



**Department of Conservation and Ministry for Primary Industries**

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**Submission: New Zealand Sea Lion Threat Management Plan by the Royal Forest and Bird Protection Society of New Zealand Inc.**

Forest & Bird appreciates the opportunity to comment on the proposed New Zealand sea lion Threat Management Plan (TMP).

Forest & Bird is New Zealand's largest independent conservation organization, numbering around 80,000 members and supporters. Our members are people that work to preserve our natural heritage and native species. Forest and Bird is the New Zealand partner of the global BirdLife International network of NGOs with partners in 120 countries.

## Forest & Bird's summary of key issues:

- The draft TMP is lacking even a mildly ambitious long term goal to recover the NZ sea lion population.
- Forest & Bird recommends the long term goal should be *to recover the sea lion population to non-threatened status* and that there should be *meaningful and measurable short term demographic targets*.
- The draft TMP has few management actions and those that it does have are not very meaningful.
- The TMP needs to prioritise management actions to alleviate anthropogenic threats, specifically fisheries related mortalities.
- The TMP has failed to highlight uncertainties associated with the use of SLEDs and did not propose research to address SLED efficacy.
- Forest & Bird is proposing an additional national program of work to address fisheries threats and SLED efficacy concerns.
- Forest & Bird recommends zero mortality of New Zealand sea lions from all fishing activities as soon as practicable, and in any event by 2022.
- Forest & Bird proposes to achieve this by implementing an innovative adaptive management plan.
- The adaptive management plan proposes a spatial fisheries closure at the Auckland Islands that will not restrict squid quota from being caught

### 1.0 Introduction:

The New Zealand sea lion *Phocarctos hookeri* is the world's rarest sea lion species and has the highest threat status listing in New Zealand of 'Nationally Critical'. They are a precious taonga that have undergone a 50% population decline over the last few decades and are under threat of extinction.

New Zealand sea lions once bred around mainland New Zealand but the breeding colonies are now largely restricted to a few sites on the sub-Antarctic Islands (Auckland and Campbell Islands). In addition very small numbers of animals are now breeding in areas of coastal Southland and Stewart Island.

Forest & Bird wants immediate action and a clear plan that will see our rare sea lions return to non-threatened status.

### 2.0 TMP objective, scope and goals:

Forest & Bird supports the objective of the draft TMP to “promote the recovery and ensure the long-term viability of the New Zealand sea lion population”. But believe the goals are weak and the proposed actions are unlikely to achieve the objective.

The scope of the draft TMP is claimed to include all key threats to the sea lion population and all known breeding sites. Yet incredibly, it almost completely ignores the known threats of fishing related mortality and indirect fisheries effects like resource competition. The draft TMP also largely ignores the second largest breeding site of Campbell Island. (See sections 2.5, 3.5 and 4.4 for more detail).

The purpose of the draft TMP was to list management options to reduce all threats to sea lions. There are proposals to address *some* threats within this plan. However, clear management actions for Ministers to remove the top anthropogenic threats need to be included as they are the threats that can most immediately be managed. Without including these management actions the draft TMP cannot hope to achieve its purpose.

Current resource constraints should not limit this process; rather Ministers need to be aware of the budgetary requirements for the actions that are needed to achieve the long term objective of recovery for the species to non-threatened status.

### **2.1: Population goals:**

Forest & Bird doesn't support the wording of the long term goal by 2036 that “the overall population is above the 2015 estimate of 11,800 sea lions and is increasing”. We think this lacks ambition and is weak, as this goal could be achieved simply by the population being bigger by one extra individual in 2036.

The long-term goal should be to recover the sea lion population to non-threatened status. The target should be to return population numbers to levels of the mid-1990s. This may not be achievable within the 20 year goal timeframe however the proposed short term demographic targets must work towards achieving this long term goal. For example at 5 years, reversing the decline and stabilizing the population; at 10 years increasing the population reaching 25% towards 1995 levels; and in 15 years reaching a goal of 50% towards 1995 levels. Without determined goals and appropriate actions we will be unlikely to achieve the objective set out in the draft TMP.

NIWA has developed a quantitative risk assessment model based on the expert panel's advice. During the second TMP workshop the experts identified that the NIWA model should be used to develop demographic targets such as for pup counts, pup survival and adult survival to enable assessment of progress towards the population goal. This has not been carried out or included in the draft TMP. We recommend that demographic targets are developed by the end of 2017 to help assess progress of the TMP towards the long term population goal.

