

Preliminary Report for CSP Project 4426 New Zealand sea lion ground component 2012/13

BPM-TAS-12-Preliminary Report for CSP project 4426 NZ sea lion ground component 2012-13
v1.1

01/03/2013



Document Distribution List

Date: 01/03/2013

Title: Preliminary Report for CSP Project 4426 New Zealand sea lion ground component 2012/13

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Document Revision Record

Rev.	Date	Description	Prepared	Reviewed	Approved
1.0	01/03/2013	Document	SC	DH	SC
1.1	01/03/2013	Revision 1	SC	LD	SC

Document Reference Number: BPM-TAS-12-Preliminary Report for CSP project 4426 NZ sea lion ground component 2012-13 v1.1

Prepared by: Dr Simon Childerhouse

Last updated: 01/03/2013

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1. Executive Summary

Blue Planet Marine (BPM) was contracted by the Conservation Services Programme (CSP) of the Department of Conservation (DOC) to provide services for CSP project 4426 - New Zealand sea lion ground component. The field component of the work was undertaken in the Auckland Islands between the 8th and 31st of January 2013. All the the research was sucessfully completed with the following highlights:

- Pup production was estimated for New Zealand sea lion colonies at Sandy Bay (n=365), Dundas Island (n=1491), Figure of Eight Island (n=75) and South East Point (n=0) with total pup production for the Auckland Islands in 2013 estimated as 1931 – a 14.7% increase on the estimate from 2012;
- Seven hundred and eighty two pups were double flipper tagged at Sandy Bay (n=347), Dundas Island (n=400), Figure of Eight Island (n=33), South East Point (n=0) and elsewhere on Enderby Island (n=2¹);
- Over 2,100 tag, brand and micro-chip resightings of individual sea lions were made. All of these resightings are still being verified and validated and, once that is completed, the exact number of resightings and the data itself will be available; and
- The New Zealand sea lion database was used for the first time, and while it worked reasonably well, there were some issues that prevented it being used to record resighting information collected during the trip.

It was a very successful trip despite being considerably shorter than previous trips and having fewer personnel.

2. Introduction

Blue Planet Marine (BPM) is pleased to submit this preliminary report to the Conservation Services Programme (CSP) of the Department of Conservation (DOC) for the provision of services for CSP project 4426 - New Zealand sea lion ground component. This report meets the provisions of Milestone 2 of the contract:

1. Completion of methodology, collecting required population field visit information, and
2. A brief report summarising activities undertaken, to the satisfaction of the DOC Supervisor.

¹ These pups have not been included in overall estimates of pup production as, given the timing of their tagging, it was not possible to determine if they had been born on Enderby or had been born at the Dundas Island colony and had subsequently swam over to Enderby.

3. Summary of Results

3.1 Logistics

The team assembled in Bluff on 4th January and, following discussions with the Master of *RV Tiama*, decided to leave one day earlier than originally planned due to a more favourable weather window at that time. As a result we departed for the Auckland Islands from Bluff on Sunday 6th January rather than Monday 7th January as previously planned. We also shared the charter with two researchers undertaking research on Albatross at Adams Island in the Auckland Islands group. A summary of key dates:

- 6th January – departed Bluff aboard *RV Tiama* for the Auckland Islands
- 8th January – Arrived Adams Island and unloaded researchers
- 9th January – Visited Figure of Eight Island and arrived at Enderby Island and dropped the team off
- 31st January – departed Auckland Islands for Bluff
- 2nd February – arrived Bluff

The field work included 19 days on Enderby Island, 3 days on Dundas Island and 1 day on Figure of Eight Island. This is considerably shorter than previous research trips of almost three months in duration.

The field team comprised four experienced NZ sea lion researchers: Dr Simon Childerhouse, Jacinda Amey, Derek Hamer and Ann McCrone who were all present for the whole trip. The team worked brilliantly and achieved all the required tasks. This field team was also smaller than previous teams who have undertaken this and other work in the Auckland Islands.

Henk Haazen, master of the *RV Tiama*, was extremely professional and accommodating and the *RV Tiama* was an excellent vessel for the work.

