

Aerial counts of southern royal albatrosses at Enderby Island — January 2017.



**Barry Baker, Rebecca French, Katrina Jenz &
Chris Muller**

Latitude 42 Environmental Consultants

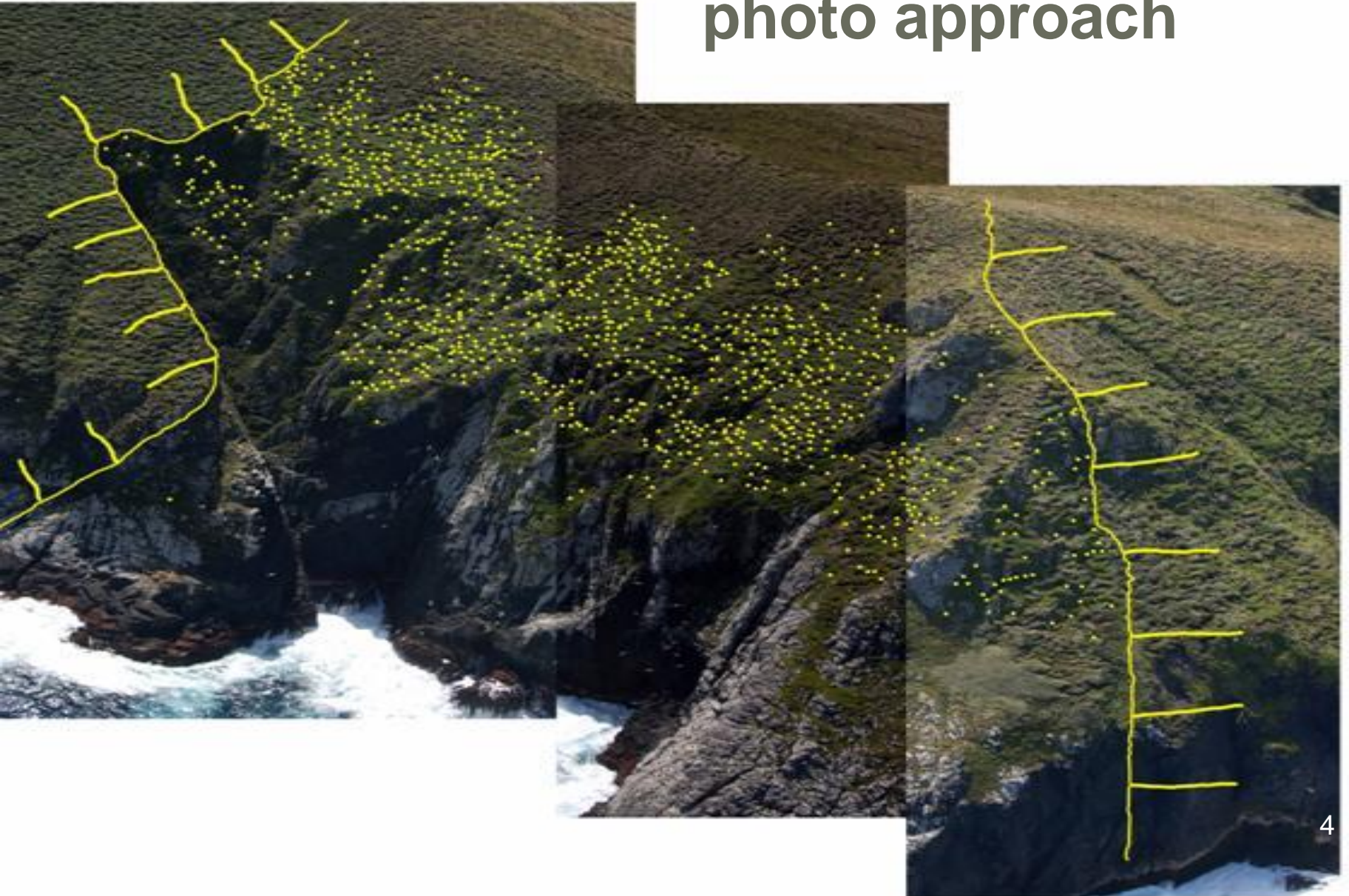
background

- accurate estimation of numbers critical for determining conservation status of any animal
- aerial photography increasingly preferred as census method of choice for surface nesting seabirds, especially in remote locations (Wolfaardt & Phillips 2011)
- applied to a range of colonially nesting albatrosses BBA, WCA, SA, GHA
- techniques still under development for loosely colonial species

