

Preliminary Results for New Zealand sea lion research ground component 2013/14 CSP Project 4522

Simon Childerhouse
Blue Planet Marine
Nelson, New Zealand
www.blueplanetmarine.com

1.0 Introduction

- Presentation of preliminary results for New Zealand sea lion research ground component 2013/14 CSP Project 4522
- Summary of details provided in previous reports:
 - ▶ Childerhouse 2013¹
 - ▶ Childerhouse et al. 2014²
 - ▶ Hamer et al. 2014³



¹ Childerhouse S (2013) Methodology for CSP Project 4522 New Zealand sea lion ground component 2013/14. Report for DOC CSP. 18 November 2013. 9 p.

² Childerhouse S, Hamer D, Maloney A, Michael S, Donnelly D, Schmitt N (2014a) Preliminary Report for CSP Project 4522 New Zealand sea lion ground component 2013/14. Report to DOC CSP. 24 January 2014. 12 p.

³ Hamer D, Michael S, Childerhouse D (2014b) NZ sea lion programme 2013/14 - Preliminary end of trip report. Report to DOC CSP. 14 March 2014. 4 p.

1.1 Project objectives

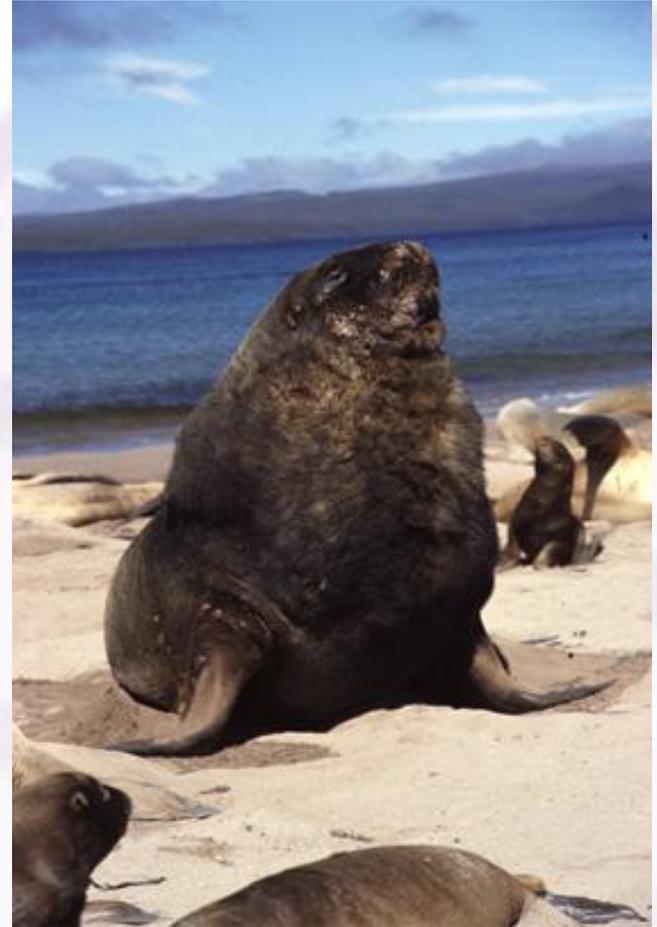
- To estimate New Zealand sea lion pup production at Enderby, Figure of Eight and Dundas Islands
- To mark New Zealand sea lion pups at Enderby and Dundas Islands following established techniques
- To conduct a five-week period of resighting previously marked animals at Enderby Island

1.2 Project requirements

- A direct count of pup production, and other age classes, at Figure of Eight Island
- A Mark-Recapture estimate of pup production at Sandy Bay (Enderby Island) and Dundas Island
- A five-week period of resighting marked animals at Enderby Island (including recording of PIT chips)
- Double flipper tag all pups at Sandy Bay, 400 pups at Dundas Island (and determine sex and weigh a sample of 100 pups at each site), and attempt to tag pups at Figure of Eight Island
- PIT (passive inductive transponder) tag all pups at Sandy Bay
- Daily counts of dead and live animals at Sandy Bay
- Regular surveys of Enderby Island (including South-East Point) for signs of pup production and marked animals

1.3 Project outputs

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



2.0 Methodology

- As per the stated project requirements, “...using established techniques” and following Childerhouse (2013)¹
- The research outlined here will follow almost the same methods as undertaken previously by DOC and as described in Chilvers (2012)² and with reference to the aerial survey methods in Baker et al. (2012)³



¹ Childerhouse S (2013) Methodology for CSP Project 4522 New Zealand sea lion ground component 2013/14. Report for DOC CSP. 18 November 2013. 9 p.

