

Subject: RE: sea lion review report

Date: Sun, 2 Mar 2014 16:53:41 +1300

From: Bruce Robertson <[REDACTED]@otago.ac.nz>

To: Pamela Mace (Pamela Mace) <[REDACTED]@mpi.govt.nz>

CC: Martin Cryer (Martin) <[REDACTED]@mpi.govt.nz>

Dear Pamela

In the past Martin Cryer has asked me to make a solid case for change to the sea lion operational plan. I am not sure why it is my job to do that, but here is one such case for change to the current 82% discount rate. It is a clear example of MPI's optimistic interpretation of the expert panel's report, to the point of ignoring clear statements. Importantly, the discount rate drives to the heart of sea lion management; changing the discount rate fundamentally changes the operational plan. In this instance, MPI is clearly not using the best available information, as that would be the previously accepted 35% discount rate.

The review panel clearly disagree with the discount rate being set at 82%. They call this "optimistic" and call for a more "precautionary approach" as an alternative.

"Given the uncertainty associated with cryptic mortality and the intractability of its quantification, we consider that a value of 0.82 is more likely to be optimistic than pessimistic." [page 24 of the report]

As you'll be aware a discount rate of 82% has important implications for sea lion management as it reflects the conclusion of high SLED efficacy and makes setting a FRML a redundant exercise, which is why MPI deemed it unnecessary to set a FRML in the last IPP.

The panel go onto say that **"We consider that until real data become available, MPI's options regarding discount rate use in the model are"** and then they outline 6 options for the discount rate and none of the options list keeping the discount rate at 82%. Instead, the panel mention a 50% rate to reflect a random outcome of SLED survival or taking a "precautionary approach" by using a deliberately low discount rate.

The expert panel make a very clear statement that the current 82% discount rate is not appropriate and are calling for a lower value.

Under the current operational plan, more sea lions are likely being killed than managers are willing to acknowledge. Indeed, the panel highlight the uncertainty associated with SLED efficacy.

Even simple calculations based on last year's fishing effort (1015 tows) indicate that rather the 10.7 sea lions mortalities estimated, we could have expected between 29.9 (50% discount rate) and 38.9 (35%) dead sea lions depending on discount rate used. If squid abundance was greater and the full 4600 tows were done, we could have expected between 135.5 (50%) and 176.1 (35%) dead sea lions, while managers would assume that only 48.8 (82%) were drowned. Under the current

operational plan, sea lion mortality would be under the FRML, but the reality is likely to be very different.

Let's hope there are no years of high squid abundance between now and 2017!

By retaining the current 82% discount rate and the operational plan unchanged, MPI are effectively saying that the panel was happy with retaining the current discount rate. **This is misleading the public by omission.** If this is not MPI's intention, then the optimistic discount rate needs to be revised down in line with the panel's statements and recommendations.

As you well know, MPI are meant to take the middle ground on sustainability and utilisation (based on the Fisheries Act), hence given the clear statements on discount rate made by the expert panel, MPI's insistence of retaining the operational plan unchanged seems at odds with that legislative responsibility. It is also at odds with the ongoing decline of sea lion pup production. Indeed, modelling from the University of Otago highlights that deaths of adult females is driving this decline.

I realise that nothing I say will change the current situation as it is a political decision, but ignoring scientific advice whether it is from a single scientist, such as myself, or from international scientists involved in MPI's "top-shelf" peer-review process (i.e an expert panel) erodes government's claims that sea lion management is being driven by science. It also erodes the goodwill of the scientific community to be involved in the governmental process. After all, who wants to be involved in a process where valid scientific concerns are so blatantly disregarded.

I look forward to your reply and a change in the discount rate and hence the current operational plan.

regards

Bruce

13th March 2014

Nathan Guy

Minister for Primary Industries

Dear Nathan Guy

On the 6th March 2014, you and the Minister of Conservation announced a sea lion threat management plan (TMP) will be developed in response to the ongoing decline of pup production at the Auckland Islands.

I welcome this move, especially given the ongoing decline of sea lions and, as the media release notes, the causes are likely to be varied and include fishing impacts, both directly via death in trawl nets and indirectly, through resource competition with the fishery.

Based on the timing of the recent Maui and Hector's dolphin TMP, it appears that any practical outcomes from the sea lion TMP are unlikely to be in place before the start of squid fishing in February 2016. That is assuming that management outcomes are able to be put in place by Feb 2016, as I note that MPI are only just now working on a 1 year project proposal that will inform the sea lion TMP process and this still needs to be put out for tender.

Given the 2 year time-frame of the sea lion TMP process, **can you tell me what management will be put in place to halt further declines in pup numbers due to the various causes, including fishing** (as noted in your media release: "or additional measures to reduce impacts of fishing"). It seems that sea lions will need to endure another 2 years of declining pup numbers before there is any concrete action.