background

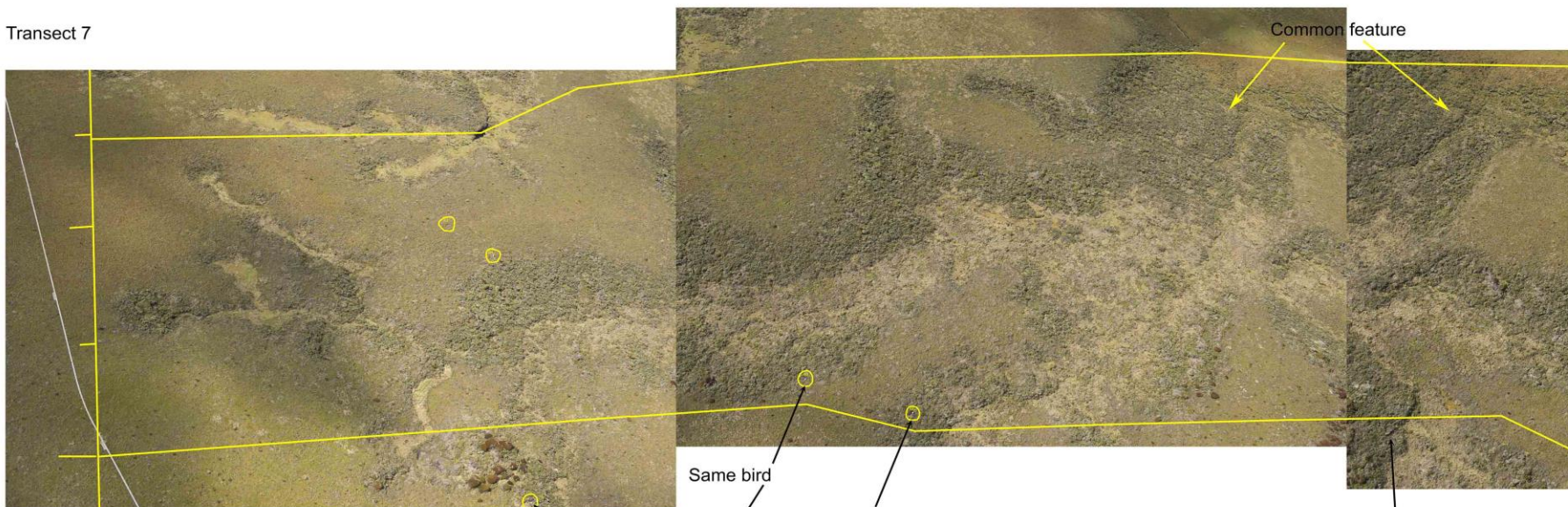
- 2012 & 2013 trials conducted on: Enderby Is – Southern royal albatross
Disappointment Is – Gibson's albatross
- 2 approaches adopted:
 - construction of landscape-style montage
'scenic photo' or 'landscape' approach
 - use of transects to construct strip montages
'transect photo' approach
- 2015 & 2016 Adams Island preliminary work

