Salvin's albatross – Bounty Is. population estimate 2013
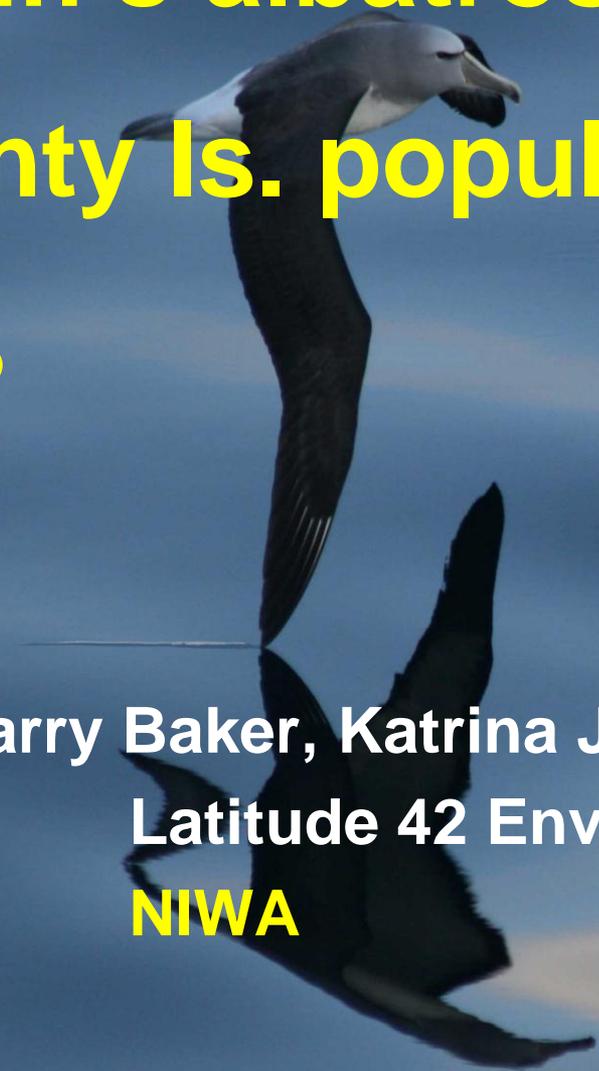
Barry Baker, Katrina Jensz & Paul Sagar
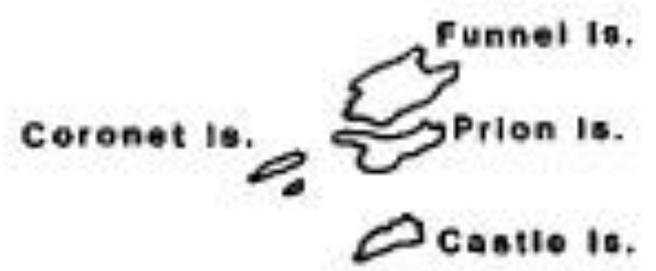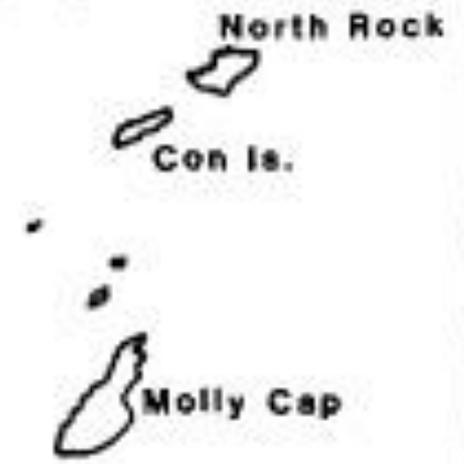
Latitude 42 Environmental Consultants

