



Responses of spotless crane and fernbird populations to experimental predator control in Whangamarino and Awarua wetlands

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Outline

- Why control predators in wetlands?
- Spotless crakes and fernbirds as indicator species
- Objectives
- Outline of predator control
- Methods for crake and fernbird monitoring
- Results
- Conclusions

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- Whangamarino: Matt Brady, Shay Dean, Craig Gillies, Bernie Kelly, Mark Lammars, Stella McQueen, Kaitlin Morrison, Lynette Plenderleith, Lucy Roberts, Emma Williams, Elise Verschoor & the trapping teams
- Awarua: Ros Cole, Sarah Crump, Ross Curtis & the trapping teams



Arawai Kākāriki
wetland restoration programme



Department of
Conservation
Te Papa Atawhai

Importance of wetlands for birds



Fernbird



Banded rail



Spotless crane



Marsh crane



Australasian bittern

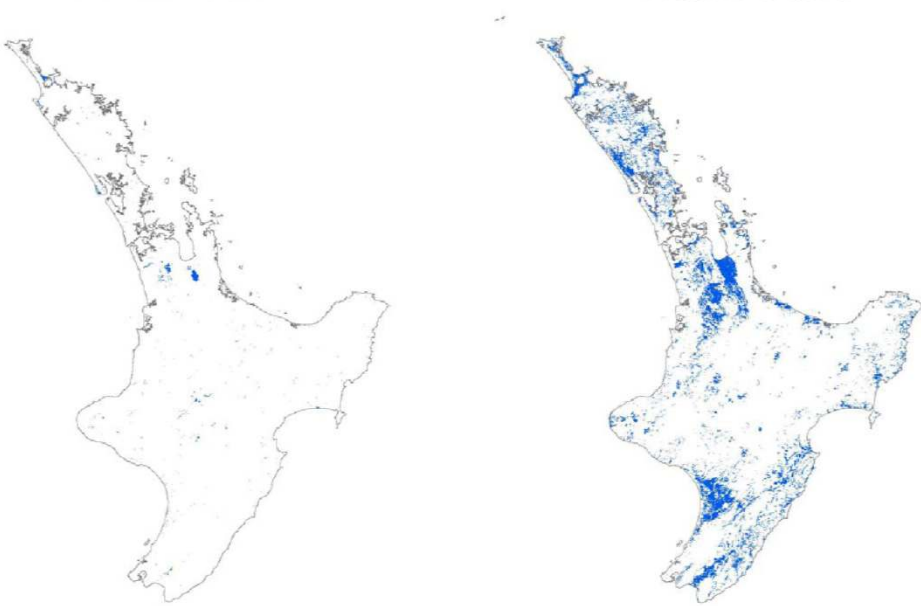
>80 bird species

>15 threatened bird species

North Island

Current extent

Historic extent



Threats

- Habitat loss
 - Drainage & fragmentation
 - Water quality
 - Sedimentation
 - Flooding
- Weed encroachment
- Predation



Why control predators in wetlands?

Species	Cat	Stoat	Ferret	Weasel	Rat	Dog	Unknown	Sources
Bittern	X							PC Taylor, P Langlands pers. comm.
Brown teal	X				X	X		Hayes & Williams 1982; Holdaway 1999; Parrish & Williams 2001; Barker & Williams 2002
Marsh crake	X					X	X	Hamilton 1885; Fleming 1939; Bryant 1942; Oliver 1955; Sefton 1958; Sefton & Devitt 1962; Westerskov 1970; Kaufmann & Lavers 1987
Spotless crake	X	X	X		X		X	Hamilton 1885, Pycroft 1898; Whitlock 1914; de Ravin 1975; Ogle & Cheyne 1980; St Paul 1977; Kaufmann & Lavers 1987
Banded rail	X	X	X	X	X	X	X	Oliver 1955; Guthrie-Smith 1921; Elliott 1983; Marchant & Higgins 1993; Parker & Brunton 2004
Fernbird	X	X			X	X	X	Stead 1948; Guthrie-Smith 1914; Oliver 1955; Bell 1976, 1978; Elliott 1978; Barlow & Moeed 1980; Fitzgerald & Veitch 1985; Kater 1999; Parker 2002
Pukeko					X		X	Carroll 1969; Craig 1980; Marchant & Higgins 1993
“Rails”	X		X			X	X	Buller 1874; Moncrieff 1938; Roser & Lavers (1976)
Waterfowl	X		X		X		X	Williams 1975; Roser & Lavers (1976); Langlands 1990; Marchant & Higgins 1990; Langham 1990; Stokes 1991; Morgan (2002)

