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OUR SEAS OUR FUTURE
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Submission: Review of the Hector's and Māui Dolphin Threat Management Plan

General Introduction

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.

OSOF welcomes the opportunity to comment on the Department of Conservation's **Review of the Hector's and Māui Dolphin Threat Management Plan [TMP],** which was backed by **the Spatial Risk Assessment [Assessment]** on the protection of the Hector's and Māui dolphin.

Introduction

Setting global conservation goals is more often a question of culture or politics than of science, and unfortunately the New Zealand government is following this precedent. Conservation of specific species, particularly charismatic ones, adds additional layers of complexity to efforts to defend and patrol the boundaries of science. Again, the importance of charismatic 'endangered species' is recognised as having political value for conservation.

Māui and *Upokohue* Hector's dolphins are the smallest and rarest marine dolphin in the world, have significant importance as a *taonga* to Māori, and are threatened with extinction due to anthropogenic impacts.

This submission addresses the issues of the following:

(1) The fishing industry being treated like a political football;

(2) Certain restrictions are necessary while toxoplasmosis is further investigated;

(3) It is important to focus on fishing and other issues such as toxoplasmosis, climate change, predation ship-strike, aquaculture.

Overall comment about "sustainability" which applies to the entire TMP

Throughout the TMP, the purpose of the Fisheries Act 1996 needs to be applied. This will result in the appropriate weight being applied to the concepts of conservation interests and socio-economic impacts.

Section 8 of the Fisheries Act 1996 – Purpose of the Fisheries Act 1996

In New Zealand, the purpose of the Fisheries Act 1996 is stipulated by section 8 as set out below.

(1) The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

The purpose has been interpreted by the New Zealand courts. At first look, the chief emphasis of s 8 of the Fisheries Act 1996 seems to be on utilisation of fisheries resources, but closer examination shows that sustainability is enshrined as the primary goal of the legislation. (Radford (2013) at 13.) (Brookers at para FS8.01.) "Sustainability must be ensured while providing for resource utilisation." (Brookers at para FS8.01.) In addition, the concept of "utilisation" is not conveyed in limited commercial terms, but embraces ideas of use that signify elements of a broader public nature or interest. (Brookers at para FS8.01.)

Utilisation v Sustainability

The *New Zealand Recreational Fishing Council Inc v Sanford [2009] NZSC 54* case involved the setting of the kahawai total allowable commercial catch (TACC) in the 2004 and 2005 fishing season. (Radford (2013) at 13.) (*Sanford* case at paras 39 and 40.) (Brookers para FS8.01.) The majority of the Supreme Court did not accept the appellants' argument that the purpose that was steering the Minister's judgment in setting a TACC is exclusively one of utilisation. (Brookers at para FS8.03.) (*Sanford* case at para 59.) The Supreme Court decided that s 8(1) of the Fisheries Act 1996 articulated a solitary statutory purpose by mentioning the two rival social policies reflected in the Act, "utilisation of fisheries" and "ensuring sustainability." (Brookers at para FS8.02.) Both policies are to be provided for as far as is feasible in the management of fisheries.

But recognising the inherent unlikelihood of those making key regulatory decisions under the Act being able to accommodate both policies in full, s 8(1) requires that in the attribution of due weight to each policy that given to utilisation must not be such as to jeopardise sustainability." Fisheries are to be utilised, but sustainability is to be ensured." (Brookers at para FS8.02.) (*Sanford* case at paras 39 and 40.)

This means that sustainability is preserved as the primary goal of the legislation. (Brookers at para FS8.01.)

The Supreme Court stated that this fundamental priority is identified in the two definitions. (Radford (2013) at 14.) (Brookers at para FS8.02.) The first contemplation in the "utilisation" definition is the preserving of fisheries resources. (Brookers at para FS8.02.) Considerations which follow are their use, improvement and growth, to enable fisheries to cater for their social, economic and cultural wellbeing. (Brookers at para FS8.02.) On the other hand the "ensuring sustainability" definition signifies the policy of satisfying foreseeable needs of future generations, which is involved with future utilisation. (Brookers at para FS8.02.) Whenever those expressions are employed in the Fisheries Act 1996 these complementary definitions apply. (Brookers at para FS8.02.)

