D. Peter Helmlinger, P.E.
Brigadier General
U.S. Army
Division Commander

Elliot Mainzer
Administrator and CEO
Bonneville Power Administration
U.S. Department of Energy

Lorri Gray
Regional Director, Columbia-Pacific Northwest
Bureau of Reclamation
U.S. Department of the Interior
Submitted Via Online Portal

Re: Southern Resident Killer Whale Expert Comments on Columbia River System Operations – Draft Environmental Impact Statement (CRSO DEIS)

Dear Brigadier General Helmlinger, Administrator Mainzer, and Director Gray,

As scientists with expertise on the Southern Resident killer whale (SRKW) population, we are writing to express our concern that the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration (Action Agencies) failed in their Draft Environmental Impact Statement (DEIS) to take a hard look at the impacts of the Columbia River System Operations on this highly endangered distinct population segment of West Coast killer whales.

As an initial matter, we request an extension of the 45-day comment period to review the DEIS and provide the Action Agencies further information on the connection between Columbia River Basin salmon and survival and recovery of the SRKWs. The 2019 Novel Coronavirus (COVID-19) pandemic has continued to escalate dramatically from day-to-day in our region and at this time most public facilities are closed, nearly all work places have severely limited access, and many of us are subject to shelter-in-place orders. The COVID-19 social distancing and safety precautions have closed or limited the hours and access to several of the region's science labs and university facilities, which directly impacts the ability to work for some of the undersigned. In addition, at least two of the undersigned are in a high-risk category, live near a cluster of cases of COVID-19 in the Pacific Northwest, and have been subject to restrictions that are longer and more severe than most. The COVID-19 restrictions have materially impacted our ability to provide the Action Agencies will a full scientific review and analysis of the DEIS. Accordingly, we request that the public comment deadline be extended until the public health crisis is over.

In case our request for an extension is not granted, we respectfully submit these comments to the Action Agencies on the Columbia River System Operations DEIS, which includes fourteen federal dams and reservoir projects in the Columbia River Basin.

I. Increasing Columbia River Basin adult salmon returns is critical to the survival and recovery of SRKWs

NOAA listed the SRKWs as endangered under the Endangered Species Act in 2005 when the population numbered 88 whales.[1] Despite almost fifteen years of federal protection, the population has continued to decline from a high census count in 1995 of 98 whales to a low point of only 73 whales today.[2] The National Marine Fisheries Service (NOAA Fisheries) has recognized the SRKWs as one of eight marine species most at risk of extinction and considers them a recovery priority number one: "a species whose extinction is almost certain in the immediate future because of a rapid population decline . . . ."[3] By NOAA Fisheries' own assessment, the population must increase by an average 2.3 percent per year for 28 years in order to be removed from the Endangered Species list,[4] yet under current conditions NOAA projects a continued downward trend over the next 50 years.[5]

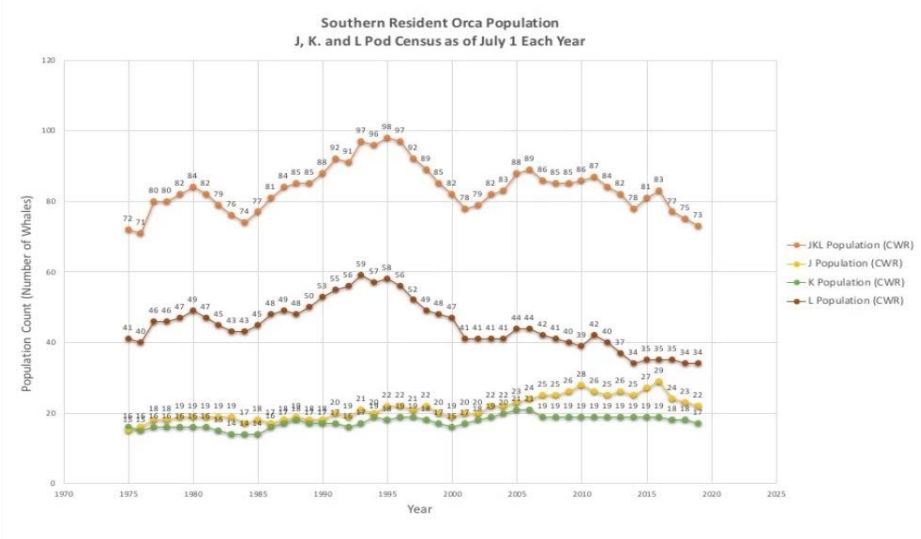

Figure 1. Population count of Southern Resident killer whales over time, including trends for individual J,K, and L pods. Credit: Center for Whale Research.

