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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

WILD FISH CONSERVANCY,)
)
Plaintiff,)
)
v.)
)
BARRY THOM, in his official capacity as)
Regional Administrator for the National)
Marine Fisheries Service, *et al.*,)
)
Defendants,)
)
and)
)
ALASKA TROLLERS ASSOCIATION,)
and STATE OF ALASKA)
)
)
Defendant-Intervenors.)
_____)

Case No. 2:20-cv-00417-RAJ-MLP

THIRD DECLARATION OF GORDON
LUIKART, Ph.D.

I, Gordon Luikart, declare the following to which I am competent to testify under penalty of perjury of the laws of the United States:

1. I have previously prepared two declarations that were submitted in this matter. The first was dated February 24, 2021, and submitted to the Court on May 5, 2021—Declaration of Gordon Luikart, Ph.D., Dkt. No. 91-5 (“First Luikart Declaration”). The First Luikart Declaration described my professional qualifications, which I do not repeat here, but instead

1 incorporate with this reference. The second declaration was dated June 8, 2021, and submitted to
2 the Court on June 9, 2021—Second Declaration of Gordon Luikart, Ph.D. (“Second Luikart
3 Declaration”). The First Luikart Declaration and the Second Luikart Declaration described the
4 work I had performed and the opinions I had developed in this matter as of the date they were
5 each submitted. The opinions expressed in those declarations continue to constitute my
6 professional opinions except as expressly provided herein.

7
8 2. In preparing this declaration, I have considered the following additional materials
9 not identified in the First Luikart Declaration or the Second Luikart Declaration:

10 a. Current pHOS data for Puget Sound, Washington Coast, and Lower Columbia
11 River Chinook salmon reported on the Washington Department of Fish and Wildlife’s
12 (“WDFW”) Salmon Conservation Reporting Engine (“SCoRE”) database (accessed 8/24/2021),
13 available at: <https://fortress.wa.gov/dfw/score/score/species/chinook>;

14 b. Document titled “Hatchery Production Initiative for Southern Resident Killer
15 Whales, FY 2020 Report (Jan. 8, 2021);

16 **SUMMARY OF OPINIONS**

17 3. The First Luikart Declaration explained that the National Marine Fisheries
18 Service’s (“NMFS”) proposal to increase hatchery production of Chinook salmon, as described
19 in the agency’s 2019 biological opinion on management of fisheries in Southeast Alaska (“2019
20 SEAK BiOp”), will appreciably contribute to the inability of numerous wild Chinook salmon
21 populations in the Puget Sound and the Columbia River evolutionarily significant units (“ESU”)
22 to recover from their threatened status under the Endangered Species Act (“ESA”) and will also
23 likely reduce the probability of their continued survival. Those opinions were based, in part, on
24 official pHOS data for Puget Sound, Washington Coast, and Lower Columbia River Chinook
25 salmon reported on Washington Department of Fish and Wildlife’s (“WDFW”) Salmon
26 Conservation Reporting Engine (“SCoRE”) database.

27
28 4. Since the First Luikart Declaration, more current data have become available in

1 WDFW's SCoRE database for some, but not all, of the relevant Chinook salmon populations. I
 2 have reviewed those data to determine whether pHOS values have changed during the last year
 3 in a manner that would affect my opinions described in my prior declarations. In sum, relevant
 4 pHOS values have not changed in a manner that causes me to alter my opinions as to the risks
 5 and harms posed by NMFS's proposal to increase hatchery production as described in the 2019
 6 SEAK BiOp.

7
 8 5. Further, it came to my attention in preparing this declaration that I miscalculated
 9 the mean pHOS value for Chinook salmon in Mill Creek, located in the Lower Columbia, in the
 10 First Luikart Declaration. The First Luikart Declaration reported the mean pHOS value for
 11 Chinook salmon in Mill Creek from 2010 to 2018 as 44%. The correct value for that period is
 12 82%.

13 OPINIONS ON UPDATED pHOS VALUES

14 6. Below are updated tables summarizing official pHOS data for Puget Sound,
 15 Washington Coast, and Lower Columbia River Chinook salmon reported on WDFW's SCoRE
 16 database since 2010 (generally 2010 to 2018, 2019, or 2020) for which data is available:

17
 18 Table 1. Average Chinook salmon pHOS levels in rivers of Puget Sound, Washington
 19 Coast, and Lower Columbia River from WDFW's SCoRE website (accessed August 24,
 20 2021). Lower Columbia populations marked with a single asterisk (*) are designated a
 21 primary population in the Lower Columbia Chinook salmon Recovery Plan; populations
 22 marked with a double asterisk (**) are designated secondary populations. Values in each
 23 of the last three columns were calculated as the average of each annual value. In
 24 particular, the Mean pHOS value (last column) will not necessarily be equal to the ratio
 25 of the mean of Hatchery Spawners to the mean of the Total Spawners (Hatchery
 26 Spawners/Total Spawners), though they will generally be similar to the average of the
 27 annual pHOS values shown in the last column. Regardless, either way of calculating the
 28 average pHOS value shows them to be far higher than biologically advisable as described
 29 as explained below.

