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Mr. Barry Thom, Regional Administrator
NOAA Fisheries, West Coast Region
7600 Sand Point Way NE, Bldg. 1
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**Re: Agenda Item D2: Tentative Adoption of 2022 Management Measures for Analysis;
PFMC, Public Meetings and Hearings, NOAA-NMFS-2022-0001-0001**

Dear Chair Gorelnik and Regional Administrator Thom,

On behalf of the Center for Biological Diversity, Orca Conservancy, Dr. David Bain, Friends of the Earth, Wild Orca, Whale and Dolphin Conservation, and Wild Fish Conservancy, please accept the following comments for consideration as you select and evaluate management measures for the 2022 ocean salmon fisheries.¹

Our organizations have been involved in the process to re-evaluate the impacts of Pacific salmon fisheries and Pacific Salmon Plan on the highly endangered Southern Resident killer whales (SRKW or “orcas”) for years now. We see that the 2022 ocean salmon fisheries regulations rely heavily on the Amendment 21 process and resulting reports and decision documents. As a result, previous documents produced and comments submitted to the SRKW Workgroup, NOAA Fisheries, and the Pacific Fisheries Management Council (PFMC) on the issue of the impacts of the Pacific Salmon Plan and Amendment 21 are hereby incorporated by reference.

While we were pleased to see specific consideration of the impacts of Pacific salmon fisheries on SRKW through Amendment 21 and to see measures adopted on the basis that they could benefit orcas (including reduced catch quotas for non-tribal fisheries off Oregon and Washington; delayed starts to some commercial fisheries, and extended winter closures for some fisheries), we remain very concerned that the PFMC and NOAA Fisheries have not gone nearly far enough to confer meaningful conservation benefits to orcas or execute their duties under the National Environmental Policy Act and Endangered Species Act.

NOAA Fisheries admitted as much when it asked the question “Can the proposed action

¹ We have uploaded our Literature Cited to a google drive for ease of submission and access. They are available at this link: <https://tinyurl.com/yc6tf42u>. We will also be mailing them to you.

reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?”² NOAA Fisheries answered no, “[t]he ***proposed action is not expected to result in either beneficial or adverse significant effects*** based on the analysis provided by the Council’s ad hoc SRKW Workgroup (Workgroup), or by the analysis in our EA.”³

In other words, Amendment 21 as implemented by the annual ocean salmon fisheries regulations will not confer a significant benefit to this highly endangered species because NOAA Fisheries did not properly account for the impacts of the Pacific Salmon Plan as a whole on these endangered orcas and did not prioritize the orcas in its selection and analysis of alternatives and management measures. Perhaps most critically, in light of the current status of SRKW and the salmon prey upon which they depend for their survival, the threshold for triggering management responses established by Amendment 21 is set at a Chinook abundance level that is too low (not protective enough) to ensure SRKW are left with enough prey to locate and consume.

The fact that the 966,000 chinook threshold (based on the average of the seven ***lowest years*** on record of Chinook return) was not met in 2021 and is not expected to be met in 2022 highlights the flaws in this standard.⁴ It is a threshold so low that management measures may never be triggered despite the precarious state of orcas and salmon they need and the dramatic climatic events we are experiencing along the West Coast. This threshold does not appear to weigh the health of orcas’ priority stocks, some of which are not managed or monitored by NOAA Fisheries. Protecting salmon and orca foraging opportunities only when Chinook are at historic lows fails to guarantee survival of the orcas and is nowhere near enough to support recovery. Instead, we urgently need a bigger and better buffer against extinction and for recovery, including a threshold for management based on indicators of orca health.

Throughout this process, we have pleaded for the threshold to be set at a higher level, such as the average Chinook abundance in years the SRKW population was stable or growing, but to date NOAA Fisheries has rejected our plea. For the reasons described in our previous comment letters and the additional reasons provided below, NOAA Fisheries must revisit its National Environmental Policy Act and Endangered Species Act analyses, fully comply with those laws, and not miss what may be our last opportunity to save and recover SRKW.

² NOAA Fisheries, Amendment 21 to the Pacific Coast Salmon Fishery Management Plan: Salmon Fishery Management Measures to Allow for Prey Availability and Foraging Opportunities for Southern Resident Killer Whales, RTIN: 0648-XA696, Finding of No Significant Impact (Aug. 20, 2021), at 2.

³ *Id.* (emphasis added).

⁴ “In 2022, the projected pre-fishing Chinook abundance in the north of Cape Falcon area is 1,316,100, which is greater than the threshold value of 966,000.” NOAA Fisheries, Preseason Report II, Stock Abundance Analysis and Environmental Assessment Part 2 for 2022 Ocean Salmon Fishery Regulations, RIN 0648-BK78 (March 2022) (“Preseason Report II”), at 26.