**Key recommendations:**

- Change the long term goal to: “Population recovered to non-threatened status” with accompanying milestone demographic targets.
- Demographic targets to return population numbers to levels of the mid-1990s should be developed by the end of 2017.
- There should be clear 5 year milestones to assess the TMP’s progress towards achieving the long term population goal.

**2.2: Partnership goal:**

Forest & Bird supports the proposed goal to work “in partnership with Ngāi Tahu on issues involving sea lions”.

Rāpoka /Sea lions are recognized as a Taonga species within the Claims Settlement Act 1998. The Department of Conservation must give effect to this partnership with respect to this Taonga species and in accordance with Section 4 of the Conservation Act 1987. It is fundamental for Rāpoka/Sea Lions that Ngāi Tahu is able to uphold and continue to engage in the management of the species with respect to Ngāi Tahutanga, tikanga. The exercise of kaitiakitanga for Taonga species is part of the fabric of what it is to be Ngāi Tahu. We support partnership actions that Ngāi Tahu to bring this species back to non-threatened status.

**Key recommendation:**

- DOC to engage with and involve Ngāi Tahu in an effective partnership for future management of taonga Rāpoka /Sea lions.

**2.3: Research and monitoring goal:**

Forest & Bird supports the proposed goal whereby a “*structured research and monitoring programme is implemented to inform and target management actions to achieve the objective of the TMP*”. However, we believe the goal needs a timeframe in order to be measurable. Currently there is no timeframe being proposed by which the research and monitoring programme should be developed and then implemented. We recommend the research programme should be developed by the end of 2017 and implemented thereafter. We also recommend that the research and monitoring programme should have input from all key stakeholders.

Waiting for research and monitoring should not be used to delay actions that would directly benefit the recovery of the species towards non-threatened species status.

The research programme should include research to address on-going uncertainties around SLED efficacy (see section 4.4 of submission for more detail); this should be prioritized in the TMP.

The programme should include the on-going need to monitor each of the populations annually (including Campbell Island), to allow for adaptive management changes as needed to further achieve the conservation objectives, particularly with regard to differences in breeding site specific needs.

**Key recommendation:**

- Priority should be given to those research goals (and associated monitoring) that will most directly benefit the recovery of the sea lion population. With priority given to mitigating anthropogenic effects, particularly from fishing.
- Campbell Island should be included in annual population monitoring programmes.

**2.4: Community goal:**

Forest & Bird supports the proposed community goal.

**2.5: Additional goal to address anthropogenic threats to sea lions:**

Various reviews and contrasting models have shown that fishing mortality is either the primary factor or at least a significant contributing factor to the NZ sea lion's population decline and is the most significant anthropogenic driver (Chilvers, 2011a; Chilvers, 2011b; Robertson & Chilvers, 2011; Bradshaw et al, 2013; Roberts, 2015; Meyer, 2016; Roberts & Doonan, 2016).

Forest & Bird recommend the draft TMP should have an additional goal not currently listed to address all anthropogenic threats identified in the risk assessment (Roberts & Doonan, 2016). As stated in the draft TMP based on the risk assessment, no one threat is responsible for the decline in the number of sea lion pups born and there needs to be an integrated response. In order to achieve the population goals listed above we recommend the following goal should be included.

***All anthropogenic threats (including fisheries related mortality) are reduced and mitigated using a variety of tools by developing a programme of management options by 2017 to be implemented through a phased approach using adaptive management in the short term.***

The draft TMP provides no analysis of management options for reducing anthropogenic threats to sea lions. The above goal would require DOC and MPI to develop management actions to actively reduce these anthropogenic threats.

The NIWA model could be used to analyse how much a particular threat and or combination of threats would need to be reduced to achieve the population goals. The expert panel recommended this approach, yet this recommendation is not included in the draft TMP. Forest & Bird recommends an action under this goal would be for the development of a risk reduction assessment using the NIWA model to show how much of a particular threat (links to management actions recommended above) would need to be reduced in order to reach the population goals. A precautionary approach should be applied to any such analysis, which should then be used to inform the reduction targets (management actions) that DOC and MPI provide to Ministers.

