

Methodology for CSP Project: New Zealand sea lion ground component 2016/17

Simon Childerhouse

www.blueplanetmarine.com

1.0 Introduction

- Presentation of methodology for CSP Project New Zealand sea lion ground component 2016/17
- Not reporting on Non-CSP funded NZSL research
 - ▶ See Sarah Michael's presentation for details of additional research
- Summary of details to be provided in CSP Report of the same name (draft available soon)



1.1 Project requirements

- A mark-recapture estimate of pup production at Sandy Bay (Enderby Island) and Dundas Island
- To double flipper tag all pups at Sandy Bay, 400 pups at Dundas Island (and determine sex and weigh a sample of 100 pups (50 males, 50 females) at each site)
- PIT (passive inductive transponder) tag all pups at Sandy Bay
- Daily counts of dead and live animals at Sandy Bay
- The resighting of marked animals at Enderby Island (including recording of PIT tags), to be conducted when time allows during the period allotted for the field work
- Regular surveys of Enderby Island (including South-east Point) for signs of pup production and marked animals, to be conducted when time allows during the period allotted for the field work
- A direct count of pup production at Figure of 8 Island and an attempt to double flipper tag as many pups as possible at Figure of 8 Island (if logistical constraints allow)

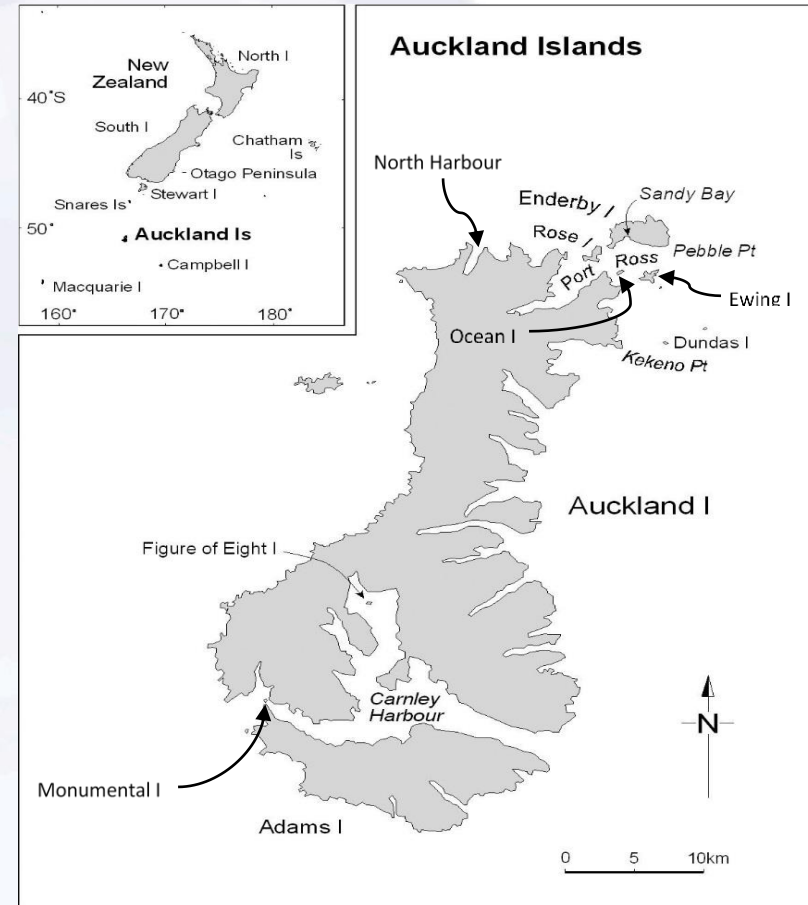
1.2 Project outputs

- Completed data collection forms, photographs, and any other hard copy data.
- Data collected, in an electronic format suitable for upload into the New Zealand sea lion database.
- A technical report (or reports) detailing the methods used, a summary of data collected and estimates of New Zealand sea lion pup production at the Auckland Islands.