Impact of mammalian predators

Species	Cat	Stoat	Ferret	Weasel	Rat	Dog	Unknown	Sources
Bittern	X							PC Taylor, P Langlands pers. comm.
Brown teal	X				X	X		Hayes & Williams 1982; Holdaway 1999; Parrish & Williams 2001; Barker & Williams 2002
Marsh crake	X					X	X	Hamilton 1885; Fleming 1939; Bryant 1942; Oliver 1955; Sefton 1958; Sefton & Devitt 1962; Westerskov 1970; Kaufmann & Lavers 1987
Spotless crake	X	X	X		X		X	Hamilton 1885, Pycroft 1898; Whitlock 1914; de Ravin 1975; Ogle & Cheyne 1980; St Paul 1977; Kaufmann & Lavers 1987
Banded rail	X	X	X	X	X	X	X	Oliver 1955; Guthrie-Smith 1921; Elliott 1983; Marchant & Higgins 1993; Parker & Brunton 2004
Fernbird	X	X			X	X	X	Stead 1948; Guthrie-Smith 1914; Oliver 1955; Bell 1976, 1978; Elliott 1978; Barlow & Moeed 1980; Fitzgerald & Veitch 1985; Kater 1999; Parker 2002
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Composition –Whangamarino wetland

(Craig Gillies and Matt Brady)



Objective

- **To estimate population trends in spotless crane and fernbirds using indices of relative abundance in areas with and without predator trapping**

Crakes and fernbirds as Indicator species:

- Impacted heavily by predators
- But, strong recovery potential
 - Fernbird: 3 clutches, >10 eggs/season
 - Spotless crane: 2 clutches, >7 eggs/season



