

August 12, 2016

Sent via electronic mail to SARA_LEP@dfo-mpo.gc.ca ; and Min@dfo-mpo.gc.ca

**Sean Nixon and Margot Venton,
Staff Lawyers**

Vancouver office
t: 604.685.5618 x 225 / 235
f: 604.685.7813
e: snixon@ecojustice.ca /
mventon@ecojustice.ca

Our File No: 498

TO: The Honourable Dominic LeBlanc
Minister of Fisheries and Oceans

AND TO: Director, SARA Directorate
Department of Fisheries and Oceans

Dear Minister LeBlanc and Director of SARA Directorate:

Re: Proposed Action Plan for Northern and Southern Resident Killer Whales

We write on behalf of the David Suzuki Foundation, Georgia Strait Alliance, Greenpeace, Raincoast Conservation Foundation, Sierra Club of BC, and Western Canada Wilderness Committee, to provide comments on the Proposed Action Plan for the Northern and Southern Resident Killer Whale (*Orcinus orca*) in Canada (the “Proposed Action Plan”), prepared under the federal *Species at Risk Act* (“SARA” or the “Act”).

Thank you for the opportunity to comment on this important step in the recovery process for this iconic species. Resident Killer Whales are of central importance to the identity of British Columbians and of Canadians generally; it is hard to imagine Canada’s Pacific coast in their absence. As a sentient mammal species with a recognizable culture and language, they also serve as a clear reminder of the intrinsic value of all species and our obligation to protect marine and terrestrial ecosystems that support Canada’s remarkable biological diversity.

We use the term “Resident Killer Whales” to refer collectively to the threatened Northern Resident (“Northern Residents”) and the endangered Southern Resident killer whale (“Southern Residents”) populations. Although many of our comments on the Proposed Action Plan apply to both populations, we stress that there is heightened urgency for separate and distinct actions for the protection and recovery of the Southern Residents. The recovery actions needed for a growing population of >280 whales (i.e the Northern Residents) are not appropriate to rebuild

an endangered population (arguably, critically endangered) of <85 whales (i.e. the Southern Residents) that has experienced several periods of decline, periodic slight growth, and has a projected annual growth rate of 0.091% decline.¹ In addition, Southern Residents inhabit a more industrialized, polluted and high traffic region where a number of substantial industrial projects are currently proposed that will significantly and adversely affect the ability of this population to successfully forage and feed - activities critical for their survival.

These comments are organized and presented under the following headings:

1. The Proposed Action Plan will not prevent extinction or provide for recovery of Resident Killer Whales
2. The legislation – SARA requirements for action plans
3. The Proposed Action Plan does not implement the Recovery Strategy
4. Recovery measure to ensure that Resident Killer Whales have an adequate and accessible food supply to allow recovery
5. Recovery measures to ensure that disturbance from human activities does not prevent the recovery of resident Killer Whales
6. Recovery measures to ensure that chemical and biological pollutants do not prevent the recovery of Resident Killer Whale populations
7. Recovery measures to protect critical habitat for Resident Killer Whales and identify additional areas for critical habitat designation and protection
8. Conclusions and Summary of recommended recovery measures

1. The Proposed Action Plan will not prevent extinction or provide for recovery of Resident Killer Whales

In addition to the detailed submissions on the recovery measures necessary to ensure prey availability for Resident Killer Whales; ensure physical and acoustic disturbance, marine pollution do not prevent recovery; and to protect critical habitat, we provide we provide the following overarching comments on the Proposed Action Plan. The Proposed Action Plan does not comply with the broad purposes or specific requirements of SARA:

1. It does not mitigate or prevent threats to Resident Killer Whales, or their critical habitat: reduced prey availability, physical and acoustic disturbance, and contaminations including from an oil spill. The Proposed Action Plan maintains status quo conditions, by

¹ Vélez-Espino, LA, JKB Ford, E Ward, CK Parken, L LaVoy, K Balcomb ... & R Sharma. 2013. Sensitivity of resident Killer Whale population dynamics to chinook salmon abundance. Completion Report, Pacific Salmon Commission, Southern Boundary Restoration and Enhancement Fund, Vancouver BC. Herein called Vélez-Espino et al. 2013

focusing on monitoring studying and discussing the plight of Resident Killer Whales. It will not prevent the extinction of Canada's unique Southern Resident Killer Whale population or support its recovery. Analysis by Velez-Espino et al. (2013) and Lacy et al. (2015)² show that the Southern Resident population will not rebuild under status quo conditions;

2. Counter to section 49(1)(d) of SARA, It does not "implement" the Recovery Strategy for the Northern and Southern Resident Killer Whales (*Orcinus orca* in Canada (the "Recovery Strategy"), or "address the threats to the species". Rather, it is a tepid departure from the goals, objectives and recommended measures set out in the Recovery Strategy, which at best will maintain status quo conditions;
3. It fails to identify a quantitative recovery goal that would allow progress towards recovery to be measured; and finally
4. Despite the federal government's primary role (and the Minister of Fisheries and Ocean's role as competent Minister in particular) in preventing the decline of Resident Killer Whales and implementing recovery actions, the Proposed Action Plan is largely an abdication of the federal government's responsibility to undertake recovery measures, particularly for Southern Residents.

To address these overarching failings, and bring the Proposed Action Plan into compliance with the Act and SARA policy, the recovery measures should be converted into concrete actions that, singly and collectively, help maintain and recover Resident Killer Whale populations.

For example, and as discussed further below "investigate strategic fishery closures as a possible tool to reduce Resident Killer Whale prey competition" during poor Chinook return years (Proposed Action Plan "PAP" # 6), should read "close fisheries to reduce Resident Killer Whale prey competition during poor Chinook return years". Similarly, "Identify projects that may impact Resident Killer Whale critical habitat and provide advice on mitigation, if appropriate" (PAP # 12) should read "ensure or require that projects do not impact critical habitat".

As the document itself observes, the "majority of the activities in the plan focus on research". While ongoing research is always important, studying, modelling and discussing the threats to

² Lacy RC, KC Balcomb, LNJ Brent, DP Croft, CW Clark and PC Paquet. 2015. Report on Population Viability Analysis (PVA) model investigations of threats to the Southern Resident Killer Whale population from Trans Mountain Expansion Project. [Prepared for NEB Hearing Order OH-001-2014 TMX ULC](#). Here in called Lacy et al. 2015

endangered and threatened Resident Killer Whales without proposed actions to address those threats, is no longer acceptable. It has been 14 years since these whales were listed under SARA and no measures to reduce identified threats in their critical habitat have been undertaken; Southern Residents in particular need immediate, concrete actions (led by Fisheries and Oceans Canada]) to begin their recovery and prevent their extinction.

Commitments by DFO to make and enforce regulations under *SARA* and the *Fisheries Act* to ensure that whales have the required food and conditions they need to survive and recover, should be unequivocally clear. Through the recovery measures, DFO must also ensure that projects and activities in Resident Killer Whale critical habitat do not threaten or destroy that habitat, or negatively affect individuals.