NIWA

background

—endemic NZ species

— Bounty Islands

98% global population (c.32 000 pairs) breeds on 7 islands

— Snares Western Chain c. 2,000 pairs

WEST GROUP
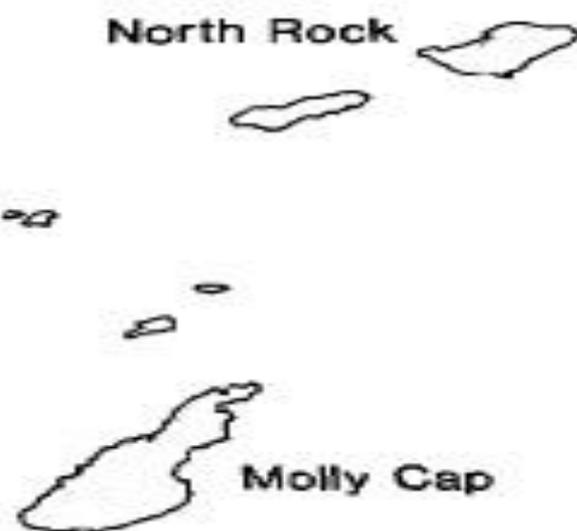
Spider Is.

Skua Rock

Proclamation Is.

Tunnel Is.

DEPOT IS.

Ranfurly Is.

Lion Is.

Penguin Is.

Ruatara Is.

BOUNTY
ISLANDS

Funnel Is.

Coronet Is.

Prion Is.

Castle Is.

CENTRE GROUP

EAST GROUP

North Rock

Con Is.

Molly Cap

Spider Is.

Proclamation Is.

Tunnel Is.
Depot Is.
Ranfurly Is.

Lion Is.

Penguin Is.

WEST GROUP

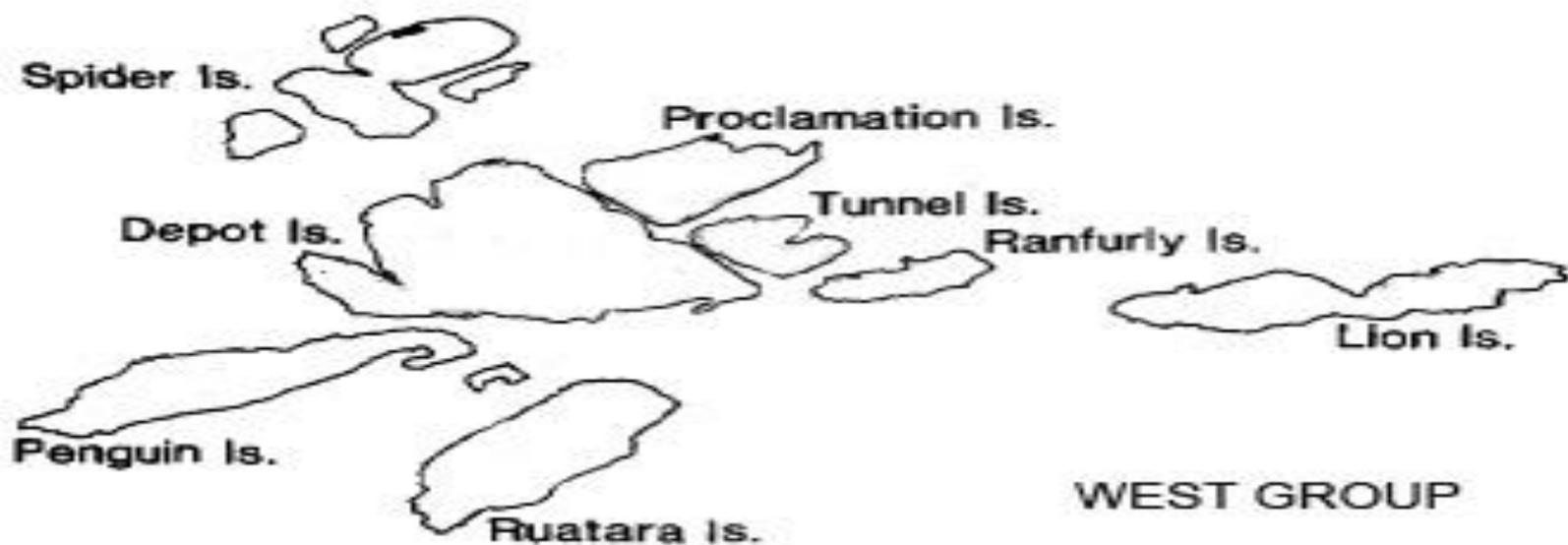Ruatara Is.

