Fisheries New Zealand
Tini a Tangaroa

Operational Plan to Manage the Incidental Capture of New Zealand Sea lions in the Southern Squid Trawl Fishery (SQU6T)

Submissions

October 2019

New Zealand Government

Growing and Protecting New Zealand

Contents

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From: [redacted]
Sent: Tuesday, 17 September 2019 3:03 p.m.
To: FMSubmissions <FMSubmissions@mpi.govt.nz>
Cc: [redacted]
Subject: draft Squid 6T Operational Plan

Draft Squid 6T Operational Plan
[redacted], Auckland Zoo – on behalf of Auckland Zoo.
Auckland Zoo, Private Bag 78700, Grey Lynn, Auckland 1245, New Zealand
Phone: [redacted]
Email: [redacted]

Auckland Zoo has a vision to build a future where people value wildlife and species are safe from extinction.

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.

Auckland Zoo would like to support a future where our rare sea lions return to non-threatened status.

- Which option for a fishing-related mortality limit do you think is most appropriate, taking into account the purpose of the Fisheries Act 1996 to allow utilisation while ensuring sustainability?
    - Although Auckland Zoo believes that any sea lion death as a result of fisheries is too much, the preference is for Option 1: The fishing-related mortality limit is set to ensure that the maximum impact of the squid fishery on the recovery or stabilisation outcome of the population is no more than 2.5 percent in the long term. A limit for 0 percent should be the ambitious target, should SLEDs be effective.
- Do you think the use of Sea Lion Exclusion Devices should be required by regulation?
    - Although Auckland Zoo believes that SLEDs should be required by regulation as one specific tool within the fishery industry, there is also a lack of in-depth research that SLEDs are effective. Auckland Zoo advocate for further fully funded research into the effectiveness of SLEDs.
- Do you think the penalty for breach of regulated use of Sea Lion Exclusion Devices is appropriate?
    - Auckland Zoo believes that the penalty for a breach of a measure set under section 11 (3) of the Fisheries Act should be set to the maximum fine of $100,000.
- Do you agree with the proposed approach to monitoring the fishery against the fishing-related mortality limit?
    - Auckland Zoo does not support the monitoring of the fishery to be solely against the fishing-related mortality limit. There must be further fully funded monitoring and research on both the fishery and sea lion population to support adaptive management.

- Do you support a minimum target of 70 percent monitoring of the Squid 6T fishery, if so, why, and if not, what level of monitoring do you think is appropriate?
    - Auckland Zoo does not support the proposed minimum monitoring target of 70 percent. Auckland Zoo expresses support for the TAG proposal for 100 percent monitoring in the fishery to provide additional confidence that all captures in the fishery are accounted for.

Ngā mihi,

[redacted]
Conservation Advocacy and Engagement
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17 September 2019

Squid 6T Operational Plan Consultation
Fisheries Management
Fisheries New Zealand
PO Box 2526
Wellington 6140

By email: FMsubmissions@mpi.govt.nz

Dear Sir/Madam

'Consultation on the Squid 6T Operational Plan' Discussion Paper 2019/17

1. Thank you for the opportunity to comment on the above Discussion Paper.

Aurora Fisheries Limited

2. Aurora Fisheries Limited (Aurora Fisheries) is a New Zealand-owned fishing company, operating out of Port Timaru. We are the smallest of the operators in the New Zealand deepwater fishery, currently operating one deepwater trawler, the [redacted] which has fished in New Zealand for approximately 28 years. Aurora Fisheries is part of the Solander Group, a business that is entirely dependent on [redacted] to catch the quota it owns.

3. The [redacted] is a factory trawler that undertakes limited processing for the majority of the year, targeting mostly hake, white warehou, silver warehou, and squid. Ours is a highly successful fishing vessel, producing over [redacted] of seafood annually, of which a large percentage is exported to Asian and European markets. However this profitability is highly dependent on the New Zealand squid fishery for profitability in this high cost, high compliance environment.

4. The [redacted] has fished in the 6T Squid fishery for a number of years and our effort in the 6T squid fishery was significant for 2017/2018. In the last decade, during which the [redacted] has had 100% observer coverage, the vessel has not caught a single New Zealand sea lion.

5. Some product from the [redacted] is supplied to New Zealand seafood processors, including the Solander Group's fish processing factory based in Richmond, Nelson. In addition to the 50 fulltime jobs the [redacted] supports at sea, Aurora Fisheries has a significant shore-based sales, management and operations team spread across Timaru and Nelson.

6. As is well known, factory trawlers like the [redacted] have extremely high operating costs, with the vast majority of their "export earnings" being recycled back into the New Zealand economy through fishing industry suppliers including everything from cold storage, trucking, ports, packaging, engineering and repairs to fishing gear, food and fuel. In short, our one 70m fishing vessel is a small economy in itself.

7. Based on our own experience and business model, we therefore strongly urge Fisheries New Zealand (FNZ) and the Minister to carefully consider all the impacts before making any decision on the options presented in the Discussion Paper. In our view, some of the proposed options would have an unnecessary negative or fatal economic effect on commercial fishers. The small operator in the New Zealand commercial fishery is an endangered species; he is responsible and works hard to meet all requirements, but he is not wealthy. He is capital constrained and is definitely not in a position to see his slim profit margins further eroded by unnecessary fishing season closures or additional compliance obligations relating to fishing gear, which is already universally utilised by fishers.

8. We have reviewed a draft of the joint submission prepared by the Deepwater Group (DWG). We are a member of this group and fully support the recommendations and other points made in that submission. In particular, we emphatically agree with the following points made in that submission;

    (a) DWG does not support the setting of an fishing related mortality limit (FRML) by the Minister and believes that an FRML is not a necessary measure in terms of Section 15(2) of the Act.

    (b) DWG support the proposition that the fishery should be closed if captures threaten the sustainability of the species, however any reference to exceeding observed captures/tow limit are not grounds for closures.

    (c) We support the DWG analysis of the population outcomes of 90%, 95% or 97.5% proposed in the consultation document and support the submission that an 80% outcome is appropriate.

    (d) There is a general principle that Government should not regulate matters that are performing adequately. The last 10 years of exemplary conformance to

deployment of SLEDs that meet the standards set by Government with high oversight must support not making SLEDs a mandatory requirement under Section 11 of the Act.

(e) Support for a 90% observed tows is dependent on three conditions:

i) That all vessels have at least one observer on them;

ii) That due to cost and the fact that vessels only undertake 2-3 tows per day that not all vessels have two observers;

iii) The failure of FNZ to provide an observer on a vessel, provided notification requirements have been met, will not preclude that vessel fishing for SQU 6T.

9. We support the outcome that has the least potential impact on commercial fishers while still remaining consistent with the environmental and information principles of the Fisheries Act 1996. The option identified in the discussion paper with the least potential impact is as option three. However we support the view of the DWG that a no FRML option should have been included in the discussion paper. For the reasons canvassed below and in the DWG submissions we submit that a no FRML option should be adopted. If however FNZ choose to adopt such a limit, option 3 must be the preferred option.

Fishing Related Mortality Limit

10. The Discussion Paper outlines three options for the setting of a FRML. Proposing that should that limit be reached, the fishery will be closed for the balance of the fishing year.

11. The objectives of the New Zealand Sea Lion Threat Management Plan 2017-2022 (TMP) include ensuring the New Zealand sea lion population is "*stable or increasing within 20 years, with the ultimate goal of achieving non threatened status*". FNZ considers that the proposals in the Discussion Paper are consistent with the vision and objective of the TMP. (Discussion Paper p.3)

12. Each of the options is expressed in the Discussion Paper to be an allowable fisheries impact. However, absent from this discussion is a statement as to what is the desired population outcome for sustainability of the species. The DWG has suggested a population outcome of 80% is acceptable, and we agree. We therefore assume that all three options stated in the discussion paper are well within acceptable limits of fishing-related mortality, and will not unduly impact on the long term sustainability of the New Zealand sea lion population.

13. Further, the Discussion Paper acknowledges that the options proposed in the paper may be considered conservative as they are based on models for the Auckland Islands New Zealand Sea lion sub-population only (Discussion Paper p.7). We also note that the Discussion Paper states that *"the direct impacts of fishing were not the major cause of the observed population decline at the Auckland Islands colony between*

2000 and 2009" and that the population *"appears to have stabilised in recent years".* (Discussion Paper p.3)

14. In such circumstances the options under consultation appear to be seeking a value judgement based upon individual submitters' tolerance to a particular level of impact

15. In order to give effect to the purpose of the Fisheries Act 1996 to provide for the **utilisation of fisheries resources** [emphasis added] while ensuring sustainability, where sustainability matters have already been considered in the formulation of the options, the option with the least impact on commercial fishers should be favoured to allow for continued utilisation of fisheries resources.

16. The potential effects of a closure based upon the FRML being reached is particularly acute in Aurora's circumstances. Closure of the fishery would have significant adverse economic impacts on us, and would threaten the viability of our deepwater fishing operations.

17. In such circumstances it is incumbent on FNZ to adopt the option that has the least impact on commercial fishers whilst still meeting the vision and objectives of the TMP. Option three is described as achieving those objectives whilst being "*likely to have the least impact on fishing operations.*" A non FRML option is also strongly supported for these reasons.

18. Whilst it is noted in the Discussion Paper that option three represents the highest potential impact on the sea lion population, nowhere does it conclude that impact is unacceptable. Nor is a principled explanation provided, or indeed any explanation as to why this option is accorded "not preferred" status.

Mandatory Use of Sea Lion Exclusion Devices

19. The Discussion Paper refers to making the use of SLEDs mandatory under section 11 of the Act.

20. Section 11 provides for the setting of sustainability measures for one or more stocks or areas after taking into account any effects of fishing on any **stock** and the aquatic environment, any existing controls under this Act that apply to the **stock** or area concerned, and the natural variability of the **stock** concerned.

    (a) Such measures may relate to the catch limit for any stock or, in the case of a quota management stock that is subject to section 13 or section 14, any total allowable catch for that stock;

    (b) the size, sex, or biological state of any fish, aquatic life, or seaweed of any **stock** that may be taken;

    (c) the areas from which any fish, aquatic life, or seaweed of any **stock** may be taken;

    (d) the fishing methods by which any fish, aquatic life, or seaweed of any **stock** may be taken or that may be used in any area;

(e) the fishing season for any stock, area, fishing method, or fishing vessels.

21. The focus of section 11 is the stainability of a stock. Although the way the Act defines a stock is somewhat circular, what is clear is that the New Zealand sea lion population is not a "stock" for the purposes of fisheries management. The New Zealand sea lion is separately defined under the Act as a protected species, and their protection is provided for elsewhere within the Act. The New Zealand sea lion population cannot be described as a stock and, therefore, the advice we have received is that section 11 of the Act is unavailable in this context. That advice also disputes the assertion that the penalty for breach of a measure set under section 11(3) is a fine of $100,000[1] (Discussion Paper p.12), though that is true in respect of a measure set under section 15 of the Fisheries Act 1996, which provides for measures to be imposed to address fishing-related mortality of marine mammals.

22. Further, as described in the Discussion Paper, all vessels operating in the 6T squid fishery already use SLEDs on all tows, carry two SLEDs in case of damage, and have the devices audited at the commencement of the fishing season. This is the result of a non-regulatory commitment given through the Operational Plan. In these circumstances, introducing a regulatory requirement to utilise SLEDs would have exactly zero impact on New Zealand sea lion mortalities.

23. Adopting a regulatory approach in this context is unnecessary and would, in all likelihood, involve the setting of specific requirements/specifications in order for SLEDs to be "compliant" – there are a number of examples throughout the commercial fishing regulations where fishing gear is so constrained. Those specifications would necessarily be based on current design and knowledge. The problem with this approach is that it would constrain any development or innovation outside of those specifications and fixes the design at the time of the passing of the rule, which seems particularly counter-productive when it was innovation by the industry that resulted in the development and refinement of SLEDs.

24. The existence or imposition of regulations can be seen as a sign that there has been a historical flaw in an innovative idea and that, ultimately, a regulation is a signal of design failure or disregard for the appropriate course of action, such that government must step in to regulate or mitigate perceived harm. This is not the case here. The development and use of the SLED devices by the fishing industry has led to a dramatic decrease in fishing- related mortality of New Zealand sea lions and, indeed, has made the proposed change in approach to managing sea lion mortality possible.

25. There is no evidence to suggest that the industry will not continue its commitment to the Operational Plan. The imposition of additional regulation is simply unnecessary,

[1] The Fisheries Act 1996 does not prescribe an offence in relation to a breach of a measure set under s11(3). It is however an offence under s228(1)(a) to breach a sustainability measure set under s11(1) which has been implemented by notice in the Gazette under s11(4)(b)(i). A sustainability measure under s11(1) may relate to the fishing method by which fish may be taken or used in any area under s11(3). The maximum penalty for breach of s228 is a fine not exceeding $100,000 (s252(5)).

and may act as a future constraint that cannot be envisaged now or provided for adequately in any regulatory proposal.

26. We note that the Discussion Paper refers to a maximum fine of $100,000. Whilst there is no fine prescribed for a breach of section 11(3) measures, this indicates the contemplated penalty. Thus, conviction for failing to use a compliant or approved SLED device would lead to automatic forfeiture of the fishing vessel (section 255C of the Act). Because of the strict liability nature of fisheries offences, even a small or insignificant deviation from the prescribed standard, if prosecuted, would lead to forfeiture of the vessel used in commission of that offence. We question whether such a draconian measure is warranted in the circumstances.

27. Once regulation is imposed, it is not dynamic and responsive to change. This is a fishery where such innovation and responsiveness has directly contributed to better outcomes for the New Zealand sea lion by dramatically decreasing sea lion mortality. It would be short-sighted to impose such requirements in a fully compliant fishery. There is no sustainability gain to be achieved by imposition of such a mandatory requirement.

Observer Coverage and Monitoring Approach

28. The [redacted] has had 100% observer coverage since 2009 – despite the fact that it ceased to be a 'foreign owned' vessel in 2015 – and, to date, has not caught one New Zealand sea lion.

29. Ninety percent observer coverage supports the accurate counting of mortality upon which the proposals are predicated and provides comfort that if a FRML were set under option three will not be exceeded. However, it must be noted that current New Zealand sea lion mortalities in each fishing year fall significantly below the FRML proposed in option 3, and we question the necessity for such a limit.

Duration of the Plan

30. Subject to the matters raised in this submission, and that of the DWG submission we support a six year duration of the plan.

Final Comments

31. Changing to a new, more direct approach to monitor sea lion mortality based on observed captures is supported. However the setting of a FRML limit should not unnecessarily act as a constraint on commercial fishing operations. FNZ considers all proposals in the consultation document are consistent with the environmental and information principles of the Act. Where that is the case, achieving the purpose of the Act requires that the option that imposes the least restriction on sustainable utilisation should be adopted.

32. We would like to meet with FNZ officials to discuss these matters and look forward to having further opportunities to comment on any detailed, concrete proposals for change in the future.

Yours faithfully

Aurora Fisheries Limited

Department of Zoology

Associate Professor Bruce C. Robertson
University of Otago
PO Box 56
Dunedin
NEW ZEALAND

Tel: [redacted]
Email: [redacted]

Thursday, 19 September 2019

Submission on the Squid 6T Operational Plan

Thank you for the opportunity to submit on the operational plan for SQU6T.

Summary

- **I support the proposal for a minimum of 90% observer coverage in SQU6T.** However, I want this level of observer coverage to extend to all fisheries in the New Zealand EEZ that interact with New Zealand sea lions (e.g. SBW, SCAMPI, etc).

- I support the aspiration of the sea lion TMP ("*promote recovery and ensure the long-term viability of New Zealand sea lions*" and lead to a "*non-threatened*" status) and hence **I support a lowering of the Fishing-Related Mortality Limit**. The FRML of 26 is a better option than the current FRML of 38 (note I do not support option 1, only the FRML of 26).

- **I do not support any of MPI's options (1, 2 or 3)**, because they are based on biased "peer-review" processes (see below). Also, the three options all allow for ongoing declines of sea lions to varying degrees when the pup production trend of the species is demonstrably still declining (Figure 1). This ongoing allowed impact is unacceptable in a threatened species and at odds with the TMP's goal.
- **I completely support Forest and Bird's Option 4 (see below)**, which proposes a temporary trawl exclusion zone at the Auckland Islands. I expect this option to be presented to the Minister in the Final Advice Paper.

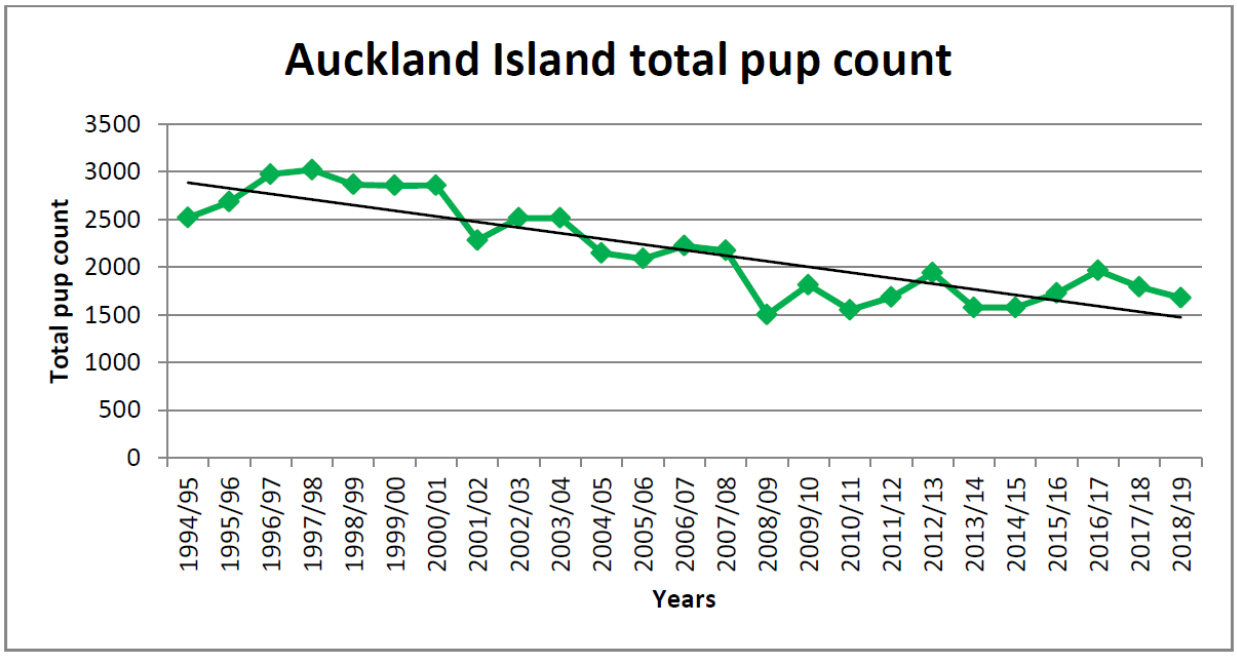

Figure 1 New Zealand sea lion pup counts at the Auckland Island from 1994/95 to 2018/2019.

I have lost faith in MPI's "peer-review" processes and hence the current management of the New Zealand sea lion bycatch. I do not trust the "science" that is coming out of MPI's processes and being used in the present consultation document or New Zealand sea lion management in general. Given this, **I cannot support any of MPI's three options outlined in the Consultation Document**.

Peer-review is just that, review by scientific experts in a field of their scientific expertise, not knowledgeable people making decisions that seem correct based on group consensus or majority vote. If government-initiated research is not reviewed by experts who can rigorously critique it, then it is just a rubber stamping exercise. Demonstrably, MPI relies heavily on knowledgeable people to undertake its "peer-review" processes rather than scientific experts.

MPI's "peer-review" meetings do not have the necessary expertise to adequately peer-review the sea lion research being undertaken. As such, research projects on New Zealand sea lions are "peer-reviewed" by a small group of government officials, fishing industry representatives, environmental NGO representatives and the occasional independent scientist who can find the time and resources to attend meetings in Wellington.

The biases in MPI's "peer review" are quite simply demonstrated in Appendix 1 of the Consultation Document (Squid 6T Operational Plan Technical Advisory Group (TAG)). On day 1 of the TAG meeting, 12 people attended to "peer-review" the research being presented – research that forms the basis of the present Consultation Document. Of these 12 people, only 1 person could be considered as an independent scientist, with all others being government officials, fishing industry representatives, environmental NGO representatives or researchers presenting their own research for peer-review. One independent scientist can hardly be considered rigorous peer-review.

MPI runs other peer-review processes for sea lions, such as the Aquatic Environment Working Group (AEWG). AEWG is often cited as support for research quality (e.g. statements such as "approved by AEWG" abound). However, similar to the TAG, AEWG's membership and meeting attendance means that the science is not "peer-reviewed" by the necessary scientific experts. This opens MPI's "science" process to the influence of vested interests and government lobbying.

In the case of the SQU6T TAG, I was unable to attend due to existing academic commitments. My peer-review of the research was not allowed by the fishing industry, who were adamant that only those who attended on the day should get their concerns recorded in the official documentation. Furthermore, my repeated requests to gain access to video data owned by the fishing industry that could help stakeholders better understand SLED efficacy have been denied.

My concern with the biases in MPI's "peer review" are easily dismissed by government and have been in the past. However, there are a number of strong examples that demonstrate the poor management outcomes that have arisen from MPI's "peer review" process. A prime example is the setting of the FRML since the early 2000s, which has clearly resulted in unacceptably high FMRLs for over a decade (between 62 and 150) given what MPI is now proposing here (a low FRML = 26 sea lions) or currently has in place (FRML = 38).

The FRML has been set using modelling since the early 2000s; initially the Breen and Kim model and then the Breen-Fu-Gilbert (BFG) model. Since the mid-2000s, this modelling has been deemed to be the "best available information" ("as agreed by AEWG"). This modelling has suggested that the sea lion population, which was declining at the time, could sustain a FRML of 542 sea lions (the Cusp rule). With pup production in further decline between 2003/04 and 2010/11 fishing seasons, the FRML was set between 62 to 150 sea lions. Importantly, the modelling suggested that FRMLs in this time could be as high as between 222 and 555 sea lions annually and that the sea lion population still would be sustainable (see annual Final Advice Papers for these years).

After a decade of stakeholder concerns with the reliability of the modelling being repeatedly dismissed by MPI, in 2012, MPI announced it would review the modelling (ironically citing stakeholder concerns). The resulting expert panel review of sea lion management (Bradshaw et al 2013) supported stakeholder concerns and the BFG model was retired (2017) in favour of a new model, the PST model. With the PST model came a significantly smaller FRML of only 38 sea lions.

The setting of the FRML is a product of MPI's "peer review". In this process, serious concerns of various stakeholders were repeatedly disregarded, which were ultimately found to be correct (i.e. the BFG model is no longer used in sea lion management). MPI has also stated confidently for over a decade that the sea lion population, which was in significant decline in pup production, was sustainable in the face of between 62 and 555 sea lions potentially being killed each fishing season (i.e. large FRMLs).

Now, however, MPI tells stakeholders that the sea lion population can sustain only 26 to 38 sea lion deaths annually. <u>This shows that the past large FRMLs were unsustainable</u>; FRMLs that were the product of MPI's "peer review" process and agreed by AEWG.

I support Forest & Bird's Option 4 – the proposed temporary trawl exclusion zone at the Auckland Islands (Figure 2). Please see the Forest & Bird Option 4 Proposal for further details.

Forest & Bird's Option 4 is a pragmatic option that will allow squid fishing to continue around the Auckland Islands, but importantly will help remove remaining impacts of fishing on the sea lion population. As MPI's Quantitative Multi-Risk Threat Assessment shows, the sea lion population is impacted by multiple, cumulative threats, hence removing all human impacts that can be managed is imperative.

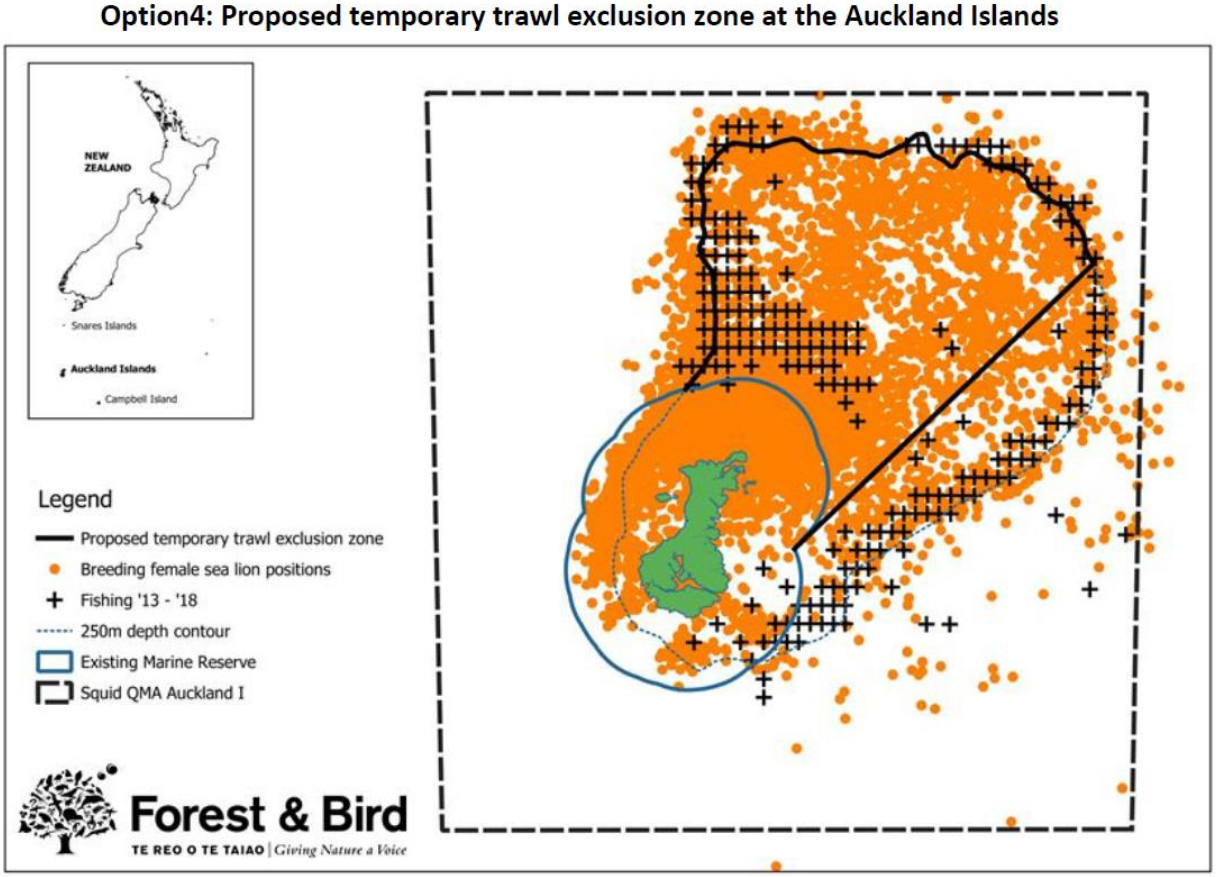

Figure 2. Forest & Bird's Option 4: a temporary trawl exclusion zone to be implemented for the 2019/2020 fishing season until the TMP is reviewed in 2022 (source Forest & Bird).

Yours sincerely

[redacted]

Associate Professor Bruce Robertson

From: Debs Butterfield [redacted]
Sent: Thursday, 8 August 2019 5:18 a.m.
To: FMSubmissions <FMSubmissions@mpi.govt.nz>
Subject: Submission on draft Squid 6T Operational Plan

Hello,
My name is Deb Butterfield. I am representing myself. My address is [redacted].

I support:

making the use of SLEDs mandatory across the fishery 100%
setting a minimum observer coverage target of 100%

Putting a limit on the number of sea lions that can be accidentally caught in the fishery before it is automatically shut down to 1 sea lion.

Despite best efforts being made I am sure by all parties involved, the fact is that sea lion numbers are still decreasing.

Sea lion deaths can never be justified by a dollar amount being made business wise. The equation is wrong morally if that is what we are trying to do.

I am also concerned that fishing will be removing food sources for the sea lions. This may force them to take risks to acquire food that they would not naturally take. Fishing activities in the sea lion area of operations needs to be managed stringently, or closed down if the sea lions are being adversely impacted.
Sea lions have as much right - if not more- to be fishing in their own environment. We have other choices we can make food wise. They do not.
Thank you for your consideration of this submission.
Kind regards
Deb Butterfield

20 September 2019

Squid 6T Operational Plan Consultation
Attn: [redacted] Fisheries Management
Deepwater Fisheries Management
Fisheries New Zealand
PO Box 2526
Wellington 6140

By email to: FMsubmission@mpi.govt.nz

Dear [redacted]

PROPOSED SQU 6T OPERATIONAL PLAN

Please find attached Deepwater Group Limited's (DWG) submission on the proposed SQU 6T Operational Plan, on behalf of SQU 6T quota owners. DWG's shareholders collectively own 93.5% of the quota shares in the SQU 6T fishery.

Quota owners submit that a Fishing-Related Mortality Limit (FRML) is no longer necessary nor, at the levels proposed by Fisheries New Zealand (FNZ), will a FRML meet the terms of the Fisheries Act 1996 (the Act). Section 15 of the Act provides for an FRML to be established where the Minister considers it necessary to ensure the long-term viability of the sea lion population. The number of incidental mortalities has been reduced through the use of Sea Lion Exclusion Devices (SLEDs) to a level that poses no threat to the sustainability or to the future growth of the sea lion population (both in terms of the Auckland Islands subpopulation and the total New Zealand population). In these circumstances, an FRML is not appropriate.

The Act only permits an FRML to be imposed where the Minister considers it necessary to avoid, remedy or mitigate the effect of fishing related mortality on the sea lion population. This requires the Minister to assess the extent to which utilisation threatens the sustainability (long term viability) of the sea lion population. It has been clearly demonstrated that while occasionally there are individual sea lion deaths due to interactions with the SQU 6T fishery, these do not have any adverse effect on the Auckland Islands sea lion population.

Quota owners recognise that the Government and other interested parties may not be comfortable with a FRML not being set (despite FNZ having previously proposed this as an option) and may seek to characterise the decision as Government abdicating its role of stewardship of this endemic mammal's population. While Industry has no desire to put the Government in a difficult position, it is important that the Minister act in accordance with the requirements of the Act.

It is logical that when the reduction of impacts on protected species reaches very low levels such that there is no adverse effect on species or populations, the applicability of management and controls should be discussed and agreed, rather than simply imposed in a purported exercise of a statutory power. DWG's proven track record of responsible management and demonstrable commitment to continuous improvement in bringing interaction levels with protected species down to very low levels are such that the Minister, Fisheries New Zealand and the Department of Conversation can have confidence that the implementation of agreed measures will be effective.

After a period of development and continued vigilance, the fleet fishing in SQU 6T through DWG now has in place a proven and highly effective mitigation programme that has led to an order of magnitude reduction in the annual number of female sea lion captures. From a high of an estimated 80 mortalities per year (during the period 1994 to 1996), estimated annual mortalities have been reduced to average 2.4 over the last 6 years. It is notable that in 2015-16 zero sea lions were caught, with 92% of fishing effort observed. Industry supports the high levels of observer coverage to independently monitor self-reporting of captures and to provide independent validation of these outcomes.

