



SOCIAL ATTRACTANTS, A POSSIBLE CONSERVATION STRATEGY FOR BLACK-FRONTED TERNS

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Black-Fronted Tern (*Chlidonias albostratus*)

- Globally endangered
- Declining population of 5000-10,000
- Breed in colonies on braided riverbeds



Black-fronted Tern/Tarapirohe © Shellie - https://c2.staticflickr.com/2/1462/24339664560_2b706ec04b_b.jpg



Personal photo

Threats

- Flooding
- Habitat degradation
 - Low flow rates
 - Weeds
 - Disturbance
- Predation
 - Introduced mammalian predators
 - Avian predators



Flood © Ib Aarmo - <https://flic.kr/p/miooZq>



Personal photo



Stoat © Derek Parker - https://c2.staticflickr.com/4/3913/1464https://flic.kr/p/miooZq2640462_bf0a88e552_b.jpg

Braided rivers

Highly dynamic systems

Difficult to manage

- Linear systems
- High immigration rates of predators

BFT management

- Landscape scale
- Colony scale and reactive to BFTs
colony location choice



Rakaia River NZ © Geoff Leeming - https://c1.staticlickr.com/1/35/90092868_bd31310c65_b.jpg

Social Attraction

- Using conspecific attraction to draw in colonial nesting species by mimicking active colonies
- Audio playback
- Decoys
- Mirrors



A constructed colony of decoy Northern Gannets on the North Island of New Zealand © BMC Ecology - https://c1.staticflickr.com/9/8098/8591672481_5c4b1b76ea_b.jpg



Short-tailed Albatross Nesting at Midway Atoll NWR © USFWS-Pacific Region - https://c2.staticflickr.com/6/5042/5229371633_5a10ab3d8d_b.jpg

Terns and social attractants

- Terns as a group are very responsive to social attractants
 - Historic colonies re-established
 - Established on temporary barges
- Species with lower site fidelity or ephemeral habitat should show stronger conspecific attraction



Barge colony © Micheal Wilhelm - http://www.columbiabirdresearch.org/images/2002/415_BargeColony_Wil.jpg

BFTs and social attractants - Previous Attempts

- Ruataniwha Wetlands 2006-07
 - Trialled both moulded plaster and pictures on foam blocks
 - 5 decoys and an audio playback system
 - Interactions with attractants, colony formed away from decoys

- Upper Wairau 2007-08
 - 20 wooden decoys, double life size
 - Continuous audio playback
 - Two nests found within 20m of decoys



Personal photo



Personal photo



Personal photo



**Social attractants as a possible
conservation strategy for black-
fronted terns**

Research Objectives

1. Use historical data of BFT colony locations to determine if/how colonies move from each breeding season to the next
2. Determine if attractants influence tern behaviour
3. Determine if attractants effectively lure terns to predetermined locations



Black-fronted Tern/Tarapirohe © Shellie - <https://flic.kr/p/DwVSdD>

Objective 1

- Analyse movement of BFT colonies from one breeding season to the next
 - GPS colony locations from historical survey data



Preliminary results

Ashley River

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Number of colonies	3	4	5	5	4	3	4	4	4	3	8	
Colony turnover		0.71	0.78	0.6	0.55	0.71	0.71	1	1	0.42	0.48	

• Mean colony turnover = 0.72 (SD= \pm 0.21)



Further analysis

- Turnover rates for all rivers with surveys in consecutive years
- Density analysis
 - Identifying if there are regions with greater probabilities of a colony forming

Investigate relationship between colony size and colony turnover



Objectives 2 & 3

Attractant set up

• Decoys:

- Life sized, moulded from plaster and painted
- 10 decoys per treatment in three pairs (~0.5m apart) and four singles (~5-10m apart)



Personal photo

Objectives 2 & 3

Attractant set up

- Audio playback
 - Recording (credit Les McPherson) will be played for 1 out of every 5 minutes from 6:00-18:00
 - USB Sound Anchor playback system (Department of Conservation)