Awarua Plains-Waituna

c. 20,000 ha

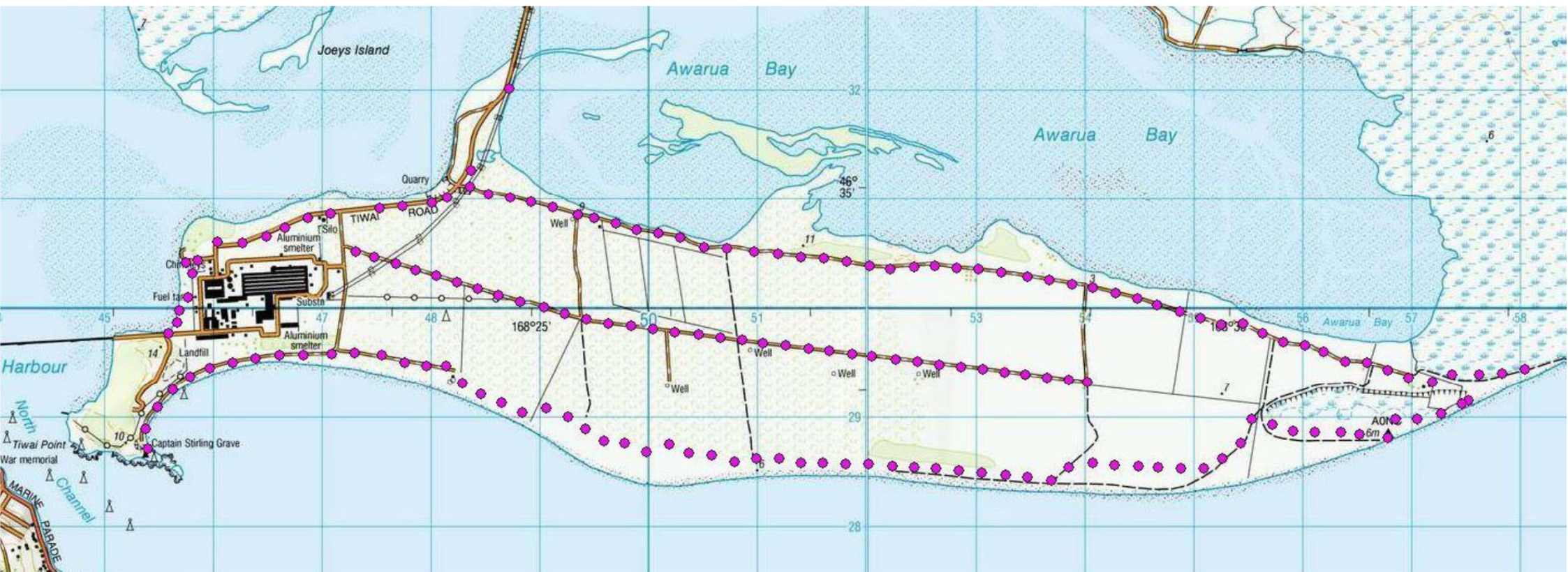


Whangamarino

c. 7,000 ha



Predator control layout - Awarua



Predator control layout - Whangamarino





Monitoring methods

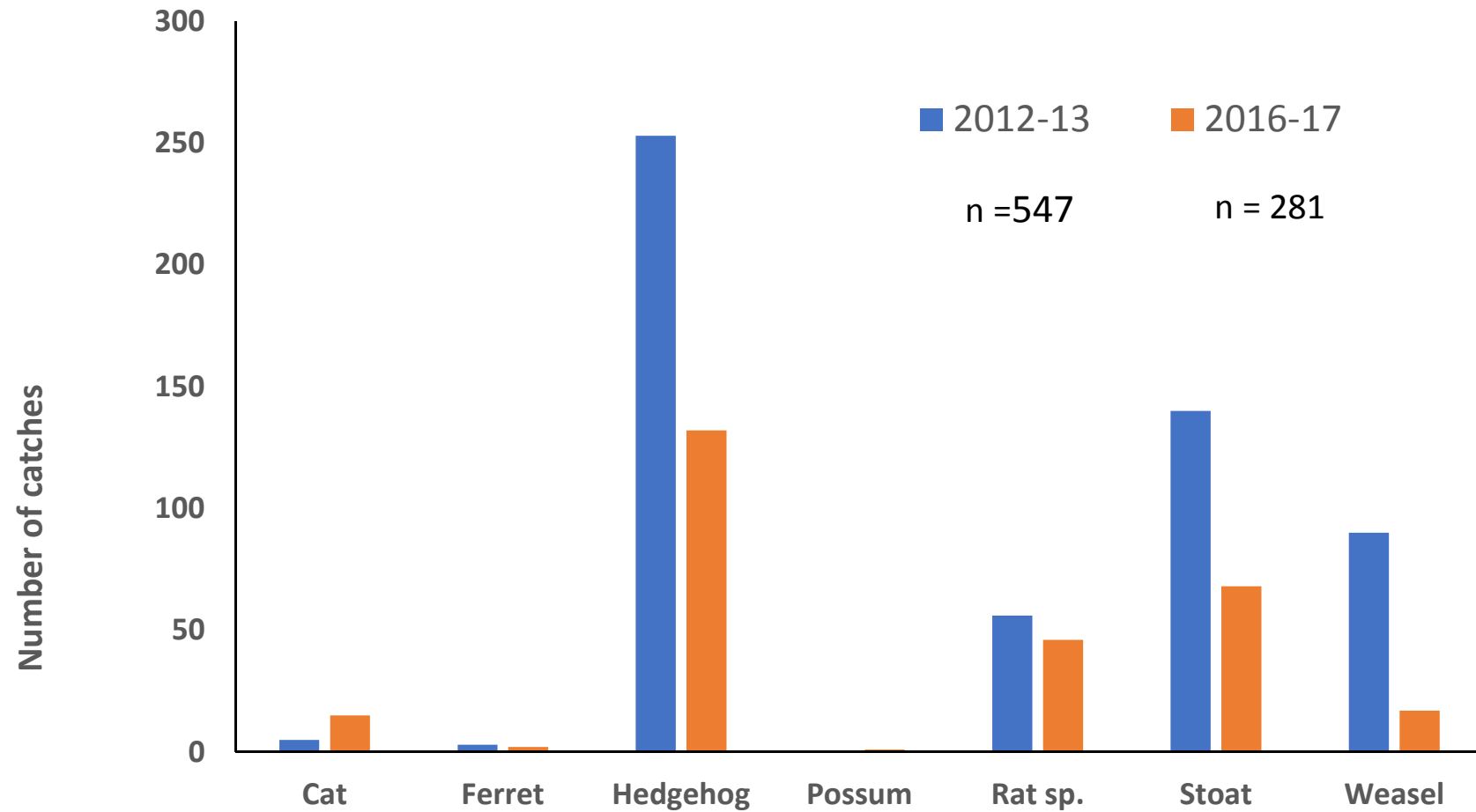
Spotless Crake (Whangamarino only)

- Standardised call-playback protocol at point stations
- 10 min counts (5 min passive listening + 5 min playback)
- 2 x/breeding season (c.100 counts/season)
- Treatment/non-treatment