Industry is proud of these mitigation achievements and remains committed to maintain and to further improve performance. In this regard industry welcomes the ongoing support and independent oversight by both Fisheries New Zealand and the Department of Conservation to ensure that our activities remain transparent and demonstrable to the public.

In advocating that a FRML is no longer necessary, industry could be characterised by some as having released itself from its commitment to ensure sea lion captures are reduced to the lowest feasible level. This is not the case. We seek to protect our investment, dedication and diligence over the last decade and in the fishery itself, but for Government to seek to continue to place increasingly unnecessary, constraining, and potentially unlawful limits on the fishery is not acceptable.

Acknowledging the above, we suggest the alternative approach of discussing and agreeing a mortality limit, based on accepting the other key management settings and parameters proposed in FNZ's Consultation Paper and supported in our submission. We welcome FNZ and DOC oversight so that our efforts remain transparent and demonstrable to the public.

Quota owners are ready to engage with Fisheries New Zealand on the implementation of agreed management measures providing the Government with assurances that interactions between the SQU 6T fishery and the Auckland Islands sea lion population continue to both be effective and to be accorded the appropriate management and security that they require.

Regards,

[redacted]

Deepwater Group Ltd

S:\Submissions\2019\Cover letter to FNZ SQU6T Operational Plan (180919).docx

20 September 2019

INDUSTRY SUBMISSION ON PROPOSED SQU 6T OPERATIONAL PLAN

Deepwater Group Limited (DWG) appreciates this opportunity to provide a submission on your proposed Operational Plan for the SQU 6T fishery (Fisheries New Zealand (FNZ) Consultation Paper No: 2019/17), on behalf of SQU 6T quota owners. DWG shareholders collectively own 93.5% of the quota shares in the SQU 6T fishery.

DWG representatives participated in the SQU 6T Operational Plan Advisory Group process which preceded the development of this plan.

The SQU 6T fishery is a major contributor to New Zealand export revenue, annually generating tens of millions of dollars. The estimated export value of SQU 6T from the 2019 season is $65 million.

SUMMARY

DWG strongly supports the adoption of the new methodology to estimate captures as follows:

- Use of observed captures as the base;
- Use of an appropriate methodology to scale from observed captures to an estimate of total captures by the SQU 6T fishery;
- Use of a cryptic multiplier of 1.3.

DWG strongly supports the continuation of the other management measures:

- Use of standardised and certified Sea Lion Exclusion Devices (SLEDs) for all tows in SQU 6T;
- Observers at not less than 90% of tows, subject to FNZ being able to provide observer coverage at that very high level;
- A trigger process to take account of significant and unforeseen relevant change(s);
- Notification and daily reporting; and
- An agreed process for closure of the fishery.

DWG supports a six-year term with appropriate triggers for any required review for this plan.

However,

DWG does not consider an FRML is required:

- The continuation of an FRML is not necessary because fishing-related mortality is not having an adverse effect on the New Zealand sea lion population. Effective mitigation measures have reduced the annual numbers of captures to a level that results in a less than 0.5% impact on the Auckland Islands population. The numbers of captures are well below the levels of the FRML as set in previous years for the SQU 6T fishery.
- The Fisheries Act 1996 (the Act) only allows the Minister to take measures necessary to mitigate the adverse effects of fishing on the sea lion population. In the current circumstances, where estimated mortalities will incur a less than 0.5% impact on the Auckland Islands population, and the population far exceeds the level required to ensure its long term viability, it is not necessary for the Minister to impose

an FRML. A 'no FRML' option should have been included in FNZ's proposed Operational Plan, as it has in past years, based on FNZ's recommendation.

- The exercise of the power in the Section 15(2) of the Act only relates to measures necessary to address the effects of fishing-related mortality on the protected species population. It is not a power to enable the Minister to arbitrarily impose unreasonably low limits on possible fisheries utilisation, or to progressively lower bycatch levels, to achieve a 'zero bycatch' outcome. The FRML options based on 2.5% and 5% impacts of fishing cannot reasonably be considered necessary to mitigate the effect of fishing-related mortality on the population.
- However, should the Minister decide that an FRML is required, then **DWG recommends** that the FRML be set in accordance with the Minister's powers to only take those actions necessary to mitigate the effect of fishing-related mortality on the sea lion population recognising that:
  - International settings and guidelines to achieve an equilibrium (optimum sustainable) population would be within the range of 50-70% of carrying capacity (or the level otherwise achieved by the population in the absence of fishing). This would exceed the level required to ensure the long term viability of the sea lion population, and;
  - The population size and threat status of sea lion, the stabilisation in the population after a previous decline (reflected by the reduction in the threat status), and the prospect of an increasing population arising from improved pup breeding and survival levels a more conservative setting of 80% of capacity (i.e. a 20% maximum impact by fishing), may be more appropriate than the international guidelines.

DWG does not support the proposal to regulate the compulsory use of SLEDs. This is both unnecessary and unreasonable given the implementation of a comprehensive programme many years ago which has resulted in universal use of SLEDs by all vessels on all tows in SQU 6T and the independent audit and certification for all SLEDs as meeting the required design standards before each fishing season. FNZ are well aware from the processes that are currently operated (and in which they are engaged) and all the checks and balances already in place that full use of standardised SLEDs has occurred every year for the past decade. DWG will continue to operate and support these essential processes.

BACKGROUND

Deepwater Group Limited

1. DWG is a non-profit organisation that works in collaboration with the Ministry for Primary Industries (MPI), FNZ, the Department of Conservation (DOC) and others to enable New Zealand to gain the maximum benefits from our deep water fisheries resources, managed within a long-term sustainable framework and recognising the effects of fishing on species other than those targeted by fishing activities.
2. DWG's vision is for New Zealand's deepwater fisheries to be trusted as the best-managed in the world.
3. DWG represents the owners of quota in New Zealand's major deepwater commercial fisheries, including those for hake, hoki, jack mackerel, ling, orange roughy, oreo, scampi, southern blue whiting and squid. Shareholders of DWG collectively own around 92% of the quota for deepwater fisheries in New Zealand and 93.5% of the quota for SQU 6T.
4. Since its inception in 2006, DWG (and the Squid Fishery Management Company prior to this time) has worked assiduously with the fleet, with relevant scientific and management bodies, with MFish, MPI, FNZ and DOC to minimise fishing interactions with sea lions and to support work that allows scientists and managers to better understand the changes in sea lion population sizes and the nature of the occasional interactions between adult sea lions and trawl fisheries.
5. Over the past decade this a range of actions and engagements have been successfully undertaken, including:
   - Direct involvement in the MFish SLED Working Group (convened at the request of the Minister of Fisheries and independently chaired);
   - Delivery of a comprehensive programme to ensure that SLEDs are used by all vessels in the SQU 6T fishery, and are independently certified as meeting the required design standards before each fishing season;
   - Engagement with and provision of data/laboratory samples to Massey University and to NIWA;
   - Support for FNZ's SQU 6T Operational Plans (and with FNZ's SBW 6I Operational Plan), including enhanced monitoring;
   - Providing additional resources and funds for veterinary work, extended field seasons and sea lion pup counts;
   - Full, active and constructive participation in all relevant DOC and FNZ technical and science working groups;
   - Support for the Pup Mortality Workshop and for disease research;
   - General support for the New Zealand Sea Lion Threat Management Plan and engagement in the processes to deliver the final version of the plan;
   - Development of Marine Mammal Operational Procedures to complement and strengthen the principles of the SQU 6T Operational Plan.
6. The squid trawl fishery is valuable, generating an estimated export revenue of $260 million across SQU 1T and SQU 6T from catches in the 2019 season. Given the two stocks fluctuate annually and without relationship to each other, the capacity required to maximise value requires access to both fisheries to manage economic risk.
7. DWG has liaised with Fisheries Inshore New Zealand Limited (FINZ) and Te Ohu Kaimoana in the preparation of this submission. FINZ endorses this DWG submission. Te Ohu Kaimoana will produce their own response (as shareholders of DWG they support this submission).

DWG's SUBMISSION

Management Actions to Align with Legislation

8. The measures contained in the SQU 6T Operational Plan are established under Section 15 of the Act.

9. Section 8 of the Act sets out the purpose as: *"to provide for the utilisation of fisheries resources while ensuring sustainability".* Ensuring sustainability means:
   - *"Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and*
   - *Avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment".*

10. Decisions need to align with the purpose of the Act, to balance utilisation and sustainability objectives, and to not reflect any unnecessary or inappropriate leanings towards either.

11. Section 9 of the Act sets out the environmental principles which must be taken into account in respect of to any decision or activity undertaken under the Act. The principles are:
   - *"Associated or dependent species should be maintained above a level that ensures their long term viability;*
   - *Biological diversity of the aquatic environment should be maintained;*
   - *Habitat of particular significance for fisheries management should be protected."*

12. It follows that the Act sets a population objective of maintaining protected species such as sea lion (as an associated species) above a level which ensures their long term viability.

13. Section 10 of the Act contains the following information principles:
"All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:
   - *Decisions should be based on the best available information;*
   - *Decision makers should consider any uncertainty in the information available in any case;*
   - *Decision makers should be cautious when information is uncertain, unreliable, or inadequate;*
   - *The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act."*

14. Decisions made in respect of the SQU 6T Operational Plan therefore need to be in accordance with the information principles, using the best available information but noting any uncertainties in that information and adopting caution where appropriate.

15. Section 15 of the Act sets out the Minister's responsibilities and powers for managing the fishing-related mortality of marine mammals and other wildlife. Section 15(2) states that (emphasis added):
"*in the absence of a population management plan, the Minister may, after consultation with the Minister of Conservation, take such measures as he or she considers are* ***necessary*** *to avoid, remedy or mitigate the effect of fishing-related mortality on any protected species and such measures may include setting a limit on fishing-related mortality*."

16. Section 15 accordingly permits the Minister to only take measures which are necessary to avoid remedy or mitigate adverse effects of fishing on a protected species. This requires the Minister to assess the extent to which (or perhaps the point at which) utilisation threatens the sustainability (i.e. long term viability) of the sea lion population.[1]

[1] *Squid Fishery Management Company Limited v Minister of Fisheries* (CA39/04) per McGrath J

DWG Marine Mammal Operational Procedures

17. In addition to the SQU 6T Operational Plan approved by the Minister, the DWG operates Marine Mammal Operational Procedures[2] which specify that vessels must:
    - Have SLEDs built to the FNZ Operational Plan specifications and have these audited pre-season;
    - Carry a minimum of two certified SLEDs per vessel;
    - Notify immediately any damage, change or transfer of SLEDs;
    - Carry digital cameras and send identification photos of pinnipeds caught in either SQU 6T or SBW 6I;
    - Report every capture immediately to DWG and provide details of the capture event on the form provided to fleet.
18. Further, the fleet annually collectively agrees to additional measures to support the FNZ Operational Plan including:
    - Agreement that all capture events are notified to the fleet with details of which vessels and any relevant circumstances related to the capture event. This ensures collective understanding of what is happening and if risk exacerbators are identified or explicable they are advise to all;
    - Industry trigger of five captures where it is agreed to meet collectively and discuss circumstances of captures and any further actions that could or should be considered;
    - No vessel will fish in SQU 6T without a certified standard SLED and any vessel that has damaged their SLEDs beyond standard will leave the fishery until repaired and re-checked.

New Zealand Sea Lion Population

19. The New Zealand sea lion population increased in size during the period 1992-97, despite high fishing effort with virtually no mitigation measures in place. A subsequent decline in numbers at Auckland Islands commenced in 1998, associated with reduced adult and pup survival. From 2002 to 2008 the decline continued, with modelling indicating that this was driven largely by the ongoing chronic effects of *Klebsiella pneumoniae* in this population. Since 2009, pup production estimates indicate the sea lion population has likely stabilised and may in fact be likely to be again increasing in size.
20. Estimates of the total sea lion population (i.e. across all subpopulations) of 11,800 (including pups, immediately after pupping) and 9,400 (excluding pups, immediately prior to pupping), were provided by Roberts and Doonan[3] for the 2016 TMP.
21. In 2019 the expert panel that undertook the Threat Review Classification for DOC[4] re-classified New Zealand Sea Lions from a "Nationally Critical" status to "Nationally Vulnerable", an improvement (i.e. reduction in threat status) of two steps in their classification. That re-classification was acknowledged as being precautionary, with pup production stable in the Auckland Islands and Campbell Islands populations and increasing at both Stewart Island and on mainland New Zealand.
22. Under the stable population growth scenario considered by Roberts (2019)[5] it is estimated that if sea lion mortality from fishing is at the median of recent estimated levels, then the population size in 2025 will be 99.5% of the unimpacted population size.
23. Roberts' stable pup production scenario is based on demographic rates estimated for the last 10 years (2010 to 2019). MPI's web page (https://www.fisheries.govt.nz/news-and-resources/consultations/draft-squid-6t-operational-plan/) has the population trajectory for the Auckland Islands female sea lion

[2] https://deepwatergroup.org/wp-content/uploads/2014/07/Marine-Mammals-Operational-Procedures-2014-15.pdf

[3] Roberts, J.; Doonan, I. (2016). Quantitative Risk Assessment of Threats to New Zealand Sea Lions. New Zealand Aquatic Environment and Biodiversity Report No. 166. 111 p

[4] https://www.doc.govt.nz/globalassets/documents/science-and-technical/nztcs29entire.pdf

[5] https://www.fisheries.govt.nz/dmsdocument/36372-aebr-223-the-population-effects-of-new-zealand-sea-lion-mortality-scenarios-relating-to-the-southern-arrow-squid-fishery-at-the-auckland-islands

population from this modelling (reproduced in Figure 1), which shows an ongoing slow decrease in the estimated population size over the last decade.

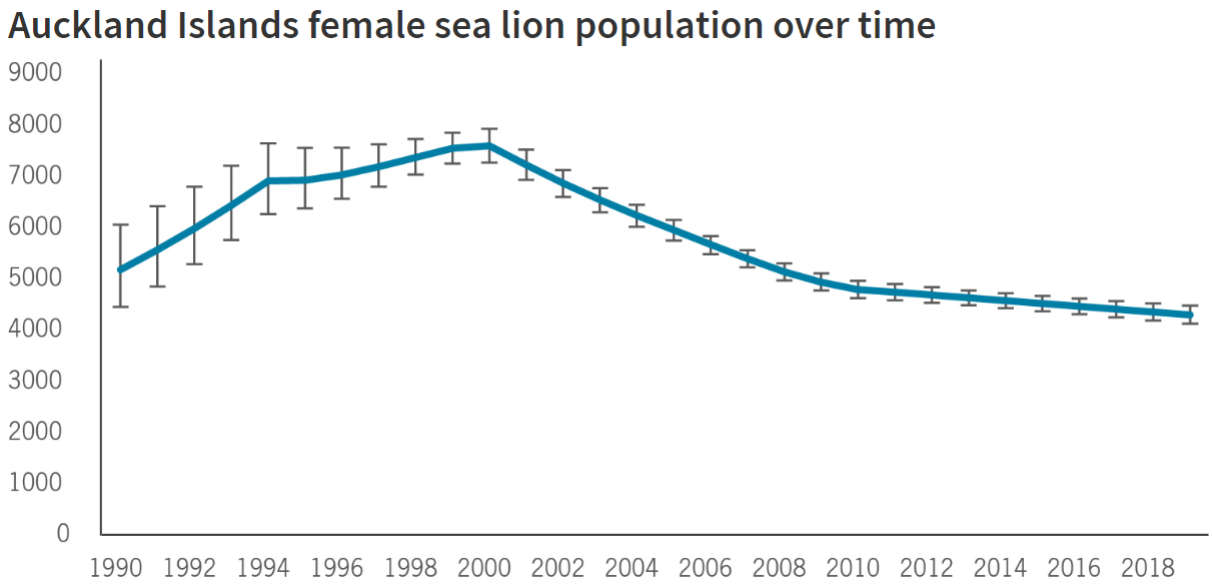

Figure 1: Auckland Islands female sea lion population size estimates 1990 to 2019

24. We note that this modelling is based on mark-recapture data that are obtained primarily from the Sandy Bay colony but are assumed to be representative of the wider Auckland Islands population. The Sandy Bay colony produces approximately 20% of total pup production for the subpopulation. However, the trend in pup production since 2009 at Sandy Bay shows a small decrease (Figure 2) while the pup production trajectory at Dundas Island shows an increasing trend (Figure 3). The possibility that demographic rates estimated from data from the Sandy Bay colony are less favourable than those from the majority of the population deserves proper consideration as it will bias population projections downwards.

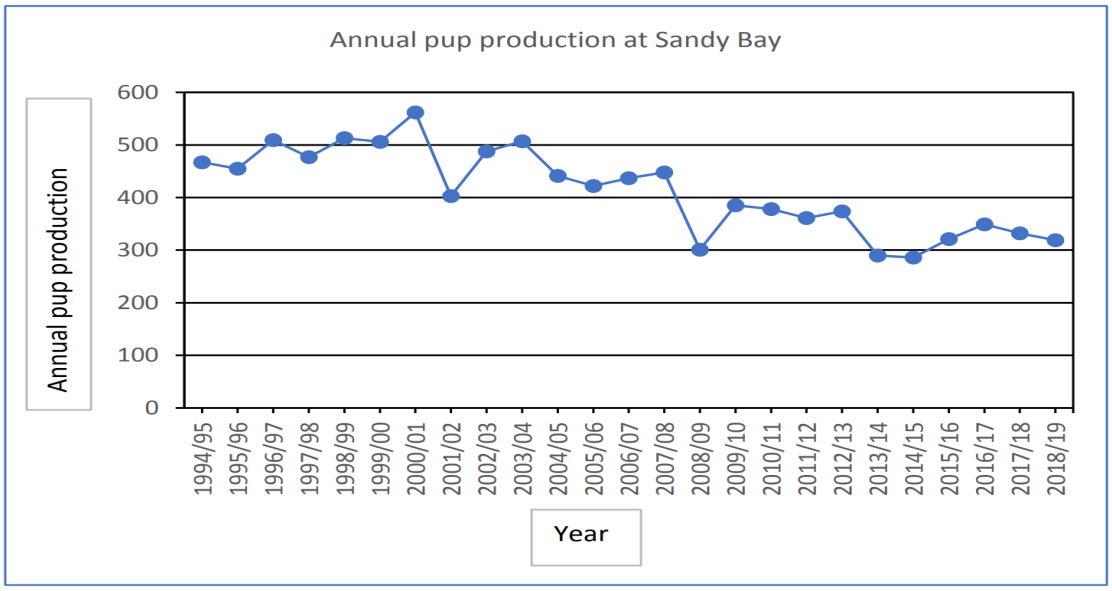

Figure 2: Annual pup production at Sandy Bay colony (data from DOC's *New Zealand Sea Lion Monitoring and Pup Production at The Auckland Islands 2018/2019 Research Report*)

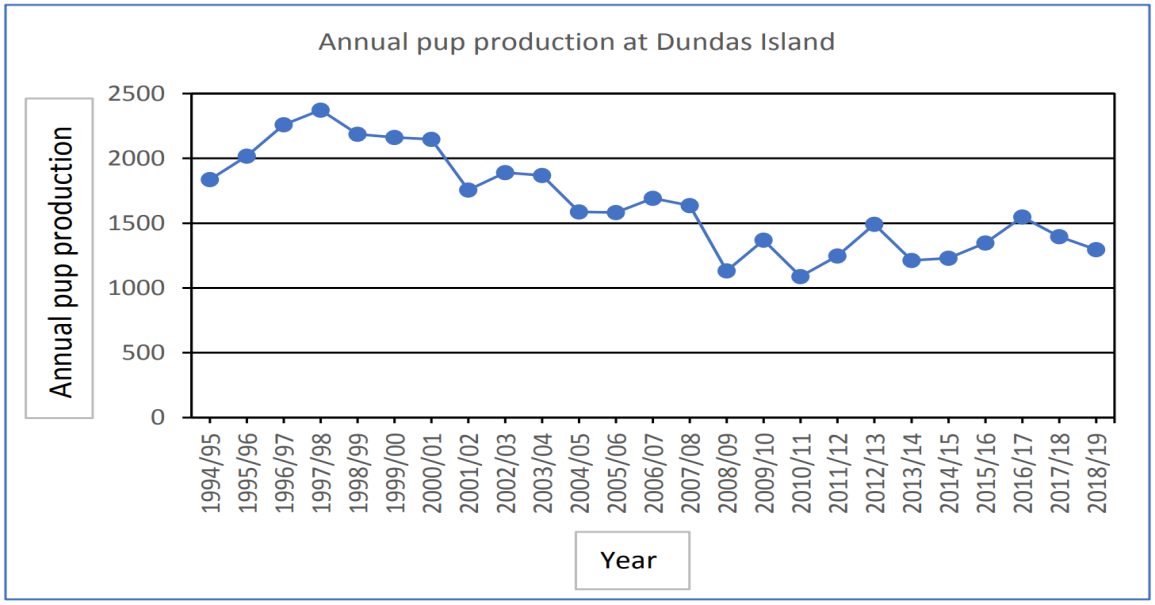

Figure 3: Annual pup production at Dundas Island colony (data from DOC's *New Zealand Sea Lion Monitoring and Pup Production at The Auckland Islands 2018/2019 Research Report*)

Threat Management Plans

25. A sea lion recovery plan was established in 1995. A sea lion management plan was established in 2009. The development of a Threat Management Plan (TMP) commenced in 2014 and was subsequently approved by the Minister in 2017 for the period 2017 to 2022.

26. The sea lion TMP, approved in July 2017, contains the following vision and objectives:
    - The vision is to:
        - *"Promote the recovery and ensure the long-term viability of New Zealand sea lions, with the ultimate goal of achieving 'Not Threatened' status"*
    - The objectives are to:
        - *"Halt the decline of the New Zealand sea lion population within 5 years" and*
        - *"Ensure the New Zealand sea lion population is stable or increasing within 20 years, with the ultimate goal of achieving 'Not Threatened' status."*

27. The modelling results of the Auckland Islands population[6], which informed the TMP indicated that it was disease, not fishing-related mortality, which was the key factor influencing the trajectory of that subpopulation.

28. As the 2019 improvement in threat ranking demonstrates, the sea lion population is likely to be stable in line with the TMP objectives. This combined with the best available information demonstrating that fishing-related mortality is not having an adverse effect on the populations, strongly suggests an FRML under Section 15(2) of the Act is not necessary.

SQU 6T Operational Plans

29. Operational Plans for the SQU 6T fishery were first implemented in 1990. These plans are based around operational procedures and a maximum allowable number of fishing-induced mortalities.

30. From 1992, the plan was based on the concept of a Maximum Allowance for Fishing-Related Incidental Mortality (MALFiRM). In 2004, the MALFiRM was replaced by a Fishing-Related Mortality Limit (FRML) as the key component of the operational plan. This was essentially a change in terminology.

31. The use of a predetermined estimated strike rate to monitor the FRML was adopted in 2003 as a consequence of the industry-led initiative to use SLEDs on all vessels operating in the fishery. As FNZ has recently acknowledged, scientific information has confirmed that SLEDs have significantly reduced the occurrence of fishing-related mortality in SQU 6T.

32. The discussion paper suggests that the FRML/MALFiRM has ranged from 115 in 2004-05, when the limit was reached and the fishery was closed, to 38 in the 2017-19 Operational Plan. This is incorrect. The FRML of 115 was set by the Minister following the industry's successful judicial review of the then Minister's imposition of an FRML of 62. The Court of Appeal found that in setting the FRML the then Minister had failed to assess the extent to which fishing-related mortality adversely affected the sea lion population and accordingly make a decision on that basis. The industry voluntarily withdrew from the fishery (it was not closed) when the FRML of 115 was reached (based on the applicable strike rate of that time). In 2006, the FRML was increased in season from 96 to 150 as a consequence of the FRML constraining utilisation due to squid abundance and the best available information demonstrating that fishing-related mortality could be higher than the FRML without imposing an adverse effect on the sea lion population.

33. Since that time and despite the best available information consistently demonstrating that fishing-related mortality is not detrimentally affecting the sea lion population and an FRML is not necessary (as FNZ has previously acknowledged), progressively lower FRMLs have been imposed. As DWG explained to the Minister in response to the decision in the 2017-19 Operational Plan, the imposition of an FRML based on a 5% impact of fishing was based on erroneous advice, failed to take into account

[6] Roberts, J.; Doonan, I. (2016). Quantitative Risk Assessment of Threats to New Zealand Sea Lions. New Zealand Aquatic Environment and Biodiversity Report No. 166

the best available information and went far beyond what could be considered reasonably necessary to prevent adverse effects on the sea lion population.

34. The industry's concern about the lawfulness of the Minister's decision has only been exacerbated by the FRML options proposed in the 2019 discussion document which inexplicably include a 2.5% impact of fishing option requested by eNGOs, acceded to by FNZ and presumably based on a "zero bycatch" goal (or philosophy). FNZ has also unreasonably suggested that the option based on a 10% impact of fishing is "not preferred" simply because it would result in a higher FRML.

Fisheries Mortality

35. The estimated annual numbers of female mortalities in the SQU 6T fishery and the FRMLs that applied each year over the 30 year period 1990 to 2019 are shown in Figure 4.

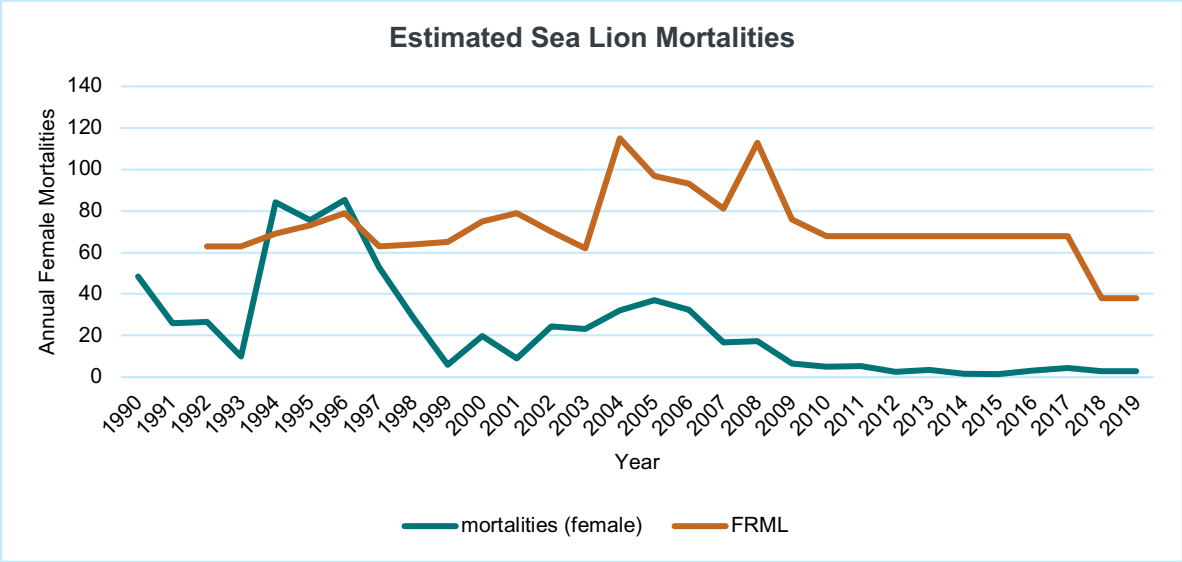

Figure 4: Estimated numbers of sea lion mortalities and the FRMLs set for the SQU 6T fishery 1990 to 2019

36. Of particular significance is the substantial reduction in the numbers of female mortalities, particularly since 2009 when SLED design was standardised. From a high of an estimated 80 mortalities per year (during the period 1994 to 1996), annual mortalities have been reduced to average 2.4 over the last 6 years. Mortalities in the last decade have averaged only 5.8% of the FRMLs.

37. The successful effects of mitigation initiatives, such as SLEDs and industry's Marine Mammal Operational Procedures, have reduced the annual numbers of mortalities due to fishing to such low levels that obtaining further substantial reductions will be difficult to achieve.

38. It is notable that in 2015-16 zero sea lions were caught, with 92% of fishing effort observed.

DWG COMMENTS ON FNZ's DRAFT OPERATIONAL PLAN

39. FNZ is consulting on the parameters for the SQU 6T Operational Plan for 2019-20. They propose the following options for the consideration of submitters:
    - Options for fishing-related maximum impact
        - Option 1: 2.5% maximum impact with an annual FRML of 26
        - Option 2: 5% maximum impact with an annual FRML of 52; and
        - Option 3: 10% maximum impact with an annual FRML of 104 (said to be not preferred by FNZ)
    - Mandatory use of Sea Lion Exclusion Devices
    - New methodology to monitor performance of the Operational Plan based on:
        - Observed captures;
        - Use of fatal interaction rate of 2.3 deaths per 1,000 tows for unobserved fishing activity;
        - Use of 1.3 scalar for cryptic mortalities.
    - Minimum target for observer coverage of 90% of tows
    - Duration of Plan – FNZ is proposing either a four or six year duration;
    - Trigger points for review – FNZ is proposing the trigger for a review should be if any significant new information becomes available that indicates:
        - Fisheries activities are having a different impact on sea lion survival than estimated in 2019;
        - If there are changes in fishing operations or level of effort; or
        - If there are significant new concerns regarding the sea lion population.
    - Fishery Closure Process - FNZ is proposing a closure if the FRML is reached.
40. DWG has reviewed FNZ's proposals and submits following comments.

Population Outcomes for New Zealand Sea Lion

41. FNZ has provided three options for the population outcomes for New Zealand sea lions. The options provided in the draft plan allow for the population of sea lions to be 97.5% (Option 1), 95% (Option 2) or 90% (Option 3) of the size that would be attained by the population in the absence of fishing.
42. For reasons unspecified in the consultation document, FNZ has labelled Option 3 as *"Not Preferred"*. In response to DWG's request for the rationale and supporting information for this unexplained approach, FNZ stated the reason as being "*This Option is not Fisheries New Zealand's preferred option given the high number of mortalities it would allow (104) compared to recent observed mortalities of 3-5 per year (higher this year*)".
43. This is neither a justifiable nor a lawful reason for not preferring the 90% option. The Court of Appeal has made it clear that the political acceptability of an increased FRML is an irrelevant consideration[7]. FNZ's approach also suggests that the outcome of the consultation process is predetermined in favour of either the 95% or 97.5% option.
44. FNZ's response also reinforces the very point which the industry has repeatedly made and which FNZ has previously accepted[8] - an FRML is not necessary because fishing-related mortality cannot reasonably be regarded as compromising the sustainability of the sea lion population and the use of SLEDs effectively mitigates any risk, as reflected in the level of observed and estimated mortalities each year over the last decade.
45. FNZ's position that the 90% option is *"Not Preferred"* is inconsistent with the previous agreed approach to population management objectives over many years:

[7] Squid Fishery Management Company Limited v Minister of Fisheries (CA30/04) per McGrath J

[8] FNZ Final Advice 2012

- From 2003 to 2017 the FRML was set based on population modelling using a 90%K (where K is the carrying capacity) or a maximum fishing impact on the population of 10% with 90% certainty, described by FNZ as *"agreed, conservative"* management criteria.
- For the 2017 Operational Plan, and consistent with the previous conservative management criteria, FNZ instructed NIWA to adopt a new PST criterion for population modelling of a 90% population size in the absence of fishing with 90% certainty - the very option that FNZ now describes as *"not preferred"*.
- FNZ then unilaterally changed the conservative management criteria and recommended that the Minister impose an FRML based on a 5% option (i.e. allowing for the impact of fishing the future population size would be 95% of the size that would be attained by the population in the absence of fishing). This was said to be due to a concern (without further explanation) that a 90% option "*would result in a higher FRML*" which FNZ "*does not consider would be appropriate at this time*". As the industry pointed out to the Minister in February 2018, the Minister's decision to follow FNZ's recommendation was misinformed and based on erroneous advice.