Recent genetic paternity analyses by NOAA using single nucleotide polymorphisms and microsatellites confirm that inbreeding is now occurring in this small population of whales.[6] Two males (J1 and L41) were inferred to have sired 52 percent of all sampled progeny born in the last

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[1] 70 Fed. Reg. 69,903 (Nov. 18, 2005).

[2] Center for Whale Research (2020) "Southern Resident Killer Whale Population," *available at*, https://www.whaleresearch.com/orca-population. One additional individual is presumed dead, and this count will likely be updated to 72 whales in the near future. *Id.*

[3] NOAA Fisheries (2016) Species in the Spotlight: Southern Resident Killer Whale DPS

[4] NMFS (2008) Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*), p. II-82, *available at,* http://www.nwr.noaa.gov/Marine-Mammals/Whales-Dolphins-Porpoise/Killer-Whales/ESA-Status/Orca-Recovery-Plan.cfm]

[5] 84 Fed. Reg. at 49,215; National Marine Fisheries Service, West Coast Region (2019) Proposed Revision of the Critical Habitat Designation for Southern Resident Killer Whales, Draft Biological Report at 7-8 (hereafter NOAA Biological Report).

[6] Ford, M.J., K.M. Parsons, E.J. Ward, J.A. Hempelmann, C.K. Emmons, M. Bradley Hanson, K.C. Balcomb, & L.K. Park (2018) *Inbreeding in an endangered killer whale population*, Animal Conservation 21: 423-432. https://doi.org/10.1111/acv.12413.

28 years.[7] Inbreeding depression, or fitness effects of inbreeding (e.g., lower fecundity), may be a concern for SRKWs.[8] As NOAA recognized in its 2016 review of the population—before inbreeding was confirmed—if inbreeding is occurring in the population, "the population trajectory may be more negative."[9] Delay in recovery of the population is likely to result in the loss of more genetic diversity, and actions like the Columbia Basin System Operations DEIS Preferred Alternative that fail to increase the SRKW population also increase the jeopardy of extinction. NOAA Fisheries itself has concluded in a different recent biological review that "the loss of a single [SRKW] individual, or the decrease in reproductive capacity of a single [SRKW] individual, is likely to reduce the likelihood of survival and recovery of the species."[10]

Throughout their range, the SRKWs face significant threats to their survival, including prey depletion, high toxicant loads, anthropogenic noise, and vessel impacts.[11] A lack of their preferred prey, Chinook salmon, is widely recognized as the primary limiting factor to their immediate survival and future recovery, with increased mortality and decreased fecundity shown to be correlated with coastwide indices of Chinook salmon abundance.[12]

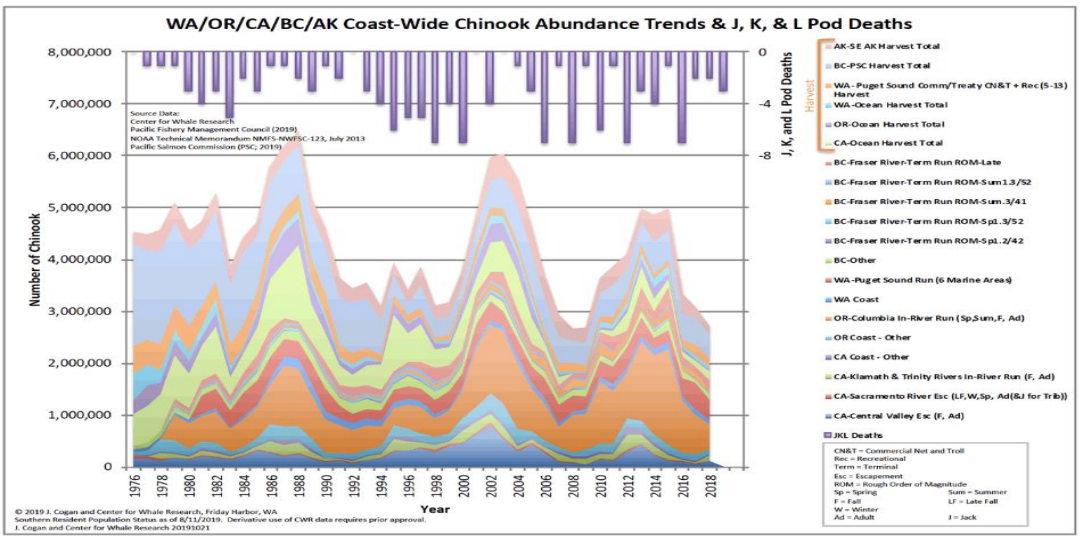

Figure 2. Coast-Wide Chinook Abundance and Southern Resident killer whale deaths. Credit: J. Cogan and Center for Whale Research.

