



Seabird bycatch in New Zealand fisheries

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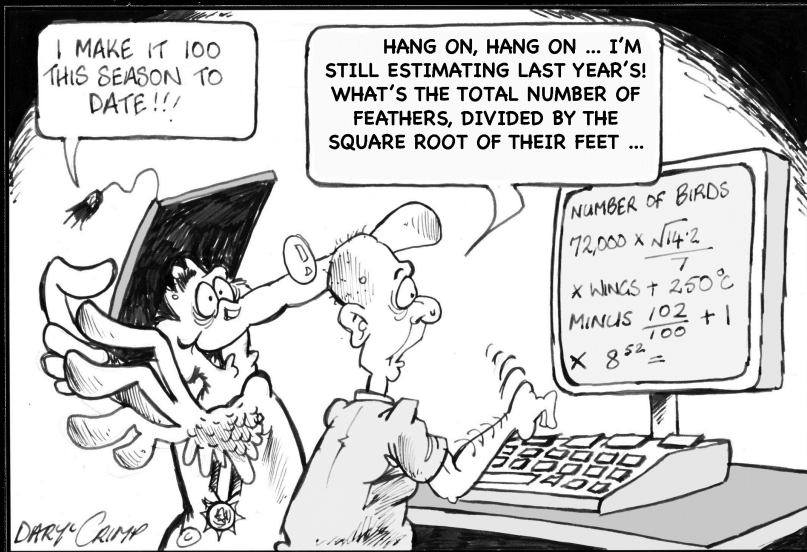
Observer data

- New Zealand fisheries monitored by Government observers
- Observers record seabird bycatch
- In the 2009 fishing year, there were 586 seabird captures reported by fisheries observers from fisheries operating within New Zealand waters



Observer photograph of a white-capped albatross killed during squid trawling

Estimating seabird bycatch





Estimation has a narrow question

How many captures would have been reported, had all fishing been observed?

Limitations

- Only sufficiently observed fisheries
- Only for individual species with high observed captures
- No cryptic mortality
- Not related to demographic status
- No consideration of other impacts

A synthesis requires a risk assessment approach



Front window of a pie shop in Bluff

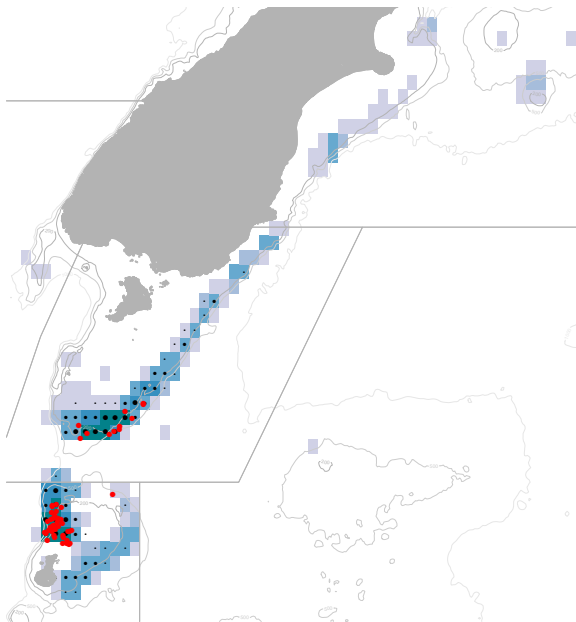


Photograph thanks to David Thompson

■ > 100 tows ■ 10 – 49 tows ■ 1 – 4 tows

• > 20 obs tows • 5 – 19 obs tows • 2 – 4 obs tows

● observed captures

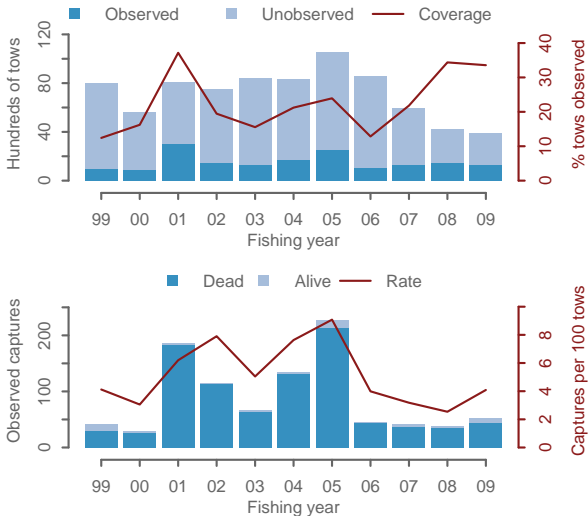


Observed white
capped albatross
bycatch in squid trawl
fisheries, 2009; 53
observed captures