I understand from your Ministry officials that there are no plans to alter the current operational plan for the SQU6T fishery, a move which might in some way alleviate current fishing pressures on the sea lion population.

That is unfortunate given that your predecessor's decision in 2012 to increase squid fishing by 140% was based on the conclusion that sea lion exclusion devices are working as intended (Minister Carter was "*suitably persuaded* that, irrespective of some remaining uncertainty, SLEDs facilitate sea lion escapes from trawl gear and contribute greatly to their ability to survive an interaction with a trawl net"). He subsequently increased the discount rate awarded fishers who used SLEDs from 35% to 82%, paving the way for the 140% increase in fishing effort. I note from your media release that you also appear to believe that SLEDs are functioning as intended.

I hope that your officials have made you aware that the recent panel of international scientific experts commissioned by MPI who reviewed the evidence for SLED effectiveness do not share Minister Carter's certainty of SLED efficacy.

The expert panel concluded that "Given the uncertainty associated with cryptic mortality and the intractability of its quantification, we consider that *a value of 0.82 [82% discount rate] is more likely to be optimistic than pessimistic.*" The panel go on to suggest six ways of determining a discount rate in the absence of "real data". They clearly state that a "low" value would provide a "precautionary approach".

Importantly, none of the panel's suggestions for setting the discount rate include Minister Carter's 82% rate that he used in reaching his 2012 SQU6T decision (see page 25 of the review panel's report). **The expert panel make a very clear statement that the current 82% discount rate is not appropriate and are calling for a lower value.**

It is important to understand the role the discount rate plays in sea lion management. Calling this a "fundamental role" is not overstating the discount rate's importance. A high rate (like 82%) allows increased fishing effort, but if assumptions of high SLED efficacy are incorrect, as the panel suggest, then we will be allowing many more sea lions to drown in the trawl nets (see the attached document examining sea lion bycatch, fishing effort and discount rate).

Even simple calculations based on last year's fishing effort (1015 tows) indicate that rather the 10.7 sea lions mortalities estimated, we could have expected between 29.9 (50% discount rate) and 38.9 (35%) dead sea lions depending on discount rate used. If squid abundance was greater and the full 4600 allowed tows were done by industry, we could have expected between 135.5 (50%) and 176.1 (35%) dead sea lions, while managers would assume that only 48.8 (82%) were drowned.

Under the current operational plan, sea lion mortality would be under the FRML, but the reality is likely to be very different. Let's hope there are no years of high squid abundance between now and 2016!

Ministry officials and industry repeated point to the lack of dead sea lions recorded by Ministry observers as evidence of high SLED effectiveness. Indeed, you are quoted in the joint media release as saying "Despite high levels of observer coverage, only a small number of incidental captures have been observed in recent years." It would be nice if this was true, but unfortunately there is no data to make this causal link between SLED design changes and bycatch mitigation.

A just as parsimonious conclusion based on the "evidence" is that changes to SLEDs have resulted in dead sea lions not being retained to be counted by Ministry observers. In fact, video evidence available to Ministry officials indicates that objects (large dead fish, etc) do fall out of the hood of SLEDs due to variable hydrodynamics in the trawl nets during shooting, turning and hauling, yet we are told that SLED hoods are "designed" to retain dead sea lions.

The design requirement that hoods retain dead sea lion to be counted is clearly in question and in the absence of evidence to the contrary makes claims of high SLED efficacy appear misleading.

Note, I have raised my concerns with your Ministry officials directly and via the AEWG stakeholder process, as well as at the recent expert panel review.

Given the concerns with the "optimistic" discount rate, **can you tell me why there are no plans to alter the current operational plan before 2016?**

Changing the discount rate in line with the expert panel's recommendations would lead to a drop in fishing effort to around 2000 tows or less. As both you and the Minister of Conservation are concerned with the ongoing impacts on the sea lions, which as you note might include fishing pressure, this would seem to be a prudent approach to management of sea lions and the SQU6T fishery.

I look forward to your reply.

regards

Bruce Robertson

Email to Minister for MPI Nathan Guy and then Minister of Conservation Nick Smith

Subject: SLED efficacy & further industry evidence

Appendix 3

Date: Tue, 1 Apr 2014 16:44:53 +1300

From: Bruce Robertson <[REDACTED]@otago.ac.nz>

To: Monique Andrew <[REDACTED]@parliament.govt.nz>

Dear Nathan Guy and Nick Smith

I understand that you have asked Deepwater Group (DWG) for further evidence of SLED efficacy and I see in an open letter that DWG has provided further information in the form of a briefing note prepared by Mr Barry Baker of Latitude 42 Environmental Consultants Pty Ltd.