For example the modeling predicts that by saving just 34 female sea lions each year there would be an immediate halt to population decline and the population would stabilise within the next 5 years, whereas 347 pups would need to be saved to stabilise the population after 2020. These values come from Associate Professor of Otago University Bruce Robertson's analysis of the demographic rate scenario projections in Roberts & Doonan (2016). He calculated the number of females and the number of pups that are required to be saved to increase breeding female survival (Sur6-14) and pup survival in the first year (Sur0) to a stable population ( more information can be found in his submission). In a recent meeting between eNGOs and DOC and MPI staff to discuss the draft TMP it was pointed out by officials that they had tried to make the document more readable to the public. Yet nowhere in the document are there simple numbers like these which would allow the public to understand what management action is actually needed. We don't think it's realistic to 'save' 347 pups, especially as *Klebsiella* is a source of pup mortality and the TMP does not propose any management action to deal with its impacts. Whereas, saving 34 females is much more realistic proposal. Forest & Bird believes that the proposed adaptive management below (see section 6.0) alongside with the other measures in the draft TMP could achieve this.

**Key recommendation:**

- The TMP should include an extra stream to address all anthropogenic threats, including fishing related mortality. A precautionary approach to be used in all modeling that informs management actions.
- The following goal should be included.

***All anthropogenic threats (including fisheries related mortality) are reduced and mitigated using a variety of tools by developing a programme of management options by 2017 to be implemented through a phased approach using adaptive management in the short term.***

- The actions associated with the goal to 'save' 34 females per year are included in the final TMP and advice paper to the Ministers.

### **3.0 The National programme:**

Forest & Bird supports aspects of the proposed national programme but strongly recommends that fishing threats be added as an additional national program work stream.

Forest & Bird recommends that fishing threats are prioritized as part of the national program.

#### **3.1: Population monitoring:**

Forest & Bird supports on-going population monitoring across all sea lion population sites. The draft TMP should not be restricted by current resourcing as stated on page 15, but MPI and DOC should put forward monitoring requirements that are needed in order to achieve the overall objective of the draft TMP.

Campbell Island population is the second largest breeding site for New Zealand sea lions, and therefore the second most important population. We do not support the proposal to monitor Campbell Island population once over the next 5 years (as proposed in table 1 TMP consultation document). This is not sufficient and we recommend annual monitoring of the Campbell Island population.

#### **Key recommendation:**

- Campbell Island is added to annual population monitoring programme.

#### **3.2: New Zealand sea lion forum:**

Forest & Birds supports the proposed Forum and would want to participate as a stakeholder.

We also support the proposal of a “*central research repository of sea lion data*” to be established for the forum members to access, as one of the most frustrating aspects to participating in the TMP process to date and working with officials is getting information. Agencies routinely refuse to release information to key stakeholders, including members of working groups (such as Forest & Bird) resulting in the frequent requests for information using the Official Information Act.

#### **3.3: National engagement campaign:**

Forest & Birds supports the proposed national engagement campaign. We recommend that the Forum works with DOC to prioritize this work, as the objectives are very broad.

Table 1 states one of the objectives of the national engagement campaign is to “reduce the impact of human interactions on NZSL”. Forest & Bird questioned the scope of this statement and learned from officials that it excludes human interactions from fishing. This is not made clear in the draft TMP consultation document and we recommend that the wording of this objective is be changed to include ‘all’, and so read: “*to reduce the impacts of all human interactions on NZSL*”.

**Key recommendation:**

- Fisheries related threats must be included in national engagement and awareness campaign.
- The national engagement objective be changed to read “*to reduce the impacts of all human interactions on New Zealand sea lions*”.

**3.4: Disease research:**

The primary natural disease threats identified in New Zealand sea lions are hookworm (*Uncinaria sp.*) infection accounting for approximately 13% annual pup mortality in the first 2 months (Castinel et al. 2007); sporadic *K. pneumoniae* epidemics affecting pups (Wilkinson et al 2006); and of lesser significance in terms of mortality, *Mycobacterium tuberculosis pinnipedae*, mainly affecting adults (Cousins et al., 2003).

*Klebsiella pneumoniae* is a bacterium that can cause septicemia or localized infections in many different organs, including the lung, brain, intestine and lymph nodes. As indicated in the TMP, there are no proven methods to treat or prevent infection in free living sea lions. Infected animals could be treated with antibiotics but this would only be efficacious at an early stage of infection and require repeated handling of infected sea lions to administer the antibiotic. There is no commercially available vaccine to prevent infection and even if there were, that would also require handling animals at least twice to administer the vaccine and a booster. Clinical trials would also need to be conducted on captive sea lions to determine optimum dose rates and administration intervals, the pharmacokinetics, efficacy of immunity and duration of cover.