I. NOAA Fisheries Has Not Complied with the National Environmental Policy Act

A. NOAA Fisheries must prepare a full Environmental Impact Statement

While NOAA Fisheries prepared an Environmental Assessment (EA) for Amendment 21 to the Pacific Salmon Plan and seems headed to approving a one-year EA for the 2022 salmon fisheries, a full Environmental Impacts Statement (EIS) on the impacts of the Pacific Salmon Plan on endangered orcas, including proposed Amendment 21, is warranted.

The National Environmental Policy Act (NEPA) “is our basic national charter for protection of the environment.” 40 C.F.R. § 1500.1(a).⁵ NEPA mandates that agencies take a “hard look” at the environmental impacts of their actions to ensure informed decisionmaking and public participation. *See id.* § 1500.1(b). To accomplish these objectives, NEPA requires agencies to fully disclose all potential environmental impacts of an action, 42 U.S.C. § 4332(2)(C), including “ecological . . . aesthetic, historic, cultural, economic, social, [and] health” effects. 40 C.F.R. § 1508.8. If an action has effects that *may* be significant, an agency must prepare an EIS before the action is taken. 42 U.S.C. § 4332(2)(C) (emphasis added). Here, the action more than meets this threshold for its effects on SRKW alone. Thus, NOAA Fisheries should prepare an EIS.

Under NEPA, significance is determined by evaluating the context and intensity of an agency’s action. 40 C.F.R. § 1508.27. The context relates to the “affected region, the affected interests, and the locality,” while intensity refers to the severity of the impacts. *Id.* at § 1508.27(a). Intensity hinges on several factors, several of which are implicated by NOAA Fisheries’ action. For example, this action affects several threatened and endangered salmon populations as well as the highly endangered SRKW and clearly “may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.” 40 C.F.R. § 1508.27(b). Further, publications and comments from the scientific community emphasizing that further constraints on salmon fisheries would benefit orcas and should be implemented now reveal how the “effects on the quality of the human environment are likely to be highly controversial.” *Id.* § 1508.27(b)(4).

NEPA also requires agencies to assess “[t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. *Id.* § 1508.27(b)(5). In the case of SRKW, we are dealing with a species on the *brink* of extinction - to cut management measures so close by using a threshold for action based on such a low Chinook abundance is recklessly gambling with SRKW extinction. Additionally, “it is reasonable to anticipate a cumulatively significant impact on the environment” (*id.* § 1508.27(b)(7)) in light of the combined impacts from past, present, and reasonably foreseeable actions on SRKW, including

⁵ We appreciate NOAA Fisheries’ election to prepare the Amendment 21 EA and FONSI using the 1978 Council on Environmental Quality NEPA regulations, acknowledging that review of this action began before the 2020 amendments became effective. Moreover, the new regulations are unlawful and, in any event, cannot trump NOAA’s statutory obligations to fully consider the direct, indirect, and cumulative effects of its actions. *See* 42 U.S.C. § 4332; *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (citing 42 U.S.C. § 4332(2)(C)). There are at least five lawsuits challenging the new regulations. The 2022 salmon fisheries EA Reports make no mention of the CEQA regulations, but we assume the same is true, and that they were prepared under the 1978 regulations.

but not limited to combined fisheries impacts. For example, leading orca scientists recently reiterated that SRKW are extremely vulnerable to “the cumulative effects of anthropogenic threats,” noting that “Chinook salmon abundance and its interactions with vessel noise/presence and PCB concentrations strongly influenced modelled killer whale population dynamics, highlighting the importance of considering threats collectively.”⁶ When using recent low Chinook abundances, they projected a 26% probability of population extinction within 86 years.⁷ “Effective conservation of species at risk now requires an understanding of the cumulative effects of multiple activities in the ecosystem.”⁸ NOAA Fisheries has not demonstrated this understanding in the Amendment 21 EA or this year’s EA documents produced to date, and should prepare a full EIS.

B. The 2021 and 2022 EAs Are Flawed

As noted, agencies can prepare an EA to determine whether an EIS is warranted. In this case, the EA prepared for Amendment 21, and heavily relied on in the 2022 ocean salmon fishery regulations EA documents, contain numerous flaws, including:

Assumptions about conditions and abundances. NOAA Fisheries’ fails to justify its “assumption that the range of abundances experienced over the past 25 years is likely representative of the range of abundances we expect to see in future years,”⁹ in light of worsening climate and oceans conditions. Many salmon populations from Alaska to California that SRKW rely on are themselves listed as threatened or endangered under the U.S. Endangered Species Act and facing unprecedented threats and low returns in 2021, including from extreme heat waves, ongoing drought, habitat degradation, ocean acidification, contaminants, fishing pressure, and delays in removing dams such as those on the Klamath River.¹⁰