Trawl fishing effort and observed captures

1999 to 2009



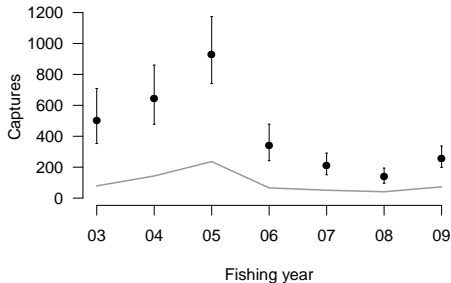


Estimated captures of white capped albatross

All EEZ, all offshore trawl fisheries

White-capped albatross

- Captures of 776 (624–968) in 2005
- Fell to 156 (118–205) in 2009



Capture rate of white-capped albatross in the Auckland Islands squid fishery

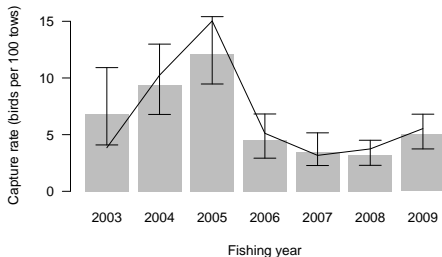


White capped albatross capture rate

Auckland Islands squid trawl

Reduced capture rate

- Sandy Bartle recorded 27.9 captures per 100 tows in 1991
- Mean capture rate of 9.4 from 2003 to 2005
- Mean capture rate of 4.1 from 2006 to 2009

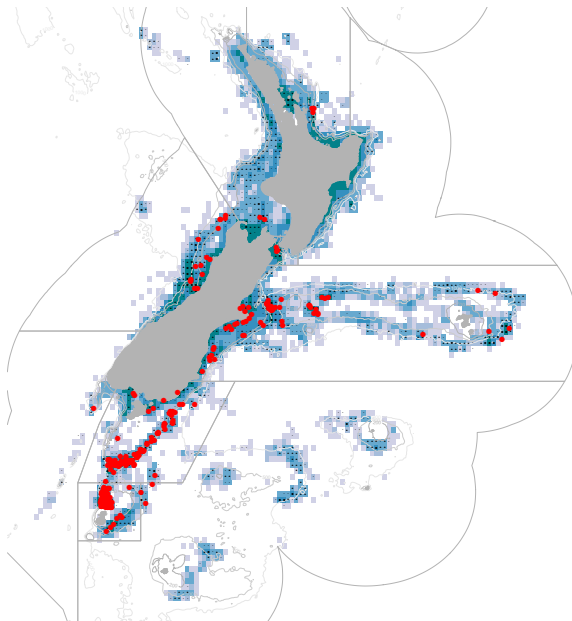


Capture rate of white-capped albatross in the Auckland Islands squid fishery

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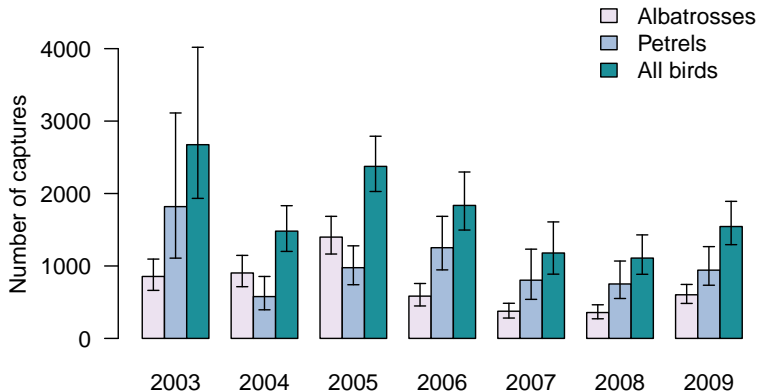
Observed seabird bycatch in trawl fisheries, 2009