² Chilvers, BL (2012) Research to assess the demographic parameters of New Zealand sea lions, Auckland Islands 2011/12 Contract Number: POP 2011/01 Final Research Report, November 2012. Report prepared for the Conservation Services Programme, Department of Conservation. 11 p.

³ Baker B, Jensz K, Chilvers BL (2012) Aerial survey of New Zealand sea lions – Auckland Islands. DOCDM-872849. Report prepared for Ministry of Agriculture & Forestry, Deepwater Group Limited & Department of Conservation. 11 p.

2.1 Changes from previous years

- Survey methodologies the same as pre-2012/13 except for:
 - ▶ Reduced team size (6 to 4)
 - ▶ Reduced field season (10 Jan – 23 Feb 2014)
 - ▶ Original field season extended till 9 March for additional monitoring of potential pup mortality event
 - ▶ Dundas mark-recapture estimate undertaken two days earlier than previously
 - ▶ Dead pups not removed from colonies throughout season
 - ▶ Helicopter transport for Dundas survey
- A vet worked alongside the team undertaking autopsies directly funded by Massey University & Deepwater Group

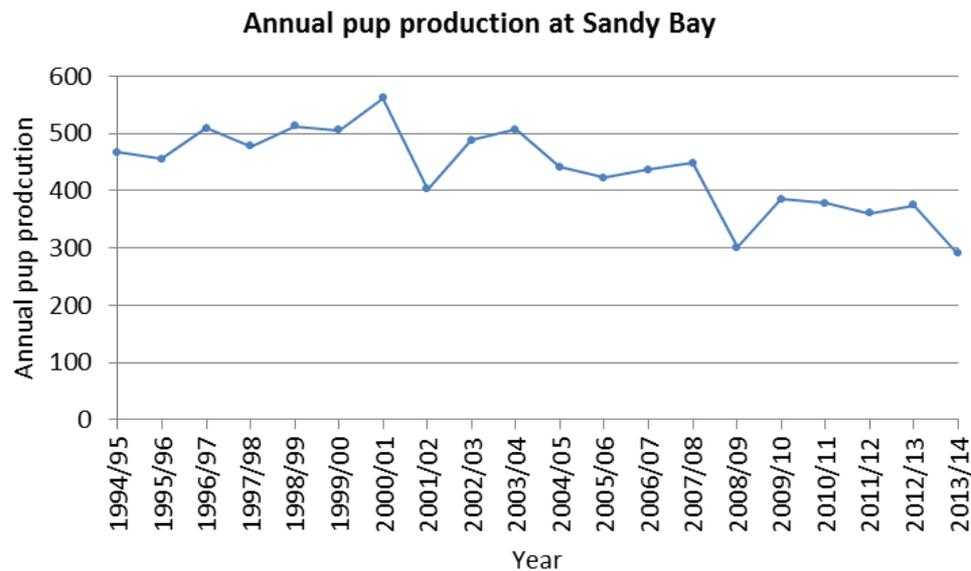
3.0 Results – timing 2014

- 6 January – departed Bluff aboard *RV Tiama* for the Auckland Islands
- 9 January – Surveyed Figure of Eight Island
- 10 January – arrived at Enderby Island
- 24 February – two team members returned home
- 9 March – remainder of team (two plus vet) returned home
- 11 March – arrived Bluff

- Enderby Is (n=59d), Dundas Is (n=3d), Figure of Eight Is (n=1d)