North Rock

Funnel Is.

Prion Is.

Molly Cap

CENTRE GROUP

EAST GROUP

Project Aims

- develop population estimate for Salvin's albatross on the Bounty Islands for 2013

- estimate population trend in relation to previous aerial surveys & ground counts

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- October 2010 & 2013 flew from Christchurch to the Bounty's

- fixed wing aircraft twin turboprop Cessna Conquest II

- population census at Bounty Is colonies using aerial photography

- no ground truthing   2010
  ground truthing   2013 Proclamation I.

ground count protocol

—Proclamation I.   23/10/2013,
  same day as aerial photography

—to determine proportions of
  - nests containing eggs;   &
 - non-breeding birds present in the colony

ground count protocol

— 2 transects of variable length X 2m wide

— transect length determined by density of nesting birds, terminated when 100 active nests with eggs located.

— all nests with eggs 1 m either side of lines counted & spot marked; together with empty nests

— counts repeated every 2 hours, recording nests with eggs, empty nests with bird on, loafing birds, partners of incubating birds

— counts along transects undertaken by one observer at 1000, 1200, 1400 and 1600 hours

—photomontages constructed using Adobe Photoshop software

—paintbrush tool mark off counted birds

data assessment
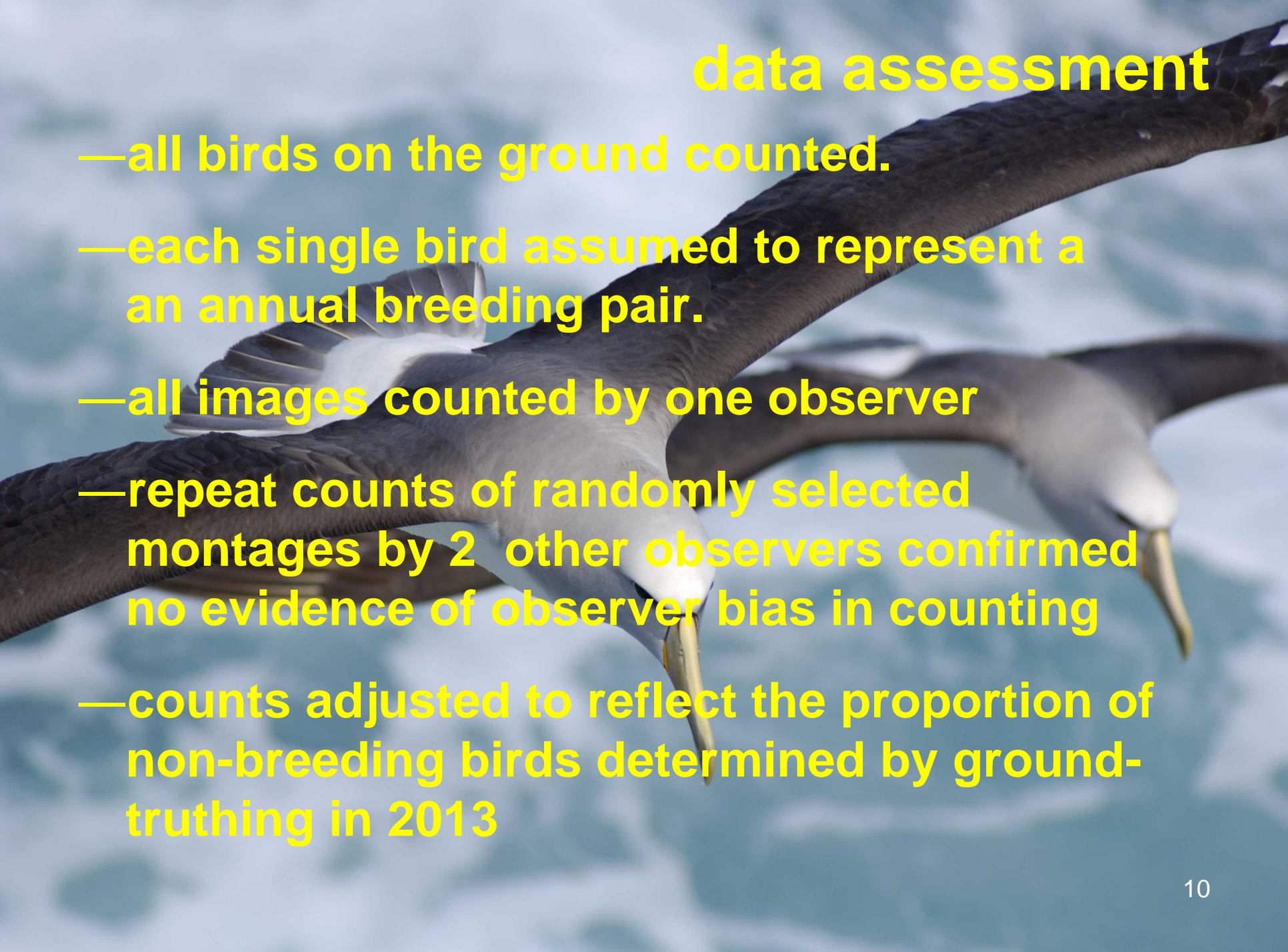
—all birds on the ground counted.

