SH1 bridge (4 November 2021), at the end of Badham Road (10 November 2021) and at the river mouth (17 November 2021).

An adult bird incubating two eggs (S44.06264, E171.42691) was observed (25 November 2021) at the end of Old Main South Road. On 2 December 2021, the nest site appeared flooded. However, at least one chick was observed with two adults and another pair feeding nearby (Figure 1). Over the next two weeks, heavy rain flooded this area, and the wrybill chick was not recorded again on subsequent visits; it is likely to have perished in the floodwaters.

9. SOUTH ISLAND PIED OYSTERCATCHER

South Island pied oystercatchers (*Haematopus finschi*; At Risk-Declining) were observed throughout the survey area, often as pairs and often near southern black-backed gull (*Larus dominicanus*; Not Threatened) colonies (see below). Although the oystercatchers exhibited breeding behaviour at several locations, evidence of nesting and small chicks were only found north of the SH1 bridge at a pool (S44.04582 E171.38154) and at the gravel bar north of the black-billed gull colony at the river mouth. The chicks at the river mouth likely fledged as adults exhibiting agitated behaviour during return visits, while the fate of those north of the SH1 bridge is unknown.

10. SOUTHERN BLACK-BACKED GULL

Southern black-backed gulls were the most abundant bird in the survey area, with breeding colonies along almost the entire length of the area surveyed. There was a particularly large concentration of birds upstream of the SH1 bridge, with approximately 1,300 birds. The only areas where they were absent were from the SH1 bridge downstream to Old Main South Road and a section of about one kilometre of riverbed at the end of Badham Road.

Large numbers of nests were seen in the sections of riverbed that were in heavy use.

11. OTHER OBSERVATIONS

A feral cat (*Felis catus*) and a stoat (*Mustela erminea*) were seen in the riverbed during the survey.

12. DISCUSSION

Black-billed Gulls

The 2021-2022 breeding season provided mixed results for breeding of endemic braided river birds in the lower Rangitātā River. Black-billed gulls were the most successful of the target species (other than southern black-backed gulls), with a large breeding colony of 2,000+ birds producing at least several hundred juveniles that survived to fully-fledged. It was extremely difficult to gauge the number of birds at this colony due to its large size and the mobile nature of the birds (maximum count recorded was 2,694 birds). A conservative estimate would be that a minimum of 300 juveniles fledged successfully. This colony was protected by signage asking the public not to disturb the birds, and they seemed unaffected by fishermen/ women passing nearby on quad bikes.

Other Species

Banded dotterel also seemed to have a good breeding season. Despite only two chicks being found in the survey area, a large number of juveniles (approximately 70) were seen in a flock during January, indicating a successful breeding season.

Black-fronted tern, wrybill, and black-fronted dotterel all had extremely poor breeding seasons in the survey area. Only one black-fronted tern nest was found with two chicks over four consecutive visits (20 days) before not being detected over the subsequent two visits. The fate of these birds is unknown. The fledging time of black-fronted terns is one month (Higgins and Davies 1996), and one or both of the chicks may have fledged.

Only one wrybill nest was detected during the surveys. A week after discovery, the nest location was flooded, but a chick was seen in the same area, presumably having escaped the flooding. This chick was not seen again following further flooding and almost certainly perished. No black-fronted dotterel nests or chicks were detected in the survey area.

Weeds

Braided river birds require open expanses of clear gravel for breeding. The habitat in the survey area was severely limited by tree lupin (*Lupinus arboreus*), a plant species that was present in nearly all of the riverbed. The only sections that were clear of lupins were several connected patches between the SH1 bridge and the end of Old Main South Road, one kilometre of riverbed at the end of Badham Road, and the gravel bar north of the river mouth.

Southern Black-Backed Gulls

Another factor limiting the breeding attempts of the target species was the abundance of southern black-backed gulls. Black-backed gulls will predate nests, and when present in large gull numbers can exclude other braided river birds from sections of river (O'Donnell and Moore 1983; Wildland Consultants 2020). This likely occurred in the lower Rangitātā this breeding season. The only areas where they were not abundant were the areas that were free of lupin. Unsurprisingly, these three areas were also where all the breeding attempts of the other target bird species were located.

The abundance of black-backed gulls, and their numerous nests, means that there is considerable potential to evaluate egg harvesting for mahinga kai. Egg harvesting could be considered as part of a conservation management programme to protect endemic braided river birds.

Conservation Management

Future conservation actions should be concentrated in the section from the SH1 bridge to the Old Main South Road, the end of Badham Road, and at the river mouth. These locations are mapped in Figure 1 and show where the main breeding attempts were recorded for the target species. Control of southern black-backed gulls and removal of lupins in these areas would increase the breeding habitat available for braided river birds and increase the likelihood of successful breeding. Continued pest mammal control is essential for the protection of breeding braided river birds in the lower Rangitātā.

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SITE PHOTOGRAPHS



Plate 1: Rangitātā riverbed downstream of Old Main South Road. Southern black-backed gulls are visible in flight and on gravel beyond the braid. 4 November 2021.



Plate 2: Rangitātā riverbed downstream of Old Main South Road. 4 November 2021.



Plate 3: Rangitātā riverbed upstream of Dip Road. Extensive lupin is visible on the far side of the braid. 10 November 2021.



Plate 4: Rangitātā riverbed upstream of Dip Road showing extensive lupin. 10 November 2021.



Plate 5: Southern black-backed gull nest, downstream of Badham Road. 10 November 2021.



Plate 6: Rangitātā riverbed downstream of Badham Road with lupins and a southern black-backed gull nest. These two species are the most visible pests in the lower Rangitātā. 10 November 2021.



Plate 7: Rangitātā riverbed at the end of Old Main South Road. The bare gravel patch is where a banded dotterel chick, and a wrybill nest and a wrybill chick, were observed. 25 November 2021.



Plate 8: Wrybill nest at the end of Old Main South Road. 25 November 2021.



Plate 9: Black-billed gull colony on the gravel bar adjacent to the Rangitātā River mouth. Signage warning the public to avoid the colony is visible on the left in the foreground. 2 December 2021.



Plate 10: Black-billed gull colony on the gravel bar adjacent to the Rangitātā River mouth. Black-billed gulls visible on the ground and in the air, spotted shags in the foreground to the right. 2 December 2021.



Plate 11: Black-fronted tern nest at the end of Badham Road. 13 January 2022.



Plate 12: Rangitātā riverbed at the end of Badham Road. The bare gravel was where the black-fronted tern was located. 13 January 2022.



Plate 13: Rangitātā riverbed at the end of Badham Road. Signage protecting black-fronted tern nesting site. 27 January 2022.



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