



New Zealand sea lion research Auckland Islands 2017/18

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1.0 Introduction



- Presentation of report for Auckland Islands New Zealand sea lion research 2017/18 funded by CSP
- Summary of details provided in previous reports:
 - ▶ Childerhouse 2017¹
 - ▶ Childerhouse et al. 2018²
- Summary to the end of the field season on 22 January 2018
- Report for CSP funded component and separate report for DOC funded research component (e.g. Campbell Island, Figure of Eight Island, pup disease work)

¹ Childerhouse S (2017) Methodology for New Zealand sea lion population monitoring 2017/18. Unpublished paper presented to the Conservation Services Programme, Department of Conservation, New Zealand. BPM document number: BPM-17-Methodology for New Zealand sea lion population monitoring 2017/18 v1.0. 9 p.

² Childerhouse S, Burns T, Michael S, Godoy D, McNutt L, McCormack C (2018) FINAL Report for CSP Project New Zealand sea lion monitoring at the Auckland Islands 2017/18. Unpublished paper presented to the Conservation Services Programme, Department of Conservation, New Zealand. BPM document number: BPM-18-FINAL-Report for CSP Project NZSL Auckland Island monitoring 2017/18 v1.1. 26 January 2018. 19 p.

1.1 Project objectives

- A mark-recapture estimate of pup production at Sandy Bay (Enderby Island) and Dundas Island.
- Double flipper tag all pups at Sandy Bay, 400 pups at Dundas Island and determine sex and weigh and measure (i.e. dorsal straight length and axillary girth) 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 8 days allotted for field work.

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.



2.0 Methodology

- As per the stated project requirements, “...using established techniques...” and following Childerhouse (2017)¹
- The research outlined here follows almost the same methods as undertaken previously by DOC and as described in Chilvers (2012)²



¹ Childerhouse S (2017) Methodology for New Zealand sea lion population monitoring 2017/18. Unpublished paper presented to the Conservation Services Programme, Department of Conservation, New Zealand. BPM document number: BPM-17-Methodology for New Zealand sea lion population monitoring 2017/18 v1.0. 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.

2.1 Researchers

- Field team of:
 - ▶ Tom Burns (Team Leader)
 - ▶ Sarah Michael
 - ▶ Dan Godoy
 - ▶ Lou McNutt
 - ▶ Chris McCormack
- Project Manager: Simon Childerhouse
- Thanks to the team for their dedication, commitment and delivery of excellent results

2.2 Changes to methodology

Survey methodologies generally the same as 2016/17 except for:

- Field season was shorter ending on 22 January 2018 with only 8 days work in the Auckland Islands funded (e.g. 27 March end in 2015/16 n = 48d field work ; 22 February end 2014/15 n = 59d field work) to coincide with the core CSP funding period
- Landings on Dundas Island were by vessel rather than helicopter
- Separate DOC contract for:
 - ▶ Figure of Eight Island survey
 - ▶ Autopsy and disease work
 - ▶ Resighting effort