We also received excellent support from a range of people and are grateful for many people including: Dave Paton (BPM), Igor Debski (DOC), Sharon Trainor (DOC), Pete McClelland (DOC), Finlay Thompson (Dragonfly) and, in particular, Dr Louise Chilvers who was very helpful with the loan of equipment, advice and in sharing her wealth of experience about NZ sea lions.

3.2 General approach and timing of field work

The results in this preliminary report follow the methodology previously described in the report *Methodology for CSP project 4426 NZ sea lion ground component*². As a general statement, the research outlined here will follow exactly the same methods as undertaken previously by DOC and as described in Chilvers (2012) and with reference to the aerial survey methods in Baker *et al.* (2012).

To ensure consistency with previous work, there were some key dates that we were aiming to achieve:

- Figure of Eight Island – the aim was to undertake a pup census on 10th January but due to unfavourable weather conditions for our planned departure date, we departed one day earlier and therefore arrived one day earlier at Figure of Eight Island. The census was undertaken one day earlier than planned on the 9th January. It is unlikely that there will be a problem with comparability with previous surveys as the dates for counts at Figure of Eight have varied considerably over the years.

² BPM-TAS-12-Methodology for CSP project 4426 NZ sea lion ground component 2012-13 v1.0

- Sandy Bay, Enderby Island – the mark-recapture was undertaken on 15th (marking) and 16th January (recapture) as planned.
- Dundas Island – the mark-recapture was undertaken on 20th (marking) and 21th January (recapture) as planned

3.3 Estimates of pup production

The following estimates of pup production were completed. Figures of annual estimates of pup production for each colony and for total Auckland Islands pup production are shown in Appendix 1.

3.3.1 Sandy Bay, Enderby Island

The 2013 estimate for pup production at Sandy Bay was 357 live pups plus 8 dead pups for a total of **365** pups.

Method	Date	Estimate (\pm SE)
Direct live count	16 th January	361
Direct dead count	16 th January	8
Mark-recapture count	16 th January	357 \pm 4
Total number pups tagged	15-17 th January	347

3.3.2 Dundas Island

The 2013 estimate for pup production at Dundas Island was 1364 live pups plus 127 dead pups for a total of **1491** pups.

Method	Date	Estimate (\pm SE)
Direct live count	21 th January	1271 \pm 25
Direct dead count	21 th January	127
Mark-recapture count	21 th January	1364 \pm 46
Total number pups tagged	19-21 st January	400 ³

3.3.3 Figure of Eight Island

The 2013 estimate for pup production at Figure of Eight Island was 70 live pups plus 5 dead pups for a total of **75** pups.

Method	Date	Estimate (\pm SE)
Direct live count	9 th January	70 \pm 1
Direct dead count	9 th January	5
Total number pups tagged	9 th January	33 ⁴

3.3.4 South East Point, Enderby Island

The 2013 estimate for pup production at South East Point was 0 live pups plus 0 dead pups for a total of **0** pups. Eight visits were made to South East Point and no live or dead pups were observed during that time.

3.3.5 Total pup production for the Auckland Islands

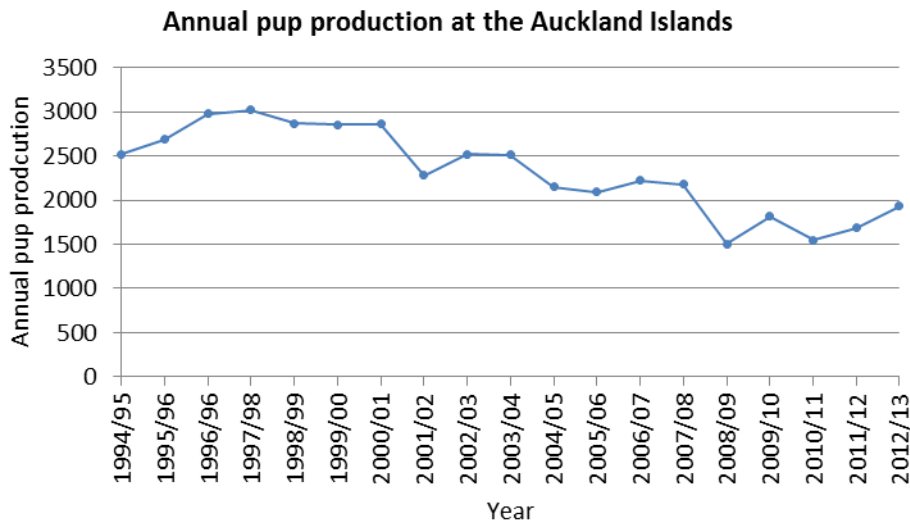
Overall, total pup production for the Auckland Islands in 2013 was estimated to be **1931** pups (i.e. 1791 live pups and 140 dead pups). This was 14.7% increase over estimated pup production in 2012 of 1684. Overall pup production for the Auckland Islands for previous years is shown in Figure 1.