2. The legislation – SARA requirements for action plans

Action plans are one of the key, practical instruments in SARA for achieving the purposes of the Act: namely, to prevent the extinction of Canada’s wildlife and to provide for their recovery. Resident Killer Whales are an “aquatic species”, over which the federal government has a clear primary responsibility under SARA and under Canada’s Constitution. If action plans for aquatic species are to achieve the broad purposes of the Act, they must set out a series of clear, practical steps that the federal government (and DFO, in particular) will take to implement the broad strategic directions set out in the recovery strategy for the species.

SARA was enacted in 2002. Its passage into law represented an important step in protecting Canada’s wildlife and their habitat. In the preamble to SARA, Parliament recognized several important principles about protecting Canada’s wildlife, including that:

“Canada’s natural heritage is an integral part of our national identity and history, [and] wildlife, in all its forms, has value in and of itself and is valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons...”

The Act’s preamble also makes explicit reference to Canada’s commitment to protect biodiversity through the UN Convention on Biological Diversity:

“Canadian wildlife species and ecosystems are also part of the world’s heritage and the Government of Canada has ratified the United Nations Convention on the Conservation of Biological Diversity, [and] providing legal protection for species at risk will

complement existing legislation and will, in part, meet Canada's commitments under that Convention....”

In a recent case, the Federal Court found that SARA is “intended to implement Canada’s obligations under the [Convention]”; the Court described “a universal legal concept whereby wildlife species and ecosystems are part of the world's heritage and it has become necessary to preserve the natural habitat of species at risk.”³

As noted above, the explicit purposes of SARA, as set out in section 6, include: “to prevent wildlife species from being extirpated or becoming extinct, [and] to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity...”. SARA achieves these broad purposes in several ways. For aquatic species that are listed as endangered or threatened, including Resident Killer Whales, the central provisions in SARA include the following:

- Once a species is listed, the Act makes it an offence to kill, harm, harass, capture or take an individual of the species (s. 32(1));
- Within a mandatory timeline after the species is listed, the competent minister must prepare a recovery strategy (see sections 37, 41(1), 42 & 43) that, among other things:
 - identifies threats to the species and its habitat and describes the broad strategy to be taken to address those threats;
 - identifies the species’ critical habitat;
 - sets population and distribution objectives that will assist the recovery and survival of the species, and describes the research and management activities needed to meet those objectives; and
 - states when one or more action plans in relation to the recovery strategy will be completed.
- Within 180 days of the time the recovery strategy is completed, the competent minister must make a SARA order to protect any unprotected portions of the aquatic species’ critical habitat from destruction (sections 57-58);
- The competent minister must prepare an action plan that describes how the broad strategy for addressing threats to the species (as set out in the recovery strategy) will be implemented (sections 47-55); and,

³ See *Centre Québécois du droit de l'environnement v Canada (Minister of the Environment)*, 2015 FC 773, at para 6. See also the UN Convention on Biological Diversity, available at: <https://www.cbd.int/convention/text/>. Relevant articles include 7(c), 8 & 14.

- The competent minister must make any necessary regulations under SARA and use powers under other federal legislation for the purpose of implementing the measures included in the action plan (sections 53, 54 and 59).

SARA imposes several explicit duties on you, as a competent minister for the Resident Killer Whales, in preparing the action plan for the species.

Section 38 of SARA imposes a duty on you in preparing the action plan to “consider the commitment of the Government of Canada to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to the listed wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty.”

As one example in the case of the Southern Residents, this means that you, as the Minister on behalf of Canada, must act to respond to urgent threats posed to whales from shipping noise. As you are aware, a major shipping lane transects the Canadian portion of the Salish Sea identified and legally protected as Southern Resident critical habitat. Best available science indicates that the Salish Sea hosts the noisiest waters on the BC coast.⁴ As a consequence of shipping, more than 90% of available communication space for killer whales can be lost in portions of their critical habitat during periods of high traffic.⁵ Analysis shows that increasing ocean noise will contribute to the decline of the Southern Resident population.⁶

Several proposals are currently under consideration, each of which would significantly increase the number of ships transiting critical habitat. Although continuing to study the effects of shipping noise and produce a noise budget is important, evidence shows that existing noise already interferes with the basic life processes of killer whales.⁷ The federal government has an obligation and the jurisdiction to regulate adverse effects on SARA listed endangered species, such as the Southern Residents, in critical habitat. Further, it has the jurisdiction to withhold

⁴ Williams, R., CW Clark, D Ponirakis & E Ashe. 2014. Acoustic quality of critical habitats for three threatened whale populations. *Animal Cons.* 17:174-185 Herein called Williams et al. 2014; Erbe, C, A MacGillivray and R Williams. 2012. Mapping cumulative noise from shipping to inform marine spatial planning. *J. Acous. Soc. Am.*, 132(5) Herein called Erbe et al. 2012; Clark, C.W. 2015. Potential Acoustic Impacts of Vessel Traffic from the Trans Mountain Expansion Project on Southern Resident Killer Whales. Prepared for the NEB Hearing Order OH-001-2014 TMX ULC, Herein called Clark 2015.

⁵ Williams et al. 2014

⁶ Lacy et al. 2015

⁷ Veirs, S, V Veirs & JD Wood. 2015. Ship noise in an urban estuary extends to frequencies used for echolocation by endangered killer whales (No. e1216). *PeerJ PrePrints*; Clark 2015.

authorization of projects that will have adverse effects on Southern Residents until such a time as proper mitigation to reduce ocean noise and its consequent adverse effects on killer whales is in place.

Under section 47 of SARA, you have an explicit duty to prepare one or more action plans for the Resident Killer Whales. Importantly, the action plan must be “based on the recovery strategy” for the species (s. 47) and must set out measures that will “implement the recovery strategy, including those that address the threats to the species and those that help to achieve the population and distribution objectives...” (s. 49(1)(d)). The Proposed Action Plan’s failure to implement and reflect the Recovery Strategy for Resident Killer Whales will be addressed in detail in later sections of this letter

The required contents of an action plan are set out in section 49(1), and include:

- (a) **an identification of the species' critical habitat**, to the extent possible, based on the best available information and consistent with the recovery strategy, and examples of activities that are likely to result in its destruction;
- (b) **a statement of the measures that are proposed to be taken to protect the species' critical habitat**, including the entering into of agreements under section 11;
- (c) **an identification of any portions of the species' critical habitat that have not been protected**;
- (d) **a statement of the measures that are to be taken to implement the recovery strategy**, including those that address the threats to the species and those that help to **achieve the population and distribution objectives**, as well as an indication as to when these measures are to take place;
- (d.1) **the methods to be used to monitor the recovery of the species** and its long-term viability; [and]
- (e) **an evaluation of the socio-economic costs of the action plan and the benefits to be derived from its implementation** [emphasis added.]

