



Ring of Steel

Localised management for black-fronted terns in the Waiau Toa

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Tarapirohe management on Upper Waiau Toa

Three years pre-management research (2012-2014)

- ~720 birds, with low hatching success & productivity

Five years of localised management (2015-2019)

- Island enhancement & ring trapping

Hypothesised that localised management would

- Reduce nest failures due to predation and flooding
- Improve nest survival and productivity





Island enhancement

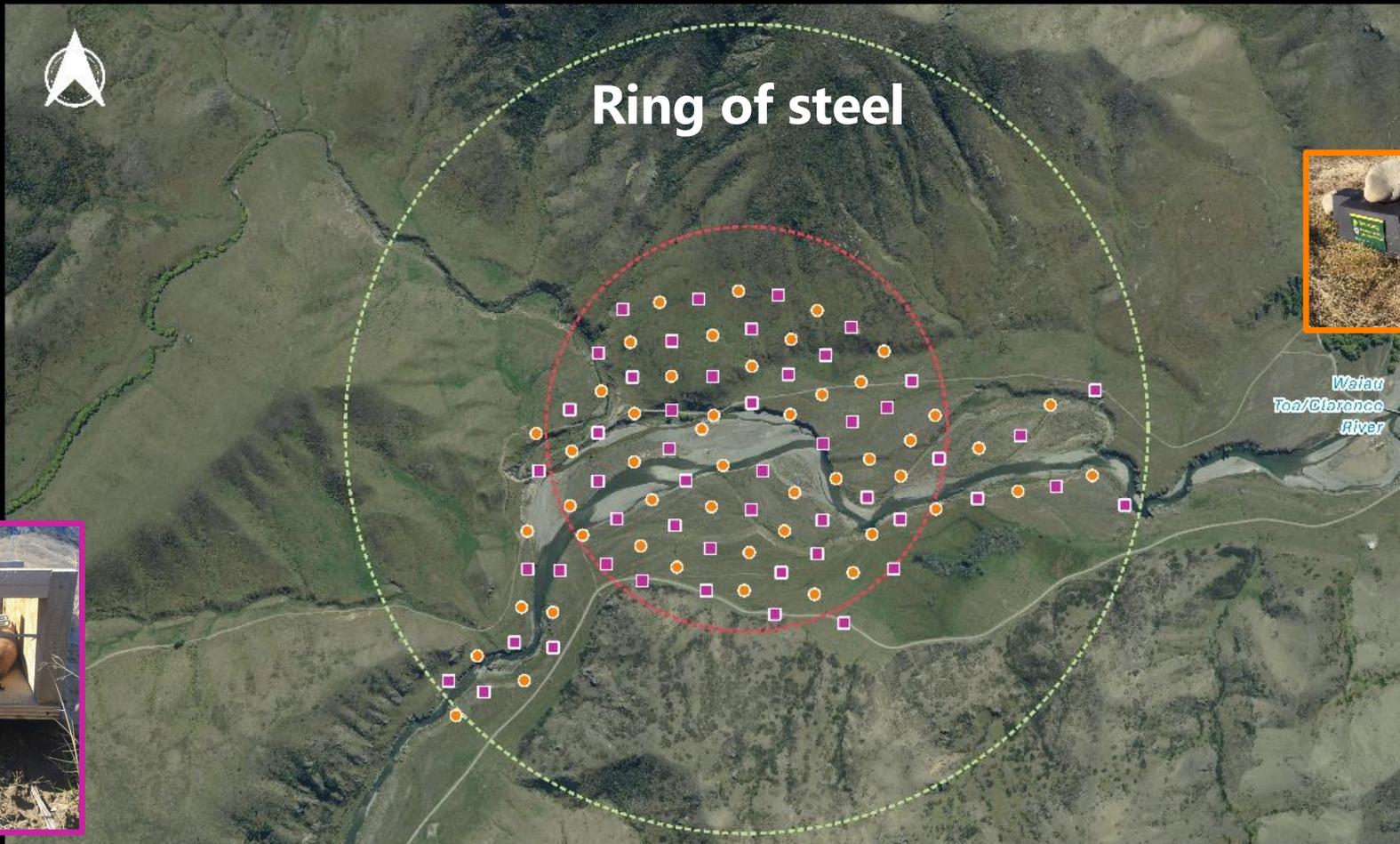
Improved three known breeding islands (March 2016)