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[7] *Id.*

[8] *Id.*

[9] NMFS (2016). *Southern Resident Killer Whale (Orcinus orca) 5-Year Review: Summary and Evaluation*. National Marine Fisheries Service, West Coast Region. 17 pp., *available at:* https://www.westcoast.fisheries.noaa.gov/publications/status_reviews/marine_mammals/ kw-review-2016.pdf

[10] NMFS (2009) Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project, at 573.

[11] National Marine Fisheries Service (2008) "Recovery Plan for Southern Resident Killer Whales (Orcinus orca)."

[12] Ford, J.K.B, G.M. Ellis, and P.F. Olesiuk (2005) *Linking prey and population dynamics: Did food limitation cause recent declines of 'resident' killer whales (*Orcinus orca*) in British Columbia*. Fisheries and Oceans; Ford J.K.B et al. (2010) *Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator?* Biology Letters, 6:139–142; Robert C. Lacy, et al. (2017) *Evaluating Anthropogenic Threats to Endangered Killer Whales to Inform Effective Recovery Plans*, 7 Sci. Reports 14119; Ward E.J, E.E. Holmes, and K.C. Balcomb. (2009) *Quantifying the effects of prey abundance on killer whale reproduction.* Journal of Applied Ecology, 46: 632–640; National Marine Fisheries Service (2008) "Recovery Plan for Southern Resident Killer Whales (Orcinus orca)."

One recent population viability analysis considered how SRKW population growth would respond to reductions in current threat levels for each of the three threats, singly or in combination.[13] They found that only by addressing prey abundance could the NOAA Fisheries recovery goal of 2.3 percent growth for the SRKW population be achieved.[14] The authors concluded that "reaching the recovery target without increasing Chinook salmon numbers is likely impossible."[15] NOAA Fisheries itself has recognized that the principle impediment to orca recovery is a severe shortage of prey—particularly Chinook salmon.[16]

Fig. 1. K13, a robust 41.5 yr old female *Orcinus orca* (left) and L67, an emaciated 23.5 yr old female that subsequently died (right). Arrows show where head width (HW) measurement was taken at 15% of the distance between the blowhole and anterior insertion of the dorsal fin (BHDF). Note that the white eye patches of K13 angle outward towards the posterior, while the eye patches of L67 angle inward and follow the shape of the skull

Figure 3. Aerial photograph comparing a robust female with an emaciated one. Credit: Fearnbach, H. et al., Using aerial photogrammetry to detect changes in body condition of endangered southern resident killer whales*, Endangered Species Research 35: 175-180 (2018).*

For their immediate survival and future recovery, the SRKWs need abundant, diverse, and accessible Chinook salmon prey throughout their range and across seasons.[17]

Salmon are the mainstay of the SRKWs diet. This diet must support daily life activities (*e.g.*, foraging, traveling, socializing, resting), in addition to gestation, lactation, and growth.[18] To maintain this high energy balance, SRKWs preferentially consume Chinook salmon, particularly older (>3 years), larger Chinook age classes.[19] Larger salmon offer the additional benefit that fewer are needed to provide a given amount of nutritional value, so larger individuals require fewer prey capture events, and less foraging effort. Chinooks' large size, relatively high fat and energy content, and year-round occurrence from multiple sources within the SRKW's range contributes to the SRKW's preference—and the preference persists "despite the much lower abundance of Chinook in some areas and during certain time periods compared to other salmonids."[20]

Underscoring the importance of Chinook to the SRKWs, scientists have found a strong correlation between Chinook abundance and SRKW impaired