The RENEW Recovery Handbook,⁸ which was developed with the participation of the Department of Fisheries and Oceans, includes a section on action plans and a proposed template. The Handbook provides a helpful description of the purpose and required contents of action plans, at page 50, noting that action plans must describe what is to be done to achieve recovery goals, that proposed actions must be doable (i.e. workable or achievable), and that responsibilities should be clearly identified:

⁸ National Recovery Working Group. 2005. Recovery Handbook (ROMAN). 2005-2006 Edition, October 2005. Recovery of Nationally Endangered Wildlife, Ottawa, Ontario. 71 pp. plus appendices.

The second part of a two-part national recovery plan consists of one or more recovery action plans that **outline what needs to be done to achieve the recovery goals and objectives identified in the recovery strategy** (the first part of the two-part plan.)

[....]

... the proposed activities [in an action plan] should correspond to goals, objectives, approaches and priorities identified in the recovery strategy and should be developed in consultation with the recovery team or strategic planners. **The actions should be doable, and timeframes and responsibilities should be identified.**

As will be discussed in more detail below, in many instances the Proposed Action Plan does not even identify a person responsible for implementing the various measures set out in the table.

Finally, sections 53, 54 and 59 of SARA impose a duty on you to make any regulations that you consider necessary for the purpose of implementing the measures included in an action plan for the Resident Killer Whales. These regulations can either be made under s. 59 of SARA (if they relate to protection of critical habitat), or under s. 53 (if they do not relate to protection of critical habitat). Section 54 gives you a related power and duty to make regulations or to use any other powers you have under any other Act of Parliament (for example, under the *Fisheries Act* and the *Oceans Act*) to implement the measures included in the action plan.

Given that you have a clear, primary responsibility for protecting Resident Killer Whales under Canada's Constitution and under federal legislation (including SARA and the *Fisheries Act*), the action plan should describe in some detail how you will use your powers under SARA and other legislation to protect and provide for the recovery of these species. While other parties and jurisdictions may have a supporting role in helping implement actions to achieve the species' recovery, you as a competent minister under SARA and as the minister responsible for the health of Canada's oceans must have a primary role in recovering the Resident Killer Whales and preventing their extinction. As described in more detail below, the Proposed Action Plan fails to set out measures that reflect your and DFO's primary role.

3. The Proposed Action Plan does not implement the Recovery Strategy or conform to SARA policy

As stated above, the intent of the Proposed Action Plan, as confirmed by both the Act and SARA policy, is to implement the Recovery Strategy

We are concerned that there are inconsistencies between the objectives, strategies and measures to achieve recovery and protect critical habitat established in the Recovery Strategy and the recovery measures set out in the Proposed Action Plan. In particular, where the

Recovery Strategy identifies the need to “regulate”, “control”, “reduce” or “limit” a potentially harmful activity the Proposed Action Plan does not provide for any such action. Instead the majority of the activities in the plan focus on research – a fact acknowledged in the documents itself (PAP p. 26). To address these inconsistencies DFO must be true to the intention of the Recovery Strategy and regulate where such action was originally envisioned by the Resident Killer Whale Recovery Team.

Further as, stated above, the Proposed Action Plan fails to identify a quantitative recovery goal, as envisioned in the Recovery Strategy (RS. P. 47). As stated above it is essential to meeting a target that you know what you are aiming for.

Finally, we are concerned that Table 3 does not conform to SARA policy, which, as described above, requires that time frames and responsibilities be identified in an action plan. Table 3 identified measures that “represent opportunities for other jurisdictions, organizations to lead”. Our concern with Table 3 is that the recovery measures identified therein might not ever happen. DFO appears to share this opinion, given that they do not include Table 3 recovery measures in the evaluation of socio-economic costs and benefits in section 3 of the Proposed Action Plan (PAP p. 26). The timeline line for near all of the Table 3 recovery measures is “unknown” or “uncertain”. Further, with only a few exceptions the “suggested other jurisdiction or organization” responsible for carrying out the recovery measure is not an identifiable agency or body, but instead a category or broad label. For example recovery measure # 91 “quantify the current levels of containment concentrations in Killer Whales”, identified as a “high priority” is to perhaps be done by “stakeholders and ENGOs” on an “uncertain timeline”. To comply with SARA policy a specific ENGO or stakeholder should be identified and a timeline provided. Absent this detail the measures in Table 3 are a wish list and should not be included in the Proposed Action Plan, unless they are expressly flagged as aspirational measures that might not happen.

We provide the following comments on the inconsistencies between the Recovery Strategy and the Proposed Action Plan with respect to strategy and measures to ensure prey availability; protect Resident Killer Whales from physical and acoustic disturbance, and environmental contamination including from an oil spill; and protection of critical habitat.

3.1 Prey availability

The Recovery Strategy identifies the need to both protect the access of Resident Killer Whales to important feeding areas, and ensure that Resident Killer Whale prey populations are adequately protected from anthropogenic factors “such as exploitation” (RS pg. 49)

The Recovery Strategy identifies some mechanisms through which this could be achieved including by mitigating threats to key prey populations and their habitat (RS. P. 48); ensuring that fisheries management plans incorporate adequate supply of prey for resident killer whales, even in changing climate scenarios (RS pg. 45); and developing “guidelines for human activities in important whale feeding areas” (RS p. 53).

3.1.1 Failure to protect stocks targeted by Southern Resident Killer Whales

By contrast, the Proposed Action Plan proposes only to “investigate” fisheries closures as a “possible tool” to use in poor Chinook return years. This falls drastically short of “ensuring” Chinook are adequately protected from exploitation. High exploitation rates on Chinook stocks known to be important in the diets of Southern Residents are pervasive, even in years when Chinook abundance is exceptionally low.

Many southern BC Chinook populations are depressed below their sustainable (MSY) spawner targets, yet directed fishing on these populations continues at exploitation levels as high, and higher than, 40%. For example, 60% of Chinook populations (CUs, 13 out of 21) that contain higher levels of wild spawning Chinook show a decline in spawner abundance of more than 50% in the last 12-15 years.⁹ This means that the primary prey Resident killer Whales rely on, especially in the spring and summer, is substantially below past levels that sustained the Southern Residents. Despite the implication for Resident Killer Whale survival, DFO has not constrained fisheries.

Fraser Spring and Summer 5₂ stream-type Chinook are a case in point. Estimates of sustainable spawner targets (S_{MSY}) for these Chinook are approximately 138,000 spawners.¹⁰ The number of spawners at half of this S_{MSY} target is 69,000 spawners. Even at 50% of the target, this salmon escapement goal has been met only once in the last 10 years. A disturbing lack of consequential effort to achieve MSY spawner targets exists in Chinook management. Beyond S_{MSY} targets, Chinook recovery targets at S_{MAX} would be an escapement goal where both Chinook and Southern Resident recovery are being maximized. Instead of this, directed fisheries continue on these salmon populations when their abundance is depressed far below sustainable levels.