Hookworms are nematodes with a direct life cycle that are found as blood-sucking adults only in the intestine of pups. They are transmitted to pups primarily through the milk of adults and to a lesser extent, by migration through the skin from a sandy substrate (Castinel et. al. 2007). Dr Castinel’s research at Sandy Bay showed that Ivermectin, an anthelmintic drug, is effective in clearing infection from pups when administered by injection. However, such an approach to management of infection would require treating each individual by injection and carries the same risks as above in terms of interference with free living animals. A further risk is that Ivermectin is potentially toxic if administered by inexperienced personnel. Nematodes may also develop resistance to drugs such as Ivermectin as is well known in the New Zealand sheep industry, making this another important risk factor for sea lion hookworm.

Tuberculosis has been identified in both NZ sea lions and furs seals, including animals from Enderby Island. However, mortality rates are low and infection is chronic, affecting mostly older individuals. It is not important as a regulating mechanism at the population level.

From a broader terrestrial, epidemiologic and veterinary perspective, vaccination or treatment of wildlife for naturally occurring disease is generally frowned upon and is rarely undertaken. Test and slaughter has provided some success with natural infections of tuberculosis, brucellosis and chronic wasting disease (CWD) in ruminants, but this is not acceptable or feasible for New Zealand sea lions. Most examples of vaccination in wildlife have been for diseases of zoonotic concern, such as rabies in skunks and raccoons in the Northeastern United States and Ontario, Canada and in geographically restricted and highly endangered species, such as with canine distemper virus (CDV) in black footed ferrets in the United States of America that were reintroduced to the wild from zoo bred animals. More recently Hawaiian monk seals were vaccinated for CDV as a preventative measure; in contrast to phocine (true seal) distemper virus (PDV) which cycles exclusively in the marine environment, CDV is considered terrestrially sourced, from domestic and feral dogs and poses a significant threat to immunologically naive monk seals (Duignan et al. 2014). Wildlife and staff veterinary pathologist at the Marine Mammal Center, Sausalito, CA, Dr. Padraig Duignan has previously worked on New Zealand sea lions and regarded such an approach as “logistically impractical from a cost and interference standpoint”.

Although better understanding *K pneumoniae* infections in these populations is useful, without a firm commitment for long term funding of research and development of mitigation measures (e.g. the development of a vaccine) this work will not ensure conservation targets are met for this species. No vaccine exists for *K pneumoniae*, in part because antibiotics are effective in humans and domestic animals, and it is not economically viable for the vaccine industry to develop such a vaccine. Currently there is no knowledge as to what kind of vaccine (recombinant modified live versus dead) would be effective for New Zealand sea lions. It may be a DNA inhibitor type or an antibody approach. However there are also potential unknown side-effects (e.g. anaphylaxis or other adverse response to vaccination). So the mitigation potential here is hypothetical and would require a firm commitment for long-term baseline research and establishment of criteria to assess any implemented mitigation measures.

Forest & Bird understands that current research is funded from a variety of sources and the primary research is being undertaken by PhD student Sarah Michael who is funded from a scholarship from the University of Sydney. Such an ad hoc approach provides no certainty for long-term commitment to the work and the focus of the graduate student research does not provide firm action plans to manage the New Zealand sea lion to non-threatened status. There are large potential side effects from trying to inoculate sea lions as previously mentioned, and there is no likelihood of funding for actions as a result of research regarding *Klebsiella*. Treatment for hookworm is more feasible and has already been trialed on New Zealand sea lions at the Auckland Islands (see work by Castinel et al 2007), but also has major potential dangers in terms of creating Ivermectin resistant strains, interference with the animals and potential for toxic reactions. The morbilliviruses, CDV and PDV, have never been shown to

cause mortality in otariids and PDV has never been recorded in the Southern Hemisphere. The risk to NZSL from morbillivirus would therefore have to be regarded as low. Should that risk status change, for example if there were a significant outbreak of CDV in terrestrial mammals in Otago or Stewart Is., then an approach similar to that used for Hawaiian monk seals could be evaluated.

Forest & Bird supports the proposal for on-going research to better understand *Klebsiella* as stated in the draft TMP “a) prevalence of disease, b) total mortality from disease, c) identification of the strain of *Klebsiella* and d) identification of the source and vectors of *Klebsiella*”.

However Forest & Bird believes that it is impractical and unrealistic to mitigate *Klebsiella pneumoniae*. The draft TMP hasn’t raised any of the concerns surrounding the treatment of wildlife for naturally occurring diseases which is generally frowned upon by experts and is rarely undertaken.