³ Only 400 pups were required to be tagged (i.e. 100 males and 300 females)

⁴ This was as many as could be tagged in the time available

Location	Live pup estimate	Dead pup estimate	Total estimate
Sandy Bay, Enderby Island	357	8	365
Dundas Island	1364	127	1491
Figure of Eight Island	70	5	75
South East Point, Enderby Island	0	0	0
Total Auckland Islands	1791	140	1931

Figure 1 Total estimated pup production for New Zealand sea lion at the Auckland Islands⁵

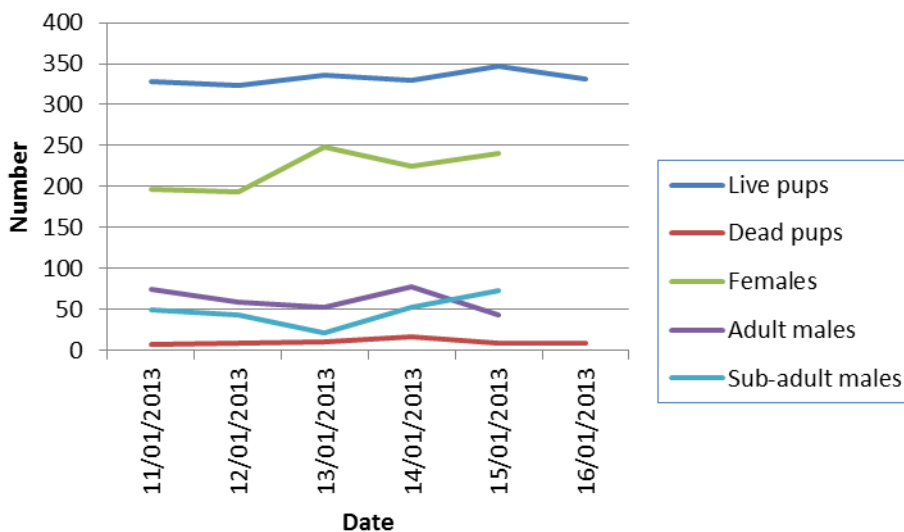


3.4 Colony counts

3.4.1 Sandy Bay, Enderby Island

Counts of live and dead pups, adult females, adult and sub-adult males from 11-16th as shown in Figure 2.

Figure 2 New Zealand sea lion counts at Sandy Bay, Enderby Island 2013



⁵ Previous year's survey data from Chilvers (2012)

3.4.2 South East Point, Enderby Island

Eight counts were made at South East Point and no live or dead pups were ever recorded.

3.5 Tagging and micro-chipping

Flipper tagging and subcutaneous micro-chipping were also undertaken. Pups at Dundas Island and Figure Island were double flipper tagged and pups at Sandy Bay were double flipper tagged and also micro-chipped. Summary of pup tagging was:

- Dundas Island – 400 pups tagged (comprising 100 males and 300 females)
- Figure of Eight Island – 33 pups which were as many as could be tagged in the time available
- Sandy Bay – 347 pups
- Enderby Island – 2 pups. These pups were tagged away from the main colonies on 23rd January. One pup was tagged half way between Sandy Bay and South East Point colonies and the other was tagged near the top of the Island, northwest of Sandy Bay. These pups have not been included in overall estimates of pup production as, given the timing of their tagging, it was not possible to determine if: (i) they were pups that had swam over from Dundas Island colony⁶, (ii) they were born at a colony on Enderby Island and moved away prior to tagging there, (iii) they had been born at a colony on Enderby Island after tagging and subsequently moved away, or (iv) if they had been born away from the colonies on Enderby Island)

3.6 Resighting and tagging data management

Over 2,100 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.