- 30 Nov – Operational Plan
- 31 Jan – Progress Report
- 31 Mar – Draft Final Report
- 30 Apr – Final Report

2.0 Methodology

- As per the stated project requirements using established techniques
- The Services consist of conducting field work at the Auckland Islands following established methods described by Childerhouse (2013¹).
- All methods identical and consistent with long term data sets with few exceptions detailed later



1. Childerhouse, SJ (2013). BPM-13-Methodology for CSP project 4522 NZ sea lion ground component 2013-14 v1.0. Report prepared for the Conservation Services Programme, Department of Conservation. 9 p.

2.1 Field work

- Auckland Islands (50°S, 166°E), New Zealand
 - ▶ Sandy Bay (3 days)
 - ▶ South East Point (1 day)
 - ▶ Dundas Island (up to 3 days)
 - ▶ Figure of Eight Islands (1 day)
- Key research dates (still to be confirmed):
 - ▶ 13 January – pup count at Figure of Eight Island
 - ▶ 16 January – mark-recapture at Sandy Bay, Enderby Island
 - ▶ 19 January – mark-recapture at Dundas Island
- Transport by yacht Balthazar and perhaps helicopter



2.2 Assessment methods

- Live
 - ▶ One-off direct counts (multiple counters)
 - ▶ Daily direct counts (single counter)
 - ▶ Mark-recapture estimates (multiple counters)
- Dead
 - ▶ Direct dead counts (single or multiple counter)



2.3 Figure of Eight Island

- Single survey on 13 January 2013 [*3 days later than normal*]
- Estimate of live pups
 - ▶ One-off direct count
 - Three people count independently
- Estimate of dead pups
 - ▶ One-off direct count
 - Three people count independently
- Tagging and tag resighting
 - ▶ As time allows



2.4.1 Sandy Bay, Enderby Island

- Timing
 - ▶ Daily counts and tag resighting of pups, adult males and females from arrival (12 Jan) until departure (21 Jan)*
 - ▶ Daily counts of dead pups continue until team leaves*
 - ▶ Mark-recapture on 15 (marking) and 16 (recapture) January
- Estimate of live pups (3 methods)
 - ▶ Method #1 Daily direct live counts
 - Single person counts pups, adult males and females once at or as close to 09:30 am as possible

* While the CSP programme will only be working 13-21 Jan other researchers will be present from mid Nov until mid Mar



2.4.2 Sandy Bay, Enderby Island

- Estimate of live pups
 - ▶ Method # 2 One-off direct live counts
 - 16 January to coincide with mark-recapture
 - Three people count three times each independently
 - ▶ Method # 3 Mark-recapture
 - Marking on 15 January with 40% (~130) of live pups marked with caps with recapture on 16 January
 - Three people count three times each independently
 - Estimates and standard errors will be developed using Peterson-Lincoln index for a closed population (Chapman 1952)³ as per previous work



2.4.3 Sandy Bay, Enderby Island

- Estimate of dead pups
 - ▶ Daily direct count
 - Single person counts dead pups every day
 - Pups removed from colony, autopsied as part of DOC research
- Marking
 - ▶ All live pups micro-chipped not already microchipped with be microchipped on 16 January
 - ▶ All live pups double flipper tagged [*change from 2014/15 & 2015/16 when only 50% of pups tagged but same as 1997/98 – 2013/14*]
- Tag resighting
 - ▶ Tag, brand and micro-chip resighting when time allows [*35 days of resighting in previous years but this year only 1*]



2.5.1 Dundas Island

- Timing
 - ▶ Mark-recapture on 18 (marking) and 19 (recapture) January
- Estimate of live pups (2 methods)
 - ▶ One-off direct live counts
 - 19 January to coincide with mark-recapture
 - Three people count three times each independently
 - ▶ Mark-recapture
 - Marking on 18 January with ~30% (~400) of live pups marked with caps and recaptured on 19 January
 - Three people count three times each independently
 - Estimates and standard errors as per Sandy Bay