Puget Sound:	Years	Hatchery Spawners ^	Total Spawners ^	Mean pHOS
Dungeness	2010-2019	348	457	75%
Nooksack Fall	2010-2016	1098	1293	83%
NF Stillaguamish	2010-2020	515	921	44%

1					
2	Skykomish	2010-2020	960	2,799	34%
3	Snoqualmie	2010-2020	271	1,144	24%
4					
5	Sammamish Fall	2010-2019	1030	1139	89%
6	Cedar Fall	2010-2019	281	1140	26%
7	Green Fall	2010-2020	2,947	4,329	65%
8					
9	Puyallup Fall	2010-2020	1019	1548	64%
10					
11	Nisqually Fall	2010-2019	840	1,488	48%
12	Washington Coast:	Years	Hatchery Spawners	Total Spawners	Mean pHOS
13					
14	Humptulips Fall	2011-2020	1,524	5,047	30%
15	Wishka Fall	2010-2020	61	514	12%
16					
17	Lower Columbia:	Years	Hatchery Spawners	Total Spawners	Mean pHOS
18					
19	Coweeman*	2010-2020	133	823	14%
20	Big White Salmon	2010-2020	242	797	31%
21					
22	Elochaman-Skamokawa*	2010-2020	399	490	72%
23	Kalama Tule**	2010-2020	4,149	5,638	65%
24					
25	Lower Cowlitz**	2010-2019	1,018	4,093	25%
26					
27	Abernathy Creek*	2010-2020	143	127	85%
28	Mill Creek*	2010-2020	257	278	72 or 82%^^

Germany Creek*	2010-2020	175	198	78%
Toutle: Green	2010-2020	480	725	57%
South Fork Toutle*	2010-2020	123	209	63%
Upper Cowlitz	2010-2016	3375	3487	97%
Little White Salmon	2010-2018	212	468	45%
Wind River	2010-2018	849	1215	70%
Washougal*	2010-2020	1,485	2,634	50%

^Average (Mean) of years listed (e.g., 2010-2019, or for 2010-2020).

^^Paragraph 19 explains that data were likely missing in 2019 so pHOS is likely 82%

7. It can be seen by comparing Table 1 in the First Luikart Declaration to the updated Table 1 above in this declaration that none of the average pHOS levels of any of the populations have changed substantially in either a positive or negative direction, with the exception of Mill Creek as explained in paragraph 19 below. All of the pHOS values are greater than biologically advisable for the reasons described in my prior two declarations. None of the biological concerns and conclusions regarding these pHOS levels expressed in my prior declarations are changed by the minor updates of average values shown in Table 1 above.

8. I have reviewed the hatchery increases anticipated or proposed for 2020 to 2022 listed in Tables 1, 2, and 3 of the document titled "Hatchery Production Initiative for Southern Resident Killer Whales FY20 Report" dated January 8, 2021 ("Prey Increase Report"). Table 1 lists numbers of additional hatchery Chinook salmon smolts expected to be produced by the State of Washington for the 2019-2021 biennium using State funds. Table 2 lists numbers of additional hatchery Chinook salmon smolts expected to be produced using funds provided under the Pacific Salmon Treaty in fiscal year 2020 as described in the 2019 SEAK BiOp. Table 3 lists numbers of additional hatchery Chinook salmon smolts expected to be produced from hatchery programs selected as alternates to receive fiscal year 2020 funds under the Pacific Salmon Treaty as

1 described in the 2019 SEAK BiOp. Since Table 3 lists releases that may be available to replace
2 releases proposed or anticipated in Table 2 that might not occur and thus would neither increase
3 nor decrease the releases identified in Table 2, I focus my comments on the releases in Table 2.

4 9. These smolt releases, actual or anticipated, are most likely over and above those
5 that have been occurring, with or without NMFS-approved hatchery and genetic management
6 plans (HGMPs) for the multiple hatcheries releasing smolts. Adults that are recruited from these
7 additional releases that are not harvested or consumed by Southern Resident Killer Whales
8 (SRKW) or other predators, and that do not return to the hatchery racks, will likely stray onto the
9 spawning grounds of wild Chinook salmon in rivers on or near the locations of the hatchery
10 facilities from which the smolts were released. As described in the First Luikart Declaration and
11 above, pHOS levels in all major rivers affected by these releases already have levels that are of
12 significant conservation concern.
13

14 10. Table 2 in the Prey Increase Report identifies releases of 3 million Chinook
15 salmon smolts from Puget Sound hatcheries in 2021, and 2 million in 2022. Of the 3 million
16 smolt releases identified for Puget Sound hatcheries in 2021, 1 million smolts were be released
17 from the Bernie Gobin Hatchery in Tulalip Bay at the mouth of the Snohomish River, and 2
18 million smolts were be released from the Soos Creek Hatchery in the lower Green River.