⁹ Riddell, B., M Bradford, R Carmichael, D Hankin, R Peterman & A Wertheimer. 2013. Assessment of Status and Factors for Decline of Southern BC Chinook Salmon: Independent Panel’s Report. Prepared with the assistance of DR Marmorek and AW Hall, ESSA Tech Ltd., Vancouver, BC for Fisheries and Oceans Canada (Vancouver, BC) and Fraser River Aboriginal Fisheries Secretariat (Merritt, BC). xxix + 165 pp. + Appendices.

¹⁰ 2015/2016 Draft Salmon Integrated Fisheries Management Plan Southern BC Page 58 of 253

Table 1: Terminal run size (before in-river fisheries occur) and escapement for Spring and Summer 5₂ Chinook 2008-2014.¹¹ Southern Resident killer whales are known to target these Chinook salmon. A sustainable target for this aggregate is estimated at 138,000 Chinook spawners; actual escapement is less than half this target. An escapement goal that maximizes Chinook recovery and benefits to killer whales would be slightly above 138,000.

Year	Brood YR ESC	In season terminal run size ^a	Reconstructed Terminal Run Size	CTC* Escapement Index	Escapement ^b	Implied R/S ^c
2008	104,299	~61,000	51,483	32,581	39,269	0.61
2009	74,257	~63,001	72,143	47,123	53,234	1.20
2010	49,710	~62,000	50,234	36,513	41,704	1.25
2011	52,867	50,390	45,698	30,674	32,487	1.07
2012	27,661	42,730	34,326	21,297	24,302	1.53
2013	39,269	38,550	40,698	30,155	36,169	1.28
2014	53,234	47,550	93,147	56,841	77,761	2.16

a Albion run size used for management purposes

b total escapement method includes infilling for missing esc data

c Recruits /Spawner assumes returns and esc are all 5 yr olds. Pre fishery recruitment is estimated by assuming a marine harvest rate of 19%

* Chinook Technical Committee of the Pacific Salmon Commission

3.1.2 Lack of protection for important feeding areas

The Recovery Strategy identifies the need to protect access to important feeding areas, including by recommending development of guidelines for human activities in important whale feeding areas (RS p. 48-9 and 54). The Proposed Action Plan does not provide any action to implement this strategy, despite the known movements of Southern Residents in conjunction with those of their preferred prey – Chinook salmon.

The most important seasonal feeding grounds in the Canadian portion of Southern Resident critical habitat include Boundary Passage, Swanson Channel off North Pender Island, the southern tip of Vancouver Island, and the mouth of the Fraser River delta (Felleman et al. 1991, Ford et al. 2000, K.C. Balcomb, unpubl. Data, NOAA 2006). These sites are major corridors for migrating salmon and can contain high concentrations of recreational and sometimes,

¹¹ 2016 Fraser River Chinook key information for Management. First Nations Forum March 8-10 Nanaimo, BC

commercial fishing vessels. These sites are not in any way protected to allow Southern Residents to feed in an undisturbed environment.

3.1.3 Physical and Acoustic Disturbance

The Recovery Strategy identifies that ocean noise, including from shipping, interferes with Resident Killer Whales ability to carry out their basic life processes (RS 27-33). It is further known that Resident Killer Whale critical habitats are the noisiest places on the BC Coast, and that human caused ambient noise is at threshold levels in particular in Southern Resident Critical Habitat (Williams et al. 2014). Additionally the Recovery Strategies identifies physical disturbance from vessels and in particular whale watching as a threat to the whales and their critical habitat (RS p. 26-7). We also know that whale watching of Southern Residents is a major industry and that during the summer months the Southern Residents are almost continuously watched and followed throughout daylight hours while in the Canadian portion of critical habitat.

The Recovery Strategy identifies the need to ensure that disturbance from human activities does not prevent the recovery of Resident Killer Whales (RS p. 50-1). The Recovery Strategy specifically recommends developing and enforcing “regulations” and “guidelines” as well as creating and protecting “sanctuaries”, to “reduce or eliminate” physical and acoustic disturbance of resident killer whales under the *Fisheries Act* or *Oceans Act* (RS p. 50). The Recovery Strategy further recommends such measures as licencing to “control” and “limit” disturbance activities, including amending the current *Marine Mammal Regulations* under the *Fisheries Act* (RS p. 44). These are all measures which could be implemented by DFO alone.

By contrast the Proposed Action Plan proposes no measures that would “control” disturbance, or “limit” physical and acoustic disturbance from human activities on Resident Killer Whales, let alone “reduce” or “eliminate” such disturbance. For example, the Proposed Action Plan includes “assessing” the cumulative effects of potential anthropogenic impacts on killer whales (# 8), but stops short of controlling or limiting those impacts.

Further, despite the clear intention of the Recovery Strategy to do so, the Proposed Action Plan does not propose regulating or licencing activities that cause physical or acoustic disturbance. This is despite the fact that DFO has been publically discussing regulating such activities through amendments to the *Marine Mammal Regulations* for almost 15 years.

Immediate regulatory action needs to be taken, in line with the Recovery Strategy, to regulate noise in critical habitat – through for example the creation of a noise budget – as well as regulating activities that generate ocean noise such as seismic activity, sonar, and perhaps most urgently shipping. Further, regulatory action needs to be taken, in line with the Recovery Strategy, to better regulate physical disturbance from boats, in particular in critical habitat.

3.2 Environmental Contamination

COSEWIC identifies contamination in Resident Killer Whales as a reason for their designation as endangered and threatened species (RS. P. 1). We also know that pollution likely led to the extinction of other populations of Killer Whales in Alaska and more recently in the UK.

The Recovery Strategy states as an objective ensuring that chemical and biological pollutants do not prevent the recovery of Resident Killer Whale populations. The Recovery Strategy identifies measures such as introducing and strengthening “national and international agreements” and “regulation” to “reduce” the introduction of chemicals that have the potential to adversely affect the health of Resident Killer Whales or their prey into the environment (RS p. 44 and 49). The Recovery Strategy identifies specific laws which it recommends strengthening including the *BC Environmental Management Act*, the *Canadian Environmental Protection Act*, the *Pest Control Products Act*, the *Integrated Pest Management Act* and the *Fertilizer Act* (RS. P. 44). The Recovery Strategy recommends increased enforcement of existing regulation and the need to enforce any new regulations (RS p. 49). The Recovery Strategy further recommends upgrading wastewater treatment (p. 44).

Again, the Proposed Action Plan fails to include recovery measures that will regulate, limit or control marine pollution such as enforcing existing law or strengthening or enacting new regulation as recovery measures.

For example the Proposed Action Plan proposes to “identify” and “monitor” contaminants of concern (PAP # 58), but stops short on banning, controlling or regulating such contaminants. There is a proposal to “incorporate knowledge of distribution, foraging behavior and contaminant bioaccumulation in killer whales into chemical regulation development” (PAP # 65), but this measure also falls short of clearly stating that chemicals will be regulated to protect whales.

