

7 November 2011

Mr R. Harding  
Manager – Marine Conservation Services  
Department of Conservation  
P. O. Box 10-420  
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*via email:* rharding@doc.govt.nz

Dear Russell,

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

In your email of 7 October 2011, you indicated that the proposed methodology for POP2011/01 (Specific Objectives 1 and 2) would be presented at the CSP-TWG meeting on 21 October 2011. In the event, a report was tabled but not presented or discussed. We have taken the opportunity (below) to provide brief written comments on the report, as suggested at the meeting. However, we consider that a working group discussion of these issues is also required.

We note that MAF have organised a meeting of the Aquatic Environment Working Group on 9 November 2011, and suggest that this meeting could provide an appropriate opportunity for the required discussion, and also for presentation of the final report for POP2010-01. We suggest that you liaise with Martin Cryer to see if the CSP items can be added to the AEWG agenda.

***Comments on pop-2011-01-sea-lion-methodology.pdf, tabled for CSP-TWG meeting on 21 October 2011***

Detailing the proposed fieldwork and methods for POP2011-01 is important, but the document tabled is unfortunately brief and lacking in relevant detail. The final reports from this ongoing series of projects have typically suffered from a similar lack of detail. It is worth noting that Eric Mellina's draft report on the 2009/2010 field trip (presented through the MAF working group system as AEWG-2011/69) provides much greater insight into the work that is carried out.

We have the following comments and queries on the proposed fieldwork programme and methods, and consider that these should be addressed before the fieldwork commences:

## **Direct counts**

Maps should be provided to show the extents of the areas in which these counts are undertaken. The detailed methodology needs to address:

- Why three people are used in the counts, and how they do this (e.g. do they split the area between them, or each count the whole area?)
- Why “up to three times each”? If less than 3x, how is this decision made?
- Why do the data record a single count per day, and not the (up to 9) replicates? How is the daily total derived?
- Do the counts take place at the same time each day? If so when? If not, how is timing decided, and is the time of the count recorded?
- Are covariates recorded (e.g. counters involved, time of count, weather, aggregation of animals)?
- Do the counts also record (either precisely or generally) animal locations? If so, how are these data captured?
- Are marked animals (tags, brands etc) recorded as part of this process, or separately?
- How frequently will counts be conducted at the two sites mentioned (Figure of Eight, Sandy Bay)?
- Are dead animals removed or left?
- Are only pups counted? What about adults (males and females)?

## **Daily accumulative counts**

Apart from the use of one person vs. “up to three” it is not clear how a “daily accumulative count” differs from a “direct count”?

While described as “daily”, these are only “at least weekly” at SEP. Many of the same issues noted for direct counts apply here:

- Maps should be provided to show the extents of the areas in which these counts are undertaken
- How the area is counted should be described (e.g. vantage point, fixed route, varied route...)
- Single count or replicates?
- Time of day and other covariates recorded?
- Animal locations recorded?
- Marked animals recorded?
- Just pups or adults too?
- Treatment of dead animals?

## **Mark-recapture estimates**

- Is there no proposal to undertake multiple MR estimates at Dundas, given concerns over the timing of the 2010 count?

- What is proposed if “weather and logistics” do not permit the counts to be made on the intended dates?
- Use of all three methods at Sandy Bay is justified on the basis of allowing comparison between techniques and the assessment of any bias. Is this necessary on an ongoing basis (i.e. every year)? If so, why?
- The numbers of pups to be marked at the two sites do not equate to approximately 25-50% of the previous estimate.
- What is the approach taken to spreading marks as “evenly as possible” through the breeding area? Presumably this differs for Sandy Bay (where the daily counts give an idea of pup density and distribution) and Dundas (no knowledge until the team lands)?
- Are shed disks retrieved to avoid littering?
- What time of day is marking carried out (noting that re-sights are “the following morning”)?
- Given that the time between marking and re-sighting on Dundas last year was shortened, why is no work proposed to assess the effect of different intervals between marking and re-sighting on the estimates?
- Are observer identities recorded consistently over time?
- Does each observer count the entire area three times, or do they cooperate to provide three team replicates?
- Is a record kept of the number of pups present which were excluded (due to the entire head not being visible)?

## **Tagging**

- Why no tagging at Figure of Eight?
- Why no PIT tagging at Dundas?
- Is tagging at Sandy Bay done on a particular occasion, or throughout the trip as new pups are located?
- Presumably the checking after one month is restricted to Sandy Bay?
- Does one person do all the tagging? If not are the tags attributable to tagger (to ensure loss rates are not variable according to tagger skill)?
- Is re-sighting combined with the direct counts, or a separate activity? How much time is devoted to this each day? Does re-sighting effort vary temporally and spatially from day to day? Are different numbers of people involved, or the same people each day?
- Exactly what data are recorded for each identified marked animal? The recording forms used should be included as part of the methodology.
- Does “location” mean the location of tags, or location of the animal?
- If an animal is recorded as having one tag, does the recording make clear whether the other tag was determined to be missing, or was un-checkable?
- Are all visible marks recorded, or just sufficient to identify the animal?
- For untagged animals, are unsuccessful PIT tag reading attempts recorded? Or only those that result in an identity?

- If a tag is present, but unreadable, is this recorded?
- PIT tag reading should presumably also be attempted on animals with tags, to allow the success rate of PIT tag reading to be determined
- How is breeding status determined and recorded?
- Is the verification of data completed daily "soon after return from the field" or annually (after the return from the entire trip)? How are data consistency problems resolved?
- The methodology mentions tagged and branded animals – what about the bleach-marked animals noted by Eric Mellina?

**Other work**

- What other work will be undertaken during the trip?

Yours sincerely,

A handwritten signature in black ink, appearing to read 'D. Middleton', with a stylized flourish extending to the right.

Dr. David A.J. Middleton

cc. Dr. Martin Cryer, MAF (chair of AEWG)