Fernbird

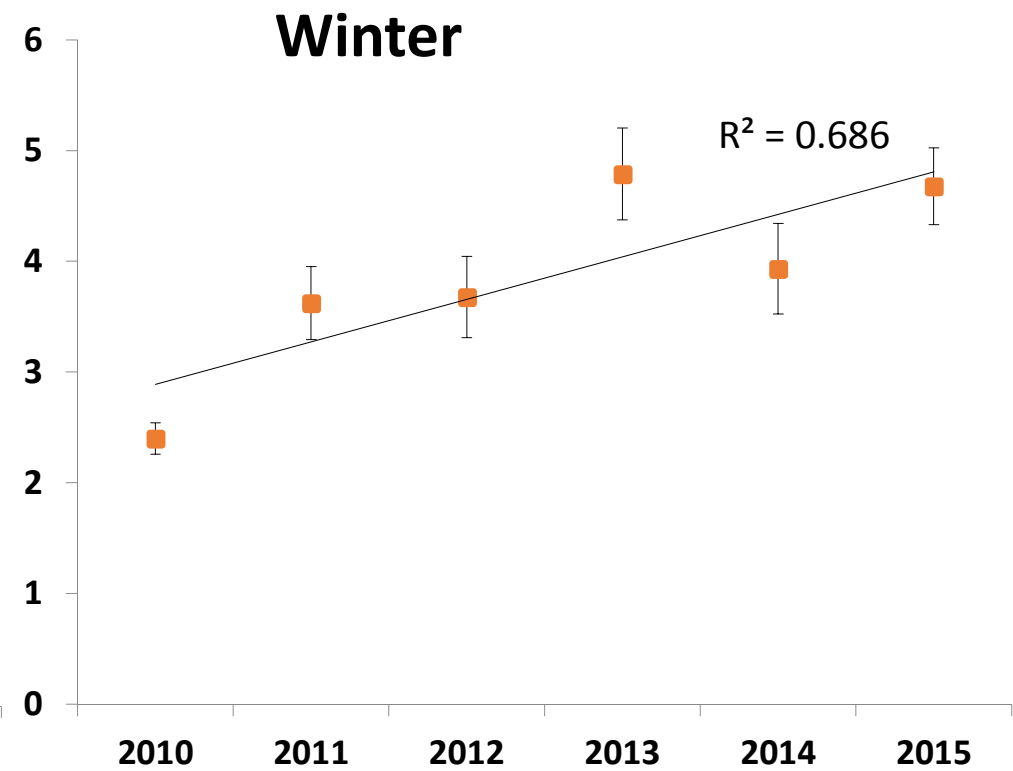
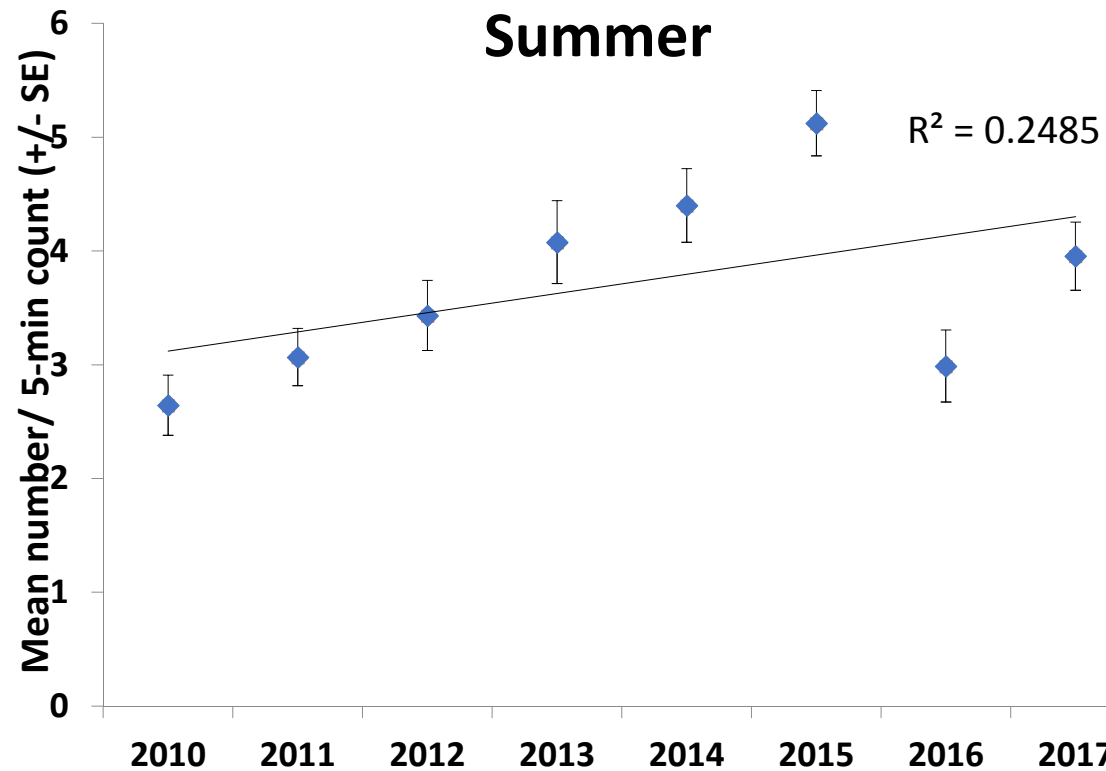
- Standardised 5-minute bird counts at point stations
- Awarua
 - Counts 2 x/year (n = 90)
 - Pre-post predator control comparison
- Whangamarino
 - counts 2 x/breeding season (n = 100)
 - Treatment/non-treatment

