

New Zealand sea lions – Proposed Auckland Islands population study 2011/12
POP2011-01

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Overall Objective:

- To provide information on the population level and dynamics of the New Zealand sea lion, relevant to the management of commercial fishing impacts on the species.

Specific Objectives:

1. To estimate New Zealand sea lion pup production on the Auckland Islands.
2. To collect information on marked animals relevant to improving the understanding of population dynamics of New Zealand sea lions at the Auckland Islands.

Methods

Objective 1: To estimate New Zealand sea lion pup production on the Auckland Islands.

Field techniques - Three pup production measurements will be used:

1) Direct counts – Undertaken on Figure of Eight Island and Sandy Bay on Enderby Island. Up to three people walk around the entire breeding area up to three times each counting all visible alive and dead pups.

2) Daily accumulative counts – Undertaken at SE Point and Sandy Bay on Enderby Island. One person counts all live and dead pups (daily at Sandy Bay, at least weekly at SEP) from early December through to January 16th.

3) Mark-recapture estimates – Undertaken at Sandy Bay and Dundas Island.

Mark-recapture field work will be conducted (weather and logistics permitting), 16th Jan. Sandy Bay on Enderby Island and 21st Jan. Dundas Island. The mark-recapture study will be carried out with pups marked with circular, 6 cm-diameter, flexible vinyl discs that will be glued to the crown of their heads with a fast-setting cyanoacrylic glue (Loctite 454). The number of pups marked will be approximately 25-50% of previous pup production estimate (Sandy Bay 150-200 marked pups, Dundas island 200-400 marked pups). Marking will be spread as evenly as possible through the breeding area (based on pup density). Most discs are shed a few days to a few weeks after the experiment. Recaptures will involve preferably three observers moving systematically through the entire sea lion pupping area counting pups sequentially the following morning, with each observer conducting preferably three replicate counts. Each pup will be classified as either marked or unmarked and a tally of each will be maintained by each observer using two hand-tally counters. Only pups where the entire head is visible will be included in the counts, to minimise the risk associated with undercounting unmarked pups. As the discs have shown to be clearly visible on the heads of pups even if only part of the head is viewed there is a greater probability that a marked pup would be correctly identified than an unmarked pup. This greater probability of viewing marked caps could lead to an overestimate of the proportion of marked pups and underestimate of pup production. Consequently, any

pups that can not be categorised as marked or unmarked, i.e., where the entire head was not visible, will be excluded from the count.

All three count methods (direct count, daily accumulative counts and mark-recapture estimates) are undertaken at Sandy Bay to allow comparison between techniques and assess for any bias in methods.

Objectives 2: To mark this seasons cohort and collect information on marked animals relevant to improving the understanding of population dynamics of New Zealand sea lions at the Auckland Islands.

To continue the ability to track demographic parameters within the NZ sea lion population at the Auckland Islands, all pups at SE Point and Sandy Bay on Enderby Island and 400 at Dundas Island (weather permitting) will be sexed and tagged with uniquely numbered plastic Dalton coffin shaped tags. Pups at Sandy Bay, on Enderby Island will also be PIT tagged (passive intergrated transponder) as recent analysis of data has identified this to be a extremely valuable marking system to allow quantification of tag loss and therefore allow for more accurate estimations of demographic parameters. Tags will be applied to both pectoral flippers approximately 10cm from body. As many pups as can be found will have their tags and PIT tags checked one month after application to allow estimation of early tag loss rate. All pup tagging will be completed by 30th January each year (weather permitting).

Daily resighting of previously tagged and branded animals will be conducted at SE Point between early December to early January and Sandy Bay, Enderby Island between early December and mid February each season. Opportunistic sightings will also be collected from Figure of Eight and Dundas Islands when staff are there (up to late February). Resightings are conducted over all of Enderby Island once a week between early December and 16th Jan and from then on at least once every two days till late February. This later resighting is important because juvenile males and females only return to Enderby Island after the main harem/breeding area has broken up and the large breeding males have left the island. At no other time can these resightings be collected. For those animals without tags, their PIT tag will be attempted to be read if possible. At the time of resighting the date, location, number of tags the animal has and breeding status will be recorded and entered into the database. All resighting and tagging data from each season will be entered into the NZ sea lion excel spreadsheet by the end of each field season with data verification (checking the existence and matching of tag numbers, colours, shapes, animal sex and other database entries for consistency) completed soon after return from the field.