

NZ sea lion programme 2013/14 - Preliminary end of trip report

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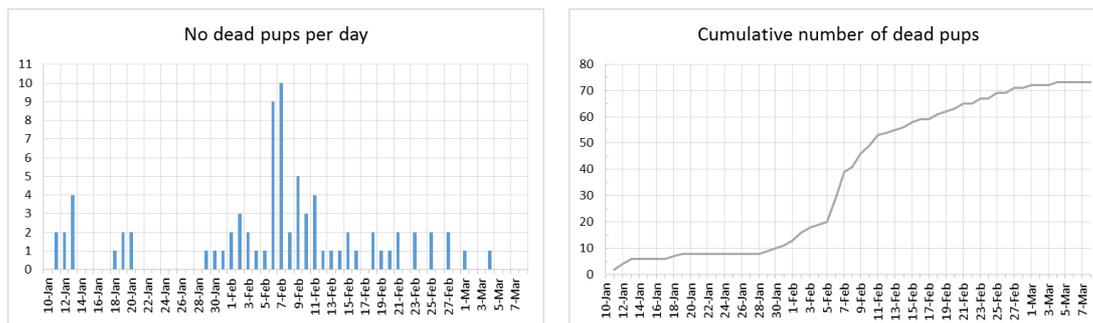
14 March 2014

This report is to provide a brief summary of the NZ sea lion programme at the end of the trip. A full report will be provided to DOC later in March. Only a few issues have been discussed here and mainly those for which DOC requested additional information.

1. 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 the 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. Full details of live pup production is reported in a previous report.

Preliminary data on the cause of death was not included as a deliverable of the DOC CSP contract for this work but it was undertaken independently by Massey University and Deepwater Group. They have kindly provided preliminary results of the autopsy work for inclusion in this report (Appendix 1).



2. Short summary of the live and dead nos you saw on your second trip to DD

A brief follow up survey was undertaken at Dundas Island on 10 March 2014 prior to the team returning back home. They observed 19 live pups and 70 dead pups with no evidence of an unusual levels of pup mortality seen. Of the 70 dead pups, 17 were found in the muddy moat around the centre of the Island. The previous visit to Dundas Island on 19 January 2014 had a live pup count of 1078 and a dead pup count of 72. The numbers of dead pups between the two surveys should not be directly compared as it is likely that pups that had died after 19 January 2014 may not have all been available for counting on 10 March 2014 as over time they will have been scavenged, decomposed and/or washed away.

3. Information about pups dying in holes

The team on Enderby Island noted many pups falling into large holes and bogs on the sward at Sandy Bay. At the eastern end of Sandy Bay, approximately 1 km from the beach are a series of large holes in the peat. Pups get into these holes, cannot get out and will likely drown/starve if they are not removed. Estimates from the team were that more than 75 pups were rescued from these holes over the survey period but it is not known how many of these may represent the same individuals being removed multiple times. Also, a small number of additional pups were removed before the team started recording each of these events, so the stated number should be viewed as a minimum. While it was mainly pups falling into these holes, some yearlings/juveniles were also recorded as caught. The team

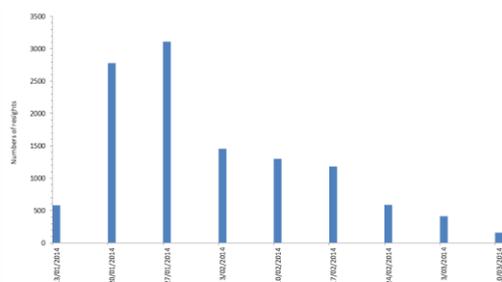
removed any individuals caught and also made access ways (e.g. either ramps or steps) so that any individuals caught subsequently would be able to make their own way out (see picture below). As such, an unrecorded number of pups likely escaped by using the ramps, which is in addition to those manually removed before the ramps were constructed. It is also important to note that while 75 pups were rescued from holes this season, there were no records of pup mortalities in holes at Sandy Bay. This is mainly as the sea lion team undertook regular surveys of the holes once this issue was identified and all pups found alive were successfully removed and ramps/steps dug to allow subsequent trapped pups to get out on their own.



There are also a series of holes forming a moat around the centre of Dundas Island which has in the past been a significant source of mortality for pups. In the early 2000s, we installed boardwalk ramps (very much like the one in the picture above) throughout most of the moat which we believe has led to reduced mortality of pups in the moats. It would be difficult to prove this as some pups still die in the moat but other already dead pups are dragged into the moat by scavenging sea birds so it can be difficult to confirm how many actually died in there.

4. Individual resights for the season

There were a total of 11,000 tag, brand and chip resights collected during the season. However, this estimate is preliminary because the data needs to be checked for incorrect entries and duplications. The following figures provide an indication of number of resights by week through the season. Please note this has not been standardised for effort which will be provided in the final report as the number of team members varied from 6, 5, and 3 for different parts of the season.



5. Other issues

There has been discussion from some people visiting Enderby Island this season about the feasibility of 'drenching' of pups to improve survival and growth. This is an issue that has been discussed previously including some published research by DOC (*Chilvers et al. 2009, Effects of hookworms (Uncinaria sp.) on the early growth and survival of New Zealand sea*

lion (Phocarctos hookeri) pups, Polar Biology 32: 295-302) on the potential benefit from worming treatment on pup mortality and growth at Sandy Bay. The team did not advocate this approach but did mention it as a potential area for future consideration noting that it is a very complicated issue and one that would require considerable, careful review of the potential positives and negatives of such an active management approach.

APPENDIX 1 – Preliminary cause of death for autopsied pups. Data courtesy of Massey University and Deepwater Group

Between the field dates of 10th January and 8th March 2014, 73 pups, 1 juvenile and 2 adults were found dead in the Sandy Bay area of Enderby Island and many of these were necropsied. Four pups underwent post mortem prior to tagging with the remainder after tagging. Post tagging pup necropsies were all pups of Sandy Bay origin except for 2 pup tagged at Dundas Island and 6 untagged (but presumed Dundas origin) pups.

Preliminary gross necropsy results for pups indicate that 66% (n=47) had lesions consistent with infection. Further histopathology and microbiology investigation is underway to confirm and refine the diagnosis of these cases and results will be reported elsewhere. Starvation was identified as a significant contributor to death in nine pups, severe hookworm infestation in three pups and trauma in one pup, where more than one diagnosis was assigned to a pup when appropriate. For 14 pups (20%), the gross diagnosis was open, due to heavy scavenging, advanced decomposition or no significant abnormalities on gross post mortem.

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