[13] Robert C. Lacy, et al. (2017) *Evaluating Anthropogenic Threats to Endangered Killer Whales to Inform Effective Recovery Plans,* 7 Sci. Reports 14119.
[14] *Id.*
[15] *Id.* at 4-5.
[16] NOAA Biological Report at 28.
[17] Washington State Southern Resident Orca Task Force (2019) Final Report and Recommendations, *available at: https://www.governor.wa.gov/sites/default/files/OrcaTaskForce_FinalReportandRecommendations_11.07.19.pdf*
[18] NOAA Biological Report at 27.
[19] *Id.* at 10, 27.
[20] *Id.* at 10. *See* Ford, J. K. B., & Ellis, G. M (2006) Selective foraging by fish-eating killer whales *Orcinus orca* in British Columbia. *Marine Ecology Progress Series 316*, 185-199.

body condition ("peanut head"), reduced growth rate, reduced overall length,[21] reduced social cohesion,[22] reduced fecundity,[23] and reduced survival.[24]

Reproductive-age females seem to be particularly vulnerable to nutritional stress. One recent study found that up to 69 percent of all detectable SRKW pregnancies were unsuccessful; of these, up to 33 percent failed relatively late in gestation or immediately post-partum, when the energetic cost and risk is especially high (to the mother whale). The authors concluded that "[l]ow availability of Chinook salmon appears to be a . . . significant cause of late pregnancy failure," and that "point[s] to the importance of promoting Chinook salmon recovery to enhance population growth of Southern Resident killer whales.[25] In particular, the authors concluded that the results of the study "strongly suggest" that recovering "Columbia River Chinook (CRC) runs should be among the highest priorities for managers aiming to recover this endangered population of killer whales."[26]

A. The Columbia River Basin is not a "small" part of SRKW diet

The SRKWs are some of "the most well-studied" killer whales on the planet.[27] Despite the wealth of scientific literature available on SRKWs, and the numerous studies that were submitted to the Action Agencies by these authors and others during scoping of the DEIS, the DEIS only includes three referenced sources of information on the SRKWs.[28] The DEIS does not

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[21] Durban, J. et al. (2009) *Size and body condition of Southern Resident killer whales*, Report to the Northwest Regional Office, National Marine Fisheries Service, Contract AB133F08SE4742; Fearnbach, H. et al. (2011) *Size and long-term growth trends of endangered fish-eating killer whales*, 13 Endangered Species Research 173; Fearnbach, H. et al. (2018) *Using aerial photogrammetry to detect changes in body condition of endangered southern resident killer whales*, Endangered Species Research 35: 175-180; Groskreutz et al. (2019) *Decadal changes in adult size of salmon-eating killer whales in the eastern North Pacific*, Endangered Species Res, 40:183-188.

[22] Parsons KM, Balcomb KC , Ford JKB, Durban JW (2009) *The social dynamics of the southern resident killer whales and implications for the conservation of this endangered population*. Anim Behav 77: 963–971; Ford, J.K.B. et al., (2005) *Linking prey and population dynamics: Did food limitation cause recent declines of "resident" killer whales (*Orcinus orca*) in British Columbia*? Canadian Science Advisory Secretariat Research Document 2005/042.

[23] Ward EJ, Holmes EE, Balcomb KC (2009) *Quantifying the effects of prey abundance on killer whale reproduction*. J Appl Ecol 46: 632–640; Wasser S.K. et al. (2017) *Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (Orcinus orca).* PLoS ONE 12(6): e0179824, https://doi.org/10.1371/journal.pone.0179824.

[24] NOAA Biological Report at 13; Ayres, K.L. et al. (2012) *Distinguishing the impacts of inadequate prey and vessel traffic on an endangered killer whale (*Orcinus orca*) population*, PLoS ONE 7(6):e36842; Ford JKB, Ellis GM, Olesiuk PF, Balcomb KC (2009) *Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator*? Biology Letters 6: 139–142; Ward, E.J. et al. (2013) *Estimating the impacts of Chinook salmon abundance and prey removal by ocean fishing on Southern Resident killer whale*, NOAA Technical Memorandum NMFS-NWFSC-123.

[25] Wasser S.K. et al. (2017) *Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (Orcinus orca).* PLoS ONE 12(6): e0179824, https://doi.org/10.1371/journal.pone.0179824.

[26] *Id.*

[27] NOAA Fisheries, Species Directive: Killer Whales, available at: https://www.fisheries.noaa.gov/species/killer-whale.