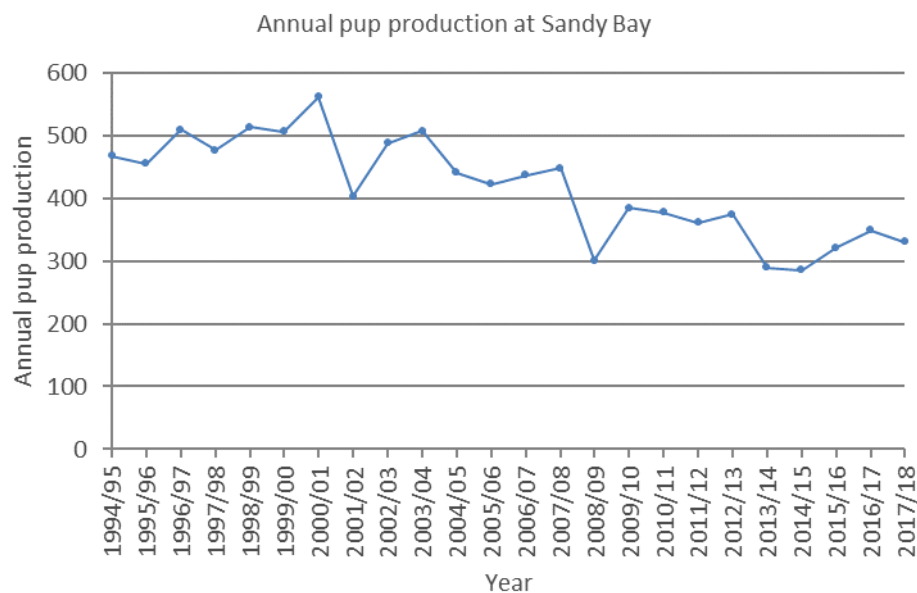
3.0 Results – timing 2017/18

- 13 Jan – Three researchers (McNutt, Godoy, McCormack) departed Bluff aboard RV Evohe for the Auckland Islands
- 14 Jan – Arrived Enderby Island, Auckland Islands and joined the two other team members (Burns, Michael) already on the Island
- 15-17 Jan – Survey and pup marking at Sandy Bay
- 18-20 Jan – Survey and pup marking at Dundas Island
- 20 Jan – Contract ended
- 2 Feb – Three researchers (McNutt, Godoy, McCormack) departed Enderby Island aboard RV Evohe and two researchers remain undertaking other work.

3.1 Pup production – Sandy Bay

Method	Date	No. counts	Start/end time	Estimate (SE)
Mean direct live count	16 Jan 2018	9	08:05/10:22	302 (2.6)
Cumulative dead count to the day of the mark-recapture*	16 Jan 2018	N/A	08:05/10:22	23
Mean mark-recapture estimate	16 Jan 2018	9	08:05/10:22	308 (3.0)
Total number pups individually marked	16-17 Jan 2018	N/A	N/A	309

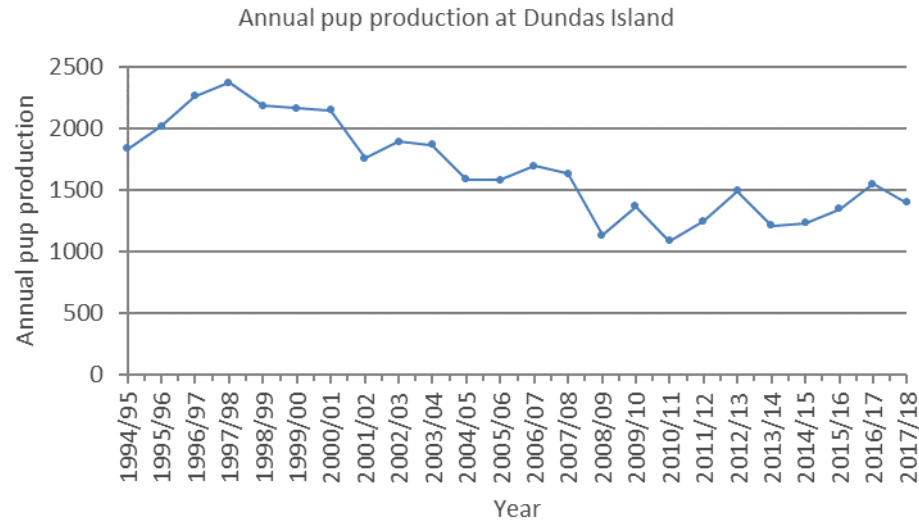
* This represents the cumulative total from daily observations of dead pups from observations starting on 6 December 2016 and therefore provides a good estimation of total pup mortality



Total pup production = 309 live + 23 dead = 332 (349 2017/18)

3.2 Pup production – Dundas Is

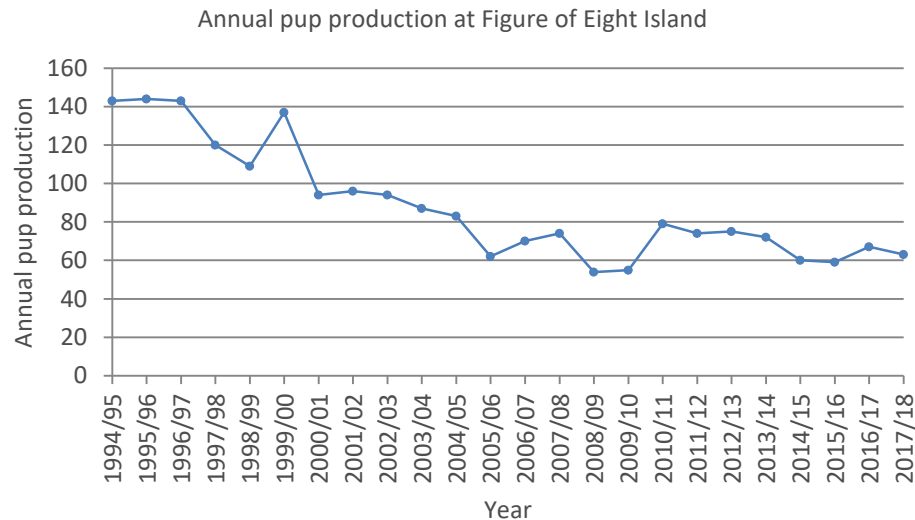
Method	Date	No. of counts	Start/end time	Estimate (SE)
Mean direct live count	18 Jan 2018	4	08:35/11:45	1258 (37.3)
Mean direct dead count	18 Jan 2018	3	08:35/11:45	57 (0)
Mean mark-recapture estimate	18 Jan 2018	9	08:35/11:45	1340 (16.8)
Total number pups tagged	18-20 Jan 2018	N/A	N/A	400 (100 male, 300 female)