- Deepen and widen channels
- Mechanical weed removal
- Annual weed control (spraying)
- Island maintenance (April 2019)
 - Bush gully: channel widened & deepened
 - Swimming hole: channel deepened & surface scraped
 - Mitchell's Cutting: No work needed





Ring of steel



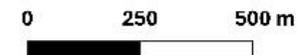
Traps

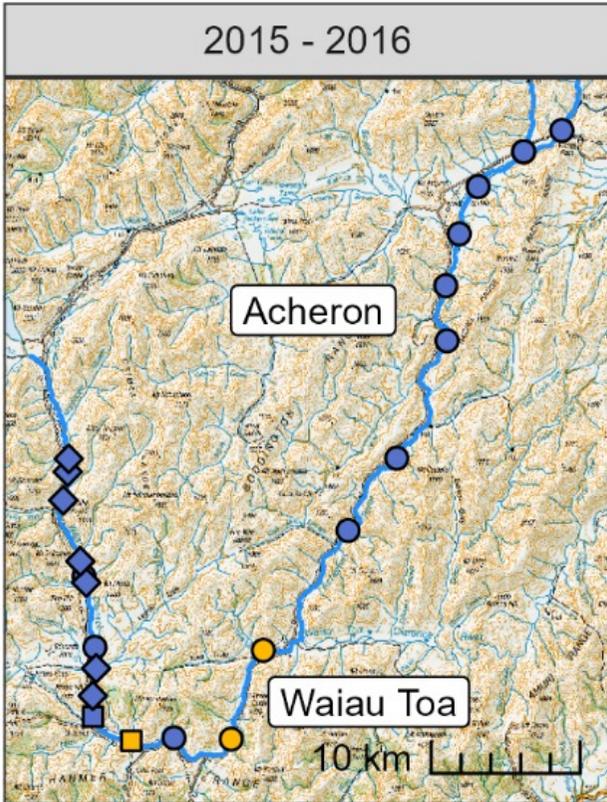
- DOC 150 + SA
- DOC 250

- 1km Buffer
- 500m Buffer
- River

Base Map © LINZ Aerial Imagery

Predator trap layout at Bush Gully, Waiau Toa/Clarence River





Management

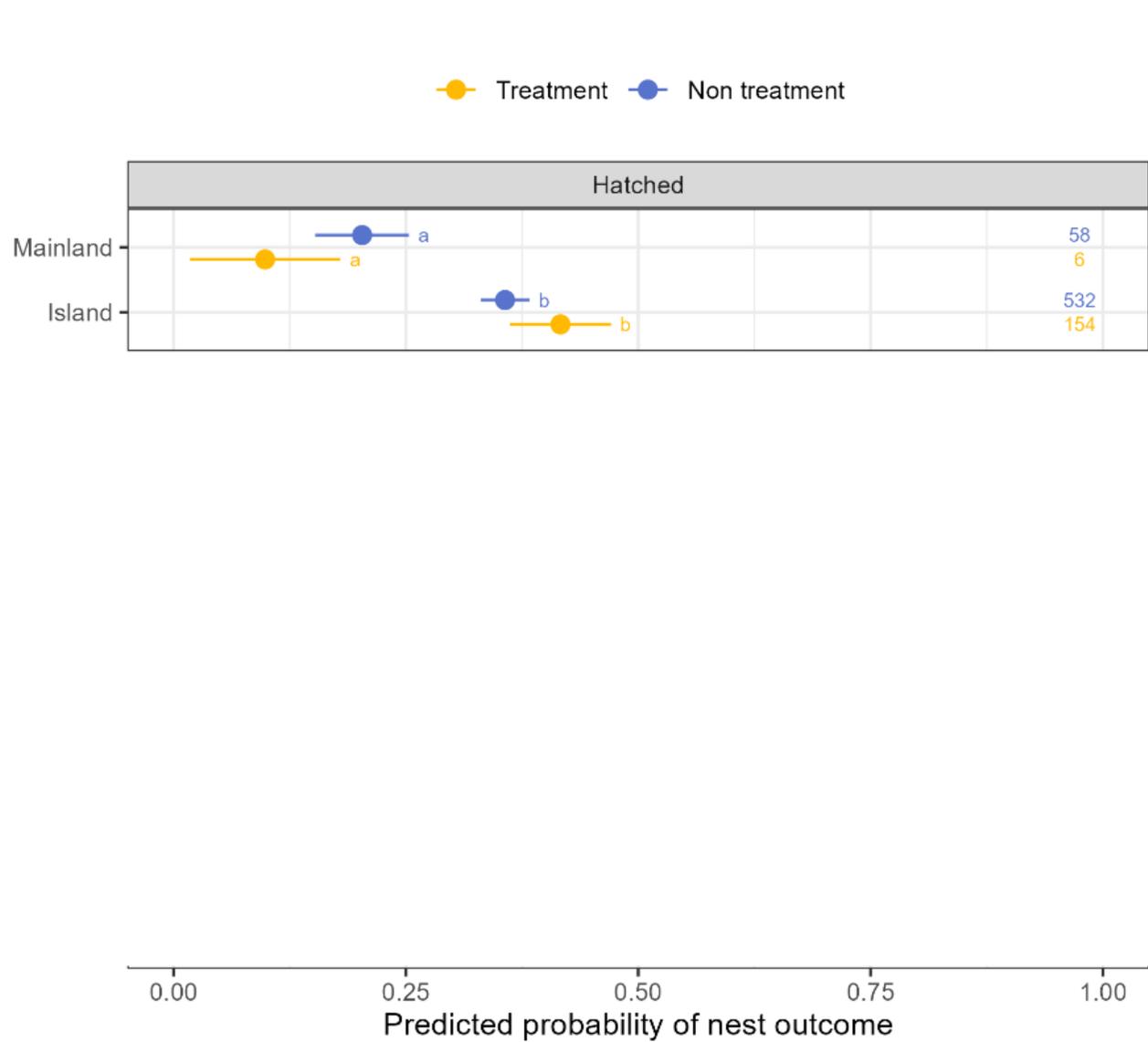
Non treatment ● Treatment

Habitat

○ Island ◆ Both □ Mainland

Nest outcomes

- More nests hatch on islands
- Fewer nests predated on islands
- No difference in number of flooded or abandoned nests
- No effect of treatment on nest outcome