NOAA Fisheries’ assumption is arbitrary and capricious in its failure to factor in and respond to the reality that “[c]hanging climate conditions and an increasing human population are having significant ongoing impacts on the marine environment and are likely to continue to affect killer whales and their prey into the future.”¹¹ This has become all too evident these last few years with massive salmon die-offs from unprecedented drought and high temperatures.¹²

Flawed reliance on hatchery fish. NOAA Fisheries continues to rely on hatchery fish to understate the impacts of fisheries and other threats to orcas. Yet it then also acknowledges on

⁶ Murray, C.C., et al., *A cumulative effects model for population trajectories of resident killer whales in the Northeast Pacific*. Biological Conserv. 257 (2021).

⁷ *Id.*

⁸ *Id.*

⁹ Amendment 21 EA at 19.

¹⁰ See, e.g. Meeks, A., CNN, Extreme heat could kill nearly all young salmon in the Sacramento River, officials say (July 14, 2021); Bacher, D., Sacramento News & Review, Hopes for imperiled fish rise as FERC approves transfer of Klamath River dam license (June 29, 2021).

¹¹ Murray et al. 2021.

¹² Duggan, T., *Fear of a massive salmon die-off this summer*, San Francisco Chronicle (May 13, 2021); Smith, A.V., *Ongoing fish kill on the Klamath River is an ‘absolute worst-case scenario,’* High Country News (May 27, 2021).

occasion that hatchery fish pose a threat to wild salmon, not to mention their impacts to water quality and the environment, their inferior value to orcas, and the increasing climate threats hatcheries themselves are facing.¹³ For example, in the Amendment 21 EA, NOAA Fisheries states “[n]egative effects from high proportions of hatchery fish have been described extensively by NOAA Fisheries before, but include a variety of genetic effects on natural population productivity and diversity when they interbreed with natural-origin fish, competition with natural populations for habitat and resources leading to density depressed populations, along with disease transmission and aggrandizement to list a few.”¹⁴

On March 3, 2021, Hanson et al. published *Endangered predators and endangered prey: Seasonal diet of Southern Resident killer whales*, which highlights the year-round “central importance” of Chinook salmon to SRKW, emphasizes the link between low Chinook abundance and low fecundity and survival, highlights risks associated with increases in hatchery production, and concludes that among other research and management measures, “efforts to also increase availability of Chinook salmon in the non-summer may be particularly important to this killer whale population’s recovery.”¹⁵

Further, even if hatchery production were not problematic, NOAA Fisheries cannot rely on hatcheries, or the potential to improve hatchery practices, to benefit whales today or even in the near future. It will take time to develop and implement new practices and policies, and even if or when they are implemented, it takes years for hatchery releases to grow to the size that can be prey for orcas. It is also important that hatchery fish are not double-counted in an attempt to offset harvest impacts in more than one fishery.

Failure to properly assess all threats to SRKW. NOAA Fisheries’ failure to take a protective approach on this issue contradicts its most recent *Species in the Spotlight: Priority Actions 2021-2025, Southern Resident Killer Whale* confirming that SRKW remain a recovery priority #1C, or one “whose extinction is almost certain in the immediate future because of rapid population decline or habitat destruction, and because of conflicts with construction, development, or economic activity.”¹⁶ The document lists insufficient prey first in a list of the top three “interactive threats” to SRKW along with contaminants and vessel noise and disturbance and defines four priority actions for 2021-2025. One of the four priorities is “Target Conservation of Critical Prey;” “Targeting actions that will increase the abundance of all Chinook salmon will benefit the Southern Resident killer whales and is therefore, a high priority.”¹⁷ Similarly, in the most recent 5-year ESA review, they agency also emphasizes the need for “target conservation

¹³ See, e.g., Hatchery Scientific Review Group, *Annual Report to Congress on the Science of Hatcheries* (2015); Flaccus, G., *Fish in Oregon hatcheries die, released early as fires rage*, Oregon Public Broadcasting (Sept. 17, 2020).

¹⁴ Amendment 21 EA at 59.

¹⁵ Hanson, M.B. et al. 2021, *Endangered predators and endangered prey: Seasonal diet of Southern Resident killer whales*. PLoS ONE 16(3): e0247031; see also Ward, Eric J., Elizabeth E. Holmes & Ken C. Balcomb, *Quantifying the effects of prey abundance on killer whale reproduction*, 46 J. Applied Ecology 632 (2009).

¹⁶ NOAA 2021, *Species in the Spotlight: Priority Actions 2021-2025, Southern Resident Killer Whale*.