Reading the briefing note and various statements made in the note (e.g. **“These commentators choose to ignore the advice and information provided to them by MPI that New Zealand SLEDs have been deliberately designed with the escape hole on the upper surface and with a forward facing hood to specifically avoid this eventuality.”**), it is apparent that this briefing note does not provide any new or “further information on SLED efficacy” as it purports. Indeed it appears that DWG are providing you with information that MPI has provided to them, albeit it in a briefing note format prepared by Mr Baker.

It is also worth noting that the briefing note does not include some key documents, including the report of the recent expert panel review of sea lion management (Bradshaw et al 2013). The expert panel spent a lot of time discussing SLED efficacy.

Further the briefing note also appears to omitted a very important report (Middleton & Banks 2008), which identifies, using cameras mounted on nets at the opening of the SLED and hood device, that variable hydrodynamics in the trawl nets on shooting, turning and hauling can allow large objects held in the hood of the SLED to “fall out” of the hood. This document calls into question the assumption that hoods are functioning as designed - that is retaining dead sea lions to be counted by Ministry observers.

It is also worth noting that the Middleton & Banks (2008) report highlights that fishing practices are likely to have changed since the 90s-2002 when turning in trawls was an uncommon event. Now it appears that turns are considerably more common. It is important to note that nets are raised off the bottom when turning a vessel, which brings the net very near the surface and can increase the chances of interacting with marine mammals and seabirds (see Middleton & Banks 2008 for further details).

The bolded quote above from the briefing notes also highlights nicely a pervasive misconception with SLED efficacy - it is assumed that “deliberate design” equals correct function. This is clearly an illogical assumption. It is also a dangerous assumption, as it means that you never have to test for SLED effectiveness, because you designed the SLED to work, so of course it works as intended.

You only have to look at the need to test car safety to see that design does not translate into function or expected outcomes. No car manufacturer sets out to make an unsafe car, but some models are clearly rated very poorly. If design equalled function, we could do away with the need for the ANCAP safety ratings.

As I see it, currently, SLEDs do not have an "ANCAP rating" and we are being told to believe that they are safe despite evidence to the contrary. There is clearly very good evidence available that can be used to investigate SLED efficacy. Some of it is industry's hands, but apparently has been overlooked (note, I presented the Middleton & Banks 2008 information at the 2013 sea lion management review where industry, MPI and DOC officials were present).

What is clear is that we need more information to determine SLED efficacy. Indeed, the expert panel spent a lot of space in their report talking about cryptic mortality and what is needed to determine SLED efficacy.

One practical outcome of this identified by the panel is that the discount rate awarded for SLED efficacy is set too high (currently 82%). Given the evidence for SLED efficacy is poor, the discount rate needs to be reduced, as I have highlighted in my recent correspondence to you.

As for the TMP process, I certainly hope that there will be more serious consideration of the evidence for/against SLED efficacy and that government official will not continue to confuse "deliberate design" with expected function.

Looking forward to your response on this matter and also my previous correspondence on lowering the discount rate.

Regards

Bruce



Office of Hon Nathan Guy

MP for Otaki

Minister for Primary Industries

Minister for Racing

Appendix 4

Min13-0987

1 MAY 2014

Bruce Robertson
bruce.robertson@otago.ac.nz

Dear Bruce Robertson

Thank you for your correspondence of 13 March 2014, regarding the management of incidental captures of sea lions by the squid fishery around the Auckland Islands.

I would also like to thank you for your support of the threat management plan (TMP) for the New Zealand sea lion.

The purpose of developing a TMP for the New Zealand sea lion is to review all the risks and to explore all possible measures to ensure their survival. The timeline for the development of the TMP will be made available shortly and will include the opportunity for input from all interested parties. In the process of developing the TMP, potential areas for immediate action or intervention will be considered and progressed, if and where appropriate.

At present, there are no plans to alter the operational plan managing the incidental interactions between sea lions and the squid fishery around the Auckland Islands. MPI is working to prioritise research associated with addressing the panel's recommendations and the research needs of both agencies to inform the TMP.

Yours sincerely

Hon Nathan Guy
Minister for Primary Industries



Office of Hon Dr Nick Smith

MP for Nelson

Minister of Housing

Minister of Conservation

Minister for Building and Construction

Appendix 5

30 JUN 2014

Dr Bruce Robertson

bruce.robertson@otago.ac.nz

Dear Bruce

Thank you for your email of 1 April 2014, to the Hon Nathan Guy, Minister for Primary Industries and me, regarding the efficacy of sea lion exclusion devices (SLEDs). In responding to your email, I am also replying on my colleague's behalf.

The uncertainties discussed in your letter are also noted in the Ministry for Primary Industries Aquatic Environment and Biodiversity Annual Review 2012. This report can be found on the Ministry's publication website (<http://www.mpi.govt.nz/news-resources/publications.aspx>). Furthermore, the data used in the compilation of this report was also provided to the expert panel reviewing the sea lion population modelling approach.