The draft TMP has proposed 3 years of funding, but it hasn’t identified the significant financial commitment the government would need to make to actively mitigate.

The experts at the pup mortality workshop, which was attended by Forest & Bird, highlighted that mitigation would be very difficult, costly and that treatment was not recommended.

Forest & Bird has concerns over how the effects of *Klebsiella* have been expressed in the TMP background document, and the numbers used – specifically how the ‘best estimates’ were determined and applied. Forest & Bird has expressed concerns for how these threats have been estimated in the NIWA model and recommend MPI provide more detail to Ministers. We support the concerns raised with regard to this by Associate Professor Bruce Robertson in his submission on this NZSL TMP consultation document.

**Key recommendation:**

- Priority be given to actions that reduce anthropogenic threats to sea lions particularly fisheries related threats rather than research into natural disease.
- Any research into disease must be accompanied by a firm funding commitment to convert findings from that research into practical management actions.

**3.5: Fishing Related Threats**

The observed sea lion population decline is highly likely to be driven by decreasing numbers of breeding females from fisheries related mortality (Robertson & Chilvers, 2011). This is a primary factor or contributing factor and must be addressed within the TMP.

Forest & Bird strongly recommends that DOC and MPI create a National programme work-stream called 'Fishing related threats'. The research objectives should be to reduce uncertainty around the SLEDs retention rate, the level of cryptic mortality, including the survival of sea lions that exit a SLED.

Forest & Bird participated in the pup mortality workshop, the agency working groups, the threat management plan and the statutory public consultations regarding the management of New Zealand sea lions and the fisheries operating in sub-Antarctic waters. We have continuously raised concerns over direct and indirect fishing effects on sea lions, specifically concerns over SLED efficacy and trophic interactions. Despite raising these concerns they have consistently been ignored by MPI. The risk assessment highlighted that fishing bycatch was the second highest threat to NZ sea lions (the highest anthropogenic threat) at the Auckland Islands and the biggest threat to those from Otago's coastline. The NIWA model also showed that fishing needed to be reduced (along with other threats) to allow NZ sea lions to recover.

There is no justification in the draft TMP as to why fishing threats have been dismissed and why they are not a national priority. We can only assume this is because MPI are backing their unproven assumption that "approximately 82% of sea lions probably survive their interaction with fishing gear" (Background document pg 14). The expert panel in 2013 even recommended a lower value should be used and that the 82% wasn't precautionary (Bradshaw et al, 2013). See section 4.4. for further comments on fisheries effects.

**Key recommendation:**

- Fisheries related threats to be addressed as a national priority in the TMP, and a specific work stream added to develop actions and management options.

## **4.0 Regional programme**

### **4.1: Pups drowning / starvation in holes**

Forest & Bird supports the project objective in Table 2. This is a viable action that can be taken by those engaged in population monitoring programme. However it is addressing a natural phenomenon that is secondary to the anthropogenic threats facing these populations.

### **4.2: Male sea lion aggression**

Forest & Bird supports the project objective in Table 2. However, male aggression is a very small source of mortality, and it is hard to envisage what research could be undertaken that would mitigate this natural threat, other than translocation or killing of problematic males, neither of which is practical or desirable. So if there is limited funding for the regional programme – as expressed by officials in a TMP meeting between eNGOs and DOC and MPI staff - then we would recommend that this work is dropped as it is of comparatively low priority.

#### **4.3: Direct human interactions**

Forest & Bird supports the projects listed in Table 2, however again these are of lower priority if funding is restricted and these regional threats need to be prioritized.

#### **4.4 The effects of fishing**

It is highly concerning that the draft TMP does not recommend any management actions to reduce fishing impacts.

Forest & Bird doesn't support the proposed fishing objectives in table 2 on page 18 – specifically to:

- *collaboratively develop and implement a SBW 6I operational plan for 2016-2022 or*
- *review the current SQU6T operational plan and management measures or*
- *collaboratively develop and implement SQU6T operational plan for 2016-2022*

Until further research has been carried out to address the uncertainty about the efficacy of SLEDs we propose an adaptive management strategy (see below).

Forest & Bird supports the proposed objectives to increase observer coverage around Stewart Island and the Otago Coast. However we are disappointed there are no actions to implement fishing restrictions to protect Otago's breeding colony. We recommend an additional objective to develop fisheries restrictions to protect the Otago sea lions from interactions with set nets and trawlers.