Scenic or landscape photo approach

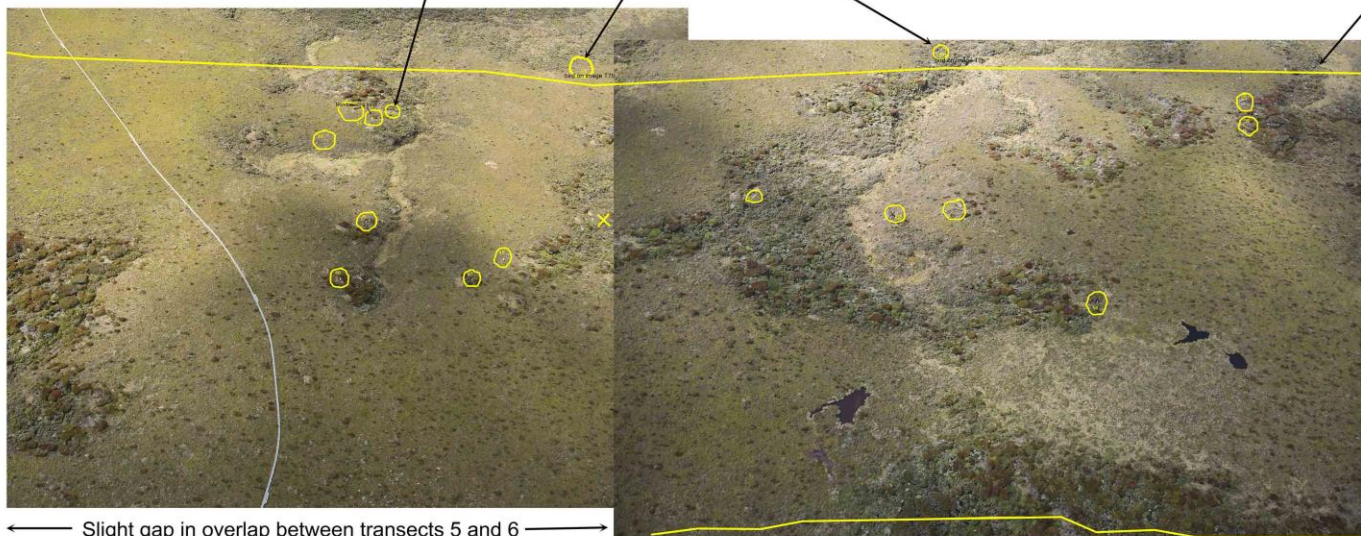


Transect approach

Transect 7



Transect 6



← Slight gap in overlap between transects 5 and 6 →

Photo-mapping

- 2016 photo mapping technique developed for Gibson's albatross at Adams Island
- In particular,
 - vertical mounted camera in waterproof pod
 - transect precision with GPS guidance system TracMap Flight Pro
 - Nikon D800 DSLR, 36 mp, fitted with Garmin GPS, GPS stamp stored in EXIF metadata

- photo resolution fit for purpose,
- extensive transect overlap permitted high resolution maps to be built
- birds easily detected on maps
- high correspondence between ground & aerial counts

BUT

- costly to produce maps as extensive helicopter charter necessary to ensure ground coverage & transect overlap