[28] The three sources are the Center for Whale Research's website (last accessed in 2018); a 2016 5-year review of the SRKWs by the National Marine Fisheries Service; and a list of priority salmon stocks developed by the National Marine Fisheries Service and the Washington Department of Fish and Wildlife. *See* Columbia River System Operations DEIS at 11-9, 11-48, and 11-50.

address or consider any peer-reviewed studies from independent scientists about the SRKWs or the most recent NOAA Fisheries conclusions, including scientific analysis and review of the SRKWs presence in coastal habitat and the importance of Columbia River Basin salmon in particular to SRKW survival.

1. **<u>The mouth of the Columbia River is a recognized "hot spot" for SRKW foraging and one of the most important sources of salmon for nutritionally stressed SRKWs.</u>**

The SRKWs spend more than half the year inhabiting the coastal waters of Washington, Oregon, and northern California. In particular, NOAA Fisheries data compiled from tagged whales, dedicated surveys, and passive acoustic monitoring indicates the SRKWs spend significant time in the winter and spring (November through May) off the mouth of the Columbia River and have been present there thirty-five times more often than would be expected by chance.[29] Although the vast majority of research on SRKWs is conducted in the Salish Sea, the majority of the population spends the majority of their time in the Pacific, and the majority of their time there is likely within the range of Columbia Basin Chinook. NOAA Fisheries itself has noted this area to be a "high use foraging area," and approximately 50 percent of the time spent by the SRKWs in coastal waters is between Grays Harbor and the Columbia River.[30]

NOAA Fisheries recently proposed designation of the mouth of the Columbia River, along with other coastal habitat, as critical habitat for the SRKWs.[31] In its Draft Biological Report in support of the proposed revision of critical habitat designation for SRKWs, NOAA Fisheries highlighted the critical importance of the prey found in the SRKW's coastal habitat, especially the Columbia River, to SRKW survival and recovery.[32]

In our expert opinion, Columbia River Basin salmon are critically important to SRKW survival and continued decline—or only negligible increase—of Columbia Basin salmon would jeopardize the survival of the SRKWs. Analysis of fish scale and Southern Resident fecal samples collected on the outer coast indicate that Chinook are the primary species consumed on the outer coast and that over half the Chinook consumed by the Southern Residents are from the

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[29] Hanson, M.B., E.J. Ward, C.K. Emmons, and M.M. Holt (2018) *Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data*. Prepared for: U.S. Navy, U.S. Pacific Fleet, Pearl Harbor, HI. Prepared by: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center under MIPR N00070-17-MP-4C419. 8 January 2018. 33 p.; Hanson, M.B., C.K. Emmons, and E.J. Ward (2013) *Assessing the coastal occurrence of endangered killer whales using autonomous passive acoustic recorders*. J. Acoustic Soc. Am. 134(5) 3486-3495; NMFS (2014) "Southern Resident Killer Whales: 10 Years of Research and Conservation"; *See also* National Marine Fisheries Science Center data and reports on Southern Resident tagging project, https://tinyurl.com/vj4dcbs

[30] Hanson, M.B., E.J. Ward, C.K. Emmons, and M.M. Holt (2018) *Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data*. Prepared for: U.S. Navy, U.S. Pacific Fleet, Pearl Harbor, HI. Prepared by: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center under MIPR N00070-17-MP-4C419. 8 January 2018; *Proposed Revision of the Critical Habitat Designation for Southern Resident Killer Whales: Draft Biological Report*. National Marine Fisheries Service, September 2019. Available: https://www.fisheries.noaa.gov/action/critical-habitat-southern-resident-killer-whale

[31] National Marine Fisheries Service: *Proposed Rulemaking to Revise Critical Habitat for Southern Resident Killer Whale Distinct Population Segment*. 84 FR 49214

[32] *See e.g.* NOAA Biological Report at 33.

Columbia River Basin.[33] Elevated triiodothyronine hormone concentrations in early spring indicate that Southern Resident orcas particularly forage on the early spring Columbia River runs.[34] The Columbia Basin "early spring interior race" Chinook runs "likely serve to replenish energetic reserves expended during the previous winter as well as help sustain the whales until . . . late summer" Chinook runs peak and therefore should be "among the highest priorities" to recover the SRKW.[35]

Figure 3. Estimated density for the K25and L84 movement tracks using a state space movement model, with 10-minute intervals. The heat map is scaled relative to a uniform distribution of habitat use (e.g. dark red values indicate 35x higher than expected by chance).