3.7 Tagging data management

A key element of this research was to ensure that the data are collected in an accurate and robust fashion and furthermore that these data are provided in an electronic format suitable for upload into the New Zealand sea lion database. Dragonfly provided a copy of the New Zealand sea lion database for use on the trip.

Overall, the database worked reasonably well but a number of technical problems arose with the database that prevented its full use during the trip. We have a list of issues to discuss with Dragonfly, some of which will reflect our lack of familiarity with the database and some other issues that may require further modifications.

3.8 Coordination with the Helicopter

The use of the helicopter for transport to and from Dundas was very successful. We were dropped on Dundas early on 19th in two short trips (e.g. one for personnel and one for gear) and picked up on the 21st with a further two trips. This was a change we made to the original logistics plan which was to fly out and back to Dundas each day (e.g. return flights on the 19th, 20th and 21st). Instead we stayed on Dundas for 2 nights, which allowed us more time to complete the work program and ultimately to collect more tag resight data.

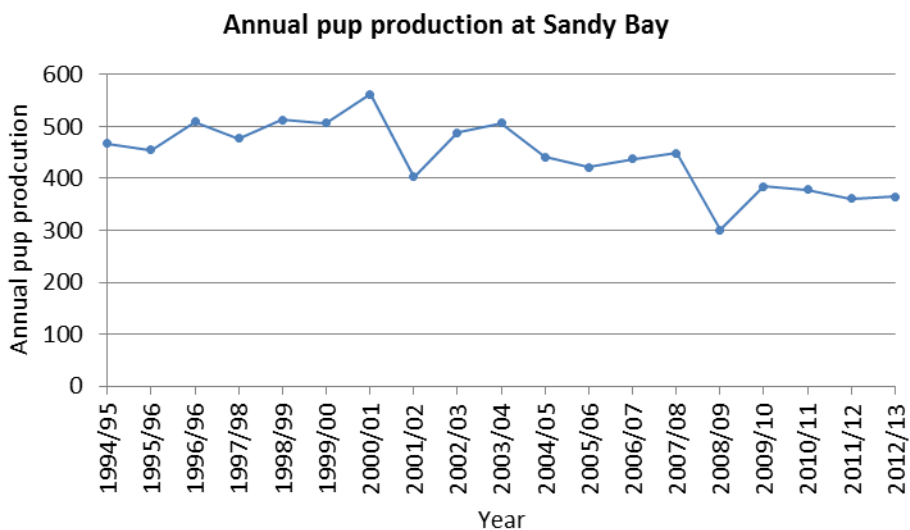
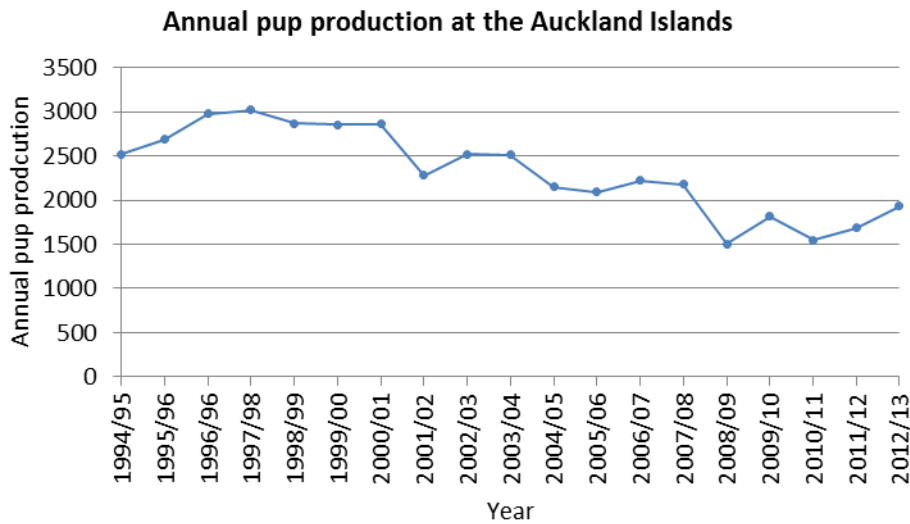
The only issue was that, as I understand it, most if not all of the other helicopter survey work had already been completed before the 19th and so the helicopter would have returned back to the mainland if they hadn't needed to stay around for us.