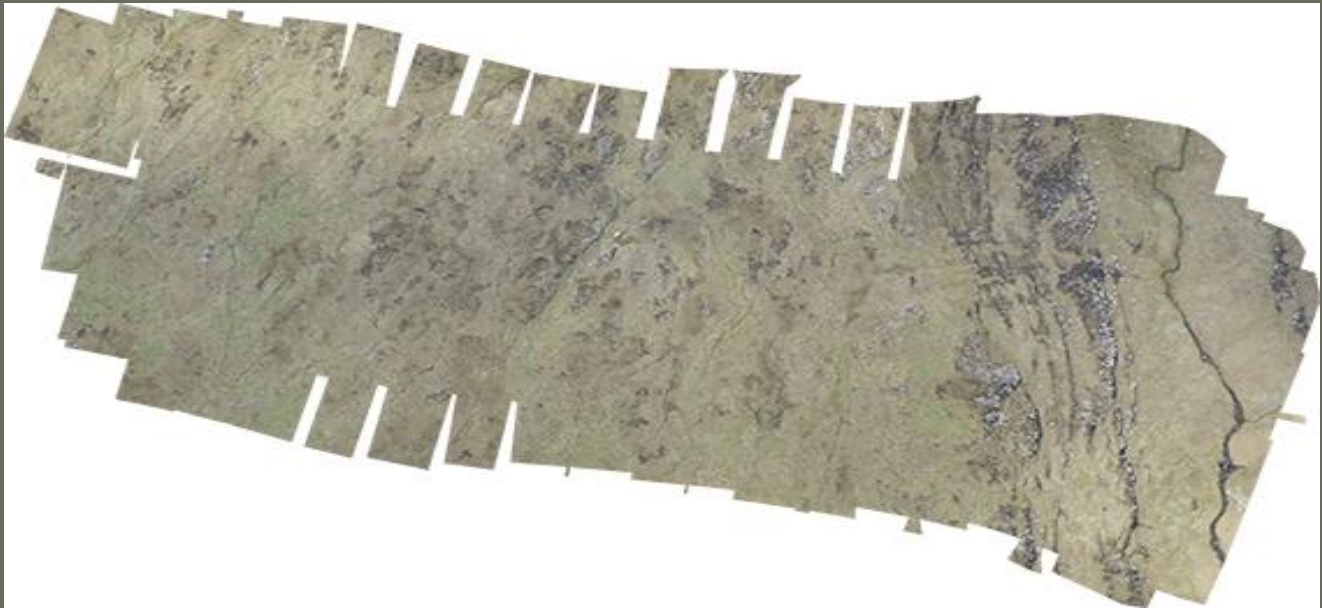
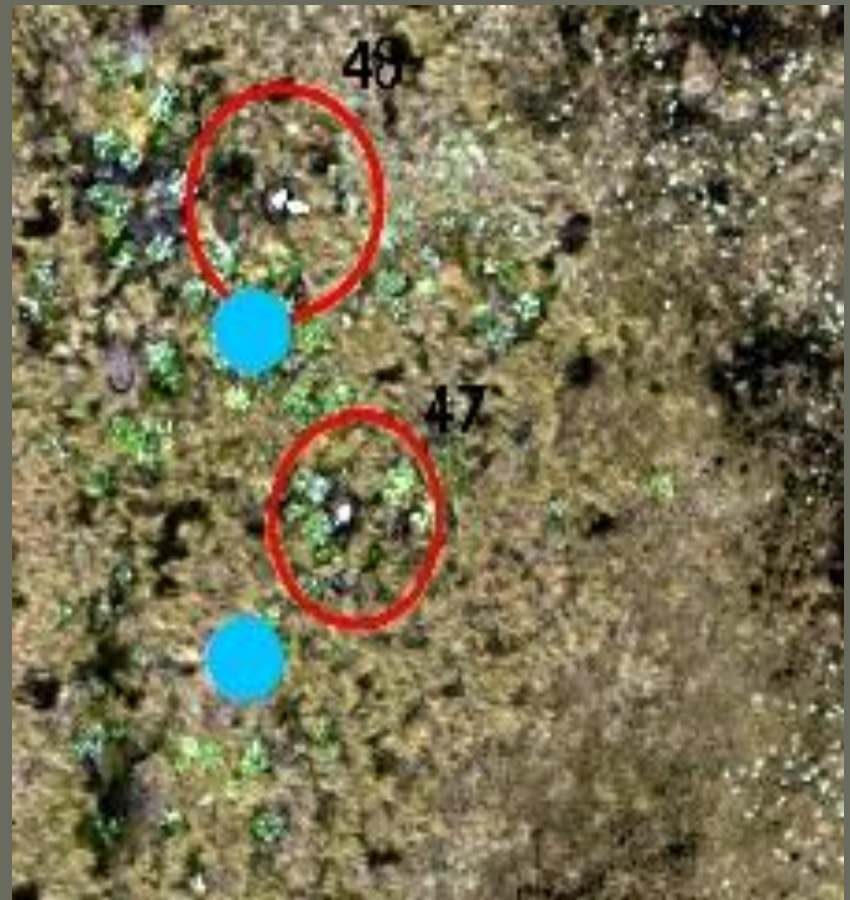
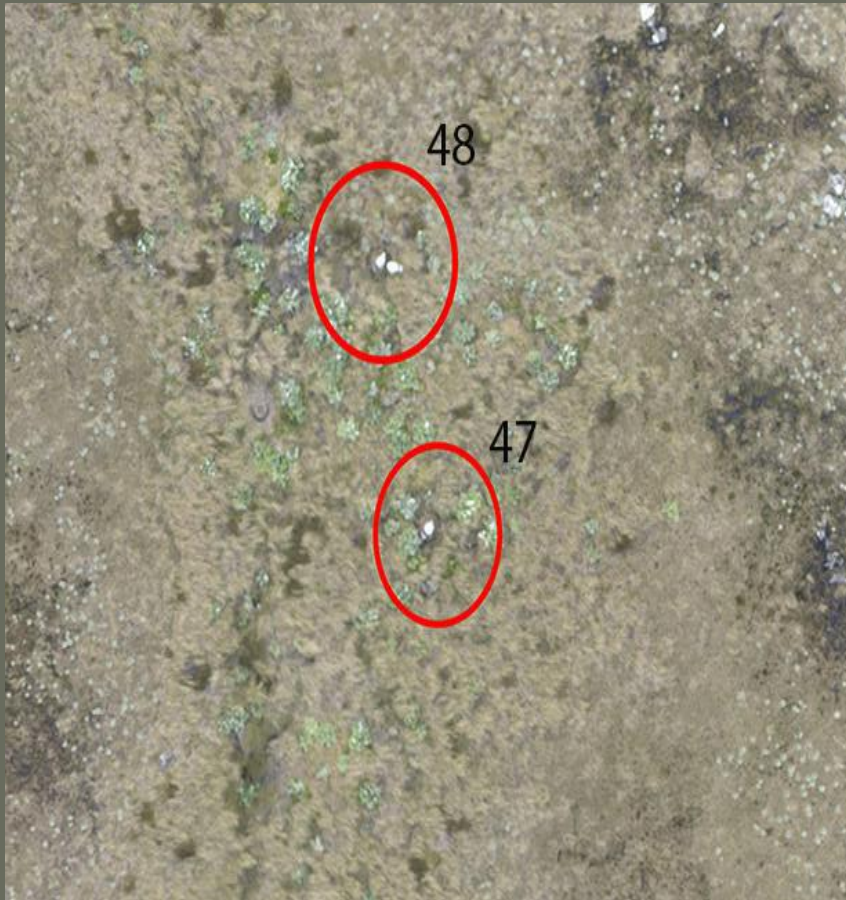