Predator captures/year - Awarua

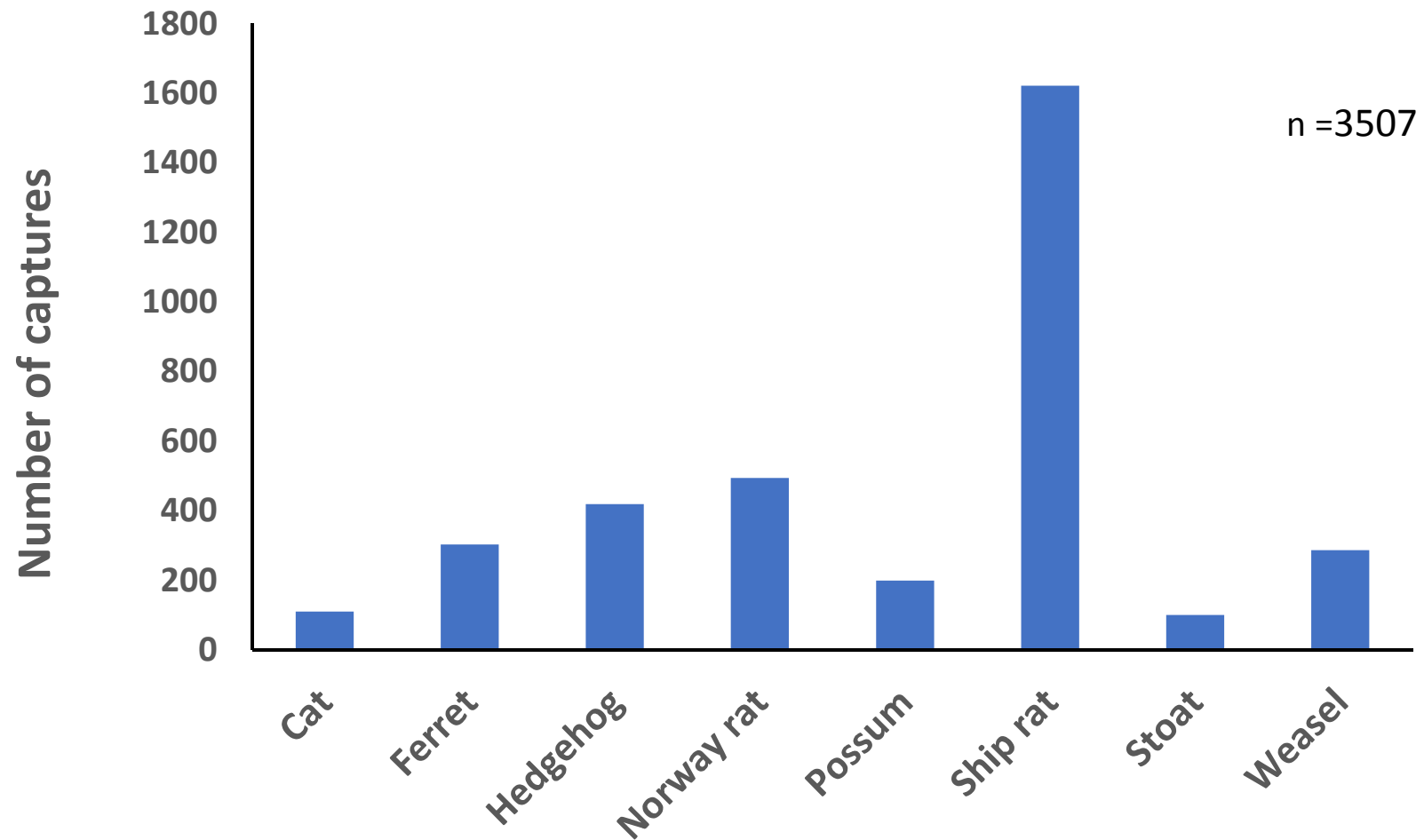




Awarua fernbird counts, 2010-2017

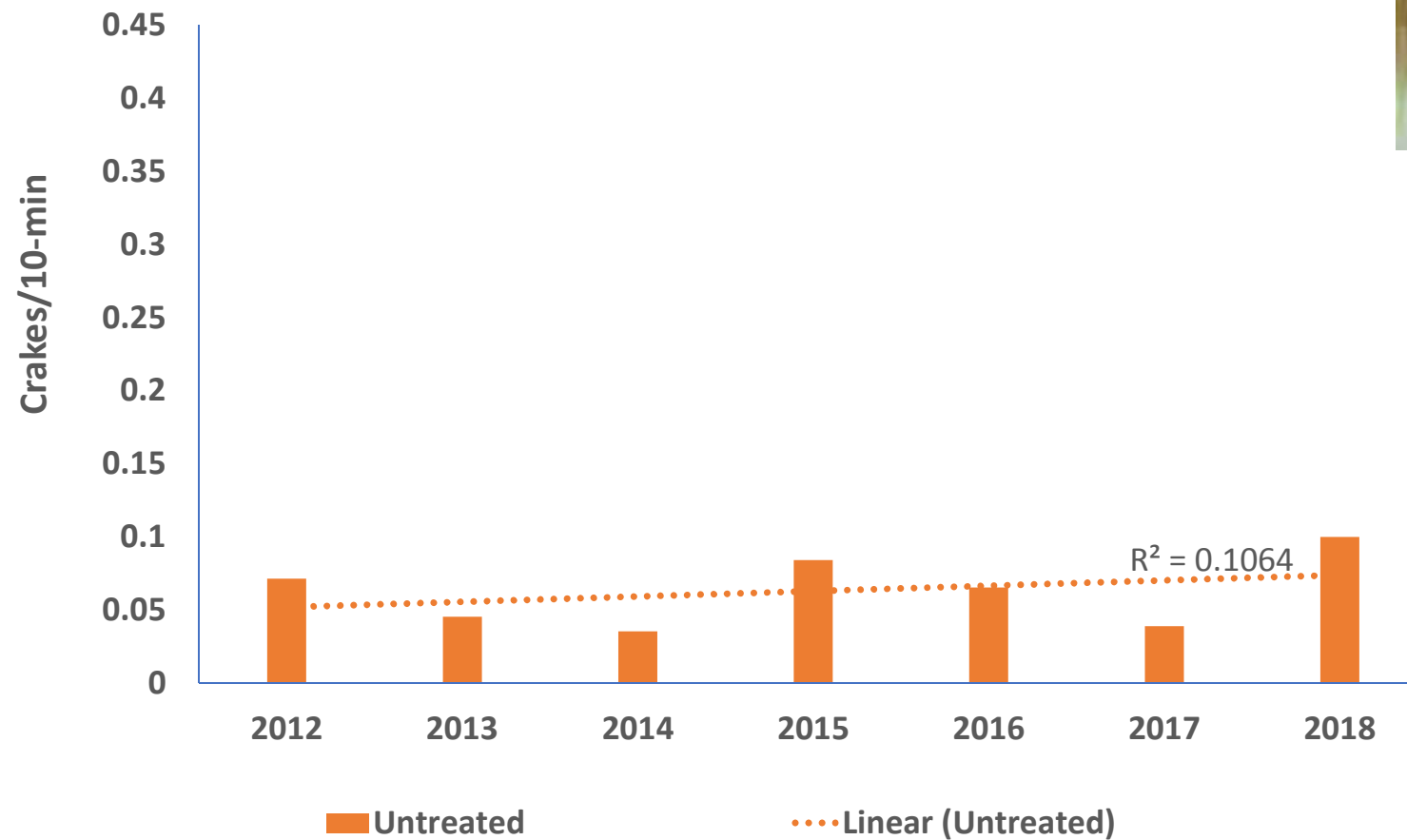