As stated above, clearly the courts have interpreted the word "while" in s 8 as being a subordinating conjunction meaning "if" or "as long as", hence providing priority to the sustainability goals. (Radford (2013) at 14.) (Richardson (1998) at 126.) In other words, utilisation is not to be practiced unless the obligations of sustainability are guaranteed. (Richardson (1998) at 126.) Further endorsing the New Zealand courts' above mentioned interpretation of s 8 of the Fisheries Act 1996, Quin says that the employment of a sturdy word like "ensuring" encourages the interpretation that the utilisation of fisheries resources is subservient to the environmental bottom line set out in ss 8(2)(a) and (b) of the Fisheries Act 1996. (Quin (1996 – 1999) at 528.

Our Submission

Question 1: Do you agree with the new vision statement and goals for the TMP? why or why not? Are there any changes you would suggest?

No - A matter of agreeing/disagreeing with the vision statement *New Zealand's Hector's and Māui dolphin populations are resilient and thriving throughout their natural range* is irrelevant given the urgency. The four medium term goals are appropriate to ensure *"known human-caused threats are managed & engage all New Zealanders.."* However, these medium-term goals are rarely satisfied in the **TMP**. OSOF suggests the goals should not be generic and should focus on issues that have clear and specific measurements of success. For example, engage all New Zealanders about the toxoplasmosis threat, emphasise voluntary no-go zones, encourage the drafting of specific educational resources e.g school resources, getting articles out in media to assist with raising awareness.

The **TMP** states how they seek to *understand how tangata whenua wish to exercise kaitiakitanga and improve knowledge of poorly understood threats*, yet the **TMP** does not include specific and measurable objectives on how they wish to undertake this.

OSOF proposes a co-design/shared decision making approach, as cultural involvement is a crucial component in conservation initiatives. If you compare this situation with the Lummi Indian Nation In the Pacific North-West you can see the differences in involvement. The Lummi Nation, along with activists and scientists have launched multiple Salish Sea Campaigns to save the critically endangered southern resident orca population (SRKW), in which only ~70 individuals remain (note: this is similar to the Māui).

> "*These are their relatives under the water going extinct. This is a fight for their relatives. This is our sacred obligation."* Kurt Russo - senior strategist Lummi Sovereignty and Treaty Protection Office.

If the Māui and Hector's dolphin are to be saved from extinction, significant cultural input needs to be acknowledged and applied to the **TMP.** OSOF recommends robust stakeholder engagement meetings as one example of this 'input'.

Question 2: Do you agree with the desired population outcomes? Why or why not? Are there any changes you would suggest?

No – There is no scientific backing in **TMP** to claim they can undertake "*population to increase to a level at or above 95% for Māui/90% for Hector's of the "maximum dolphins the environment can support…*".

Although the intentions are good, what is the purpose or ecological justification for seeking to re-create an uncertain hypothetical pre-fisheries exploited population that a) no longer exists and can realistically never be reconstructed (even if scientists knew the entire composition, which in this situation they don't).

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).

The **TMP** 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).

The improbable and arguably irrelevant exercise of the **TMP** seeking *desired 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.

Question 3: Do you agree with the updated objectives? Is there anything else that should be considered?

Fishing objectives: Unrealistic and over-promising. The **TMP** states that historically, fishing has been regarded as the greatest human-induced threat to the death of the Māui and Hector's dolphin. However evidence in the **Assessment** which provided scientific backing to the **TMP** proves that there are other risks such as disease, predation, etc. The **TMP** states that objectives need to be "specific, time-bound and measurable" but fails to satisfy these criteria for "*a) dolphin deaths arising from fishing threat do not cause depletion, b) create substantial barriers to dispersal or connectivity between subpopulations..."* Therefore, under the **TMP** these don't classify as objectives at all.

Toxoplasmosis management objectives: This is a promising step and one that should be encouraged. The **TMP** states that following fishing, this is the second identified threat to Māui and Hector's and requires urgent action. However, before establishing the Toxoplasmosis Action Plan, the statement "*reduce the number of dolphin deaths attributed to toxoplasmosis to near zero"* is over selling a concept. OSOF supports the re-evaluation of the Toxoplasmosis Action Plan.