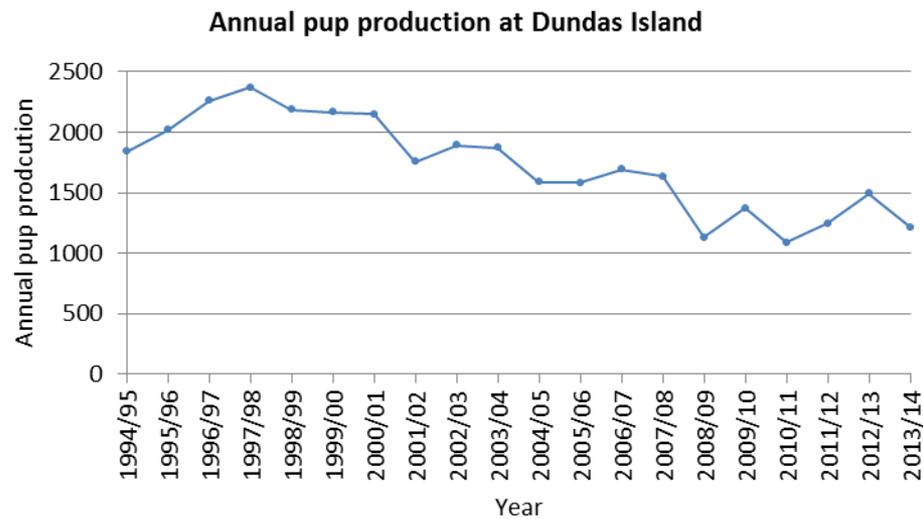
3.1 Pup production – Sandy Bay

Method	Date	Estimate (SE)
Mean direct live count	16 Jan	273 (5.0)
Cumulative dead count to the day of the mark-recapture	16 Jan	6
Mean mark-recapture estimate	16 Jan	284 (7.0)
Total estimated pup production	16 Jan	290
Total number pups tagged	16-17 Jan	287



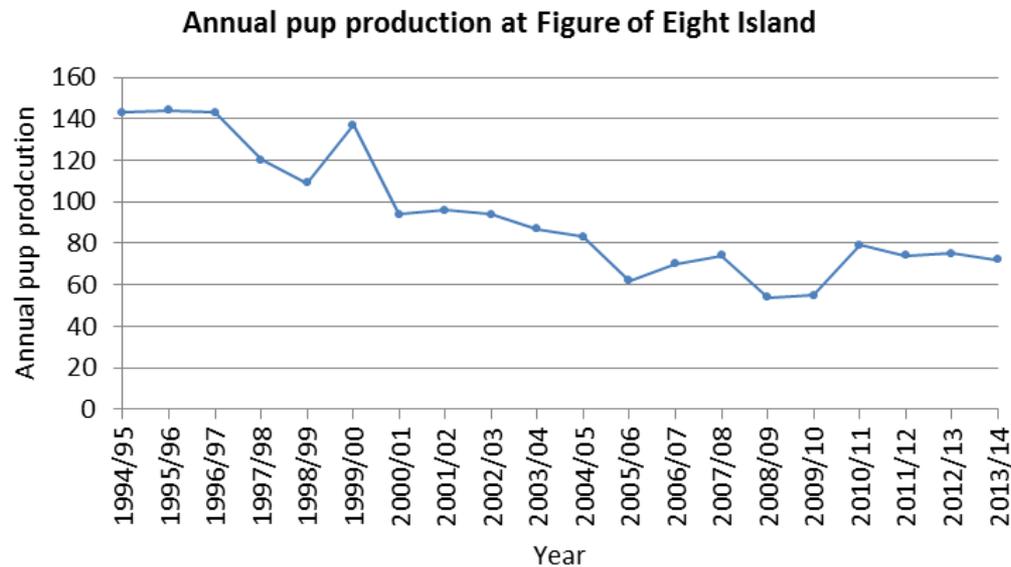
3.2 Pup production – Dundas Is

Method	Date	Estimate (SE)
Mean direct live count	19 Jan	1078 (11)
Mean dead count on the day of the mark-recapture	19 Jan	72 (0)
Mean mark-recapture estimate	19 Jan	1141 (12)
Total estimated pup production	19 Jan	1213
Total number pups tagged	18-20 Jan	400