Cumulative predator captures - Whangamarino 2013-2017



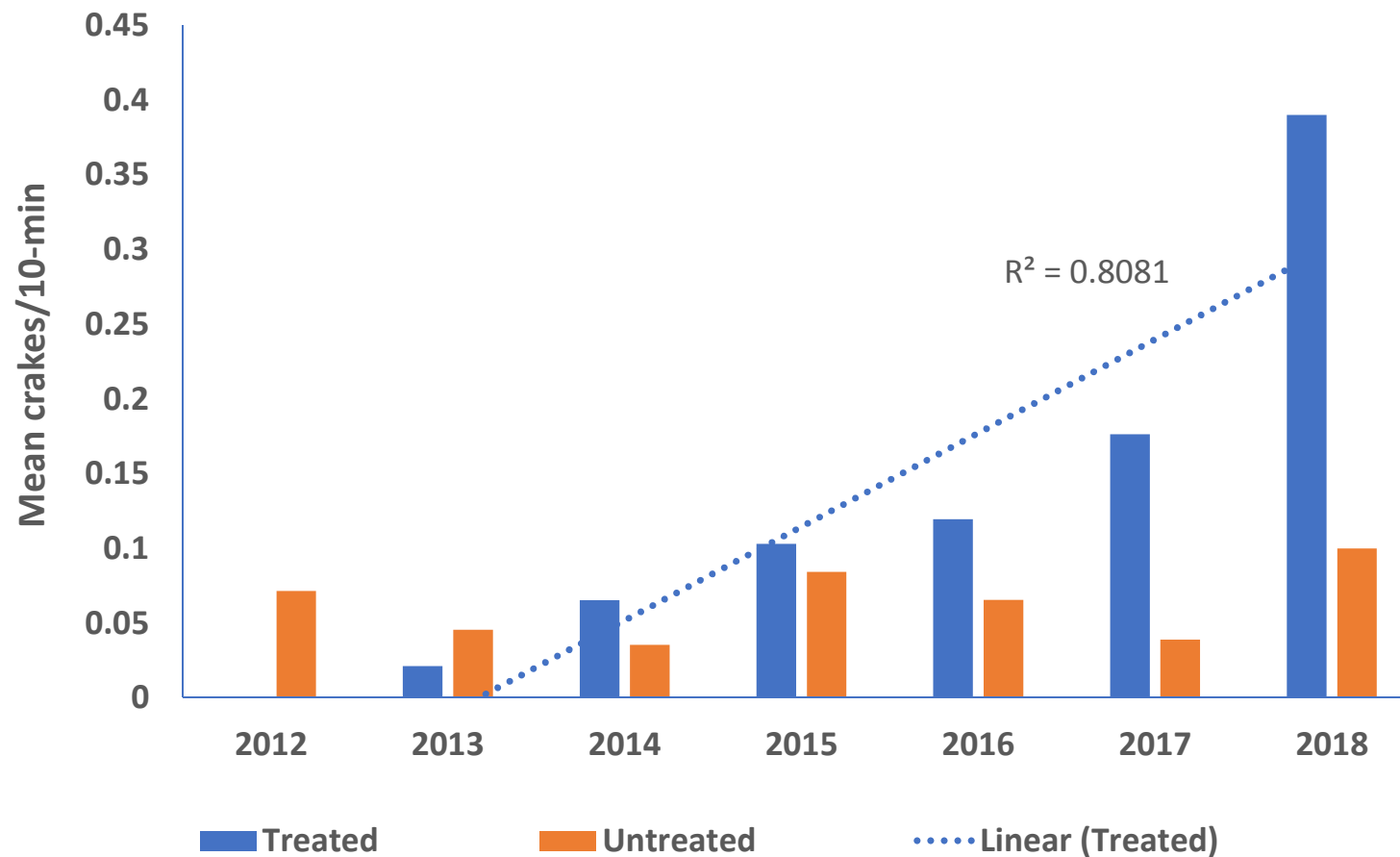
Whangamarino spotless crakes