Other non-fishing threats: This section in the **TMP** fails to list aquaculture, ship strike, and predation, all which are noted under the **Assessment** as potentially being problematic. Furthermore, the non-fishery related threats mentioned in the **TMP** are not specific, measurable, or time-bound, therefore they do not classify as objectives under the **TMP**.

Engagement objectives **:**OSOF maintains that the **TMP** establishes insufficient objectives. OSOF maintains that a higher degree of public engagement is required, and should consider/involve e.g., youth engagement, iwi/hapū targeted engagement.

The **TMP** does not state how the public can assist in stopping the extinction. Instead, the **TMP** states how New Zealanders need to be able to identify the Māui dolphin (this is already possible considering the global attention they are getting), and it aims to improve public understanding on the processes to report sightings/live stranding and beach cast dolphins (this only shows a selective part of the population, as stated in the **Assessment**). Instead the **TMP** needs to state how threats from activities can be managed on an individual level (some examples include responsible pet ownership, sustainable seafood choices, coastal habitat restoration with planting initiatives, etc) The **TMP** is giving the public a false sense of security. There are multiple examples where public engagement has overtaken, and in some cases overwritten Government action to aid conservation. The SRKW population have guidelines that go beyond state and

federal regulations, all due to public and cultural engagement. A voluntary "no-go zone" for boats cruising, and "Be Whale Wise" partnerships implement best vessel practices to protect the wildlife. As at 2018, volunteer ship slowdowns are conducted in the SRKW habitat. In New Zealand, a study in the Hauraki Gulf resulted in volunteer cargo ship speed restrictions, highlighting the value of scientific and social stakeholders working together for conservation (Constantine et al. 2015). It is realistic to presume such practices can be promoted in New Zealand when it comes to the Māui and Hector's dolphins, and it is up to the public to push this. OSOF encourages the Government to consider such measures.
Research objectives: The research objectives are unsatisfactory.

Question 4: Do you have additional information about the subpopulation sizes and/or fishing-related deaths that you would like to share?

Recreational set netting restrictions should apply alongside commercial restrictions, but this raises compliance/illegal fishing issues which isn't addressed in the **TMP**. The **Assessment** attempted to quantify recreational set net use in critical habitat. However, the **Assessment** based their results off 1 aerial survey research paper by Hartill et al. 2011, which the **TMP** has incorporated into their closure assessments. Trying to quantify recreational set net use is not covered in the **TMP** Research Objectives.

The **TMP** estimates that to achieve the Fishing Objective, "fishing must result in less than 1 dolphin death every 7 years." The current average rate of deaths from commercial fishing is one dolphin every 9 years based on fisheries/observer data. Bycatch data sourced from Dragonfly Data Science indicated zero observed bycatch associated with the trawl or setnet commercial fisheries between 2003 and 2016. This is likely due to the extremely low observer coverage on boats. Set net commercial fisheries had an average observer coverage of <1%, while trawls were at 13% during this time period (Dragonfly Data Science, 2018).

Question 5: Which of the options do you prefer for Maui dolphins? Why? Would you make changes to the preferred option?

Option 4 - Set net Māui dolphin: The **TMP** states that the number of deaths attributed to commercial fishing is relatively low relative to those attributed to toxoplasmosis. However, considering set net fishing contributed to 84% of the total commercial fishing risk (as stated in the **TMP**), further emphasis is needed to restrict the set net fishery (commercial AND recreational) between Hawera and Wellington.
The **TMP** has based Option 4 from attempts to model the habitat of dolphins by a number of assumptions, one being public sightings. The **TMP** states that Option 3/4 would result in measures "*extending further into harbours*" and would "*extend south from Hawera to Wellington. "* as the *"sightings data suggest Hector's dolphins may use this area to traverse from South Island populations".* According to the Māui and Hector's dolphin sightings database spreadsheet 2019 (found on the DOC website), only 1 sighting is listed off the Kapiti coast. This sighting states they saw "*two fins*" but they *"weren't sure which water mammals they*

were..." and this is *"pending validation".* This sighting is included in the **Assessment** and subsequently the **TMP**.