If fishing mortality is actually higher than currently estimated then the benefits of actions to reduce fishing mortality would be underestimated.

#### **On-going concerns with SLEDs:**

There is a complete lack of evidence to support MPI's position that "direct effects of fishing-related mortality on the New Zealand sea lion population is minimal" (IPP, 2011 pg. 42), and the government's conclusion in 2012 that "Improved scientific research shows Sea Lion Exclusion

Devices (SLEDs), that enable sea lions accidentally caught in fishing gear to escape, are working”.

Data around fisheries mortalities has become difficult to assess and have certainty around because of the introduction of sea lion exclusion devices (SLEDs) into the trawl nets and the variable observer coverage. Even if an interaction of a sea lion with a SLED is not fatal (and they may be), the animals may sustain injuries that jeopardize their survival chances once ejected. Also sea lions are mammals so are breath hold divers, research has shown that sea lions in the Auckland Island population are foraging and diving at the extremes of their physiological limits (Chilvers et al., 2006; Chilvers, 2009) making them likely more vulnerable to interactions with nets and SLEDs. The possibility of sea lions drowning in the net before they reach the SLED and are ejected has not been properly accounted for. Depending on where they are in a dive, they may survive an encounter with a SLED and yet simply run out of air to get back to the surface.

There is no evidence that SLEDs retain all dead sea lions, a basic assumption falsely claimed by MPI. If dead sea lions are ejected out of the hood, as suggested by Forest & Bird and others, then the fact that fewer sea lions are being observed caught since the introduction of SLEDs may be extremely misleading. Video evidence has shown that animals can be washed out of the hood (ejected). There is also concern that trawl nets become slack when vessels perform turns during their long (greater than 8 hour) tows which could also cause dead sea lions to fall out of the hoods.

As previously highlighted, there are no new fisheries management measures being proposed, despite on-going uncertainties around SLEDs and the discount rate applied. The Auckland Island squid trawl fishery (SQU6T) is managed under the 2012 operational plan. It sets a discount rate for vessels using SLEDs of 82%. This implies that 82% of sea lions survive when a SLED is used.

The 2013 expert panel expressed concerns over MPIs position “*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*” (Bradshaw et al., 2013). This uncertainty is not included in the draft TMP.

Given that there is no scientific evidence to support such a high survival rate a precautionary approach must be followed. At a minimum the previous discount rate, of 35% should be reinstated until further research is conducted to determine post-exit survivability and cryptic mortality is accounted for, as both would affect the discount rate.

Strike rate is another important factor managers use when setting the total allowable kill quota of sea lions in a fishery – the fishing related mortality limit (FRML). The strike rate determines how many sea lions are killed per tow, if there was no SLED. As SLEDs are used in trawl nets the actual strike rate is not able to be determined, instead it is estimated. It was initially based on the standard average tow of less than four hours and was 5.3%, however tow length has doubled as vessels are trawling for longer periods, some greater than eight hours. This is a concern as effectively the industry has been able to double the trawling effort by increasing the

length of tows and thus increasing the likelihood of sea lion interactions. Forest & Bird recommends the TMP includes a management action to update the strike rate based on the best available information.

Forest & Bird is disappointed that the uncertainty around discount rates and strike rates are completely excluded from the draft TMP and background paper and no objectives are listed to address these. We recommend that these uncertainties are included in the final TMP along with actions to address these issues.

The final TMP needs to also include management actions to address other fisheries that operate in the sub-Antarctic waters and are known to kill NZ sea lions, such as southern blue whiting, scampi and hoki.

### **Key recommendations:**

- An additional objective to develop fisheries restrictions to protect the Otago sea lions from interactions with set nets and trawlers. SLED efficacy must form a part of research programmes and actions for changes in management of the SQU6T fishery outline under 5.0 and 6.0 to be implemented.
- The final TMP should include management actions to address other fisheries that operate in the sub-Antarctic waters and are known to kill NZ sea lions, such as southern blue whiting, scampi and hoki.
- We also have serious concerns about the proposed cost-benefit analysis of restricting fishing in sea lion foraging areas (table 2) and recommend postponing this work until SLED efficacy has been addressed.
- The uncertainty around discount rates needs to be detailed in the TMP and the application of a precautionary approach to modeling and therefore the discount rate used; we propose reverting to previous level of 35%.
- Revision of the strike rate needs to be implemented.