¹⁷ NOAA 2021, *Species in the Spotlight: Priority Actions 2021-2025, Southern Resident Killer Whale*.

of critical prey.”¹⁸

Further, the Council and NOAA have not thoroughly assessed the direct, indirect and cumulative impacts of Pacific salmon and other fisheries on the endangered orcas in light of yet other synergistic threats facing SRKW. For example, NOAA Fisheries has failed to meaningfully consider cumulative threats and impacts to salmon and orcas from climate change (and ocean acidification¹⁹) and from other fisheries, including salmon fisheries that target Chinook these orcas could otherwise intercept (including notably fisheries in Southeast Alaska), and fisheries that result in incidental harvest and bycatch of Chinook. While the Council and NOAA Fisheries have not analyzed the impacts of the fisheries together in this year’s EA documents, the Amendment 21 decision documents *use* other fisheries to conclude that additional measures it takes might not help that much, the benefits to orcas could be offset because, the document contends, the “fishery impacts on salmon could increase in northern fisheries in Canada and Alaska if the West Coast ocean salmon fisheries” catch levels are reduced.²⁰ It really is one system that should be looked at comprehensively by the fishery management councils and NOAA Fisheries at a more granular level than the treaty process. NOAA Fisheries cannot on the one hand say it will not look at other fisheries in determining impacts on orcas but then on the other contend it will not take more protective action because other fisheries will negate the benefits by upping their fishing effort. Plus, this conclusory statement ignores the fact that Canada is actually voluntarily reducing harvest opportunities to benefit orcas.

NOAA Fisheries has also failed to meaningfully consider cumulative and synergistic threats and impacts from other authorized and unauthorized take, including from vessel noise and disturbance and potentially catastrophic impacts from low probability/high consequence threats to orcas like from oil spills. A review of publicly available data reveals the magnitude of the cumulative stressors SRKW endure. NOAA Fisheries has authorized tens of thousands of takes of these endangered whales for military exercises, geophysical and other scientific research, dam and water project operations, fisheries, infrastructure development and maintenance, stormwater discharge and other pollution-related programs. For many of these activities, NOAA states that it cannot determine with any confidence how many individual whales will be taken, so it relies on surrogates as a proxy for take exceedance. Examples of these surrogates include fish harvested and exceedance of contaminant levels. While use of a proxy can be helpful in effecting on-the-ground management, it fails to illuminate the sheer scale of stressors faced by these orcas.

The allowed take we documented for SRKW represents a small fraction of the actual take that occurs. First, we were unable to obtain all the Biological Opinions and Federal Register Notices providing for such take. Second, many takes of SRKW (e.g., from recreational vessels) do not require permits from the federal government—yet they add to the cumulative body of stressors

¹⁸ NOAA 2021, Southern Resident Killer Whales (*Orcinus orca*), 5-Year Review: Summary and Evaluation.

¹⁹ Crozier LG, McClure MM, Beechie T, Bograd SJ, Boughton DA, Carr M, et al. Climate vulnerability assessment for Pacific salmon and steelhead in the California Current Large Marine Ecosystem. *Plos One*. 2019; 14(7) e0217711; Crozier et al. 2021, Climate change threatens Chinook salmon throughout their life cycle, *Communications Biology* 4:222 (2021).

²⁰ Amendment 21 EA at 59.

faced by this critically endangered whale population. While any one stressor, on its own, may or may not affect the fitness of an individual whale, repeated stressors from a variety of sources over time are likely to lead to individual- and population-level effects. NOAA Fisheries must better assess the "death by a thousand cuts" scenario when it authorizes take of SRKW under either the Marine Mammal Protection Act (MMPA) or Endangered Species Act (ESA).

Although last year came with the welcome news of three pregnancies,²¹ two tragically have already been lost,²² and researchers already feared this would not be nearly enough to sustain this waning population of only 74 whales, including this new calf.²³ These whales need more food and quieter waters to forage, breed, and communicate effectively. Wasser et al. 2017 found a relationship between prey availability and inter-annual variation in calf survival.²⁴ Other scientists, for example Lacy et al 2017,²⁵ suggested that in order for the population to reach the recovery target of a 2.3% growth rate, acoustic disturbance to these orcas must be cut by 50% and the Chinook abundance would need to be increased by 15%. The demographic patterns this model is based on have already changed, with higher mortality rates and lower birth rates, indicating their proposed targets for the improvements in noise reduction and prey abundance to grow the population are likely to be underestimates.

Every bit counts, including the Pacific salmon fisheries harvest – not only for increasing abundance of salmon, but also for increasing availability to the orcas. Salmon in the right places at the right time are essential to ensure the orcas can meet their nutritional needs year-round. Rather than simply looking at historical salmon abundance and deciding what fraction of years they are willing to implement conservation measures, NOAA Fisheries should be looking at the levels of salmon abundance needed to support a calf survival rate that would lead to 2.3% population growth (3-4 viable calves every year for a population in the 70's).