—each single bird assumed to represent a an annual breeding pair.

—all images counted by one observer

—**repeat counts of randomly selected montages by 2 other observers confirmed no evidence of observer bias in counting**

—counts adjusted to reflect the proportion of non-breeding birds determined by ground-truthing in 2013
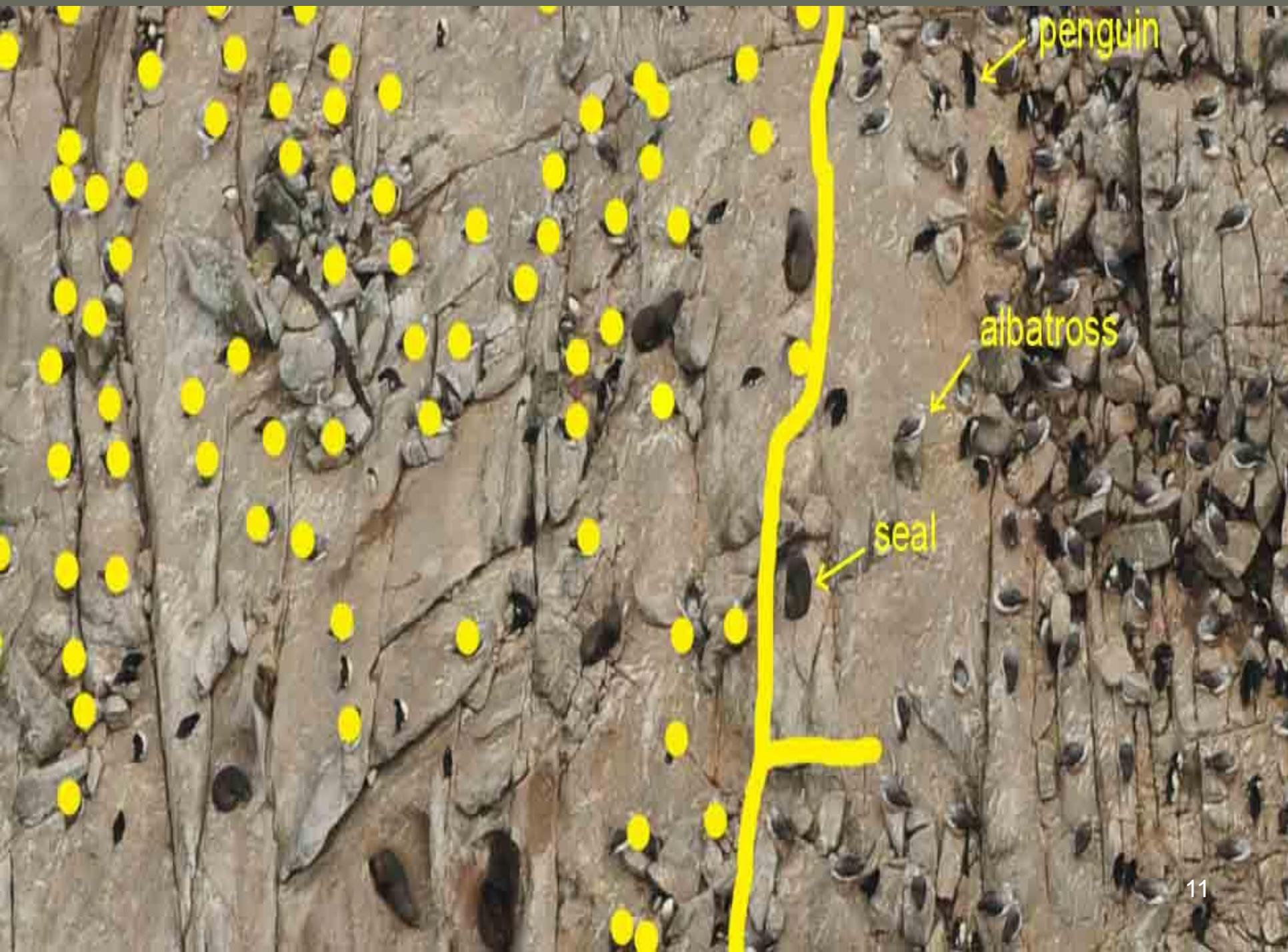
penguin