Personal photo

Objectives 2 & 3

Paired control sites will be set up in 10 Canterbury braided rivers

Site selection

- Habitat parameters
- Expert advice
 - Richard Maloney, John Dowding

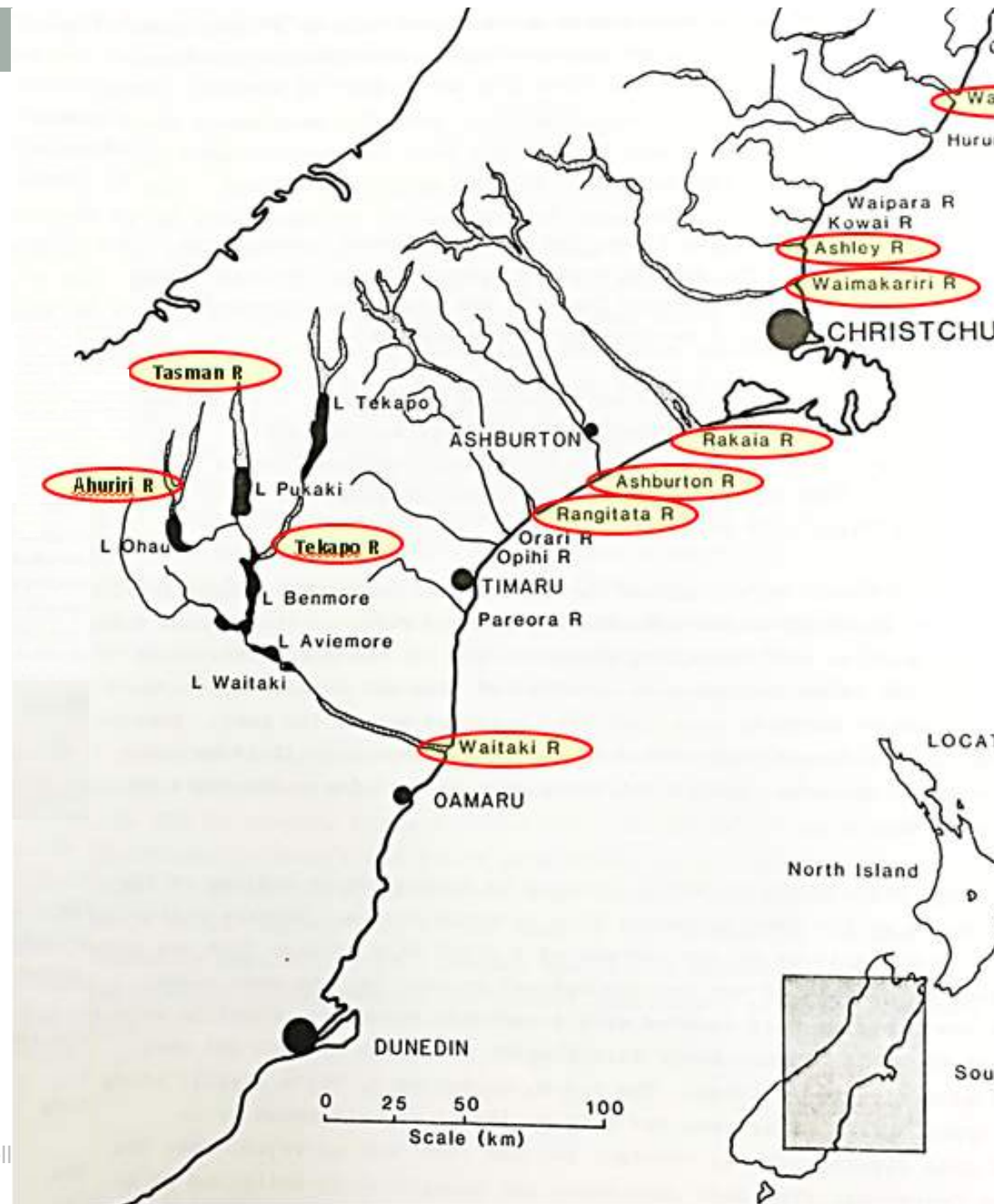


Figure adapted from O'Donnell and Moore (1999)

Objectives 2 & 3

- Ashley and Upper Waimakariri sites will be visited twice weekly
- All other sites visited every two weeks

- Observations of tern behaviour
 - Focal and behaviour sampling

- Expected outcomes:
 - Strong social attraction in BFTs

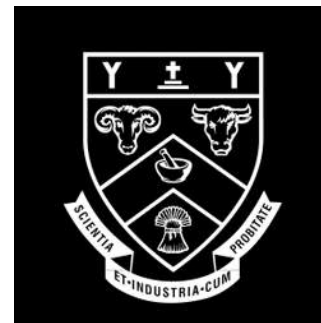


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B R I A N M A S O N
scientific & technical trust





Thank you!