(non-treatment, n = 59 stations)



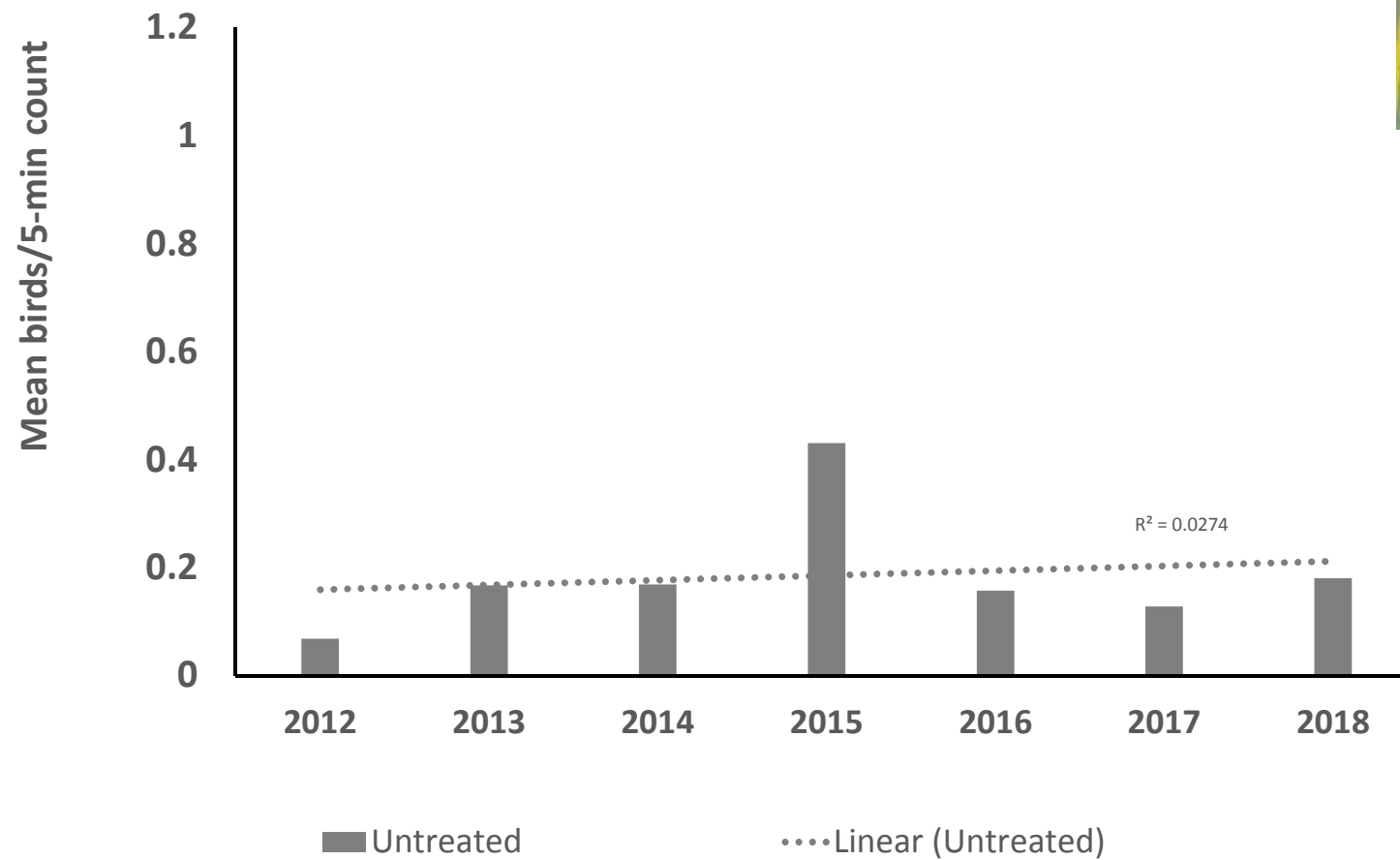
Whangamarino spotless crakes

(Treatment, n = 51 stations)



