Creating ‘ideal’ braided river bird breeding habitat

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BRaid ‘Braided River Aid’

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Braided river birds are threatened by:

- **Habitat loss - weed invasion, management issues**
- **Predators**
- **Human disturbance**
- (Excessive water abstraction)

Waimakariri river

Habitat loss. The greatest challenge is weed invasion

2014

This can happen very rapidly

2016

We cannot rely on floods to clear weeds on a regular basis

Especially on the smaller foothills-fed rivers

But we can clear weeds artificially

Predation

Most land predators live in the ‘weedy’ berm. Weed-free islands are not preferred habitat

‘Maintaining safe islands with high water flows around them limits predator access’

O’Donnell et al, 2016: ‘Management ….. priorities for conserving biodiversity on NZ’s braided rivers’


Islands generally protect birds from predation by feral cats and hedgehogs
MOULTRIE
53°F
CAMERA 5
26 MAR 2021 02:07 am

Islands will not stop Norway rats, which can be a major problem

There may be little alternative other than to trap rats on the island

Neither will islands stop avian predators, such as the harrier hawk and black-backed gull

30.00 inHg ↑ 35℃ 12/28/2019 02:13PM CAMERA4

Human disturbance. Not eliminated on islands, but humans do not like wet feet

So – forming weed-free islands can create ideal habitats for breeding birds

Waitaki island

Case study 1

Black-fronted tern island. Eglinton river, Te Anau

- Creation of safe islands (mid-1990s)
- Manual control of woody and herbaceous vegetation on breeding islands (since creation)
- Predator control on surrounding land (since 1998)
- Monitoring responses (since creation)
- Advocacy / education

'We detected significant declines on eight rivers (range 5.5–15.8%p.a.), ***a significant increase on one river (Eglinton; 16.3% p.a.)*** *and no trends on the remaining 20 rivers. The Eglinton River is the only site at which sustained predator control (aimed at mustelids) occurred throughout the monitoring period.'*

O'Donnell and Hoare, 2011: Meta-analysis of status and trends in breeding populations of black-fronted terns (Chlidonias *albostriatus*) 1962–2008.

Case study 2. Lower Waitaki river Seven islands of approximately 1ha each

- Creation of weed-free islands – dozer (2016)
- Control of weeds – spray and manual (annually since 2016)
- Ground predator control on surrounding land (since 1998)
- Monitoring responses (since 2015)

Island characteristics:

* Weed free
* 0.6m high
* Good flows on both sides (>6m3)
* Cobbled gravel surface

Monitoring: Waitaki weed-free islands. **Number of islands (7) on which birds were observed**

NB.

No BFTs were observed on these islands prior to weed clearance.

After weed removal, BFTs observed on 5 islands during first season – nesting on two.

Species	Season							
	2016 / 17		2017 / 18		2018 / 19		2019 / 20	
	Present	Nesting	Present	Nesting	Present	Nesting	Present	Nesting
Black-fronted tern	5	2	?	5	7	7	7	5
Black-billed gull	2	1	N/A	N/A	3	1	-	-
Wrybill	6	5	N/A	N/A	4	2	3	2
Banded dotterel	7	6	N/A	N/A	6	6	6	5
S.Is Pied oystercatcher	3	-	N/A	N/A	5	2	4	1
Pied stilt	5	3	N/A	N/A	6	4	5	2

Mammalian predators detected in 3 habitat types

Habitat	Cats	Mustelids	Mice	Hedgehogs	Possums	Rats
Riverbank	+	+	+	+	+	-
Weed islands	-	+	+	-	+	-
Cleared islands	-	-	+	-	-	-

Major outcome: Better breeding and fewer predators on created weed-free islands

The main predator by far was black-backed gulls, which soon recognised a new food source

Case study 3.
Waiau Toa / Clarence river

- Island creation (3) – dozer (2015)
- Control of weeds – spray and machine (2015 – 2019)
- Predator control out to 500m from islands (2015 – 2019)
- Monitoring of BFT breeding beforehand (2012 - 2014) Annually after island creation (2015- 2019).