46. FNZ's approach is all the more surprising given that the modelling for the 2019 Operational Plan has introduced even more conservatism into the '90% option' by increasing the certainty requirement from 90% to 95%. Further, as FNZ has acknowledged, this option is conservative because the modelling is based on the Auckland Islands subpopulation only and assumes that the full FRML limit is reached each year (that is the worst case) when in reality the actual level of fishing-related mortality is far lower (<10% of the FRML if the 90% option was adopted). As the modelling demonstrates, if future fishing-related mortalities are equal to the average across the recent estimated period, the population is estimated at 99.5% of that in the absence of fishing with 95% certainty. This reinforces DWG's view that the FRML is not necessary.

47. The proposal to introduce a more conservative approach is also at odds with the DOC Threat Status review panel 2019 decision to reduce the threat status of New Zealand sea lions from "Nationally Critical" to "Nationally Vulnerable".

48. The FINZ response to the draft TMP for Hector's and Maui dolphins contains considerable discussion of the setting of population outcomes for marine mammals. Their review of relevant international literature indicated:
    - Marine mammal populations can recover from very low levels of abundance, as shown in the research by Magera[9]
    - The US Marine Mammal Protection Act specifies management for an "optimal sustainable population" level, which is defined by the US National Marine Fisheries Services (NMFS) as *"a population level between carrying capacity and the population size at maximum net productivity".*
    - Taylor (2003)[10] establishes NOAA guidelines for the recovery of endangered marine mammals, suggesting recovery factors of 0.1 for species with a small abundance and high risk of extinction to 0.5 for species with high abundance (>5,000) and low risk of extinction to1.0 for large populations not at risk of extinction. They would translate to populations outcomes of 95%, 75% and 50% respectively.
    - An optimal sustainable population level for marine mammals is thought to be between 50–85% of capacity, but generally 60% is used, and the International Whaling Commission assumes 60% is the level at which whale populations are most productive[11].

[9] Magera, AM, Mills Flemming, JE, Kaschner, K, Christensen, LB, & Lotze, HK. (2013). Recovery trends in marine mammal populations. PloS one, 8(10). e77908. doi:10.1371/journal.pone.0077908.

[10] Taylor B L, Scott M, Heyning J E, and Barlow J, 2003 Suggested Guidelines for Recovery Factors for Endangered Marine Mammals under the Marine Mammal Protection Act, NOAA Technical Memorandum NMFS, NOAA-TM-NMFS-SWFSC-354

[11] Magera, AM, Mills Flemming, JE, Kaschner, K, Christensen, LB, & Lotze, HK. (2013). Recovery trends in marine mammal populations. PloS one, 8(10). e77908. doi:10.1371/journal.pone.0077908.

- The Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS) has adopted a population objective for small cetaceans to restore and/or maintain stocks/populations to 80% or more of the carrying capacity[12].

49. A consistent approach to population management objectives, having regard to their relative status, should be adopted for marine mammal populations. FNZ has acknowledged that managing human-induced mortality with a high degree of certainty so that the population is maintained at 50% of carrying capacity would ensure that the population remained above a viable level. While a setting of 95% of capacity might be appropriate for Maui dolphins, it needs to be remembered that Maui dolphin has an abundance of only 63 adult dolphins, is a biennial breeder, has a Nationally Critical threat status (two levels of more concern than sea lions) and is effectively under a major rebuild scenario with extensive protection measures in place. We do not consider sea lions to be in a comparable position.

50. Although FNZ proposed a 90% population outcome for Hector's dolphins, that is considered to be excessively high when compared to the international guidelines and comparatives.

51. New Zealand sea lions are not comparable to Maui dolphins but have more comparable circumstances to Hector's dolphins, having:
    - arrested a previous decline in abundance;
    - a stabilising or stabilised population;
    - a population considered viably large for a marine mammal;
    - a Nationally Vulnerable threat status; and
    - only a low risk of extinction.

52. We therefore consider a more appropriate population outcome for sea lions would be 80%.

53. We note the population outcomes have a fisheries impact objective of 95% certainty. While that level of certainty may be appropriate to Maui dolphins in their rebuild phase, it is not appropriate for sea lions and is inconsistent with the 90% certainty used in population modelling since 2003 and that used to set the 2017 the FRML for the 2017 Operational Plan and the recent improvement in the threat status of sea lions. Sea lions are intensively managed with annual pup production counts, annual tag-recapture information, disease research, monthly and annual monitoring of fishing activity and mortalities, high levels of observer monitoring, and effective mitigation measures, the monitoring framework for sea lions and their threat status, a more appropriate level of certainty would be 50%.

Need for an FRML within this Operational Plan

54. Under Section 15(2) of the Act, the Minister can only take such measures as are **necessary** (which means reasonably necessary) if fishing-related mortality is threatening the sustainability or long term viability of the sea lion population. In doing so, the Minister is required to balance the Act's objectives of providing for utilisation while ensuring sustainability, provided for the environmental principle of managing above long term viability, and may take a precautionary approach if the best available information is uncertain.

55. The draft Operational Plan indicates that fishing does not pose a significant threat to the long-term viability of the sea lion population and that the removal of fishing would have only a negligible impact on the future growth rate:

> *"When future squid fishery deaths were equal to the average across the most recent estimated period, the mature female population status in 2025 was 99.5% of that estimated in the absence of future squid fishery mortality (95% CI = 99.5%–99.5%).[13]".*

[12] MOP 2: Resolution on Incidental Take of Small Cetaceans (Bonn 1997).

[13] https://www.fisheries.govt.nz/dmsdocument/36372-aebr-223-the-population-effects-of-new-zealand-sea-lion-mortality-scenarios-relating-to-the-southern-arrow-squid-fishery-at-the-auckland-islands

56. We are unable to understand why, with the above comment in the advice to inform the plan, the draft plan provides the following comment:

    "Based on the updated analyses, the squid fishery is estimated to be having less than a 1.5 percent impact on the sea lion population".

57. The population has stabilised, as reflected in the recent lowering of sea lion's threat ranking.

58. Given that estimated mortalities currently average only 7.3% of the current FRML (which DWG considers was imposed based on erroneous advice), setting an FRML to protect the sea lion population is unnecessary.

59. Some NGOs and commentators have advocated setting a low FRML based on an arbitrary 'zero bycatch' goal. Under the Act, zero bycatch is not an option unless the population is in such dire straits that zero mortality is the option necessary to protect the species at a population level. Consideration of the need to attain a 'zero bycatch' target would be unlawful in terms of Section 15(2) and an irrelevant consideration in accordance with the Court of Appeal judgment.

60. It is difficult to understand how FNZ can rationally describe the previous conservative objective of 90% as *"not preferred"* on the one hand and on the other include an option based on a 97.5% objective – a level significantly higher than the 95% proposed population objective for the nationally critical Maui dolphins. one which FNZ described as a level as near as practicable to zero.

61. The setting of an FRML is to establish the protection from fishing-related mortality necessary to ensure the long term viability or sustainability of a protected species. In circumstances where fishing-related mortality is demonstrably not adversely affecting the sea lion population (0.5% impact) and where the population is already well above the level required to ensure its long-term viability, it is not lawful for the Minister to set progressively lower FRMLs as part of what appears to be a bycatch reduction programme.

62. The argument has been advanced that, even if an FRML is unnecessary to mitigate the risk of fishing-related mortality compromising the long term viability of the sea lions, it nevertheless might act as a backstop to that risk. The Minister has other powers in Section 16 of the Act to address an emergency such as a sudden and significant increase in mortalities and/or decline in the sea lion population.

The Fishing-Related Mortality Limit (FRML)

63. As discussed above, an FRML is not necessary to address the effect of fishing-related mortality on the sea lion population, given the proven efficacy of SLEDs in reducing mortalities and that the sea lion population is well above the level required to ensure its long-term viability. At the very least, a no FRML option should have been included in the discussion document (as has been advised previously in 2012) along with the conservative 90% option and an option based on an 80% population objective.

64. The imposition of an FRML based on a 95% objective (let alone a 97.5% objective) could not be reasonably considered necessary to ensure the sustainability of the sea lion population.

Monitoring Mortality Levels

65. This plan proposes a new methodology for the estimation of fishing-related mortalities.

66. Whereas the previous approach relied on assumptions as to a strike rate and a discount factor, this plan proposes to move to a new basis, using the observed number of captures scaled for any unobserved fishing activity and a cryptic scalar to reflect the possibility of mortalities after a sea lion exits a SLED.

67. Observed captures are used as the basis for the calculation. With high observer coverage, the primary input of captured animals is robust. DWG support a target of 90% observer coverage.

68. There is a need for a process to estimate total captures from the fishery (i.e. to scale from the observed tows to the total number of tows conducted in the SQU 6T fishery). FNZ proposes to do this by using

actual observed captures from observed tows and by applying a fixed rate of 2.3 mortalities per 1,000 tows to the unobserved tows.

69. Actual capture rates are known to vary from year to year, and a fixed rate assumption is therefore not ideal. In the figure below (**Figure 5**) we compare model-based estimates, a simple ratio estimate, FNZ's proposed methodology applied to all tows, and observed captures

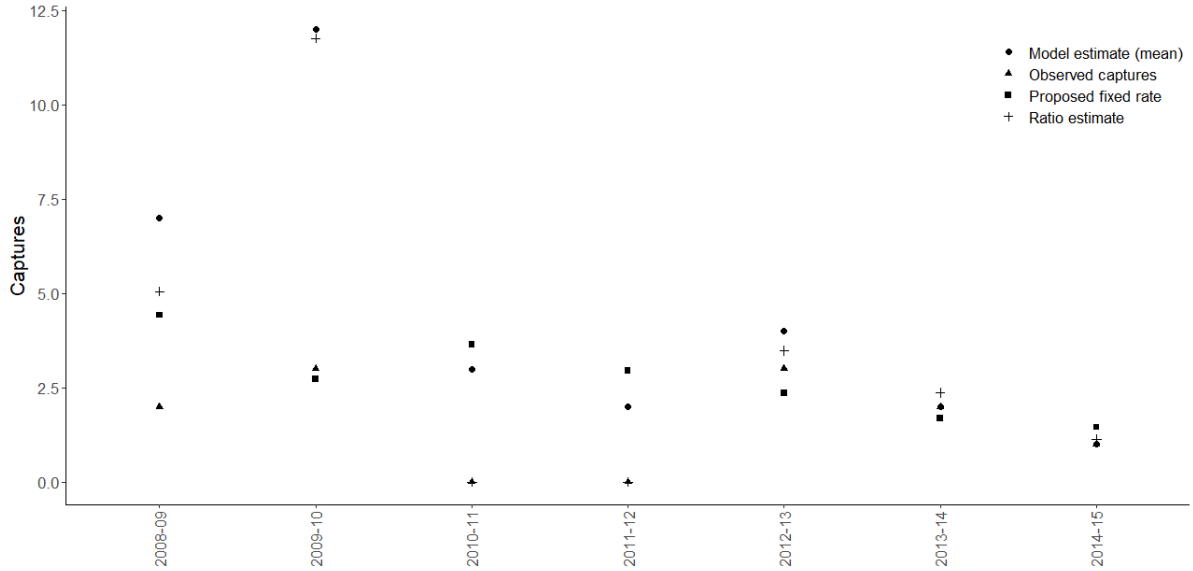

Figure 5: Comparison of sea lion model estimates, numbers of observed captures, MPI's proposed fixed rate and a simple ratio applied to all tows in the SQU 6T fishery for the years 2008-09 to 2014-15 (from Table A3, page 66 in Abraham, E.R.; Berkenbusch, K. (2017). Estimated captures of New Zealand fur seal, New Zealand sea lion, common dolphin, and turtles in New Zealand commercial fisheries, 1995–96 to 2014–15. New Zealand Aquatic Environment and Biodiversity Report No.188.)

70. Taking the model-based estimates from AEBR 188 as the best estimate of captures, it is clear that both the proposed fixed rate approach and a simple ratio estimator can both miss the mark in terms of providing a robust estimate that takes account of interannual variation in rates. Although this illustration is simplistic in applying the fixed rate to all tows (rather than just the unobserved proportion as proposed) DWG suggests that – with the advent of daily electronic catch-effort reporting and a high level of observer coverage – it is unnecessary to resort to simplified calculations for in-season monitoring. There is potential to provide statistically robust estimates of captures on a regular basis (weekly or even daily), rather than only via a post-season analysis.

71. The proposed cryptic scalar of 1.3 has been the outcome of a considerable scientific analyses of all available information, robust modelling of possible scenarios and comprehensive scrutiny by the Aquatic Environment Working Group. AEWG discussion of the approach and the modelling was particularly robust and informed.

72. DWG supports a scalar of 1.3.

73. This approach provides far more certainty for estimates of total mortalities than the previous approach and can be readily determined for management purposes.

74. DWG supports the new methodology.

Mandatory Use of Sea Lion Exclusion Devices

75. FNZ has proposed that the use of SLEDs be made to be mandatory.

76. The proposal notes:
    - The non-regulatory commitment to use SLEDs in SQU 6T;
    - The requirement to carry a replacement SLED;
    - The auditing of the SLEDs.

77. If SLEDs were made mandatory under Section 11(3) of the Act, the penalty for a breach of that section is a maximum fine of $100,000 as noted in the Discussion Document. However, FNZ's Consultation Paper fails to also mention the draconian consequences of the automatic forfeiture of fish, proceeds of sale, fishing gear and vessels, upon conviction due to the strict liability nature of the offence.

78. The following table illustrates the high level of conformance with the use of SLEDs

Fishing year	Observer coverage	Tows with standardised SLEDs
2008/09	40%	100%
2009/10	26%	100%
2010/11	35%	100%
2011/12	45%	100%
2012/13	86%	100%
2013/14	84%	100%
2014/15	88%	100%
2015/16	92%	100%
2016/17	70%	100%
2017/18	89%	100%
2018/19	95%	100%

79. DWG opposes making the use of SLEDs mandatory by regulation for the following reasons:
    - SLEDs are required under a non-regulatory DWG Marine Mammal Operational Procedure;
    - The SQU 6T Operational Plan contains the specification of eligible SLEDs and requires their use;
    - All SLEDs are audited prior to the season commencing;
    - Use of the SLED is already at a 100% level and has been for over a decade, demonstrating that a non-regulatory commitment and processes work;
    - Maintenance of regulated devices is fraught with problems and stifles innovation and improvements being made to devices;
    - Any breach would result in draconian consequences upon conviction due to the strict liability nature of the offence – up to a $100,000 fine and the automatic forfeiture of fish, proceeds of sale, fishing gear and vessels.

80. There is a general principle that Government should not regulate matters that are performing adequately. The last 10 years of exemplary conformance to deployment of SLEDs that meet the standards set by Government with high oversight must support not making SLEDs a mandatory requirement under Section 11 of the Act.

81. The proposed use of Section 11 to impose the mandatory use of SLEDs as a sustainability measure is also inappropriate. The focus of Section 11 is on the sustainability of stocks, whereas the Minister has the ability to implement measure necessary to avoid, remedy or mitigate the effect of fishing on a protected species such as sea lions under Section 15(2), and under Section 15(4) may recommend the making of regulations considered necessary for the purpose of implementing such measures.

82. DWG does not support making SLEDs a mandatory requirement as it is unnecessary to do so.

83. DWG seeks assurances that FNZ will maintain its oversight role with regard to the audit and use of SLEDs in the SQU 6T fishery.

Monitoring of the SQU 6T Fishery

84. DWG notes that observer coverage has been high in recent years and should continue for the duration of the plan.

85. FNZ proposes that a minimum of 90% of tows should be observed by FNZ observers.

86. While DWG would support that target, it is dependent on three conditions:
    - That all vessels have at least one observer on them;
    - That due to cost and fact that vessels only undertake 2-3 tows per day that not all vessels have two observers;
    - The failure of FNZ to provide an observer on a vessel, provided notification requirements have been met, will not preclude that vessel fishing for SQU 6T.

87. DWG notes that in future reliance on this level of human observers may be reduced by using alternative monitoring tools once technology and policy allow for this, and that this may occur within the proposed six-year term of the plan.

Tow Limits

88. The consultation document notes that with an output performance management basis, tow limits would no longer be appropriate.

89. DWG agrees with that view.

Plan Duration

90. DWG supports a duration of six years with appropriate triggers for early review to provide some certainty to the management of the fishery.

91. DWG agrees with FNZ's rationale for the longer term.

Trigger Points for Review of the Operational Plan

92. FNZ is proposing the trigger for a review should be if any significant new information becomes available that indicates:
    - Fisheries activities are having a different impact on sea lion survival than estimated in 2019;
    - If there are changes in fishing operations or level of effort; or
    - If there are significant new concerns regarding the sea lion population.

93. FNZ have given some examples of the above being
    - Auckland Islands pup count that is less than 1,575;
    - Unusual mortality/disease event affecting large numbers of sea lion pups and/or adults;
    - If observed mortalities are significantly different to predicted mortalities based on SEFRA outputs. This would be estimated post-season once data is available. It would be calculated from observed mortalities and measured effort most likely based on 100 percent observer coverage;

- Evidence of substantial change in the captures of Auckland Islands sea lions in other fisheries (i.e. observed captures/capture rates).

94. It should be noted that DWG has agreed with the previous sets of triggers in previous years and has itself taken voluntary action when significant issues of relevance have occurred (e.g. voluntary reduction to the FRML in 2009 in response to the very low pup count in that year (and now, in hindsight, a nadir in pup production).

95. However, we are concerned with the need to review if observed mortalities are significantly different to predicted mortalities based on SEFRA outputs. The current SEFRA estimates of mortalities average 3 per year for the SQU 6T fishery. The significance of mortality levels should be relative to the sustainability of the population, not the SEFRA estimates and not the population outcome target. Changes in fishing operations and effort may be driven by wider economic concerns and should only be a cause for concern if the sustainability of the species is threatened. Change in itself is not a cause for review, consequential impact of such change is the cause for review.

96. Effectively, the review factor would evaluate the annual catch rate in SQU 6T – that might vary for a range of factors and might trigger a need for research but it would be unlikely that a review of the full plan should be triggered by a change in any one year.

97. DWG supports appropriate agreed trigger points being established for the review of the plan.

Fishery Closure Process

98. DWG supports that the fishery should be closed if captures threaten the sustainability of the species, noting that the FRML as discussed in the draft plan is not a sustainability measure.

99. DWG supports fishery closure if the agreed level of sea lion captures is exceeded, noting that this support is contingent upon the reasonableness of the setting of that level

DWG's RECOMMENDATIONS

100. Given the international practices for the setting of population outcomes for marine mammals, the circumstances of the New Zealand sea lion population and the intensive management of the SQU 6T fishery, **DWG cannot support** any of the population outcomes of 90%, 95% or 97.5% as proposed by FNZ in the consultation document and submits that an 80% outcome is appropriate.
101. Given that fisheries mortalities of sea lions will impact on the Auckland Islands population by only 0.05% and mortalities are estimated to be less than 10% of recent FRMLs, **DWG does not support** the setting of an FRML by the Minister and believes that an FRML is not a necessary measure in terms of Section 15(2) of the Act.
102. **DWG supports** the new methodology to monitor the extent of sea lion mortalities based on observed captures, the development of a statistically robust approach to scaling to 100% of effort, and a cryptic scalar of 1.3.
103. Given the 100% use of SLEDs by the SQU 6T fleet to date (and planned for future), the ongoing commitment in the Marine Mammal Operational Procedures to use SLEDs, and noting it is good practice not to regulate where there is no need to do so, **DWG does not support** making the use of SLEDs mandatory. DWG expects FNZ to maintain an oversight role in the audit and use of SLEDs.
104. **DWG supports** the minimum observer coverage being 90% but would prefer that all vessels fishing in SQU 6T carry at at least one observer to observe fishing activities.
105. Given the change to a direct estimate of mortalities and the low level of mortalities in general, **DWG does not support** the setting of tow limits or other utilisation limits on fishing activity.
106. Given the review provisions intended, **DWG supports** a six-year duration for the plan.
107. **DWG supports** the use of triggers to review the operational plan but considers that the triggers should relate to new threats to the sustainability of the sea lion population and not a deviation from projected patterns of impacts.
108. **DWG supports** the closure of the fishery where the sustainability of the sea lion population is threatened.

Please direct any queries in respect of this submission in the first instance to [redacted]

\Deepwater Group\Submissions\2019\DWG Submission on FNZ Proposed Operational Plan SQU6T 2019 (180919).docx

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20 September 2019

Squid 6T Operational Plan
Consultation Fisheries Management
Ministry for Primary
Industries PO Box 2526
Wellington 6011

Email:

FMsubmissions@mpi.govt.nz

Dear Madam/Sir

Submission on Consultation on the Squid 6T Operational Plan

Introduction

The Environment and Conservation Organisations of NZ (ECO) is the national alliance of about 50 groups with a concern for the environment and conservation. Some of these member bodies are themselves federations or multiple groups.

ECO has followed issues of conservation and environmental management and practice, law and policy since its formation in 1971-2 and we have member groups from all around New Zealand.

We have a number of well-qualified and experienced policy and resource management specialists in our Environmental Law and Management Group.

Key Points

ECO welcomes the wider range of options included in this operational plan but is still concerned that it does not include all the potential options available to the Minister and does not include the a zero bycatch goal for the sea lions.

ECO cannot support options 1 to 3 but considers the Option 4 proposal put forward by Forest

and Bird should be considered by Ministers.

The operational plan should be consistent with the goal in the NZ Sea lion Threat Management Plan to "promote recovery and ensure the long-term viability of New Zealand sea lions" and lead to a non-threatened status. New Zealand sea lion rapoka are globally recognized as an endangered species.

Options 1 to 3 would still allow the population to decline and not recovery.

The operational plan should:

- Include all fisheries that impact on the sea lions (eg scampi) and not just the squid fishery;
- Be precautionary in its management approach;
- Require 100% observer coverage in all fisheries in 6T area;
- Only apply for limited period as there is too much uncertainty on the bycatch and population trend;
- Acknowledge that change in fishing practices can exacerbate bycatch eg longer tows and turns;
- Recognize the uncertainty in the assessment of strike rate and discount rate;
- Research needs should be a requirement of an operational plan.
- Research using cameras on board vessels and nets should be used to further assess the impacts on the sea lions in all fisheries operating within their marine habitat.

Issues in Discussion Paper

Executive Summary

2. Purpose

Any operational plan should consider all fisheries and direct and indirect effects of fishing on sea lions.

3. Background

3.1 NZ Sealion threat status

The threat status:

- that the IUCN international experts group has assessed the NZ sea lion as a threatened species with a global ranking of endangered[1].
- That the Minister of Conservation has listed the sea lion as a threatened species under the Marine Mammals Protection Act.

[1] Chilvers, B.L. 2015. *Phocarctos hookeri*. *The IUCN Red List of Threatened Species* 2015: e.T17026A1306343. http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en. Downloaded on 20 September 2019.

ECO questions the decision to down grade the threat status of Sea lions under the DoC Threat Classification System processes and criteria which was contrary to the trend in population. The claim for the change was supposedly based on:
"apparent stabilisation in population size at the Auckland Islands since 2009 and increases in other breeding locations – Moutere Ihupuku/Campbell Island, Rakiura/Stewart Island and the mainland – during this time." (DoC, 26 May 2019).

The point on stabilization is contrary to the evidence which saw a continuing decline in pup numbers on the Auckland Islands from 1965 in 2016-17 to 1679 in 2018-19.

It is crucial that the any threat classification system is open, transparent and scientifically robust process. The IUCN Threat classification system meets those test while the DoC process and criteria, which is only accepted in New Zealand, needs wider review and reflection.

Internationally important area:

The Auckland Islands is a designated World Heritage Area and New Zealand sea lions were part of the reason for that status being granted.

3.2 NZ Sealion Threat Management Plan

The vision of the NZSL TMP is to:
"promote the recovery and ensure the long-term viability of New Zealand sea lions, with the ultimate goal of achieving 'Not Threatened' status".

The objectives are to:
1. Halt the decline of the New Zealand sea lion population within 5 years
2. Ensure the New Zealand sea lion population is stable or increasing within 20 years, with the ultimate goal of achieving 'Not Threatened' status.

MPI needs to be more pro-active in considering and reducing the environmental footprint of fisheries. The impact of fisheries on threatened species is an important global consideration.

3.3 NZ Sea lion Proposals

ECO supports the options being proposed by Forest and Bird to close part of the Auckland Islands shelf to trawling during the breeding season to protect foraging of breeding females and their pups.

The options put forward by MPI would result in impacts of between 2.5% and 10% of an endangered species. This would result in an annual sea lion mortality limit (FRML) of between 26 and 104 in the squid fishery.

None of these options would:

- Be consistent with the goals and objective in the Threat Management Plan;
- Acknowledge the ongoing declining state of the sea lion population;
- Give recognition to the endangered status of the sea lions.

The proposal by Forest and Bird is clearly a temporary measure. This will allow research into the success of alternative management options as the current management measures have clearly not succeeded and will not succeed in allowing the sea lion to recover.

The Forest and Bird option also ameliorate other indirect impacts of the fishery on sealions, including:

- Squid are a part of the sea lions diet;
- The benthic impact of bottom trawling on prey species that make up part of the sea lions diet;
- Allow breeding sea lions foraging to be undisturbed by trawlers during a critical part of the year.

3.4 Commercial Fisheries effects

3.5.1 Squid fishery

Ministers should note that:

- The TACC for this fishery is ad hoc and has no relationship to whether it is sustainable or not, or whether it meets the purposes and principles of the Fisheries Act 1996.
- That the squid fishery is highly variable.

Estimates of any economic loss from changes to protect the sea lion will always be highly speculative. Ministers should recognize that:

- The squid fishery is highly variable and that there is no guarantee of catches over 950 tonnes (the lowest catch of record);
- The fishing industry has known about the conflict with sea lions since the fishing squid fishing occurred around the Auckland Island and have taken that risk into account in their decision making;
- Any assessment needs to consider the impact of fishing on economic values other than direct financial values to the industry eg aesthetic, tourism, and intrinsic values. The Ministry has to consider the reasonable foreseeable needs of future generations to have a recovering sea lion population and wider economic values when considering utilisation.
- Same vessels also operate in squid 1T and this quota is consistently under-caught.
- That there are alternative fishing methods that could be used to catch this quota and

gain and economic return. The fishery is only closed to trawling and not to jigging.

Economic considerations cannot be only focused on the losses to industry. Economic considerations must consider the annual loss in natural capital and other values including option value and bequest value.

3.5.2 Scampi and other fisheries

Any operational plan needs to consider the cumulative effect of other fisheries that are known to impact on the sea lions. Observer coverage is low and patchy in the scampi fishery. It is time that MPI and DOC required all vessels fishing in the equivalent of the 6T area to have MPI observers.

3.5.3 Sea lion Exclusion Devices (SLEDS)

As SLEDs are used in several fisheries (eg squid and southern blue whiting) there needs to be further research on their use and effectiveness. Cameras and other new technology should be used to monitor their effectives.

4.0 Statutory Considerations

Statutory considerations include international obligations as well as NZ domestic law.

Marine Mammal Protection Act

This section should acknowledge that:

- There is a marine mammal sanctuary around the Auckland Islands that covers the territorial sea (out to 12 nautical miles).

Fisheries Act

Section 5 requires the Minister to consider international obligations. The Auckland Islands and the surrounding 12 nautical miles is a designated World Heritage Area and that the sea lions were a key reason for that status being granted.

Other international obligations relevant include the Biodiversity Convention provisions and the UN Convention of the Law of Sea including article 192 obligations to preserve and protect the marine environment.

Amongst these obligations is the United Nations Food and Agriculture Organisation (FAO) Code of Conduct on Responsible Fisheries (1995) which states that:

"6.5 States and subregional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available. The absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment."

Article 7.5 of the Code of Conduct further set out what constitutes precautionary management in fisheries.[2]

The United Nations Implementing Agreement on High Seas Fisheries and Straddling Stocks[3] includes a requirement on *"coastal States and States fishing on the high seas [to] apply the precautionary approach in accordance with article 6."* Article 6 includes requirements for:
"1. States shall apply the precautionary approach widely to conservation, management and exploitation of straddling fishstocks and highly migratory fishstocks in order to protect the living marine resources and preserve the marine environment.
2. States shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures."

~~Therefore, where information~~ is uncertain or unknown about the state of a stock or biological

[2] **7.5 Precautionary approach**
7.5.1 States should apply the precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.
7.5.2 In implementing the precautionary approach, States should take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities, including discards, on non-target and associated or dependent species, as well as environmental and socio-economic conditions.
7.5.3 States and subregional or regional fisheries management organizations and arrangements should, on the basis of the best scientific evidence available, inter alia, determine:
stock specific target reference points, and, at the same time, the action to be taken if they are exceeded; and stock-specific limit reference points, and, at the same time, the action to be taken if they are exceeded; when a limit reference point is approached, measures should be taken to ensure that it will not be exceeded.
7.5.4 In the case of new or exploratory fisheries, States should adopt as soon as possible cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures should remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment should be implemented. The latter measures should, if appropriate, allow for the gradual development of the fisheries.
7.5.5 If a natural phenomenon has a significant adverse impact on the status of living aquatic resources, States should adopt conservation and management measures on an emergency basis to ensure that fishing activity does not exacerbate such adverse impact. States should also adopt such measures on an emergency basis where fishing activity presents a serious threat to the sustainability of such resources. Measures taken on an emergency basis should be temporary and should be based on the best scientific evidence available.
[3] The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (in force as from 11 December 2001).

information, the decision should favour lower catch limits or more environmentally stringent regulations.

Case Law

Section 10 obligations are to apply the best available information but that the absence or uncertainty in information is not to take a measure to achieve the purpose of the Act. The Court of Appeal recognised that section 10(d) "emphasises the need for caution". The uncertainty over the bykill rate, the threat to the protection sea lion means that caution should err on side of a higher underlying kill rate per 100 tows.

As France J (2004)[4] stated "The Act does emphasise that 'Fisheries are to be used' (Westhaven Shellfish Ltd v Chief Executive of the Ministry of Fisheries [2002] 2 NZLR 158 at para [46]. However there is a balance to be struck between that objective and 'the need for caution' (Westhaven ibid) reflected by the sustainability objective."

The Court of Appeal has also commented: "The purpose of the Act, in terms of s 8(1), is to provide for the utilisation of fisheries resources while ensuring sustainability; most of the Act is directed to that purpose… Those provisions reflect the obligations in articles 61 and 62 of the UN Convention on the Law of the Sea to promote optimum utilise of fishing resources of the EEZ without prejudice to their conservation (see also s 5 of the Act)."[5]

Further the provisions of section 15 make it clear that need to take measures necessary "to avoid, remedy or mitigate the effects of fishing related mortality on any protected species". A limit which fails to allow an endangered species to recover and move to a non-threatened state would not "avoid, remedy or mitigate the effects of fishing" on sea lions and would not be a precautionary measure.