### **5.0: Alternative fishing methods**

Forest & Bird recommends changes to the management of the Auckland Island squid fishery (SQU6T) and the TMP should provide for alternative fishing methods.

Not only does the SQU6T fishery kill nationally critical New Zealand sea lions, it also kills other marine mammals and this fishery has one of the highest capture rates of seabirds in New Zealand. We have previously advocated for alternative fishing methods to be promoted and supported by MPI. There is no mention of jigging as an alternative fishing method. Jigging would still allow for utilization of squid, but would not kill sea lions, other marine mammals or seabirds in the process.

Jigging is carried out in some of the World's roughest oceans, an example of this fishing in a similar environment to the sub-Antarctic Islands is the offshore squid jig fishery at the Falkland

Islands (Barton, 2002). This fishery highlights that jigging is a viable fishing method for squid in the rough sub-Antarctic waters.

The government should look at incentives to encourage the promotion and trialing of squid jigging around the Auckland Islands. There is excess jigging quota which could easily be transferred.

As a possible alternative to jigging, the Minister could transfer quota from the squid trawl fishery (SQU6T) that operates around the Auckland Islands and overlaps with NZ sea lions foraging area into other areas around New Zealand (SQU1T), as squid is found throughout our waters. This would allow for spatial separation of the fishery and sea lions but still allow for the utilization of squid. Again, there is excess unfished trawl quota that could allow for this transfer of effort.

## **6.0: Adaptive management:**

In much the same way that we do not support an allowable kill of kiwi or kakapo, Forest & Bird considers that New Zealand sea lions, that have full protection under the Marine Mammal Protection Act, should not be killed in any fishing operation, either accidentally or deliberately. Given the serious population decline, the threat status of New Zealand sea lions and the overlap with commercial fisheries, Forest & Bird recommends the management objective to address fisheries threats should be:

*Zero mortality of New Zealand sea lions from all fishing activities as soon as reasonably practicable, and in any event by 2022.*

This management objective could in part be managed around the Auckland Islands through the extension of the existing marine mammal sanctuary, with a prohibition on all trawling, to cover the foraging range of sea lions over the continental shelf in the region.

Otherwise the management objective would be achievable by switching the squid trawl fishery into a squid jig fishery. A transitional period to allow for this change is accommodated within an adaptive management strategy.

Forest & Bird recommends an adaptive management strategy over 5 years to progress the goal of a zero bycatch target. As previously recommended to MPI and DOC officials we propose a spatial fisheries closure – like a species specific reserve, for a specific timeframe to fully protect a proportion of the main breeding population of NZ sea lions at the Auckland Islands, specifically nursing mothers and their dependent pups.

This proposed spatial fisheries closure is not designed to stop commercial fishing, or reduce TACC as has been explained previously by Forest & Bird in working groups after the review of the 2011 operational plan for SQU6T. The squid trawl fishing effort can be moved to other areas like the Snares Shelf, or elsewhere around New Zealand (SQU1T) as squid is caught throughout our waters.

This spatial fisheries closure would provide a short term transition period for the fishing industry and an opportunity for key research on trawling effects, trophic interactions including resource competition and breeding and survival success to be examined. The fishing industry claims that jigging cannot be done in these southern ocean conditions yet jigging is carried out in similar water conditions around the world, like the Falkland Islands.

### **Details of the proposed spatial closure**

Squid fishing occurs during the summer months which overlap with the breeding season of NZ sea lions. Female NZ sea lions forage over the entire Auckland Island shelf (Chilvers 2008a, b, 2009) and are restricted in the area and duration of their foraging by their need to return to dependent pups ashore (Robertson and Chilvers 2011).

Squid fishing is concentrated into two distinct areas around the Auckland Islands, one to the north-west and the other to the south-east of the Auckland Islands (Chilvers, 2009). We recommend the closure of the north-west squid fishing area, which is closer to Sandy Bay – an important breeding site and importantly an easily accessible research site. Female sea lion foraging overlaps with both fishing areas, and both areas have caught female sea lions. Tagged females have shown strong fidelity in their foraging around the Auckland Island which means those females who forage in the north-west area will have minimal risk of being caught by trawlers (Chilvers, 2008a; 2009). As Augé *et al.* (2013) highlighted spatial fisheries closures can be particularly useful where there is high foraging site fidelity.

Forest & Bird recommends that further work with agencies and other key stakeholders would enable the development of a robust proposal for ministerial consideration.