Total pup production = 1340 live + 57 dead = 1397 (1549 2016/17)

3.3 Pup production – Figure of Eight Is

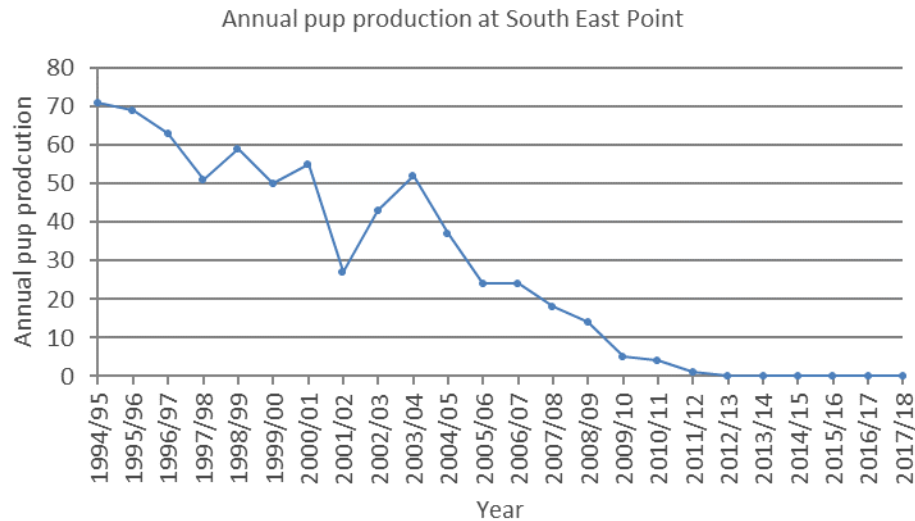
- Work undertaken separately by DOC. Survey completed 8 February 2018
- Reported here for completeness
- Live pups = 54 tagged + 1 untagged, dead pups = 8: Total pup production = 63



Total pup production = 55 live + 8 dead = 63 (67 2016/17)

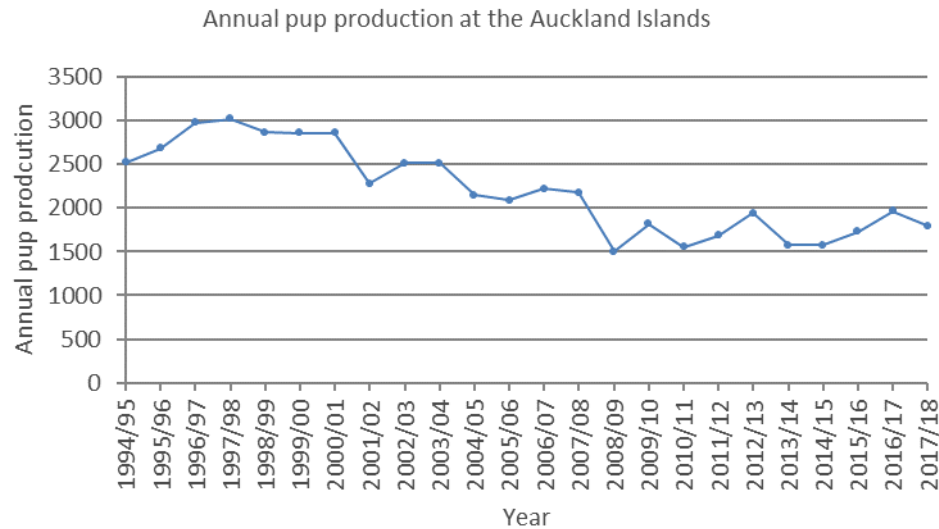
3.4 Pup production – South-East Pt

- 2 visits to South-East Point
- No live or dead pups observed but some adult females observed there in December