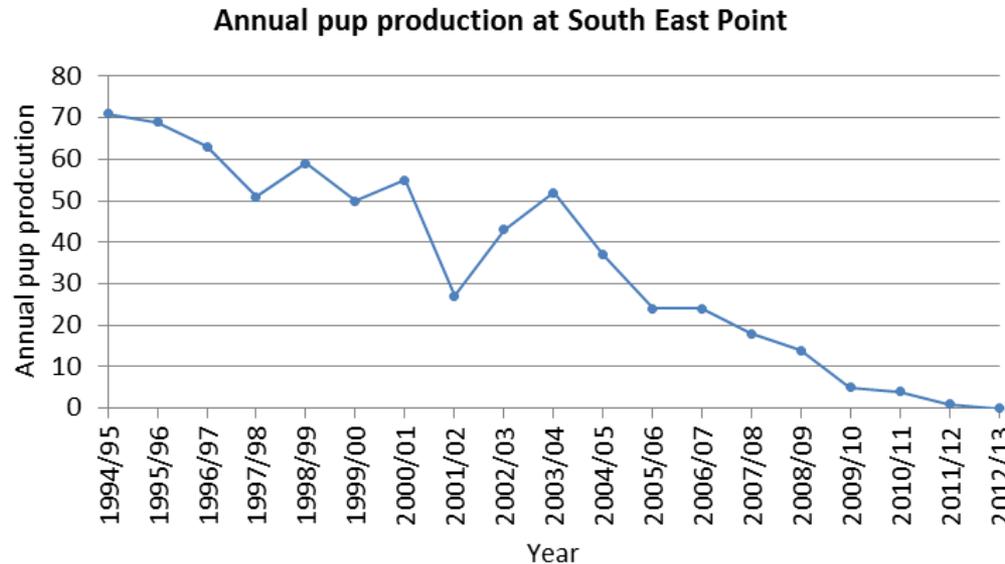
3.3 Pup production – Figure of Eight Is

Method	Date	Estimate (SE)
Mean direct live count	9 Jan	62 (1)
Mean direct dead count	9 Jan	10 (0)
Total estimated pup production	9 Jan	72
Total number pups tagged	9 Jan	24



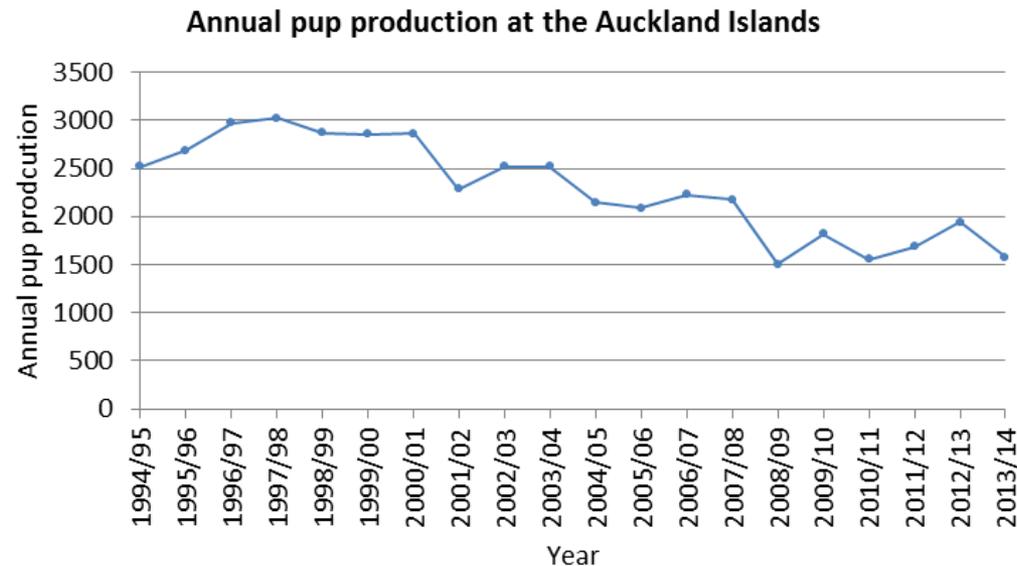
3.4 Pup production – South-East Pt

- 10+ visits to South-East Point
- No live or dead pups observed



3.5 Pup production – Auckland Is

Location	Live pups	Dead pups	Total estimate
Sandy Bay	284	6	290
Dundas Island	1141	72	1213
Figure of Eight Island	62	10	72
South east Point	0	0	0
Total for Auckland Islands	1487	88	1575