The Proposed Action Plan does not propose upgrading waste water treatment as a recovery measure, despite the fact that waste water effluent and treatment is federally regulated by DFO. Instead it proposes the DFO will “work with” municipal agencies tasked with domestic, agricultural and industrial discharges” (PAP # 76).

3.4 Critical habitat

The Recovery Strategy further recommends establishing Marine Protected Areas under the *Oceans Act* to protect important features and places within critical habitat (RS p. 43) and in particular establishing acoustic sanctuaries.

The Proposed Action Plan retreats from the recommended measure of “establishment” of an MPA under the *Oceans Act* replacing it with “investigate” the use of protected areas to protect important foraging and beach rubbing locations (PAP # 7). The Proposed Action Plan is silent on the issue of establishing acoustic sanctuaries.

4. Recovery Measure to ensure that Resident Killer Whales have an adequate and accessible food supply to allow recovery

4.1 We know that Resident Killer Whales need Chinook salmon

The Recovery Strategy recognizes that “[Resident Killer] Whales forage selectively for certain salmonids regardless of abundance”, and that “Chinook salmon is the predominant prey species” (RS p. 10).

Further we know that the abundance of Chinook salmon strongly influences birth, growth, and mortality rates of Resident Killer Whales and is linked to their level of nutritional and physiological stress.¹² We also know that a strong positive correlation between high mortality in Resident Killer Whales and low abundance of Chinook salmon has been established to the extent that Chinook availability is considered the primary limiting factor for Resident Killer Whale survival (Lacy et al. 2015, Ford et al. 2010). Lacy et al. (2015) identified reduced consumption of Chinook salmon as having the largest effect on depressing the SRKW population size, possibly leading to extinction. Velez-Espino et al. (2013) demonstrated that fisheries reductions and closures would improve vital rates and recovery trajectories of southern resident killer whales. Lacey et al. (2015) further demonstrated that an increase in Chinook consumption of 20% would result in an increased Southern Resident growth rate as high as 1.9%. This growth rate is in range of the US recovery target¹³ and provides a high probability that the currently impaired population could survive at larger and more viable numbers into the future.

¹² Ford, JKB, GM Ellis, PF Olesiuk & KC Balcomb. 2010. Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator? *Biology letters* 6, no. 1 (2010): 139-142. Herein called Ford et al. 2010, Velez-Espino et al. 2013, Lacy et al. 2015; Ayres et al. 2012

¹³ US recovery objective for SRKWs is a growth rate of 2.3% year.

Reduced food consumption can occur when:

1. the ability of whales to locate and catch fish is inhibited because of physical and acoustic disturbance from boats and ships,
2. exploitation by fisheries throughout the US and Canada competitively exclude and deprive whales of access and use of food,
3. influences such as habitat loss, oil spills and climate change cause further declines in salmon abundance.

Despite the clear understanding of the key role exploitation by fisheries plays in reducing food consumption, the Proposed Action Plan proposes only that DFO will “investigate” strategic fisheries closures as a “possible tool” (PAP # 7). The Action Plan must do better, and ensure in line with the Recovery Strategy, that fisheries management plans incorporate clear measures to protect prey availability for killer whales, including planning for anticipated low Chinook abundance by closing fisheries that adversely affect the abundance of Chinook salmon occurring in the critical habitat of whales.

While there are some uncertainties about Killer Whale diets, there are many things that we do very clearly understand. For example, while in their critical habitat in the summer, Chinook stocks targeted by southern resident killer whale are returning primarily to the Fraser River.¹⁴ Chinook salmon targeted by whales in May and June include spring and early summer stream-type Chinook returning to the mid and upper parts of the Fraser watershed.¹⁵ In July, stocks targeted by southern residents shift to the Mid Fraser and North Thompson stream-types, in August targeted stocks shift to the South Thompson ocean-type, and in September, to the lower Fraser ocean-type. The presence and timing of these stocks in the diet of whales is consistent with their seasonal stock composition and run timing through the Salish Sea.

The Albion Chinook test fishery on the Fraser River is used as an indicator of in-season run abundance; ergo, an indicator of prey abundance in Southern Resident critical habitat. In 2016, predicted returns of spring and early summer Chinook were forecast to be especially low. Yet, no planning or recognition of the implication for killer whales was taken by DFO. The 2016 spring and early summer Chinook return to the Fraser has unfolded as one of the lowest returns since the test fishery began in the 1980s.

¹⁴ Hanson, MB, RW Baird, JK Ford, J Hempelmann-Halos, DM Van Doornik, JR Candy ... & SK Wasser. 2010. Species and stock identification of prey consumed by endangered southern resident killer whales in their summer range. *Endangered Species Research*, 11(1), 69-82. Herein called Hansen et al. 2010

¹⁵ Based on research conducted between 2004-2008, see Hansen et al. 2010

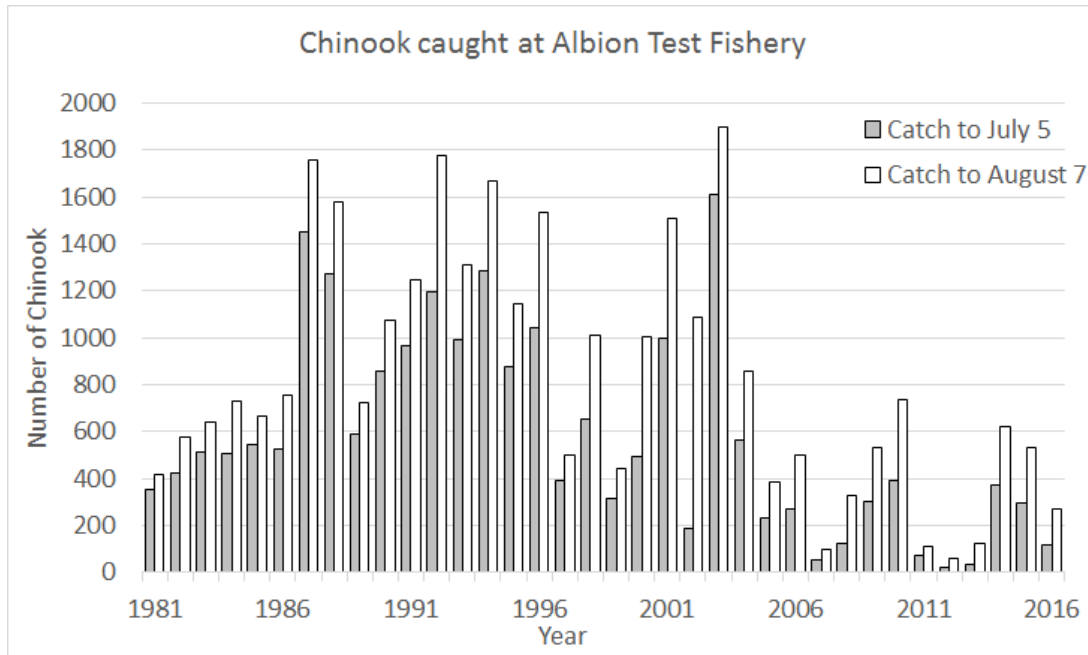


Figure 1. Chinook caught at the Fraser Albion Test Fishery to July 5 and August 7 from 1981-2016.¹⁶ Low Chinook abundance at the Albion Test fishery has been correlated with a rise in physiological and nutritional stress in all three pods of Southern Resident Killer whales.¹⁷

Evidence from nutritional and stress analysis undertaken on all three Southern Resident pods between 2007 and 2009 identifies the importance of the Albion Chinook test fishery as an indicator of prey abundance for southern resident killer whales. Specifically, thyroid hormones, which rise in response to nutritional and other psychological stressors, closely correspond to the relative Chinook abundance/CPUE at the Albion Fraser River test fishery¹⁸.