albatross

seal

11

ground count results

Time	Transect #	Nest with eggs	Empty nests with bird on	Loafers	Total birds	Proportion birds breeding
10.00	1	100	10	28	138	0.72
	2	100	11	19	130	0.77
12.00	1	100	10	27	137	0.73
	2	100	14	19	133	0.75
14.00	1	100	11	29	140	0.71
	2	100	12	20	132	0.76
16.00	1	100	11	27	138	0.72
	2	100	11	19	130	0.77
Mean						**0.74**

— total count October 2013 – mid incubation 53,893   (CI 53,429 — 54,357)

— mean proportion breeding birds   0.74 occupied nests containing eggs   0.90

— 39,995 (95% CI 39,595 - 40,395) annual breeding pairs in 2013

— most birds on Depot Is. 15,000

Bounty Island raw counts & estimated annual breeding pairs

ISLAND	2010		2013	
	Raw	Corrected	Raw	Corrected
Molly Cap	3,361	2,494	4,390	3,258
Funnel I.	5,159	3,829	6,983	5,182
Spider I.	3,750	2,783	4,644	3,446
Depot I.	17,862	13,256	18,510	13,737
Penguin I.	2,203	1,635	1,407	1,044
Ruatara I.	5,313	3,943	6,754	5,012
Tunnel I.	2,333	1,731	4,629	3,435
Proclamation I.	2,851	2,116	6,576	4,880
TOTAL	41,101 SE 203	31,786 232	53,893 178	39,995 200

— aerial survey is effective method of assessing population size of Salvin's albatross at the Bounty Islands

— proportion of non-breeding birds (25.8%) is high, but may be normal at this stage (mid-incubation period) of breeding

— developing annual correction factors in the absence of ground truthing not feasible from aerial photography (unlike white-capped albatross breeding in Auckland Is)

— non-breeder proportion likely to be much lower (c. 5%) 6 weeks earlier at end of egg laying period

— not appropriate to draw conclusions about population changes by combining aerial counts with earlier data sets
- methods vary considerably
- carried out at different times of breeding cycle

Acknowledgements

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