The further addressing of any uncertainties around SLEDs is a matter of risk management and prioritisation. Both the Ministry for Primary Industries and Department of Conservation are working to prioritise research needs as part of the Threat Management Plan for New Zealand sea lions.

I recently inspected a SLED at Motueka nets in Nelson to get a better appreciation of the technology. I stressed to participants that I was keen for further work to more accurately determine survival rates.

I would also welcome the opportunity to meet in person, perhaps when I am next in Dunedin, so as to get a better appreciation of your concerns.

Best wishes

Nick Smith
Minister for Conservation

MAM 11/5

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**Institute of Veterinary, Animal and Biomedical Sciences
Massey University**

PATHOLOGY REPORT

Appendix 6

Status: Pending
Date: 30/10/2003
Type: Mortality

Padraig Duignan
Massey University

Palmerston North

Lab. Case/Spec ID: **35361**

Submitter's Ref:
Date Submitted: 29/10/2003
Date Received: 29/10/2003
Previous Case ID:
WMD Case/Spec ID: 2194/1

Animal ID: SS03-21 Ph
Animal Name:
Species: *Phocarcos hookeri*
Common Name: New Zealand (Hooker's) Sea Lion
Sex Class: Male
Age Class: Adult
Date Died: 23/10/2003

Number Dead:
Number at Risk:
Number Sick:
Number Submitted: 1

Growth and Development (Biometrics)

Parameter	Result Description	Value	Date Measured	Age Group
Girth at Flippers		1.4 m	25/10/2003	Adult
Girth at Navel		.9 m	25/10/2003	Adult
Sternal Blubber Depth		25 mm	25/10/2003	Adult
Total Length		2.38 m	25/10/2003	Adult

DIAGNOSIS

Abscess, peri-laryngeal, chronic, severe, associated with *Klebsiella pneumoniae* and *Enterococcus* sp.

COMMENTS

The abscess was very large and located around and ventral to the larynx. From the congestion in the lungs and the blood stained froth in the airways it is evident that this sea lion died in respiratory distress probably caused by the abscess constricting the airway at the larynx. It is also possible that the abscess eroded into blood vessels seeding bacteria into the blood causing septicaemia although detecting such a lesion in an abscess this large would have been very difficult. *Klebsiella pneumoniae* can cause septicaemia, pneumonia, arthritis, abscesses, and suppurative and necrotizing fascitis in people for whom it is a common pathogen. It is an unusual pathogen in animals, domestic or wild, but has recently caused two epidemics among NZ sea lion pups on the Auckland Islands in 2002 and 2003. In the pups it has caused the same range of pathology as seen in people. This is the first isolation of this pathogen from an adult sea lion. The second bacterium isolated, *Enterococcus* sp. Is an incidental finding.

ANIMAL HISTORY

The animal was necropsied in the field by Kerri Morgan and samples submitted to Massey. The specimens included the head and stomach frozen and wrapped in the silage wrap, pottles containing faeces and abscess pus, a swab from the abscess, blood tubes, and fixed tissues.

GROSS PATHOLOGY

External Examination - The animal is in good body condition with a deep blubber layer and no apparent loss of muscle mass. There are no apparent external lesions.

Internal Examination - On opening the skin on the ventral aspect of the neck, there is a large swelling apparent around the larynx at the level of the hyoid arch. It is approximately 20 x 15 cm and well encapsulated. On incising the mass a large volume of fluid pus and fibrin are released. The exudate is not foul smelling. The location of the abscess appears to involve the retropharyngeal lymph nodes. There are plerocercoid flukes in blubber of the ventral abdomen but no inflammation associated with them.

Alimentary System - The stomach is empty apart from some anisakine nematodes and there are no mucosal lesions. There is nothing in the small intestine. The gall bladder is dilated and filled with normal bile.

Respiratory System - There is blood-tinged froth in the bronchioles and bronchi of both lungs and in the trachea. The lung parenchyma is diffusely congested. The large abscess is impinging on the larynx.

Cardiovascular, Urogenital, Lymphatic Systems - No visible lesions.

Reproductive System - Left testis 16 grams. 5 x 4 cm length x diameter.

BACTERIOLOGY

Faeces: No growth of Salmonella.

Abscess swab: *Klebsiella pneumoniae*, *Enterococcus* sp.

Pathologist: Pdraig Duignan BSc, MSc, MVB, PhD.

Assistant(s): Kerri Morgan

Copy To: Fiona McKay, Rob Suisted, Ian Wilkinson

CASE HISTORY

This male sea lion was found dead on the beach at Cannibal Bay in the Catlins on October 23rd. It had been seen alive in June at the same location by University of Otago students.