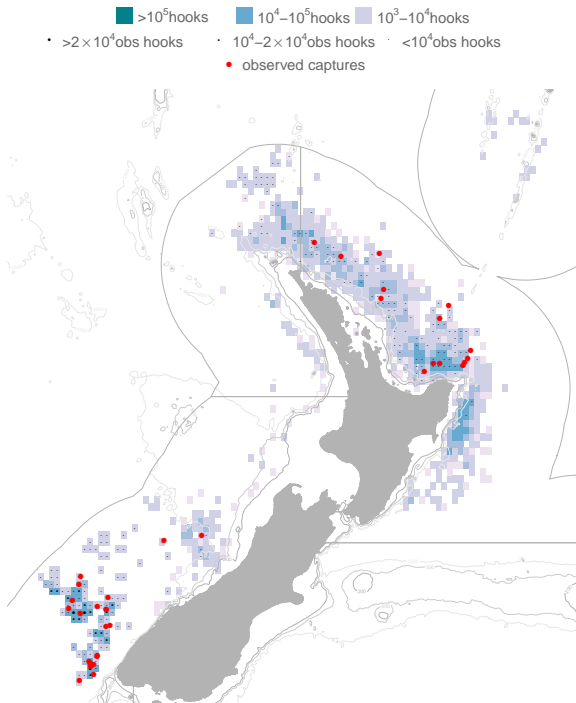
Sooty shearwater	127
White chinned petrel	86
White capped albatross	78
Spotted shag	32
Salvin's albatross	29
Buller's albatross	19
Flesh footed shearwater	3
Cape petrel	4
Westland petrel	2
Chatham albatross	1
...	



Estimated seabird bycatch

Offshore trawl





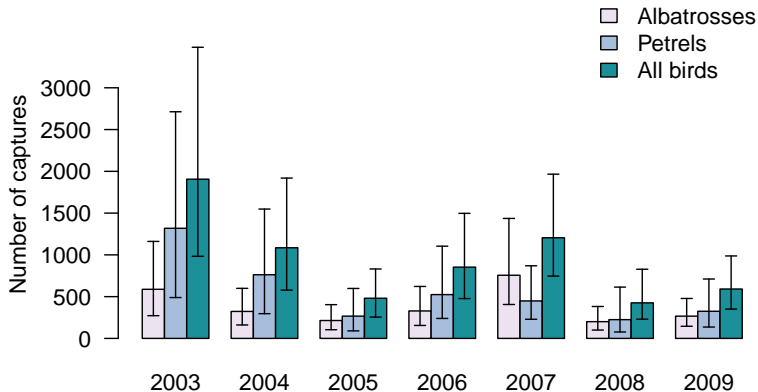
Observed seabird bycatch in pelagic longline fisheries, 2009

Buller's albatross	29
Grey petrel	6
White capped albatross	3
White chinned petrel	3
Salvin's albatross	3
Black petrel	2
Black browed albatross	2
Wandering albatross	2
Cape petrel	1
Westland petrel	1
Antipodean albatross	1
Campbell albatross	1
Gibson's albatross	1
Northern royal albatross	1

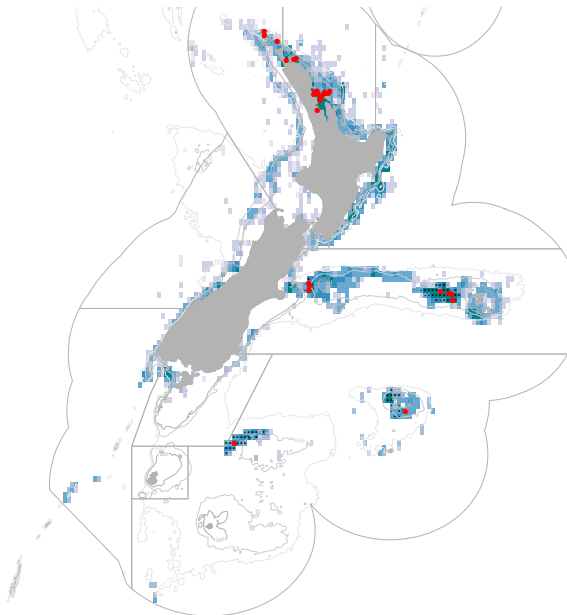


Estimated seabird bycatch

Pelagic longline



$>10^5$ hooks
 $10^4 - 10^5$ hooks
 $10^3 - 10^4$ hooks
 · $>2 \times 10^4$ obs hooks · $10^4 - 2 \times 10^4$ obs hooks · $<10^4$ obs hooks
 • observed captures



Observed seabird bycatch in demersal longline fisheries, 2009

Flesh footed shearwater	13
Black petrel	8
Grey petrel	3
Cape petrel	2
Penguins	2
White chinned petrel	1
Salvin's albatross	1
Chatham albatross	1
Black backed gull	1
Buller's shearwater	1