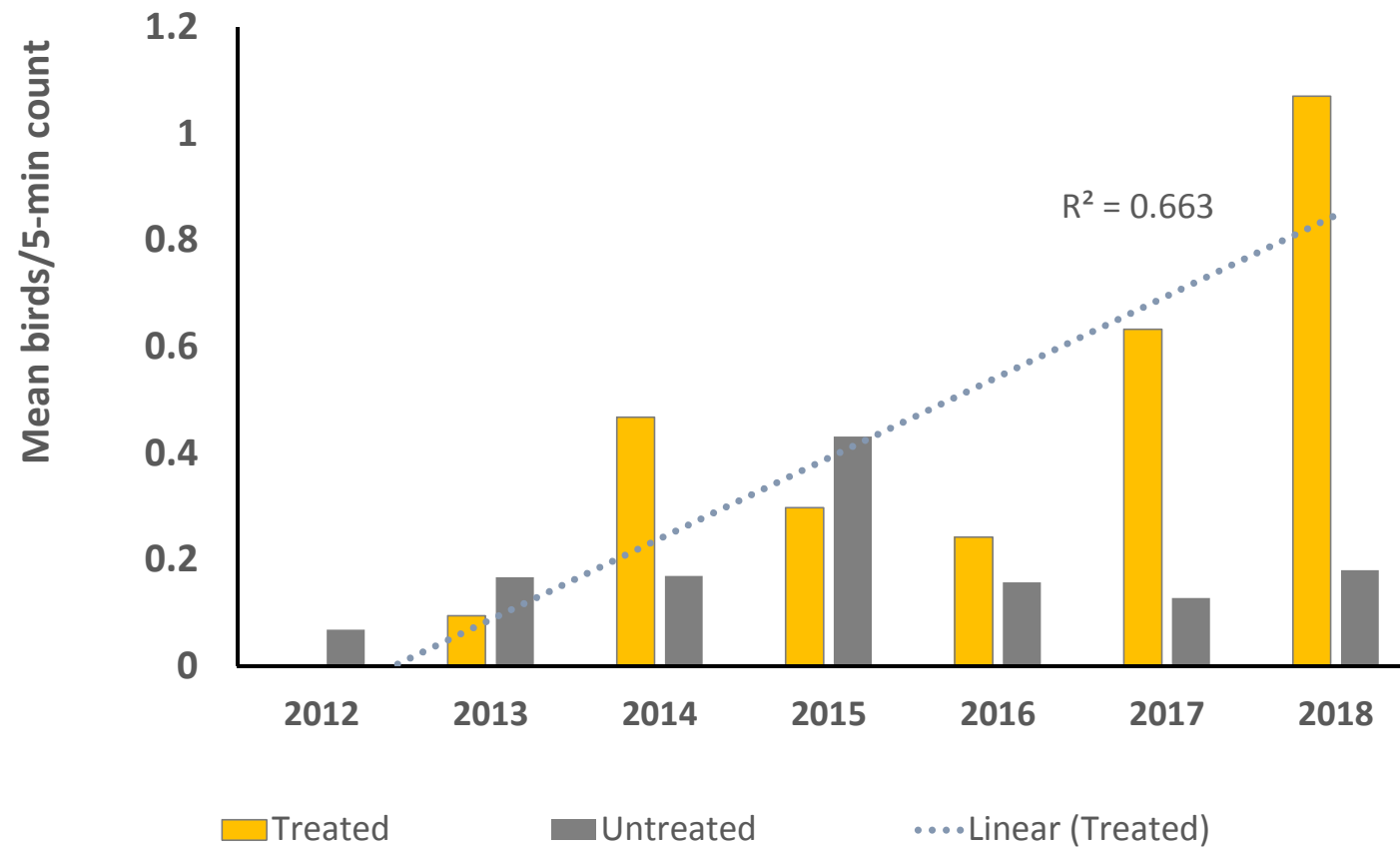
Whangamarino fernbird

(non-treatment, n = 40 stations)



Whangamarino fernbird

(Treatment, n = 52 stations)





Conclusions and future directions

- Preliminary data looks promising – but many questions remain:
- Measuring benefits challenging in wetlands because of multiple threats interacting
 - Habitat quality and loss (weeds, water quality, sedimentation, food supplies)
- Will increases be sustained?
- Other species?
- What is the best combination of control techniques?
 - Composition of predators seems to vary between wetlands