3.6 Pup tagging

Location	Pups tagged
Sandy Bay	287
Dundas Island	400
Figure of Eight Island	24
South-East Point	0
Total for Auckland Islands	711

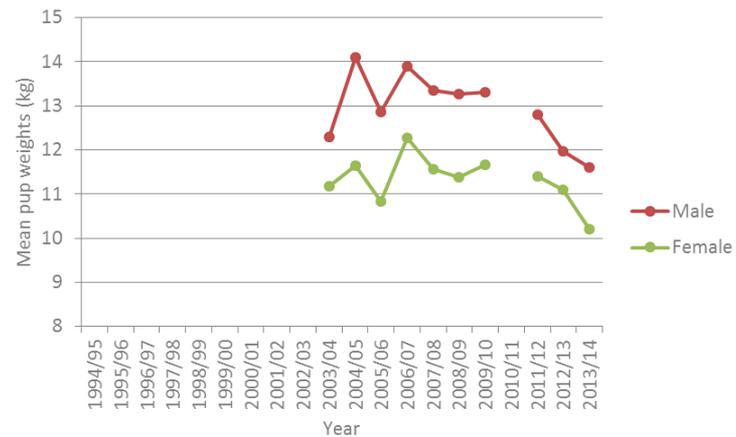
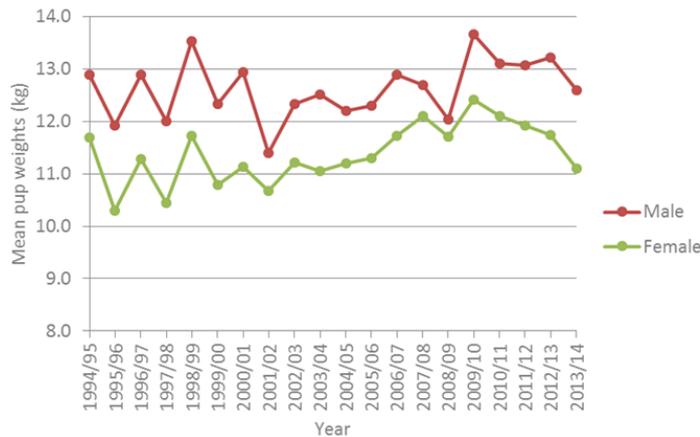
- All pups at Sandy Bay were to be tagged and micro-chipped but incompatible chips were provided and therefore only 202 pups were able to be chipped