⁶ The first pup tagged on Dundas Island and seen on Enderby Island was 25th January.

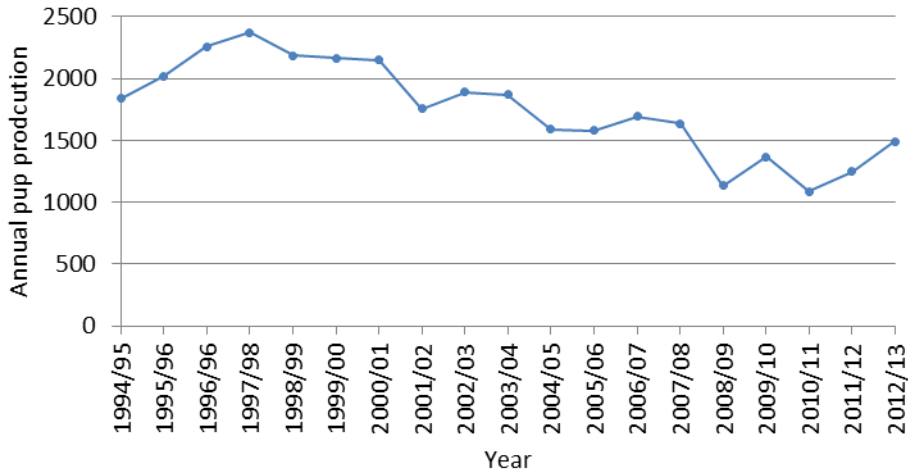
4. References

- Childerhouse, SJ. (2012) Methodology for CSP Project 4426 New Zealand sea lion ground component 2012/13. Report prepared for the Conservation Services Programme, Department of Conservation. 8 p.
- 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.

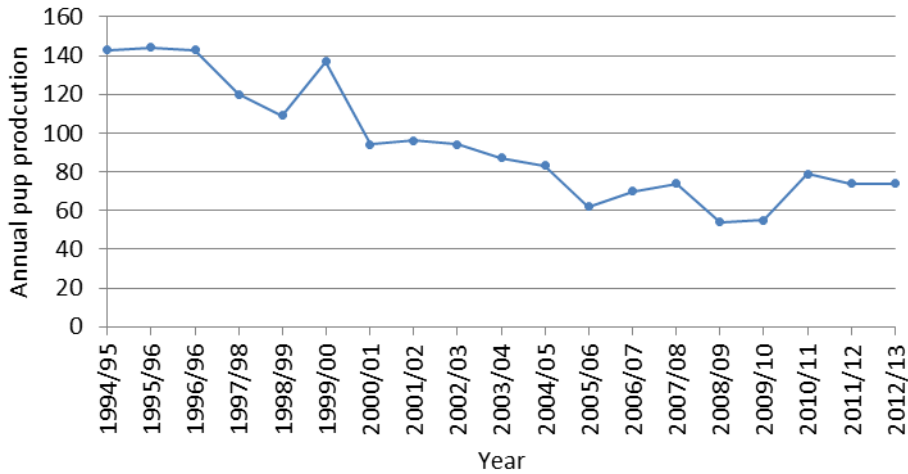
Appendix 1 Annual estimates of pup production for each colony and for total Auckland Islands pup production (NB. Previous year's survey data from Chilvers (2012))



Annual pup production at Dundas Island



Annual pup production at Figure of Eight Island



Annual pup production at South East Point