Considering the urgency for this population, the restriction needs to be put in place and research undertaken in order to see if they are occupying these areas. If Option 4 is implemented, there needs to be a specific Research Objective directed at dolphin movement in these areas.

A major limitation with this option is that in order for it to be successful, significant compliance methods need to be enforced. The **TMP** does not mention fisheries compliance anywhere, nor does it attempt to quantify the effects of recreational fishing. OSOF recommends an appropriate compliance enforcement plan of action.

Option 4 – Trawl fishery Māui dolphin: Considering the urgency in saving the Māui dolphin from extinction, restricting trawling out to 100m depth contour is a reasonable presumption (regardless of trawl fishing not identified as a major threat in the **TMP** and the **Assessment**).

The **TMP** does not categorise trawling (inshore mid-depth, offshore) as both occur in the Taranaki Bight, and subsequently at different depths. IUCN 2012 called for all commercial fishing to be banned to the 100m depth contour in order to save the species from extinction, and since then many organisations have referenced this recommendation. Although this is an appropriate line of action, it can be noted that a large portion of trawling in the Taranaki Bight operates at 500m depth (jack mackerel), and a ¼ of Taranaki trawl fisheries operating at 600-800m deep (Hake). It is possible that depredation will pose a risk to these dolphins in these areas.

Question 7: What option do you prefer for the Hector's dolphins? Why? Would you make any changes to the preferred option?

Option 4 - Set net Hector's dolphin: There is currently a year-round ban on amateur set netting and there are commercial fishing restrictions in the Banks Peninsula Marine Mammal Sanctuary. However the **TMP** is silent regarding set netting for flounder that is currently permitted in the designated Flatfish areas from 1 April to 30 September Pigeon Bay, Akaroa Harbour, Lyttelton Harbour and Port Levy areas around Banks Peninsula, which have been identified as Hector's habitat in the **Assessment**. Further restrictions need to be applied in these areas, and emphasis needs to be put on recreational netting effects which is notably absent from the **TMP**.

Option 4 - Trawl fishing Hector's dolphin**:** The **TMP** states trawling has little impact on Hector's dolphins, there is limited evidence to suggest further trawling restrictions will benefit the Hector's dolphins survival (on top of what has already been provided by the 2005 TMP).

OSOF suggests that Capture Limits be determined in the trawl fishery for Hector's dolphins (similar to with the New Zealand sea lion capture limits for the SQU6T fishery), in which the fishery is closed if they catch X amount of sea lions in their fishing gear. This has been successful for sea lions. and puts more emphasis on the fishing industry to be careful.

Question 8: Do you agree with the proposed fisheries monitoring objectives? Why or why not?

No -The Fisheries Monitoring Objectives in the **TMP** refer to achieving the *"desired population outcomes"* when this is unrealistic and over-promising.Furthermore, it is stated that the objectives are not being decided within the **TMP** (the **TMP** is developing a 5-year plan outlying priority areas of monitoring etc.). Without the Fisheries Monitoring Objectives being decided in the **Plan** there are no grounds to agree or disagree.

Question 9: Do you have additional information about fisheries monitoring that you would like to share?

Yes -If commercial set nets have been assessed as posing a substantially greater risk to dolphins than trawl fishing (20-30% more risk (as stated in the **TMP**), why were 8 cameras put on set net trial and 20 on trawl boats in Taranaki at a cost of NZD17 million?

Yes - OSOF supports the need to document depredation behaviour. Interactions between cetaceans and fisheries have increased during the last decade, as human and marine predators are competing for marine resources. There is abundant research that focuses on the effect fisheries have on cetacean populations (Forney 2011; Hall 2014). Observers have noted depredation in Māui and Hector's dolphins (feeding behaviour around commercial fishing vessels) It is therefore important for observers to record this behaviour so potential conclusions can be drawn. A population of killer whales in the Crozet Islands is benefiting from depredation with female reproductive potential increasing 4% annually, as depredation reduces the energetically expensive pursuits for prey (Guinet et al. 2014). Similar behaviour has also been seen in pilot whales in Hawaii (Barlow et al. 2006) and sperm whales in Alaska (Cribble et al. 2016). Although this is important to note, there is no evidence to support potential negative/positive effects of depredation on Māui/Hector's.

Yes - fisheries legislation needs to be re-evaluated. When comparing species protection with Australia, New Zealand falls short as the species protection in Australia is more integrated than New Zealand's regime. 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 with causes confusion.

Under the EPBC Act, the Commonwealth Environmental Minister accredits a Fisheries Management Plan FMP once content that 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.

FISHERIES NZ are in the process of reducing tarakihi trawl effort on the east coast of the North Island due to sustainability concerns. The first stage is a 20% reduction in TACC (Total Allowable Commercial catch), and the second stage is to implement additional measures as stated in the sustainability review 2019 where options cover a 31-35% reduction in TAC (Total Allowable Catch - covers recreational, customary and

commercial sectors) which will reduce overall trawl effort in this area for the next 12 years. This information is available through the MPI 2019 Sustainability Review.

Protected species

In addition to the TMP, New Zealand could voluntarily approve a "population management plan" pursuant to section 15(1) of the Fisheries Act 1996 to protect Hector's and Maui dolphins. Section 15(1) provides that if a population management plan has been approved, the [Minister for Primary Industries] may take such other measures as he or she considers necessary to further avoid, remedy or mitigate any adverse effects of fishing on the relevant protected species. (Radford (2013) at 40.) Population management plans provide a chance for the [Minister of Conservation], who handles other non-fishing dangers to protected species, to respond to fishing – related mortality as part of the total human – induced mortality of the species at issue, and to set fishing – related mortality limits (MALFiRMS) for impacted species. MALFiRMS may apply to NZ fisheries waters or to discrete populations, must allow threatened species to recover as soon as reasonably practicable but within 20 years and "should neither cause a net reduction in the size…nor seriously threaten the reproductive capacity of [the] population" of any non-threatened species. (Radford (2013) at 41, Wheen (2012) at 485, Wildlife Act 1953, ss 14F – 14H, Marine Mammals Protection Act 1978, ss 3E – 3G.)

Integrated management

The processes utilised to safeguard Hector's and Maui dolphins ought to employ an integrated management style and involve conservation goals as well as having regard to socio economic impacts on the fishing industry. The Fisheries Act 1996, the Marine Mammals Protection Act 1978 and the Wildlife Act 1953 all have their own bodies and processes which are not fully integrated. (Radford (2013) at 35.)

Australia by comparison has undertaken a more integrated management approach to managing the environmental aspects of its EEZ fishing regime. The international drive towards integrated management has in Australia led to numerous initiatives such as the National Strategy for Ecologically Sustainable Development (1992). However, it was the issue in 1998 of Australia's Ocean Policy which had the most important continuing policy result for Australia's marine region. (Radford (2013) at 35.)

Founded on ESD principles, for the first time the Australia's Ocean Policy delivered an integrated framework for ecosystems based planning and management of Australia's Exclusive Economic Zone, to be applied via a regional planning process. (Radford (2013) at 35.) (Rothwell & Baird at 266). Complementing the policy schemes promoted by Australia's Ocean Policy was the introduction of the EPBC Act in an endeavor to give a complete Commonwealth answer to matters of national environmental significance. The capacity under the EPBC Act to involve bioregional planning has been integral to putting Australia's Ocean Policy into effect. (Radford (2013) at 35.) (Rothwell & Baird at 266). At an institutional level in Australia, the National Oceans Office was established in the last 15 years as a governmental institution intended to apply an integrated approach to facets of environmental management. The regional marine planning process commenced by the National Oceans Office has been a significant movement towards the Ecologically Sustainable Development of Australia's Oceans with a firm dedication to ecosystem – based management. (Radford (2013) at 36.) (Rothwell & Baird at 266.)

Ecosystem approach

New Zealand needs to ensure that the TMP employs an ecosystem approach. The ecosystem approach is implicit in New Zealand's fisheries management legislation. Sections 8 and 9 of the Fisheries Act 1996 imply the ecosystem approach. Section 8 deals with the sustainability principle and section 9 deals with the environmental principles. [The sustainability principle is discussed above.] (Radford (2013) at 37.)

Section 9 of the Fisheries Act regarding New Zealand's environmental principles provides:

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 environmental principles:

(a) Associated or dependent species should be maintained above a level that ensures their long term viability;

(b) Biological diversity of the aquatic environment should be maintained;

(c) Habitat of particular significance for fisheries management should be protected.

In addition New Zealand's Fisheries 2030 Strategy, which was issued in 2008, is a policy document and not legislation. The strategy is intended to provide direction for fisheries management through to the year 2030. One of the main principles espoused by the strategy is an ecosystem based approach. "We apply an ecosystem-based approach to fisheries management decision-making." (Radford (2013) at 37.) (AEBAR at 316.) New Zealand's Fisheries Plans which apply to the entire Exclusive Economic Zone are clearly ecosystem orientated. (Radford (2013) at 37.)

Environmental principles

The TMP needs to apply s 9 of the Fisheries Act 1996 regarding environmental principles. Doing so will cause environmental bottom lines to be applied to the TMP. The Minister is only required to take account of the section 9 Fisheries Act 1996 principles. Decision makers may take account of the environmental factors in section 9 and then disregard them. (Radford (2013) at 45.) (Quin at 529). Such decisions could only be disputed on the basis that they would not sustain the resource at issue for future generations; or that the adverse environmental impacts of the action at issue could not be mitigated to an acceptable level. (Quin at 529). These two environmental bottom lines will not catch many decisions which contemplate and then disregard the environmental principles. (Quin at 529) However New Zealand is committed to an ecosystem based approach these days. (Quin at 529). So it is likely to endeavor to comply with section 9. (Radford (2013) at 45.)

Question 10: Do you agree that drift net fishing should be explicitly prohibited? If so, should it be prohibited to the areas subject to set net prohibitions or should there be a complete prohibition in NZ?

OSOF would like to see the fishing industry transition to dolphin-safe fishing methods in all Hector's and Maui dolphin habitat.

Question 11: Do you agree with the establishment of the Toxoplasmosis Action Plan?

Yes - Inclusion of this action plan is a promising aspect of the **TMP**. Greater benefits will be realised by focusing management actions at the point of the toxoplasmosis path-way, wetland restoration and riparian planting.There needs to be more public awareness around Toxoplasmosis threats to wildlife.

Question 12: Do you agree with the two objectives and associated performance plans?

No- Reducing the number of dolphin deaths attributed to toxoplasmosis to "*near zero*" is over promising considering research on toxoplasmosis is lacking in New Zealand and overseas.

Question 13: Do you have any suggestions for specific research or actions that could be incorporated into the Toxoplasmosis Action Plan?

Yes - Specific public and cultural education actions need to be included in the plan, e.g government funded campaigns that provide practical advice on how to help.

Yes - Other modes of sampling the Māui and Hector's dolphins need to be considered. Scat has been widely accepted as a non-invasive sampling technique and have been used in the SRKW populations to assess disease (including parasitic like toxoplasmosis) and nutritional stress from inadequate prey supply (Parson et al. 1999; Parson 2000; Ford et al. 2016). Scat analysis has directly linked a lack of pregnancy success in the SRKW population to a lack of nutrition (Wasser et al. 2017). Scat has been used to assess Glucocorticoids (steroid hormones) that help regulate physiological and behavioural coping mechanisms in response to nutritional and psychologically stressful situations (ford et al. 2016). This has helped shape regulations around whale watch and recreational boater, as the SRKW population had surges of Glucocorticoids which showed they were stressed with boater activity. Scat samples are suitable for sequencing mitochondrial DNA fragments in the bottlenose dolphin (Parsons et al. 1999). All of these factors are massive limitations in the Māui and Hector's dolphins. These gaps in research have resulted in inadequate conservation measures being incorporated into the **Assessment** and **TMP**.

Scat Is collected by dogs. The current and future roles in dogs in conservation has been used in North Atlantic right whales, orca (Woollett et al. 2013), and bottlenose dolphin (Parson et al. 1999; Parson 2001).Conservation dogs have been used in New Zealand terrestrial animals for 40 years helping monitor kiwi and pāteke in Northland, protecting the Hauraki Gulf islands from introduced pests, helping monitor kiwi, blue duck/whio and kea on the West Coast (Hurt 2009; Browne et al 2009). It is realistic to consider this, especially considering the Māui and Hector's average alongshore home range of 50km being significantly less than that of a larger bodied mammal (Rayment et al. 2009).

Until a practical solution is created, the Māui and Hector's dolphins future is in our hands. Focus can be directed to controlling feral cat populations, and neutering cats, with similar conditions suggested in the USA to prevent toxoplasmosis in the sea otter (Miller et al. 2002).

Question 14: Do you agree or disagree with the proposal relating to marine mammal sanctuary extensions? Why or why not?

OSOF agrees with the need to increase the current Marine Mammal Sanctuary by at least 12 nautical miles in the West and 20 at banks peninsula. This exclusion and special prohibitions in this zone is imperative on the basis of ecosystem functioning, as most of the prey items for these animals are offshore, as well as the fact that these are social mammals and will travel large distances. In areas known to have high abundance, it is essential to have restrictions, including strict prohibition on several marine offshore activities (including extractive mining, drilling etc), to protect these taonga.

Question 15: Do you agree or disagree with the offshore distances in the proposal relating to MMS extensions? Why or why not?

OSOF disagrees with the current distance proposed for the West, 12 nautical miles, however **agrees** with the extension of the current extension at banks peninsula to 20 nautical miles. As aforementioned, these species are highly social, feed at distance and depth and will migrate out of a 12 nautical mile exclusion zone. In addition, as outside of this zone, prohibition of essential fishing methods as well as surveying and mining will be permitted. In this case, 12 nautical miles is certainly not large enough to be considered an appropriate distance in keeping with maintaining ecosystem functioning. This is especially so considering the planned offshore mining/drilling in the West. OSOF recommends a larger exclusion in the West in keeping with Banks Peninsula.

Question 16: What suggested amendments do you think should be considered and why?

Both the extension of the West Coast as well as Banks peninsula. However, it is stressed that the extension in the West coast is not nearly enough to have a suitable and much needed impact on the ecosystem functioning in the area. This offshore corridor has benefits of maintaining connectivity but 12 nautical miles is limited and the recommendations should follow that of Banks Peninsula; increase to 20 nautical miles with heavy restrictions on mining and surveying.

Question 17: Which of the options do you prefer for seismic surveying Why? Would you make any changes to the preferred options?

OSOF recommends Option 3 for seismic surveying. It is well documented in scientific literature that such survey techniques have considerable and significant negative impact on animals that echolocate, and also non marine mammals, we must proceed with the option providing for full protection from such activities. This is needed especially in the West coast where there is significant activity which has not been well regulated in the current governing environment and requires control from central government, moving consent application to the EPA.

Question 18: Which of the options do you prefer for seabed mining? Why? Would you make any changes to the preferred options?

Option 5 **–** A near-shore corridor would help retain connectivity between areas and reduce the risk of subpopulation fragmentation in these core Hector's dolphin areas. These dolphins require the highest level of protection to ensure their survival. OSOF recommends that no seabed mining, petroleum exploration or extractive activities should be carried out in dolphin habitat to ensure ecosystem and species protection.

Question 19: Do you agree or disagree with the offshore distances in the proposal? Why or why not?

No seabed mining, petroleum exploration and related activities should be carried out in Hector's and Maui dolphin habitat to ensure species and ecosystem protection.

Question 20: Do you agree with the moratorium on new permits for viewing Māui dolphins? Why or why not?

Yes - Until a robust TMP is put into action that addresses all threats sufficiently to stop the species from declining further, OSOF agrees with a moratorium on new permits.

Question 21: Do you agree with no other changes for dolphin watching and vessel traffic for Māui and Hector's dolphins?

Yes - dolphin watching - dolphin watching and reviewed guidelines have been emphasized overseas to prevent noise disturbance to endangered marine mammals, but only with scientific backing (Lusseau et AL 2009). It was determined in the **Assessment** that the sound modelling used to assess underwater sound disturbance was not relevant as the sources of underwater sound relevant to Hector's and Māui was not shown in the JASCO. The auditory characteristics of Hector's is not known, and it was suggested that research on captive commerson's dolphins should be done to determine this, which raises a whole different issue. However, none of this is noted in the **Plan** Research Objectives.

Ecotourism drives $25M per year for Banks Peninsula and a proportion of this goes directly back into Hector's dolphin research.

No - vessel traffic - because research is lacking, voluntary boater no go zones and education needs to be emphasized.

Question 22: Do you agree or disagree with the proposal above? Why or why not?

Yes, provided the best case scenario is implemented for the survival of the Hector's and Maui dolphin.

Question 23: What suggested amendments do you think should be considered and why?

Suggestions made throughout this submission.

Question 24: What alternative proposal relating to non-fishing related threats, beyond those set out above, do you think should be considered and why?

Aquaculture, ship strike and coastal development were noted for management by the 2008 TMP but no assessment was applied, They were covered in the **Assessment** but are notably absent from the **TMP**.

The Geodatabase was used in **Assessment** to determine aquaculture risk. It was noted that no attempt was made to differentiate the aquaculture sectors (finfish/shellfish) despite probable differences their effects on the dolphins. Aquaculture has been known adversely effect on marine mammals (Wiirsig & Gailey 2002). More strikingly, there is an aquaculture overlap with dusky dolphins in New Zealand Marlborough Sounds' mussel farms (Markowitz et al 2004) and bottlenose dolphin oyster farms overseas (lopez et al 2008). The increasing presence of aquaculture in coastal waters calls for a better understanding of its environmental effects, which is completely ignored in the **TMP** Research Objectives.

Hector's dolphins are showing small scale displacement with mussel farms in Banks Peninsula (personal coms, unpublished PhD data).

The spatial marine oil spill risk assessment (MORSA15) in the **Assessment** found 99% of oil spill risk is associated with oil tanks, vessels and cargo ships (Navigatus 2015).

Climate change is largely ignored in the **TMP**, which appears to be government trend as of late. Unfortunately, it is not universally accepted that human activities have a detrimental impact on the world's climate. More than 620 local and national governments around the world have declared climate emergencies, and the New Zealand government has failed to meet this precedent. In saying that, local, regional and district Councils have – is it therefore more likely to call on local government to help prevent the extinction of these species? This raises another issue entirely which cannot be covered in this submission.

Predation by seven gilled sharks is not mentioned in the **TMP**, regardless of it being extensively covered in the **Assessment**. According to Fisheries New Zealand (2019), Shark predation was attributed as the primary cause of death of two individuals during the period during which comprehensive, consistent necropsy methods were adopted, including a Hector's dolphin on the south coast of the South Island and a Māui dolphin on the west coast of the North Island .Of these, the broadnose sevengill shark was deemed by the Aquatic Environment Working Group to be the most plausible main predator of Hector's/Māui dolphins. They are well-known to be frequent predators of coastal dolphins and porpoises globally (Heithaus 2001). Considering climate change will increase turbidity which in turn will increase predation (just to name a few), these issues are serious and need to be addressed.

Conclusions

- Setting conservation goals is more often a question of culture or politics than of science, and unfortunately the **TMP** falls into this category.
- Threats should not be mitigated in isolation. Their interaction and cumulative impacts need to be considered together to effectively reduce the overall impact of human induced threats to a population.It is therefore recommended that a holistic approach is taken in order to address cumulative impacts across all activities. This provides for a more robust, integrated plan to be developed.
- Public and cultural engagement are the main players in preventing the extinction of these species and needs to be encouraged.
- Multiple research objectives have been overlooked or ignored, and conservation dogs could aid in collecting information in a non-invasive way.
- The implementation of the 2019 Hector's and Maui Dolphin TMP will be a true test of whether New Zealand can save its endemic Hector's and Maui Dolphins from all current threats.

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Appendix 1 – Hector's and Māui Dolphin Threat Management Plan Review, Risk Assessment Workshop, 9-13 July 2018. Panel Recommendations.

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