New science confirms what decades of science has been indicating—noise and disturbance from vessels reduce the ability of the endangered orcas to capture prey.²⁶ Holt et al. 2021 found that orcas spend less time foraging in the presence of all types of vessels and conclude that reducing ship speeds could increase the probability of uninterrupted foraging and increase the proportion

²¹ The Center for Whale Research July 2021 census reported 74 whales but L47 was presumed dead on September 20, 2021 (screenshot provided); Southern resident grandmother orca 'missing and likely dead,' KNKX Public Radio (Sept. 2021).

²² Mapes, L., New calf joins endangered southern resident orcas; 2 other pregnancies lost, Seattle Times (Mar. 2, 2022).

²³ See, e.g., Denardo, C., Is It Too Late for the Southern Resident Orcas, Outside (2021), available at <https://www.outsideonline.com/outdoor-adventure/environment/end-watch-southern-resident-orcas/> (text of article attached).

²⁴ Wasser, Samuel K. et al., *Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (Orcinus orca)*, 12 PLoS ONE e0179824 (2017).

²⁵ Lacy, Robert C. et al., *Evaluating anthropogenic threats to endangered killer whales to inform effective recovery plans*, 7 Scientific Reports 14119 (2017).

²⁶ Holt, Marla M., Jennifer B. Tennesen, M. Bradley Hanson, Candice E. Emmons, Deborah A. Giles, Jeffrey T. Hogan, and Michael J. Ford, *Vessels and their sounds reduce prey capture effort by endangered killer whales (Orcinus orca)*, Marine Environmental Research 170 (2021).

of accessible salmon.²⁷ Another 2021 publication found that whales spent less time capturing prey when vessels were in close proximity (< 400 yards).²⁸ This effect was particularly pronounced in females, which has implications for successful reproduction.²⁹ And yet another recent study found that vessels influenced the orcas' surface behaviors with implications for communication, group cohesion, and reproductive success.³⁰ The authors stress the importance of vessel regulation and management in conservation of SRKW.³¹ NOAA continues to sit on best available science instead of adequately incorporating these cumulative effects and impacts on the SRKW or sufficiently taking direct disturbance into account when establishing its management measures.³² We have enough science to know that if we delay in taking the necessary conservation actions, we will not recover this dwindling population. We will lose it forever.

These threats (climate change, ocean acidification, contaminants, exposure to emerging disease, vessel noise and disturbance) are likely to get worse, and NOAA Fisheries should have taken them all into consideration in establishing a more protective salmon threshold for orcas.

Limited and flawed alternatives analyzed and adopted. For this year's ocean salmon fisheries Alternative 3 appears to be marginally more favorable for SRKWs, but not in a material way, because none of the alternatives are sufficient. On a broader scale, NOAA Fisheries failed to consider several alternatives to Amendment 21, which were recommended by commenters, that are more protective abundance thresholds that are based on data from years when SRKW did not exhibit nutritional stress. The threshold used should approximate a salmon abundance that supports the higher bounds of fecundity, survival, and improved body condition that can lead to the recovery of the population. It should also take into account that Southern Resident killer whales are highly selective foragers that prefer 4- and 5-year old Chinook salmon,³³ and consequently the models used to estimate total abundance may not reflect availability of adequate prey for Southern Residents. Commenters also recommended consideration of an alternative that included a North of Falcon abundance threshold below which no non-treaty fishing would be authorized.

²⁷*Id.*

²⁸ Holt, M. M., J.B. Tennessen, E.J. Ward, M.B. Hanson, C.E. Emmons, D.A. Giles, and J.T. Hogan, Effects of Vessel Distance and Sex on the Behavior of Endangered Killer Whales. *Front. Mar. Sci.* 7:582182 (2021).

²⁹ *Id.*

³⁰ Bubac, C.M., A.C. Johnson, and R. Otis, Surface behaviors correlate with prey abundance and vessels in endangered killer whale (*Orcinus orca*) population. *42 Mar Ecol.* (2021); see also Lo, Catherine, F., K.A. Nielsen, E. Ashe, D.A. Bain, A. Mendez-Bye, S.A. Reiss, L.T. Bogard, M.S. Collins, and R. Williams, Measuring speed of vessels operating around endangered southern resident killer whales (*Orcinus orca*) in Salish Sea critical habitat, *Mar. Poll. Bull.* (2022).

³¹ *Id.*

³² Protecting depleted salmon runs that the whales no longer feed on while allowing sport fishers on waters where they may be foraging could have the unintended consequence of maximizing overlap in time and space between sport fishing boats and the orcas.