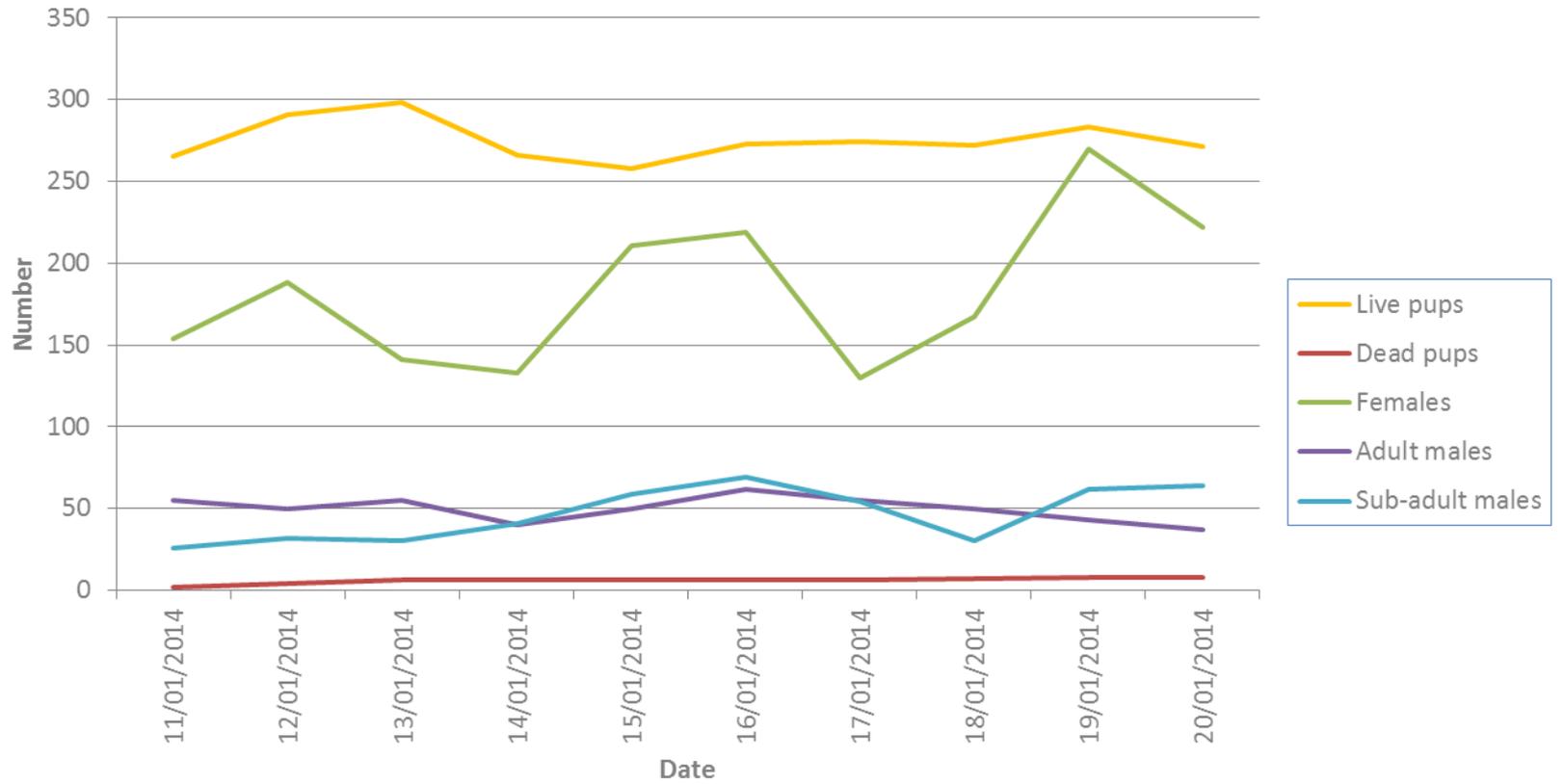
3.7 Pup weights

Location	Mean female weight (kg)	Mean male weight (kg)
Sandy Bay	11.1	12.6
Dundas Island	10.2	11.6

- Mean pup weights at Sandy Bay were 5% lower than 2012/13 for both males and females
- Mean pup weights at Dundas Island were 8% and 5% lower than 2012/13 for males and females respectively

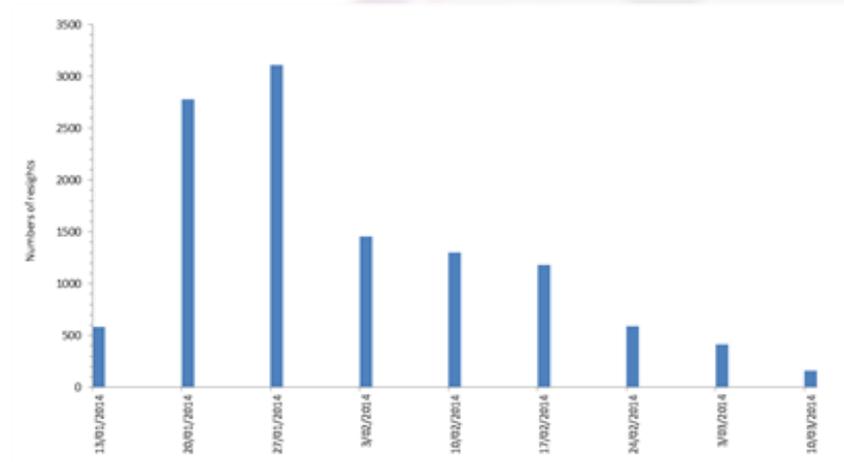


3.8 Counts at Sandy Bay



3.9 Resighting

- Over 11,100 individual tag, brand and micro-chip resightings were made
- All of these resightings are still being verified and validated and, once that is completed, the exact number of resightings will be available
- 6,914 resights in 2011/12¹ and 2,100 in 2012/13²