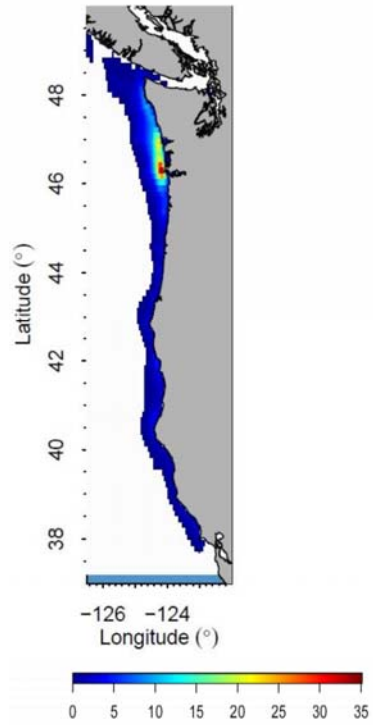

Figure 1. Locations of 2014 -2016 season acoustic recorders and 2013 track of satellite-tagged SRKW K25 relative to Navy training ranges. Density 5x5 km grid cells based on duration of occurrence are shown in red.

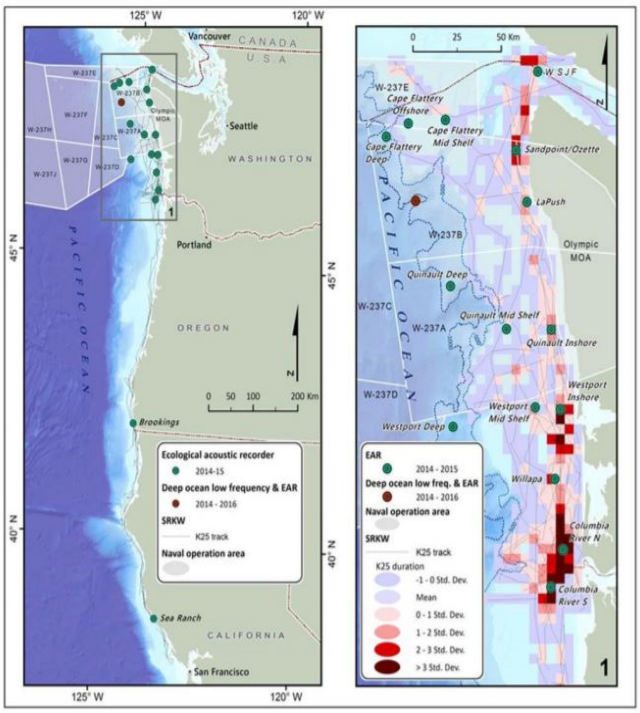

Figure 4 & 5: Density and duration of occurrence of Southern Resident killer whale based on model of satellite-tagged movement tracks (left) and acoustic recorders and satellite-tagged movement tracks (right) show mouth of Columbia River to be area of high occurrence. Credit: Hanson, M.B., E.J. Ward, C.K. Emmons, and M. M. Holt. 2018. Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data*. Prepared for: U.S. Navy, U.S. Pacific Fleet, Pearl Harbor, HI. Prepared by: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center under MIPR N00070-17-MP-4C419. 8 January 2018. 33 p.*

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[33] Ward, E. et al (May 2019) NWFSC Science to Inform SRKW Distribution and Diet, Presentation to Pacific Fisheries Management Council SRKW Working Group: *available at* https://www.fisheries.noaa.gov/webdam/download/92840008 ; NOAA Biological Report at 11.

[34] Wasser S.K. et al. (2017) *Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (Orcinus orca).* PLoS ONE 12(6): e0179824, https://doi.org/10.1371/journal.pone.0179824; Hanson, M.B., J.A. Nystuen, M.O. Lammers (November 2013) *Assessing the coastal occurrence of endangered killer whales using autonomous passive acoustic recorders*, J. Acoust. Soc. Am. 134 (5) Ward, E. et al (May 2019) NWFSC Science to Inform SRKW Distribution and Diet, Presentation to Pacific Fisheries Management Council SRKW Working Group, *available at* https://www.fisheries.noaa.gov/webdam/download/92840008, https://www.fisheries.noaa.gov/event/ad-hoc-southern-resident-killer-whale-workgroup].

[35] Wasser S.K. et al. (2017) *Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (Orcinus orca).* PLoS ONE 12(6): e0179824, https://doi.org/10.1371/journal.pone.0179824.