19 11. Those adult fish returning to spawn that were released from the Bernie Gobin
20 Hatchery at Tulalip Bay that are not collected at the hatchery are likely to stay onto spawning
21 grounds in the Stillaguamish, Skykomish, and/or Snoqualmie Rivers. Those hatchery fish will
22 increase the already high levels of pHOS in those rivers, further reducing the likelihood of
23 recovery of these components of the Puget Sound Chinook ESU.
24

25 12. Stray spawning adults that were released from the Soos Creek Hatchery will
26 likely increase pHOS levels in the Cedar, Green, Puyallup, and/or Nisqually Rivers, thereby
27 further impairing the prospects for the recovery of these components of the Puget Sound
28 Chinook salmon ESU.

1 13. Table 2 of the Prey Increase Report lists Columbia River releases of Chinook
2 salmon hatchery smolts of 750,000 in 2020; of which 120,000 smolts are from the Umatilla
3 Hatchery upstream of John Day Dam and 630,000 smolts are from the Willard National Fish
4 Hatchery located on the lower Little White Salmon, downstream of the Dalles Dam.

5 14. Table 2 of the Prey Increase Report shows releases to the Columbia River from
6 hatcheries located downstream of the Dalles Dam total 4,250,000 smolts in 2021 and 1,900,000
7 smolts in 2022.

8 15. Adult Chinook salmon returning to spawn that were released from these
9 Columbia River hatcheries would likely increase pHOS levels for Chinook salmon populations
10 in the Lower Columbia River ESU downstream of John Day Dam, including some or all of the
11 rivers listed for the Lower Columbia above in Table 1 of this declaration.

12 16. As noted in my Second Luikart Declaration and shown above in Table 1 of this
13 declaration, current pHOS levels in the majority of rivers in the Lower Columbia River ESUs
14 listed in the table are well above levels likely to cause biological risk. Of the 14 Chinook
15 populations listed in Table 1 of this declaration, only 2 have average levels of pHOS less than
16 30%. Ten have levels of pHOS equal to or greater than 50%. As explained in detail in the First
17 Luikart Declaration, those pHOS levels pose significant threats to the genetic diversity, genomic
18 integrity, adaptability, and resilience of the affected wild (naturally-spawning, ESA-listed)
19 populations.
20

21 17. The releases of additional Chinook salmon hatchery smolts that have recently
22 occurred and are proposed to occur in the immediate future will likely further increase the
23 already dangerous levels of pHOS in these rivers, and thereby further impair the ability of these
24 populations to sustain themselves, much less recover to the point that the ESUs could be de-
25 listed.
26

27 18. It is my professional opinion that it is imperative to significantly and rapidly
28 *reduce* the current levels of pHOS in these rivers if these Chinook populations are to have a

1 reasonable chance of surviving and recovering.

2 **CORRECTION OF pHOS VALUE FOR MILL CREEK**

3 19. As noted in paragraph 5 above, the average value of pHOS for Mill Creek for
4 years 2010 to 2018 reported in the Second Luikart Declaration was erroneous due to a copying
5 error on my part. The correct value was 82%. The new average pHOS value for 2010 to 2020 is
6 75%. This is due to the listed value for 2019 being zero, which is likely due to spawner data not
7 being recorded for Mill Creek for this year. If the average pHOS value is calculated for the years
8 2010 to 2020 (excluding the misleading zero value for 2019) the average pHOS is 82%, which is
9 identical to the average for 2010 to 2018. Thus, there has been little change in the average pHOS
10 value in the past 11 years; in particular, there has been no apparent change in the high straying
11 rates of hatchery Chinook salmon onto the spawning grounds in Mill Creek between 2018 and
12 2020, the most recent year for which data is available.

14 **CONCLUSION**

15 20. The First Luikart Declaration included the following conclusion on my opinions:

16 The Puget Sound Chinook salmon ESU and the Lower Columbia
17 River Chinook salmon ESU are listed as threatened species under
18 the ESA. According to NMFS's most recent status reviews, most
19 populations in the ESUs suffer low natural-origin abundance levels
20 and have high fractions of hatchery spawners (pHOS). These high
21 pHOS levels are likely contributing to the low productivity of the
22 natural populations.

23 It is my opinion that the release of some 20 million additional
24 hatchery Chinook salmon smolts from hatchery facilities in Puget
25 Sound, the Columbia River, and on the Washington Coast will
26 likely further increase pHOS levels and thereby further inhibit the
27 prospects for the continued survival, much less the recovery, of
28 Chinook salmon populations in the Puget Sound Chinook salmon
29 ESU and the Lower Columbia River ESU.

21. There have been only minor changes in pHOS values for the relevant Chinook
salmon populations since I submitted the First Luikart Declaration. Accordingly, the opinions
expressed in the First Luikart Declaration and summarized above remain my professional

1 opinions on these matters today.

2 Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true
3 and correct.

4 DATED this 28th day of March 2022.

5 *Gordon Luikart*

6 _____
7 Gordon Luikart, Ph.D.

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