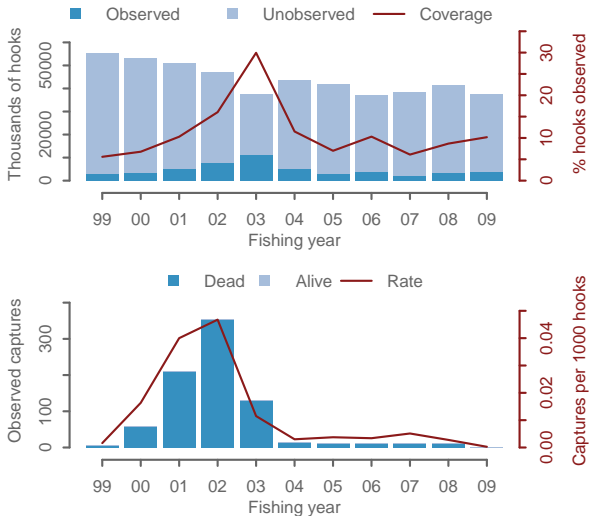


Elizabeth Crapo, NOAA, public domain



Demersal longline effort and captures

White chinned petrel, 1999 to 2009



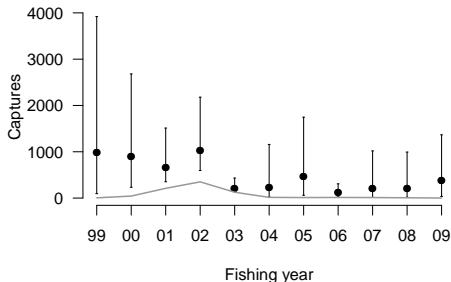


Estimated captures of white chinned petrel

All EEZ, large vessel demersal longline fisheries

High uncertainty

- Estimated captures of 1025 (595–2179) in 2002
- Fell to 371 (36–1366) in 2009
- Mean estimate of integrated weight line effect of 12.8%
- Observations biased to vessels that use integrated weight line

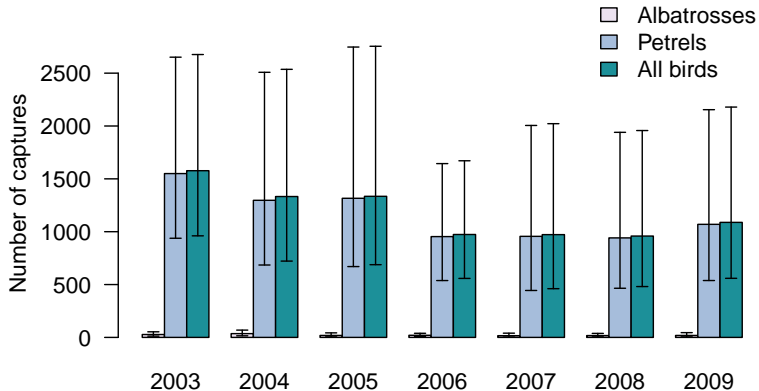


Captures of white chinned petrel in demersal longline



Estimated seabird bycatch

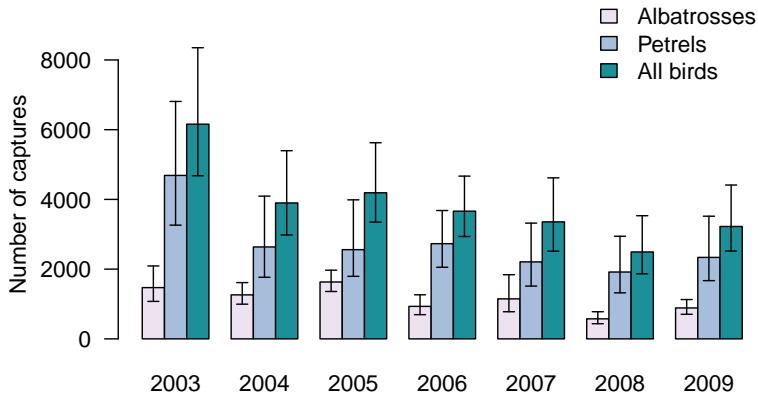
large vessel and snapper demersal longline





Estimated bycatch in commercial fisheries

Currently around 4 000 captures annually



Offshore trawl, pelagic longline, large vessel and snapper demersal longline

Recreational fisheries

Over 10 000 captures annually

- Carried out 763 boat ramp interviews; 21 people reported a seabird capture on the day of the interview
- In the Hauraki Gulf, there are 4 million hours of fishing annually
- Translates into 11 500 (95% c.i.: 6 600 to 17 200) seabird captures
- A thumb-suck of 40 000 captures nationally, from telephone survey estimates of the amount of fishing
- Post-capture survival unknown



A giant petrel gets the gurnard, Herb Spannagal, Fishing News



Acknowledgments

Thanks to the many, many people who work to solve this problem

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Photographs David Thompson, Duncan Wright for the Buller's
albatross in the banner (CC-BY-SA), DOC, MPI

Finding out more All research available from
<http://dragonfly.co.nz/publications.html>