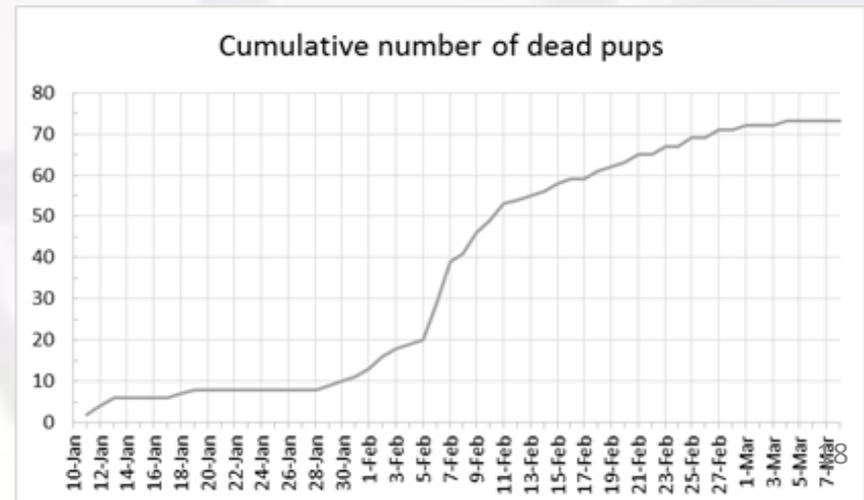
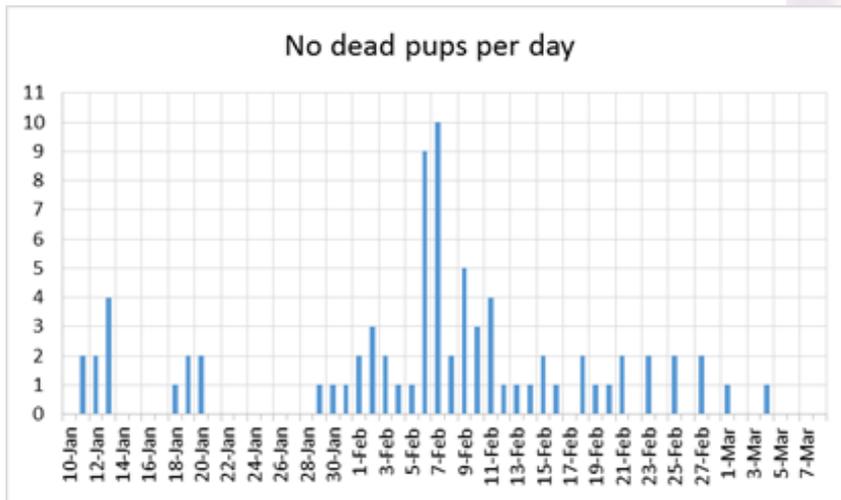


¹ Chilvers, BL (2012) Research to assess the demographic parameters of New Zealand sea lions, Auckland Islands 2011/12 Contract Number: POP 2011/01 Final Research Report, November 2012. Report prepared for the Conservation Services Programme, Department of Conservation. 11 p.

² Childhouse S, Amey J, Hamer D, McCrone A (2013) Final Report for CSP Project 4426 New Zealand sea lion ground component 2012/13. Version 1.2. Report for DOC CSP. 24 June 2013. 25 p.