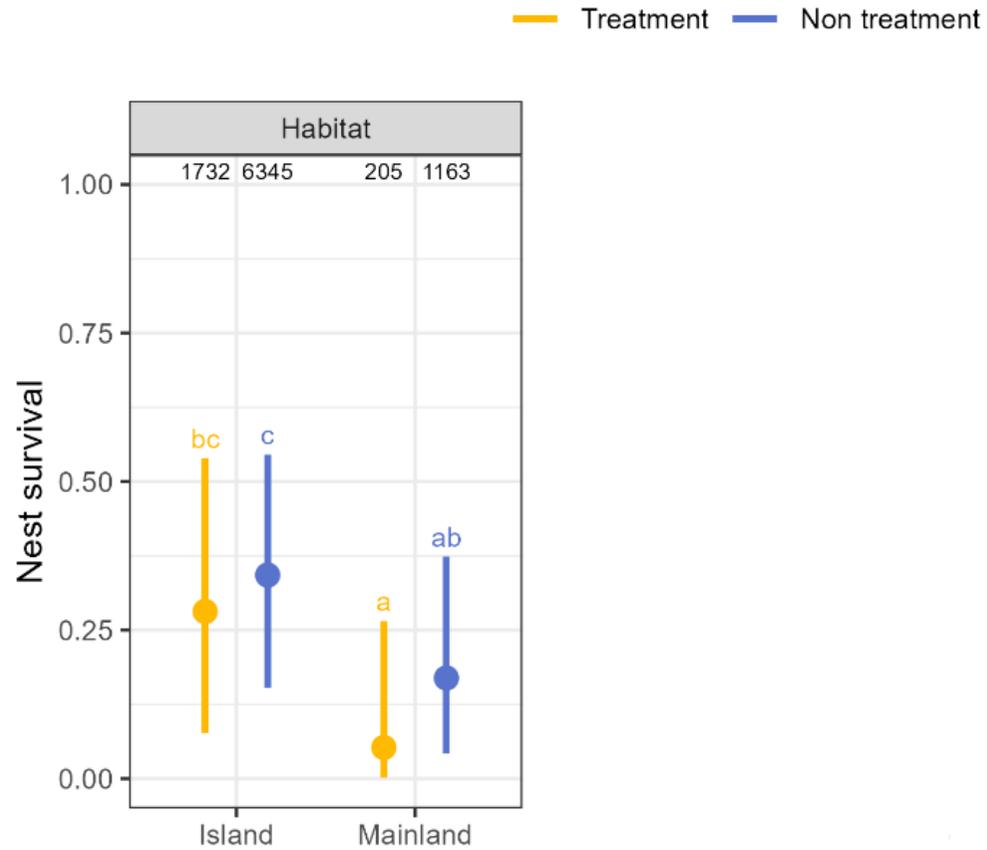




Nest survival

- Better on islands than mainland colonies
- Declines with higher flows
- Worse later in the season
- No effect of treatment

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Causes of nest failure