³³ Ford, J.K.B, Wright, B.M., Ellis, G.M., and Candy, J.R. 2010. Chinook salmon predation by resident killer whales: seasonal and regional selectivity, stock identity of prey, and consumption rates. *DFO Can. Sci. Advis. Sec. Res. Doc.* 2009/101. iv+ 43 p.

NOAA Fisheries considered and ultimately rejected just one additional alternative, other than “no action,” which was “based on the maximum TS1 starting abundance observed during the mid to late 90s (1995 – 2000) which is approximately 1,144,000 adult Chinook salmon.”³⁴

NOAA Fisheries ultimately chose a management threshold based on the mean of the *lowest seven years of Chinook abundance*, approximately 966,000 adult Chinook, which reflect “two relatively good status years (1994 and 2007)” and the other five with “fair or poor SRKW status.”³⁵ Even if the estimate were correct, it is not protective enough, for the reasons noted above. Further, it is concerning to see the overestimates in many of the pre-season salmon forecasts when compared with actual abundance levels, an issue raised by staff at the March PFMC meeting. NOAA Fisheries must explain how this relates to (and how it should affect) the orca-related salmon abundance threshold. At the very least, the inaccuracy (and often overestimate) of preseason abundance forecasts should result in a generous buffer built into any salmon threshold for the benefit of orcas and a conservative approach in estimating pre-season abundance.³⁶

Otherwise, any additional salmon that might arguably be available from various salmon recovery efforts, including hatchery expansion and habitat restoration, is allocated to people, not endangered orcas. We support more fish for people, but these orcas need more fish first. NOAA Fisheries should also consider that while the pace of restoration work may pick up in coming years, the pace of habitat degradation due to day-to-day human activities, such as logging, construction, and other development is likely to continue to exceed restoration gains for many years.

Staff also referenced new Shelton data at the March PFMC meeting that if used or incorporated seem to significantly lower the historical salmon abundance estimates.³⁷ Yet it appears staff is initially proposing that the solution may be to simply lower the orca-related salmon threshold by the same factor without analyzing the relationship between these lower levels of prey and SRKW population dynamics and viability metrics. Also, it appears that the latest Shelton data show fewer Chinook North of Falcon, or a smaller piece of the pie in that area, and NOAA Fisheries has not explained what that change in distribution means for Southern Residents.

While we appreciate all the hard work the Southern Resident killer whale workgroup completed and its acknowledgment of the relationship between salmon stocks and orca demographics, we are concerned that the lack of a perfect predictive model is keeping the Council and NOAA Fisheries from doing what is required to maintain and recover the SRKWs, which are hovering on the brink of extinction. It is in everyone’s interest to protect and recover the salmon on which orcas depend, but we will not have a chance to save SRKW if we do not make their survival a top priority.

³⁴ Amendment 21 EA at 18.

³⁵ Amendment 21 EA at 12.

³⁶ In other contexts and for good reason, NOAA Fisheries uses minimum, not best, population estimates when deciding how much by-catch is unlikely to affect a population.

³⁷ See also 2022 Preseason Report II at 26 “Questions about accuracy of pre-season abundance thresholds as well as new models that “may warrant an update to the numerical value of the abundance threshold.”

NOAA Fisheries failed to meaningfully assess an alternative of closure of the non-tribal Pacific salmon fisheries and/or closure of the Pacific salmon fisheries if the pre-season Chinook abundance estimate is predicted to reach the selected threshold, at a minimum to provide a baseline against which the effects of other alternatives could be compared.³⁸ Canada continues to implement strong and area-specific measures to protect orcas, including time and area-based sanctuary zones and Chinook retention fishery closures.³⁹ On June 8, 2021, it also launched a Pacific Salmon Strategy Initiative, which recognizes the importance of addressing bycatch and incidental harvest and emphasizes that fishery closures are necessary when stocks of conservation concern cannot easily be avoided.⁴⁰ NOAA Fisheries should follow Canada's lead on these fisheries rather than potentially undercut or negate Canada's efforts by adopting less ambitious and robust measures for these cross-jurisdictional populations.

NOAA Fisheries also failed to analyze an alternative under which non-treaty PFMC ocean salmon fisheries in the EEZ north of Cape Meares (or from central California to the Canadian border) move to terminal areas at and near the mouths of rivers. This would make the prey density produced by the entire run what the orcas experience, rather than reducing it to the quota. This could result in a significant increase in prey density for the whales. Fish traps in rivers serve both to move catch riverward of where whales feed and also allow selective removal of hatchery fish.