This adaptive management strategy allows for meaningful action to take place while further research is carried out.

### **Key recommendations:**

- We propose a spatial fisheries closure – like a species specific reserve, for a specific timeframe to fully protect a proportion of the main breeding population of NZ sea lions at the Auckland Islands, specifically nursing mothers and their dependent pups.
- We recommend the spatial fisheries closure cover the north-west squid fishing area.
- We propose a transition to jigging within SQU6T as per 5 year adaptive management strategy above.
- Forest & Bird recommends a management action in the TMP to create and fund a forum to bring balanced stakeholder input into creating a robust adaptive management model that includes the spatial fisheries closure.

## **7.0: Summary:**

**The TMP as proposed lacks ambition and appropriate actions to enable the long-term viability of the New Zealand sea lion. The TMP as currently written over emphasizes natural issues that impact sea lions and downplays the impact of anthropogenic threats, particularly fisheries related impacts. Priority must be given to those actions that will mitigate the human impacts, including fishing on the different sea lion populations. To this end we make these recommendations:**

- Change the long term goal to: “Population recovered to non-threatened status” with accompanying milestone demographic targets.
- Demographic targets to return population numbers to levels of the mid-1990s should be developed by the end of 2017.
- There should be clear 5 year milestones to assess the TMP’s progress towards achieving the long term population goal.
- DOC to engage with and involve Ngāi Tahu in an effective partnership for future management of taonga Rāpoka /Sea lions.
- Priority should be given to those research goals (and associated monitoring) that will most directly benefit the recovery of the sea lion population. With priority given to mitigating anthropogenic effects, particularly from fishing.
- Campbell Island should be included in annual population monitoring programmes.
- Fisheries related threats must be included in national engagement and awareness campaign.
- The national engagement objective to be changed to read “*to reduce the impacts of all human interactions on New Zealand sea lions*”.

- Priority be given to actions that reduce anthropogenic threats to sea lions, particularly fisheries related threats rather than research into natural disease.
- Any research into disease must be accompanied by a firm funding commitment to convert findings from that research into practical management actions.
- Fisheries related threats to be addressed as a national priority in the TMP, and a specific work stream added to develop actions and management options.
- An additional objective to develop fisheries restrictions to protect the Otago sea lions from interactions with set nets and trawlers. SLED efficacy must form a part of research programmes and actions for changes in management of the SQU6T fishery outline under 5.0 and 6.0 to be implemented.
- The final TMP should include management actions to address other fisheries that operate in the sub-Antarctic waters and are known to kill NZ sea lions, such as southern blue whiting, scampi and hoki.
- We also have serious concerns about the proposed cost-benefit analysis of restricting fishing in sea lion foraging areas (table 2) and recommend postponing this work until SLED efficacy has been addressed.
- The uncertainty around discount rates needs to be detailed in the TMP and the application of a precautionary approach to modeling and therefore the discount rate used; we propose reverting to previous level of 35%.
- Revision of the strike rate needs to be implemented.
- We propose a spatial fisheries closure – like a species specific reserve, for a specific timeframe to fully protect a proportion of the main breeding population of NZ sea lions at the Auckland Islands, specifically nursing mothers and their dependent pups.
- We recommend the spatial fisheries closure cover the north-west squid fishing area.
- We propose a transition to jigging within SQU6T as per 5 year adaptive management strategy above.
- Forest & Bird recommends a management action in the TMP to create and fund a forum to bring balanced stakeholder input into creating a robust adaptive management model that includes the spatial fisheries closure.
- While crucial research into SLEDs is carried out Forest & Bird recommends the operational plan for the SQU6T fishery is delayed being reviewed and updated, and reverts back to previous management option: a) the strike rate 5.65% should be updated to reflect the best available information as the 5.65% strike rate does not account for the increase in tow length discussed, and a 10% strike rate would be more appropriate; b) due to the large uncertainties and assumptions that led to the increase in the SLED discount rate we propose this should be reverted at a minimum back to the 35% used during the 2010 – 11 season.
- Forest & Bird does not support the use of a discount rate at all, as post-exit survivability is completely unknown and cryptic mortality is also not accounted for.

**Forest & Bird is disappointed with the selective use of available information in the TMP process, the draft TMP consultation document and supporting material.**

**Thank you for taking the time to read Forest & Bird's key comments on the draft New Zealand sea lion Threat Management Plan. Should you have any queries regarding our comments, please do not hesitate to contact us.**

**Regards,**

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