While it may be correct that Puget Sound Chinook salmon stocks are "one of the most important" salmon stocks for SRKWs,[36] it is equally true that Columbia River Basin salmon stocks are one of the most important stocks for SRKW survival and recovery—in particular, the fat rich spring Chinook. The SRKWs need to maintain a balance of energy year-round to support daily activities, as well as gestation, lactation, and growth.[37] The orcas rely on multiple stocks of Chinook, depending on availability at different times of the year and in different parts of their range.[38] The DEIS fails to account for the fact that salmon from all of the rivers within the orcas' range are not available to the orcas on a year-round basis but, instead, are critical to the orcas' survival in specific seasons.[39] The spatiotemporal distribution of Chinook runs within the orcas' range means that different runs are more available, and therefore more important, to the SRKWs at different times of the year.[40] Columbia Basin Chinook provide the SRKWs with a key source of food and nutrition during the winter and spring, and they likely sustain the whales until the Fraser River runs peak in the Salish Sea in late summer.[41] The size of individual salmon and their caloric content vary by species, geographic area, season, and year, and therefore have different value to SRKWs as well.[42] This too makes the fat-rich inland spring Chinook from the Columbia River Basin uniquely important.

The DEIS concludes that the Multiple Objective Alternative 3 (MO3), i.e. lower Snake River dam breaching alternative, would result in "a moderate to major increase in smolt-to adult returns and overall abundances of adult salmon and steelhead over the long term," and that would "increase the prey base available to . . . killer whale[s]."[43] However, the Action Agencies

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[36] Columbia River Systems Operation DEIS at 3-685.

[37] NMFS (Sept. 2019) Proposed Revision of the Critical Habitat Designation for Southern Resident Killer Whales: raft Biological Report, *available at*: https://www.fisheries.noaa.gov/action/critical-habitat-southern-resident-killer-whale

[38] NMFS (2019) Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response. Consultation on the Delegation of Management Authority for Specified Salmon Fisheries to the State of Alaska. NMFS Consultation Number: WCR-2018-10660. April 5, 2019. 443 p.

[39] Ford M.J. et al. (2016) *Estimation of a Killer Whale (Orcinus orca) Population's Diet Using Sequencing Analysis of DNA from Feces*. PLoS ONE 11(1): e0144956. https://doi.org/10.1371/journal.pone.0144956; Hanson M.B. et al. (2010) *Species and stock identification of prey consumed by endangered southern resident killer whales in their summer range*. Endang Species Res 11:69-82. https://doi.org/10.3354/esr00263

[40] Ayres KL, et al. (2012) Distinguishing the Impacts of Inadequate Prey and Vessel Traffic on an Endangered Killer Whale (Orcinus orca) Population. PLoS One 7: e36842, http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0036842; Shelton, A.O. et al (2019) Using hierarchical models to estimate stock-specific and seasonal variation in ocean distribution, survivorship, and aggregate abundance of fall run Chinook salmon. Can. J. Fish. Aquat. Sci. 76(1): 95-108. doi:10.1139/cjfas-2017-0204; Weitkamp, L.A. 2010. Marine Distributions of Chinook Salmon from the West Coast of North America Determined by Coded Wire Tag Recoveries, Transactions of the American Fisheries Society, 139:1, 147-170

[41] Wasser S.K. et al. (2017) *Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (Orcinus orca).* PLoS ONE 12(6): e0179824, https://doi.org/10.1371/journal.pone.0179824

[42] Mesa, M., & Magie, C. (2006) *Evaluation of energy expenditure in adult spring chinook salmon migrating upstream in the Columbia River Basin: An assessment based on sequential proximate analysis.* River Research and Applications, 22(October), 1085–1095. http://doi.org/10.1002/rra; O'Neill, S. M. et al. (2014) *Energy content of Pacific salmon as prey of northern and Southern Resident Killer Whales*. Endangered Species Research. 25: 265–281.

[43] Columbia River System Operations DEIS at 3-758.

conclude without citation or analysis that the effect for the prey-limited SRKWs would be only "minor."[44] We agree that MO3 would result in the greatest increase in overall abundance of adult salmon over the longer term. We find no support for the conclusion that the impact on the severely nutritionally stressed SRKWs of "a moderate to major increase" in adult salmon returns "over the long term" would be "minor." We challenge the Action Agencies in their response to our comments to outline a credible survival and recovery plan for SRKWs that does not include lower Snake River dam breaching. While Lower Snake River dam breaching by itself may not be enough to recover SRKWs, in our expert opinion, recovery of this population of whales is not achievable without lower Snake River dam breaching.