NOAA Fisheries also failed to adopt all feasible pre-defined management actions that would be triggered when the threshold is met, including prohibiting non-treaty ocean salmon fishing in the now-finalized Southern Resident critical habitat areas North of Cape Meares (Areas 1 & 2), limiting harvest in that region outside of coastal critical habitat,⁴¹ and delaying the opening of non-treaty commercial and recreational ocean fisheries South of Cape Meares until June (when Southern Residents are less likely to be foraging in that area).⁴²

Additional measures the agency appears to have rejected include:

- a requirement for vessel monitoring systems on commercial ocean salmon fishing vessels and collection of refined spatial data on ocean salmon recreational fisheries to better understand the overlap of ocean salmon fisheries and Southern Resident foraging areas

³⁸ In general, NOAA Fisheries failed to adequately respond to public comments during the Amendment 21 process, which as NOAA notes began on July 14, 2020 and included ten Council meetings and 15 meetings of the SRKW Workgroup. *See* Amendment 21 EA at 9; Amendment 21 FONSI at 3.

³⁹ Fisheries and Oceans Canada, 2021 management measures to protect Southern Resident killer whales; Mapes, L., *Canada announces big cuts to commercial fishing to protect wild salmon that Washington's orcas eat*, The Seattle Times (June 29, 2021).

⁴⁰ *See, e.g.,* Fisheries and Oceans Canada, Pacific Salmon Strategy Initiative, Backgrounder (June 2021).

⁴¹ On July 30, 2021, NOAA Fisheries issued a final rule expanding SRKW critical habitat into coastal waters along Washington, Oregon, and California, which is important given their coastwide occurrence and the additional layer of protection critical habitat provides listed species. NOAA Fisheries, Final Rule, *Revision of Critical Habitat for the Southern Resident Killer Whale Distinct Population Segment*, 86 Fed. Reg. 41668 (Aug. 2, 2021); *see also* Emmons, C.K. et al. 2021, *Passive acoustic monitoring reveals spatiotemporal segregation of two fish-eating killer whale *Orcinus orca* populations in proposed critical habitat*. *Endang. Species Res.* 44:253-261.

⁴² *See* Gayeski, N., Comments to the PFMC re: Proposed Alternatives (Apr. 5, 2022).

and implement time and area closures in Southern Resident foraging hotspots and critical habitat.

- improved monitoring and management of salmon stocks for the benefit of SRKW that can inform fisheries management and also determine whether triggers for reinitiating consultation have been met. For example, NOAA Fisheries should require:
 - An age-structured stock assessment using cohort reconstruction data;
 - Stock-specific harvest information;
 - Disclosure incidental salmon mortality in other fisheries;
 - Analysis of fishery operation transformations that could recover salmon stocks and benefit Southern Residents;
 - Development and implementation of a genetic stock identification sampling program for ocean salmon fisheries to improve the scientific basis for Pacific salmon management and to advance Southern Resident conservation;
 - Documentation of the data NOAA Fisheries uses for the rate of incidental salmon mortality in this and other fisheries that is used in abundance models, including the geographic range of salmon catch assessed;
 - Methods to monitor priority stocks for orcas regardless of whether these are fisheries' target stocks;
 - Regular review and incorporation emerging scientific literature; and
 - Regular assessment of the adequacy of selected management measures based on the results of the above.

II. NOAA Fisheries Has Not Fully Complied with the Endangered Species Act (ESA)

Considered “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation,” the Endangered Species Act (ESA), 16 U.S.C. §§ 1531-1544 embodies Congress’s “plain intent . . . to halt and reverse the trend toward species extinction, whatever the cost.” *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180, 184 (1978). The ESA reflects “a conscious decision by Congress to give endangered species priority over the ‘primary missions’ of federal agencies.” *Id.* at 185.

For the reasons discussed above and others, NOAA Fisheries’ biological opinion issued for Amendment 21 under the ESA, upon which it will presumably rely on for the 2022 salmon fisheries, is arbitrary, capricious, and contrary to law. It does not ensure that the agency’s actions (when considered with the aggregate effects of the factors considered in the environmental baseline, cumulative effects, and the dire status of the species) are not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of its critical habitat. 16 U.S.C. § 1536(a)(2); 50 C.F.R. §§ 402.02, 402.14(g). Thus, the agency cannot rely on this biological opinion to meet its legal obligations under the ESA for Amendment 21 or the annual fisheries regulations. Consistent with its statutory and regulatory mandates, NOAA Fisheries must revisit its analyses using the best available science and prioritize SRKW above other considerations until the population is on a recovery trajectory and meeting its population growth target of at least 2.3% per year.

In conclusion, we appreciate your consideration of these comments and look forward to meaningful and bold action to bring these orcas back from the brink of extinction.