Squid fishery catch limits (TACC) are ad hoc and there is "no proven method to estimate yields from the squid fishery before a fishing season begins". Given this, and the variability in the squid fishery, failure to reach to the TACC should not be seen as the requirement to meet the utilisation purpose of the Act. Squid fishers can use other recognised methods of catching squid around the Auckland Islands ie jigging.

The same vessels fish for squid around the Auckland Islands 6T and in the mainland 1T fishery. These vessels move back and forth from the Auckland Islands to the Snares Shelf. The utilization aspects should consider both 1T and 6T as a joint fishery.

The balance between utilisation of the squid and the conservation of the sea lion needs

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4 *Squid Fishery Management Company Limited v The Minister of Fisheries* (High Court, Wellington, CIV-2003- 485-2706, 27 February 2004, France J)

5 5 *Kellian v Minister of Fisheries (Court of Appeal, CA 150/02, 26 September 2002).*

to be put in the light of alternative methods, the variability of the squid fishery and the conservation status of the sea lions.

5.1 Other Settings

5.1.1 Duration of Operational Plan

ECO only supports a one or two year plan given:

- The operational plan only includes squid and not other fisheries that impact on sealions;
- Research on the effects of an area closure on sea lions needs to monitored and reviewed;
- Further research needs to be carried out to better estimate survivability;
- Further research on cryptic mortality of sea lions in fisheries.

5.1.2 Observer Coverage

ECO supports 100% observer coverage in all fisheries that impact on the sealions including squid, southern blue whiting, scampi. This should be a mandatory requirement.

5.1.3 Fishery Closure Process

ECO supports a transparent closure process with reporting to all stakeholders equally.

6 Next Steps

The next steps must include adding all fisheries that impact on the sea lions into the operational plan.

7. Conclusion

If you require any clarification on this submission and our comments please contact the ECO office or myself.

Yours sincerely,

[redacted]

19th September 2019

Squid 6T Operational Plan Consultation
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Forest & Bird
TE REO O TE TAIAO
Giving Nature a Voice

Squid 6T Operational Plan Consultation

Introduction to Forest & Bird

1. The Royal Forest & Bird Protection Society (Forest & Bird) is New Zealand's largest and longest-serving independent conservation organisation. Our mission is to be a voice for nature – on land, in the sea, and in our fresh waters.

2. For over 95 years Forest & Bird and its members have been working to fulfil our constitutional purpose, which is to "*take all reasonable steps within the power of the Society for the preservation and protection of the indigenous flora and fauna and the natural features of New Zealand*."

3. Forrest & Bird is the New Zealand partner of the Global BirdLife International network of NGOs with partners in 120 countries.

Why New Zealand Sea lion/ rāpoka matter to Forest & Bird

4. The New Zealand (NZ) sea lion / rāpoka (*Phocarctos hookeri)* is New Zealand's only endemic pinniped. New Zealanders value NZ sea lions, they are a taonga species for tangata whenua, especially Ngāi Tahu[1]. Despite being a protected species NZ sea lions are endangered and have undergone a significant population decline. The New Zealand public expects the Government to protect and recover the NZ sea lion towards their

[1] Ngāi Tahu taonga animal species from -https://www.doc.govt.nz/globalassets/documents/about-doc/concessions-and-permits/conservation-revealed/ngai-tahu-taonga-animals-lowres.pdf

pre-colonisation population, just as we do for endemic threatened birds like kiwi or kakapo.

5. Forest & Bird has a long history of advocacy for the protection of New Zealand' marine mammals and has been at the forefront of efforts to protect NZ sea lions including the establishment of the Auckland Island marine mammal sanctuary and marine reserve.

6. It is legal in NZ for commercial fishers to accidentally kill our endangered NZ sea lions whilst trawling for squid (or other fish); provided they report it and the total number killed annually doesn't exceed a limit set by the Fisheries Minister. The government doesn't allow a kill quota for kiwi or kakapo, so why is it ok to kill sea lions? Why are commercial fishers not required to continually improve and reduce the number of NZ sea lion being killed annually? Forest & Bird considers that no NZ sea lions that have full protection under the Marine Mammal Protection Act 1978 should be killed in any fishing operation, either accidentally or deliberately and that the Government must adopt an ambitious Zero Bycatch Policy to drive meaningful bycatch reduction and recover the population.

Summary

7. Forest & Bird supports the vision of the NZ sea lion Threat Management Plan (TMP) to "*promote recovery and ensure the long-term viability of New Zealand sea lions*" and lead to a "*non-threatened*" status for the species [2]. The Squid Operational Plan must align to the TMP vision and goal.

8. Forest & Bird wants a new way of thinking about bycatch of endangered, threatened, and protected species that is consistent with the goal signalled in the proposed New Zealand Biodiversity Strategy and the principle that 'we only catch what we eat'[3].

9. NZ sea lions are threatened and the population is declining. Forest & Bird recommends the Government adopt a zero bycatch goal for NZ sea lions. Whilst a zero bycatch goal is aspiration, the purpose is to drive continued improvement in a fishery so that human impacts, like bycatch, decline towards zero as fast as possible.

10. Forest & Bird does not support any of the three Options put forward by Fisheries New Zealand as they all allow the NZ sea lion population to continue to decline over time.

[2] Department of Conservation & Ministry for Primary Industries. (2017). New Zealand sea lion / Rapoka Threat Management Plan. https://www.doc.govt.nz/globalassets/documents/conservation/native-animals/marine-mammals/nz-sea-lion-tmp/nz-sea-lion-threat-management-plan.pdf

[3] Department of Conservation. (2019). Te Koiroa O Te Koiora – our shared vision for living with nature August 2019. A discussion document on proposals for a biodiversity strategy for Aotearoa New Zealand. The New Zealand Government https://www.doc.govt.nz/globalassets/documents/conservation/protecting-and-restoring/biodiversity-discussion-document.pdf

11. Forest & Bird is proposing Option 4 as an alternative interim management measure to establish a temporal trawl exclusion zone at the Auckland Islands. Option 4 would significantly remove the threat squid trawl has on the vital foraging grounds of breeding female NZ sea lions. Breeding female sea lions are restricted in the area and duration they can forage by their need to return to their dependent pup at shore. Option 4 would seasonally restrict trawling from 17% of the 6T fishing area. Option 4 would not impact on the overall commercial catch of squid from within the 6T fishing area. Option 4 is a win-win for conservation and utilisation.

12. Forest & Bird recommends the Minister implements Option 4 as an interim measure until the TMP is reviewed in 2022 and a holistic and coordinated management plan of all fisheries and threats that kill NZ sea lions has been developed.

13. Forest & Bird wants to progress discussions of Option 4 with officials, industry, tangata whenua particularly Ngāi Tahu and other stakeholders.

1.1:NZ sea lion / rāpoka population trend & threat status

14. NZ sea lions / rāpoka were once found all around mainland New Zealand and likely numbered up to 68,000 individuals[4]. Today they are one of the rarest and most highly localised sea lions in the world, with fewer than 12,000 individuals. NZ sea lions have had a 48% decline in pup production since 1998 and scientists link this to a decline in the adult population, particularly breeding females at the Auckland Islands[5,6,7].

15. The majority of the population (98% of all breeding) are found around New Zealand's Sub-Antarctic Islands – Auckland Islands and Campbell Island. A smaller proportion, ~2% of NZ sea lions breed around Rakiura / Stewart Island and Otago and Southland regions. The Auckland Islands are a vital breeding stronghold

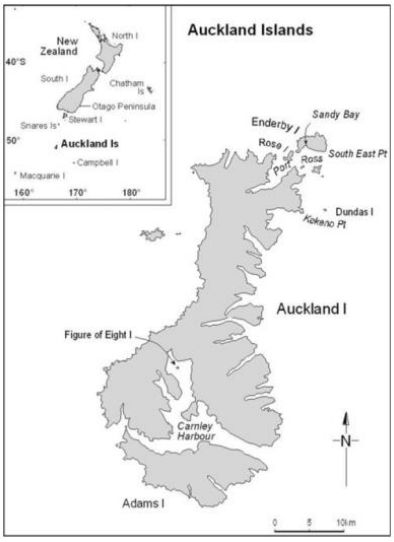

Figure 1: Map showing location of Auckland Island and breeding locations from Chilvers et al., 2011

[4] Collins, C.J., Chilvers, B. L., Taylor, M., & Robertson, B. (2016). Historic population size of the threatened New Zealand sea lion *Phocarctos hookeri*. *Journal of Mammalogy* 97(2): 436-443.
[5] Robertson, B.C & Chilvers, B.L. (2011). The population decline of New Zealand sea lion *Phocarctos hookeri*: a review of possible causes. *Mammal Review* 41:253-275
[6] Chilvers, B.L & Meyer, S. (2017). Conservation needs for the endangered New Zealand sea lion. *Aquatic Conservation* 27:846-855
[7] Meyer, S., Robertson, B. C., Chilvers, B. L., & Krkošek, M. (2015). Population dynamics reveal conservation priorities of the threatened New Zealand sea lion *Phocarctos hookeri*. *Marine Biology*, *162*, 1587-1596

for the species with ~ 69% of NZ sea lion breeding occurring there[2,6]. Figure 1 shows the location of the Auckland Islands.

16. The Auckland Island sea lion population has been regularly monitored through pup counts and resighting effort. Figure 2 shows the total pup counts for the Auckland Islands from 1994 to 2019. Since 1998 (the highest pup counts during this period) NZ sea lions pup production (proxy for population) has declined by ~55% (1998 to 2019[8]). While the substantial population decline of NZ sea lions has slowed in more recent years, the overall trend (linear trend line in Figure 2) shows the Auckland Island pup production (population proxy) is still declining. Population models show that NZ sea lions will continue to decline without effective intervention[7].

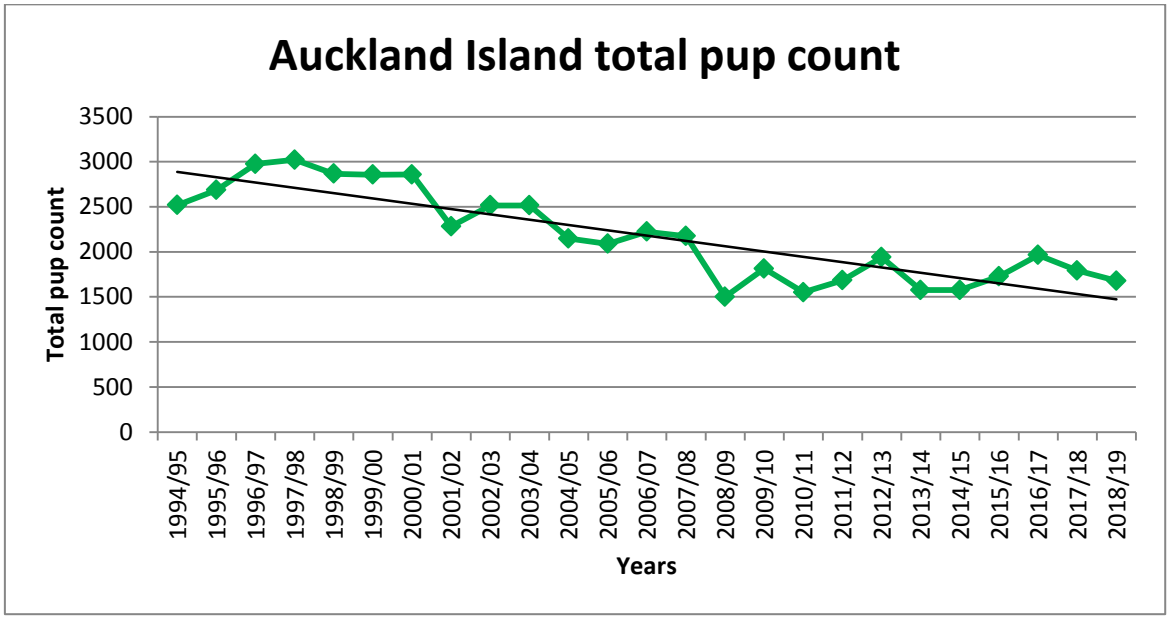

Figure 2: Auckland Island total pup count over time from 1994/95 to 2018/19. Source of the data CSP, 2019 report[8]

17. NZ sea lion is listed as Endangered by the IUCN[9]. The Department of Conservation (DOC) uses the NZ Threat Classification System to define threat status. In 2019 DOC downgraded the threat status of NZ sea lion from "*Nationally Critical*" to "*Nationally vulnerable*"[10] based on an "*actual improvement*" and "*an apparent stabilisation in population size at the Auckland Islands since 2009 and increases in other breeding*

[8] Department of Conservation. (2019). New Zealand sea lion monitoring and pup production at the Auckland Islands 2018/2019 Research Report, June 2019 https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/pop2018-03-sea-lion-pup-count-2018-19.pdf

[9] Chilvers, L. (2015). *Phocarctos hookeri*. In: IUCN Red List of Threatened Species, version 2015.2. www.iucnredlist.org

[10] Baker, C.S., Boren, L., Childerhouse, S., Constantine, R., Van Helden, A., Lundquist, D., Rayment, W., and J.R. Rolfe. (2019). Conservation status of New Zealand marine mammals, 2019. *New Zealand Threat Classification Series 29*. 18 p. https://www.doc.govt.nz/globalassets/documents/science-and-technical/nztcs29entire.pdf

locations – Moutere Ihupuku / Campbell Island, Rakiura/Stewart Island and the mainland – during this time"[11].

18. Forest & Bird does not support this downgrade in threat status as the actual data does not support this "*improvement*". Figure 2 shows since the late 90's a decline in the overall population at the Auckland Island and DOC's own data across all locations shows a similar decline[7]. Furthermore, this latest breeding season found that across all locations there was a decline in the number of NZ sea lion pups born[7].

19. Forest & Bird does not support the selective use of available NZ sea lion pup data in the latest threat review as this has resulted in a 'shifting baseline'. By selectively removing the 1998 year data it reduces the decline in sea lion numbers (from ~40% to 29% decline), thereby supporting the Department's narrative that the sea lion population is now "*stable*"[9].

20. The New Zealand sea lion Threat Management Plan (TMP) was released in 2017 and is in place until 2022. The TMP's vision is to "*promote recovery and ensure the long-term viability of New Zealand sea lions*" and to recover the species to a "non-threatened" status[2]. It's five year objective is to "*halt the decline of the New Zealand sea lion population within 5 years*" and one of its measures of success is for the Auckland Islands population to produce pup counts that are consistently above 1,575 (2014 pup count) and ideally over 1,965 (2017 pup count)[2]. The pup numbers at the Auckland Islands for the last three years are as follows[7]:

Year	2016/2017	2017/2018	2018/2019
Auckland Island pup count[7]	1965	1729	1679

21. The TMP has been in place since 2017 and is past the halfway mark. The 2018/2019 pup count for the Auckland Islands is **15% lower** than when the TMP started. The numbers don't support an "*apparent stabilisation*" and definitely not an improvement.

22. NZ sea lions are an endangered and protected species and the long-term population trend is declining[7]. Forest & Bird strongly supports the recovery of NZ sea lions towards their pre-colonisation population, just as we do for endemic threatened birds like kiwi and kakapo.

[11]Department of Conservation. (2019). Media release 26th May 2019. https://www.doc.govt.nz/news/media-releases/2019/matariki-whale-signposts-resurgence-of-tohora-southern-right-whale/?fbclid=IwAR2DZYJNjzbeyumiscKZHwag1pyRF8iU7j-hKGVyM41cKZz07-FUHOLQBF4

1.2: Zero Bycatch Goal for NZ sea lion / rāpoka

23. In much the same way that Forest & Bird would not support an allowable kill of Kiwi or Kakapo, Forest & Bird considers that no NZ sea lions or other marine mammals that are vulnerable and or declining and have full protection should be killed in any fishing operation, either accidentally or deliberately. Whilst a zero bycatch goal is an aspiration goal, the purpose is to drive continued improvement in a fishery so that protected species bycatch rates decline towards zero as fast as possible. The options put forward by Fisheries New Zealand all allow the NZ sea lion population to continue to decline over time, this does not align with the Threat Management Plan vision and goals of recovery.

24. At the 2019 New Zealand Marine Sciences Society annual conference the Minister of Conservation, Eugenie Sage said she supported a zero bycatch policy for NZ sea lions[12]. Forest & Bird welcomes this and recommends the Government develops a zero bycatch policy as soon as possible. Whilst Fisheries NZ model shows removing fishing bycatch towards zero alone will not likely stop the NZ sea lion decline[13] it would give the population the best chance of recovering naturally. Forest & Bird has produced a Pathway to Zero Bycatch to highlight short and medium long term goals[14].

25. Having a zero bycatch goal for NZ sea lions would require the entire fishing industry, not just squid trawlers around the Auckland Islands, to look at where and how they fish. It would require the development of a holistic and coordinated management plan of all fisheries and threats that kill NZ sea lions. A holistic zero bycatch goal linked to the TMP recovery vision would drive innovation and continual improvements to reduce bycatch as much as possible towards zero. Until such policy is developed there is no incentive or requirement for commercial fishers to improve or change from the status quo.

26. Zero bycatch goal is not a new concept. There are international recommendations, such as those by the Internationally Whaling Commission and examples, such as the Hawaiian monk seal, where managers have effectively adopted a zero bycatch goal by setting the PBR (level of bycatch) to zero, in this case for a population that is small, endangered and declining.

27. New Zealanders care passionately about the recovery of this endemic species. A survey carried out by WWF NZ and Colmar Brunton highlights New Zealanders support a zero bycatch goal. Colmar Brunton found that "*84% of New Zealanders think the Government*

[12] https://www.odt.co.nz/news/dunedin/sage-backs-zero-bycatch-policy-sea-lions
[13] Roberts, J. (2019). Population effects of New Zealand sea lion mortality scenarios relating to the southern arrow squid fishery at the Auckland Islands New Zealand Aquatic Environment and Biodiversity Report No. 223
[14] https://www.forestandbird.org.nz/sites/default/files/201908/a%20pathway%20to%20zero%20bycatch_final.pdf

should adopt a zero-bycatch goal – meaning that while there will always be some accidental bycatch in commercial fisheries, we should work to reduce that impact towards zero"[15]. When asked about NZ sea lions specifically "*84% of New Zealanders agreed or strongly agreed that the number of NZ sea lions being killed in commercial fisheries should be further reduced*"[16].

1.3: Fisheries threats to NZ sea lion / rāpoka & consultation options

28. Fisheries NZ's Quantitative Multi-Risk Threat Assessment showed that NZ sea lions are impacted by multiple and cumulative threats, particularly from fisheries bycatch, disease and nutritional stress (potentially due to fishing pressure and climate change impacts on prey availability) [17]. Fisheries bycatch is identified as the most significant human threat to NZ sea lions[5,7,17], and is the only threat that can be actively managed.

29. More long-term research is needed to assess climate change impacts on prey availability and what impact spatiotemporal fluctuations in environmental conditions could potentially have and management options to mitigate these. There is a Government funded project looking at wider spatiotemporal fluctuations in environmental conditions and fish. There is Government funded work looking at disease and mitigation options. There is no government funded work looking at reducing direct fisheries impact.

30. The squid trawl fishery operates around the Auckland Islands and overlaps with the NZ sea lion foraging grounds. NZ sea lions are killed despite the use of sea lion exclusion devices (SLEDs) on nets. Forest & Bird acknowledges Fisheries NZ's work to attempt to reduce uncertainty around the effectiveness of SLEDs which found that the risk from fishing is now low[13,18]. Other models suggest fishing risk is much higher and a driving factor behind the decline of NZ sea lions[7]. Regardless of the level, NZ sea lions are being killed by the squid trawl fishery and the NZ sea lion population is

[15] Source: from WWF NZ - Colmar Brunton, (2017a). Attitudes towards a Zero Bycatch Goal. http://awsassets.wwfnz.panda.org/dow84nloads/report___attitudes_towards_a_zero_bycatch_goal.pptx

[16] Source: from WWF NZ - Colmar Brunton, (2017b). Attitudes towards Sea lions and the threats they face.

[17] Roberts and Doonan, (2016) *Quantitative Risk Assessment of Threats to New Zealand Sea Lions,* New Zealand Aquatic Environment and Biodiversity Report No. 166. Ministry for Primary Industries, Wellington.

[18] A few years ago the 'best' model and approach used by Fisheries NZ estimated that the squid trawl bycatch of sea lions was over 500 individuals a year, now a different model and approach has been adopted and it estimates an average of six sea lions are killed per year. There were seven observed deaths for this latest fishing year 2018/2019, which equates to 9 estimated deaths using Fisheries NZ latest approach. Models can be useful but are only as good as hypothetical probabilities and data informing them. Forest & Bird has become increasing frustrated with the Fisheries NZ science peer review and consultative processes. A key concern is that these processes lack fisheries independent subject experts and are therefore rarely adequately peer reviewed. Forest & Bird is also frustrated with the selective use of science by Fisheries NZ. If a published paper (often internationally peer reviewed) doesn't go through Fisheries NZ science working group – AEWG then it is rarely considered useful or used.

declining. We must reduce all human impacts as close to zero as possible to achieve population recovery.

31. Fisheries NZ manages the squid fishing threat in isolation from other fisheries, through the SQU6T Operational Plan. The Operational Plan which sets out an annual allowable kill quota of NZ sea lions by the commercial fishing industry referred to as the fishing related mortality limit (FRML).

32. The FRML is set under section 15(2) of the Fisheries Act[19] by the Minister of Fisheries *"In the absence of a population management plan, the Minister may, after consultation with the Minister of Conservation, take such measures as he or she considers are necessary to avoid, remedy, or mitigate the effect of fishing-related mortality on any protected species, and such measures may include setting a limit on fishing-related mortality"*[19].

33. Fisheries NZ is currently consulting on the new Operational Plan which is proposed to be in place for 5 years. Fisheries NZ has put forward Options of how many Auckland Island NZ sea lions can be killed each year during the squid fishing season, refer to Table 1. It's important to note that the squid trawl fishery is not the only fishery that kills NZ sea lions. It is the only fishery to have a FRML. Southern blue whiting and scampi also kill NZ sea lions, but are managed in isolation. Forest & Bird continues to recommend the Government adopts a holistic zero bycatch goal and manages all these fisheries and threats in a more inclusive way.

Table 1: Proposals for the 2019/2020 squid trawl fishery (6T) compared to current settings. Source Consultation document[20]

				Achieved by:		Sea Lion Exclusion Device		
	Maximum impact on population	PST (Annual)	FRML (Annual)	Tow "limit"	Observed captures "limit"	Use/ Expected Use	Regulatory status	(Proposed) Minimum observer coverage
Current	5%	46	38	2,397	N/A	100%	No	70%
Option 1	2.5%	26	26	N/A	20	100%	Possible	90%
Option 2	5%	52	52	N/A	40	100%	Possible	90%
Option 3 (not preferred)	10%	104	104	N/A	80	100%	Possible	90%

[19]The Fisheries Act 1996 - http://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html
[20] Fisheries New Zealand. (2019). Consultation on the Squid 6T Operational Plan. Fisheries New Zealand Discussion Paper 2019/17. August 2019. New Zealand Government, from https://www.fisheries.govt.nz/dmsdocument/36435-consultation-on-the-squid-6t-operational-plan

34. The current approach (current season officially closes September 30th[21]) is that the FRML set produces a tow limit (maximum number of tows the industry can make). If the FRML is reached (that number of sea lions observed dead) or tow limit reached the fishery would be closed. Fisheries NZ is proposing a new approach which will be based on the number of NZ sea lions observed or reported killed in the fishery, rather than a limit to the number of tows the industry can do in the 6T fishing area (Auckland Island area).

35. Fisheries NZ incorrectly state that the proposed FRML provides a "*high degree of certainty that the sea lion population will be maintained at a level that ensures their long-term viability*"[20]. In theory this would only be true if the population is growing at an optimal rate. In reality any fisheries impact will contribute to further decline the population, unless the population trend is moving in a positive direction. Roberts (2019) shows the NZ sea lion population is not moving in a positive direction, and is likely to continue to decline[13]. This declining population projection is supported by fisheries independent models[7].

36. The Options put forward by Fisheries New Zealand in the Squid 6T Operational Plan will not achieve the TMP vision and objectives for population recovery. The three proposed Options all allow fishing to continue killing NZ sea lions. Option 1 would allow the population to be reduced by an additional 2% above the existing non-fisheries related decline by 2025, Option 2 would allow a 5% population reduction, and Option 3 would allow a 10% population reduction[20]. Increased population decline cannot logically be seen as a way to achieve population recovery which, by the Department of Conservation's own definition, requires the population to be increasing[10].

37. The level of observed bycatch required before the fishery would be constrained for Options 1, 2 & 3 are significantly higher than the latest observed bycatch of seven NZ sea lions. Option 1 would require 20 NZ sea lions to be observed, Option 2 40 to be observed and Option 3 a massive 80 individual to be observed[20]. These values are based on a target of 90% observer coverage, which Forest & Bird does not think is realistic given the limited observer coverage available (observer days), the last seasons coverage and competing fisheries observer coverage needs. The unwillingness of the industry to adopt electronic digital monitoring as an alternative doesn't help.

38. Effectively Fisheries NZ are proposing arbitrary (but informed by their new model and approach) FRML Options which **all result in an unconstrained squid trawl fishery** while allowing the NZ sea lion population to be reduced.

[21] Note that the fishing season for 2018/2019 (current) is already closed as boats have withdrawn from the area so bycatch values used are unlikely to change.

39. Fisheries NZ have based the Options above by applying a Population Sustainability Threshold (PST). The PST represents the maximum number of NZ sea lions that can be killed to allow the population to achieve a certain outcome. A concern with the PST approach is that it assumes there is always a 'sustainable' level of impact because the models that inform the PST assume the population is growing. As highlighted in Figure 2 and by researchers[7,13], the NZ sea lion population is not a growing population or projected to be. Fisheries NZ doesn't describe this in the consultation document instead it describe the PST as "*the population outcome is defined in terms of how much impact (reduction in population size) that the fishery can have*"[20], relative to if there was no fishing impact on that population. The PST is a management setting and has not been informed by the Technical Advisory Group or stakeholders. The PST proposals do not link to the TMP vision and objectives and will not enable NZ sea lions to recover. The assumptions made by Fisheries NZ that the PST is both 'sustainable' and 'acceptable' are misleading. Forest & Bird does not believe these assumptions hold true for a declining and protected species such as NZ sea lions. Forest & Bird and others have consistently pushed for a process to discuss these management settings and decisions but have been denied.

40. Fisheries NZ has not put forward any direct mitigation options to reduce the impact the squid trawl fishery is having on the Auckland Island NZ sea lion population alongside a FRML. The approved TMP stated that during the first 5 years there would be a focus on direct mitigation of NZ sea lion deaths. This was to initially focus on reducing pup mortality in natural holes at main breeding sites and then "*mitigating interactions with commercial fisheries*"[2]. There is no incentive or requirement for commercial fishers to change their status quo fishing or improve. Fisheries NZ has only put forward options that allow the Auckland Island NZ sea lion population to decline over time. Given this and Forest & Bird's constitutional purpose, which is to "*take all reasonable steps within the power of the Society for the preservation and protection of the indigenous flora and fauna and the natural features of New Zealand*", **we do not support** any of the three Options put forward by Fisheries NZ alone.

41. Forest & Bird is proposing an Option 4 to be presented to the Ministers, agency staff, tangata whenua (particularly Ngāi Tahu), industry and other stakeholders. Option 4 would reduce the impact the 6T squid fishery has on the endangered NZ sea lion population, particularly the breeding females at the Auckland Island, whilst still allowing the 6T squid trawl fishery to operate. Option 4 would not reduce bycatch to zero, the ambitious goal, but it would significantly reduce current levels and is proposed as an interim temporary measure until the review of the TMP in 2022. Refer to section 1.5 for more information.

1.4: NZ sea lion / rāpoka foraging grounds and squid 6T fishing effort

42. Fisheries NZ have not highlighted the importance of the Auckland Island waters to NZ sea lions in the public consultation document. It is essential to understand spatially where NZ sea lions forage and what drives this, alongside where squid trawling occurs.

43. Until recently Fisheries NZ has failed to use the extensive published literature on foraging utilisation distributions of lactating female NZ sea lions to support management decisions. However, in order to inform this new approach being taken, the PST, Fisheries NZ developed a spatially-explicit fisheries risk assessment (SEFRA) model and commissioned a review of all historic telemetry data of lactating females from the Auckland Island[22].

44. Prior to the Fisheries NZ work, scientists had shown where Auckland Island lactating females (the most important population demographic[7,]) foraged[23,24,25,26,27,28,29,30,31,32] (refer to Figures 3 and 4 as examples of this). Figure 3 and 4 show that individuals tagged at different locations display a similar foraging preference to the 250m depth contour – referred to as the Auckland Island shelf. Breeding females at the Auckland Islands have been shown to be central place foragers, which mean they have a restricted foraging range during the breeding season[23 -32].

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[22] Large, K., Roberts, J., Francis, M., & Webber, D.N. (2019). Spatial assessment of fisheries risk for New Zealand sea lions at the Auckland Islands. *New Zealand Aquatic Environment and Biodiversity Report* No. 224 85p. Fisheries New Zealand https://www.mpi.govt.nz/dmsdocument/36375-aebr-224-spatial-assessment-of-fisheries-risk-for-new-zealand-sea-lions-at-the-auckland-islands

[23] Chilvers, B.L. (2010). Final Report: Research to assess the demographic parameters and at sea distribution of New Zealand sea lions, Auckland Islands. Report prepared for the Conservation Services Programme, Department of Conservation POP 2007:01

[24] Chilvers, B.L. (2008a). New Zealand sea lions (*Phocarctos hookeri*) and squid trawl fisheries: bycatch problems and management options. *Endangered Species Research* 5:193 – 204.

[25] Chilvers, B.L. (2008b). Foraging site fidelity of lactating New Zealand sea lions. *Journal of Zoology* 276:28 –36.

[26] Chilvers, B.L. & Wilkinson, I.S. (2008c). Philopatry and site fidelity of New Zealand sea lions, *Phocarctos hookeri*. *Wildlife Research* 35: 463-470.

[27] Chilvers, B.L. & Wilkinson, I.S. (2009). Divers foraging strategies in lactating New Zealand sea lions. *Marine Ecology Progress Series* 378: 299 - 308.

[28] Chilvers, B.L., Wilkinson, I.S., Duignan, P.J., & Gemmell, N. (2006). Diving extremes: are New Zealand sea lions (*Phocarctos hookeri*) pushing their limits in a marginal habitat? *Journal of Zoology 269:233-241.*

[29] Chilvers, B.L., Wilkinson, I.S., Duignan, P.J., & Gemmell, N. (2005). Identifying the distribution of summer foraging areas for lactating New Zealand sea lions *Phocarctos hookeri*. *Marine Ecology Progress Series* 304:235-247.