In reaching its conclusion, the DEIS relies on the priority stock list (Priority List) developed by NOAA Fisheries and the Washington Department of Fish and Wildlife. That list, however, is not at odds with the conclusion that Columbia Basin salmon are one of the most important stocks for SRKWs. The Priority List ranks each stock in the SRKWs' range, and six of the Priority List's top ten stock groups originate in the Columbia Basin, including lower Columbia (fall), upper Columbia, Snake (fall), lower Columbia (spring), middle Columbia, and Snake River (spring/summer).[45] Furthermore, as described in the Priority List document itself, a number of assumptions and caveats are incorporated in the model that give unwarranted preference to Puget Sound and Fraser River salmon stocks. First, the list of stocks and prioritization reflects the *observed* diet of prey-limited, endangered SRKWs.[46] Second, the priority stock report states that there was "no spatial correction factor for sample collection (stocks originating from near the sample locations are more likely to be collected)," and, "no correction factor for abundance (more abundant stocks are more likely to be identified in the diet)."[47] Sampling effort in Puget Sound and other inland waters of Washington State is much greater than on the outer coast due to logistical constraints for researchers.[48] Another major flaw in this analysis is that it does not take into account restoration potential of these stocks, and so currently depleted stocks are underrepresented. The DEIS recognizes that under MO3 "prey should increase beyond [the No Action Alternative] over the long term," and that this could change SRKW foraging "behavior both over the short and long term as whales react to changes in prey availability."[49] This is an important recognition that the SRKWs are responsive to changing Chinook salmon availability, and that they would indeed be likely to adapt their foraging behavior to benefit from any increase in Columbia River Basin stocks.

The Columbia River Basin is a critical source of salmon for this prey limited species, and an increase in overall abundance of salmon from the largest river system in the whales' range

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[44] Columbia River System Operations DEIS at 3-758.

[45] NOAA Fisheries West Coast Region and WDFW (June 2018) "Southern Resident Killer Whale Priority Chinook Stocks Report." Available at: https://archive.fisheries.noaa.gov/wcr/publications/protected_species/marine_mammals/killer_whales/recovery/srkw_priority_chinook_stocks_conceptual_model_report___list_22june2018.pdf; *See* NOAA Fisheries "Chinook Salmon" https://www.fisheries.noaa.gov/species/chinook-salmon-protected

[46] NOAA Fisheries West Coast Region and WDFW (June 2018) "Southern Resident Killer Whale Priority Chinook Stocks Report." Available at: https://archive.fisheries.noaa.gov/wcr/publications/protected_species/marine_mammals/killer_whales/recovery/srkw_priority_chinook_stocks_conceptual_model_report___list_22june2018.pdf;

[47] *Ibid.*

[48] *See* Draft Biological Report.

[49] Columbia River System Operations DEIS at 3-759.

would have a major impact on SRKWs. NOAA's own recovery plan for SRKWs states, "[p]erhaps the single greatest change in food availability for resident killer whales since the late 1800s has been the decline of salmon in the Columbia River basin."[50]

Conclusion

The DEIS acknowledges that the Action Agencies' Preferred Alternative would result in only a "minor change in prey availability" in comparison to current conditions (i.e the No Action Alternative); however, the DEIS concludes that this would have only a "negligible effect" on SRKWs.[51] This is contrary to the science and NOAA Fisheries' own findings and conclusions in other studies and reports, which consistently recognize the SRKWs as "among the most at risk" of extinction unless immediate action to increase prey availability is taken.[52] In our expert opinion, if there is only a "minor change in prey availability" for the SRKWs from the largest river system in their range, the SRKWs will continue to decline and ultimately go extinct.

Thank you for your consideration of this important matter.

Sincerely,

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[50] National Marine Fisheries Service (2008) "Recovery Plan for Southern Resident Killer Whales (Orcinus orca)."
[51] Columbia River System Operations DEIS at 7-153
[52] NOAA Fisheries. New Action plans outline recovery efforts for eight 'Species in the Spotlight.' *Available at*, https://www.noaa.gov/media-release/new-action-plans-outline-recovery-efforts-for-eight-species-in-spotlight.