Model results show the Albion Chinook CPUE was the only significant main effect linking hormone response, however less variance was explained if parameters like vessel traffic were removed. The authors concluded that prey availability ultimately had a greater physiological impact than vessel traffic, but vessel traffic was still a factor. This finding was reinforced in Lacy et al. (2015), who found that modelled increases in population growth rate were primarily driven by prey availability, but the greatest increase in growth rate came from the combination of increased prey availability and reduced noise and disturbance from vessels.

¹⁶ DFO's Albion Chinook Index is available at <http://www.pac.dfo-mpo.gc.ca/fm-gp/fraser/docs/commercial/albionchinook-quinnat-eng.html>

¹⁷ Ayres, KL, RK Booth, JA Hempelmann, KL Koski, CK Emmons, RW Baird, K Balcomb-Bartok, MB Hanson, MJ Ford, and SK Wasser. 2012. Distinguishing the impacts of inadequate prey and vessel traffic on an endangered killer whale (*Orcinus orca*) population. *PLoS One* 7, no. 6: e36842. Herein called Ayres et al. 2012.

¹⁸ Thyroid hormone analysis on Southern Residents undertaken by Ayres et al. (2012) shows a short-term (glucocorticoid) and a longer-term (T3) response to prey availability.

Ayres et al. (2012) identify the end of 2007 through 2008 as the poorest overall nutritional state during the study period. This period corresponds with the highest number of deaths and lowest number of births and surviving calves observed during the study period. Eight whales went missing from December 2007 through October 2008, two of which were reproductive age females and included a visually emaciated pregnant female (Ayres et al. 2012).

Further work by researchers at the Center for Conservation Biology at the University of Washington have found that about 65% of the pregnancies in Southern Residents are ending early with miscarriages, and of those miscarriages, nearly one-third take place during the last stage of pregnancy.¹⁹ This and other research using photogrammetry can identify subtle changes in a killer whale's physical condition, including pregnancy and signs of poor health. These findings indicate that when food is adequate during pregnancy, females are more likely to carry their unborn calves to term, thus building the population. But when food is scarce, killer whales fail to have successful calves.

A growing body of evidence²⁰ provides important and rigorous ancillary information that visual appearance of malnutrition, stress response of thyroid hormones, low birthrates and increased mortality in Southern Residents have a strong probability of being due to low prey availability.

Despite the strong correlation that exists between changes in Chinook salmon abundance and resident killer whale survival and mortality, Chinook fisheries have never been constrained to accommodate food requirements of resident killer whales. This is particularly wrong given the existence of tools such as the Albion Test Fishery which often predicts low availability of Chinook in Critical Habitat of Southern Residents.

4.2 The Resident Killer Whale Action Plan needs to include fisheries management measures that ensure Chinook for whales

Given the above, it is imperative that DFO immediately limit directed fishing effort on Chinook populations and ensure a robust rebuilding strategy for depressed Chinook populations is in place. Incidental harvest to a minimal level through test fishing and nominal catch in fisheries targeting other species may be acceptable (e.g., maintaining a total exploitation rate on chinook of less than 3%). DFO must continue to manage and limit Chinook fishery based on early indicator information gathered through test fisheries.

¹⁹ Wasser, SK. 2016. Population growth is limited by nutrition and toxin impacts on pregnancy success in endangered southern resident killer whales. 2016 Salish Sea Ecosystem Conference April 13-15 Vancouver BC

²⁰ Ford et al. 2010, Ayers et al. 2012, Velez-Espino et al. 2103, Lacy et al. 2015

The management of fisheries, and the intentional opening of fisheries targeting south coast chinook stocks (e.g., the Juan de Fuca spring recreational fishery), is directly within DFO's control and mandate. Further efforts, including renegotiation of the Pacific Salmon Treaty with the United States, is also an important initiative, but should not be a condition precedent for DFO taking immediate regulatory action.

Lastly, the use of hatcheries or other enhancement methods should only result in increased exploitation of Chinook stocks once natural spawning abundance has already improved, rather than as a measure to allow ongoing exploitation prior to ensuring recovery.

4.3 Recommended measures to ensure prey is available for Resident Killer Whales

To ensure that Resident Killer Whales have an adequate and accessible food supply to allow recovery, the Action plan needs to include:

1. Closures of or restrictions on marine commercial and recreational Chinook fisheries that intercept migrating mixed stocks of Chinook returning to critical habitat or know to be important in the diets of Southern Resident killer whales;
2. Re-negotiation the Chinook Annex of the Pacific Salmon Treaty to reduce and /or close interception Chinook fisheries on southbound migrating stocks;
3. targeted rebuilding of depressed Chinook runs throughout their historic range;
4. Habitat protection measures that protect freshwater, estuarine and marine rearing and migrating habitat of Chinook salmon in all life stages; and
5. Refrain from the use of hatcheries as rebuilding solutions to problems caused by habitat loss, exploitation, and other anthropogenic causes.

5. Recovery Measures to ensure that disturbance from human activities does not prevent the recovery of resident Killer Whales

The Recovery Strategy confirms that Resident Killer Whales rely on sound to hunt, communicate and survive. For resident killer whales to catch and consume more salmon, disruption of feeding activity in the presence of boats and ships must be minimized. Lacy et al. (2015) identified reduced consumption of Chinook salmon as having the largest effect on depressing the Southern Resident population size, possibly leading to extinction. Reduced food

consumption can occur when the ability of whales to locate and catch salmon is inhibited because of physical and acoustic disturbance from boats and ships.

Southern Resident killer whales are within 400m of a vessel most of the time during daylight hours from May to September.²¹ Resident killer whale behaviour during vessel interactions has been widely documented and includes avoidance tactics,²² disruption of foraging behaviour and therefore energy acquisition,²³ and differences in surface active behaviours and time spent traveling.²⁴

Vessels are present an estimated 78% of the time that the Southern Residents forage and feed. The presence of vessels can cause whales to spend 25% less time catching and eating salmon, translating to a 16% reduction in food intake.²⁵ The ability to effectively find and catch prey items already at low abundance is further reduced when foraging is occurring with acoustic and physical disturbance from vessel traffic. This reduction in foraging efficiency translates to lower intake of food energy and lowers survival, lowers birthrates and increases mortality.