[30] Chilvers, B.L., Amey, J.M., Huckstadt, L.A., & Costa, D.P. (2011). Investigating foraging utilisation distribution of female New Zealand sea lions, Auckland Islands. *Polar Biology* 34:565-574

[31]Chilvers, B.L., Childerhouse, S.J & Gales, N.J. (2013) Winter foraging behaviour of lactating New Zealand sea lions *Phocarctos hookeri*. *New Zealand Journal Marine and Freshwater Research* 47:125-138

[32] Chilvers, B.L. (2009). Foraging locations of female New Zealand sea lions (*Phocarctos hookeri*) from a declining colony. *New Zealand Journal of Ecology*. 33(2):1106 – 113.

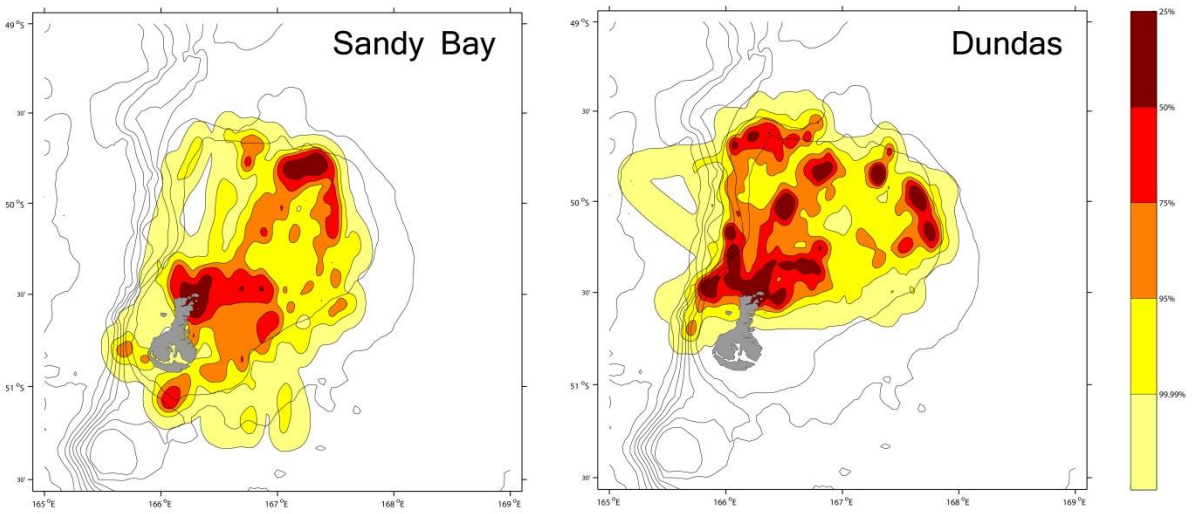


Figure 3: Utilisation distribution of lactating NZ sea lions during January and February summers from 2005 to 2007 from Dundas and Sandy Bay breeding sites. Source[30]

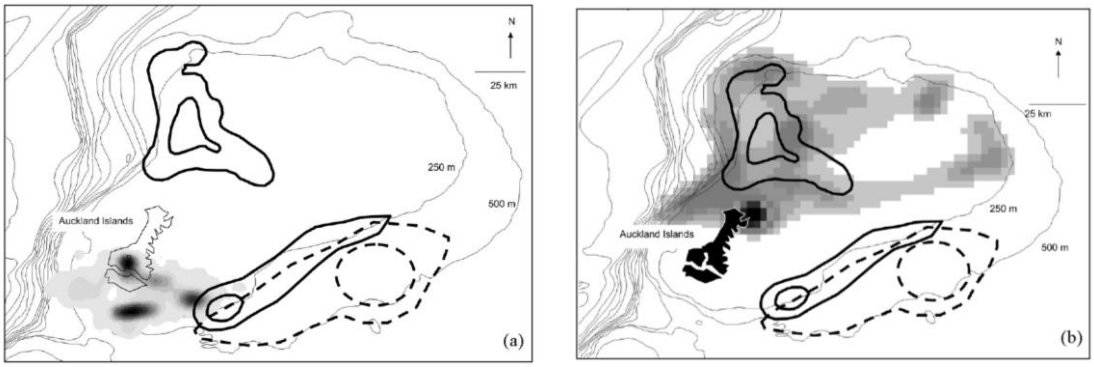
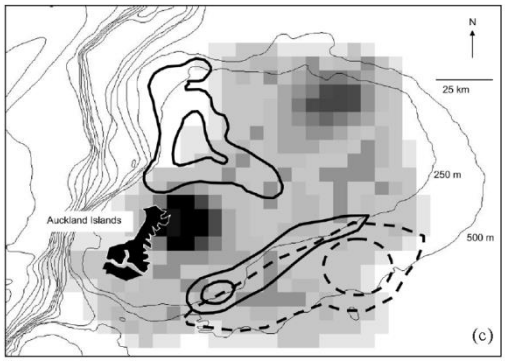


Figure 4: Utilisation distribution of lactating NZ sea lions from (a) Figure of Eight Island, January and February 2007 and 2008 (*n* = 4); (b) Enderby Island, January and February 2001–2004 (*n* = 26); (c) Dundas Island January and February 2005–2007 (*n* = 29) and '01-'07 fishing effort (black lines – squid dashed lines - scampi). Source[31]



45. The extensive published research[23-32] on foraging behaviour of lactating female NZ sea lions at the Auckland Islands all show they forage over the entire Auckland Island shelf, right out to the 500m depth contour but have denser utilisation of the 250m depth contour. Lactating female NZ sea lions are **restricted in area and duration they forage by their need to return to their dependent pup at shore**[23-32]. Researchers have also shown that these breeding females are foraging and diving at their physiological limits. Chilvers et al.[29,32] found 68% of all dives assessed were

beyond NZ sea lions calculated anaerobic dive limits, meaning they are working incredibly hard to get enough food at the Auckland Islands[23-32].

46. Lactation is extremely energy demanding and therefore female NZ sea lions must optimise their foraging behaviour to maximise energy intake so they can successfully raise their dependent pups[30].

47. Stable isotope analysis of NZ sea lion whiskers can indicate long-term foraging strategies. Recent published research confirmed that female NZ sea lions have one of two distinct foraging strategies (benthic – foraging on the seafloor or mesopelagic – forage at various depth in the water column) that are "*habitual within and between year*"[33] furthermore highlighting the importance of understanding foraging distributions. This study also supports that the restricted foraging grounds of NZ lactating sea lions is unlikely to have changed significantly over time as sea lions display these habitual within and between year strategies[33], so while the telemetry data available for analysis is dated (1996 to 2012[22]) it still represents the best estimate of utilisation and foraging distributions for lactating NZ sea lions at the Auckland Islands.

48. Forest & Bird, and others, have been pushing for this research to be used to inform management decisions for years. NZ sea lions at the Auckland Islands are living in extreme conditions and are reliant on restricted unprotected waters outside the existing marine reserve to successfully forage and raise dependent pups.

49. Fisheries NZ commissioned Large et al.[22] to process for the first time all available spatial tracking data from the Auckland Islands between 1996 -2012. Figure 5 shows the groomed data from three breeding locations and Figure 6 shows a comparison of the data used in the analysis of individual tagged sea lions. Figure 5 visually displays that depending on tagged location lactating NZ sea lions tend to forage in slightly different locations but the majority of positions are from on the Auckland Island shelf. This is the first summary of all available telemetry data and it clearly supports earlier results that a significant proportion of the habitual foraging distributions of Auckland Island lactating females occur outside the exiting marine reserve in unprotected waters where these NZ sea lions are exposed to the squid trawl fishery (6T). The dependency on the shelf links with NZ sea lion prey availability.

[33] Chilvers, B.L. (2019). Whisker stable isotope values indicate long-term foraging strategies for female New Zealand sea lions. *Endangered Species Research* 38: 55-66.

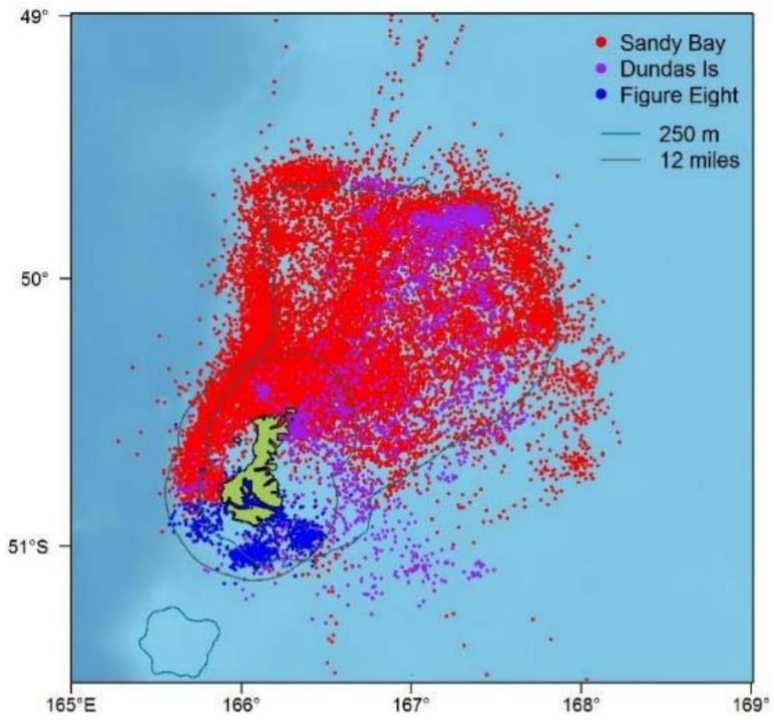


Figure 5: Groomed and filtered fix locations for NZ sea lions tagged at three different colonies at the Auckland Island. Source[21]

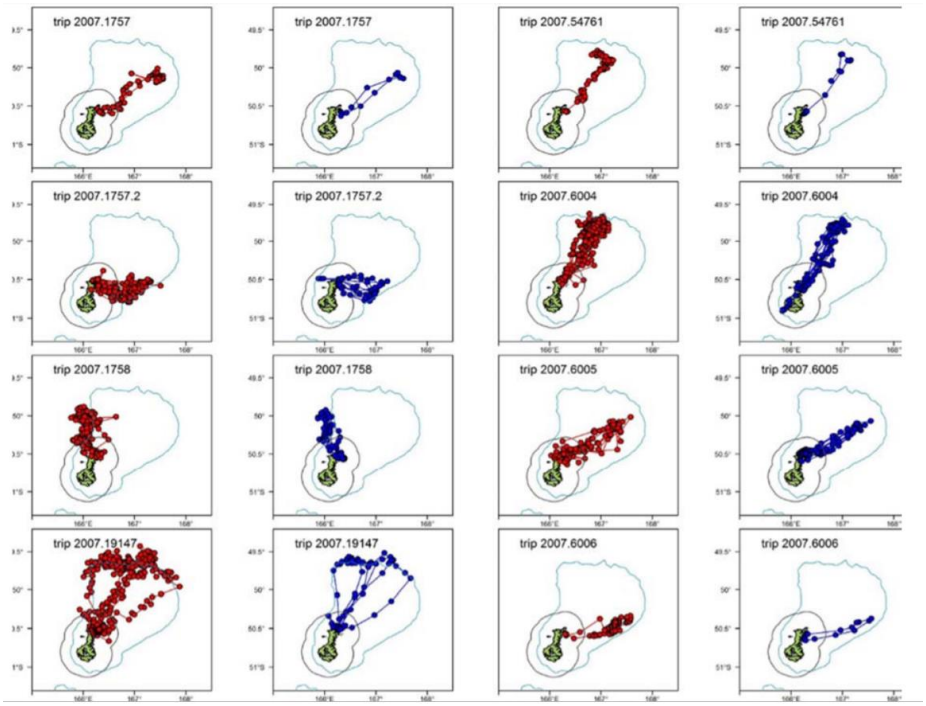


Figure 6: Comparison of groomed telemetry data for 8 tagged sea lions showing filtered fixes (red symbols) and fitted locations (blue symbols). The 250 m depth contour (light blue line) and 12 nautical mile marine reserve boundary (grey line) are also shown. Source[21].

50. Fisheries NZ map squid fishing effort over time (Figures 7a-c[22])[34]. Over time the area squid is caught in varies, but primarily there are two distinct areas: one towards the north / north-eastern Auckland shelf boundary and one towards the south-eastern boundary of the Auckland shelf. Figure 7a-c also show the locations of where NZ sea lion have been observed killed. As part of the public consultation on Fisheries NZ should have updated fishing effort maps and overlaid where the latest NZ sea lions were killed.

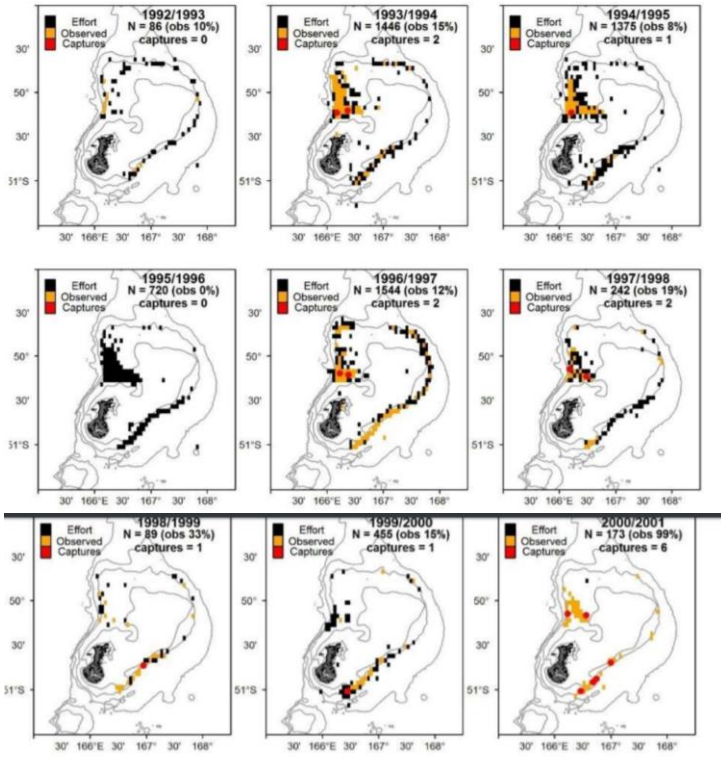


Figure 7a: Spatial distribution of fishing effort from 1992 to 2001. Source[21]

[34] Unfortunately Forest & Bird wasn't able to get access to adequate effort data to better assess how it has changed through time and was reliant on these maps. We also do not know where in the 6T fishery the seven observed sea lions were killed.

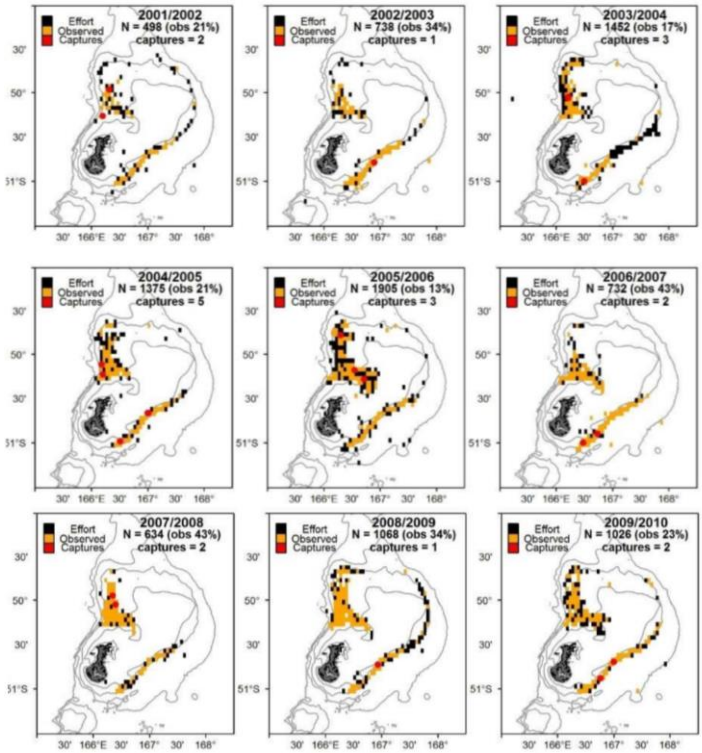


Figure 7b: Spatial distribution of fishing effort from 2001 to 2010. Source[21]

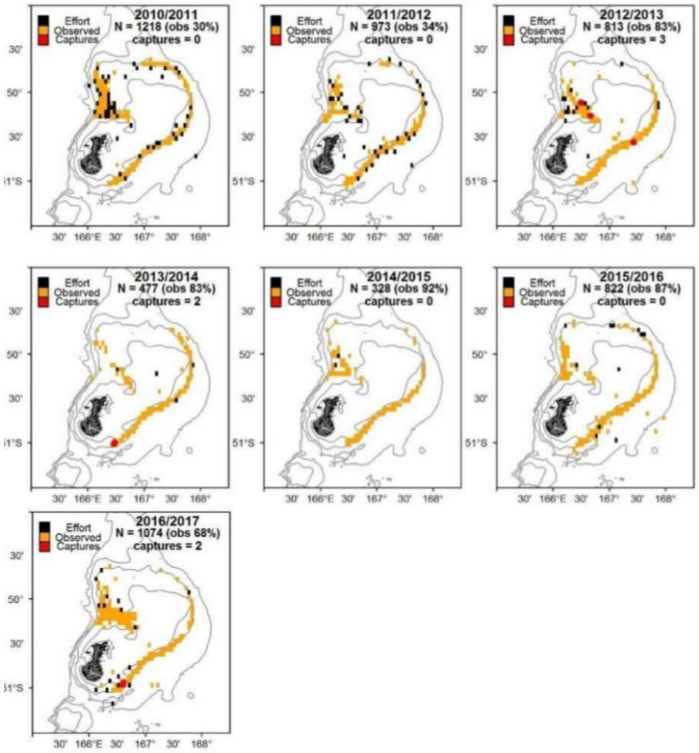


Figure 7c: Spatial distribution of fishing effort from 2010 to 2017. Source[21]

1.5: Option 4 – temporal Auckland Island trawl exclusion zone

51. The Auckland Island NZ sea lion population remains an important breeding stronghold for this species. Telemetry data[22-32] highlights that lactating female NZ sea lions are central place foragers which mean they are restricted in the area they forage as they have to return to the same location at the end of each foraging trip to their dependent pup. Lactating females tend to prefer foraging on the Auckland Island shelf (within the 250m depth contour) and the shelf edge. Not only is lactation the mot energy demanding period for a female sea lion, but this means these sea lions need to optimise their foraging behaviour to maximise energy intake to rear their dependent pups successfully[30].

52. Lactating NZ sea lion foraging grounds overlaps with the Auckland Island squid fishery (6T). NZ sea lions are killed accidentally despite the use of sea lion exclusion devices (SLEDs) on all squid trawl nets. This season seven NZ sea lions were observed killed, whilst this number may seem low it is likely to be higher as observed sea lions deaths only represent a proportion of those killed.

53. Squid makes up a proportion of NZ sea lion diet. This overlap between foraging grounds and fishing also highlights a potential for ecological resource competition[5,7,23-28]. Comparisons of NZ sea lion pup 'health' between the Auckland Islands and the mainland Otago/ Southland show that nutritional stress could be a factor at the Auckland Islands[5,22-31,35]. Forest & Bird supports further research into resource competition and nutritional stress.

54. Fisheries NZ is proposing varying options of an acceptable level of FRML as the primary tool for managing squid fishing impacts. These options will not drive continual improvement, innovation or any reduction in bycatch rates. Forest & Brid does not support this approach especially for a declining population and have in consultation with other eNGOs and scientists developed Option 4.

55. Forest & Bird is proposing as an interim measure the Minister of Fisheries creates a temporary trawl exclusion zone to be implemented for the 2019/2020 fishing season until the TMP is reviewed in 2022 and a holistic approach to mitigate and reduce direct fisheries bycatch can occur across all fisheries, alongside management of other threats.

56. Option 4 is a temporal trawl exclusion zone designed as an interim measure to significantly reduce the threat and overlap the Auckland Island squid trawl fishery has on the important foraging grounds of breeding female NZ sea lions. The

[35] Department of Conservation CSP reports.

temporal nature of the trawl exclusion zone is to reflect that it is needed during the known breeding season when females have dependent pups on shore. The interim nature of the proposal is that a Ministerial decision is needed before the 2019/2020 fishing season starts and there is a lack of time to adequately progress an official assessment of essential areas for all foraging lactating NZ sea lions. Option 4 is designed to give the Minister a realistic and implementable option to be in place for two fishing season while the TMP is updated. Option 4 could provide valuable adaptive fisheries management data when reviewing direct fisheries impacts. Option 4 only restricts trawling seasonally.

57. Forest & Bird has used the best available telemetry information for Auckland Island lactating NZ sea lions which includes over 9,200 positions, with individuals tagged from Sandy, Dundas and Figure 8 locations. Telemetry data was provided by Fisheries NZ under the Official Information Act and is the same data used by Large et al., 2019[22]. This data (orange dots in Figure 8 & 9) clearly displays preferential foraging grounds. The fisheries data provided by Fisheries NZ was given at grid level for the last five fishing years (2013/2014 to 2017/2018). Whist 'effort' isn't shown the data provided shows there are distinct fishing areas which overlap with foraging grounds but commercial fishing doesn't operate over the entire 250m depth contour and shelf edge.

58. Given lactating NZ sea lions have no alternative foraging grounds Forest & Bird's primary recommendation would be to apply a temporary trawl exclusion zone to protect the entire 250m depth contour (Auckland Shelf) refer to Figure 8. This version of 'Option 4' would not reduce all the risk, as there are breeding female sea lion positions outside of the 250m depth contour. However, if applied it would significantly reduce the threat from the squid trawling. Spatially this option represents seasonally closing 24% of the 6T fishing area.

59. If this Option was implemented, there would likely be an impact to the commercial fishing industry. The squid trawl quota in area 1T (waters outside of the 6T fishing box) is consistently under caught. To date commercial fishers have failed to move outside of the 6T fishing area to catch available quota. Available quota is therefore not what is restricting where the commercial fishers operate. An abundance of squid associated with the 250m depth contour / Auckland Island shelf is more likely to be what is driving this commercial fishing behaviour and area preference. Forest & Bird has acknowledged this impact and while our preference is for fishers to move outside of the important foraging ground of all lactating NZ sea lions we have put forward an alternative option – again as an interim measure and a win-win for both conservation and fisheries, refer to Figure 9.

60. **Option 4 (Figure 9) would not restrict the 6T squid trawl fishery** as it still allows the fishery to fully operate. But, **Option 4 would significantly reduce the threat squid trawl poses** by closing 17% of the 6T fishery during the known breeding season. Option 4 should reduce the bycatch of NZ sea lions. This is an interim step to reduce direct fisheries bycatch until the TMP can be updated and a more holistic and coordinated approach can be taken to reduce direct fisheries bycatch across all fisheries.

61. Option 4 (Figure 9) allows for fishing. The south-eastern area of the 250 m depth contour has been excluded. It was selected based on; published fishing 'effort' information and it having slightly less overlap with known preference of the 250m depth contour based on the telemetry data used and in consultation with fisheries independent sea lion scientists and other eNGOs.

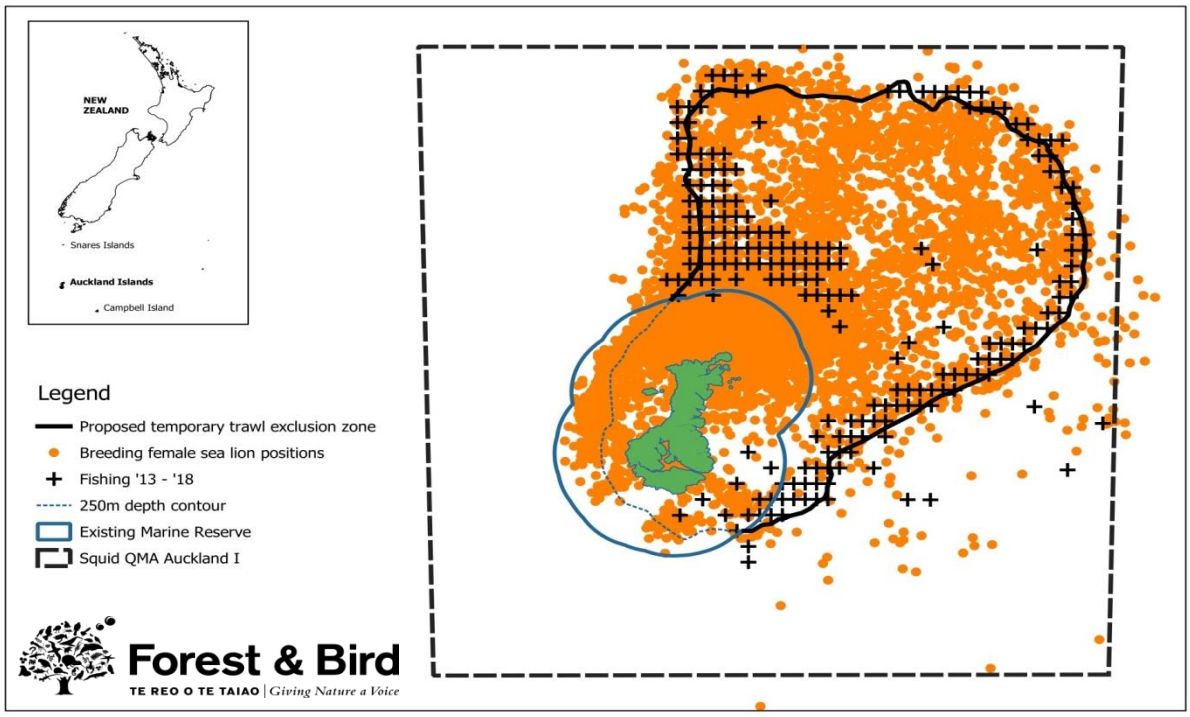


Figure 8: Utilisation distribution of all lactating NZ sea lions tagged from 1996 to 2012 and proposed Auckland Island temporal trawl exclusion zone (Forest & Bird preferred management option). Data provided by Fisheries NZ.

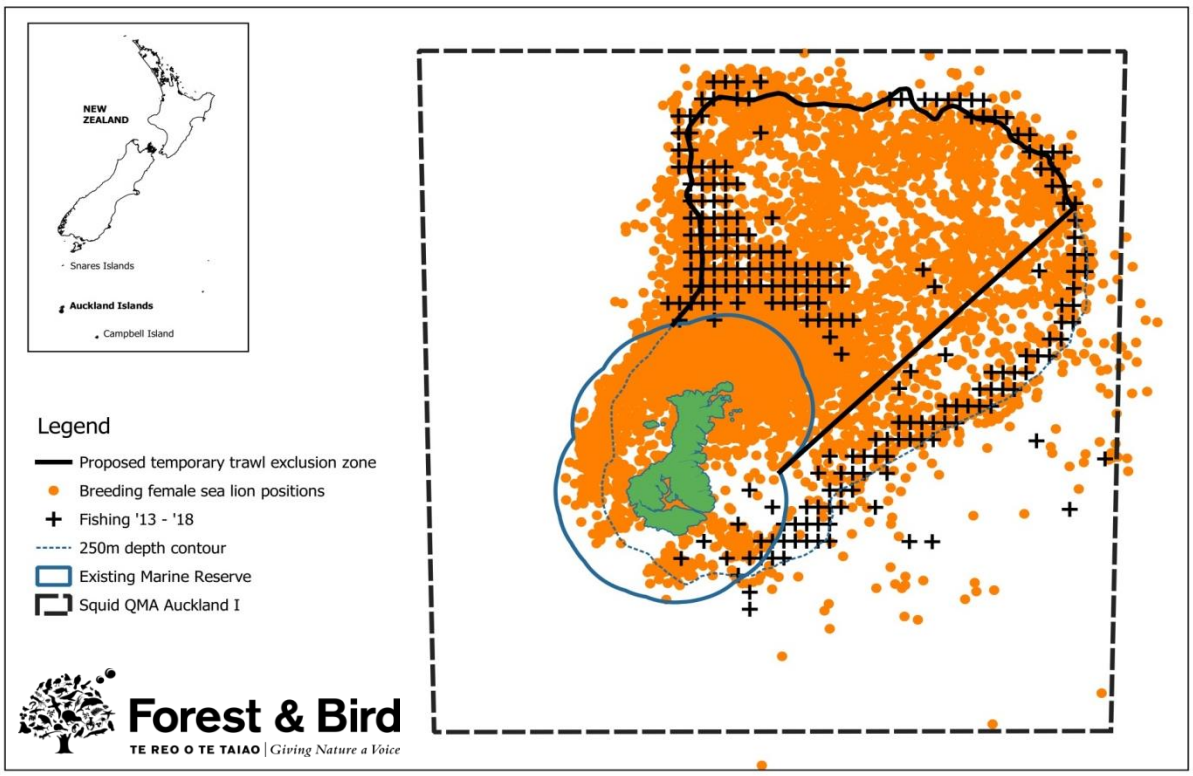


Figure 9: Option 4 – Forest & Bird's proposed Auckland Island temporal trawl exclusion zone and utilisation distribution of all lactating NZ sea lions tagged from 1996 to 2012. Data provided by Fisheries NZ.

62. Forest & Bird acknowledges a zero bycatch goal isn't going to be achieved overnight, nor if Option 4 was implemented, but this interim temporal measure represents the intention to continually strive to reduce direct fishing impacts in the areas of highest risk to lactating NZ sea lions while still enabling the squid trawl fishery to operate. As Roberts & Doonan (2016)[16] showed, fishing bycatch is the most significant threat to NZ sea lions that we can actively manage.

63. Forest & Bird wants to discuss Option 4 in more detail with the Minister, Fisheries NZ officials, industry, tangata whenua (particularly Ngāi Tahu) and other stakeholders. Currently there is no process to look at innovation, mitigation, spatial management and how to actively reduce direct fisheries impacts from the squid 6T fishery (or any other fishery). Forest & Bird is proposing that the Minister implement Option 4 as an interim measure for this 2019/2020 fishing season and establish a working group with all key parties to further progress this Option.

Thank you for the opportunity to comment. For any questions please don't hesitate to contact Forest & Bird.

Sincerely,

[redacted]

References

Baker, C.S., Boren, L., Childerhouse, S., Constantine, R., Van Helden, A., Lundquist, D., Rayment, W., and J.R. Rolfe. (2019). Conservation status of New Zealand marine mammals, 2019. *New Zealand Threat Classification Series 29*. 18 p. https://www.doc.govt.nz/globalassets/documents/science-and-technical/nztcs29entire.pdf

Childerhouse, S. & Gales, N. (1998). The historic distribution and abundance of the New Zealand sea lion *Phocarctos hookeri*. *New Zealand Journal of Zoology* 25(1): 1- 16.

Chilvers, B.L & Meyer, S. (2017). Conservation needs for the endangered New Zealand sea lion. *Aquatic Conservation* 27:846-855

Chilvers, B.L. & Wilkinson, I.S. (2008c). Philopatry and site fidelity of New Zealand sea lions, *Phocarctos hookeri*. *Wildlife Research* 35: 463-470.

Chilvers, B.L. & Wilkinson, I.S. (2009). Divers foraging strategies in lactating New Zealand sea lions. *Marine Ecology Progress Series* 378: 299 - 308.