Monitoring: Waiau Toa / Clarence islands

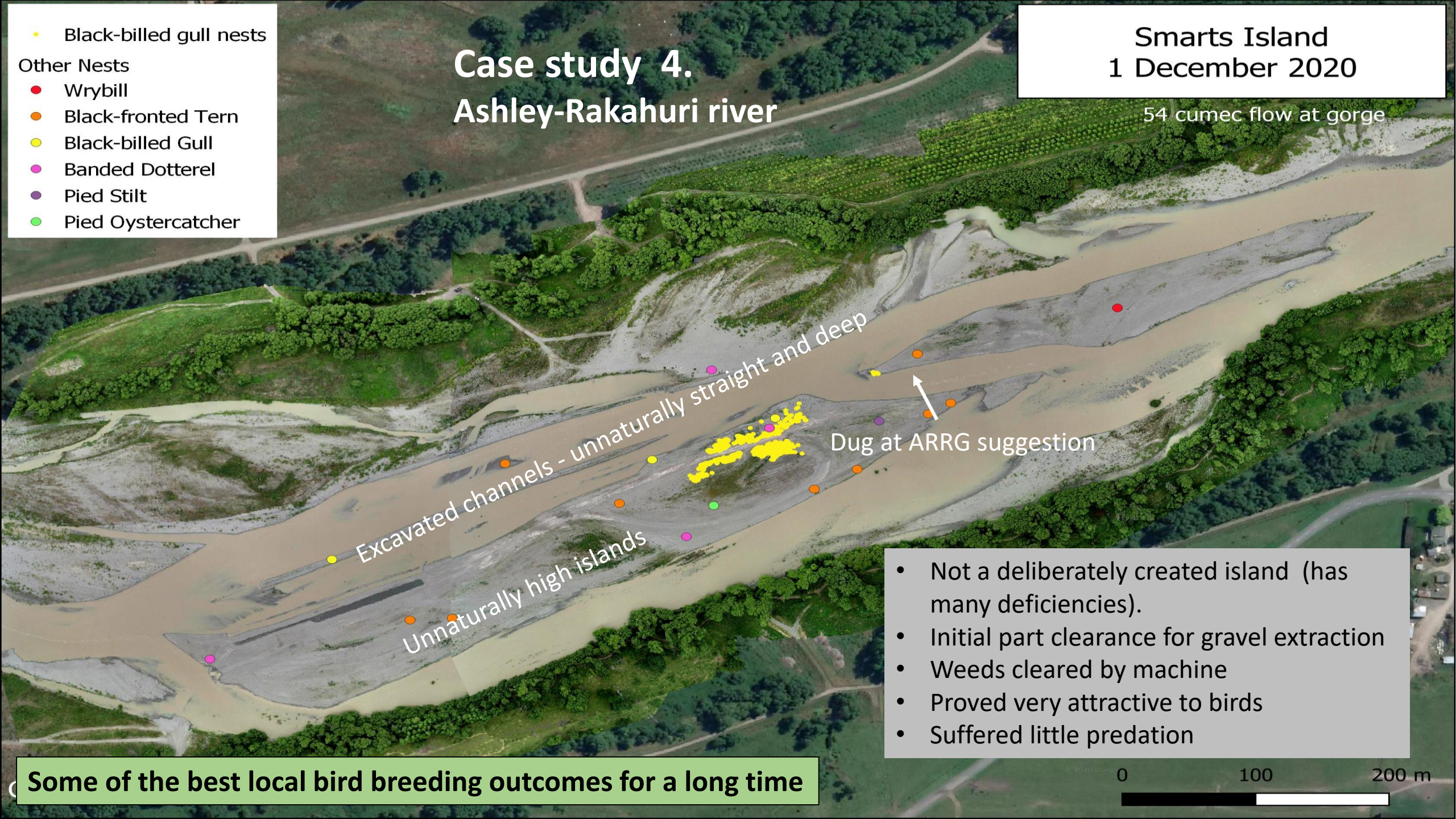
Black-fronted tern productivity (chicks fledged / nesting attempt)