Sincerely,



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Literature Cited

- Bacher, D., Hopes for imperiled fish rise as FERC approves transfer of Klamath River dam license, Sacramento News & Review (June 29, 2021).
- Bubac, C.M., A.C. Johnson, and R. Otis, Surface behaviors correlate with prey abundance and vessels in endangered killer whale (*Orcinus orca*) population. 42 Mar Ecol. (2021).
- Crozier LG, McClure MM, Beechie T, Bograd SJ, Boughton DA, Carr M, et al. Climate vulnerability assessment for Pacific salmon and steelhead in the California Current Large Marine Ecosystem. Plos One. 2019; 14(7) e0217711 (2019).
- Crozier et al. 2021, Climate change threatens Chinook salmon throughout their life cycle, Communications Biology 4:222 (2021).
- Denardo, C., Is It Too Late for the Southern Resident Orcas, Outside (2021).
- Duggan, T., *Fears of a massive salmon die-off this summer in Sacramento River water conflict*, San Francisco Chronicle (May 13, 2021).
- Emmons C.K. et al. 2021, *Passive acoustic monitoring reveals spatiotemporal segregation of two fish-eating killer whale *Orcinus orca* populations in proposed critical habitat*. Endang Species Res 44:253-261.
- Fisheries and Oceans Canada, 2021 management measures to protect Southern Resident killer whales.
- Fisheries and Oceans Canada, Pacific Salmon Strategy Initiative, Background (June 2021).
- Flaccus, G., Oregon Public Broadcasting, *Fish in Oregon hatcheries die, released early as fires rage* (Sept. 17, 2020).
- Ford, J.K.B, Wright, B.M., Ellis, G.M., and Candy, J.R. 2010. Chinook salmon predation by resident killer whales: seasonal and regional selectivity, stock identity of prey, and consumption rates. DFO Can. Sci. Advis. Sec. Res. Doc. 2009/101. iv+ 43 p.
- Hanson, M.B. et al. 2021, Endangered predators and endangered prey: Seasonal diet of Southern Resident killer whales. PLoS ONE 16(3): e0247031.
- Hatchery Scientific Review Group, *Annual Report to Congress on the Science of Hatcheries* (2015).
- Holt, M. M., J.B. Tennessen, E.J. Ward, M.B. Hanson, C.E. Emmons, D.A. Giles, and J.T. Hogan, Effects of Vessel Distance and Sex on the Behavior of Endangered Killer Whales. Front. Mar. Sci. 7:582182 (2021).

Holt, M. M., J.B. Tennesen, E.J. Ward, M.B. Hanson, C.E. Emmons, D.A. Giles, and J.T. Hogan, Vessels and their sounds reduce prey capture effort by endangered killer whales. *Mar. Env. Res.* 170 (2021).

KNKX Public Radio, Southern resident grandmother orca ‘missing and likely dead,’ (Sept. 2021).

Lacy, Robert C. *et al.*, *Evaluating anthropogenic threats to endangered killer whales to inform effective recovery plans*, 7 *Scientific Reports* 14119 (2017).

Lo, Catherine, F., K.A. Nielsen, E. Ashe, D.A. Bain, A. Mendez-Bye, S.A. Reiss, L.T. Bogard, M.S. Collins, and R. Williams, Measuring speed of vessels operating around endangered southern resident killer whales (*Orcinus orca*) in Salish Sea critical habitat, *Mar. Poll. Bull.* (2022).

Mapes, L., *Canada announces big cuts to commercial fishing to protect wild salmon that Washington’s orcas eat*, *The Seattle Times* (June 29, 2021).

Mapes, L., New calf joins endangered southern resident orcas; 2 other pregnancies lost, *Seattle Times* (Mar. 2, 2022).

Meeks, A., *Extreme heat could kill nearly all young salmon in the Sacramento River, officials say*, *CNN* (July 14, 2021).

Murray, C.C., *et al.*, *A cumulative effects model for population trajectories of resident killer whales in the Northeast Pacific*. *Biological Conserv.* 257 (2021).

NOAA, *Species in the Spotlight: Priority 2021-2025, Southern Resident Killer Whale* (2021).

NOAA, *Southern Resident Killer Whales (Orcinus orca), 5-Year Review: Summary and Evaluation* (2021).

Smith, A.V., *Ongoing fish kill on the Klamath River is an ‘absolute worst-case scenario,’ High Country News* (May 27, 2021).

Ward, Eric J., Elizabeth E. Holmes & Ken C. Balcomb, *Quantifying the effects of prey abundance on killer whale reproduction*, 46 *J. Applied Ecology* 632 (2009).

Wasser, Samuel K. *et al.*, *Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (Orcinus orca)*, 12 *PLoS ONE* e0179824 (2017).