Chilvers, B.L. (2008a). New Zealand sea lions (*Phocarctos hookeri*) and squid trawl fisheries: bycatch problems and management options. *Endangered Species Research* 5:193 – 204.

Chilvers, B.L. (2008b). Foraging site fidelity of lactating New Zealand sea lions. *Journal of Zoology* 276:28 –36.

Chilvers, B.L. (2009). Foraging locations of female New Zealand sea lions (*Phocarctos hookeri*) from a declining colony. *New Zealand Journal of Ecology*. 33(2):1106 – 113.

Chilvers, B.L. (2010). Final Report: Research to assess the demographic parameters and at sea distribution of New Zealand sea lions, Auckland Islands. Report prepared for the Conservation Services Programme, Department of Conservation POP 2007:01

Chilvers, B.L. (2019). Whisker stable isotope values indicate long-term foraging strategies for female New Zealand sea lions. *Endangered Species Research* 38: 55-66.

Chilvers, B.L., Amey, J.M., Huckstadt, L.A., & Costa, D.P. (2011). Investigating foraging utilisation distribution of female New Zealand sea lions, Auckland Islands. *Polar Biology* 34:565-574

Chilvers, B.L., Childerhouse, S.J & Gales, N.J. (2013) Winter foraging behaviour of lactating New Zealand sea lions *Phocarctos hookeri*. *New Zealand Journal Marine and Freshwater Research* 47:125-138

Chilvers, B.L., Wilkinson, I.S., Duignan, P.J., & Gemmell, N. (2006). Diving extremes: are New Zealand sea lions (*Phocarctos hookeri*) pushing their limits in a marginal habitat? *Journal of Zoology 269:233-241.*

Chilvers, B.L., Wilkinson, I.S., Duignan, P.J., & Gemmell, N. (2005). Identifying the distribution of summer foraging areas for lactating New Zealand sea lions *Phocarctos hookeri*. *Marine Ecology Progress Series* 304:235-247.

Chilvers, L. (2015). *Phocarctos hookeri*. In: IUCN Red List of Threatened Species, version 2015.2. www.iucnredlist.org

Collins, C.J., Chilvers, B. L., Taylor, M., & Robertson, B. (2016). Historic population size of the threatened New Zealand sea lion *Phocarctos hookeri*. *Journal of Mammalogy* 97(2): 436-443.
Conservation Minister Eugeine Sage - https://www.odt.co.nz/news/dunedin/sage-backs-zero-bycatch-policy-sea-lions

Department of Conservation & Ministry for Primary Industries. (2017). New Zealand sea lion / Rapoka Threat Management Plan.
https://www.doc.govt.nz/globalassets/documents/conservation/native-animals/marine-mammals/nz-sea-lion-tmp/nz-sea-lion-threat-management-plan.pdf

Department of Conservation. (2019). Media release 26th May 2019.
https://www.doc.govt.nz/news/media-releases/2019/matariki-whale-signposts-resurgence-of-tohora-southern-right-whale/?fbclid=IwAR2DZYJNjzbeyumiscKZHwag1pyRF8iU7j-hKGVyM41cKZz07-FUHOLQBF4

Department of Conservation. (2019). New Zealand sea lion monitoring and pup production at the Auckland Islands 2018/2019 Research Report, June 2019

https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/pop2018-03-sea-lion-pup-count-2018-19.pdf

Department of Conservation. (2019). Te Koiroa O Te Koiora – our shared vision for living with nature August 2019. A discussion document on proposals for a biodiversity strategy for Aotearoa New Zealand. The New Zealand Government https://www.doc.govt.nz/globalassets/documents/conservation/protecting-and-restoring/biodiversity-discussion-document.pdf

Fisheries Act 1996 - http://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html

Fisheries New Zealand. (2019). Consultation on the Squid 6T Operational Plan. Fisheries New Zealand Discussion Paper 2019/17. August 2019. New Zealand Government, from https://www.fisheries.govt.nz/dmsdocument/36435-consultation-on-the-squid-6t-operational-plan

Forest and Bird Pathway to Zero Bycatch report - https://www.forestandbird.org.nz/sites/default/files/201908/a%20pathway%20to%20zero%20bycatch_final.pdf

Large, K., Roberts, J., Francis, M., & Webber, D.N. (2019). Spatial assessment of fisheries risk for New Zealand sea lions at the Auckland Islands. *New Zealand Aquatic Environment and Biodiversity Report* No. 224 85p. Fisheries New Zealand https://www.mpi.govt.nz/dmsdocument/36375-aebr-224-spatial-assessment-of-fisheries-risk-for-new-zealand-sea-lions-at-the-auckland-islands

Meyer, S., Robertson, B. C., Chilvers, B. L., & Krkošek, M. (2015). Population dynamics reveal conservation priorities of the threatened New Zealand sea lion *Phocarctos hookeri*. *Marine Biology*, *162*, 1587-1596

Roberts and Doonan, (2016) *Quantitative Risk Assessment of Threats to New Zealand Sea Lions,* New Zealand Aquatic Environment and Biodiversity Report No. 166. Ministry for Primary Industries, Wellington

Roberts, J. (2019). Population effects of New Zealand sea lion mortality scenarios relating to the southern arrow squid fishery at the Auckland Islands New Zealand Aquatic Environment and Biodiversity Report No. 223

Robertson, B.C & Chilvers, B.L. (2011). The population decline of New Zealand sea lion *Phocarctos hookeri*: a review of possible causes. *Mammal Review* 41:253-275

WWF NZ - Colmar Brunton, (2017a). Attitudes Towards a Zero Bycatch Goal. http://awsassets.wwfnz.panda.org/dow84nloads/report___attitudes_towards_a_zero_bycatch_goal.pptx

WWF NZ - Colmar Brunton, (2017b). Attitudes towards Sealions and the threats they face.

From: Kevin Collins [redacted]
Sent: Friday, 16 August 2019 6:01 p.m.
To: FMSubmissions <FMSubmissions@mpi.govt.nz>
Subject: submission -- Draft Squid 6T Operational Plan

See submission below:

Which option for a fishing-related mortality limit do you think is most appropriate,
taking into account the purpose of the Fisheries Act 1996 to allow utilisation while
ensuring sustainability?
Option One

Do you think the use of Sea Lion Exclusion Devices should be required by regulation?
Yes, absolutely.

Do you think the penalty for breach of regulated use of Sea Lion Exclusion Devices is
appropriate?
No, the maximum fine should be $500,000. The whole point of penalties is to act as a serious deterrent.

Do you agree with the proposed approach to monitoring the fishery against the fishing-related mortality limit?
yes

Do you support a minimum target of 70 percent monitoring of the Squid 6T fishery, if so, why, and if not, what level of monitoring do you think is appropriate?
I support a 90 percent minimum observer coverage. The importance of protecting the sea lion population requires a very high level of observation.

Kevin Collins
[redacted]

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New Zealand Sea Lion Trust Submission Regarding 2019 Squid 6T Operational Plan

The New Zealand Sea Lion Trust ("the Trust") welcomes the opportunity to make a submission regarding the 2019 Squid 6T Operational Plan.

Founded in 2003, the Trust exists to promote the protection and conservation of, and education about the New Zealand Sea Lion. Our work covers the entirely of the NZ sea lion population, including subantarctic breeding populations. Nationally, we advocate at all levels, support researchers studying NZ sea lions and/or their habitats, and educate the public about this native megafauna. Locally, we work with the Department of Conservation identifying, monitoring and tagging the local breeding population centered around the Otago and Southland coasts.

The Trust has access to expertise relevant to support the objectives of the 'New Zealand sea lion/rāpoka Threat Management Plan 2017-2022' and hence the management of the Squid 6T Operation Plan. The Trust has made submissions to previous Operational Plans for the fishery.

The Trust congratulates Fisheries New Zealand for the establishment of the Technical Advisory Group and appreciates that their considerations and recommendations are included in 'Discussion Paper 2019/17'. However, the Trust has grave reservations about each of the proposed 3 Options set out in Table 2 of the 'Discussion Paper 2019/17.

NZ sea lions are absolutely protected and as such, we continue to question why Fisheries are allowed a kill limit, particularly in the face of the continued decline of the population breeding directly adjacent to the SQU6T Fishery:

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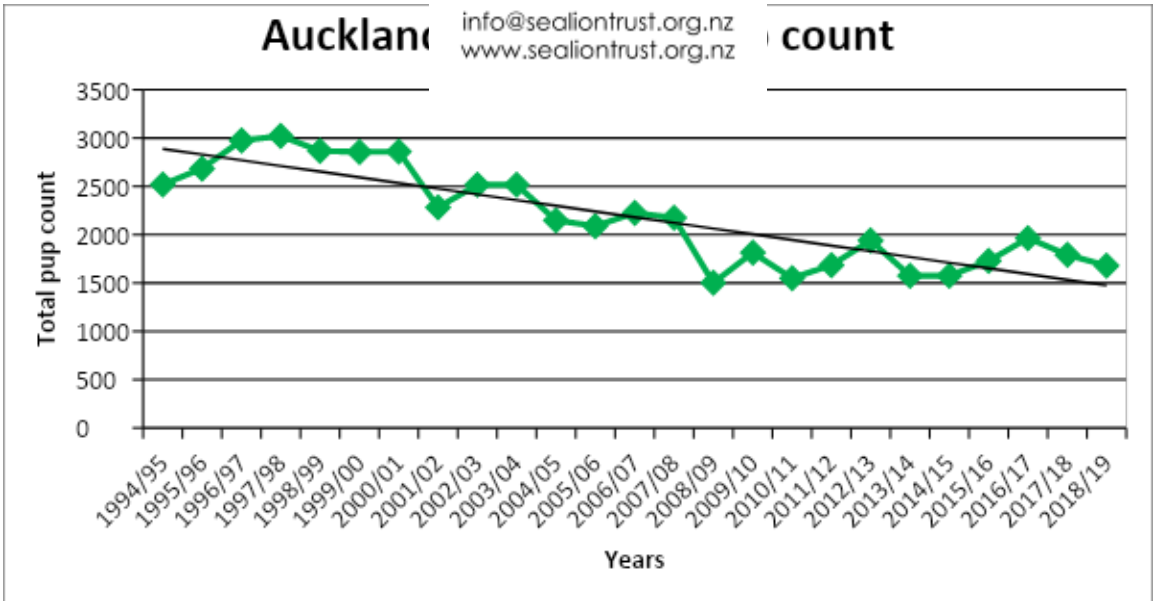

Further, the Trust concurs with the submission from one of our Science Advisors, Mr. Shaun McConkey, regarding the assumptions upon which the Options are based, and with his concern that **"none of these options will make any difference to the status quo [of the New Zealand sea lion population] and are effectively meaningless."**

The Trust considers that each of the three options laid out in the consultation document will result in a) the preventable deaths of wholly protected New Zealand sea lions and b) an unacceptably high risk that the objectives of the New Zealand Sea Lion Threat Management Plan will not be delivered. **The Trust therefore does not support the implementation of any of the proposed options.**

To assist the New Zealand sea lion population to re-build, the Trust concurs with the logic for, and supports the implementation of, an Option 4 as set out in the submission made by Forest & Bird. **The implementation of a temporary trawling exclusion zone for the duration of the breeding season of the Auckland Island New Zealand sea lions is a proactive approach to reduce fisheries interaction with, and bycatch of, sea lions**. Option 4 will:

- increase the likelihood that the population of New Zealand sea lions will increase;
- allow trawling in all of the fishery outside the breeding season of the New Zealand sea lions and trawling in all but 17% of the fishery during the breeding season;

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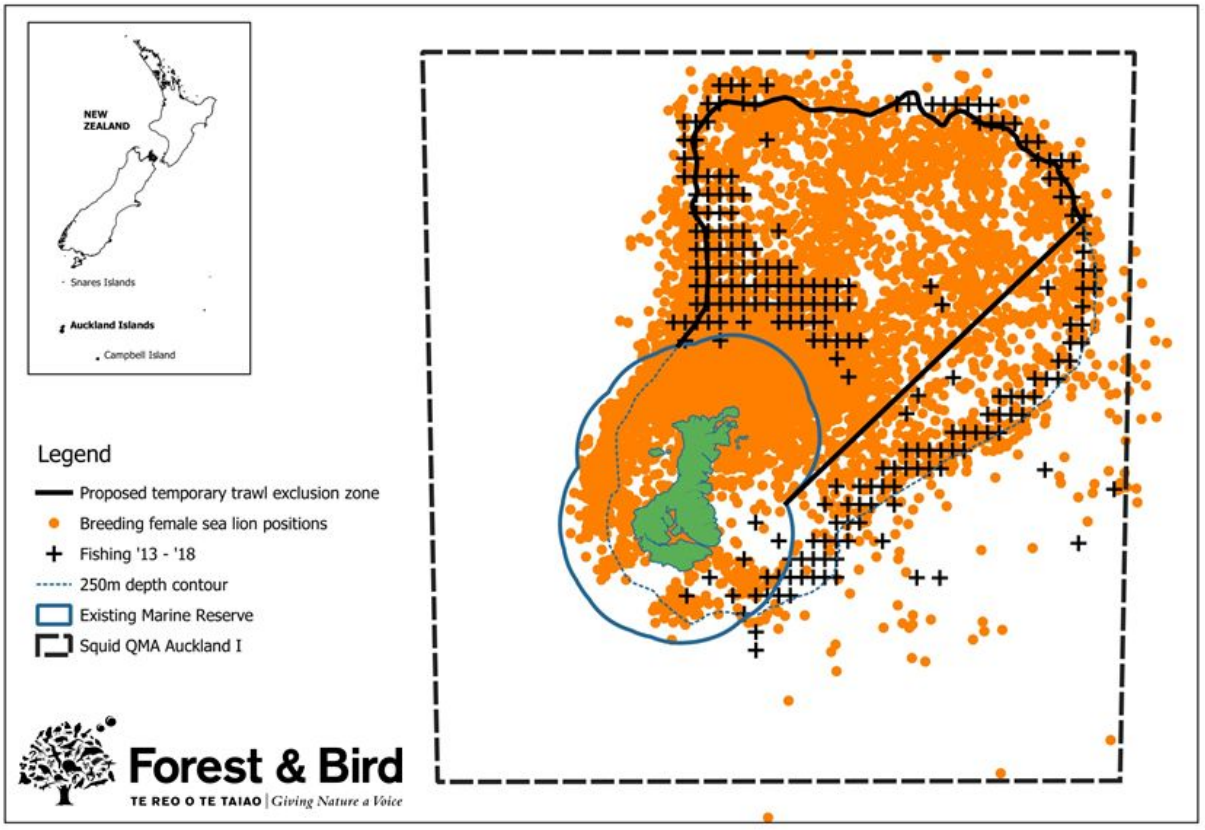
- not reduce the quota in th

Option 4 map showing preferred partial, seasonal closure of SQU6T:



At the end of the temporary spatial and temporal management approach within Option 4, the Technical Advisory Group will be able to:

- evaluate the impact of the temporary trawling exclusion zone on the New Zealand sea lion population;
- evaluate the impact of the temporary trawling exclusion zone on fishing catch and effort in the fishery; and
- consider appropriate future spatial and temporal fisheries management for the fishery.

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In the light of the lessons learned [redacted] the temporary trawling exclusion zone in the fishery, it is vital that [redacted] plement consistent spatial and temporal management arrangements across all fisheries that interact with New Zealand sea lions. This approach will ensure the highest likelihood that the New Zealand Government can deliver the objectives of the Threat Management Plan and any further plans developed to reduce risks to and support the population of sea lions.

To assist the delivery of the objectives of the current Threat Management Plan where and when trawling is permitted in the fishery, the Trust considers that it is important to adopt the following measures:

- There is considerable value in regulating the mandatory use of Sea Lion Exclusion Devices (SLEDs) on all tows in the fishery.
- There is also value in designing the regulation to allow Fisheries New Zealand to approve use of SLEDs for which the design is likely to improve their effectiveness. For example, in bottom trawls there may be benefits of moving the SLED closer to the mouth of the net, reducing the time (and increasing the likelihood of survival of) New Zealand Sea Lions are inside the trawl net.
- The penalty for breach of regulated use of Sea Lion Exclusion Devices at $100,000 is appropriate, given it is approximately twice the export value of catch from a typical tow. If this is the maximum penalty available, to act as an effective disincentive to breach the regulation, it certainly should be no lower.

The Trust has the following views regarding monitoring of the fishery:

- The Trust agrees with the proposed approach to monitoring the fishery against the fishing-related mortality limit, although with an observed capture “limit” of 5 (rather than the proposed 20) dead or alive New Zealand Sea Lions. The Trust notes that the proposed “limit” of 20 is more than twice the estimated number of deaths of New Zealand Sea Lions in recent years. This approach both limits the fishing-related mortality of New Zealand sea lions and provides an incentive for the fishing industry to develop fishing operations that reduces the likelihood of the fishery being closed, unlike the “Tow Limit” approach also considered by the Technical Advisory Group.
- As the mortality of New Zealand sea lions from interactions with fishing gear are rare events in the fishery, it is vital that the monitoring of the fishing tows are very high. **The Trust’s preference is for 100% observer coverage of all trawl tows**. While the

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Trust notes the advice of t up that the "Direct observation of captures/capture limit" uld likely require 100 percent monitoring (100 percent observer coverage), at least in the short term" there may be insufficient observers available.

- As considered by the Technical Advisory Group, the Trust supports the use of electronic monitoring equipment (such as cameras) in place of observers, if the equipment is demonstrated to reliably record interactions between New Zealand sea lions and fishing gear and if the data can be delivered to Fisheries New Zealand in real time, to allow the fishery to be closed when the fishing-related mortality limit is triggered.
- It is vital that the level of crypto-mortality of New Zealand Sea Lions accounts for trawl tows that are not observed, if any tows are not monitored.

The Trust supports the introduction of the following requirements in the fishery:

- Mandatory requirement for equipment known as a Vessel Monitoring System that report geospatial position (and other) data to Fisheries New Zealand in real time to be used on all vessels operating in the fishery. The data would assist in the spatial management of the fishery.
- Mandatory requirement for on-board camera that provides observations of all interaction between New Zealand sea lions and fishing gear.

Please do not hesitate to contact the Trust regarding the above, if needed.

Yours sincerely,

[redacted]

[redacted]

New Zealand Sea Lion Trust
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[redacted]

OTAGO CONSERVATION BOARD
Poari Papa Atawhai – ā-rohe ki Ōtago
PO Box 811, Queenstown, 9300 Ph: 03 442 7933 Email: otagoconservationboard@doc.govt.nz

Squid 6T Operational Plan Consultation
Deepwater Fisheries Management
Fisheries New Zealand
P O Box 2526
Wellington 6140

2 September 2019

Submission of the Otago Conservation Board to the Consultation on the Squid 6T operational plan 2019.

The Otago Conservation Board (OCB) submitted on the previous Operational plan (2017/18 and 2018/19) and has maintained its interest in the management of the impacts of the southern squid fishery on the New Zealand sea lion/rapoka population. We are pleased to have the chance to submit on the current plan.

Most of the comments we made then are still relevant now. Our submission this time reflects the approach we adopted then, which could be broadly described as promoting a precautionary principle to the effects of the squid fishery on the sea lion population.

We believe that using the Fishing Related Mortality Limit (FRML) as the primary regulatory measure is a realistic one. We note the changes to the methodology used to estimate the FRML to a more direct process and believe this is a positive change, making the process simpler as relates the FRML more directly to the impacts on sea lion population numbers.

In general, it appears that the population of sea lions has stabilised from its downward trend and the numbers of sea lions ending up in nets has decreased. This is due in no small part to the efforts of the fishing industry in their uptake in the use of the Sea Lion Exclusion Device (SLEDs) and they are to be applauded for doing so.

The discussion document outlines 3 options for the setting of the FRML:

	Maximum impact on population	Fishing-Related Mortality Limit
Option 1	2.5%	26
Option 2	5%	52
Option 3 (Not preferred)	10%	104

The Otago Conservation Board supports **Option 1** for the following reasons:

In our submission to the previous plan we said:

"The 2017/2018 Operational Plan should... set the Fishing-Related Mortality Limit (FRML) at 38 (Option 2)"

The FRML is not reaching the level (of 38 dead sea lions/year) proposed by the previous plan or indeed the 26 deaths envisaged in Option 1 of this plan. There have been an estimated 12 sea lion deaths over the last two years. Given that the fishery is not being affected in terms of the amount of squid being caught, and that the plan seems to be working, we see no need to increase the limit beyond this. For this reason, we support Option 1.

We also said:

"The goal is not to stabilise the NZ Sea Lion population at its current threatened status but for the population to increase beyond that status. Impacts from fishing activity need to be assessed in those terms".

This statement still stands. The population is still assessed as 'Nationally vulnerable' and by applying a precautionary principle, we allow a margin for a potential increase in sea lion mortality and also for other negative environmental factors, as well as promoting the potential to grow the population. Therefore, we support Option 1.

In general, the OCB agrees with the executive summary of the discussion paper that suggests that the fishery is having a low impact on the sea lion population and that the FRML ensures that the fishery does not adversely affect that into the future.

It is vital however, that the good work of both industry and research continues to aid the recovery of the Auckland Islands sea lion population. This means the application of the more precautionary Option 1 approach and the continued gathering of information through the observer programme.

We also note from the discussion document that;

"The vision of the NZ Sea Lion Threat Management Plan is to "*promote the recovery and ensure the long-term viability of New Zealand sea lions, with the ultimate goal of achieving 'Not Threatened' status2*".

The objectives are to:

1. Halt the decline of the New Zealand sea lion population within 5 years; and

2. Ensure the New Zealand sea lion population is stable or increasing within 20 years, with the ultimate goal of achieving "Not Threatened" status."

These are ambitious goals and given the unpredictable nature of the dynamics of the Auckland Island sea lion population, we see no reason to endanger their current stability by allowing a potentially higher FRML.

The OCB supports a four-year lifetime of the plan to tie in with the review of the NZSLTMP in 2023, with the inclusion of the triggers for review as outlined in the discussion document.

The OCB also notes that, while there is allowance made in the Population Sustainability Threshold (PST) calculations for the possible impacts on sea lion mortality of other fisheries, we would like to see further work done on quantifying these impacts, in particular on the scampi fishery closest to the Auckland Islands.

The discussion document also asked for feedback on a number of questions. Our thoughts are listed below.

Discussion questions:

Which option for a fishing-related mortality limit do you think is most appropriate, taking into account the purpose of the Fisheries Act 1996 to allow utilisation while ensuring sustainability? Option 1. There seems no need to go higher.

Do you think the use of Sea Lion Exclusion Devices should be required by regulation? No. There has been good uptake by industry.

Do you think the penalty for breach of regulated use of Sea Lion Exclusion Devices is appropriate? The OCB has no comment to make on this.

Do you agree with the proposed approach to monitoring the fishery against the fishing-related mortality limit? Yes. The FRML is a good incentive to guide the industry and provides a definitive backstop should it be reached. Relating it to the % effect on the population is a useful tool and the new methodology seems simpler, better understood and better applied.

Do you support a minimum target of 70 percent monitoring of the Squid 6T fishery, if so, why, and if not, what level of monitoring do you think is appropriate? We feel that observer coverage should be at least 90%. We are only now starting to get good research; it would be best to keep getting it. We encourage the government and industry to continue to use independent observers, support robust statistical analysis of collected data and to work collaboratively to technical solutions to minimising bycatch.

Yours sincerely,

[redacted]

Otago Conservation Board
16 Kerry Street
Alexandra 9320
[redacted]

OTAGO CONSERVATION BOARD
Poari Papa Atawhai – á-rohe ki Ōtago

Fisheries New Zealand

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Date: 20 September 2019

OUR SEAS OUR FUTURE
www.osof.org

Submission: SQU6T Operational Plan Consultation

General Introduction

1. Our Seas Our Future ("OSOF") is a not-for-profit organisation that aims to protect New Zealand's coastal and marine ecosystems through advocacy, education, and environmental stewardship, ensuring that they are managed sustainably and protected for future generations.
2. OSOF welcomes the opportunity to comment on the Ministry for Primary Industries **SQU6T Operational Plan Submission (OP).**

Our Submission

Question 1. Which option for a fishing-related mortality limit do you think is most appropriate, taking into account the purpose of the Fisheries Act 1996 to allow utilisation while ensuring sustainability?

3. **Option 1 with amendments**
4. None of the options take into account non-fishery related deaths (Robertson and Chilvers 2011).
5. Disease is a serious risk for these species due to their highly restricted range in the sub-antarctic islands. There have been two recorded outbreaks of bacterial infections within sealion colonies. The first disease occurred in 1998 and resulted in the death of 53% of pups during their first month of life. A different disease caused massive die offs in 2002/03.

Although disease is unlikely to be the main cause of sea lion declines, it may hinder the ability of populations to recover from other threats, such as fishing mortality.

6. The **OP** refers to achieving a "defined population outcome" for NZ sea lions, and how it is the 'same approach taken to the proposed desired population outcomes in the Hector and Maui dolphin Threat Management Plan. There is no scientific backing in **OP** to claim they can undertake "*with 95% certainty, impacts are at or below a level that will allow the Auckland Island NZ sea lion population to recover to, and/or stabilize at an equilibrium size that is at or above a proportion of the unimpacted population size...*".

7. Although the intentions are good, we see no purpose or ecological justification for seeking to re-create an uncertain hypothetical pre-fisheries exploited population. It has been long cautioned that managing human altered ecosystems to 'pre exploited' levels is a dubious concept because we cannot safely conduct large-scale experiments in nature (Freeman 2008).

8. The **OP** fails to acknowledge that science follows an ecosystem or multi-species approach and this has been adapted worldwide, as seen in Agenda 21 of the IUCN, the UN Food and Agricultural Organization (FAO), science- based organizations such as the North Atlantic Marine Mammal Commission (NAMMCO), the Pacific International Council for the Exploration of the Sea (PICES) and the Indian Ocean Tuna Commission (Freeman 2008).

9. The improbable and arguably irrelevant exercise of the **OP** seeking *defined population outcomes* seems to provide the rationale for much of what passes for marine mammal conservation. Unfortunately the New Zealand Government has fallen into this category.

10. Annual Fishing-Related Mortality limit under all options include both sexes combined. Because females have a restricted foraging range while nursing, they are more likely than males to encounter SQU6T trawl nets (Chilvers et al 2005). Research shows that females have a lower survival rates than males, and this needs to be reflected in the Fishing-Related Mortality limit.

11. A revised **OP** should be developed immediately after the finalisation of the Hector and Maui TMP and draw upon the data from the process.

12. Fisheries New Zealand urgently needs to consider the impact on NZ sea lions from Scampi, Hoki and other mid-trawl fisheries separately. All sea lion mortalities are incorporated into the estimates of demographic rates in this population, and are therefore taken into account when the Population Sustainability Threshold (PST) for the SQU6T is calculated.

13. Fisheries New Zealand urgently need to consider cumulative effects of all fisheries related mortality, as well as non-fishing related mortality.

14. Fisheries legislation needs to be re-evaluated. Compared to an integrated approach to species protection in Australia, the regime in New Zealand falls short. In Australia, Commonwealth species protection is dealt with in one piece of legislation, the EPBC Act. In New Zealand, three pieces of legislation are involved, being the Fisheries Act 1991, the Marine Mammal Protection Act 178 and the Wildlife Act 1953. Under the EPBC Act, the Commonwealth Environmental Minister accredits a Fisheries Management Plan FMP once all reasonable steps have been taken to circumvent injuring and killing threatened and listed species. New Zealand has not instituted this type of protection under the Fisheries Act and only imposes penalties if an animal is hunted, killed, brought, processed for sale or possess

without lawful authority. Due to this, the environmental protection provided by Australia's defences is higher than environmental protection provided by New Zealand's defences.

15. The current actual impact is less than 1.5% therefore the option which is closest to 1.5% is the most appropriate option. The purpose of the Fisheries Act is met by Option 1. Although Option 1 is unlikely to constrain the amount of fishing activity and thereby "allows utilisation", the proposed fishing related mortality limit of 2.5% would serve as a backstop to ensure that fishing does not have an adverse effect on sea lion population in the future and thereby "ensures sustainability". Option 1 would be consistent with the NZSL TMP vision of *"promoting the recovery and ensuring the long-term viability of New Zealand sea lions, with the ultimate goal of achieving "Not Threatened" status".*

Question 2. Do you think the use of Sea Lion Exclusion Devices should be required by regulation?

16. **YES** - SLED's should be a mandatory requirement under section 11 of the Act that requires SLEDs to be used on all tows in the squid 6T fishery.

17. SLED's being mandatory in the SQU6T fishery is necessary considering it is a bottom trawl fishery, and it is estimated that 57% of sea lions that swim into the net swim out again.

18. Mandatory use of the SLEDs will act as a disincentive for innovation/improvement of SLED design, which is encouraged to reduce the most uncertain aspect of the Operational Plan, cryptic mortality. However, the Operational Plan only specifies SLEDs in the SQU6T fishery and disregards the middle depth fisheries including scampi, which operates all year round 20-60 nautical miles from the Auckland islands, and Hoki, Hake, Ling and Warehou.

19. There is data deficiency with use of SLEDs, because it is unknown what state the sea lion may be escaping in i.e. injured - meaning accurate data on the number of mortalities is unavailable. SLEDs are obviously better than nothing however we would like to see implementation of monitoring systems e.g. camera or device attached to the sleds to show that SLEDs being used effectively. In addition, cameras and 100% observer coverage should be deployed on boats in this area to ensure boats are using SLEDS in every tow.

20. The most important initiative to mitigate impacts of fishing on sea lions is the SLED. Although all vessel operators in the SQU6T fishery currently deploy SLEDs on all tows as the result of a non-regulatory commitment, regulating the use of SLEDs in the SQU6T fishery would provide more assurance that SLEDs will be used on all tows, and provide a tool for Fisheries NZ to respond if any tows were to be completed without a SLED.

Question 3. Do you think the penalty for breach of regulated use of Sea Lion Exclusion Devices is appropriate?

21. **YES** – The penalty is appropriate.

22. There also needs to be a push for SLEDs on the alternative fisheries operating in the region, and funding and scientific research to reduce cryptic mortality from SLED use.

Question 4. Do you agree with the proposed approach to monitoring the fishery against the fishing-related mortality limit?

23. **YES-** The proposed approach of relying on observed sea lion captures as adjusted by the cryptic mortality rate for observed tows, and by also relying in a complementary way on the fatal interaction rate for unobserved tows is a sound approach. This is because the approach takes account of both observed and unobserved factors.

24. The cryptic mortality rate of 1.3 sea lion deaths per observable capture takes account of situations where the sea lion drowns in the net but the body is subsequently lost without being able to be observed (body non-retention), and it also takes account of situations where the sea lion exits the net via the SLED but nonetheless dies as a consequence of the interaction (post exit mortality). The Technical Advisory Group's (TAG) suggestion that a single cryptic mortality rate should be used, based on the weighted average of effort composition (ratio of midwater to bottom trawls) for the three most recent fishing years (2015/16 to 2017/18) is appropriate. Taking this approach, each observed mortality would be adjusted by the cryptic mortality multiplier and the fishery closed when the adjusted total reaches the fishing-related mortality limit.

25. For tows that have not been observed, Fisheries NZ will calculate estimated sea lion mortalities resulting for that effort based on the "fatal interaction rate" of 2.3 fatalities per 1000 tows. This ensures that all squid fishing activity that may result in a sea lion fatality is accounted for in monitoring against the fishing –related mortality limit.

26. It is a good precautionary decision for clarity and transparency, and to avoid questions about post-release mortality of sea lions, for Fisheries NZ to propose that both live and dead observed captures should count against the fishing-related mortality limit.

Question 5. Do you support a minimum target of 70 percent monitoring of the Squid 6T fishery, if so, why, and if not, what level of monitoring do you think is appropriate?

27. **NO** - OSOF supports a minimum target of 100% monitoring in the fishery.

28. This is the level of monitoring which has been sought by the TAG who are qualified and who have considered this issue. The TAG expressed support for 100% monitoring in the fishery to provide additional confidence that all captures in the fishery are accounted for.

29. It would be very attainable for a 100% level of monitoring to be achieved. This year 95% of all fishing effort has been monitored by on-board Fisheries NZ observers, therefore the current level of monitoring is almost at the 100% level. The high resourcing requirements for 100% monitoring are likely to be able to be met by both the fishing industry and Fisheries NZ. The history of the past five years supports this proposition. Actual observer coverage has been over 84% in the last 5 years, primarily as the result of having at least one observer on every foreign owned vessel at all times. In the 2017/18 fishery, over 88% of tows were observed, and 95% of tows were observed in the 2018/19 SQU6T fishery.

30. With advancing monitoring technology, additional monitoring approaches may be considered for the fishery that could reduce the resourcing requirements. However, this is not available in the short term.

References

31. Chilvers, B. L., Wilkinson, I. S., Duignan, P. J., & Gemmell, N. J. (2005). Summer foraging areas for lactating New Zealand sea lions Phocarctos hookeri. *Marine Ecology Progress Series*, *304*, 235-247.

32. Robertson, B. C., & Chilvers, B. L. (2011). The population decline of the New Zealand sea lion Phocarctos hookeri: a review of possible causes. *Mammal Review*, *41*(4), 253-275.

33. Freeman MR (2008) Challenges of assessing cetacean population recovery and conservation status. Endangered Species Research 6: 173–184.

5th September 2019

Squid 6T Operational Plan Consultation
Fisheries New Zealand
Ministry for Primary Industries
PO Box 2526
Wellington 6140

BY EMAIL: FMSubmissions@mpi.govt.nz

Sealord Submission on Squid 6T Operational Plan Consultation 2019

1. Kia ora and thank you for the opportunity to make a submission on the Squid 6T Operational Plan Consultation.
2. Sealord is half owned by the Maori people of New Zealand, through Moana New Zealand (Aotearoa Fisheries Ltd), and half owned by global seafood company Nippon Suisan Kaisha, Ltd (Nissui).
3. One of the largest quota holders in New Zealand, Sealord manages all aspects of our deep-water operations from harvest to sale. Sealord operates eight deep water vessels in New Zealand waters. For more information on Sealord please refer to www.sealord.com.
4. Sealord supports measures to reduce bycatch of threatened species.
5. Sealord endorses the submissions to the Squid 6T Operational Plan Consultation made by Te Ohu Kaimoana and by Deepwater Group.

Sealord in the SQU6T Fishery

6. Arrow squid are unique in New Zealand's middle depth fisheries in that they live only one year, spawn once then die. It is not possible to assess the biomass prior to the fishing season and to date there have been no environmental variables that reliably correlate with abundance. It is clear however that though the fishery has been exploited for forty years with no restriction, other than commercial and operational imperatives, there has been no noticeable impact on available biomass. When also considering the high value of the product, SQU6T may be considered an ideal fishery; if industry can control non-fish bycatch.
7. Sealord has fished in the SQU6T fishery since the '80s with an annual average catch is circa 3,000 tonnes greenweight. This equates to 20% of the total annual SQU6T catch.
8. The SQU6T campaign, in concert with the Snares Shelf SQU1T fishery, is a critical component of the annual

catch plan for half of the Sealord fleet. The effect of regulations that increase the business risk of losing access to the squid fisheries is greater than the loss of SQU6T catch – the result of an inappropriately applied FRML could be the the exit of a vessel and the loss of GDP and jobs.

9. The SQU6T fishery has a high annual variabiltity in both catch and effort. In occasional years the abundance of squid in the 6T fishery will lead to a significant increase in effort, possibly compounded by lack of abundance in the Snares fishery.
10. Since the introduction of the Sea Lion Exclusion Device (SLED) observed captures in the SQU6T fishery have been reduced, by an order of magnitude, to an annual average of three individuals. This result is alongside an increase in observer coverage rates.
11. Sealord is a signatory to the SQU6T Deepwater Group Code of Conduct, the of aim this agreement is for industry to demonstrate exemplary performance and exceed the requirements of the Fisheries NZ Operational Plan. The Code of Conduct agreement commits Sealord, in addition to complying with the Operational Plan, to the following behaviours:
    a. All sea lion interactions are promptly reported along with digital photography
    b. All crew undertake environmental training every 12 months
    c. No entry to the fishery without at least two compliant SLEDs on board. And requirement to leave fishery in the case of damage to the SLEDs
    d. Compliance with transparency initiatives
    e. No entry into the fishery before 1st February without an observer
    f. Commitment to leave the fishery as soon as squid catch declines

Conceptual disagreement with SQU6T Operational Plan Consultation approach

12. Sealord does not aggree that the application of the FRML alone is the only conservation measure:
    a. The FRML is a useful limit to understand the upper limit for sustainability of the sea lion population.
    b. The industry has made massive strides in bringing sea lion captures so far below the FRML capture rate that there can be no accusation that the industry sees it as a target.
    c. The FRML is presented as a management target by detractors to the fishing industry and publicised to mischaracterise the status of bycatch improvement.
    d. The proposed options for FRML in the consultation document (2.5%, 5% and 10%) are arbitrary increments with little relationship to conservation science. On the assumption that the 10% limit

is the maximum limit underwhich the sea lion population is sustainable, then this is the limit that is appropriate in both in terms of science and the law.

13. The New Zealand sea lion population is stable. Localised depletion around the Auckland Islands does not correlate with fishery interactions.
14. Section 15(2) of the Marine Mannal Protection Act (1978) states that The Minister may "…take such measures as he or she considers are necessary to avoid, remedy, or mitigate the effect of fishing-related mortality…". Sealord questions why the minister considers it necessary to propose stricter measures on an industry that has demonstrated an ongoing commitment to eliminate seal lion mortality, and succeded, to the extent that three or fewer is the norm and last season's total of seven is a noteworthy outlier.
15. It does not follow that as fishing companies institute measures and are successful in reducing the incidence of sea lion captures, that therefore the FRML should be reduced to reflect the 'new normal'. This amounts to punishing fishers for good behaviour.

Sealord submission in the proposals for the SQU6T Operational Plan

16. Sealord supports option 3 in the Proposals for a 10% maximum impact on the sea lion population, noting that for the reasons outlined above Sealord sees this only as an upper limit which will not lead to a decline in the population of sea lions and is not a target. Sealord supports the ongoing, industry led, progress in mitigating sea lion capture, which have been proven to delivery substantially lower mortalities than would otherwise affect the population.
17. Sealord does not support the proposal for regulatory requirement for SLED. The SLED is our current best tool for sea lion mitigation however this does not mean that the design will always be the best it can ever be or that it could not be eclipsed by a different mitigation measure and if it is legislated it becomes much more onerous to make changes in the future. The industry Code of Conduct requires that vessels will carry SLEDs and, as the Ministry is aware, every SQU6T tow in the last seven years has complied with the requirement therefore Sealord would see this regulation as superfluous.
18. Sealord does not support that live released sea lions should count against the FRML.
19. Sealord supports a monitoring target of 100% in order to give both MPI and the public assurance that reported interactions are correct. It should however be noted that Sealord do not agree that unmonitored vessels do not report sea lion captures and therefore require the application of the "fatal interaction rate" however also understands that having 100% observer coverage will remove all doubt.

Yours sincerely

SEALORD GROUP LTD

[redacted]

[redacted]

[redacted]

Sealord

Submission on the Draft Squid 6T Operational Plan

17/9/19

I have several concerns with the Draft Squid 6T Operational Plan

My first concern is with the lack of real data informing all of the decisions being made which are instead largely based on models and simulations.

The previous model by [redacted] consistently gave much more positive predictions of population growth than were being observed. Once this model was finally reviewed by an independent panel it was rejected and a new one established.

The new model stated that "A positive growth rate was obtained only with the alleviation of Klebsiella." indicating that pup survival is the most important factor in population growth. This goes against conventional wisdom for similar species and against an alternative model developed by [redacted]. This is also at odds with recent modelling (Roberts, J. 2019) which suggests that the improvement in pup production trajectory in recent years (from decreasing to stable) was driven by increased annual survival at age groups 2–5 and 6–14 years while pup survival remained the same. This indicates how uncertain modelling can be. Even if a model is accurate, it can only be as good as the input values which for many of the SQU6T management decisions are estimates.

This leads to modelling of cryptic mortality by Meyer (2019) which is "informed by: data of observed NZSL captures relative to estimated total interactions with observed trawl events (to model probability of exiting the net); simulation studies (e.g. post-exit survival); and estimates based on expert knowledge (e.g. carcass retention)." Most of the input values come from estimates and simulations some of which are themselves based upon estimates.
For example:
Foraging behaviour – real data
Fishing activity – real data
Number of sea lions retained in nets – real data
Sea lion interactions with trawls – estimated based on real data
Number of sea lions drowning in nets but not retained – estimated based on estimates
Number of sea lions escaping nets but not surviving – estimated based on estimates
Total sea lion population – estimated based on real data
Effect of fishing related mortality on the population – estimated based on estimates
The number of factors that are estimated (especially based on other estimates) is a real concern and attempts should be made to increase the amount of real data in order to reduce uncertainty in these areas.

I also have concerns over the continued decline of the Auckland Island sea lion population. While this has stabilised, it has not recovered which makes it vulnerable to any future declines. This stabilisation should therefore not be considered a success and will not lead to a non-threatened status

I am concerned that the future research focuses mainly on further simulations and modelling rather than the collection of real data to provide better information for decision making. Some form of scanner at the exit hole of the SLED may be able to detect PIT tags in sea lions and provide better data on interactions with nets and resighting of animals recorded by the scanner could also provide data on survivability of sea lions that have passed through the exit hole

My final concern is with the language used in the consultation background information.

- "SLEDs are considered to be effective at allowing most sea lions to escape from the trawl net and survive."
- "we not only know that SLEDs allow the majority of sea lions to escape and survive, but we can characterise what might happen to a sea lion that swims into a trawl net."
- "From this information, we know that fishing in SQU6T is having a very low impact on the sea lion population"

On each occasion the language used suggests certainty about the following statement that is unjustified and misleading.

In regard to the proposals for which people's views are being sought:

- making the use of SLEDs mandatory across the fishery
- setting a minimum observer coverage target of 90%
- putting a limit on the number of sea lions that can be accidentally caught in the fishery before it is automatically shut down. There are 3 options in the paper which equates to a 2.5%, 5% or 10% impact on the sea lion population.

SLEDs are currently used on all vessels in SQU6T; the observer coverage is already around 90%; and the current estimated impact on the sea lion population is around 1%, so less than any of the 3 limits proposed. Therefore, none of these options will make any difference to the status quo and are effectively meaningless.

An alternative option that would have a more meaningful impact on sea lion survivability would be to further reduce the overlap between fishing activity and sea lion foraging

Shaun McConkey, MSc (Marine Science)
Science Advisor NZ Sea Lion Trust
[redacted]

Te Ohu Kaimoana's response to Fisheries New Zealand's Draft Squid 6T Operational Plan

Te Ohu Kaimoana

Contents

Executive summary

1. Te Ohu Kaimoana is committed to the conservation of marine mammals. Over the past decade we have seen a considerable and consistent reduction in the incidental mortality of New Zealand sea lions (rāpoka) associated with the Squid 6T fishery (SQU6T). This improvement can be largely attributed to the development and full and proper use of excluder devices (known as SLEDs) that allow the release of live rāpoka from trawl nets. The fishing-related mortality limit (the FRML) has not been met since 2003 and observed captures have been below 10 since 2006 with high observer coverage. This shows over a decade of commitment and effective protection for rāpoka.

2. The reduction of rāpoka mortalities has been achieved through a "bottom up" approach to the codified management of the behaviour and operations of the fishing companies involved. "Bottom up" means the measures and procedures to reduce rāpoka captures have been developed and implemented by the participants in the fishery. These measures are required through industry Operational Procedures which support and align with Fisheries New Zealand's SQU6T Operational Plan.

3. Annual population monitoring provides confidence that the rāpoka population is being maintained above a level that ensures its long-term viability. Further, the long period of low captures in SQU6T has reduced effects on the Auckland Island's (Maungahuka/Motu Maha) sub-population ensuring that biological diversity within the wider population is maintained.

4. We have reviewed the draft SQU6T Operational Plan (the Plan) against this backdrop of progress and have concluded that the regulatory measures outlined in it are unnecessary – particularly the setting of a statutory FRML and regulating the use of SLEDS – given these proposals seek outcomes that have already been achieved.

5. The Fisheries Act 1996 (the Act) obliges the Minister of Fisheries to ensure that the rāpoka population is maintained above a level that ensures its long-term viability. The Minister may set sustainability measures under Part III of the Act to assist with meeting that obligation. Before setting or varying a sustainability measure, the Minister of Fisheries (the Minister) must consider the effects of fishing on the aquatic environment, which includes protected species. If the Minister is satisfied that existing measures are managing the effect, there will be no need to set a formal sustainability measure. It is our contention that the impacts of fishing on the rāpoka population are being managed beyond the requirements of the Act and that there is no need for setting further sustainability measures.

6. In addition, we do not consider the case has been made for compulsory use of SLEDs in SQU6T. This is for two reasons:

    - First, SLEDs are used by every vessel operating in the fishery in accordance with both industry Operational Procedures and the Operational Plan. Put simply, the Minister requests their full use every year and industry both agree and deliver on this. Every tow in SQU6T has had a standardised SLED deployed for the last ten years and thus it is not necessary to regulate their implementation.

    - Second, if regulated the prescription of SLED specification would restrict further innovation. There is no benefit for the regulation of SLEDs; only potential cost and risk.

7. The Plan claims that the most relevant consideration for the regulation of the use of SLEDs is the existence of National Deepwater Fisheries Plan. We understand that the plan being referred to was in effect between 2011 and 2016 but has since expired. It is not appropriate for a consultation document to give weight to a plan that does not currently appear to have status under the Act.

8. The proposals in the Plan are unnecessary and, if implemented, risk destabilising the high and demonstrable level of responsibility industry have taken to protect rāpoka. They would effectively replace "bottom up" outcomes that have been achieved through industry operational procedures with a "top down" set of regulations. This approach risks disconnecting the very people who are best placed to continue adapting their fishing operations to further reduce incidental mortality. Further we note from Deepwater Group's (DWG) submission their declaration to continue to maintain full use of SLEDs and other relevant operational requirements and given the performance over the last decade see no reason to doubt their capability to or sincere willingness to deliver this.

9. We strongly support continuation of the non-statutory measures set out in the current SQU6T Operational Plan and consider they have been successfully implemented to date by collaborative development, application, maintenance and monitoring. This is evidenced by the low captures of rāpoka over the past decade. Our strong preference is for such plans to be used to enable innovation and therefore be developed through a bottom up process. Industry have already proven through the success of the SQU6T fishery that they are capable and committed to such action. We consider the actions that have been taken in the SQU6T fishery to be a success for protected species mitigation. We strive to maintain and build on this progress.

Introduction

10. This document outlines Te Ohu Kaimoana's response to the proposals for an updated Plan. Our interest in the matter relates to our responsibility to protect the rights and interests of Iwi and assist the Crown to discharge its obligations under the Deed of Settlement and the Treaty of Waitangi[1]. To achieve our purpose, we are guided by the principles of Te Hā o Tangaroa. We do not intend for this response to derogate from or override any response or feedback provided independently by Iwi, through their Mandated Iwi Organisations (MIOs[2]).

11. MIOs have approved our Māori Fisheries Strategy and three-year strategic plan, which has as its goal "that MIOs collectively lead the development of Aotearoa's marine and environmental policy affecting fisheries management through Te Ohu Kaimoana as their mandated agent". We play a key role in assisting MIOs to achieve that goal.

12. We work on behalf of 58 MIOs, who collectively represent the interests of all Māori. Asset Holding Companies (AHCs) hold Fisheries Settlement Assets on behalf of their MIOs. The assets include Individual Transferable Quota (ITQ) and shares in Aotearoa Fisheries Limited which, in turn, owns 50% of the Sealord Group.

[1] *Our purpose, set out in section 32 of the Māori Fisheries Act, is to "advance the interests of iwi, individually and collectively, primarily in the development of fisheries, fishing and fisheries-related activities, in order to:*
(a) Ultimately benefit the members of iwi and Māori generally; and
(b) Further the agreements made in the Deed of Settlement; and
(c) Assist the Crown to discharge its obligations under the Deed of Settlement and the Treaty of Waitangi; and
(d) Contribute to the achievement of an enduring settlement of the claims and grievances referred to in the Deed of Settlement."

[2] MIO as referred to in The Māori Fisheries Act 2004: in relation to an iwi, means an organisation recognised by Te Ohu Kai Moana Trustee Limited under section 13(1) as the representative organisation of that iwi under this Act, and a reference to a mandated iwi organisation includes a reference to a recognised iwi organisation to the extent provided for by section 27

13. The focus of this response is the Plan. However, we also discuss how the proposals in the document relate to the requirements of the Act as well as the existing protocols and procedures required by the Deepwater Group. The Act requires fishing effects to be avoided, remedied or mitigated where long-term viability is threatened. In our view fisheries risks to rāpoka have been managed to ensure their long-term viability.

Guiding principles

Our advice is based on Te Hā o Tangaroa

14. Iwi/Māori have a unique and lasting connection with the environment. Our challenge is to ensure that this connection is maintained. Te Hā o Tangaroa kia ora ai tāua is an expression of a Māori World View that encapsulates the idea that the breath of Tangaroa sustains us. It contains the principles we use to analyse modern fisheries policy, and other policies that may affect the rights of Iwi under the Deed of Settlement.

15. Te Hā o Tangaroa, kia ora ai tāua highlights the importance of our interdependent relationship with Tangaroa, including his breath, rhythm and bounty and how those parts individually and collectively sustain humanity. The guiding principles underpinning this worldview highlight the need to ensure that we protect and maintain our relationship with Tangaroa.

16. Protection of the reciprocal relationship with Tangaroa is an inherent part of the Deed of Settlement agreed by Māori and the Crown in 1992. The fundamental purpose of the Settlement was the sustenance of Māori identity through the full range benefits that fisheries provides. This was inherent in the fundamental guarantee of Article 2 of Te Tiriti o Waitangi.

17. The fisheries settlement is an important and relevant part of modern fisheries management for Aotearoa. As a result, Māori rights in fisheries can be expressed as a share of the productive potential of all aquatic life around Aotearoa. Māori rights are not just a right to harvest, but also to use the resource in a way that provides for their social, cultural and economic wellbeing.

18. The Act complements and supports Te Hā o Tangaroa kia ora ai tāua. Our ability to maintain a reciprocal relationship with Tangaroa depends in part upon appropriate implementation of the Act.

19. Te Hā o Tangaroa kia ora ai tāua does not mean that Māori claim a right to use fisheries resources to the detriment of other children of Tangaroa. It speaks to striking an appropriate balance between people and those we share the environment with.

20. Kaitiakitanga relates to the obligation of Māori to tiaki the environmentthrough the management of resources – including protection and use. It encapsulates both sustainable management and utilisation of resources in such a way and at such a rate as to ensure that they are not diminished. Approaches that seek either 100% utilisation or 100% preservation do not align with kaitiakitanga. This speaks to the intent of both the Act and to the Deed of Settlement.

Context

Fisheries New Zealand is proposing the following options for the review of the Plan:

21. Options for the maximum fisheries related impact:
- Option 1: 2.5% maximum impact with an annual FRML of 26
- Option 2: 5% maximum impact with an annual FRML of 52; and
- Option 3: 10% maximum impact with an annual FRML of 104 (not preferred)[3]

22. Statutory requirement of Sea Lion Exclusion Devices.

23. New methodology to monitor performance of the Plan based on:
- observed captures,
- use of fatal interaction rate of 2.3 deaths per 1,000 tows for unobserved fishing activity
- use of 1.3 scalar for cryptic mortalities

24. Minimum target for observer coverage of 90% of tows.

25. Duration of Plan – Fisheries New Zealand is proposing either a four- or six-year duration.

26. Trigger points for review – Fisheries New Zealand is proposing the trigger for a review should be if any significant new information becomes available that indicates:
- fisheries activities are having a different impact on sea lion survival than estimated in 2019,
- if there are changes in fishing operations or level of effort, or
- if there are significant new concerns regarding the sea lion population.

27. Fishery Closure Process– Fisheries New Zealand proposes a closure if the FRML is reached.

The New Zealand Sea Lion Threat Management Plan 2017 guides the development of the Plan

28. The Threat Management Plan sets out objectives to:
    a. Halt the decline of the New Zealand sea lion population within five years
    b. Ensure the New Zealand sea lion population is stable or increasing within 20 years, with the ultimate goal of achieving 'Not Threatened' status.

The objectives of the Threat Management Plan are being met

29. All sub-populations of rāpoka are increasing or stable including the population on Maungahuka/ Motu Maha. We consider this progress a monument to a comprehensive and inclusive Threat Management Plan. This year's review of the threat classification of rāpoka by the Department of Conservation improved the status by two categories from Nationally Critical to Nationally vulnerable. The reason for the reclassification was due to "actual improvement"[4] which was based on the population estimate and analysing the rate of past decline.

[3] *Stated as "not preferred" by Fisheries New Zealand in the discussion document*
[4] *Conservation Status of Marine Mammals 2019 – Department of Conservation*

Fisheries are not adversely affecting rāpoka – the threat has been mitigated

30. It is currently estimated that fisheries result a 0.5%[5] impact on the Maungahuka/Motu Maha adult female population. In the decades leading up to 2000 when SLED development started anywhere up to 120 rāpoka were estimated to have been captured in some years. Over the last seven - eight years the SQU6T fishery is delivering an approximately 97% reduction in captures and in 2015-16 the SQU6T fishery caught no rāpoka (with 92% of tows observed).

Ngāi Tahu have an important relationship with rāpoka

31. This relationship reflects the long history of interaction, management and use. Ngāi Tahu works in partnership with the Department of Conservation, which has enabled the Iwi to maintain their relationships with the lands, waters, flora and fauna within the Ngāi Tahu takiwā. By exercising rangatiratanga across these ancestral lands and waters, and as active tangata tiaki, the traditions that support the central values that define Ngāi Tahu can be maintained. Under the Threat Management Plan, Ngāi Tahu are actively involved in the management and decision making in relation to the enhancement of the species, to ensure the flax-roots knowledge and the Ngāi Tahu voice is heard[6].

Effort in the squid fishery is driven by squid abundance and price

32. Squid have a life span of 18 months, therefore squid fisheries are internationally seasonal and highly variable in abundance and economic value. In recent years the prices have been high at $NZ6,000 per tonne. These prices reflect poor catches in other international fisheries. Over the last decade catches in SQU6T have averaged nearly 15,000 tonnes, worth $NZ90 million per annum. While prices remain high it remains profitable to fish at lower catch rates and total volumes per unit cost.

The squid trawl fishery is an important part of the deepwater fleet dynamic

33. There are no trawlers that focus solely on squid, rather the fishery forms a supplementary part of an annual catch plan. Thus, capacity to fish for squid is dependent on the relative price and availability of other deepwater fishstocks, especially the hoki fishery. There will be a significant reduction in hoki ACE available in the 2019-20 fishing year. Hence there is likely to be a relocation of some extant hoki vessel capacity into squid fisheries. This is particularly likely if price and abundance support increased effort economically.

[5] Marine mammal risk assessment 2019 - "When future squid fishery deaths were equal to the average across the most recent estimated period, the mature female population status in 2025 was 99.5% of that estimated in the absence of future squid fishery mortality (95% CI = 99.5%–99.5%)

[6] New Zealand sea lion/rāpoka Threat Management Plan 2017 p6

Our view: regulatory limits are not necessary for the SQU6T fishery

34. The case for the proposed regulations in the SQU6T fishery is not well made. The regulatory measures outlined in it are unnecessary – particularly the setting of an FRML and requiring the use of SLEDS. These measures are seeking outcomes that have already been achieved. It is contrary to good practice to regulate for outcomes that are already being delivered.

Regulatory options for fisheries management should be based on the purpose and principles of the Fisheries Act 1996

The Deed of Settlement should be protected

35. Section 5(b) of the Act states that the Act should be interpreted, and decision-makers must act in a manner consistent with, the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act).

36. The Settlement Act enacted the provisions of the Deed of Settlement signed by Māori and the Crown to resolve Māori claims to fisheries. The Settlement involved:
    a. allocation of commercial fishing assets, including quota, to iwi
    b. implementation of a regime for management of customary non-commercial fishing by kaitiaki.

37. At the time settlement was reached, Māori accepted that:
    a. the quota management system was an appropriate system for managing commercial fishing
    b. their fishing rights would be subject to sustainability measures.

    However, Māori did not accept that the value of their rights or their traditional cultural practices which those rights support should be undermined by measures that go further than what is necessary to sustain fisheries and the aquatic environment. To do so would be to undervalue their ongoing relationship with Tangaroa.

38. Action taken to provide protection beyond a level necessary to achieve the purpose of the Act cannot be defined as a "sustainability measure". Actions of this kind need to be done through a more engaging approach with industry and Iwi. We call this a "bottom up" approach.

Sustainability and utilisation must be balanced

39. The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. This means there must be a balance when decisions are made about sustainability measures. In relation to protected species, the Act requires sufficient action to ensure long-term viability of species and to maintain biodiversity . Actions taken to support these obligations need to be balanced with the obligation to provide for utilisation of fisheries resources.

There are considerations to make when varying sustainability measures

40. Section 11 requires the Minister to consider the following when varying sustainability measures:
    a. any effects of fishing on any stock and the aquatic environment; and
    b. any existing controls under this Act that apply to the stock or area concerned; and
    c. the natural variability of the stock concerned.

41. The consultation document claims that the most relevant consideration for the regulation of the use of SLEDs is not the performance of the fishery itself, but the existence of a National Deepwater Fisheries Plan. It is stated that this plan has been approved under section 11A of the Act. We understand that the plan being referred to was in effect between 2011 and 2016 but has since expired. There is no provision for an expired plan under the Act to retain any interim status.

42. We do not think it is appropriate for a consultation document to give weight to a plan that does not appear to have status under the Act. But even if it did, Parliament's intent when introducing fisheries plans under section 11A was to provide a mechanism for Iwi and stakeholders to take responsibility for achieving fisheries management objectives with the agreement of the Minister.

43. While the Act does not specify who can prepare a fisheries plan, the history of fisheries management in New Zealand highlights that statutory plans have been unsuccessful when developed through a "top down" process. Our strong preference is for such plans to be used to enable innovation and therefore be developed through a "bottom up" process.

Decisions for managing the effects of fisheries should be based on the best available information

44. The information principles outlined in section 8 of the Act require decision-makers to take the following into account:
    a. decisions should be based on the best available information;
    b. decision makers should consider any uncertainty in the information available in any case;
    c. decision makers should be cautious when information is uncertain, unreliable, or inadequate;
    d. the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

45. For Maungahuka/Motu Maha rāpoka and SQU6T fisheries, the best available information is just that: the best available information. There is a high level of monitoring of both the rāpoka population and the fishing operations. It is a candidate for being the most overseen and strictly managed fishery in Aotearoa's waters. The information provided by this monitoring and management demonstrates that a successful programme is in place and that the SQU6T fishery is not having an adverse effect on the population. This information provides te context for decision making.

[7] *Section 9*

Measures under the Act are limited to the effects of fishing

46. The Act enables the Minister of Fisheries, after consultation with the Minister of Conservation, to:

> *take such measures as he or she considers are necessary to avoid, remedy, or mitigate the effect of fishing-related mortality on any protected species ...*[8]

Court proceedings relating to rāpoka interactions with the squid fishery analysed this provision of the Act[9]. Of particular importance, the Court found that the Minister has discretion as to what is an appropriate measure to manage the effects of fishing. However, the Minister may only take measures which they consider necessary in terms of avoiding, remedying or mitigating adverse effects of fishing on a protected species.

Statutory limits no longer necessary for SQU6T fishery

We recognise the successful protection of rāpoka in the SQU6T fishery

47. Historical high mortalities of rāpoka are no longer a part of the contemporary SQU6T fishery (figure 1 - *over page*). The last decade of rāpoka interactions in SQU6T demonstrates that this fishery has appropriately and consistently managed bycatch risk. Through the implementation and subsequent requirements of SLEDs and other operational protocols, this fishery has achieved great outcomes for protected species mitigation. This is a true success and exemplar of responsible fisheries management in Aotearoa.

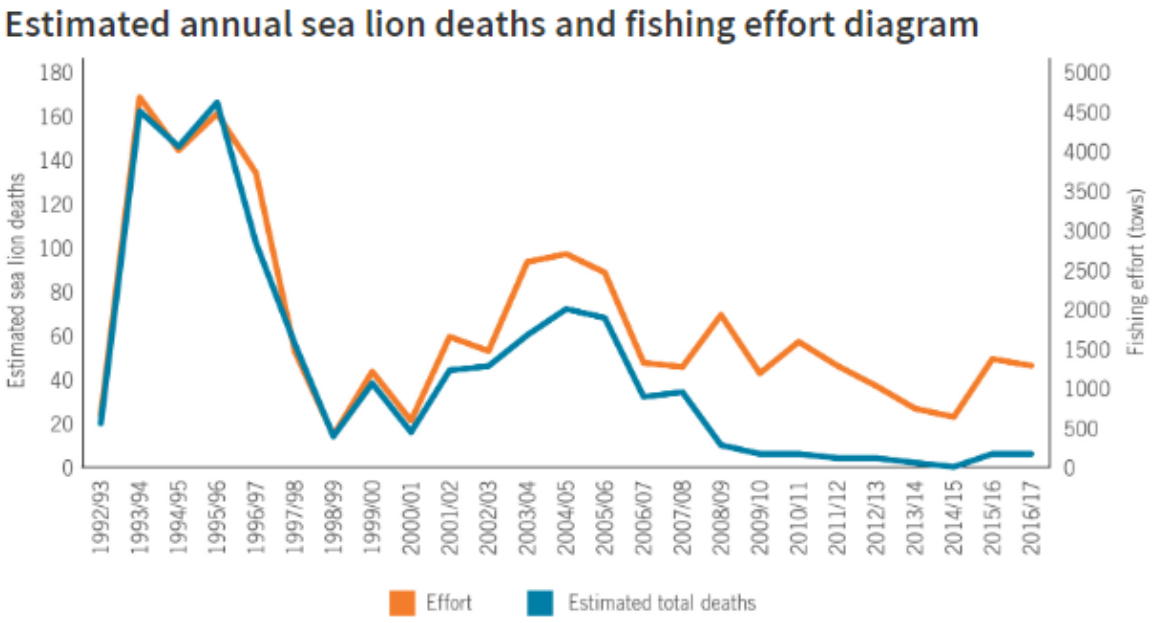

Figure 1: Fishing effort and estimated bycatch mortality of rāpoka in SQU6T

[8] *Section 15*

[9] *Squid Fishery Management Company Limited V Minister of Fisheries (See France J CIV-2003-485-2706 and McGrath J CA39/04).*

The fishing industry has gone beyond the statutory requirements of the SQU6T fishery

48. The operational measures in place and the protocols set out in Deepwater Group's Code of Conduct manage the risk posed by fisheries well below the FRML. Table 1 (below) sets out the last ten years of successful implementation of standardised SLEDs and the resulting incidental mortalities. The 2008-16 iterations of the SQU6T Operational plan did not stipulate a required level of observer coverage. Industry have been supportive of observer coverage in this fishery and therefore achieved the high levels set out in the table.

