

# **River bird surveys & managing potential adverse effects of gravel extraction**

BRaid Symposium

July 2021



# Using river bird surveys to manage effects under the RMA

- Regional Council (CRC) regulates activities on riverbeds, including the extraction of gravels.
- Resource Consent & Gravel Authorisation
- Potential to adversely affect birds, particularly riverbed nesting birds
- Potential to improve habitats (weed clearance and island creation)
- Avoid, remedy, mitigate



**Gravel  
extraction**

**Risks**



Image: Grant Davey



# Disturbance? Improved habitats?



Image: Grant Davey



# Gravel extraction – Benefits?





# Using river bird surveys to manage effects under the RMA

- Since 1990s CRC required pre-works bird survey to avoid bird nests
- Between 1 September to 1 February (height of the breeding season)
- 2018 Review
- Recommended changes & highlighted data deficiencies for smaller hill-fed rivers



# Existing river bird survey requirements reviewed

- Survey method
- Data access & ability to utilise
- Default use of survey requirement
  - Application information & exemption provisions
- Data deficiencies for many rivers with extraction



## What we did

- Adopted new template for bird survey conditions
  - Standardised method and reporting format
  - Focus on riverbed nesting threatened species
  - Adopted eBird reporting platform
  - Specified survey exemptions
- Surveyed nine hill-fed rivers



# Utility of pre-works river bird survey data Compliance Reporting vs Data Resource

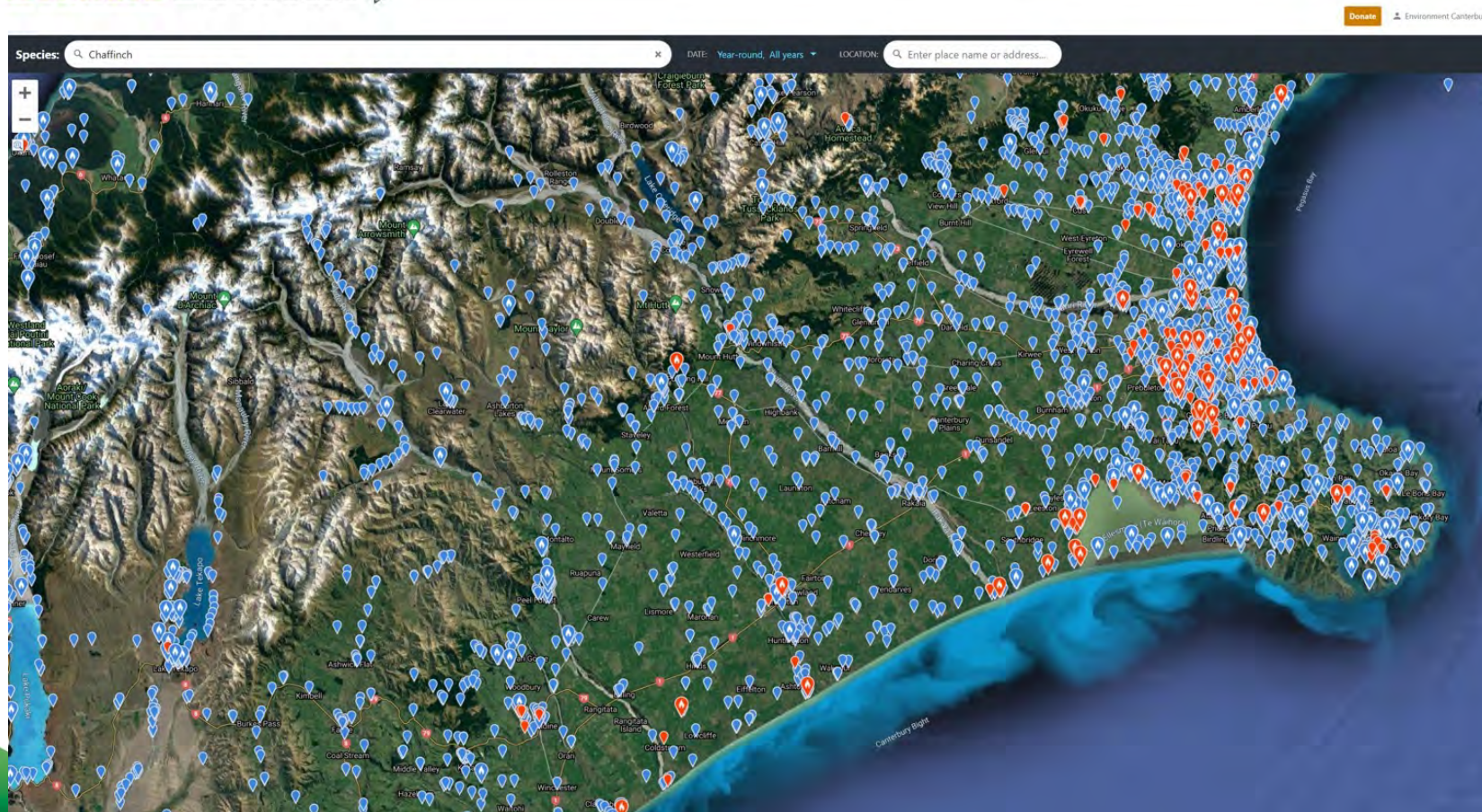
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| 2006 Waimakariri DM Consultants - Copy                                | Edwards Stream October 2017 K Walter                                       | Okuku River August 2014 J Dowding                             | Rangitata River January 2015 H Stevens    |
| 2007 Waimakariri DM Consultants                                       | Edwards Stream September 2015 K Walter                                     | Okuku River January 2013 J Dowding                            | Selwyn River August 2014 A Crossland      |
| 2009 Garry DM Consultants   | Eyre River November 2005 J Dowding   | Okuku River November 2016 A Crossland                         | Selwyn River January 2014 N Mogan         |
| 2010 Rakaia DM Consultants  | Eyre River November 2017 A Crossland                                       | Okuku River October 2014 A Crossland                          | Selwyn River November 2011 A Crossland    |
| 2011 Waiau Lindsay Rowe   | Eyre River November 2017 J Dowding   | Okuku River October 2015 J Dowding                            | Selwyn River November 2014 J Dowding      |
| 2012 Waimakariri DM Consultants                                       | Eyre River October 2013 J Dowding  | Okuku River September 2015 L Rowe                             | Selwyn River November 2015 N Mogan        |
| 2012 Waipara Lindsay Rowe   | Eyre River October 2013 J Dowding (2)                                      | Okuku River September 2017 A Crossland                        | Selwyn River November 2016 C Baddeley     |
| 2013 Ashley Hedley  | Eyre River September 2013 A Crossland                                      | Opahi River Gorge January 2015 K Walter                       | Selwyn River October 2005 A Crossland     |
| 2013 Hapuku David Barker  | Eyre River September 2013 J Dowding  | Opahi River January 2015 J Jolly                              | Selwyn River October 2014 N Mogan         |
| 2013 Waipara Keystone Ecology   | Eyre River September 2013 N Mogan  | Opahi River January 2015 K Walter                             | Selwyn River September 2016 J Dowding     |
| 2014 Percival, Kowai, Makerikii Keystone Ecology                      | Eyre River September 2014 D Parker   | Opahi River January 2018 J Jolly                              | Taylor's Stream December 2013 J Dowding   |
| 2014 Selwyn Keystone Ecology  | Eyre River September 2015 J Dowding  | Opahi River Kems Crossing January 2015                        | Te Moana River November 2017 J Jolly      |
| 2015 Bealey Keystone Ecology  | Garry River November 2009 J Dowding  | Opahi River October 2015 F&G                                  | Te Moana River October 2017 J Jolly       |
| 2016 Conway Lindsay Rowe  | Gray, Makerikii, Kowai, Percival and Waipara Rivers September 2013 N Mogan | Opahi River October 2017 J Jolly                              | Tengawai River November 2016 H Stevens    |
| 2017 Waipara Andrew Crossland   | Hae Hae Te Moana River October 2015 J Jolly                                | Orari River December 2016 B Pringle                           | Twizel River December 2015 D Nelson       |
| 2017 Waitaki MGI  | Hae Hae Te Moana River October 2017 J Jolly                                | Orari River November 2017 J Jolly                             | Twizel River September 2017 S Hedley      |
| 2018 Rakaia DM Consultants  | Hakataramea River September 2017 K Walter                                  | Orari River November 2017 J Jolly 2                           | Waiau River December 2010 L Rowe          |
| Ashburton River February 2014 J Wilkie                                | Hakataramea River September 2017 K Walter 2                                | Orari River October 2015 B Pringle                            | Waiau River December 2014 N Mogan         |
| Ashburton River North Branch and Pudding Hill Stream Oct 2013 N Mogan | Hapuku River November 2013 D Barker  | Orari River October 2016 J Jolly                              | Waiau River February 2013 J Dowding       |
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| Ashburton River November 2016 J Dowding                               | Hawkins, Hororata, Wainiwanui Rivers October 2017 M Sanders                | Orari River September 2016 J Jolly 2                          | Waiau River November 2016 J Dowding       |
| Ashley River (Lees Valley) August 2014 J Dowding                      | Heathcote River December 2013 N Mogan                                      | Orari River September 2016 J Wilkie                           | Waiau River October 2011 L Rowe           |
| Ashley River 2014-2015 surveys at new bridge site J Dowding           | Hinds River September 2014 N Mogan   | Otaio River January 2016 K Walter                             | Waiau River September 2014 N Mogan        |
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| Ashley River August 2013 S Hedley                                     | Hinds River September 2016 J Wilkie  | Pahau River December 2016 J Dowding                           | Waiau River September 2016 N Mogan        |
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| Ashley River January 2018 J Dowding                                   | Kowai River December 2014 J Dowding  | Pudding Hill Stream and Ash River September 2014 N Mogan      | Waimakariri River August 2013 J Dowding   |
| Ashley River July 2014 N Mogan  | Kowai River January 2013 J Dowding   | Rakaia River and Little Rakaia River September 2014 J Dowding | Waimakariri River August 2014 D Parker    |
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| Ashley River September 2005 J Dowding (2)                             | Kowhai River November 2012 L Rowe  | Rakaia River December 2009 J Dowding                          | Waimakariri River August 2016 J Dowding   |
| Ashley River September 2005 J Dowding 3                               | Leader River August 2014 L Rowe  | Rakaia River January 2015 J Dowding                           | Waimakariri River December 2010 J Dowding |
| Ashley River September 2008 J Dowding                                 | Leader River November 2017 J Preece  | Rakaia River January 2015 N Mogan                             | Waimakariri River January 2010 J Dowding  |
| Ashley River September 2013 A Crossland                               | Leader River October 2013 N Mogan  | Rakaia River January 2016 J Dowding                           | Waimakariri River January 2012 J Dowding  |
| Ashley River September 2013 J Dowding                                 | Little River, Cleardale December 2013 J Dowding                            | Rakaia River January 2018 J Dowding                           | Waimakariri River January 2012 J Dowding  |
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| Ashley River September 2014 A Crossland                               | Makerikii and Okuku Rivers August 2015 J Dowding                           | Rakaia River November 2016 J Dowding                          | Waimakariri River January 2018 N Mogan    |
| Ashley River September 2017 N Mogan                                   | Makerikii River August 2013 J Dowding                                      | Rakaia River September 2012 J Dowding                         | Waimakariri River July 2007 J Dowding     |
| Bealey River January 2015 N Mogan                                     | Makerikii River August 2014 J Dowding                                      | Rakaia River September 2012 J Dowding 2                       | Waimakariri River July 2009 J Dowding     |
| Bealey River October 2015 N Mogan                                     | Makerikii, Kowai and Percival Rivers August 2014 N Mogan                   | Rakaia River September 2012 J Dowding 3                       | Waimakariri River November 2013 N Mogan   |
| Bealey River September 2015 N Mogan                                   | Makerikii, Kowai, Bushey Creek and Percival Rivers January 2015 N Mogan    | Rakaia River September 2013 J Dowding                         | Waimakariri River November 2014 N Mogan   |
| Blythe September 2014 N Mogan   | North Branch Ashburton River October 2013 J Dowding                        | Rakaia River September 2016 A Crossland                       | Waimakariri River November 2015 J Dowding |
| Conway River January 2016 L Rowe                                      | North Branch Ashburton River October 2015 J Dowding                        | Rakaia River September 2017 A Crossland                       | Waimakariri River November 2015 N Mogan   |
| Conway River November 2017 N Mogan                                    | Moate Bridge Ashburton River November 2015 J Dowding                       | Rakaia River September 2017 A Crossland                       | Waimakariri River October 2013 J Dowding  |
| Edwards Stream November 2015 J Wilkie                                 |  |   | Waimakariri River October 2013 J Dowding  |



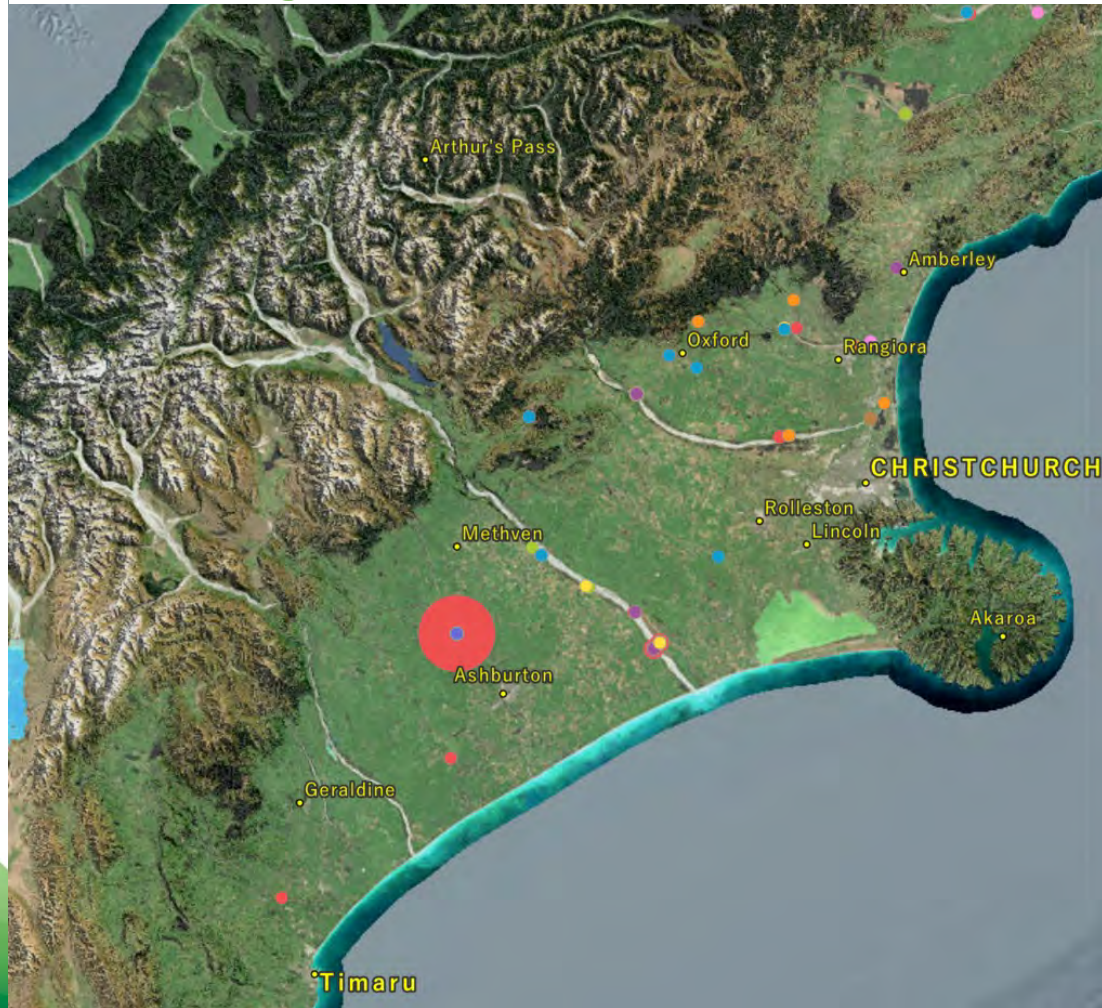
# Available (readily) to Ecan staff, future applicants & community

New Zealand Bird Atlas 





# Improved data access & utility



(3 of 6)

Banded Dotterel are 50.00% of the total birds found at this location

|                                   |  |
|-----------------------------------|--|
| Submission ID                     | S60091578                                      |
| Common Name                       | Banded Dotterel                                |
| Scientific Name                   | Charadrius bicinctus                           |
| Taxonomic Order                   | 5,695  |
| Count                             | 5  |
| Total bird count at this location | 10   |
| State/Province                    | NZ-CAN   |
| County                            | Kaikoura District                              |
| Location ID                       | L9943686                                       |
| Location                          | 7371, Hapuku NZ-Canterbury (-42.3201,173.7338) |

Zoom to

Layer List

Layers

☒ Download eBird Ecan April 2021 Shorebirds Only

Common Name

- South Black Backed Gull
- Spur-winged Plover
- Banded Dotterel
- South Island Pied Oystercatcher (SIPO)
- Pied Stilt
- Black-fronted Tern
- Canada Goose
- Black-billed Gull
- Wrybill
- Black-fronted Dotterel
- Other

Count

- > 1,200
- 900
- 600
- 300
- < 1

☐ Resource Consents

☒ Rating Units with Ratepayer & Owner Details



**Rivers with gravel  
extraction**

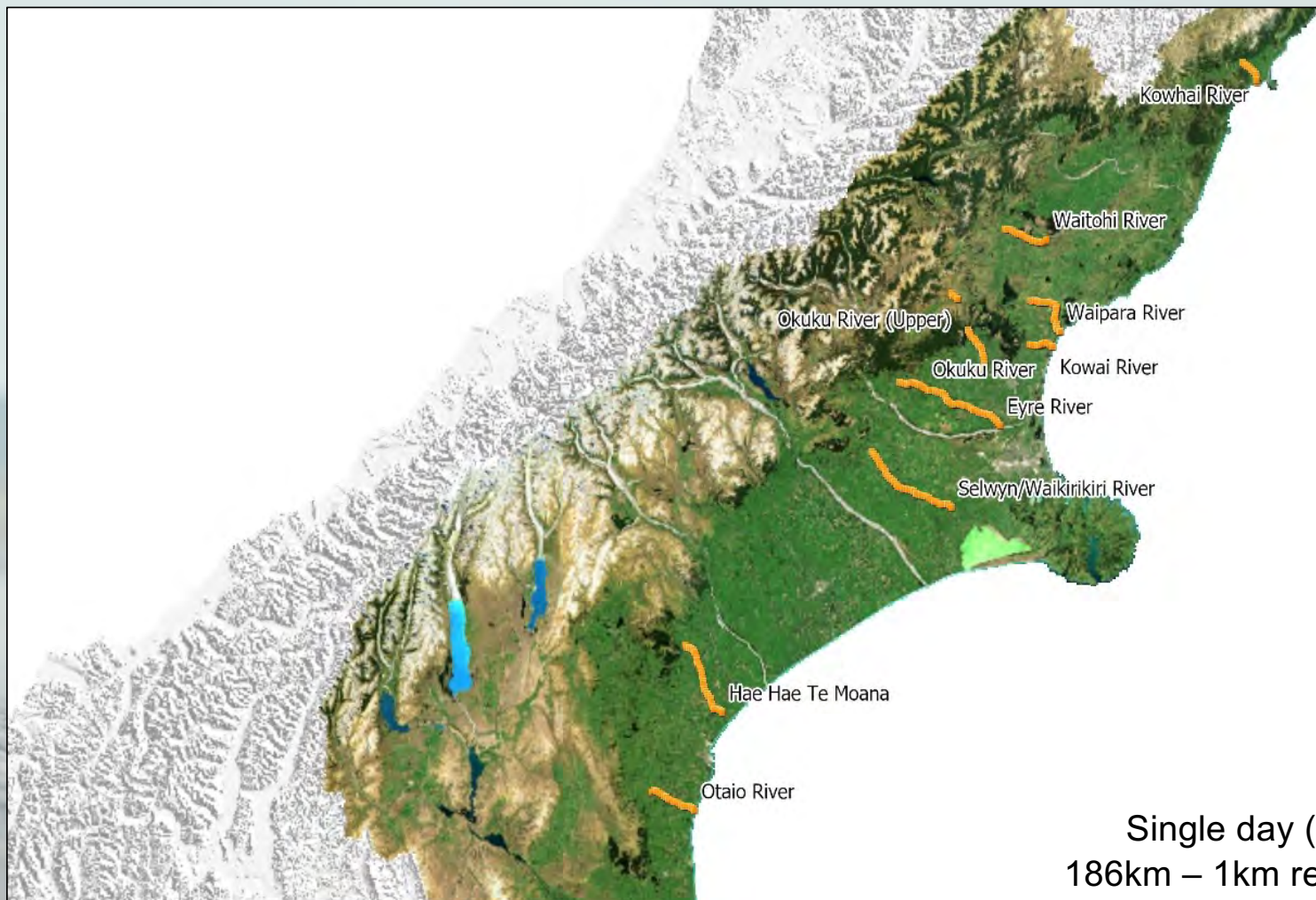
**Mis-match  
with existing formal  
bird survey records**

**Information gap  
Smaller hill-fed rivers**



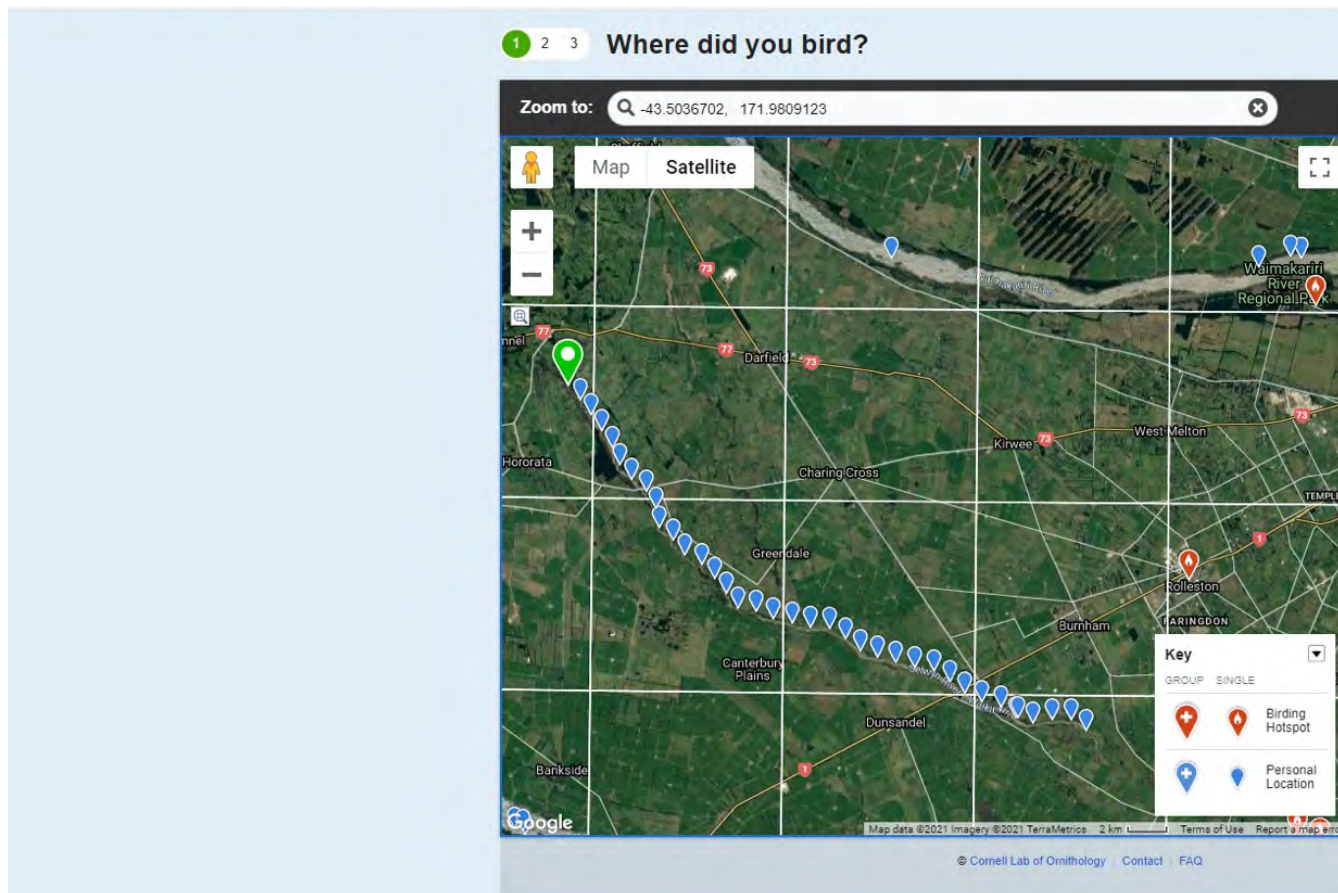


# Surveyed Rivers 2019



Nine rivers  
1-2 people  
Single day (Eyre River)  
186km – 1km reach counts





Example checklists submitted to the public ornithological website eBird;  
Selwyn / Waikirikiri checklists by kilometre reach, 2019 count.



# Observations

- Relatively low numbers
- Nine to 26 river bird species (SIPO & Pied Stilt on all)
- 2 to 8 Threatened or At Risk riverbed-nesting spp.
- Breeding behaviour by >1 threatened species on six of the rivers.
- All nesting observations at river reaches with **flowing water**, a **width of >30 meters** and an **absence of heavy woody weed infestation**.
- River environments often presented areas of extensive **weed encroachment** and the use of riverbeds by **vehicles** was frequently observed.



# Weed encroachment

## Loss of riverbed nesting habitat





# Eyre River pre and post 2021 high flows



Weeds – Flows



## Attraction to works areas



The Otaio River,  
South Canterbury



# Substrate Suitability





# Width & Channelisation

Eyre River





# Dry reaches

**Eyre River**





# Substrates, Weeds, Dry reaches

Selwyn River





# Variable habitat value

**Selwyn River, downstream**





## Disturbance Vehicle use of rivers

Black-fronted  
dotterel



The Kowai River  
(Leithfield, North Canterbury)



## Upper Okuku River







Banded dotterel  
chicks

The Waipara River  
(North Canterbury)



## Cryptic birds and nests





A banded  
dotterel  
nest scrape





# Black-fronted dotterel



Images: A Crossland



Alpine-fed & Hill-fed

River bird  
habitat  
network

Resilience

## Waimakariri & Ashley Rakahuri 2019

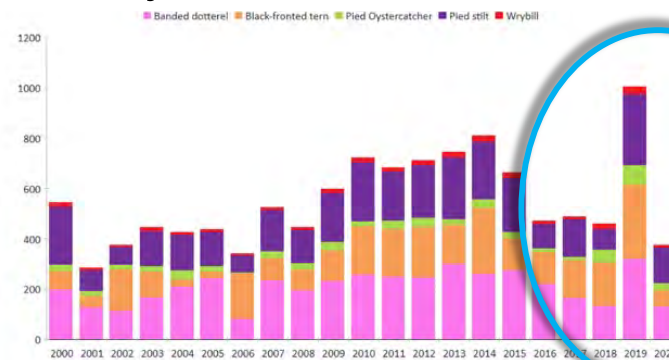
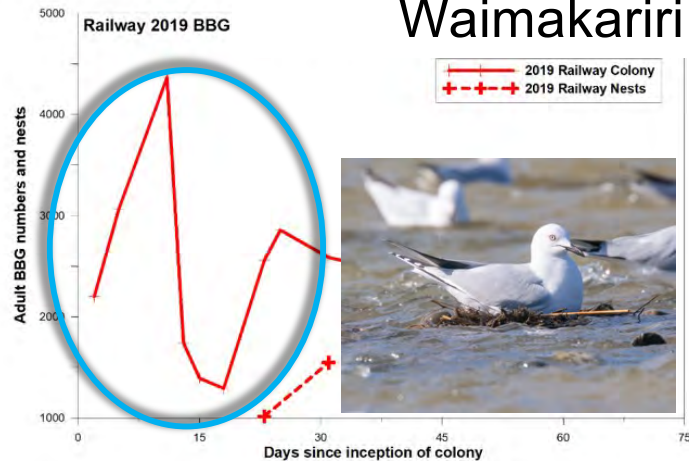


Image & graph: Grant Davey, ARRG



# Reflections on pre-works survey use

- Dynamic habitat quality / availability
- Still learning what species are using these rivers
- Site specific assessments required
- Pre-works surveys offer an adaptive approach
- Offsetting an option(?) – the Wildlife Act
- These surveys don't address the wider conservation challenge
- New NPSIB...?



# Non-river bird values of river environments

## Other terrestrial habitats

- Lizards
- Indigenous vegetation
- Bats
- Forest birds





# Conclusions

- ❖ **Rivers are 'significant' habitat for indigenous river birds.**
  - Activities under the RMA consider potential effects - avoid, remedy, mitigate
  - Given cryptic nature, bird mobility & dynamic habitats surveys remain an effective means to avoid potential adverse effects on river birds.
- ❖ **Exemptions from standard bird survey requirements**
  - High woody weed cover
  - No flows
  - Narrow riverbed width (<25m)
- ❖ **Ongoing threats to river bird conservation.**
  - Extensive weed encroachment
  - Low flows during the nesting season
  - Vehicle use of riverbeds
- ❖ **Other ecological values to consider**



# Acknowledgements

2019 river bird survey assistance and information collation: Andrew Crossland, Frances Schmechel, Grant Davey, Helen Greenep, Jim Jolly, Kennedy Lange, Melissa Shearer, Nick Ledgard, Philip Grove, Rachel Bjornsson and Rob Carson-Iles.

Background imagery to slides: Plato Creative



# He Pātai - Time for questions?



**Sometimes the habitat network includes novel sites**