3.5 Pup production – Auckland Is

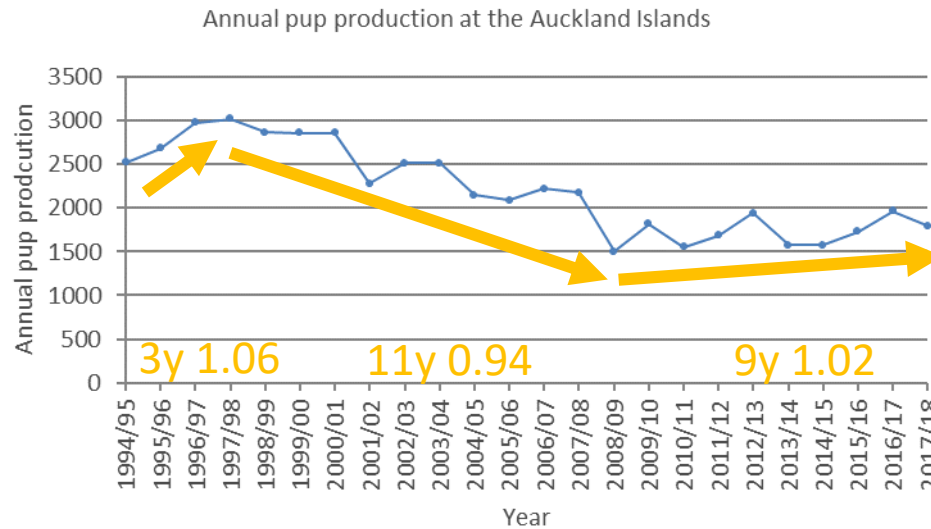
Location	Pup production	No. live	No. dead
Sandy Bay	332	302	23
Dundas Island	1397	1340	57
Figure of Eight Island	63	55	8
South East Point	0	0	0
Total Auckland Islands	1792	1697	88



Total pup production = 1697 live + 88 dead = 1792 (1965 2016/17)

3.5 Pup production – Auckland Is

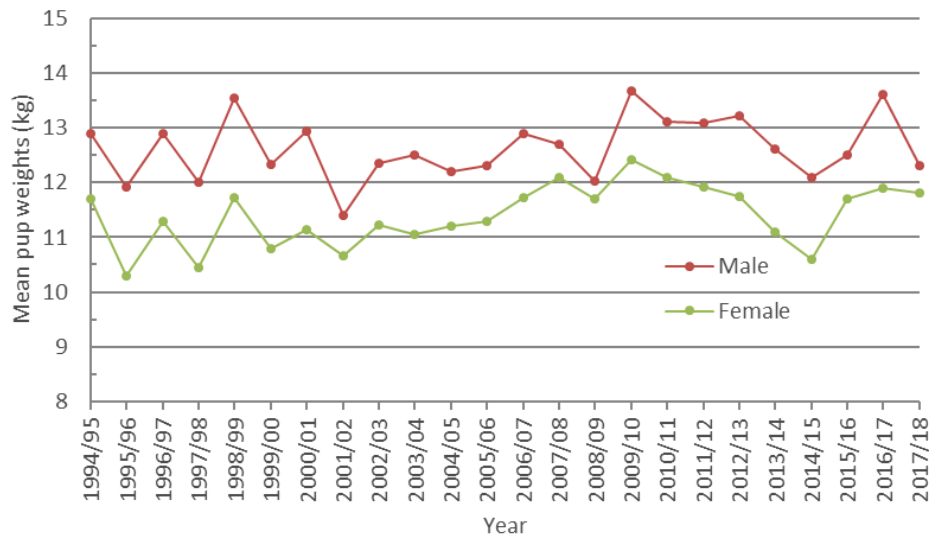
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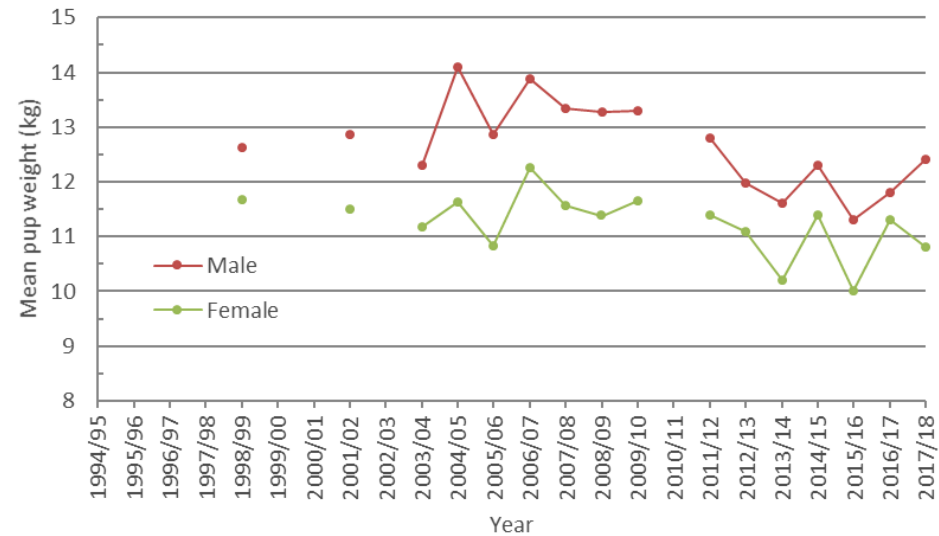
Total pup production = 1697 live + 88 dead = 1792 (1965 2016/17)