Photo analysis



Project aims

- test the suitability of direct counts of nesting southern royal albatross on Enderby I.
- develop a rapid assessment & cost-effective method for counting Gibson's albatross in the Auckland Islands

SRA background

—endemic NZ species

biennial breeder



—Campbell Island

8,300 – 8,700 pairs

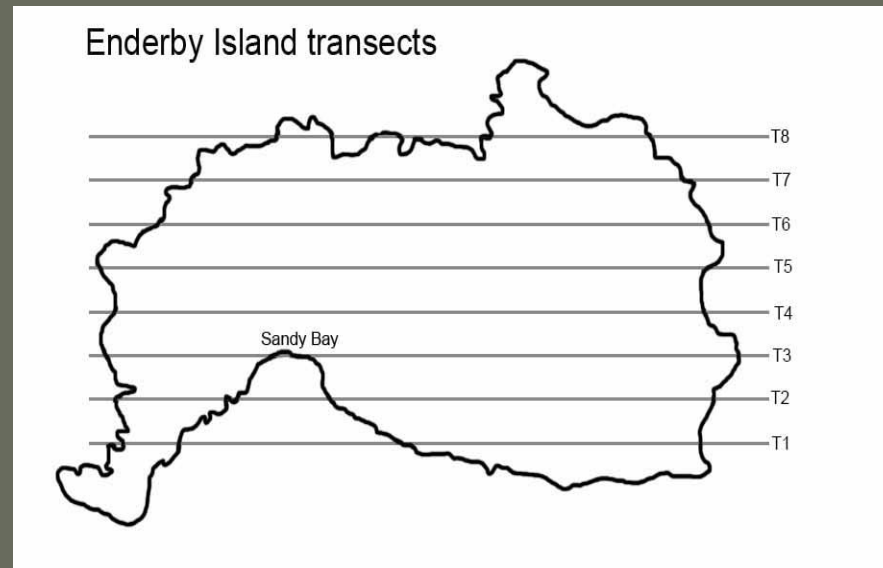
Moore et al 2012

—Enderby Is, Auckland Islands

60 pairs

—both populations severely reduced during the farming era, now recovered

- Enderby Island (50°30'S, 166°20'E)
small 710 ha, low lying, max elevation 45 m
- history of annual ground counts
- few series of 8 transects spaced at 200 m running West to East
- Direct count of birds seen within 200 m wide transect



methods

- timing January 2014
 - SRA mid incubation
 - chicks from previous year fledged
- aerial platform Squirrel Helicopter
 - flight height 300 ft asl
 - flight speed 40 knots
- data recorded
 - distance of bird from transect line
 - angle from the line
 - angle of inclination (to permit conversion of offset spatial data)
 - potential use of distance sampling to estimate popn size

ground counts

- ground search of Enderby Is. carried out
1 day after aerial count 22 January 2017
- search by 2 people walking 20 – 40 m apart
- most of island searched, dense rata excluded
- location of all nests mapped & GPS
- sample of nests inspected to determine breeding
status