Table 1. Regulatory settings vs. fishery achievements since 2008

Fishing year	FRML	Observed captures[10]	Observer coverage[11]	Observer coverage required	Tows with standardised SLEDs**
2008/09	95*	2	40%	n/a	100%
2009/10	76	3	26%	n/a	100%
2010/11	68	0	35%	n/a	100%
2011/12	68	0	45%	n/a	100%
2012/13	68	3	86%	n/a	100%
2013/14	68	2	84%	n/a	100%
2014/15	68	1	88%	n/a	100%
2015/16	68	0	92%	n/a	100%
2016/17	68	3	70%	n/a	100%
2017/18	68	2	89%	70%	100%
2018/19	38	7***	95%	70%	100%

** Set at 113 then reduced voluntarily by industry due to low pup count*

*** SLEDs have not been statutorily required*

**** Includes four male subadults (population is driven by adult female survival)*

A Statutory Fishing Related Mortality Limit in SQU6T is obsolete

49. The FRML for rāpoka in the SQU6T fishery hasn't been met since 2005/06, this is due to a range of operational improvements including the efficacy of SLEDs as a mitigation method. The effectiveness of SLEDs as a mitigation tool allow for fisheries to interact with rāpoka with a low risk of mortality. This is evidenced by the considerable and consistent reduction in captures. The reduction means that this fishery is no longer adversely affecting the long-term viability or biological diversity of this population. Estimated mortalities have averaged 5.8% of the FRMLs over the past decade. This renders the use of an FRML setting obsolete as a conservation tool, however, this does not prevent industry from continuing to reduce and maintain low risk through a bottom up approach.

[10] *Fisheries New Zealand and Dragonfly 2019*

[11] *Fisheries New Zealand and Dragonfly 2019*

Unnecessary regulations contradict good regulatory practice

50. Setting an FRML or regulating the requirement of SLEDs is unnecessary and would have no tangible effect on the rāpoka population or current fishing operations. Further, the proposal does not fit with the guiding document - Government expectations for good regulatory practice which states:

    We should not introduce a new regulatory system or system component unless we are satisfied it will deliver net benefits for New Zealanders[12].

    We do not recognise a net benefit from setting an FRML or requiring SLEDs that regulates to achieve an already demonstrated outcome. Regulatory agencies are meant to "pay particular attention to requirements that appear unnecessary, duplicative, ineffective or excessively costly".

There is no justifiable reason to deem Option 3 as "not preferred"

51. Fisheries New Zealand stipulated that Option 3 is not preferred (Table 2 - below). This position is contrary to the view previously held by Fisheries New Zealand which supported a 90% population objective with 90% certainty and referred to these management criteria as "agreed, conservative". This position was held for the period of 2003-2017. However, despite this change of view, there was no rationale for the new position in the discussion document. Deepwater Group requested the rationale behind the statement, Fisheries New Zealand responded - 'This option is not Fisheries New Zealand's preferred option given the high number of mortalities it would allow (104) compared to recent observed mortalities of 3-5 per year (higher this year)". This reasoning is not appropriate nor lawful. By this measure, the more the industry reduced captures, the more the population objective would need to increase to inhibit the FRML. This is counter to the objectives of the TMP and the SQU6T Operational Plan. The response from Fisheries New Zealand also suggests that the FRML is no longer necessary to restrict bycatch, but it is instead used to manage perceptions. The Court of Appeal has made it clear that the political acceptability of an increased FRML is an irrelevant consideration[13].

    Table 2. Options proposed for the SQU6T FRML

	Maximum impact on population	Fishing-Related Mortality Limit
Option 1	2.5%	26
Option 2	5%	52
Option 3 (Not preferred)	10%	104

[12] *Government expectations for good regulatory practice – New Zealand Treasury*

[13] *Squid Fishery Management company Limited v Minister of Fisheries (See McGrath J CA30/04)*

The options for an FRML do not represent the current state of the fishery

52. There is a large gap between actual mortalities and the options for an FRML. This creates two issues for the SQU6T fishery. First, population modelling scenarios conducted for the Maungahuka/Motu Maha population is pessimistic in that it assumes the full FRML is caught every year. This is not a true representation. By modelling with actual captures the impact reduces from 1.5%[14] to less than 0.5%[15]. It is inappropriate to use the FRML to model impacts if the FRML is not representative of the actual known impact (best available information). Second, having an FRML that is far higher than actual mortalities generates a misconstrued view of the fishery for the public and environmental groups. These groups have the tendency to interpret the FRML as a target, or that it is the true level of mortality incurred from fishing. This is far from the case and doesn't reflect the commitment and improvements this fishery has achieved toward protecting rāpoka.

The FRML cannot be constrained to the level of mortalities that are occurring

53. For SQU6T, setting an FRML well above mortality levels is inappropriate and unrepresentative. However, constraining the FRML to actual mortality levels would be contradictory to the purpose of the Act as the levels of mortality are well below a level that would cause an adverse effect. For these reasons we rationalise that an FRML is unnecessary to achieve conservation outcomes.

We remain committed to the ongoing protection of rapoka

With rights come responsibilities to act as kaitiaki

54. The SQU6T Operational Plan is carried out under the Act and therefore must be deemed consistent with the Deed of Settlement. SQU6T is a deepwater fishery and Settlement assets are allocated to Iwi on a population basis. This has the effect of making all 58 MIOs quota owners in this fishery. As Settlement quota owners, it is also their responsibility to ensure sustainable management of this fishery.

The Plan provides "backstops" that allow timely response to changes in fishery or rāpoka populations

55. The trigger levels set out in the Plan are aligned with the objectives of the Threat Management Plan. These triggers mean that any drastic changes in the fishery or the rāpoka population result in a review of the Plan. We have confidence in our ability to detect these trigger points with high certainty, due to the level of observer coverage and annual population assessments.

[14] SQU6T Operational Plan discussion document - 2019

[15] Marine mammal risk assessment 2019 - "When future squid fishery deaths were equal to the average across the most recent estimated period, the mature female population status in 2025 was 99.5% of that estimated in the absence of future squid fishery mortality (95% CI = 99.5%–99.5%)

The Deepwater Group Operational Procedures address every rāpoka capture event

56. Under the Operational Procedures (MMOP) the trigger level for action is one rāpoka capture. The actions required are summarised as follows:

- advise your vessel manager
- check any failures relevant to the MMOP risk actions
- two identification photos taken
- complete the rāpoka capture form
- check SLED where relevant
- promptly and immediately report to Deepwater Group either directly or via shore management.

The Deepwater Operational Procedures require the use of SLEDs

57. The specifications required for SQU6T in the Operational Procedures are summarised as follows:

- SLED built to specification of SQU6T Operational Plan
- any SLED to be deployed must be checked and certified prior to use
- vessels must carry at least two SLEDs with unique identifier numbers
- SLEDs must be used in all tows in SQU6T fishery
- damaged and repaired or transferred SLEDs must be notified to Deepwater Group as soon as possible.

The Deepwater Group also codifies a required response to rāpoka captures that is agreed to by all vessel operators

58. There is an annual collective agreement by the SQU6T fleet outlining additional measures to support the SQU6T Operational Plan, including:

- agreement that all capture events are notified to the fleet with details of which vessels and any relevant circumstances related to the capture event. This ensures collective understanding of what is happening and if risk exacerbators are identified or explicable they are advised to all
- industry trigger of five captures – where it is agreed to meet collectively and discuss circumstances of captures and any further actions that should be considered
- no vessel will fish without a certified standard SLED and any vessel who has damaged their SLEDs will leave the fishery until repaired and checked.

Monitoring means more than just watching

59. Fisheries New Zealand monitor the fishery via Global Positioning Satellite, observer records and daily effort and catch reports. Any rāpoka capture is a matter of immediate discussion between Fisheries New Zealand and Deepwater Group. The identification photographs collected under Deepwater Group's MMOP are provided for confirmation if there is uncertainty around which species was captured.

Reporting provides transparency to all stakeholders

60. Fisheries New Zealand provide weekly reports to all stakeholders on the fishery and all aspects of effort, observer coverage, captures and non-conformance to the Operational Procedures. Deepwater Group circulate this to all quota-owners and vessel operators.

SQU6T is one of the most strictly and conscientiously managed fisheries in Aotearoa

61. There are no other fisheries in Aotearoa (excepting SBW6I) with such levels of codified requirements, checks and audits, oversight and reporting. It is not a "voluntary" system, the Crown requires it upon delivery of the Operational Plan. It is also required and supported by quota owners who protect the value of their property right through conformance to the requirements. The last decade of delivering these outcomes demonstrates that industry is able to manage to this level of discipline.

Recommendations

62. We strongly support the ongoing implementation of industry procedures.

We recommend removal of the statutory FRML from the SQU6T fishery

63. We propose continuing the successful regime of operational measures, protocols and research that have consistently reduced rāpoka mortalities for over a decade. Removal of the FRML will restore focus to the actual number of mortalities occurring each year which better represents the current relationship between the squid fishery and rāpoka.

64. If Fisheries New Zealand consider that it is still necessary to impose an FRML as an insurance policy then we would recommend an FRML of no less than 104. If caught, this FRML allows the population no more than 10% impact with 90% certainty. This population objective is conservative by international standards; however it is congruent with the previously agreed objective for this population and we consider it appropriate for at least the term of the current Threat Management Plan. While this population objective is appropriate in our view, we remain uncomfortable setting an FRML that so poorly reflects the state of current mortalities.

65. It is difficult to support rational population objectives and principles when they result in such high "limits" that are not applicable to the fishery. Doing so risks misinterpretation of the intentions of industry as callous or not caring about rāpoka protection, which is definitely not the case. On the other hand, we cannot support the setting of a restrictive FRML that goes beyond the purpose of the Act. Therefore, our position is that no statutory FRML be set for SQU6T.

We recommend continuing high levels of observer coverage for the SQU6T fishery

66. For this iteration of the Plan, we recommend observer coverage is as high as possible with no less than 90% tows observed. However, the in the instance where Fisheries New Zealand is not able to provide an observer, fishing activity should not be restricted. It would be inappropriate to prevent fishing on the basis of observer limitations in this fishery. If these instances were to occur, the unobserved mortality rate (para. 68) will apply.

We do not support the statutory regulation of SLEDs

67. For ten years a standardised and audited SLED has been deployed for 100% of tows without the need for statutory backing. Statutory regulation of SLEDs is unnecessary to guarantee their implementation. Further, if regulated in this way, the ability to modify for improvements becomes greatly restricted. To do so would have the effect of reducing the incentives for ongoing innovation in both design and application. We recommend that the requirement that every tow in SQU6T deploys a SLED remains in the Plan.

We recommend using the cryptic multiplier to monitor the fishery

68. We support the use of the following methodology for estimating mortality:
- observed captures as the base count
- fatal interaction rate of 2.3 deaths per 1,000 tows for all unobserved tows
- cryptic multiplier of 1.3.

    Fisheries New Zealand have also proposed an option to use a Spatially Explicit Fisheries Risk Assessment model to extrapolate observed mortalities to unobserved tows. We support innovation to make monitoring fisheries more efficient. However, it would be preferable to run both approaches in order to "calibrate" and not disrupt the continuous data set we currently hold.

We recommend the use of triggers to review the Plan

69. The use of triggers allows managers and operators to respond to changes in fishing effort or pup productivity. We fully support the adaptive and conscientious approach this provides to both fisheries and protected species management.

We recommend a six-year duration for the Plan

70. The consistent performance of mitigation measures as well as the improving health of the rāpoka population on Maungahuka/Motu Maha provides support for a longer term for the Plan. We support this timeframe with the provision of appropriate triggers to catalyse early review if necessary.

Conclusion

We are proud of Iwi, industry, Fisheries New Zealand and Department of Conservation for their collaboration that is successfully protecting rāpoka – and Aotearoa should be too

71. We consider the SQU6T fishery an exemplar of fisheries management excellence in protected species mitigation. Collaborative and comprehensive research and operational programmes have generated a world class. The high-level monitoring of both the fishery and the rāpoka population provides assurance and transparency. We consider the relationship between the SQU6T fishery and rāpoka to be well balanced and we remain committed to improvement.

Appendix A


Te Hā o Tangaroa Kia Ora Ai Tāua
The Breath of Tangaroa Sustains Us
Whakapapa – We descend from Tangaroa and have a reciprocal relationship with our tupuna
Hauhake – our rights and obligations to cultivate Tangaroa for the benefit of Tangaroa and to support Tangaroa's circle of life
Kai – our right to enjoy our whakapapa relationship with Tangaroa through wise and sustainable use of the benefits Tangaroa provides to us
Tiaki – Māori have an obligation to care for Tangaroa for the betterment of Tangaroa and of humanity

Te Ohu
Kaimoana

WWF-New Zealand

[redacted]

WWF-NEW ZEALAND SUBMISSION ON THE SQUID 6T OPERATIONAL PLAN

WWF-New Zealand is grateful for the opportunity to comment on the 2019 draft Squid Operational Plan (the plan), which seeks to manage the interaction between squid fisheries and New Zealand sea lions/ rāpoka.

CONTENTS

1 EXECUTIVE SUMMARY

The dramatic population decline of rāpoka has slowed, however the downward trend continues despite suggestions of "stabilisation." Modelling from 2016 and 2019 shows decline into the future unless multiple threats can be alleviated.[1]

Since the last Squid Operational Plan review in 2017, there has been progress to reduce the uncertainty about the effectiveness of Sea Lion Exclusion Devices (SLEDs), and new science that indicates accidental capture (bycatch) of rāpoka in squid trawl fisheries is low.

However, the Government has not made progress towards more holistic and coordinated management of fisheries threats across all the sub-Antarctic fisheries that kill rāpoka, and each fishery is still managed in isolation.

The Government proposes using Fishing Related Mortality Limits (FRML) as the main way of managing rāpoka bycatch. While FRML and other "allowable take" type approaches are useful to identify when bycatch is a "problem" requiring management, in the case of a threatened and declining population, there is already a "problem", even before you add fisheries impact to it. Any bycatch of rāpoka will speed up the decline.

In the case of threatened and declining populations such as rāpoka, the goal should be to continually improve management and reduce impact as much as possible towards zero. Once the population is truly recovered or at-least recovering (trending up), then there may be a level of bycatch that is acceptable, or a "customary take" that may be determined appropriate by tangata whenua.

This submission highlights key issues with the Government's proposals in the consultation document:

1. The government proposals will not drive continual improvement, innovation and further bycatch reduction because the estimated bycatch is far lower than any of the proposed Fishing Related Mortality Limits (FRMLs).
2. Key assumptions in the Government's management approach are incorrect. The FRML is not "sustainable", it will not lead to population "recovery" in the case of a declining population, and it is not "acceptable" to New Zealanders.

We recommend the Government:

1. Adopt a zero-bycatch goal which represents the intention to continually strive to reduce human impacts. In practice, this means better coordinated efforts across all sub-Antarctic commercial fisheries to bring the overall fisheries bycatch down.
2. Explore options with stakeholders to provide spatial protection of essential foraging areas for the time of year when females are feeding pups, while still enabling squid fishing outside the most essential foraging areas.

2 BACKGROUND

[1] Roberts and Doonan (2017), Roberts (2019).

2.1 New Zealand sea lions/ rāpoka – status and science

New Zealand sea lions/ rāpoka are the rarest sea lion species in the world, and they are a unique national Taonga, and classified as "Nationally Vulnerable" in the New Zealand Threat Classification System.[2] Archaeological data shows that they once lived all around New Zealand coast, and may have numbered up to 68,000.[3] There are now around 12,000 Rāpoka living mostly in defined areas of the Sub-Antarctic Islands.

Rāpoka are impacted by multiple and cumulative threats, including the disease *Klebsiella,*[4] fisheries bycatch, and nutritional stress (potentially due fishing pressure and climate change impacting prey).[5] These multiple threats caused the Auckland Island population to half since the late 1990s.[6] The decline has slowed since 2010, however population projections show it is likely to continue to decline even in the scenario of recent "stabilisation".[7]

2.2 The rāpoka Threat Management Plan

A National Threat Management Plan (TMP) for New Zealand sea lions/ rāpoka has been developed with a vision to recover the species to a "Non-Threatened" status. The Squid Operational Plan must align to the TMP vision and goals in its management of accidental capture of rāpoka in trawl nets (bycatch), and should also reflect the Crown's Treaty partnership with Ngai Tahu in all matters concerning rāpoka.

2.3 Legal obligations under te Triti o Waitangi

The proposed plan makes no mention of the Crown's legal obligations to its Treaty Partner – Ngāi Tahu, with respect to the management of sea lions and their threats.

Rāpoka are a taonga species under the Ngāi Tahu Claims Settlement Act 1998, in which the Crown acknowledges the cultural, spiritual, historical, and traditional association of Ngāi Tahu with rāpoka. This commits the Crown to ensure kaitiakitanga responsibilities for rāpoka are met and to consult with and have particular regard to the views of Ngāi Tahu in policy decisions concerning the protection, management, or conservation of rāpoka.

MPI should talk directly with Ngāi Tahu about how the plan should acknowledge their role, and ensure Ngāi Tahu has a seat at decision-making table for important management decisions such as defining an "acceptable" level of fisheries impact.

2.4 Managing fisheries threats to rāpoka

2 Baker et al. (2019)

3 Childerhouse, S. & Gales, N. (1998). The historic distribution and abundance of the New Zealand sea lion Phocarctos hookeri. New Zealand Journal of Zoology 25(1): 1- 16.

4 Klebsiella Pneumonia is a bacteria that impacts the survival of sea lion pups.

5 Roberts and Doonan, (2016).

6 Roberts, (2019)

7 Roberts, (2019, figure 3, middle row)

The best available science shows that fisheries bycatch is the biggest human caused impact on Rāpoka,[8] and it is the only human impact that can be directly managed right now.[9] The squid fishery is only one of several fisheries that pose a danger to Rāpoka,[10] but these fisheries are managed in isolation. WWF continues to encourage the Government to take a more holistic and coordinated approach to management of all fisheries threats around the sub-Antarctic islands.

We acknowledge the efforts made by fishers to reduce mortality through use of Sea Lion Exclusion Devices (SLEDs) and to support new science to improve understanding about SLED efficacy. The risk from squid fisheries is estimated to have reduced from around 160 deaths in 1995/96 to an average of around 6 per year, for the five year period 2013/14-2017/18. There were 9 estimated deaths in 2018/19.

3 ISSUES WITH PROPOSED APPROACH TO MANAGING SEALION BYCATCH

3.1 The government proposals will not drive continual improvement, innovation and further bycatch reductions

None of the Government proposals to set different FRMLs would be an active step to reduce bycatch, as they would set the "allowable" limit at least three times higher than the current estimated bycatch. The most stringent proposal (option 1) would require 20 rāpoka to be observed captured in one year before fishing is constrained. Option 2 would allow 40 observed sealion deaths before fishing was constrained. With around 6 rāpoka estimated captured per year currently in the squid 6T, a limit of 20 or 40 observed captured is not a step to reduce bycatch.

3.2 Key assumptions in the Government's management approach are incorrect

MPI risks misleading the public and decision-makers by saying that the FRML is "sustainable" and "acceptable" – when they are neither. MPI is not communicating clearly about the difference between the scientific theory behind MPI's modelling, and the reality of what is happening to the sealion population. This creates confusion and high risk that the public and decision-makers will be misled.

3.2.1 The FRML is not "sustainable" in the case of a declining population

[8] Roberts and Doonan, (2016).
[9] There is yet no vaccine or treatment for klebsiella
[10] Rāpoka are also accidentally killed in the scampi and Southern Blue Whiting fishery around the Auckland Islands,

The Population Sustainability Threshold (PST) and the Potential Biological Removal (PBR[11]) assume that there will be some level of impact that is there will be a "sustainable" because the models assume **a growing population**.[12] However, rāpoka at the Auckland Islands are **not a growing population**. In-fact, even though MPI describes the population a "stabilised," it is still declining and will continue to decline.[13]

MPI incorrectly states that the proposed fishing related mortality limits provide a "*high degree of certainty that the sea lion population will be maintained at a level that ensures their long-term viability*." This is only true in a theoretical world where the population is growing at its optimal rate. In the real world – any fisheries impact will contribute to further decline, until the population trend is moving in a positive direction.

MPI's option 1 would allow the population to be reduced by an additional 2.5% (on top of existing non-fisheries related decline) by 2025, and option 2 would allow a 5% reduction by 2025.[14] Contributing to further population decline does not aligned with the Sealion TMP vision and goals for "recovery." According to the Department of Conservation Threat Classification, a "Recovering population" must be **increasing**.[15]

3.2.2 The FRML is not "acceptable" in the case of a declining population

New Zealanders do not consider further bycatch to be "acceptable" for a population such as New Zealand Rāpoka, that is endangered and declining.[16] Research by Colmar Brunton found that 84% of New Zealanders think the Government should adopt a zero-bycatch goal – meaning that while there will always be some accidental bycatch in commercial fisheries, we should work to reduce that impact towards zero.[17] When asked about rāpoka in particular, 84% of New Zealanders agreed or strongly agreed that the number of rāpoka being killed in commercial fisheries should be further reduced.[18]

Even when presented with information that fishing is not the biggest threat (i.e. that the risk assessment shows disease is a larger threat), people feel strongly that management action should reduce the threats that we can control, as much as possible.[19]

[11] The PBR level is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or The conservation goal is the 'optimum sustainable population' defined as being at or above the population level that will result in maximum productivity (ICES 2014a).
[12] The PST and PBR models use r-Max – the theoretical maximum possible growth rate for the species. The models do not account for actual growth rate (or decline)
[13] Roberts, (2019, figure 3, middle row
[14] Under the modelling scenario of "stable population growth", in 2025, a PST of 26 females would result on a population that is 95.4% of what the population would be in the absence of any fisheries deaths. (Roberts, 2019, figure 3 middle row.
[15] https://www.doc.govt.nz/nature/conservation-status/
[16] Colmar Brunton, (2019).
[17] Colmar Brunton, (2017a).
[18] Colmar Brunton, (2017b).
[19] Ibid.

4 RECOMMENDATIONS FOR IMPROVING MANAGEMENT OF SEALION BYCATCH

4.1 A Zero bycatch goal

For small, vulnerable and declining marine mammal populations, there needs to be continual improvement and effort to drive impact towards zero as fast as possible. While reducing fisheries impact to zero alone will not likely stop further sealion population decline,[20] it will give the population the best possible chance of recovering naturally.

There are examples from around the world where managers have set PBRs to zero for populations that are very small and endangered, or declining. The International Whaling Commission's Revised Management Procedure (RMP) catch limit is set to zero when populations are very small and endangered, or naturally declining.[21] In the USA, no bycatch is considered acceptable for species listed on the Endangered Species Act (ESA).[22] An example is the Hawaiian monk seal where managers have chosen to set the PBR to zero, because the population is naturally declining (due to multiple threats including disease), and there is no reserve in the population to allocate to human-caused mortality.[23]

In 2017, independent global experts reviewed the New Zealand Spatially Explicit Fisheries Risk Assessment (SEFRA) method, and identified that there may be some highly threatened populations where any bycatch mortality above zero might not be appropriate. They recommended that SEFRA introduce specific rules or clear guidance for managers that recognise that such populations require special treatment.[24]

4.1.1 What does a zero-bycatch goal mean in practice?

In practice, implementing a zero-bycatch goal would mean taking steps to further reduce commercial fisheries on rāpoka including:

- Better coordinating efforts across all sub-Antarctic commercial fisheries to bring the overall fisheries bycatch down. This may mean focusing research and management effort on the scampi and southern blue whiting fisheries where we need to build understand the impact of those fisheries and potential mitigation and management options.
- establishing spatial protection over the most important foraging areas for lactating female rāpoka (in the time of year when females are feeding pups). We understand Forest and Bird are working with fishing effort data and rāpoka tracking data to identify the potential areas for protection. We recommend FNZ work with Forest and

[20] Roberts, (2019).
[21] Leaper, R. Pers Comms (2018).
[22] Species or population stocks are listed as an endangered species or a threatened species under the Endangered Species Act of 1973 [16 U. S.C. 1531 et seq.]
[23] Moore, and Merrick, (2011); Paul Wade (NOAA) pers comms. September 2018.
[24] Lonergan, et al. (2017). Recommendation H2, pg. 9.

Bird and relevant affected stakeholders to find a middle ground that will reduce bycatch, and enable squid fishing.

4.2 Spatial protection of essential foraging areas

Female NZ rāpoka are restricted in the area and duration they forage by their need to return to their dependent pups on shore.[25] Forest and Bird has used foraging female tracking data provided by MPI to identified the areas of highest protection value. See figure 1.

The proposed temporary trawl exclusion zone represents 17% of the Auckland Island fishing area known as 6T. This means that squid trawl fishing can continue in the majority of the quota area – enabling the protection of NZ rāpoka and the utilisation of squid.

WWF-New Zealand recommends the Government engage and explore this new approach to management that will actively reduce fisheries threats in the areas of highest risk to breeding females, while still enabling squid fishing outside the most essential foraging areas.

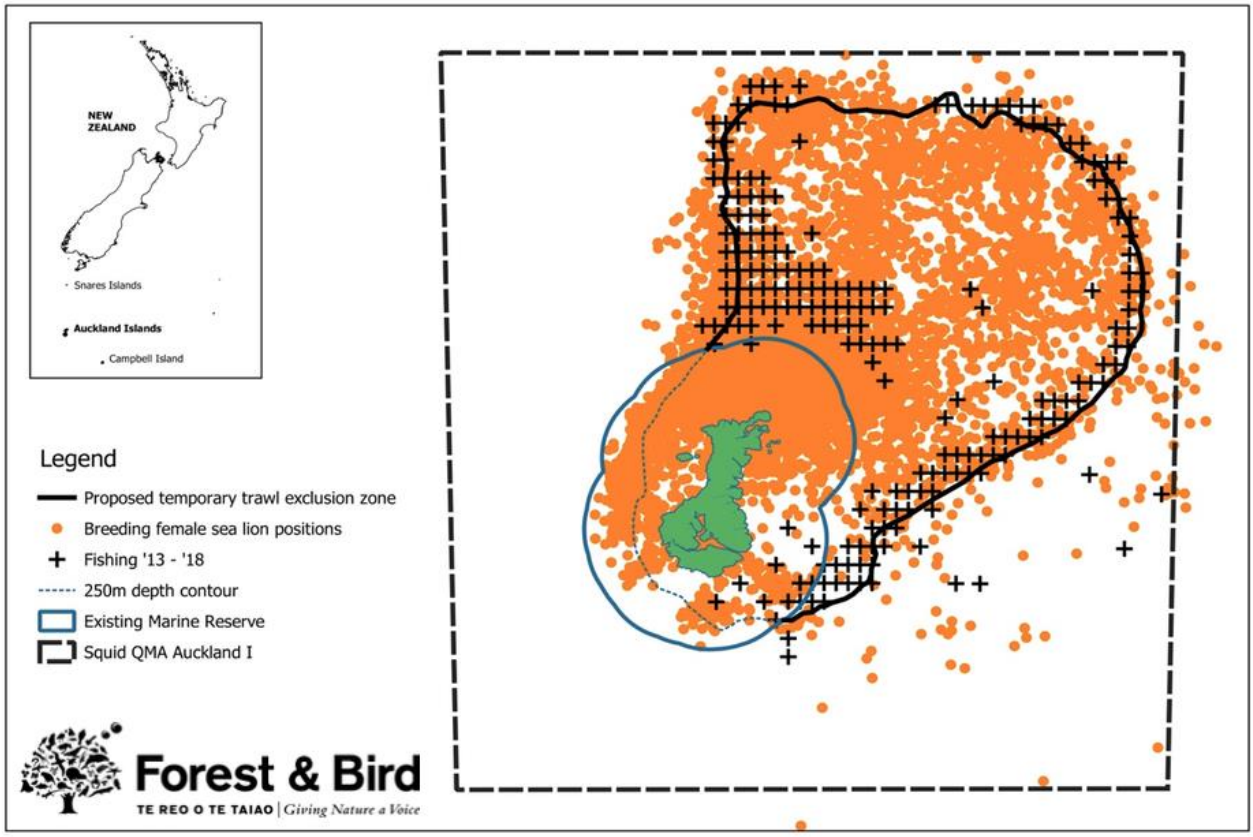

Figure 1

[25] Chilvers, B.L. (2008); Chilvers et al (2011).

5 REFERENCES

Baker, C.S.; L. Boren, S. Childerhouse, R. Constantine, A. van Helden, D. Lundquist, W. Rayment and J.R. Rolfe, (2019). Conservation status of New Zealand marine mammals, 2019. NEW ZEALAND THREAT CLASSIFICATION SERIES 29

Chilvers, B.L. (2008). Foraging site fidelity of lactating New Zealand rāpoka. *Journal of Zoology* 276:28 –36.

Chilvers, B.L., Amey, J.M., Huckstadt, L.A., & Costa, D.P. (2011). Investigating foraging utilisation distribution of female New Zealand rāpoka, Auckland Islands. *Polar Biology* 34:565-574

Colmar Brunton, (2017a). Attitudes Towards a Zero Bycatch Goal. http://awsassets.wwfnz.panda.org/dow84nloads/report___attitudes_towards_a_zero_bycatch_goal.pptx

Colmar Brunton, (2017b). Attitudes Towards Rāpoka and the threats they face.

Colmar Brunton, (2019). *New Zealanders' attitudes towards conservation of endangered species: Spotlight on the Māui and Hector's Dolphins.* Wellington, NZ: Endangered Species Foundation and WWF-New Zealand. https://drive.google.com/open?id=1oH8BZM6ExH_jHQnwIIACqe66XZ8yPXku

Leathers, A. (2018). *Discussion document: setting and defining marine mammal population goals for use in risk assessment science and management tools.* http://awsassets.wwfnz.panda.org/downloads/wwf___new_zealand_discussion_document___setting_marine_mammal_population_conservation_goals_.pdf

Robards, M.D., et al., (2009). Limitations of an optimum sustainable population or potential biological removal approach, *Journal of Environmental Management* (2009), doi:10.1016/j.jenvman.2009.08.016

Roberts and Doonan, (*2016)* Quantitative Risk Assessment of Threats to New Zealand Rāpoka, *New Zealand Aquatic Environment and Biodiversity Report* No. 166. Ministry for Primary Industries, Wellington.

Roberts, J. (2019). Population effects of New Zealand sea lion mortality scenarios relating to the southern arrow squid fishery at the Auckland Islands. *New Zealand Aquatic Environment and Biodiversity Report* No. 223