346 filmed nest failure events

- Flooding = 45% of nest failures
- Harriers & hedgehogs also important (10%)



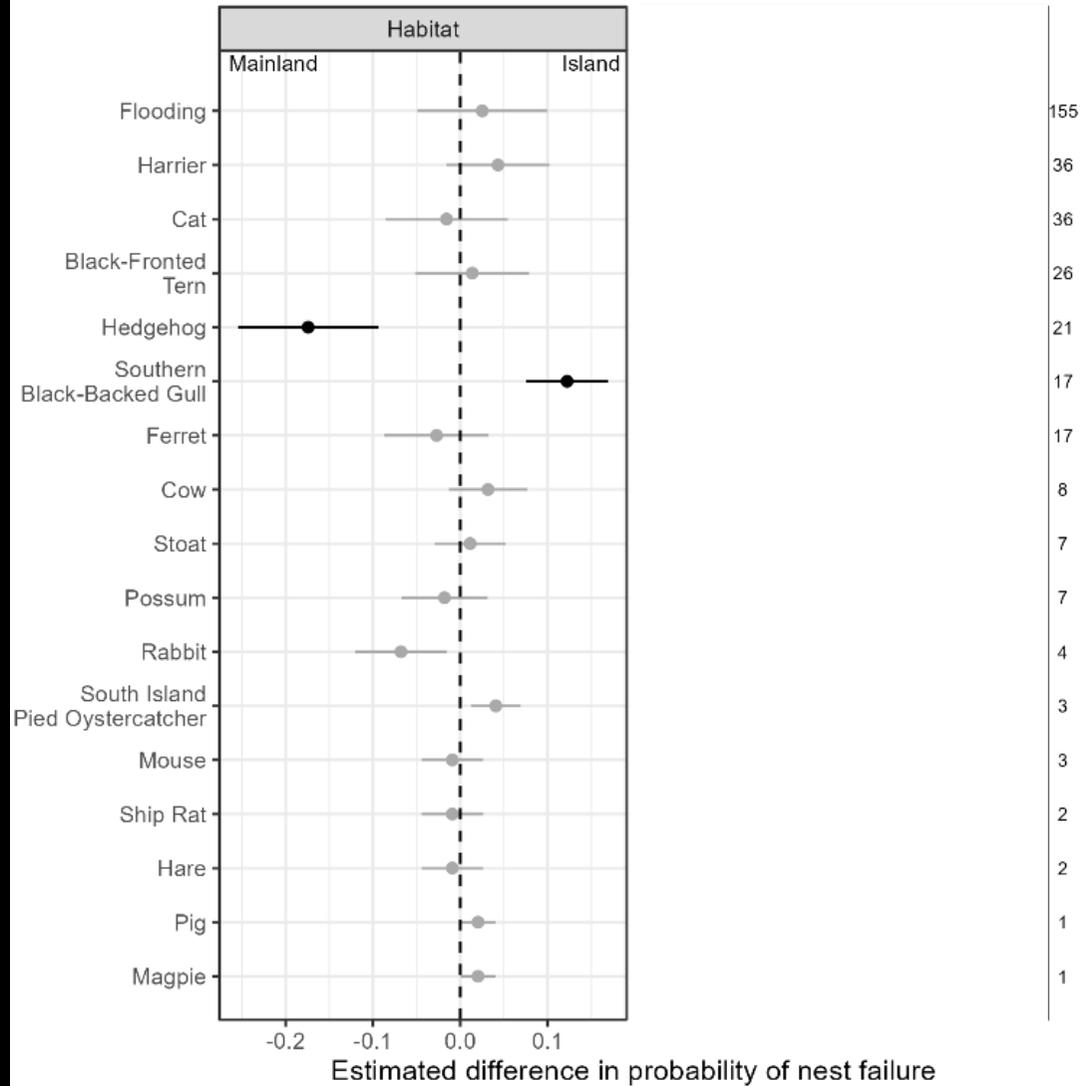
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More nest failures due to:

- Hedgehogs for mainland nests
- SBBG for islands nests
- Ferrets & rabbits for non-treatment nests

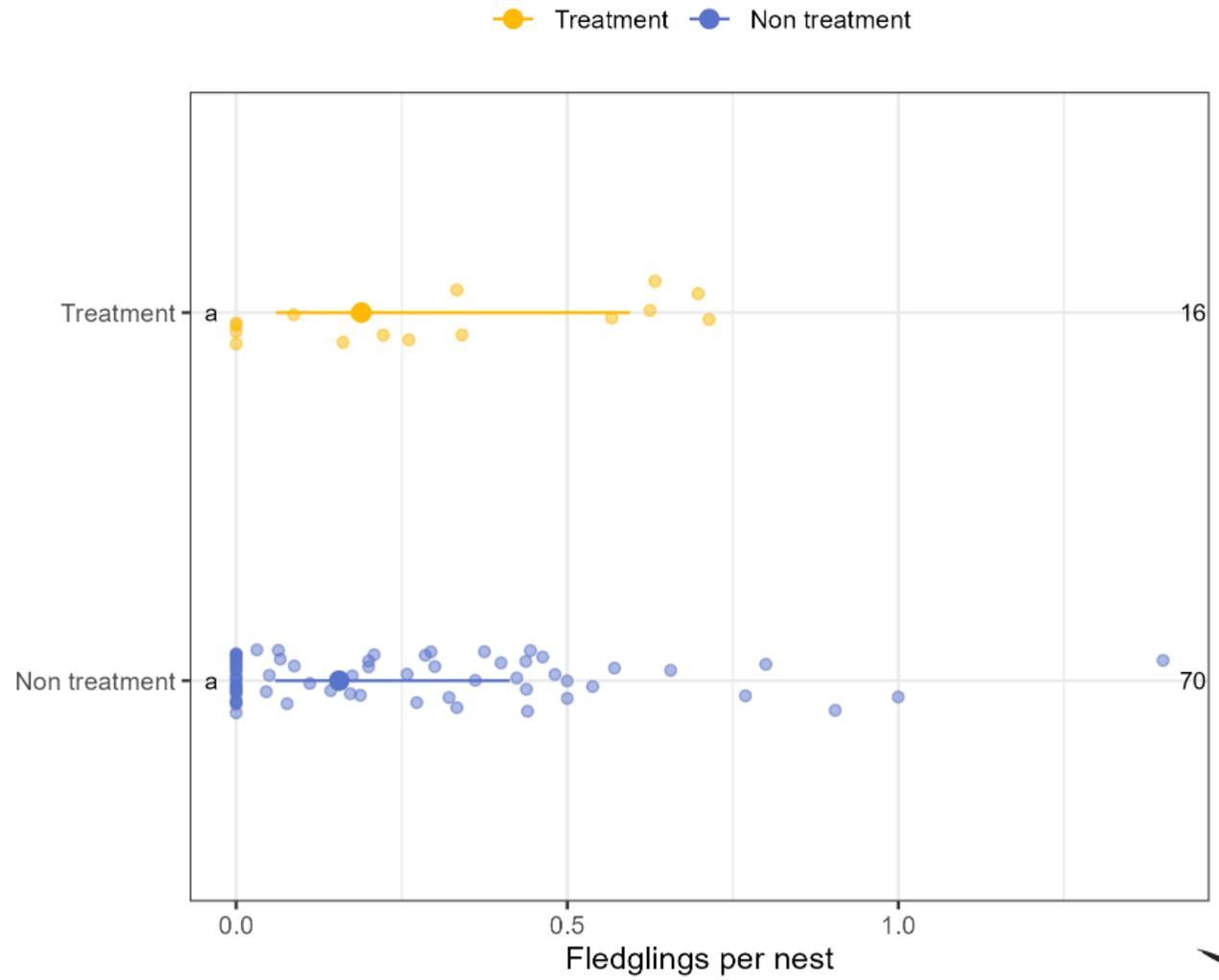




Productivity

- No difference between treatments

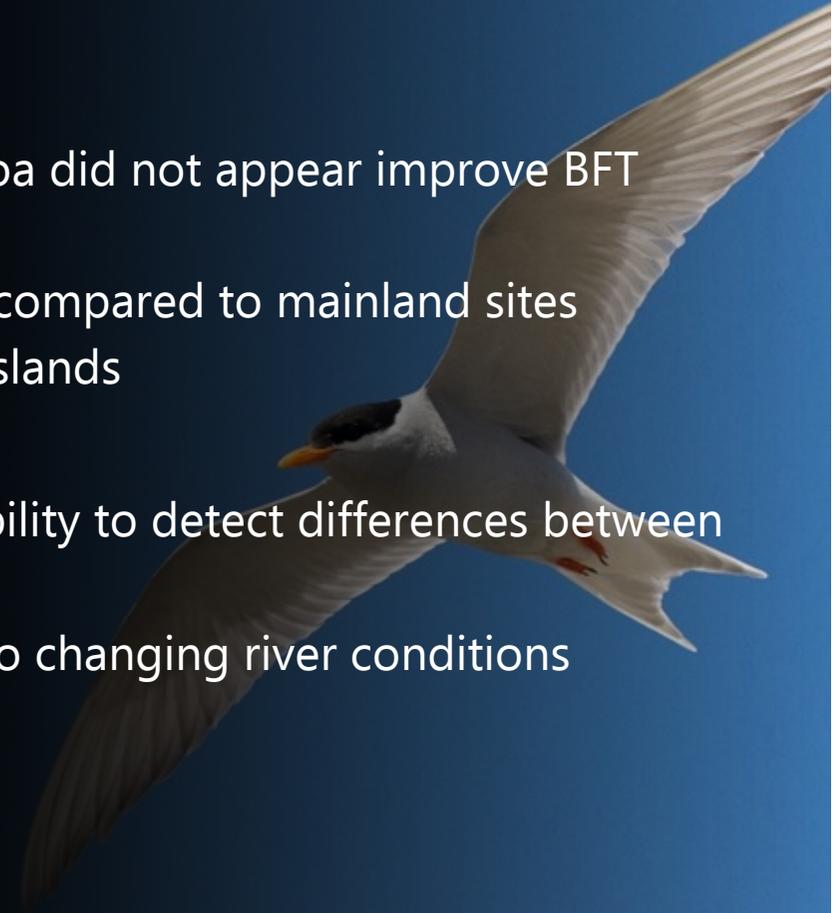
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Summary

- Ring of steel & island enhancements in the Waiau Toa did not appear improve BFT nest survival or productivity
- Nest survival higher and predation lower on islands compared to mainland sites
 - Lower predation by hedgehogs observed on islands
- Small number of treated colonies may reduce our ability to detect differences between treatments
- Difficulties assigning fledglings to habitat type due to changing river conditions





Questions

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