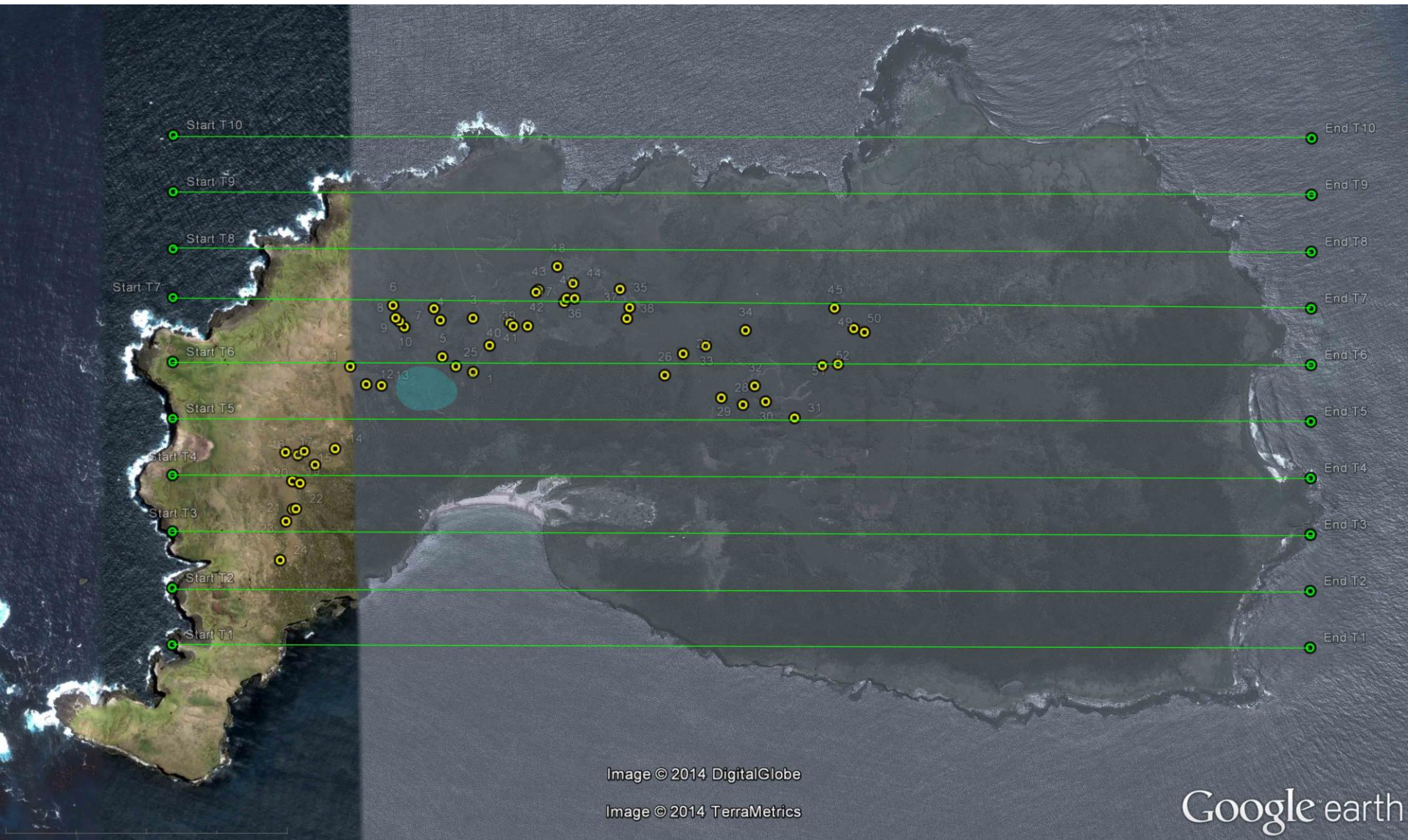


Image © 2014 DigitalGlobe

Image © 2014 TerraMetrics

Google earth

SRA results

Aerial count	Ground count
62 apparently occupied sites	52 occupied sites

—19 birds assessed on ground

apparently occupied sites	loafer	egg	broken egg
19	5	12	2
	26%		

SRA results

Adjusted Aerial count	Ground count
46 nesting pairs	38 nesting pairs

discussion

- Use of transects and counts of 200 m wide transects was effective in rapidly assessing population size of royal albatrosses on Enderby Is.
- Ground counts were 16.1 % lower than ground counts, but ground count may have underestimated birds present?
 - only 2 observers used, survey time shorter than usual 2 days historically allocated to ground counting
- Technique permits rapid counting of great albatrosses, & is cost-effective
- Use of GPS guidance system TracMap Flight Pro recommended to improve transect precision

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Thank you