2.5.2 Dundas Island

- Estimate of dead pups
 - ▶ Direct count
 - Three counts by whole team
- Tagging
 - ▶ 400 pups double flipper tagged on 18 and 19 January
- Tag resighting
 - ▶ Tag, brand and micro-chip resighting as time permits but the team will only be only on the Island for three days maximum



2.8.1 South East Point, Enderby Island

- Estimate of live pups
 - ▶ Direct count
 - Single person counts pups, adult males and females once at or as close to 09:30 am as possible
- Estimate of dead pups
 - ▶ Direct counts
 - Pups removed from colony and placed in hole to avoid double counting
- Tagging
 - ▶ All live pups double flipper tagged but no pups recorded there since 2011/12
- Tag resighting
 - ▶ Tag, brand and micro-chip resighting

3. Tag resighting

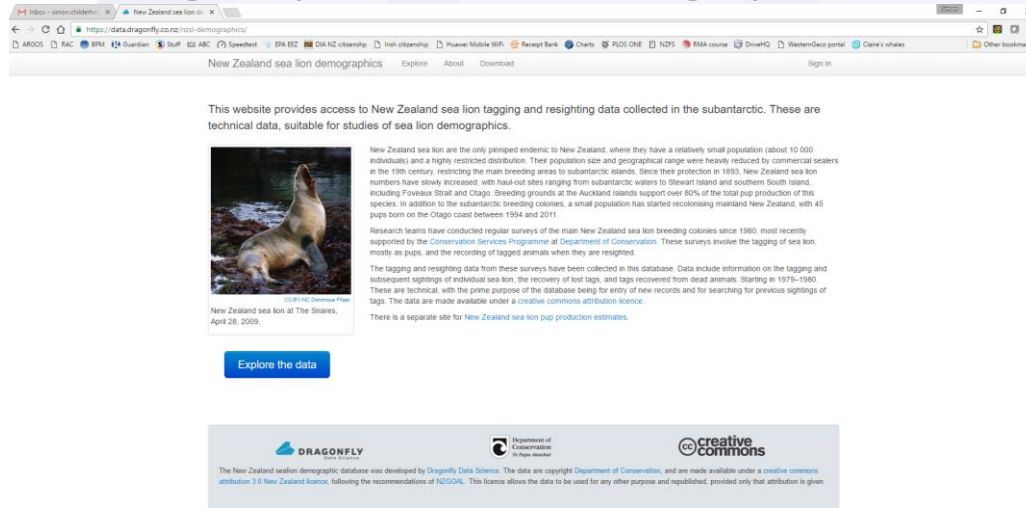
- As per previous survey work by Childerhouse (2013)
- Resighting of tags, brands and micro-chips [**35 days of resighting in previous years but this year only 1***]

* While the CSP programme will only be working 13-21 Jan other researchers will be present from mid Nov until mid Mar



4. Management of tag data

- Data are collected in an accurate and robust fashion and these data are provided in an electronic format suitable for upload into the New Zealand sea lion database
- As per previous survey work by Childerhouse (2013)
- All data open access in the New Zealand Sea lion Data base developed and maintained by Dragonfly Science and available at
 - ▶ <https://data.dragonfly.co.nz/nzsl-demographics/>



5. Non-CSP NZSL research

- In addition to CSP funded research, non-CSP funded research is also being undertaken
 - ▶ Please see presentation by Sarah Michael
- Other NZSL work potentially includes:
 - ▶ Autopsies of dead pups
 - ▶ Daily counts at Sandy Bay
 - ▶ Weekly diet samples
 - ▶ Shark scar monitoring
 - ▶ Ramps for reducing pup mortality
 - ▶ Canine collection for diet studies
 - ▶ Surveys of other islands

6. Comments?

- Simon Childerhouse
 - ▶ Mob +64-27-641-0164
 - ▶ Email simon.childerhouse@blueplanetmarine.com
- Thanks to
 - ▶ DOC: Katie Clemens-Seely, Laura Boren, Ian Angus