		2015	2016	2017	2018	2019
Treatment (enhanced island)	Number of nests	45	139	82	42	18
	Fledglings	7	145	52	15	6
	Productivity	**0.16**	**1.04**	**0.63**	**0.36**	**0.33**
Non-treatment	Number of nests	401	353	441	501	249
	Fledglings	24	55	70	135	10
	Productivity	**0.06**	**0.16**	**0.16**	**0.27**	**0.04**

Main causes of BFT nesting failures:

* Flooding – 51% in non-treatment sites; 40% in treatment sites
* Predation – 22% in non-treatment sites; <5% in treatment sites
* Major predator – harrier hawk (11% in unmanaged sites, 2% in treated sites)

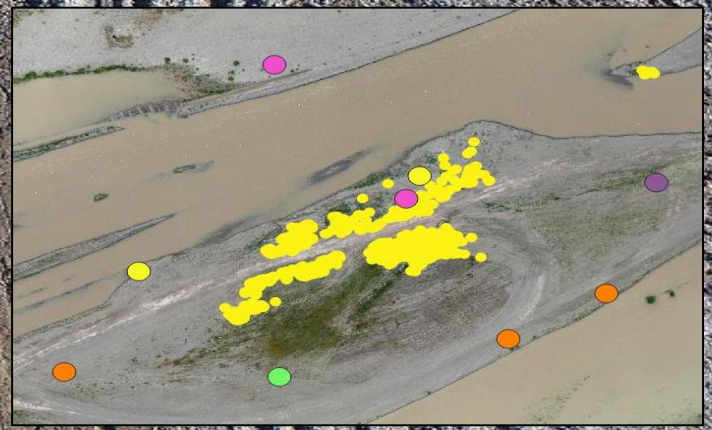
Major outcome: Better breeding and fewer predators on created weed-free islands


Black-billed gull nests
Other Nests
Wrybill
Black-fronted Tern
Black-billed Gull
Banded Dotterel
Pied Stilt
Pied Oystercatcher
Case study 4.
Ashley-Rakahuri river
Smarts Island
1 December 2020
54 cumec flow at gorge
Excavated channels - unnaturally straight and deep
Dug at ARRG suggestion
Unnaturally high islands
• Not a deliberately created island (has many deficiencies).
• Initial part clearance for gravel extraction
• Weeds cleared by machine
• Proved very attractive to birds
• Suffered little predation
Some of the best local bird breeding outcomes for a long time
0
100
200 m

Case study 4.

Ashley-Rakahuri river

Use of a tractor-mounted undercutter to clear weeds and loosen compacted gravel surfaces



Recommendations for creating ideal bird breeding habitat on braided rivers

- Weed-free islands, with regular annual maintenance
  - Usually machine first, and then manual/chemical, including margins
  - Ideally, extend weed control to nearest other land
  - Island size – >2ha(?) unproven, larger might be better
- Raised to at least 50cm above average flows
  - If possible, reinforced along up-river margins
- Loosen compacted gravel surfaces – 'blade' flat (or sand) surfaces not as attractive to birds
- Surrounded by good water flows (>6m3 if possible)
  - Hardest to maintain on small rivers
  - May well require future flow redirection
- Trapping of ground predators
  - Carefully on island, but most important on surrounding land
- Reduction / removal of aerial predation
  - Particularly SBBG (eliminate if possible)
  - Possibly harrier hawks – deter with scarecrows(?)

Case study 5. Waiau river

Why is 'ideal' island creation not happening more often?

Arguably, the BFTs which breed annually at Sharks Tooth bend on the Waiau river comprise the most visible and readily accessible good-sized BFT colony in N. Canterbury. Breeding outcomes have been variable. Weed removal and island creation would be simple and cheap, but has never been attempted.

Shark's Tooth bend, Waiau river

Creating ‘ideal’ braided river bird breeding habitat

Weed-free island creation should be part of management plans / maintenance / action for every braided river

Artificially created islands.
Free of weeds and ground predators

Lower Waitaki river

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Conway river