3.10 Pup mortality

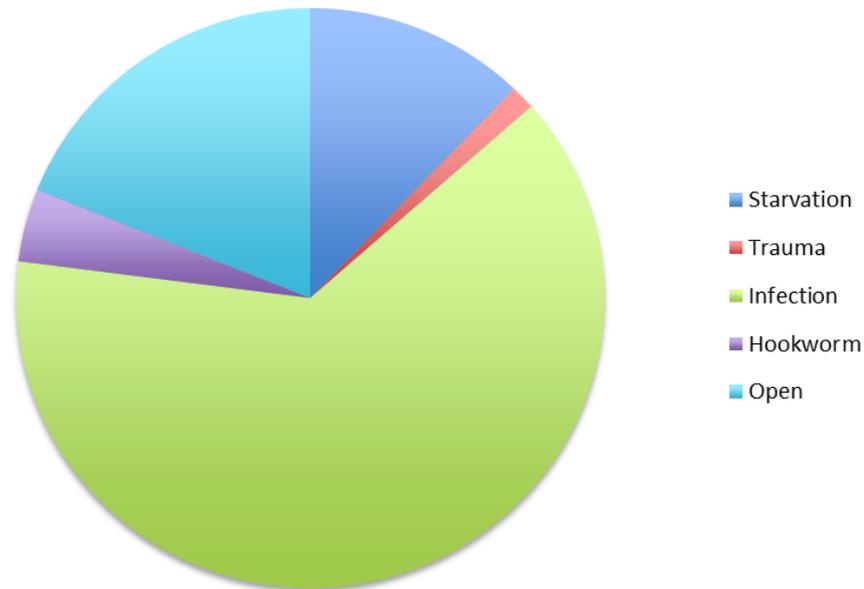
- The season was extended to continue monitoring of pup mortality due to a pulse of higher than normal daily pup mortality observed around 6-7 February 2014
- Total estimated pup mortality at Sandy Bay was 73 pups up until 8 March 2014 with the caveat that these figures do not represent full season surveys as in previous years and so should be viewed as a minimum



3.11 Pup mortality

- Preliminary cause of death for autopsied pups
- Data courtesy of Massey University and Deepwater Group

Preliminary gross necropsy diagnosis of pups at Sandy Bay, Enderby Island



3.12 Tagging data management

- Recording of flipper tags, micro-chips and brands
- New Zealand sea lion database was used
- Several issues arose that prevented its full use during the trip
 - ▶ Issues with data input
 - ▶ other issues that may require further modifications
- All tagging data entered in database
- All resighting data will be entered
- Useful for searching and checking individual records



3.13 Helicopter work

- This was undertaken by Barry Baker (Latitude 42)
 - ▶ Separate report on this work
- Very successful for transport to Dundas
- Ground team coordinated with the Helicopter team to support assessment of the aerial survey methodology



4.0 Conclusions

- Field component of the work 9 January to 9 March 2014
- Pup production was estimated for New Zealand sea lion colonies at:
 - ▶ Sandy Bay (n=290), Dundas Island (n=1213), Figure of Eight Island (n=72), South East Point (n=0)
 - ▶ Total pup production for the Auckland Islands in 2013/14 estimated as 1517
 - ▶ 18% decrease from 2012/13
 - ▶ 2012/13 was a 15% increase from 2011/12
- Third lowest total pup production and lowest recorded for Sandy Bay

4.1 Conclusions

- 711 pups were tagged: Sandy Bay (n=287), Dundas Island (n=400), Figure of Eight Island (n=24), South-East Point (n=0)
- Over 11,100 tag, brand and micro-chip resightings of individual sea lions
- Helicopter worked well for transport to Dundas Island
- It was a successful trip despite being considerably shorter than previous trips and having fewer personnel
- Advice from CSP TWG on minimum sample size required for pup tagging research for any future Animal Ethics Application

5.0 Feedback and thanks



- Any feedback to Simon Childerhouse
 - ▶ Mob. +64-27-641-0164
 - ▶ Email: simon.childerhouse@blueplanetmarine.com
- Thanks to:
 - ▶ Field team of Derek Hamer, Andy Maloney, David Donnelly, Nat Schmitt and Sarah Michael
 - ▶ Dave Paton (BPM), Igor Debski (DOC), Sharon Trainor (DOC), Doug Veint (DOC), Barry Baker (Latitude 42), Mark Deaker (Southern Lakes Helicopters), Louise Chilvers (DOC)
 - ▶ Henk Haazen and crew of *RV Tiama*
 - ▶ Wendi Roe (Massey), Richard Wells (Deepwater Group)