3.6 Pup weights

Location	Mean female weight			Mean male weight		
	n	Kg (SE)	Change from 2016/17	n	kg (SE)	Change from 2016/17
Sandy Bay	50	11.8 (1.9)	-1%	50	12.3 (2.0)	-10%
Dundas Island	50	10.8 (1.9)	-4%	50	12.4 (1.9)	+5%
Figure of Eight Island	*	*	*	*	*	*



Sandy Bay



Dundas Island

3.7 Pup tagging

Location	Pups tagged only	Pups tagged & microchipped	Pups microchipped only
Sandy Bay	0	309	0
Dundas Island	400		
Figure of Eight Island	54		
South-East Point	0		
Total for Auckland Islands	454	309	0



3.8 Resighting

- Very few resights and this was only tasked when time allowed and with only 8 days programmed we were busy with other core tasks
- This will be reported separately by DOC field team

3.9 Pup mortality

- This will be reported separately by the DOC field team

3.10 Tagging data management

- Recording of flipper tags, microchips and brands
- All tagging and resighting data entered into excel spreadsheets and then imported into the online NZSL database
- Useful for searching and checking individual records
- All data has been entered and is available in publicly accessible version of NZSL database maintained by Dragonfly at: <https://data.dragonfly.co.nz/nzsl-demographics>



3.11 Pup mortality in holes

- Issues with pups dying in holes in previous years
- Exploration of mortality in holes and mitigation options
- Previous mitigation work funded by WWF, DOC, and Deepwater Group
- Continuation of maintenance of ramps by DOC field team after this project and will be reported separately

4.0 Conclusions

- CSP field component of the work 13 to 20 January 2018 which was significantly shorter than previous CSP projects but is being supplemented by additional DOC funded projects
- Pup production was estimated for New Zealand sea lion colonies at:
 - ▶ Sandy Bay (n=332), Dundas Island (n=1397), Figure of Eight Island (n=63), South East Point (n=0)
 - ▶ Total pup production for the Auckland Islands in 2017/18 estimated as **1792**
 - ▶ 173 (9%) pup decrease from 2016/17
 - ▶ 19% higher than lowest count in 2008/09

4.1 Conclusions

- 763 pups marked: Sandy Bay (n=309 tagged & chipped), Dundas Island (n=400), Figure of Eight Island (n=54), South-East Point (n=0)
- Very few tags resights were collected as this was not a part of the core work for this project
- Pup length to standard weight measurements continued
- Overall, very successful trip

5.0 Acknowledgements

- Steve Kafka, master of the *RV Evohe*, and his crew were extremely professional and accommodating and the *vessel* was an excellent vessel for the work
- The NZSL disease team including Shannon Taylor and Aditi Sriram who assisted during tagging
- DOC Wellington staff including Ian Angus, Katie Clemens-Seely, Enrique Pardo and Kris Ramm
- DOC Southland staff including Tony Preston, Sharon Trainor, Joseph Roberts, John Peterson and Rory Hannan
- Members of the CSP Technical Working Group who provided useful feedback on this project
- The project was funded by the Conservation Services Programme of DOC through levies on the commercial fishing industry