5.1 Resident Killer Whale Action Plan needs clear measures to address ocean noise

Acoustic quality is an element of resident killer whale critical habitat. Unspoiled communication space is essential for foraging, feeding and communication. As such, noise pollution makes it difficult for whales to conduct these vital activities. Research on the interaction between resident killer whales and noise has been shown to affect call amplitude, source levels, and call duration.²⁶ Erbe (2002)²⁷ predicted that temporary and permanent hearing loss thresholds are being exceeded by the amount of noise from constant boat traffic in Southern Resident critical habitat. Most of Southern Resident critical habitat also exceeds the European target of 100 dB

²¹ Lusseau, D, DE Bain, R Williams & JC Smith. 2009. Vessel traffic disrupts the foraging behavior of southern resident killer whales *Orcinus orca*. *Endanger. Species Research*, 6(3), pp.211-221. Herein called Lusseau et al. 2009

²² Williams, R, AW Trites & DE Bain. 2002. Behavioural responses of killer whales (*Orcinus orca*) to whale-watching boats: opportunistic observations and experimental approaches. *J. of Zoology* 256.02: 255-270; Herein Williams et al 2002; Williams, R & E Ashe. 2007. Killer whale evasive tactics vary with boat number. *J. of Zoology* 272.4: 390-397.

²³ Lusseau et al. 2009; Williams, R, D Lusseau & PS Hammond. 2006. Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*). *Biological Conservation* 133.3: 301-311.

²⁴ Williams et al. 2009; Noren, DP, AH Johnson, D Rehder & A Larson. 2009. Close approaches by vessels elicit surface active behaviors by southern resident killer whales. *Endangered Species Research* 8, no. 3: 179-192.

²⁵ Lacy et al. 2015.

²⁶ Holt, MM, DP Noren, V Veirs, CK Emmons & S Veirs. 2009. Speaking up: Killer whales (*Orcinus orca*) increase their call amplitude in response to vessel noise. *J. of the Acoustical Society of America* 125, no. 1: EL27-EL32; Holt, MM, DP Noren & CK Emmons. 2011. Effects of noise levels and call types on the source levels of killer whale calls. *J. of the Acoustical Society of America* 130, no. 5 (2011): 3100-3106; Foote, AD, RW Osborne & A Rus Hoelzel. 2004. Environment: whale-call response to masking boat noise. *Nature* 428, no. 6986 (2004): 910-910.

²⁷ Erbe, C. 2002. Underwater noise of whale-watching boats and potential effects on killer whales (*Orcinus orca*), based on an acoustic impact model. *Marine mammal science*, 18(2), 394-418. Herein Erbe 2002

re 1 lPa for annual average noise levels in either the 63 or 125 Hz 1/3 octave.²⁸ Killer whales lose more than half of their communication base in the presence of ships, and within their critical habitat lose almost all (97%) during times of heavy traffic.²⁹ Southern Residents have already lost substantial proportions of their communication space in Haro Strait to shipping noise. Haro Strait is one of the Southern Residents most frequented and important foraging areas.³⁰

Multiple industrial projects are currently proposed that will increase shipping and associated noise in critical habitat of endangered Southern Resident killer whales. Best available science suggests that this critical habitat is already too noisy.³¹ Modelling shows that independently, each of the proposed projects would prevent resident killer whale recovery and encourage population decline.³² Yet no mitigation is proposed to address these significant adverse effects of increased shipping and noise.

Both the Recovery Strategy and the Habitat Protection Order make it clear that the acoustic quality of critical habitat must be protected from destruction. Yet there is no regulation that seeks to either set a safe level for noise in critical habitat or to regulate licence or limit activities that cause noise in critical habitat. This includes the proposed Amendments to the Marine Mammal Regulations which do not include regulation of ocean noise. Thus, the DFO must prescribe measures through the Action Plan to protect the acoustic quality of critical habitat and limit noisy activities in critical habitat.

5.2 Action plan needs clear measures to protect Resident Killer Whales from physical disturbance

Disturbing marine mammals including Resident Killer Whales is nominally prohibited by the *Marine Mammal Regulations*. Due to the vagueness of the existing rules, DFO has long proposed to amend those regulations – a commitment which is not clearly reflected in the Proposed Action Plan.

Further, the proposed amendments to the Marine Mammal Regulations will not provide any greater protection to the critically endangered Southern Residents than any other marine mammal in the Salish Sea – even in critical habitat. The proposed amendments to the Marine

²⁸ Erbe, C, A MacGillivray & R Williams. 2012. Mapping cumulative noise from shipping to inform marine spatial planning. *J. of the Acoustical Society of America* 132, no. 5 (2012): EL423-EL428. Herein Erbe et al 2012

²⁹ Williams et al. 2014, Clark 2015.

³⁰ Hanson et al. 2010.

³¹ Williams et al. 2014, Clark 2015.

³² Update to Lacy et al. 2015 in prep.

Mammal Regulations would make the existing 100 meter approach distance for marine mammals law. This would provide less protection for Southern Residents in the Canadian portion of critical habitat, than in the American portion. Thus it is imperative that DFO take additional effort through the Action Plan to regulate and licence vessel that disturb Resident Killer Whales in critical habitat.

5.3 Recommended measures to protect Resident Killer Whales from acoustic and physical disturbance

To ensure that Resident Killer Whales have an adequate and accessible food supply to allow recovery, the Action plan needs to include the following recovery measures:

1. Regulate shipping and noise in the critical habitat of endangered whales.
Canada has the jurisdiction to regulate shipping and underwater noise levels. Until a cumulative effects assessment of the proposed increases in Salish Sea shipping, and a “noise budget” for critical habitat is complete, there can be no increase to current noise levels. This means no increase in vessel and shipping traffic within critical habitat, and no approvals for new projects before these assessments are completed.;
2. Make Vessel Approach Distances law. Approach distances to threatened and endangered resident killer whales must be established in law. The current approach distance of 100 must be increased to 200 metres (matching US regulations on Southern Resident Killer Whales) while whales are in their critical habitat;
3. Licence and regulate whale watching operations in critical habitat. In addition to regulating approach distances – which should apply to all vessels – other restrictions, like limiting boat numbers, and/or constraining the viewing times and/or the days when boats follow whales, must also be considered. Licencing whale watching boats provides DFO with a tool to better enforce compliance - especially in the case of otherwise unenforceable guidelines;
4. Update Marine Mammal regulations or protect whales and their habitat under SARA. The marine mammal regulations amendment process that would enforce mechanisms to limit disturbance, has been ongoing for 13 years. If this processes cannot achieve minimum standards to regulate disturbance to endangered and threatened whales, then DFO must regulate disturbance in critical habitat under SARA; and

5. Fund and prioritize on-the-water enforcement and education programs. These programs are effective ways to protect whales from harmful interactions with marine vessels, including whale-watching and recreational boats.

6. Recovery measures to ensure that chemical and biological pollutants do not prevent the recovery of Resident Killer Whale populations

The Recovery Strategy clearly identifies that Resident Killer Whales are at risk now from identifiable contaminants that we know are already present in critical habitat. Knowledge of the impacts of contaminants on marine mammals is extensive. Exposure to persistent organic pollutants (POPs) and other pollutants may contribute to poor body condition especially in individuals that may be food limited. When prey availability is low, the cumulative effects of food deprivation promote fat metabolism and put stored contaminants into circulation.

Further the Recovery Strategy identifies the serious threat that oil spills present to killer whales and their prey, as well the contamination associated with shipping. As you know the federal government is currently considering approving increase in oil tanker and other vessel traffic in Southern Resident critical habitat.

Yet the majority of the recovery measures in the Proposed Action Plan (those in approach 1, 2 and 3) are focused on investigating, monitoring and identifying the impacts of these contaminants on whale health and their sources. Though important, such initiatives will not achieve the goals of the Recovery Strategy of limiting the introduction contaminants that can harm whales into critical habitat.

6.1 Recommended recovery measures to reduce contaminants that harm Resident Killer Whales and their prey

The primary emphasis of the action plan should be on Approach 4 –reducing the introduction of contaminants into the environment. We propose:

1. Establishing short-term targets and timelines to ban the most common and toxic contaminants in killer whale critical habitat that are harmful to the whales' health. The current section within the Proposed Action Plan offers no timelines nor goals on how to reduce the introduction of pesticides into the environment and wholly ignores other emerging particularly bioaccumulative contaminants, as well as marine debris, such as microplastics.

2. The workshop identified in Approach 3 (#61) has (to our understanding) already occurred, so a more robust list of actions to clearly identify the long list of contaminants of concern, along with timelines to reduce their introduction to marine environments should be clearly laid out in Approach 4;
3. The impacts from chronic fossil fuel spills (from boats, waterfront industries, for e.g.) is ignored and clear goals to reduce this source should be included;
4. Reduce the risk of a catastrophic oil spill. Though mitigation of impacts of oil spills is mentioned in Approach 5, no actions are included to address the increased risk of oil spills that accompany many of the proposed projects that would dramatically increase shipping in the Salish Sea; and
5. Establish short-term targets and timelines to ban the ongoing discharge of the most common and toxic contaminants into killer whale critical habitat that are harmful to the whales' health.

7. Recovery measures to protect critical habitat for Resident Killer Whales and identify additional areas for critical habitat designation and protection

7.1 Failure to protect critical habitat

In December 2010, the federal court confirmed³³ that DFO has a legal obligation to adequately protect all aspects of resident killer whale critical habitat from destruction- including its chemical, biological, acoustic and physical features. In 2015, Fisheries and Oceans Canada stated in 2015 that:

“the poor survival and birth rates of Southern Resident Killer Whales over the past 20 years suggest that current habitat quality, including that of designated Critical Habitat within [Trans Mountains] Marine Regional Study Area, may be insufficient to allow for recovery of this population.”

Despite the courts legal ruling that all aspects of critical habitat must be protected, scientific evidence that the acoustic and biological features in particular, of Southern Resident critical

³³ What ever the proper name for that law suit is

habitat continue to decline. Despite DFO's recognition that these qualities have declined, the federal government has not taken any measures to protect critical habitat. The Proposed Action Plan still does not recommend actual measures and actions to protect critical habitat

7.2 Expansion of critical habitat

Growing evidence also suggests that critical habitat of resident killer whales should be expanded. Foraging for Southern Residents extends from coastal BC south to northern California and foraging for Northern Residents extends from coastal BC north to SE Alaska. This range overlaps with rearing grounds and migration routes of Chinook salmon. The importance of this entire feeding range to resident killer whales is denoted by the strong correlation between the Pacific Salmon Commission's coast wide annual Chinook Index of abundance with survival and mortality in resident killer whales.

7.3 Recovery Measures to protect and expand critical habitat

1. Expand Southern Resident and Northern Resident critical habitat within Canada to include important migratory routes of Chinook salmon on the West Coast of Vancouver Island and northern British Columbia.
2. Work with US agencies to expand critical habitat for Southern Residents to include important Chinook migration routes on the west coast of Washington, Oregon and northern California.
3. Support the proposed addition of acoustic quality as an essential element of American portion of Southern Resident critical habitat to be protected under the American *Endangered Species Act*.

8. Conclusion and Summary of recommendations

The Proposed Action Plan lacks measures that will effectively reduce threats to resident killer whales, stop their decline (in the case of southern Residents) or prevent decline (in the case of Northern Residents) and propel them towards recovery. Southern Residents in particular are struggling to find enough salmon to eat in a noisy and polluted ocean. Lacy et al. 2015 shows that Southern Resident survival requires more Chinook salmon, less noise from ships, and less disturbance from boats.

No substantive actions are proposed to address, limit or control these threats or to ensure the protection of their critical habitat.

The Action Plan needs to include the following recovery measures:

1. Food supply

- Closing or limiting of marine commercial and recreational Chinook fisheries that intercept south migrating mixed stocks of Chinook.
- Re-negotiation of the Chinook Annex of the Pacific Salmon Treaty to close directed commercial troll and sport interception fisheries on migrating Chinook in SE Alaska
- Fisheries restrictions that ensure Chinook escapement rebuilding plans meet minimum escapement targets, and ideally have rebuilding plans that maximize Chinook abundance and SRKW recovery at higher escapement levels
- Habitat protection measures that protect freshwater, estuarine and marine rearing and migrating habitat of Chinook Salmon in all life stages.

2. Disturbance.

- Immediately update the marine mammal regulations to increase the “no-go” boat disturbance in SRKW critical habitat from 100 to 200m to match US regulations. Other whale watching regulations such as limiting boat numbers, constraining the viewing times and/or days when boats follow whales, must be identified and implemented.

3. Noise

- No approval of projects that increase shipping in the Salish Sea until a Cumulative Effects Assessment is undertaken on these proposals, and a noise budget completed;
- Regulated noise budget for critical habitat.

4. Pollution

- Strengthen regulations that control the introduction of contaminants that harm whales and their prey, with a particular focus on petrochemicals and pollution associated with shipping given the proposed expansion of shipping including of diluted bitumen through critical habitat.

5. Enforcement:

- Funding to monitor and enforce regulations for endangered killer whales

The above actions are immediate priorities.

In addition, there is a need for longer-term action on marine pollutants, commitments to marine protected areas, amendments to the marine mammal regulations, identification of Salish Sea killer whale sanctuaries, and reduction of ship noise.

Thank you for considering these comments as you produce the final Action Plans for the Resident Killer Whales.

Yours truly,

The image shows two handwritten signatures in black ink. The signature on the left is 'Mgt Venton' and the signature on the right is 'Sean Nixon'.

Margot Venton and Sean Nixon, Staff Lawyers

Cc / enclosures: