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THE HONORABLE MICHAEL H. SIMON

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON

NATIONAL WILDLIFE FEDERATION, et al.,

Plaintiffs,

and

STATE OF OREGON,

Intervenor-Plaintiff,

v.

NATIONAL MARINE FISHERIES SERVICE, et al.,

Defendants.

Case No.: 3:01-cv-00640-SI

DECLARATION OF DAVID B. JOHNSON IN SUPPORT OF STATE OF OREGON'S AND NATIONAL WILDLIFE FEDERATION'S MOTIONS FOR PRELIMINARY INJUNCTION

I, David B. Johnson, declare:

INTRODUCTION AND QUALIFICATIONS

1. I have previously submitted declarations in this proceeding: Declaration of David B. Johnson, filed July 26, 2004 (ECF No. 591) (in support of motion to enjoin the curtailment of summer spill); Declaration of David B. Johnson, filed January 9, 2017 (ECF No. 2117-1) (in

support of motion for additional spill and early operation of the juvenile fish bypass at the lower Snake River dams); Reply Declaration of David B. Johnson, filed February 28, 2017 (ECF No. 2167). My professional experience, education, and qualifications are set forth in those filings and are updated here.

2. I am the Manager of the Nez Perce Tribe's (Tribe) Department of Fisheries Resources Management (DFRM) and have served the Tribe in that capacity for 20 years. I obtained a Bachelor of Science in Biology and a Master of Science in Biology from Northern Arizona University in 1979 and 1982, respectively. I have been employed by the Tribe's DFRM for 33 years, including several positions prior to becoming Manager: Deputy Program Manager, Production Coordinator, Monitoring and Evaluation Biologist, and Fisheries Biologist. I have also been employed as a Fisheries Biologist with the Bureau of Indian Affairs in the Albuquerque Area Office and with the U.S. Forest Service in the Northern Region Regional Office and on the Clearwater National Forest.

3. As Manager of the Tribe's DFRM, I oversee one of the largest and most successful tribal fisheries programs in the United States.[1] The DFRM has 190 employees, 150 full-time, an annual operating budget of over $20 million, and eight offices throughout the Nez Perce Tribe's Treaty territory in Oregon and Idaho. The DFRM works in close partnership with the federal and state agencies and tribes on many fronts, including: managing a federal fish hatchery, co-managing another, operating its own hatchery and eight acclimation sites, and partnering with state and federal agencies in Oregon, Washington, and Idaho to produce fish to

[1] The Nez Perce Tribe's DFRM received the 2015 Honoring Nations award with High Honors from The Harvard Project on American Indian Economic Development.

supplement naturally spawning runs of spring/summer and fall Chinook listed under the Endangered Species Act (ESA); partnering with the U.S. Forest Service to implement an award-winning effort to restore watersheds throughout the Tribe's Treaty territory;[2] co-managing harvest and enforcement efforts with our state and tribal counterparts in U.S. v. Oregon and other forums; collaborating on the current Lewiston Orchards Water Exchange Project, a regional stakeholder outgrowth of previous Nez Perce Tribe v. NOAA Fisheries and Bureau of Reclamation litigation; and participating in the forums providing technical oversight and policy advice to the Federal Columbia River Power System (FCRPS) operators.

4. As DFRM Manager, I have acquired substantial familiarity with the FCRPS, its recurring ESA issues, as well as related federal treaty and federal fiduciary issues and obligations. I have served as the Tribe's technical representative for the remands of each of the prior FCRPS Biological Opinions (BiOps). I participated in the negotiation of the interim flex spill agreement pending the completion of the CRSO EIS, the EIS process, and consultations with the Action Agencies and NOAA Fisheries on the CRSO EIS, BiOp, and ROD. Even in instances where the Nez Perce Tribe and federal or state agencies are not in agreement, the Tribe has always been willing to work with these entities to carry out actions that will benefit fish. I believe it is essential to develop and maintain strong, respectful working relationships with my tribal and federal and state agency counterparts and I strive to put that belief into practice.

BACKGROUND

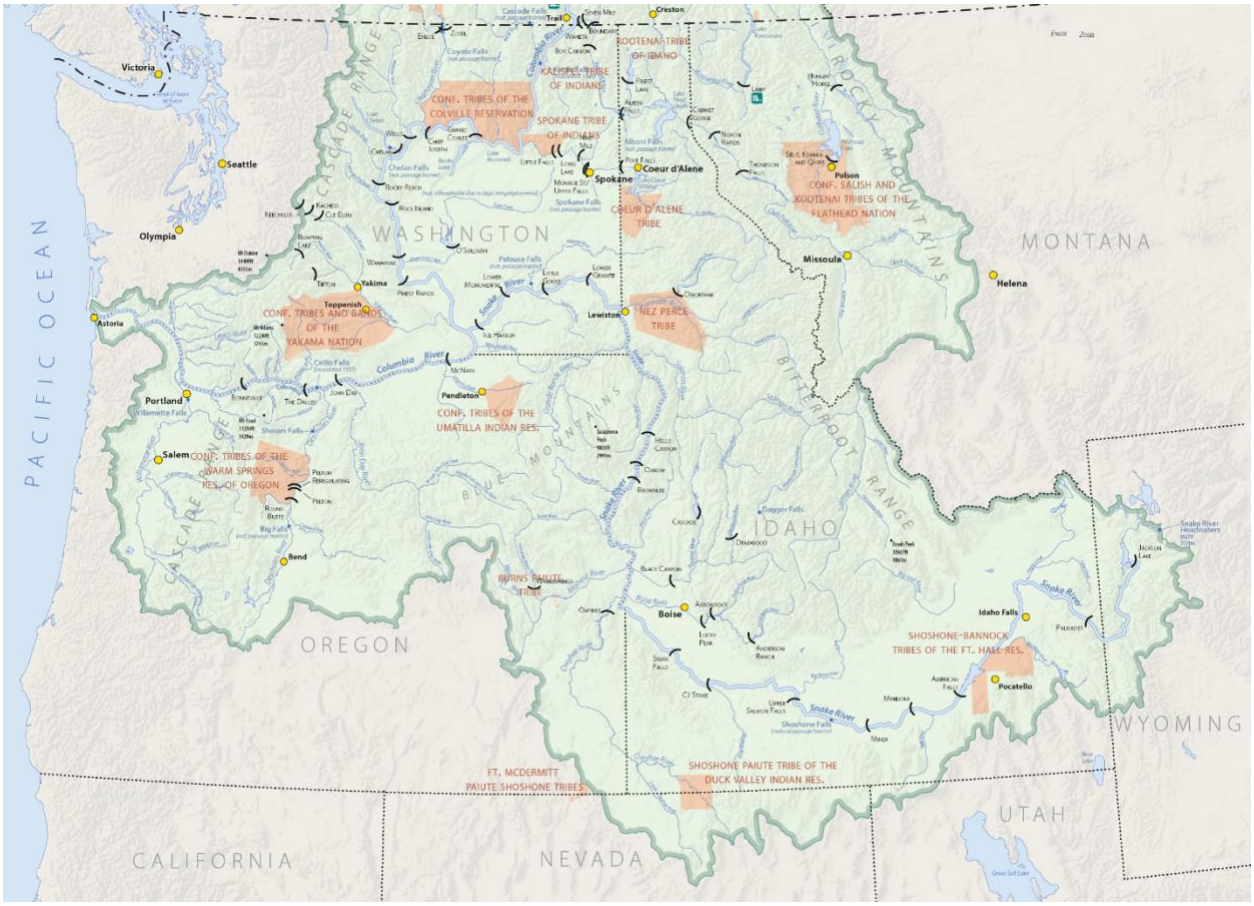
5. The Nez Perce Tribe has actively and consistently participated in the FCRPS litigation because it is deeply committed to rebuilding Columbia and Snake river salmon runs to

[2] The DFRM is a two-time recipient of the Forest Service's Rise to the Future award.

healthy, harvestable levels and fairly sharing the conservation burden. Of the Snake River runs, sockeye are listed as endangered under the ESA, and spring/summer Chinook, fall Chinook, and steelhead are all listed as threatened under the ESA. Pacific lamprey are considered species of concern by the U.S. Fish and Wildlife Service (USFWS) and coho were extirpated (but have been reintroduced by the Tribe). The dams on the lower Snake River and the mainstem Columbia have had – and continue to have – an enormous devastating impact on salmon and steelhead, and, in turn, on the Nez Perce Tribe and its people. The Nez Perce Tribe, in its 1855 Treaty with the United States, reserved the right to take fish at all its usual and accustomed places; in addition to those on the mainstem Columbia, many of these usual and accustomed fishing places and the Tribe's Reservation lie above all eight of the dams on the lower Snake and Columbia rivers. Another FCRPS dam, Dworshak Dam, is located on the Nez Perce Reservation itself, on Nez Perce trust land, and blocks all fish passage on the North Fork Clearwater River.

6. The Tribe has also been actively involved in the litigation in this case resulting in Court-ordered spill and early operation of the juvenile fish bypass at the lower Snake River dams.

7. It cannot be emphasized enough that the Snake River Basin and its stocks are critically important and that a substantial amount of salmon habitat in the entire Columbia River Basin is within the Snake River Basin. The following map depicts the location of Snake River Basin (the division between the Snake Basin and the Upper Columbia Basin is formed by the confluence of the two rivers) relative to dams and the present-day reservations of the Columbia Basin tribes.

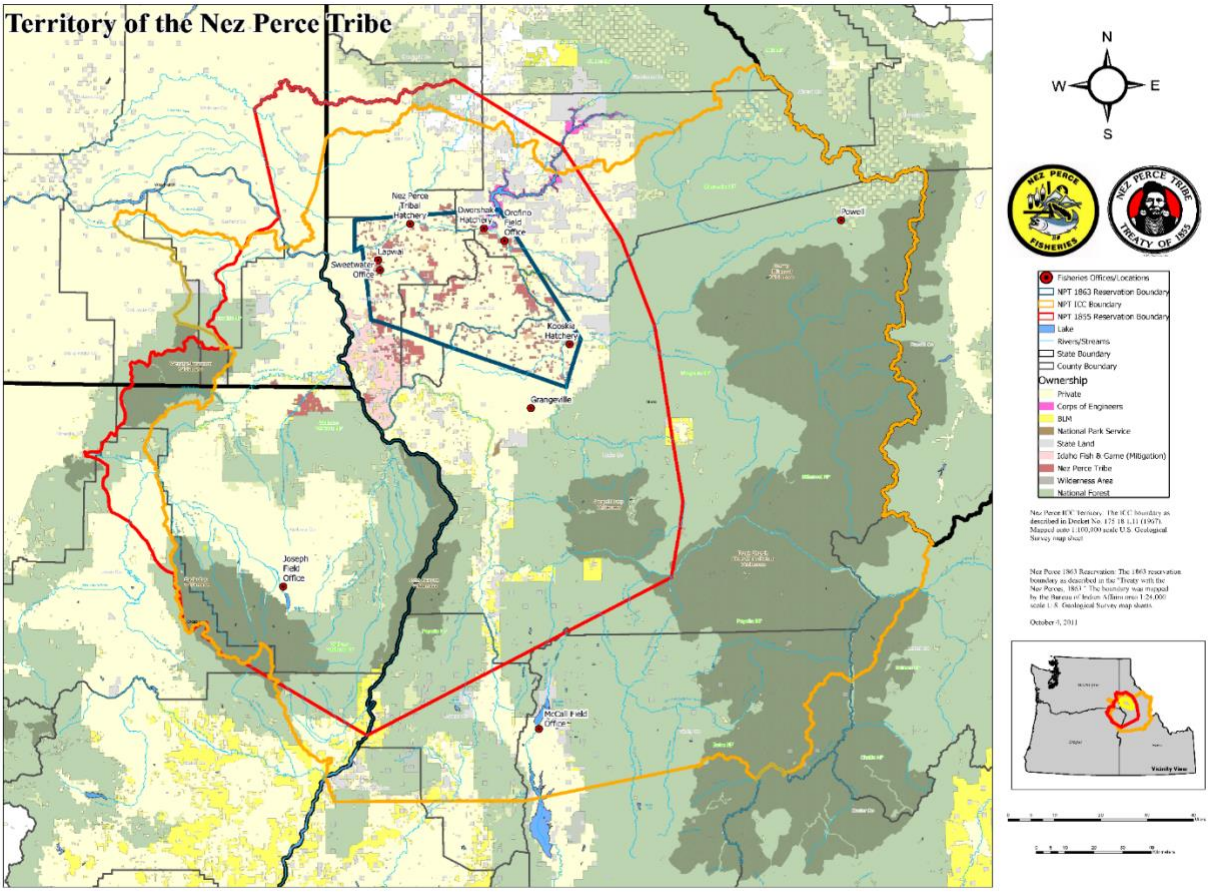


Spring/summer Chinook and steelhead habitat is in the mountains – on the eastern slope of the Cascade Range in Washington and Oregon, as well as the Willamette Basin in Oregon; the Blue Mountains in northeastern Oregon and southeastern Washington; and most of central Idaho.[3] In the Columbia Basin, the greatest amount of that habitat is in the mountains of northeast Oregon and central Idaho. Spring/summer Chinook need access from and to mountain tributaries, and they need good, cold water habitat when in their natal streams. Adults enter the Columbia River in the spring, travel into the mountains and stay there until spawning – from

[3] In contrast, fall chinook spawn and rear in the mainstem of the larger rivers of the Columbia Plateau – in the mainstem Columbia, Snake, Clearwater, and other large tributaries.

early-August through mid-September. Because the adults are present through the heat of the summer prior to spawning, they need to "hole up" in the cold mountain rivers and streams. It is their offspring, who reside in these streams for over a year, similarly require cold, clean water, and, importantly, unimpeded access to the ocean to continue their life-cycle.

8. The following map focuses in on the Snake River Basin relative to Nez Perce country. This map shows the lands determined by the Indian Claims Commission to be exclusively used and occupied by the Nez Perce Tribe and the 1855 and 1863 Reservations. Nez Perce country overlaps much of the remaining salmon habitat in the Snake River Basin.



The Tribe's off-reservation fishing rights reserved in its 1855 Treaty are not limited to the lands it ceded to the United States or to its Reservations; these fishing rights encompass all the Tribe's usual and accustomed fishing places which, for example, include Willamette Falls, the mainstem Columbia, and places throughout the heart of salmon country in the Snake River Basin. A majority of these lands in the heart of Nez Perce and salmon country are owned by the United States and managed by the U.S. Forest Service; the map depicts these in green, with the lighter green areas managed for multiple uses (e.g., timber production, grazing), and the darker green designated as Wilderness areas. These lands contain an abundance of excellent habitat for spring/summer Chinook, and are, in fact, the best remaining habitat for spring/summer Chinook in the Columbia Basin.

I. THE DIRE STATUS OF SNAKE RIVER SALMON AND STEELHEAD POPULATIONS

9. The Tribe views the status and biological needs of the fish as the starting point for any inquiry related to FCRPS actions and compliance with the law.

10. While the region has embraced robust, thriving salmon and steelhead goals established by the Columbia Basin Partnership,[4][5] Snake River spring/summer Chinook remain imperiled and precarious nearly 30 years after their initial listings under the ESA, falling far short of delisting abundances and falling several orders of magnitude short of any notion of thriving populations.

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[4] See NOAA, https://media.fisheries.noaa.gov/dam-migration/mafac_report_cbp_phase_1_recommendations_full_report.pdf.

[5] See Id., https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null.

11. The most recent 5-year status review of listed salmon and steelhead species by NMFS was published in 2016. This status report, referenced in the 2020 BiOp, indicates that the overall viability ratings for the listed species has not improved since the 2011 status review referenced in the 2014 BiOp. For Snake River spring/summer Chinook, all population groups are either at high risk of extinction or functionally extirpated, with the exception of the Chamberlain Creek population in the Middle Fork Salmon. 2020 BiOp at 104, Table 2.2-2 (NMFS00362285). For Snake River sockeye, the listed Evolutionarily Significant Unit (ESU) remains at high risk of extinction. 2020 BiOp at 436 (NMFS00362617). NMFS' 2016 status review also reports that population abundances of several listed ESUs have declined since the 2011 status review, and for those populations that have improved, those improvements have been minimal. The 2021 status review has not been released, but we are not aware of any evidence that would suggest any significant improvement in the status of listed fish since the 2016 report.

12. In conservation science, Quasi Extinction Thresholds (QETs) serve as criteria where avoidance of absolute extinction of populations can no longer be assumed or predicted. Quasi-extinction, in its simplest terms, means: the population is nearing absolute extinction; the risk of extinction cannot be modeled but is considered to be unacceptably high; the population is uncertain to persist; and, the probability of recovery is low without substantial intervention.

13. For ESA-listed salmon and steelhead populations, NMFS has identified QET as 50 or fewer adult spawners on the spawning grounds per year for four consecutive years.

14. The 2020 BiOp does not contain an assessment of the current status of listed salmon and steelhead populations relative to QET. The 2020 BiOp offers an assessment of

reaching QET at some future time under the proposed action (BiOp at 223 (NMFS00362404)), yet it does not assess whether the listed fish are presently at or near QET.

15. The Tribe conducted an assessment of the current status of each of the individual populations that make up the listed Snake River spring/summer Chinook ESU relative to QET and also assessed the near term status (2025) of these populations relative to 50 adult spawners on the spawning grounds.[6] We believed that conducting such an analysis would provide insight into whether certain populations in the ESU were better or worse than others and help us determine what management actions could or should be taken.

16. To conduct this assessment of current QET, we reviewed the data on abundance of natural origin spawners. This information on abundance of natural origin spawners counted or estimated to be on the spawning grounds comes from data collected by the fish or land managers in the Snake River Basin including the Idaho Department of Fish and Game (IDFG), Washington

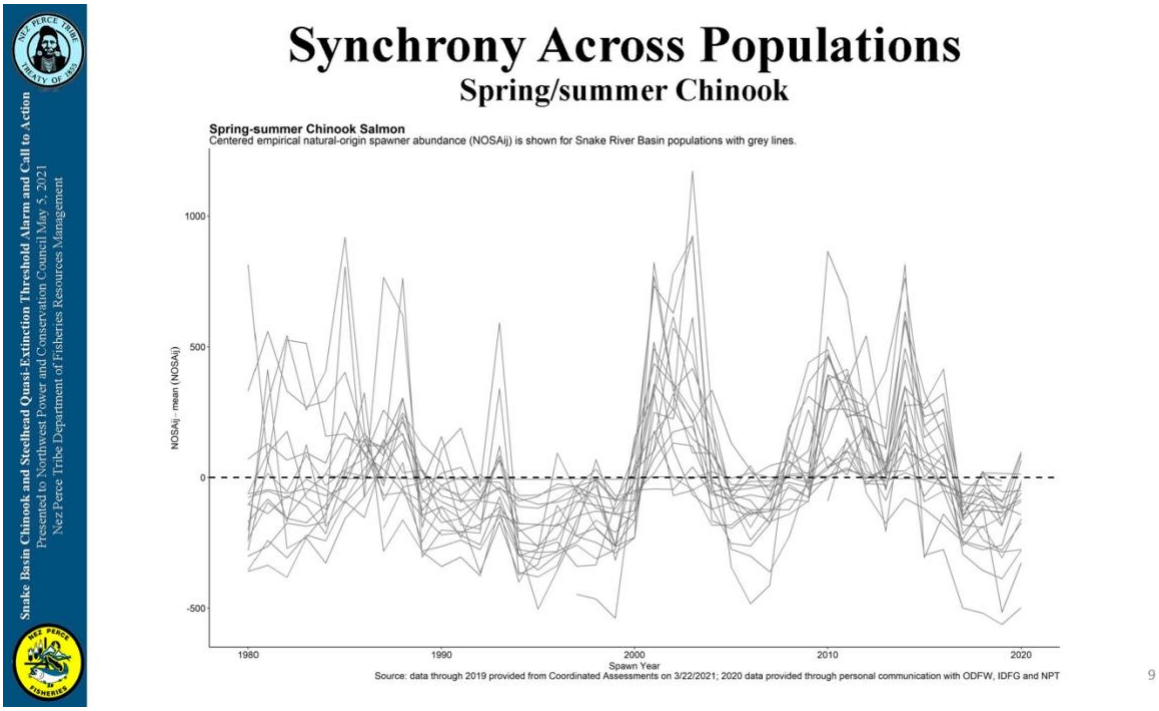
[6] Initially, we had been interested in the status of the Tucannon population of Snake River spring/summer Chinook relative to QET, where the returns have been consistently low. The Tucannon is one of two populations of Snake River spring Chinook in the portion of Snake River within Washington's border; the other population, the Asotin Creek population, has been identified by NOAA as "functionally extirpated." The Tucannon River empties into the reservoir behind Lower Monumental Dam. Washington's "State of Salmon in Watersheds 2020" report describes the Tucannon population of Snake River spring/summer Chinook as being "in crisis," https://stateofsalmon.wa.gov/executive-summary/salmon-status/ (last visited July 16, 2021). The returns to the Tucannon have been so low that the supplementation program co-managed by the Tribe and the state of Washington has not been able to make broodstock the last five years, and there has been essentially no harvest in the Tucannon for many years. Ongoing and necessary habitat restoration is occurring in the Tucannon, with the involvement of Washington's Snake River Recovery Board, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and others. After assessing the QET for the Tucannon and finding that it was currently below QET (50 fish or fewer on the spawning grounds for 4 consecutive years), we then analyzed all extant Snake River spring-summer Chinook (and steelhead) relative to QET to assess whether the Tucannon was an anomaly.

Department of Fish and Wildlife (WDFW), Oregon Department of Fish and Wildlife (ODFW), the U.S. Forest Service, USFWS, the Shoshone-Bannock Tribes (SBT), Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe. This is the same information NOAA uses in its Viability Assessments and Five-Year Status Reviews.

17. We reviewed our analysis and findings with our co-managers (IDFG, WDFW, ODFW, SBT) as well as NOAA Fisheries (twice) and with staff from the Columbia River Inter-Tribal Fish Commission member Tribes. We made a formal presentation of this QET assessment to the Northwest Power and Conservation Council on May 5, 2021 (a complete copy of our presentation slides is attached to this declaration as Exhibit A[7] and we explain these slides below). We have also presented this information to the U.S. v Oregon parties; to leaders of the Columbia Basin Tribes convened in Mission, Oregon; to the Affiliated Tribes of Northwest Indians; and, most recently, at a Salmon-Orca Summit co-hosted by the Affiliated Tribes of Northwest Indians and the Nez Perce Tribe.

18. Our analysis found that Snake River spring/summer Chinook populations tended to follow the same trends, that there was synchrony across the populations – i.e., that the peaks and valleys in abundance tended to happen to all populations.

[7] Also available at https://nwcouncil.app.box.com/s/6uxxczn1mmtx6tdu1fb86pilrku5asc8 (last visited July 16, 2021).

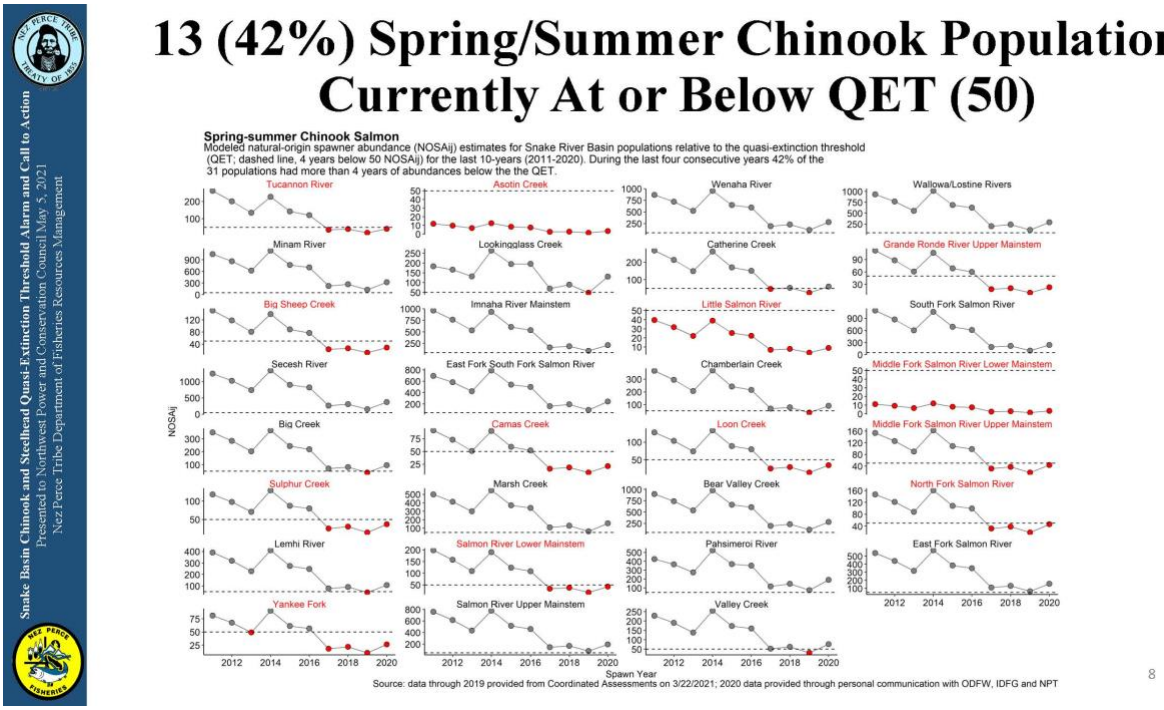


19. After determining there was synchrony across Snake River spring/summer Chinook populations, our analysis focused on the last 10 years of data, from 2010 – 2020. A 10-year period is consistent with, and captures the abundance and productivity levels of, two complete lifecycles of these fish (looking at a shorter time frame would be more heavily influenced by annual environmental variations). In addition, the last 10 years are a time period where some extreme temperature conditions in the ocean and inland have been experienced – such as in 2015 (and as it turns out, this year, 2021), and thus this time period captures current environmental conditions these fish face under a warming climate.

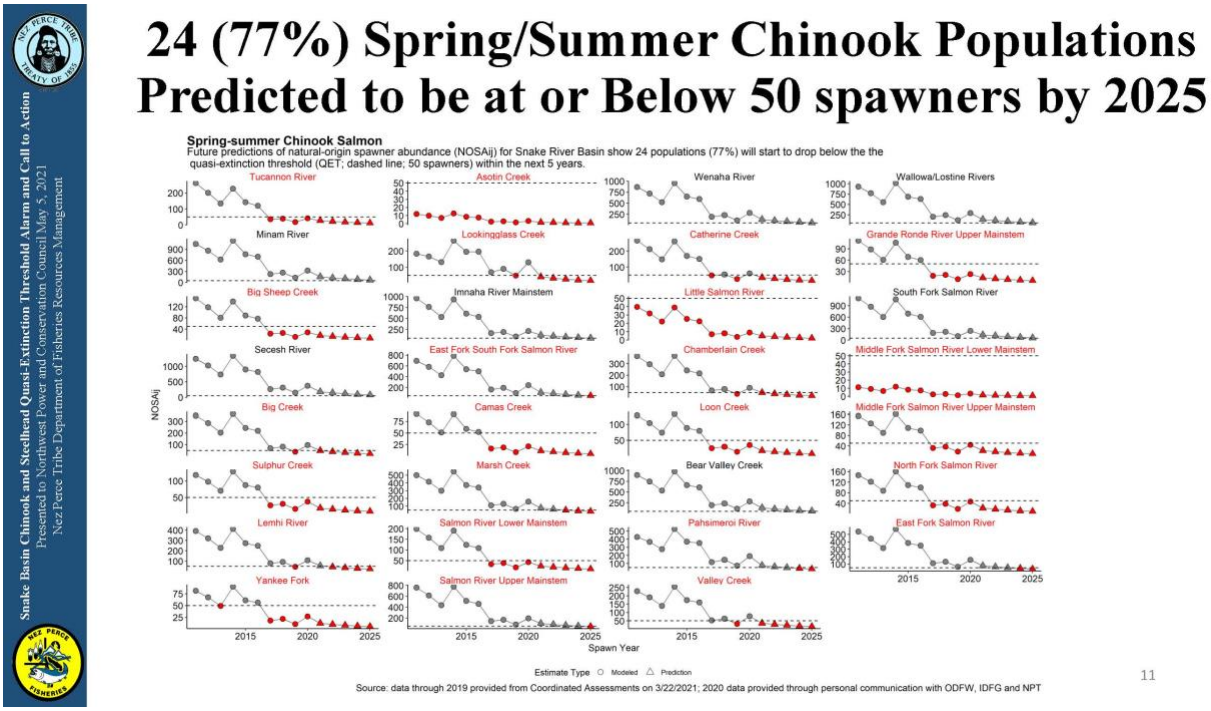
20. We found that, alarmingly, a large number, 13 of the 31[8] (or 42%) of the extant Snake River Basin populations that make up the ESU listed under the ESA are *currently* at or

[8] The Panther Creek population was not included due to insufficient data.

below the QET – that is, returns of 50 or fewer natural origin spawners on the spawning grounds for four consecutive years. These years and populations are shown in red on the slide below.

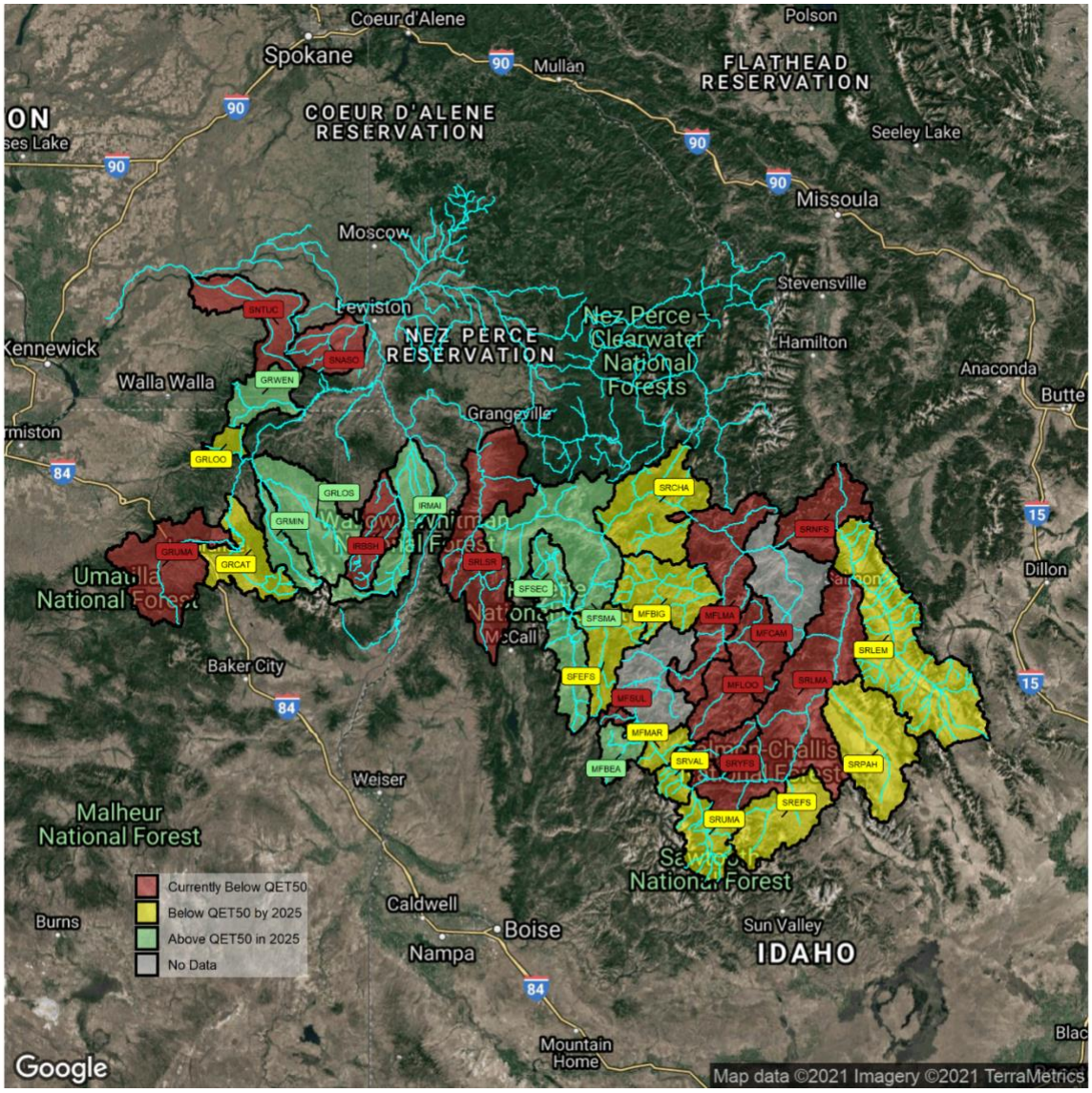


21. We then modeled the change in abundance for the last 10 years across all the populations and found that the population abundance was declining by approximately 19% each year. Applying this rate of decline through 2025 – we found that 24 of the 31 (or 77%) of the extant Snake River Basin populations that make up the ESU would be at or below 50 natural origin spawners by 2025 as depicted in the following slide.



22. In summary, this assessment found that 42% of the extant Snake River Basin spring/summer Chinook populations currently have natural origin spawner abundances at or below QET of 50 spawners or fewer on the spawning grounds for four consecutive years, and 77% of these populations would be at or below 50 natural origin spawners by 2025.

23. This assessment of Snake River spring/summer Chinook relative to QET was shocking information. The following map depicts the populations that are currently at or below the QET level in red, those that will be at or below 50 spawners on the spawning grounds by 2025 in yellow, and the other extant ESA listed populations are in green. The geographic scope of this information is also shocking.



24. We applied the same analysis to the Snake River steelhead Distinct Population Segment (DPS) listed under the ESA and found similar patterns of decline and of reaching the QET. Although not as drastic as the Snake River spring/summer Chinook populations, three of 16 (19%) steelhead populations have had 50 or fewer fish on the spawning grounds for four consecutive years, but they too have declined at a rate of 18% per year over the last 10 years and

seven of 16 (44%) of the populations are anticipated to be at 50 or fewer natural origin spawners by 2025.

25. In addition to these concerns, we reviewed recent information provided by NOAA researchers regarding the status of spawners relative to the QET considering a changing climate. Crozier et al., Climate Change Threatens Chinook Salmon Throughout Their Life Cycle, Communications Biology (2021), https://www.nature.com/articles/s42003-021-01734-w.pdf. Although NOAA's researchers also predict spawning populations to drop below QET in the future under predicted climate conditions, they did not consider recent data in evaluating the starting point. Our data shows that an alarming number of these populations are *already* below the QET. The conditions of these returns in our changing climate is dire – right now.

26. Our analysis has been widely reported by The Lewiston Tribune,[9] The Spokesman-Review,[10] and the Columbia Basin Bulletin.[11] We believe alarm bells should be

[9] Eric Barker, Tribe's Fish Study is a Call to Alarm, The Lewiston Tribune (Apr. 30, 2021), https://lmtribune.com/river_of_change/tribe-s-fish-study-is-a-call-to-alarm/article_7a96ec10-3ff0-5850-bd82-2933780ebc7e.html.

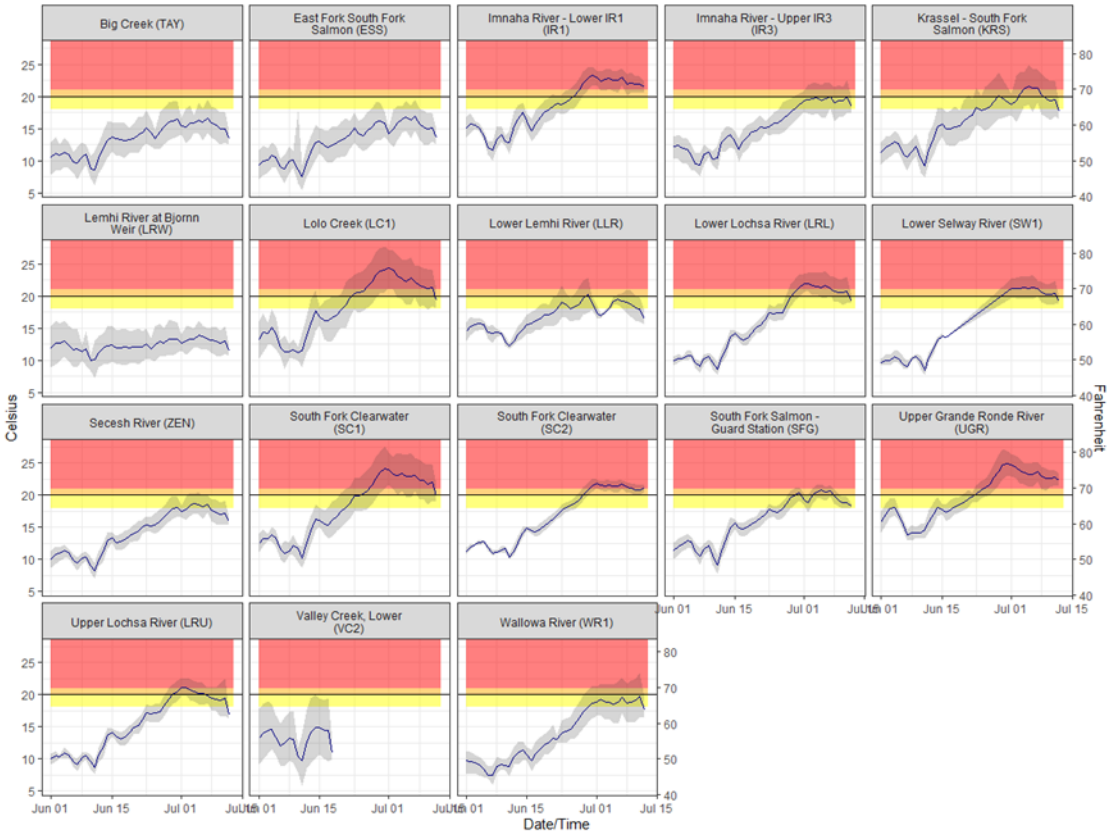
[10] Eli Francovich and Orion Donovan-Smith, U.S. promised Nez Perce Fishing Rights, but What if Snake River Dams Kill Off Fish, The Spokesman-Review (May 10, 2021), https://www.spokesman.com/stories/2021/may/09/the-us-promised-the-nez-perce-fishing-rights-but-w/.

[11] Nez Perce Study Shows Snake River Basin Salmon/Steelhead At Risk Of Extinction; Tribe Says Emergency Actions Needed, The Columbia Basin Bulletin (May 7, 2021), https://www.cbbulletin.com/nez-perce-study-shows-snake-river-basin-salmon-steelhead-at-risk-of-extinction-tribe-says-emergency-actions-needed/. (Columbia Basin Bulletin's website is inaccessible without a paid subscription. For convenience, a complete copy of the article is attached to this declaration as Exhibit B.)

going off and that big changes, in addition to the efforts we are currently engaged in, must occur to change the trajectory for these stocks.

27. In addition to the terrible status and trajectory of the runs, this summer's heat wave will further degrade conditions for those few fish in the wild. There are predicted to be approximately 6,250 spring/summer Chinook salmon in the Snake River Basin this year (including returns to the Tucannon River). That number is less than a third of the aggregate minimum abundance number (22,250 fish) for Snake River spring/summer Chinook described in my February 28, 2017 declaration (paragraph 2). As of this writing, water temperatures are extreme, and flows are very low. The following graphic sets forth the July 13, 2021 water temperatures for several Snake River spring/summer Chinook spawning areas and depicts lethal temperatures in several locations,[12] and alarmingly, before the hot period of July – August.

[12] Daily minimum, average, and maximum water temperatures observed at in-stream PIT tag arrays plotted over EPA constant temperature thresholds (high disease risk: yellow band, migration blockage/delay: orange band, lethal: red band). Graphic downloaded from Biomark Biologic database (https://data.biomark.com/accounts/login/?next=/).



28. The following information shows the low flow conditions as measured on larger streams and rivers in the Snake Basin.[13] Currently, flows are about half of what they would

[13] Flow conditions (cfs) recorded at USGS, Idaho Power, and Oregon Water Resource Department flow gauges; the blue line shows the daily average for 2021 flows, while the dark band indicates the daily 25 and 75 percentiles (i.e., 50% of the water years recorded), and the light band shows the daily 0-25 and 75-100 percentiles (i.e., lowest 25% and highest 25% of the water years recorded).

In-stream PIT-arrays Temperature Data: https://data.biomark.com/accounts/login/?next=/ (last visited July 16, 2021).

USGS:

Idaho: USGS, https://waterdata.usgs.gov/id/nwis/current/?agency_cd=usgs&parameter_cd=staname,datetime,00065,00060,00010,median&group_key=basin_cd (last visited July 16, 2021).

Oregon: USGS, https://waterdata.usgs.gov/or/nwis/current/?type=flow (last visited July16, 2021).

typically be for this time of the year. Most of this year's spring/summer Chinook salmon are already in their natal Snake River Basin tributaries and, as described above, they typically spawn between early-August through mid-September. As a result, they will likely be subject to extreme environmental conditions for the next month or two. It is expected that a significant number of the 6,250 wild spring/summer Chinook salmon that returned to the Snake River Basin this year will succumb to these lethal conditions and die before spawning.

Other Flow Data:

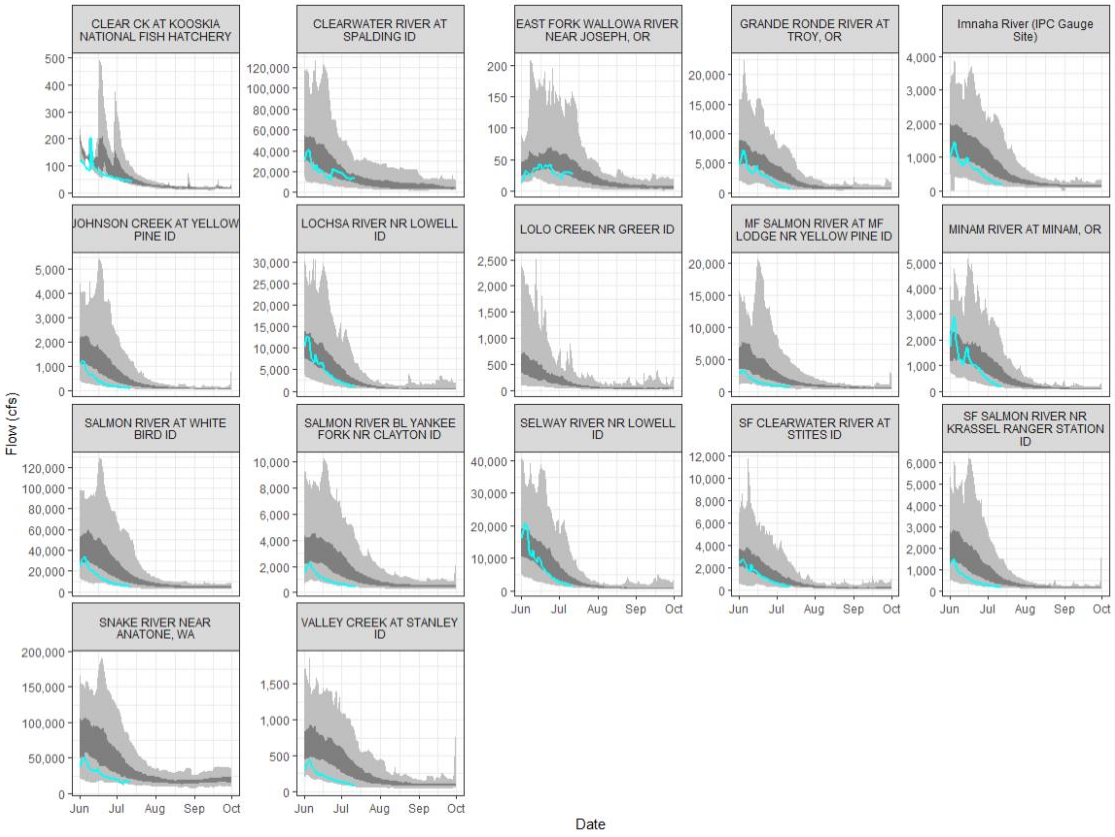
Oregon Water Resources Department

Lostine River at Baker Rd, NR Lostine, OR.: State of Oregon, https://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/ (last visited July 16, 2021).

Lostine River, NR Lostine, OR: State of Oregon, https://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/ (last visited July 16, 2021).

Idaho Power

Imnaha River: Idaho Power, https://idastream.idahopower.com/Export/DataSet?DataSet=Flow.DayMean%4013292000&ExportFormat=csv&Compressed=false&RoundData=False&Unit=&Timezone=-7&_=1624334095277 (last visited July 16, 2021).



29. These dire circumstances - the continued low, extinction level number of spawners and extreme environmental conditions - require *immediate action* to hold onto these populations. As the Tribe discussed in 2017, making passage – downstream and up – as favorable for the progeny of these low spawn years as possible is absolutely essential for these populations.

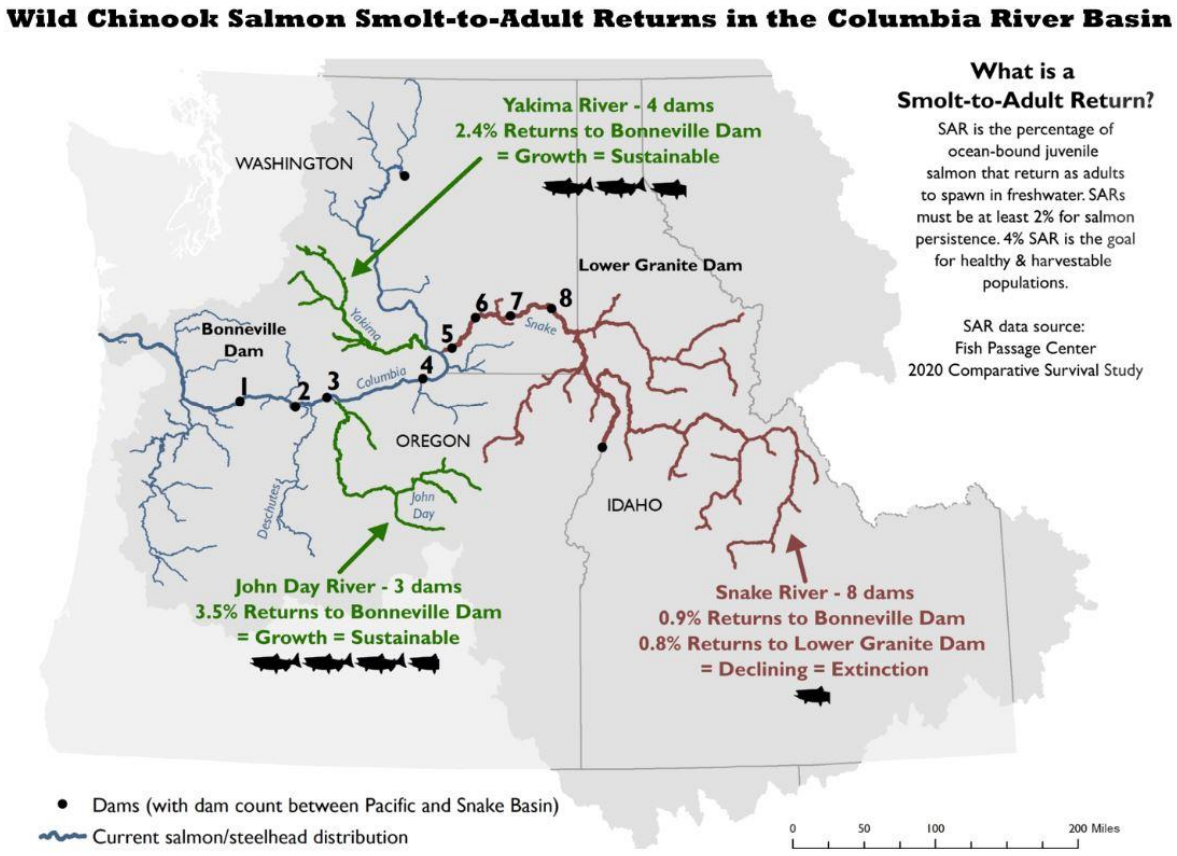
II. BREACHING THE FOUR LOWER SNAKE RIVER DAMS WOULD BENEFIT THE SURVIVAL AND RECOVERY OF SNAKE RIVER SALMON AND STEELHEAD MORE THAN ANY OTHER ACTION

30. The Nez Perce Tribe adopted a resolution in 1999 calling for the breaching of the four Lower Snake River dams. This resolution, and a description of the rationale supporting it, is set forth in the Tribe's DFRM Management Plan for 2013 – 2028 (https://nezperce.org/wp-

content/uploads/2020/09/DFRM-Management-Plan-2013-2028.pdf). The Tribe's position on this has not changed over the years. In fact, the information on status of the runs, as well as the literature cited in Ed Bowles' declaration provides ample evidence that the scientific community overwhelmingly finds that breaching the four lower Snake River dams would increase the survival of Snake River salmon and steelhead more than any other action and is urgently needed.

31. The graphic below depicts the difference in smolt-to-adult return rates (SARs) associated with breaching the four Lower Snake River dams.[14] These four dams on the Lower Snake River make an extreme difference in return rates, and thus the ability for the populations to survive and recover. With breach, the survival of the Snake Basin populations would be expected to be similar to that for populations that only have three or four dams to contend with between the ocean and natal streams (see John Day and Yakima River returns). There are no other obstructions or habitat conditions that would prevent fish from freely passing from the headwaters of the Salmon or Clearwater down to McNary dam.

[14] U.S. Congressman Mike Simpson, The Columbia Basin Initiative, available at https://simpson.house.gov/salmon/ (last visited July 16, 2021.)



32. As such, it is important to consider that although spill can be increased to avoid powerhouse encounter rates and thereby reduce mortality, the reservoirs, and the unnatural environment they create for migratory species remain a dominating harm. The reservoirs slow the river and migration rates and serve as heat traps, making warmer water temperatures – exacerbated by climate change – even warmer. The reservoirs provide a greater amount of habitat for predators, especially for introduced, non-native species like smallmouth bass, and more recently, walleye. In general, although dam passage can and should be improved, reservoirs will continue to be unnatural and harmful for migratory fish until they are removed.[15]

[15] A higher percentage of Snake River Fall Chinook that emerge from redds constructed in the lower Clearwater River do use the reservoirs for extended periods of growth – often

III. THE NEZ PERCE TRIBE SUPPORTS OREGON AND NWF'S MOTIONS FOR INJUNCTIVE RELIEF TO INCREASE VOLUNTARY SPILL AND LOWER RESERVOIR WATER LEVELS TO INCREASE SALMON AND STEELHEAD SURVIVAL

33. The Tribe is the most active of any single agency in restoring salmon and steelhead within Nez Perce country – which overlays the core of salmon habitat in the Snake Basin – and has been engaged in this effort for decades. The Tribe's support for NWF's and Oregon's (together "Plaintiffs") requests arises from its unique perspective and its history, as well as its experience with operating hatcheries (including supplementation hatcheries in which the intent is to increase the number of spawners in the wild), and implementing extensive habitat restoration projects, and is also based on the following.

34. Snake River spring/summer Chinook habitat encompasses about 14 million acres; about half of this is in federal Wilderness Areas, National Recreation Areas, on Wild and Scenic Rivers, and in undeveloped National Forest roadless areas. There are only a few ways to improve returns of fish spawning and rearing in the wilderness area rivers such as the Minam, Wenaha, and Middle Fork Salmon. Returns to these areas cannot be increased by supplementing with hatchery fish and habitat cannot be improved by repairing man-caused degradation. As a consequence, actions that can be taken to improve returns are those that occur after the fish have left their rivers and begun their migration. These include improving downstream passage at the dams; reducing predators (e.g., birds and other fish); reducing predation on returning adults (e.g.,

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maturing to smolt as a yearling, rather than the subyearling lifestage typical for the species. The changed migration timing is the result of releases from Dworshak Dam – which accelerate emergence timing (because they are warmer than ambient river conditions), and then retard normal growth and emigration timing (because they are then cooler than ambient river conditions) for the species. In other words, the natural lifecycle of Snake River Fall Chinook has been altered by the operations of two different reservoirs.

sea lions); reducing problems with upstream passage (managing flows over the dams so that the adults can easily find the ladders); and managing harvest.[16] Of all these sources of mortality, the greatest is that associated with downstream passage at the dams[17] and the Tribe supports Oregon's and NWF's requests for injunctive relief to address that.

A. The Increases in Voluntary Spill Oregon and NWF Seek Will Help Increase Adult Returns

35. The Nez Perce Tribe supports the spill operations requested in Oregon's and NWF's motions for injunctive relief. The spill requested is an action that can have a virtually immediate effect on improving survival during the smolt-to-adult life stage. Spill levels can be implemented and adjusted on a short timeline and can yield immediate benefits. As such, spill can provide a survival cushion and reduce the harm to the listed species that would otherwise occur.

36. The foundation for the spill relief requested by Oregon and NWF, and for the Tribe's support of that request, is based upon survival benefits resulting from a reduction in powerhouse (turbine or bypass) encounter rates, with associated bypass effects and latent mortality, for all of the dams the fish must pass.

37. In-river and ocean survival, as they correspond to bypass effects and latent mortality, have been empirically studied. Comparative Survival Study (CSS) reports

[16] Fisheries, treaty and non-Indian, are managed on abundance-based sliding scales that are responsive to the annual returns. This year, because of the low predicted returns, the Tribe closed harvest on all natural spawning areas with the exception of those where the runs are supplemented by hatcheries.

[17] See, e.g., 2008 NOAA AR B143 at 32 (Fig. 8A) (graph showing FCRPS responsible for 43-74% of human-caused mortality for overall Snake River spring/summer Chinook populations); id. (up to 87% for populations with low habitat improvement potential).

(Haeseker et al. 2012 (NMFS00300703), Tuomikoski et al. 2013,[18] McCann et al. 2015,[19] McCann et al. 2016,[20] McCann et al. 2017,[21] McCann et al., 2019,[22] McCann et al 2020[23]) have provided scientific justification that both in-river survival and ocean survival increase as the encounter rate of fish with powerhouses decrease.

38. The Nez Perce Tribe developed a web-based application[24] based on CSS

[18] Tuomikoski et al., Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye 2013 Annual Report, https://www.fpc.org/documents/CSS/2013-CSS-Report-Fix.pdf. (Could not readily find 2013 CSS in NOAA Administrative Record.)

[19] McCann et al., Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye 2015 Annual Report, https://www.fpc.org/documents/CSS/2015-CSS-Report-Fix.pdf. (Could not readily find 2015 CSS in NOAA Administrative Record.)

[20] McCann et al., Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye 2016 Annual Report, https://www.fpc.org/documents/CSS/2016-CSS-Report-Fix.pdf. (Could not readily find 2016 CSS in NOAA Administrative Record.)

[21] McCann et al., Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye 2017 Annual Report, https://www.fpc.org/documents/CSS/2017-CSS-Report-Fix.pdf. (Could not readily find 2017 CSS in NOAA Administrative Record.)

[22] McCann et al., Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye 2019 Annual Report, https://www.fpc.org/documents/CSS/2019CSSAnnualReport.pdf. (Could not readily find 2019 CSS in NOAA Administrative Record.)

[23] McCann et al., Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye 2020 Annual Report, https://www.fpc.org/documents/CSS/2020-CSS-Report.pdf. (Could not readily find 2020 CSS in NOAA Administrative Record.)

[24] This application is available at: https://nptfisheries.shinyapps.io/pitph2/

Powerhouse Encounter Rate (PITPH) methods (McCann et al. 2015) that generates estimates of PITPH for spill operations.[25] This application is commonly used to make relative comparisons of PITPH associated with spill operations; for example, it was available to the parties as they developed the interim flex spill agreement. This application generates a PITPH of 1.4 for the 2021 PA and 0.8 for the Oregon and NWF Injunctive Request (Table 1) associated with spring spill operations.

Table 1. Modelled and observed estimates of Powerhouse Encounter Rate (PITPH) for recent and proposed hydrosystem operations. Observed PITPH is a function of actual water year conditions.

Operation	NPT PITPH Shiny App[26]	Observed[27]
2018 Injunctive Order	1.8	2.0
2019 120% Flex Spill	1.9	2.1
2020 125% Flex Spill	1.4	1.06
2021 Proposed Action (PA)	1.4	
Oregon/NWF Injunctive Relief	0.8	

39. Providing surface passage throughout the year, as requested by Oregon and NWF, is critically important because ESA-listed and other adult and juvenile fish are present in and migrate through the lower Columbia and Snake River (reservoirs) year round. The impacts of

[25] Applications of CSS and NPT estimators of PITPH were discussed at a special Technical Management Team (TMT) process meeting on July 1, 2020, and summarized in FPC memorandum 30-20 (https://www.fpc.org/documents/memos/30-20.pdf).

[26] Nez Perce Tribe DFRM, https://nptfisheries.shinyapps.io/pitph2/ (last visited July 16, 2021).

[27] Northwest Power and Conservation Council, The Columbia River System Flexible Spill and Power Agreement 2020 Update (Dec. 16, 2020), https://nwcouncil.app.box.com/s/nhx4ctgdyc1aarrqtq622bbl78k5tfwx (last visited July 16, 2021).

powerhouse passage, and especially turbine passage, shown for spring and summer periods still apply during other months. In contrast, the benefits of surface passage, via spill, has been shown to benefit in-river and ocean survival (as discussed earlier) and should be provided to all fish species and life histories. These include fall and winter migration by juvenile fall Chinook; early spring migration by juvenile spring/summer Chinook, steelhead, and lamprey; and downstream passage of adult steelhead.

Providing surface passage spill during the fall and winter is especially critical in order eliminate the "zero flow" operations allowed to occur under the 2020 BiOp (starting as early as mid-October). Under such conditions, a river is no longer a river.[28]

In addition, the merits of spill during the fall, winter, and spring for downstream passage of adult steelhead, that overshoot their natal streams, should be available continuously; not only for 12 hours per week during select months of the year, as required under the 2020 BiOp.

40. Similar to my previous analysis of adult return benefits from increased spill in the declarations I submitted in 2017, this Injunctive Relief request is expected to bring back more adults. What makes this request even more compelling is the current reality that when many populations of Snake River spring/summer Chinook have 50 or fewer spawners on the spawning grounds, each natural spawner counts towards improving that number. All the "knobs" on hydro operations that can benefit fish must be turned now.

[28] Elimination of zero flow conditions were sought by fish managers (SOR 2020-6), but rejected by Action Agencies.

B. The Lowering of Reservoir Water Levels that Oregon and NWF Seek Will Help Increase Salmon and Steelhead Survival

41. The Tribe supports Oregon's and NWF's requests for operations at Minimum Operation Pool (MOP). Operation of Lower Snake River projects at MOP elevations has been established as a fish protection measure that reduces water transit time and fish travel time. However, deviation from MOP elevations have been implemented by the Corps of Engineers as means to maintain sufficient depth in the navigation channel and ports. Shoaling, caused by sediment build-up in the Lower Granite pool is now requiring the pool to be maintained three feet higher than MOP during low flow conditions. Lower Granite reservoir serves as a sediment sink and dredging has been the primary tool (with its own set of impacts and costs) deployed by the Corps to maintain this channel for navigation. Presently, the Corps has raised the elevation of MOP – to the benefit of navigation but to the detriment of the ESA-listed fish. (This example is discussed below in ¶43).

42. The impacts of the raised MOP conditions on fish travel time is described in the Fish Passage Center's memo 34-21.[29] Synergy between low flows and raised MOP conditions exacerbates the impacts on fish travel time with three foot raised MOP conditions - slowing travel time through the Lower Granite Pool by up to 8 to 12 hours.

IV. The Tribe's Experience Gives it No Confidence the Action Agencies, Following the 2020 ROD, Will Voluntarily Act to Benefit the Imperiled Fish

43. Since the Action Agencies issuance of the 2020 ROD adopting the 2020 BiOp and 2020 EIS, the Tribe has had to make or support several Systems Operations Requests

[29] Available at https://www.fpc.org/documents/memos/34-21.pdf.

(SORs) to the Action Agencies to revise their operations to give deference to the survival of the fish. A description of the SORs, their disposition and the Tribe's role are shown in Table 2. The Action Agencies' operations that forced the Tribe to make or support SORs included: cessation of flow through the reservoirs for an extended period in the fall – leaving no flow for fish to follow;[30] extreme daily fluctuations in releases from Dworshak Dam – disturbing juveniles downstream of the dam;[31] and operating Lower Granite at an elevated pool level – slowing travel time and decreasing efficiency of cool water releases from Dworshak Dam necessary to cool Lower Snake reservoirs.[32] In cases where the SOR requests were rejected, the Action Agencies decided to implement operations for the benefit of power production or navigation purposes of the dam, not for the benefit of ESA-listed fish. We have no confidence, based on our experience following the Action Agencies' issuance of their 2020 Record of Decision, that the Action Agencies will take actions that are consistent with addressing the dire condition of Snake Basin chinook, sockeye, and steelhead populations.

[30] Columbia Basin Bulletin, Hydro Managers Reject Salmon Managers Request to Push Back Start Date on Zero Nighttime Generation in Lower Snake; Decision Elevated to Oversight Group (Oct. 1 2020), https://www.cbbulletin.com/hydro-managers-reject-salmon-managers-request-to-push-back-start-date-on-zero-nighttime-generation-in-lower-snake-decision-elevated-to-oversight-group/ (last visited July 16, 2021).

[31] Pete Caster, Flow Swings Roil Anglers, The Lewiston Tribune (Feb. 5, 2021), https://lmtribune.com/outdoors/flow-swings-roil-anglers/image_d854773a-5f12-55c0-9219-cbabb13d469d.html.

[32] Eric Barker, More Steps Taken to Help Snake River Salmon, The Lewiston Tribune (July 15, 2021), https://lmtribune.com/northwest/more-steps-taken-to-help-snake-river-salmon/article_e6801785-f73c-5952-ab0f-8a7e6f9a2c86.html.

Table 2. SORs associated with 2020 BiOp implementation. Available at 2021 System Operational Requests / TMT (crohms.org) .

SOR #	Purpose	Disposition	Nez Perce Role
2020-6	Recommend continued application of Zero Nighttime Flow limitations and criteria, implemented since 2005, at the Snake River projects.	Rejected at Technical Management Team (TMT) and the Regional Implementation Oversight Group (RIOG)	Primary Author
2021 - 1	Recommend cessation of within day load shaping operations at Dworshak Dam.	SOR revised	Primary Author
2021 -1 (Updated)		Load shaping suspended while path forward developed (still pending).	Primary Author
2021 -3	Requested operations to mitigate for and reduce high water temperatures in the lower Snake River reservoirs	Implemented	Signed on
2021 -4	Requested short-term operation modifications to address unseasonably high-water temperatures in the region during 2021	Implemented in part; Action 1 (lowering of Snake reservoirs to minimum operating pool (MOP) elevations) rejected at TMT and elevated to RIOG by NPT (RIOG deliberation pending)	Signed on
2021 -5	We request that the following action be implemented to conserve water in Dworshak Reservoir in order to extend temperature mitigation later into August: 2 (1) increase water temperature criterion for the Lower Granite Tailrace from 68°F to 69.5°F beginning no earlier than July 23rd and no later than July 29th and ending on August 17th. As conditions warrant, FPAC will determine start and end dates and update TMT.	Implemented	Signed on

V. The 2020 BiOp Fails to Reveal the Status of Fish and Wildlife Program Funding Relative to Tributary Habitat Restoration and Off-Site Mitigation that the BiOp Relies Upon

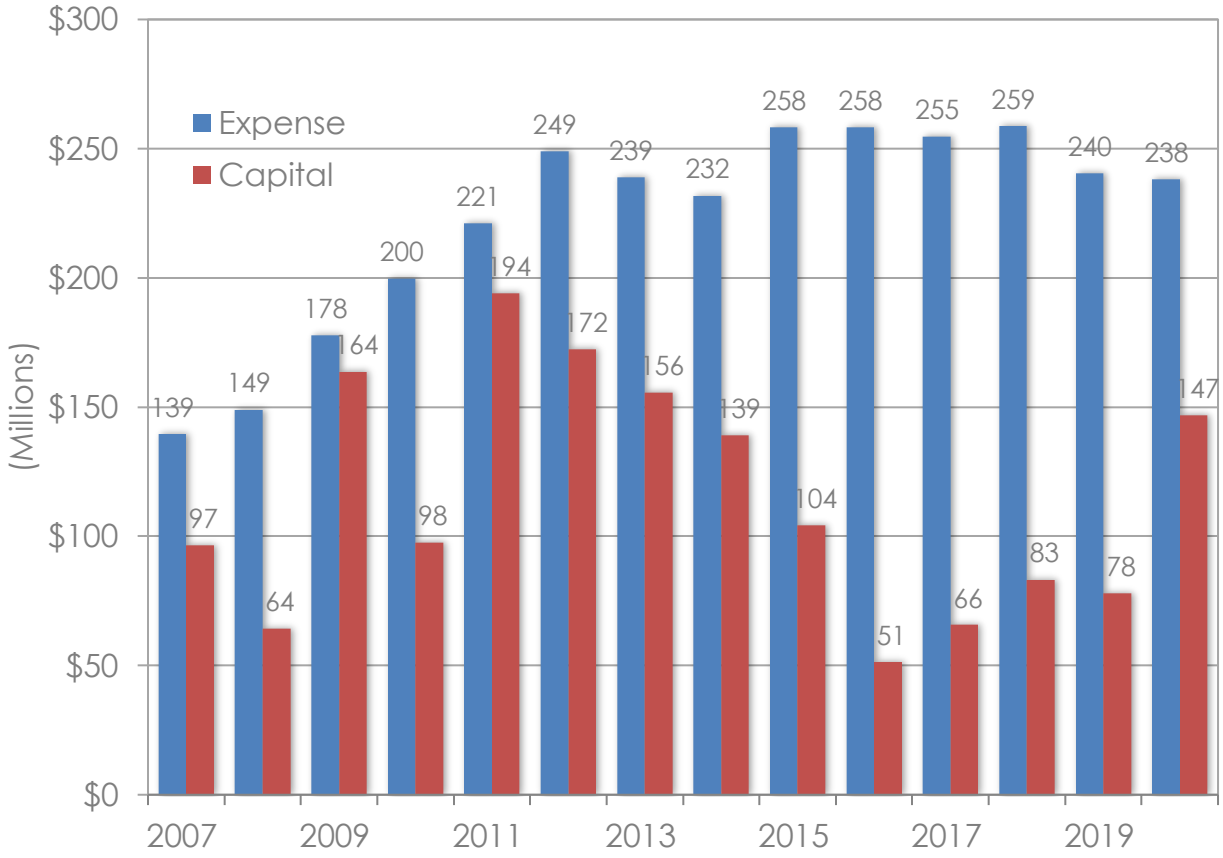
44. The 2020 BiOp observes that the Action Agencies have proposed tributary habitat restoration as part of the proposed action, and refers the reader to the Action Agencies' Biological Assessment where the Action Agencies state that, for the next 15 years – from 2021 through 2036 "[t]he effort will be at a similar level to that described in the 2018 proposed action…." BA at 2-97 (NMFS00246726). Elsewhere, the BiOp acquiesces to the BA's impression that the Action Agencies will be implementing a relatively similar level of effort when it comes to research, monitoring or hatchery actions. This Court, in NMFS V, ordered the Action Agencies to "continue to fund and implement the 2014 BiOp until the [then-contemplated] 2018 biological opinion is prepared and issued. NMFS V, at 949. Neither the BiOp nor the BA reveals that during 2018, BPA went through a highly publicized financial crisis, during which they chose to cut expenditures for the Fish and Wildlife Program (FWP)[33][34] The Tribe had its contracts funded by the Direct Funded expense program[35] reduced by

[33] Rocky Barker, This Agency Spends the Most to Help Northwest Salmon But Cuts are Coming, Idaho Statesman, https://www.idahostatesman.com/news/local/news-columns-blogs/letters-from-the-west/article197393289.html.

[34] Ted Sickinger, Bonneville Power Outlines its Plan to Stay Competitive, The Oregonian/Oregon Live (Updated Jan. 30, 2019; Posted Jan. 31, 2018), https://www.oregonlive.com/business/2018/01/bonneville_power_outlines_its.html.

[35] The Direct-Funded program pays for projects such as habitat improvements, research, and some hatchery costs. These are different from other categories in the FWP such as Reimbursables, Fixed Costs, Forgone Revenue, and Power Purchases – See Northwest Power and Conservation 2020 Columbia River Basin Fish and Wildlife Program Costs Report, https://www.nwcouncil.org/sites/default/files/2021-2.pdf.

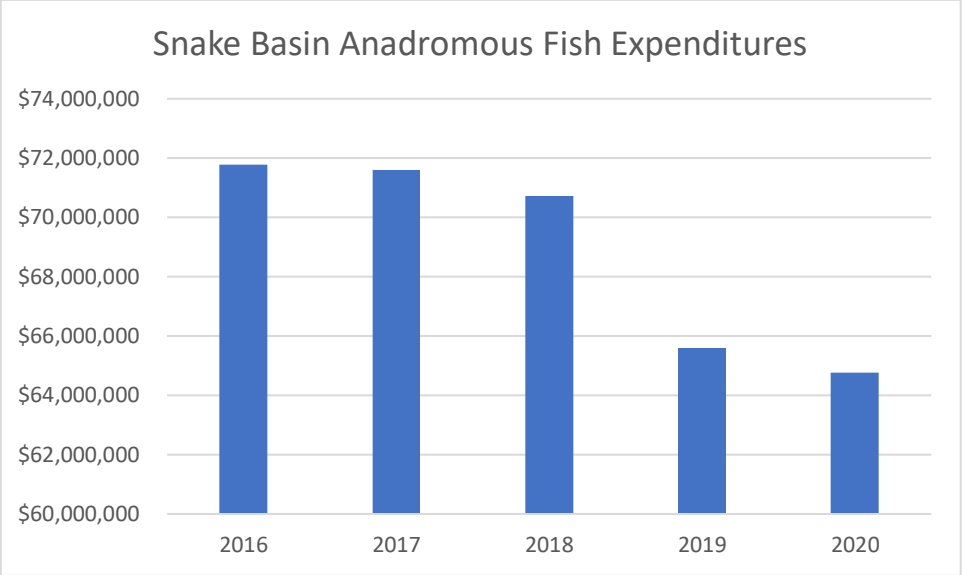
$2,280,373 (from $18,016,732 to 15,736,359).[36] During this time period BPA reduced its overall FWP expenditures from about $259M to $238M, as shown in the graphic below (from the Northwest Power and Conservation Council 2020 Columbia River Basin Fish and Wildlife Program Costs Report).[37]



[36] $791,249, associated with the Fall Chinook Acclimation Program, was transferred from the BPA Direct Funding program to the Lower Snake Compensation Program (LSRCP)– which is BPA funded under its Reimbursable program.

[37] The Capital Costs largely represent costs to the Corps of Engineers for hydro related expenditures, whereas the Expense costs fund projects implemented by the various States and Tribes.

What is significant about these cost cutting measures is that funding for Snake Basin ESA-listed fish[38] were reduced significantly – as shown in the graphic below.

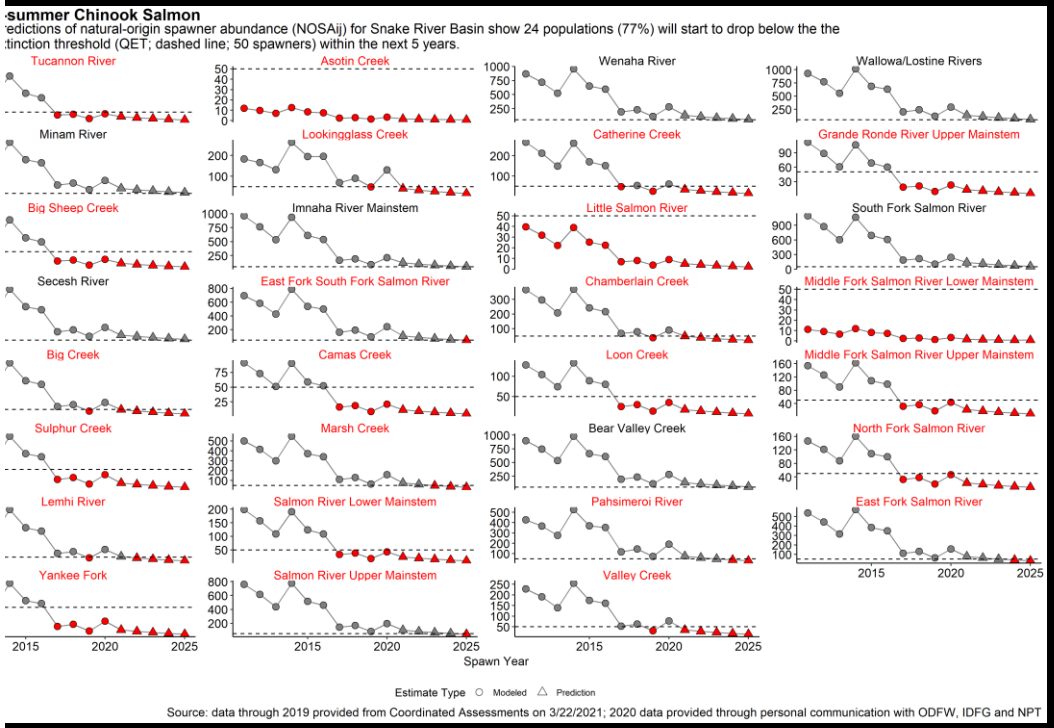


Relative to BPA's ability to fund a similar level of habitat effort or its willingness to implement additional measures that can help these fish out of the dire condition they are in, it is important to recognize that BPA has indicated in its recent Rate Cases, Integrated Program Reviews, and its 2018 – 2028 Strategic Plan, that it plans to hold costs at or below the cost of inflation through 2028 when the new long-term contracts are in place – essentially a flat-lined budget, at this reduced level. Further, BPA has described that "BPA intends to manage its fish and wildlife program costs (direct and capital costs) at or below the rate of inflation, *inclusive of any new obligations that may emerge from litigation or subsequent commitments in current or future*

[38] This includes Direct-Funded, Capital costs and BPA costs associated with administering the contracts for Snake Basin Fall Chinook, Spring/summer Chinook, Sockeye and Steelhead.

David B. Johnson

Snake Basin Chinook and Steelhead uasi-Extinction Threshold Alarm and Call to



- **42% of the Snake Basin spring/summer Chinook popu have natural origin spawner abundance currently at or be (50)**
- **77% of the populations predi drop below critical level of 50 spawners by 2025**

'e are the circle. That's what life is all about. We take care of one another. So when someone in trouble, that's when the rest of us have to step in."

—Elmer Crow, Nez Perce

What is Quasi-Extinction?

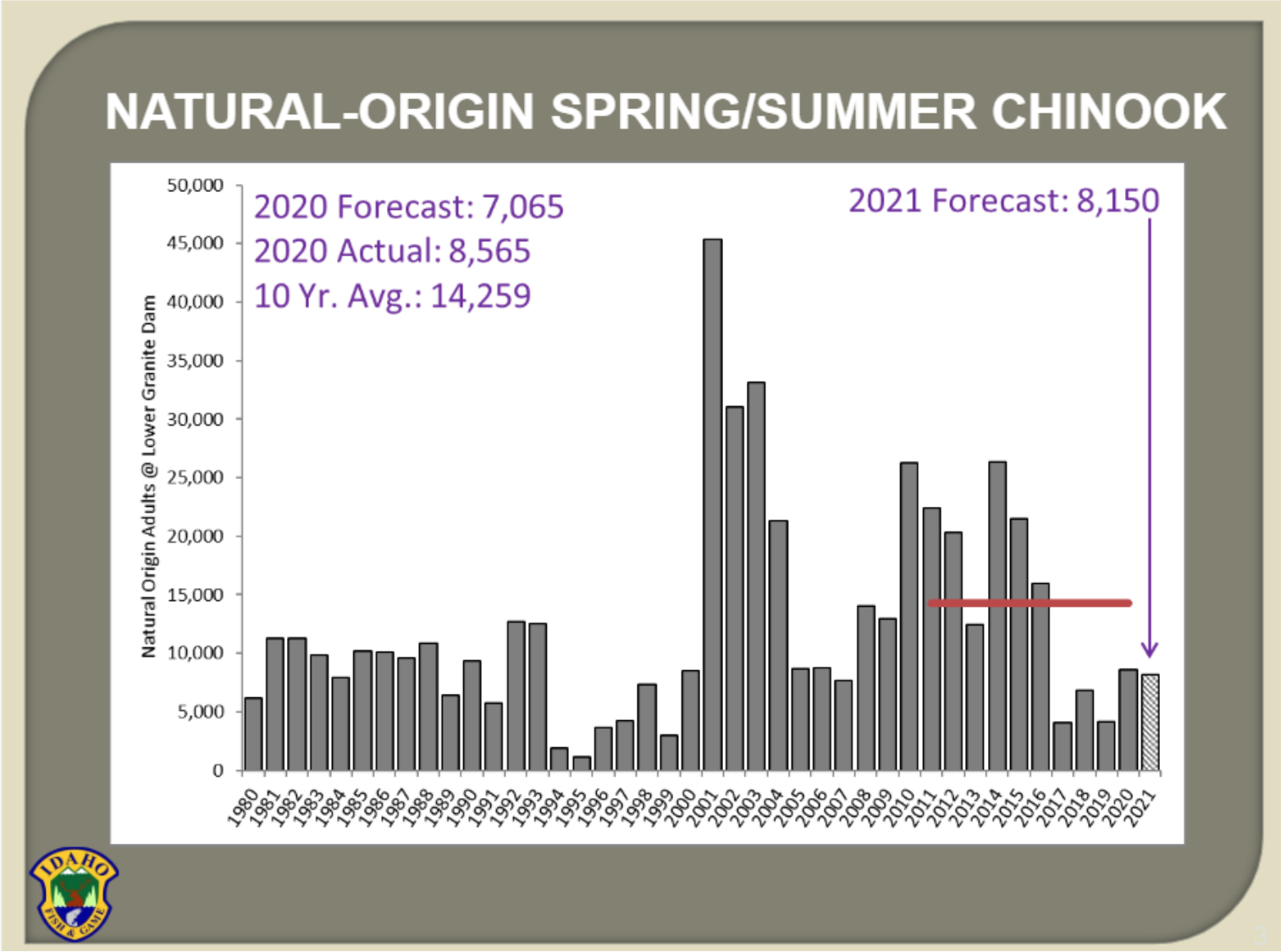
Abundance threshold for risk assessment and/or management inter

- Adult salmon abundance in a population nearing absolute extinction.
- A state where the risk of extinction cannot be modeled but is considered be unacceptably high.
- A population that is uncertain to persist.
- Probability of recovery low without substantial intervention.

Snake River Salmon and Steelhead Ret

IDFG Presentation to NPCC March 2021

https://nwcouncil.app.box.com/s/h0iyex0w1oo9m98fv4hojmzv0qogibpi (Slide 3)



Management Goals and Thresholds

Snake Basin Spring/summer Chinook Salmon
38 Extant (32 listed and 6 non-listed) Populations

Desired - Healthy and Harvestable – CBP, NPCC

- Range from 2,000 to 8,000 per population.
- 179,000 escapement at Lower Granite Dam, excluding blocked areas (235,000 with blocked
- Aggregated values for Snake Basin populations = 121,000 (124,000 including Tucannon).

Delisting – Minimum Abundance Threshold (MAT) – NOAA

- Range from 500 to 2,000 per population.
- Aggregated values for Snake Basin populations = 30,000 (29,250 at Lower Granite Dam).

Critical - Quasi-Extinction Threshold (QET) - NOAA

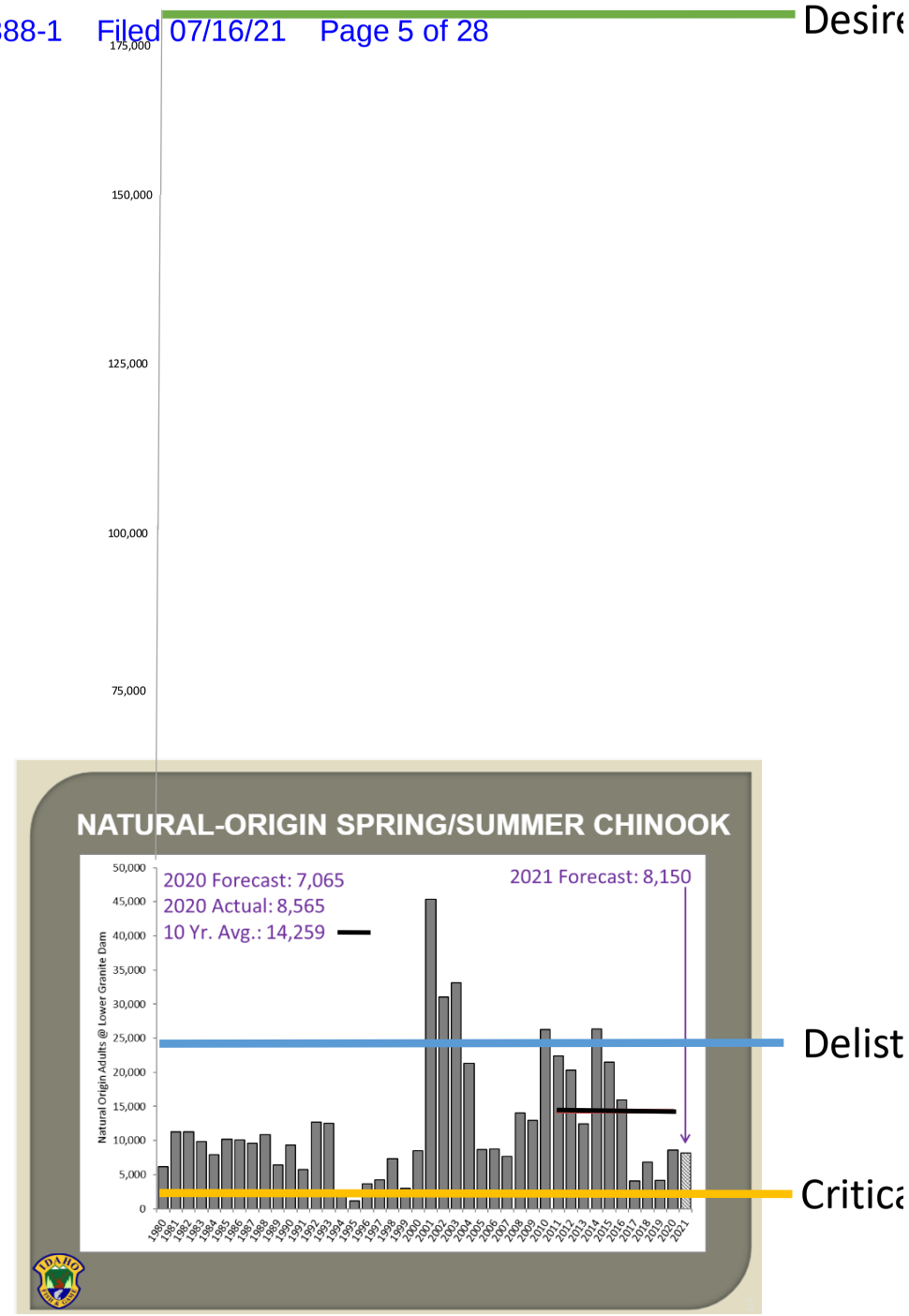
- 50 or fewer spawners within a population for four consecutive years.
- Aggregated values for Snake Basin populations = 1,900 (1,850 at Lower Granite Dam).

Extirpation - Functionally Extinct or Absolute Extinction

- One or fewer adults in each year of cohort/generation

Snake River Chinook Salmon Returns Relative to Aggregated Population Management Goals and Thresholds

Modified from IDFG March 2021 Presentation to NPCC

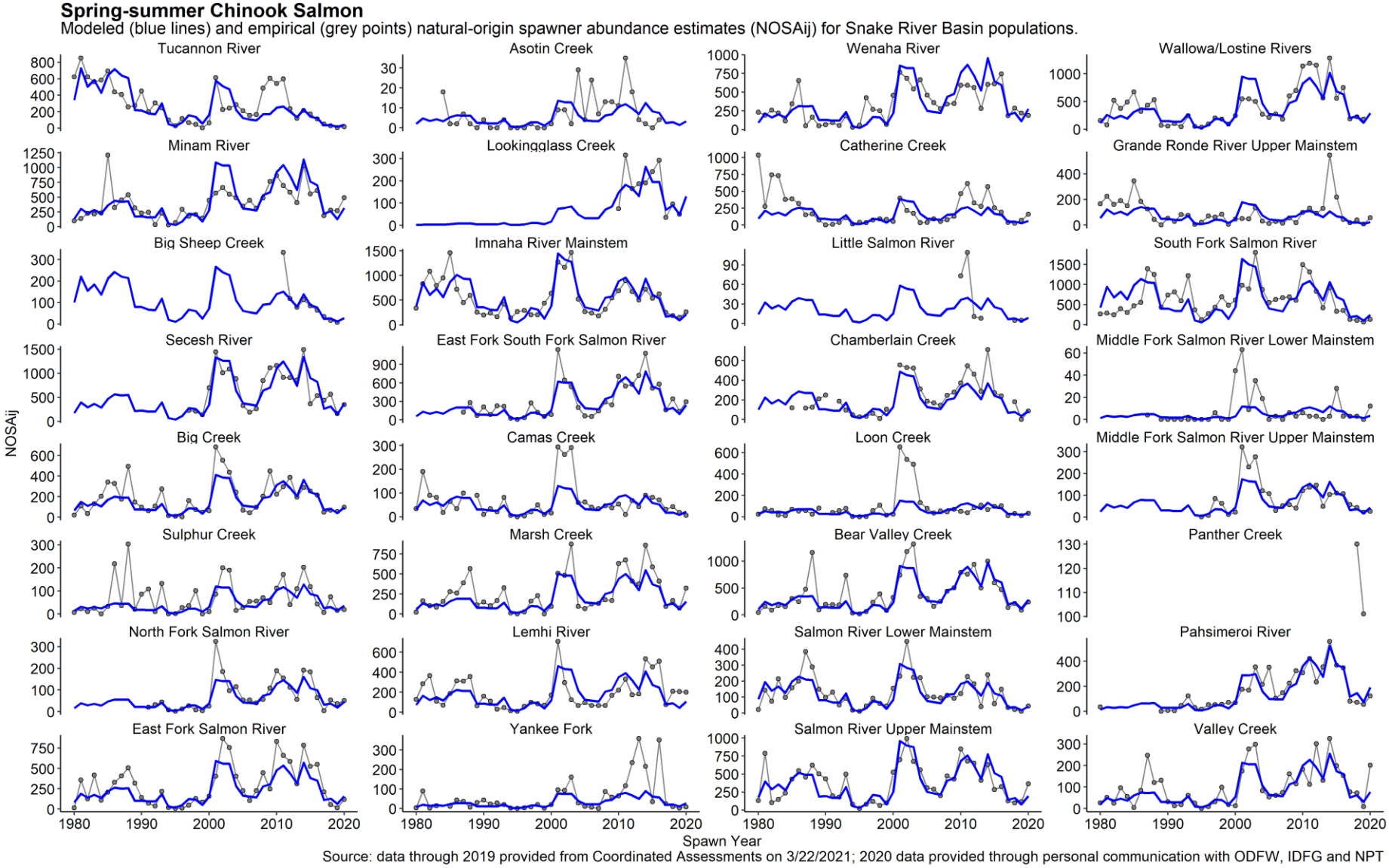


Population Specific Abundance Data Sources and Attribution

- Spring/summer Chinook NOSAij (weir M/R and SGS surveys)
  - 1980-2019 - Coordinated Assessments
  - 2020 – Personal Communication with IDFG, ODFW, NPT
- Results limited to 31 of 32 ESA listed spring/summer Chinook populations.
- Asotin, Lookingglass, and Big Sheep creeks already classified as functionally extirpat
- Panther Creek and all Clearwater basin populations classified as extirpated.
- Natural origin abundance data includes jacks.

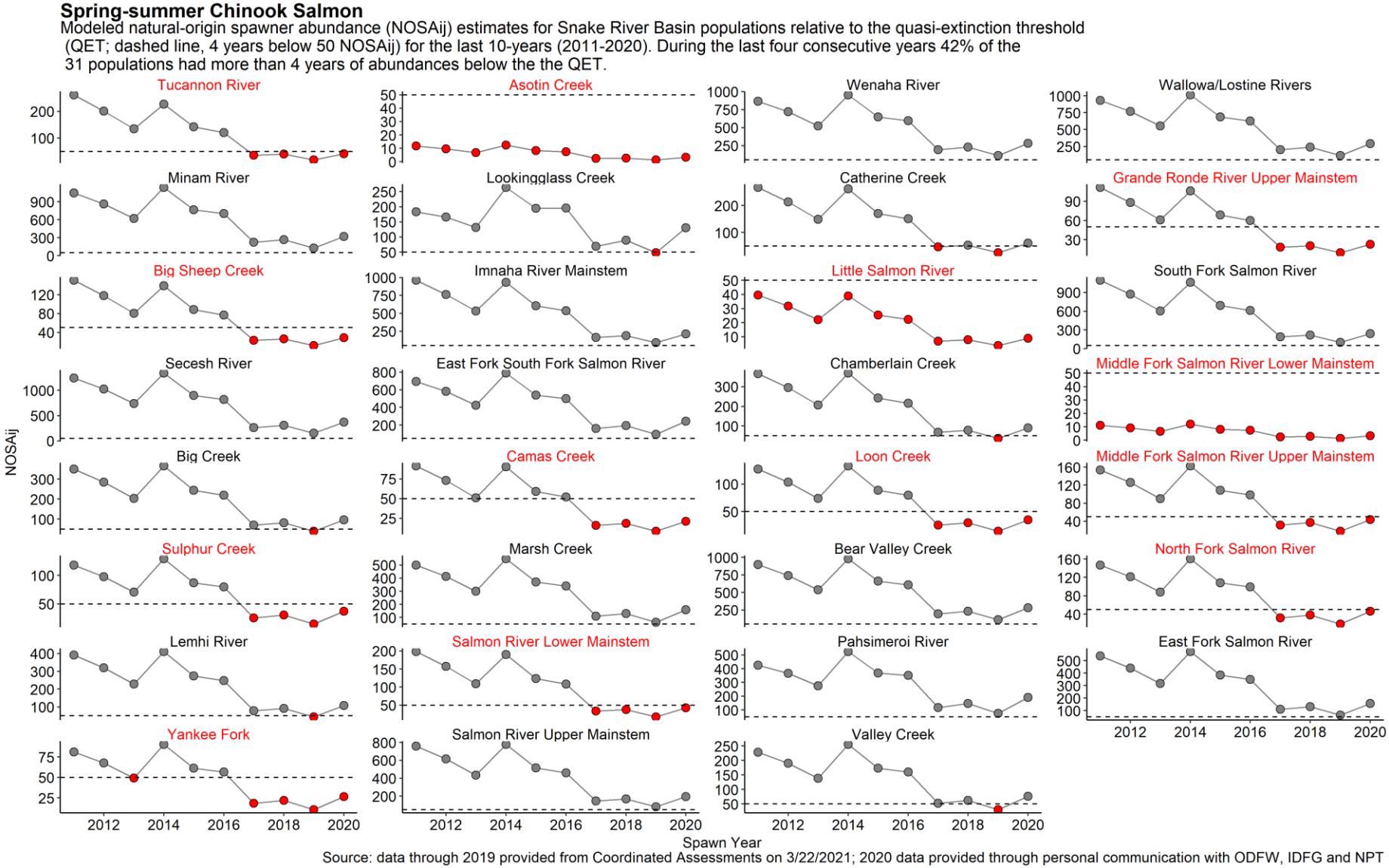
Abundance Fits Common Model

Spring/summer Chinook



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

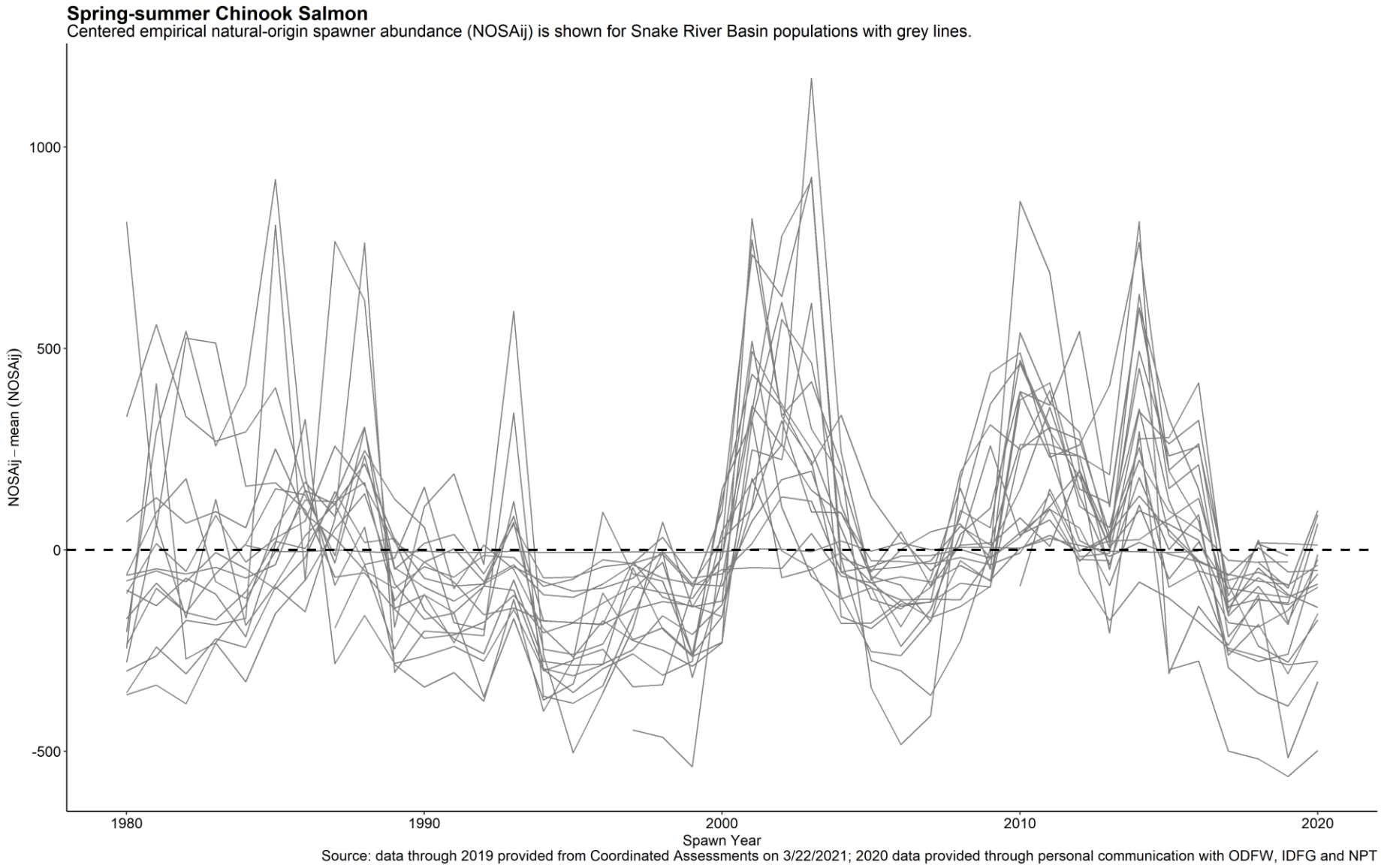
13 (42%) Spring/Summer Chinook Popula
Currently At or Below QET (50)



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

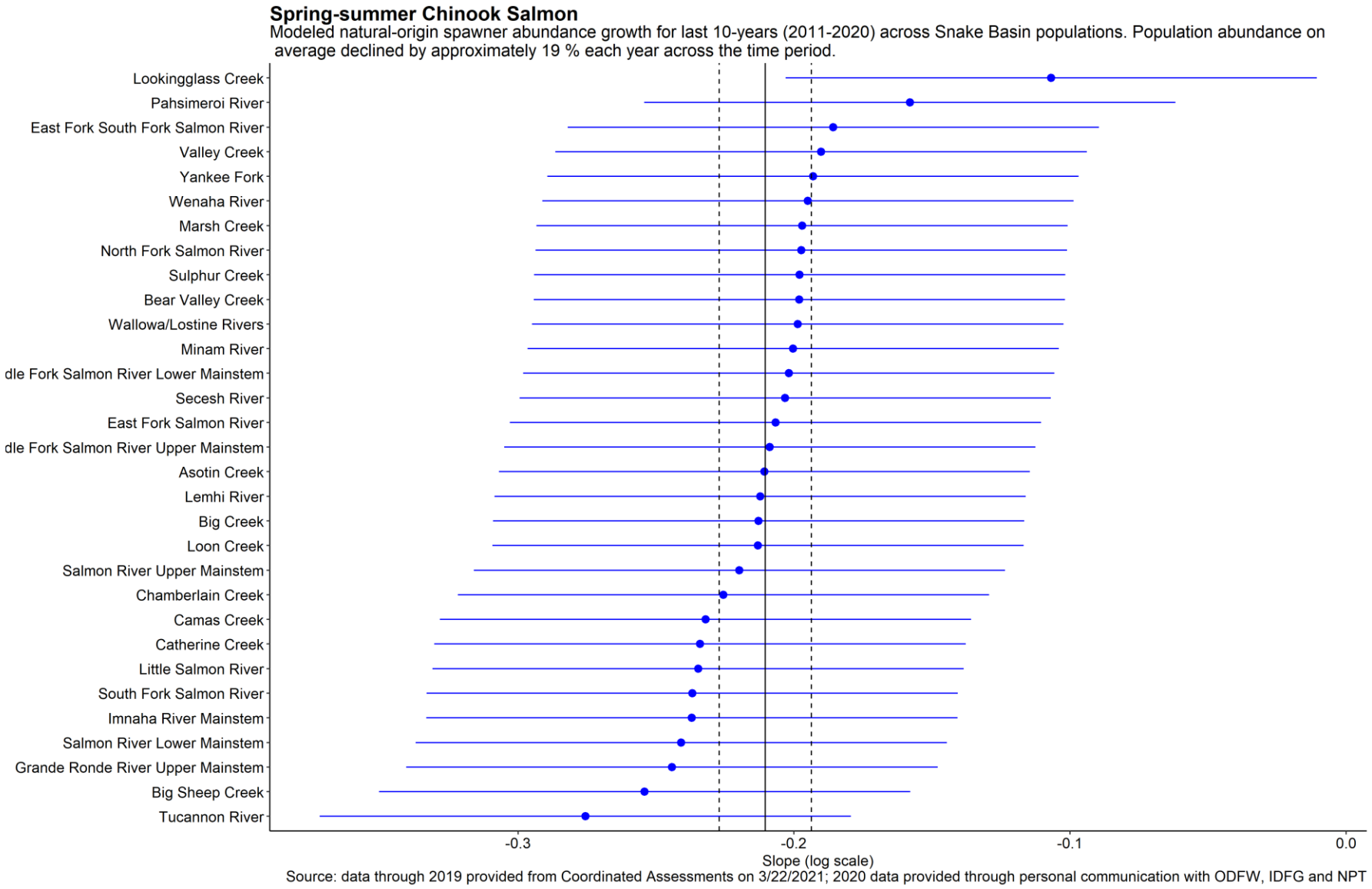
Synchrony Across Populations

Spring/summer Chinook

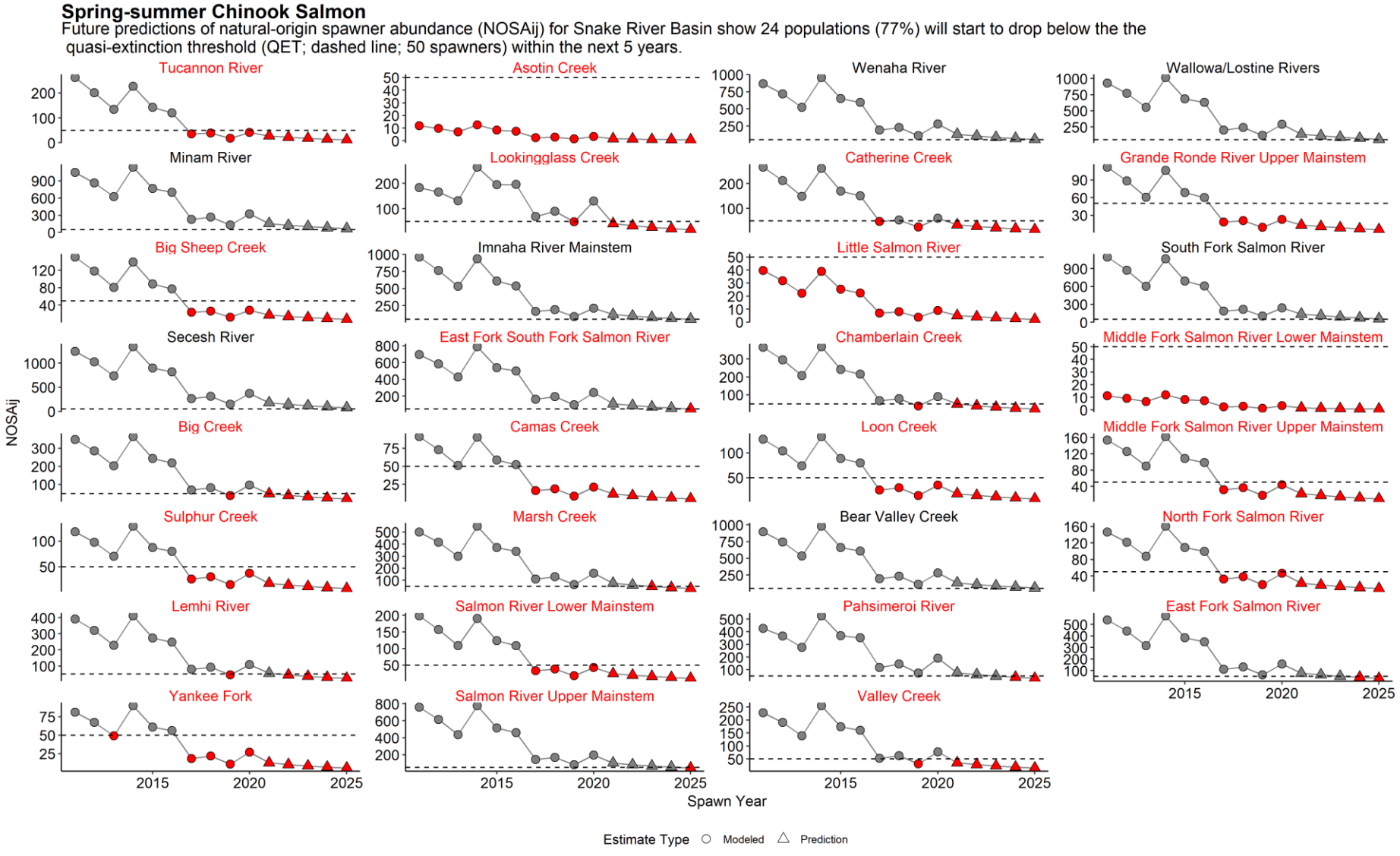


Abundance Declining 19% Each Year

Spring/summer Chinook



24 (77%) Spring/Summer Chinook Populat Predicted to be at or Below 50 spawners by



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

Management Goals and Thresholds

Snake Basin Steelhead

25 Extant (all ESA listed) Populations

Desired - Healthy and Harvestable - CBP

- Range from 2,500 to 7,500 per population.
- 137,480 escapement at Lower Granite, excluding blocked areas.
- Aggregated values for Snake Basin populations = 105,000 (100,000 at Lower Granite Dam).

Delisting – Minimum Abundance Threshold (MAT) – NOAA

- Range from 500 to 1,500 per populations.
- Aggregated values for Snake Basin populations = 21,500 (20,000 at Lower Granite Dam).

Critical - Quasi-Extinction Threshold (QET) - NOAA

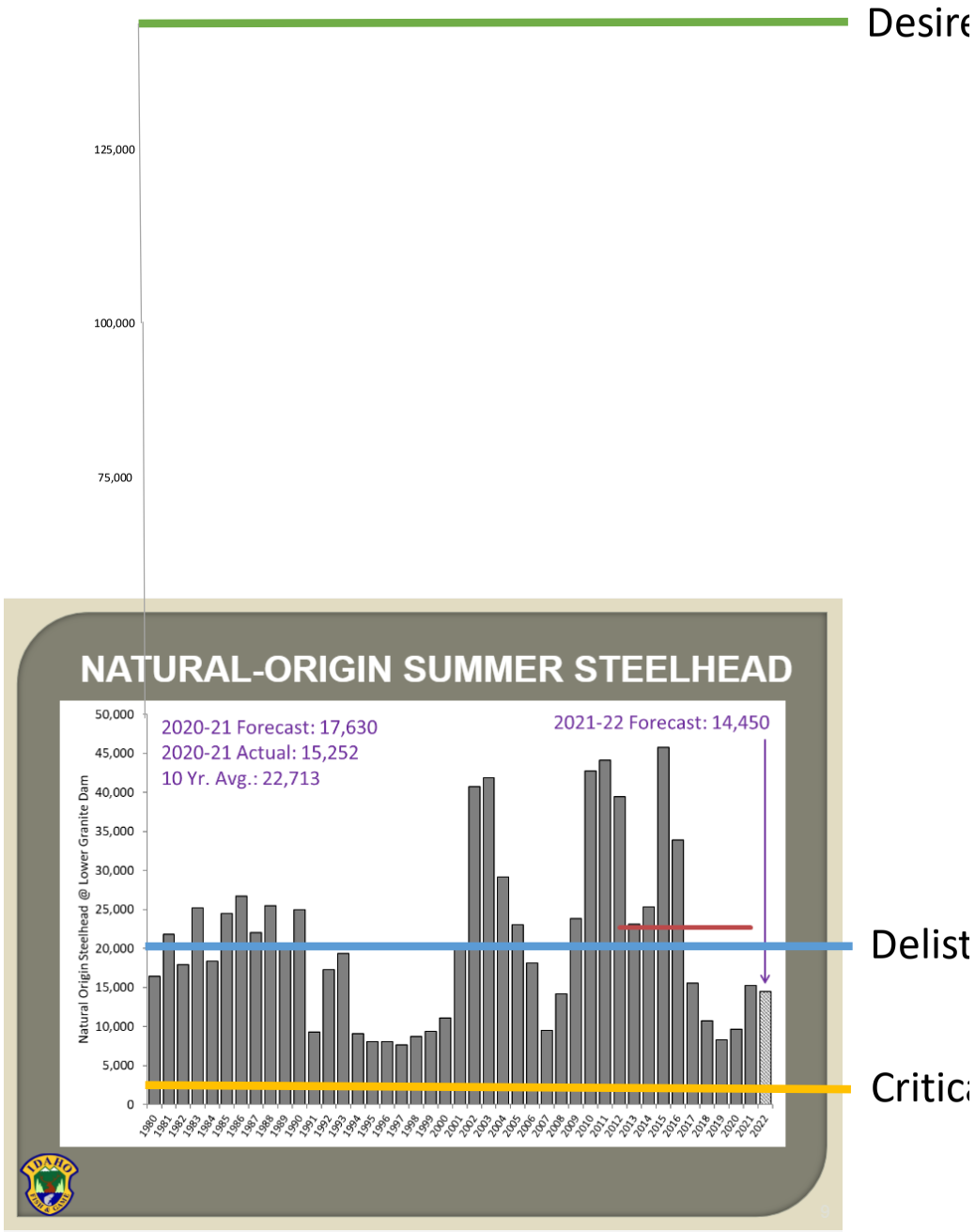
- 50 or fewer spawners within a population for four consecutive years.
- Aggregated values for Snake Basin populations = 1,250 (1,200 at Lower Granite Dam).

Extirpation - Functionally Extinct or absolute Extinction

- One or fewer adults in each year of cohort/generation

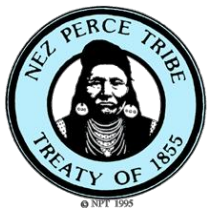
Snake River Steelhead Returns Relative to Aggregated Population Management Goals and Thresholds

Modified from IDFG March 2021 Presentation to NPCC



Population Specific Abundanc
Data Sources and Attribution

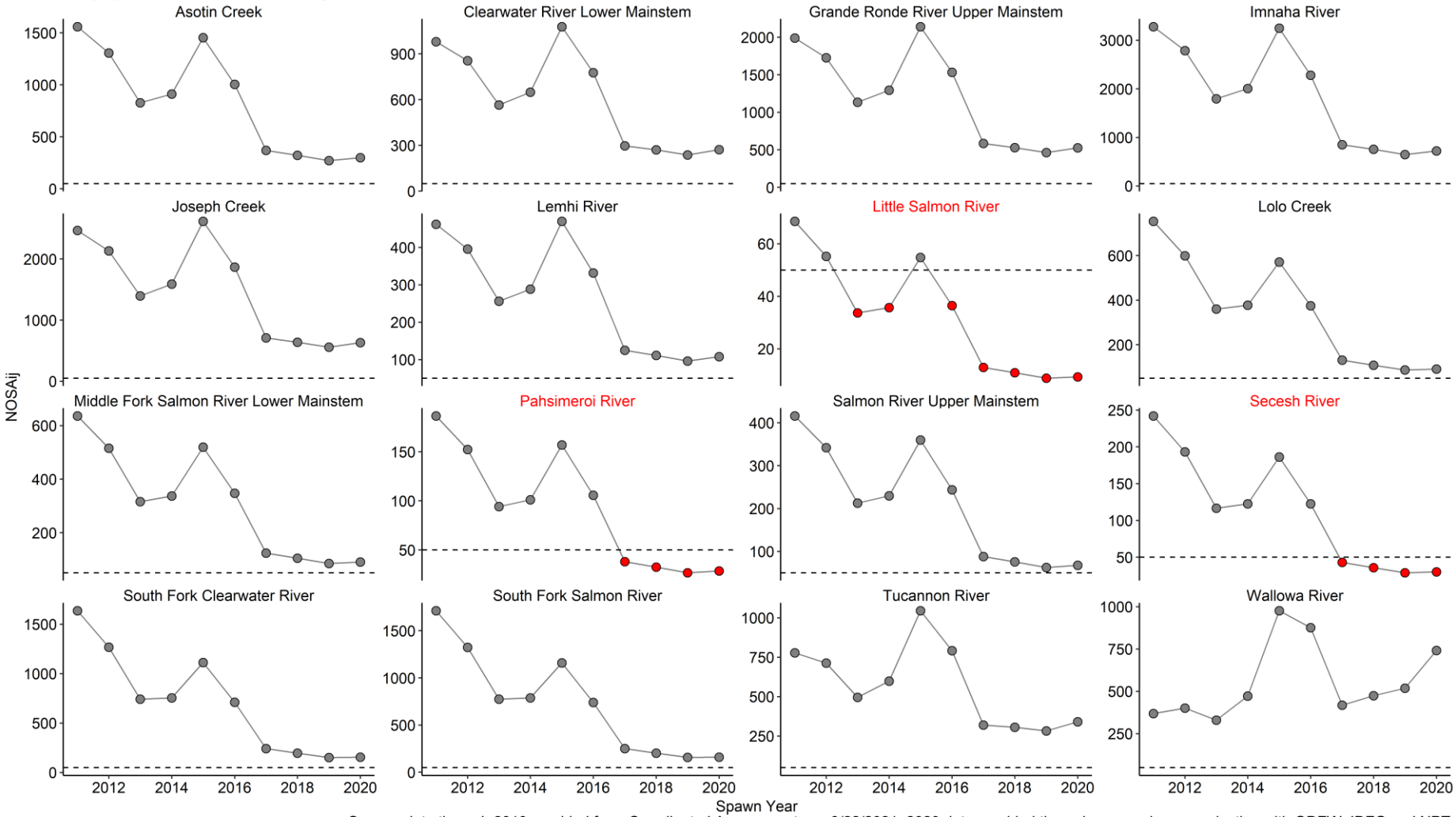
- Summer Steelhead (STADEM and DABOM)
  - 2010-2019 - Coordinated Assessments
  - 2020 – Personal Communication with NPT
- Results limited to 16 of the 25 extant ESA listed steelhead populations.
- No data for two populations (Chamberlain Creek and Middle Fork Salmon Upper M
- Six populations lack sufficient data (East Fork Salmon River, Grande Ronde Lower
  Lochsa River, North Fork Salmon River, Panther Creek, and Selway River).
- Assessment limited to anadromous form of O. mykiss.




3 (19%) Summer Steelhead Populations Currently At or Below QET (50)

Summer Steelhead

Modeled natural-origin spawner abundance (NOSAij) estimates for Snake River Basin populations relative to the quasi-extinction threshold (QET; dashed line, 4 years below 50 NOSAij) for the last 10-years (2011-2020). During the last four consecutive years 19% of the 16 populations had more than 4 years of abundances below the the QET.

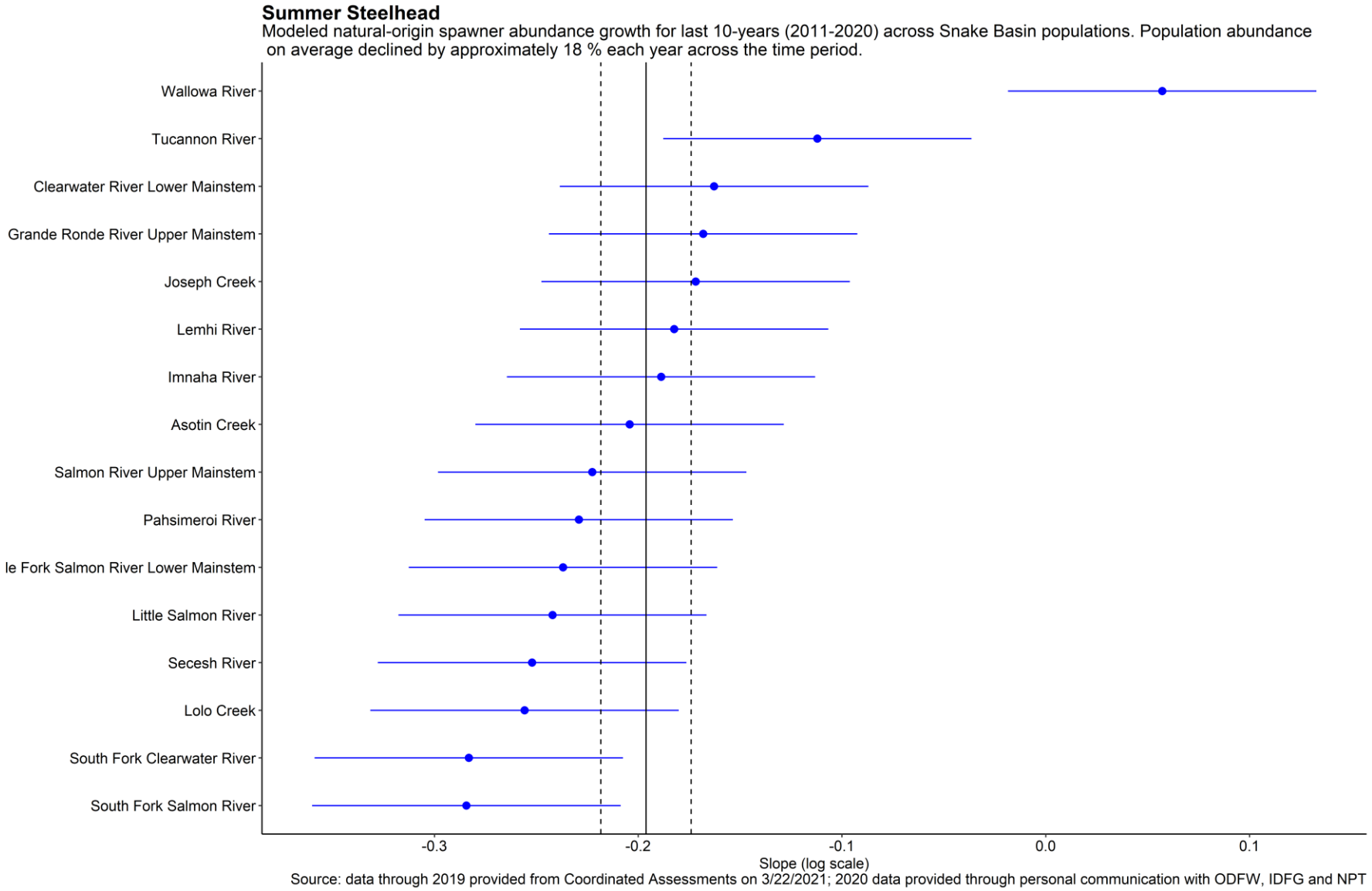


Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

Abundance Declining 18% Each Year

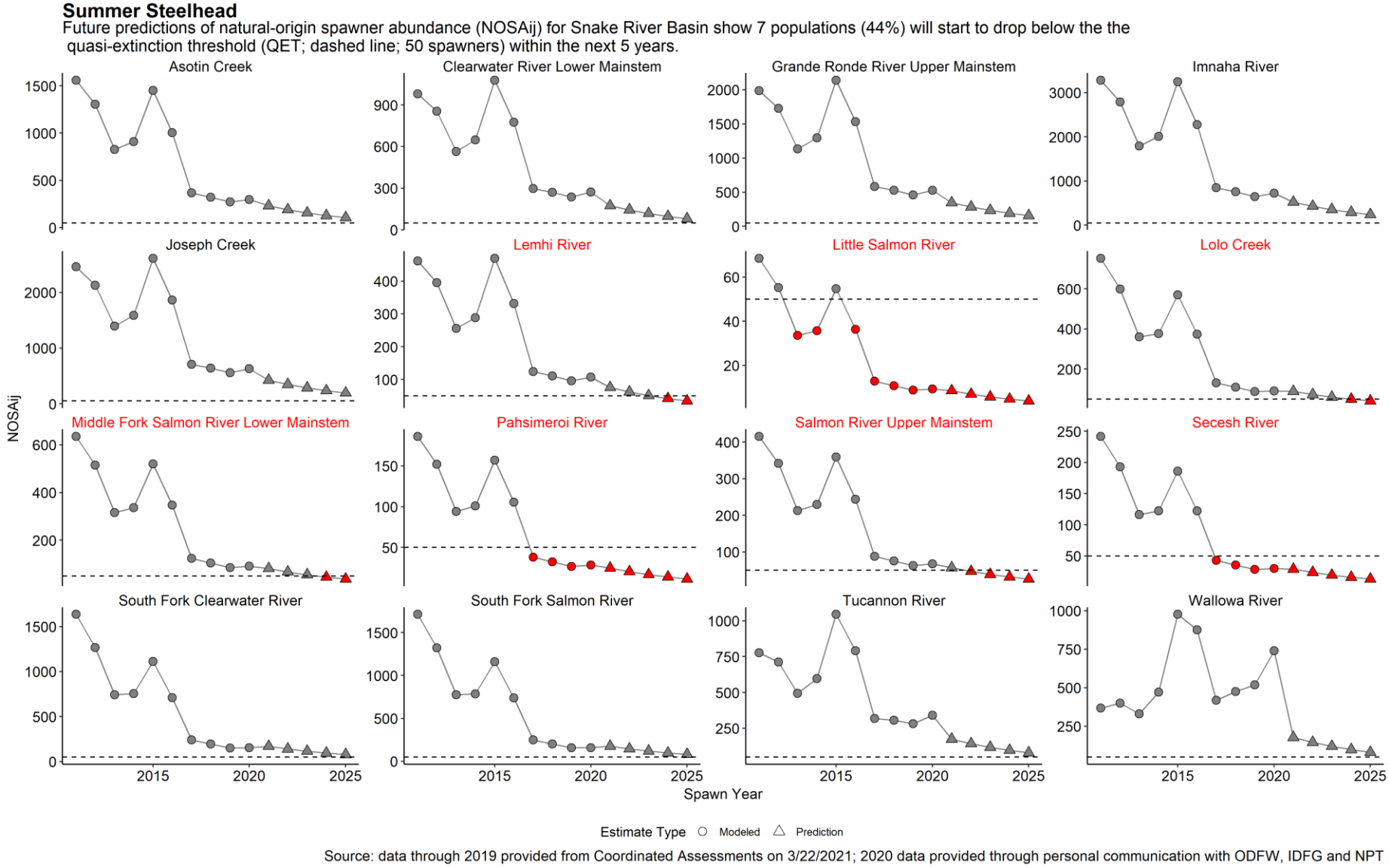
B-run Populations Declining at Faster Rate

Summer Steelhead



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

7 (44%) Summer Steelhead Populations Predicted to Be At or Below 50 spawners by



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

Challenging Environment Ahead

Urgency needed as at risk populations already well below forecasted abund

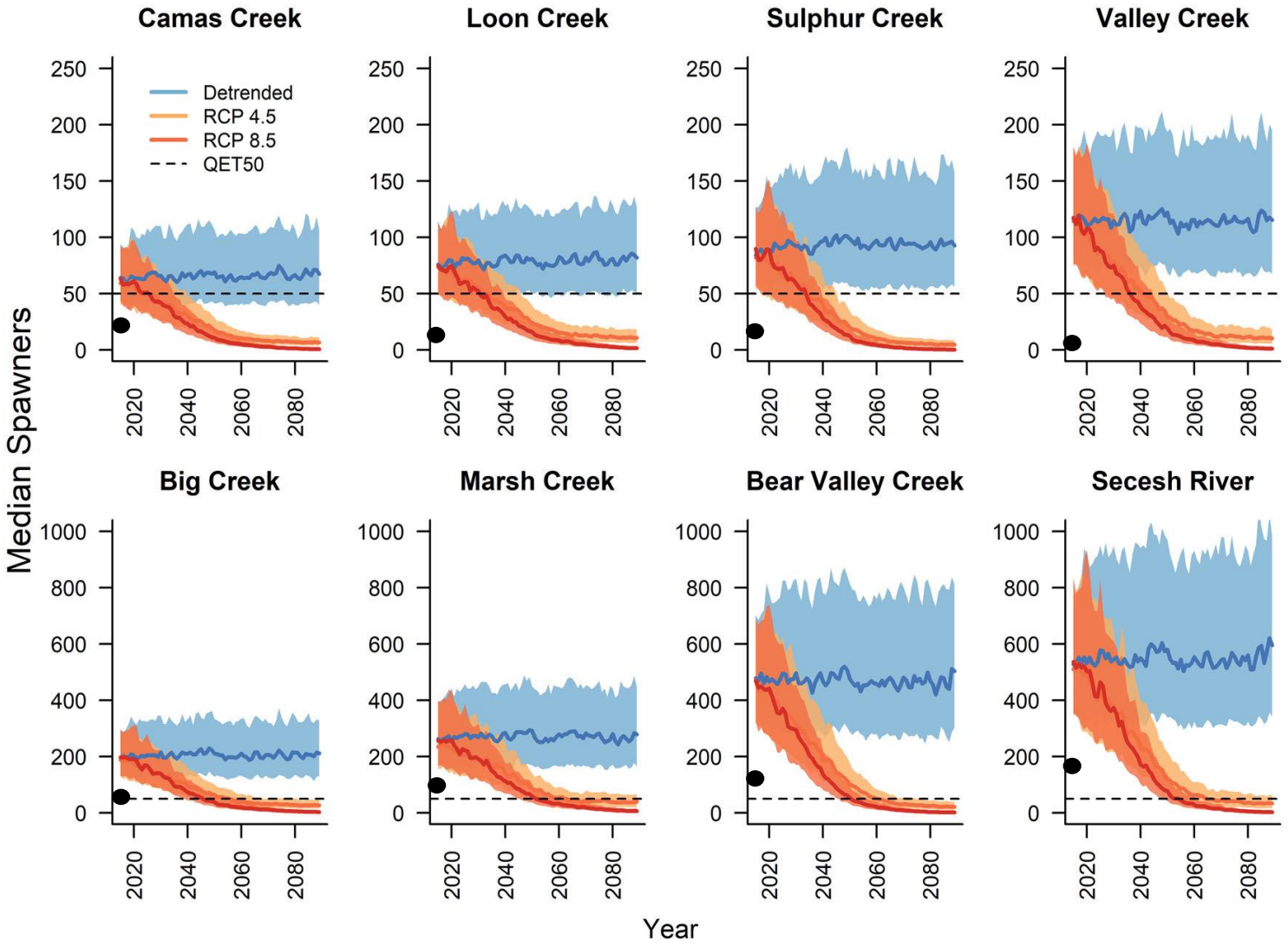
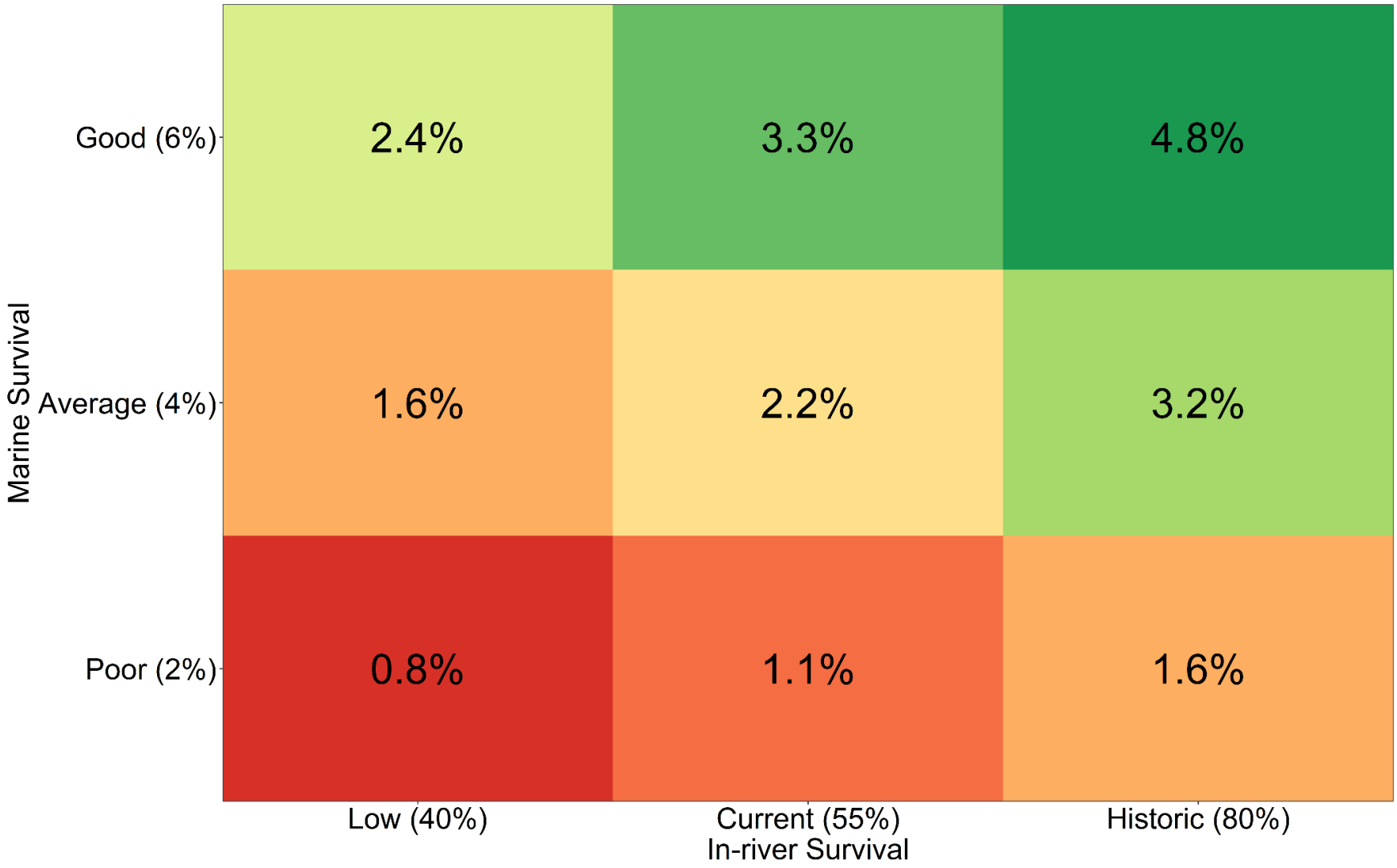


Fig. 4 - Crozier et al. 2021 (modified with actual 2019 abundance - indicated by black dots ●).

Mainstem Survival Has Direct Effect on SARs and Number of Returning Adults

(Generalized Example)



At-Risk Populations Spring/summer Chinook

13 (42%) currently at or below QET (50) (highlighted yellow in table).

19 (61%) at or below 50 spawners in at least one year since 2017.

24 (77%) predicted to be at or below 50 by 2025 (red text in table).

MPG	Population	Endemic Hatchery	Cryo-preserved	Predator	Habitat	Hydro	Harv
L. Snake	Tucannon	X	X	M	X	X	M/T
	Asotin (ext)			M	X	X	M/T
Dry CI	Upper South Fork (ext)	X		M	X	X	M/T
Wet Clearwater	Lolo (ext)	X		M	X	X	M/T
	Lochsa (ext)	X		M	X	X	M/T
	Meadow (ext)			M		X	M/T
	Moose (ext)			M		X	M/T
	Upper Selway (ext)	X		M		X	M/T
Grande Ronde / Imnaha	Wenaha			M		X	M/T
	Minam		X	M		X	M/T
	Catherine	X	X	M	X	X	M/T
	Lookingglass (ext)	X		M	X	X	M/T
	Lostine/Wallowa	X	X	M	X	X	M/T
	U Grande Ronde	X	X	M	X	X	M/T
	Imnaha	X	X	M		X	M/T
	Big Sheep (ext)	X		M		X	M/T
South Fork Salmon	Little Salmon			M		X	M/T
	Secesh		X	M	X	X	M/T
	South Fork Salmon	X	X	M	X	X	M/T
	East Fork South Fork	X	X	M	X	X	M/T
Middle Fork Salmon	Chamberlain			M		X	M/T
	Big		X	M		X	M/T
	Lower Middle Fork			M		X	M/T
	Camas			M		X	M/T
	Loon			M		X	M/T
	Upper Middle Fork Salmon			M		X	M/T
	Sulphur			M		X	M/T
	Bear Valley		X	M	X	X	M/T
	Marsh		X	M	X	X	M/T
Upper Salmon	North Fork Salmon			M		X	M/T
	Lemhi			M	X	X	M/T
	Lower Mainstem Salmon			M		X	M/T
	Pahsimeroi	X	X	M	X	X	M/T
	East Fork Salmon			M		X	M/T
	Yankee Fork Salmon River	X		M	X	X	M/T
	Valley			M		X	M/T
	Upper Mainstem Salmon	X	X	M		X	M/T
	Panther (ext)	X		M	X	X	M/T

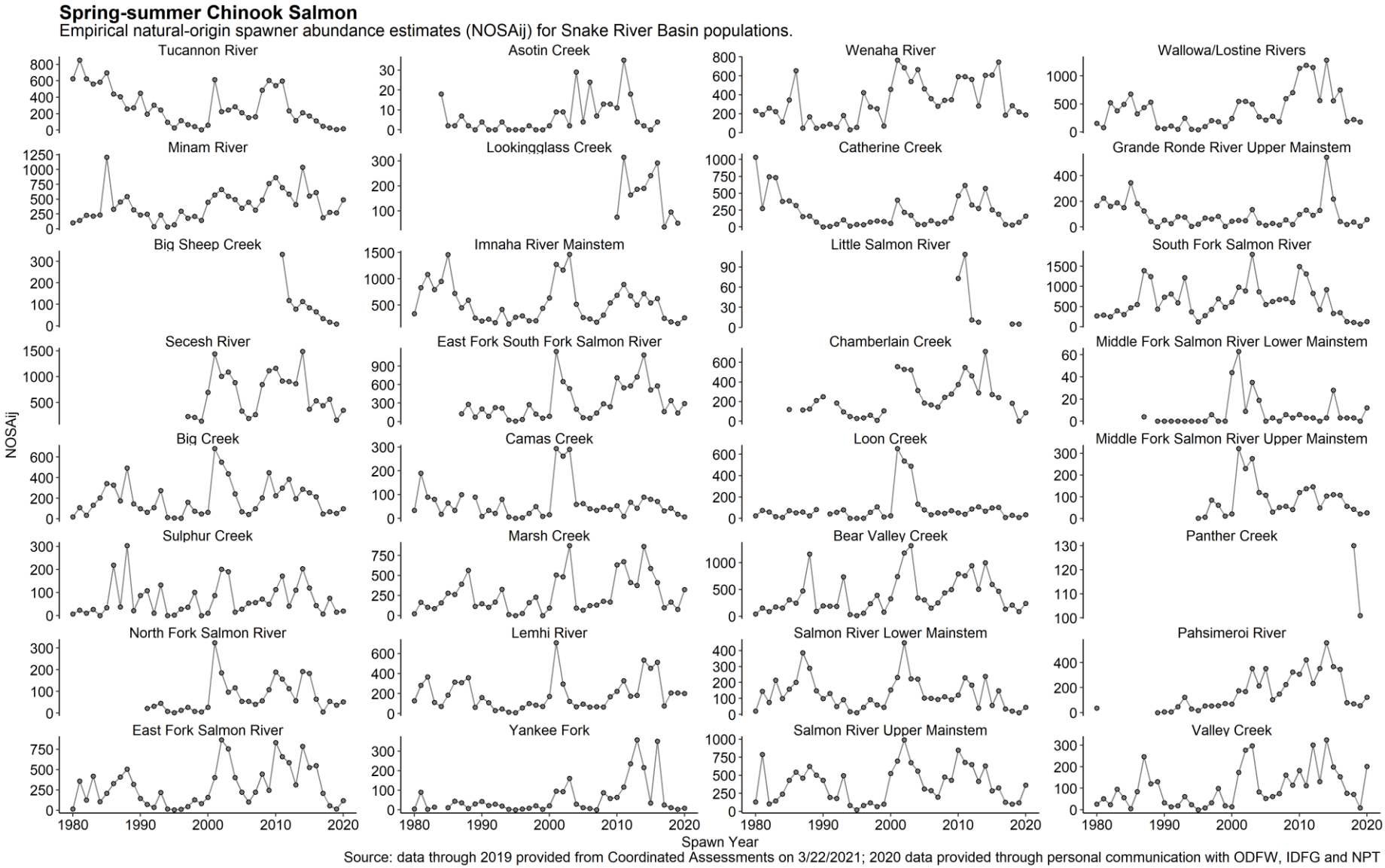
Call to Action

- Multiple factors contributing to low abundance.
- Improving survival at multiple life stages needed.
- Maximizing freshwater survival during periods of poor conditions paramount.
- Seek actions sufficient to address current crisis and hel salmon thrive – Simpson solution.

Bonus Slides

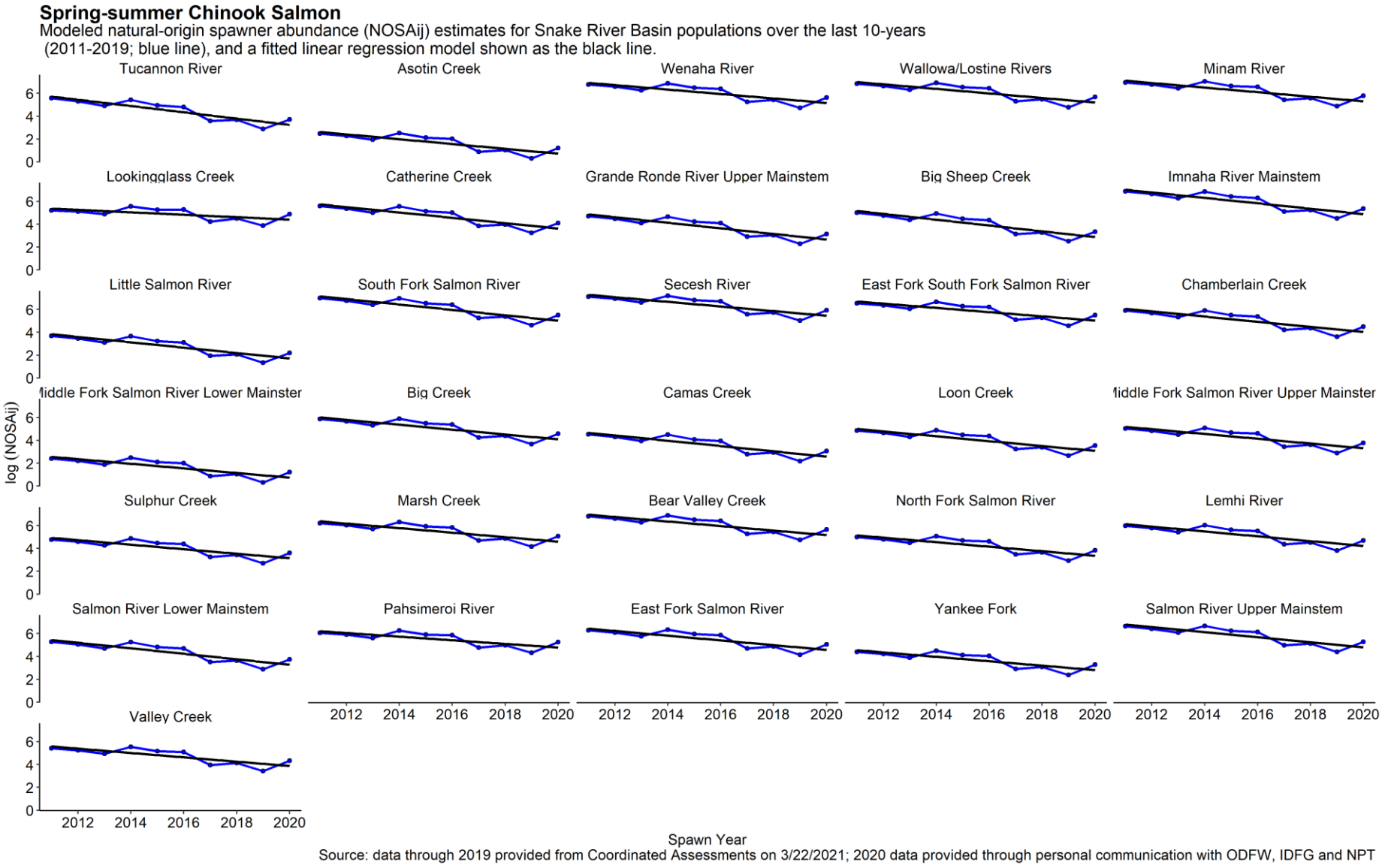
Empirical Population Specific Abundance

Spring/summer Chinook



Populations in Decline Over Last 10 Yea

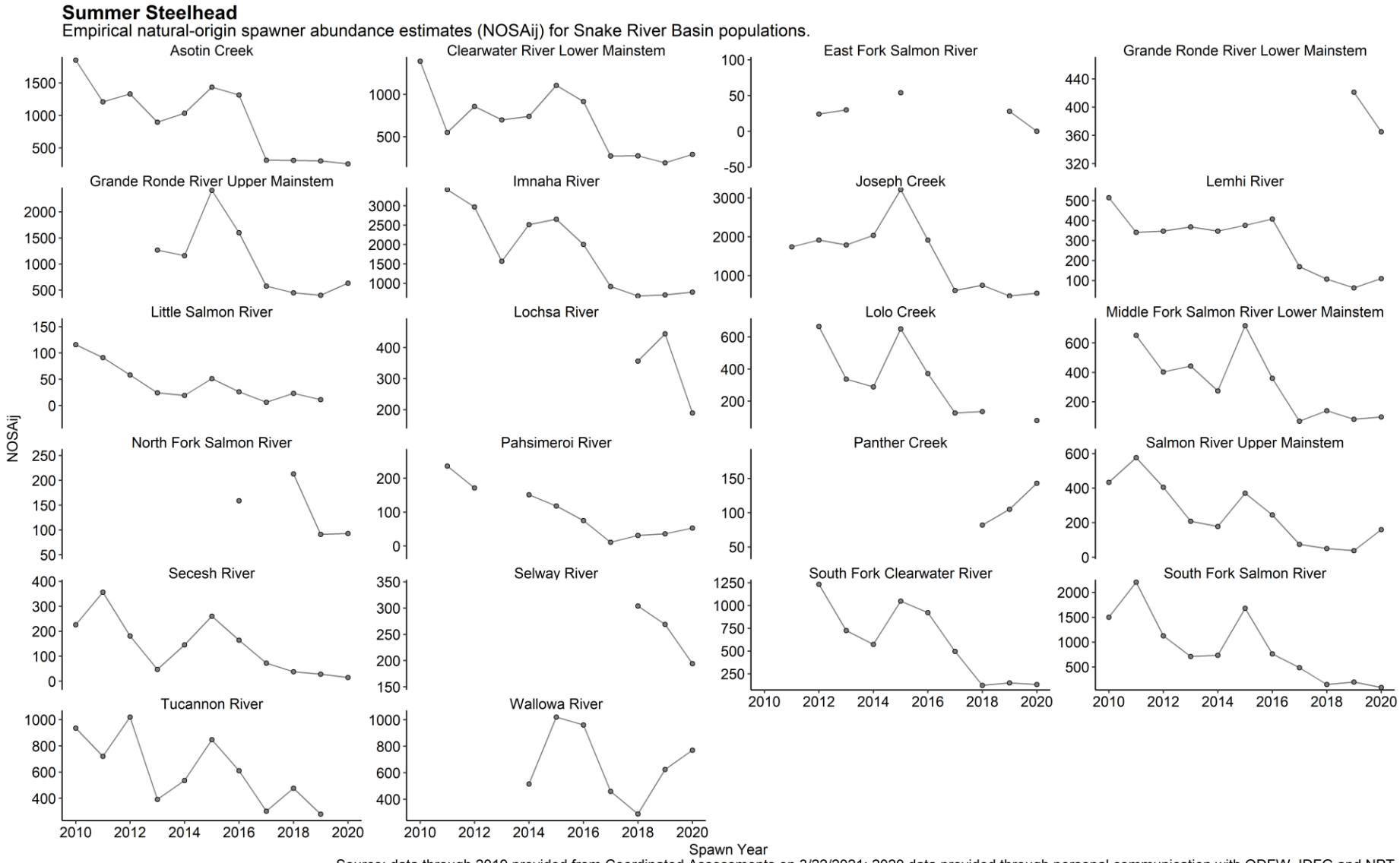
Spring/summer Chinook



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

Empirical Population Specific Abundance

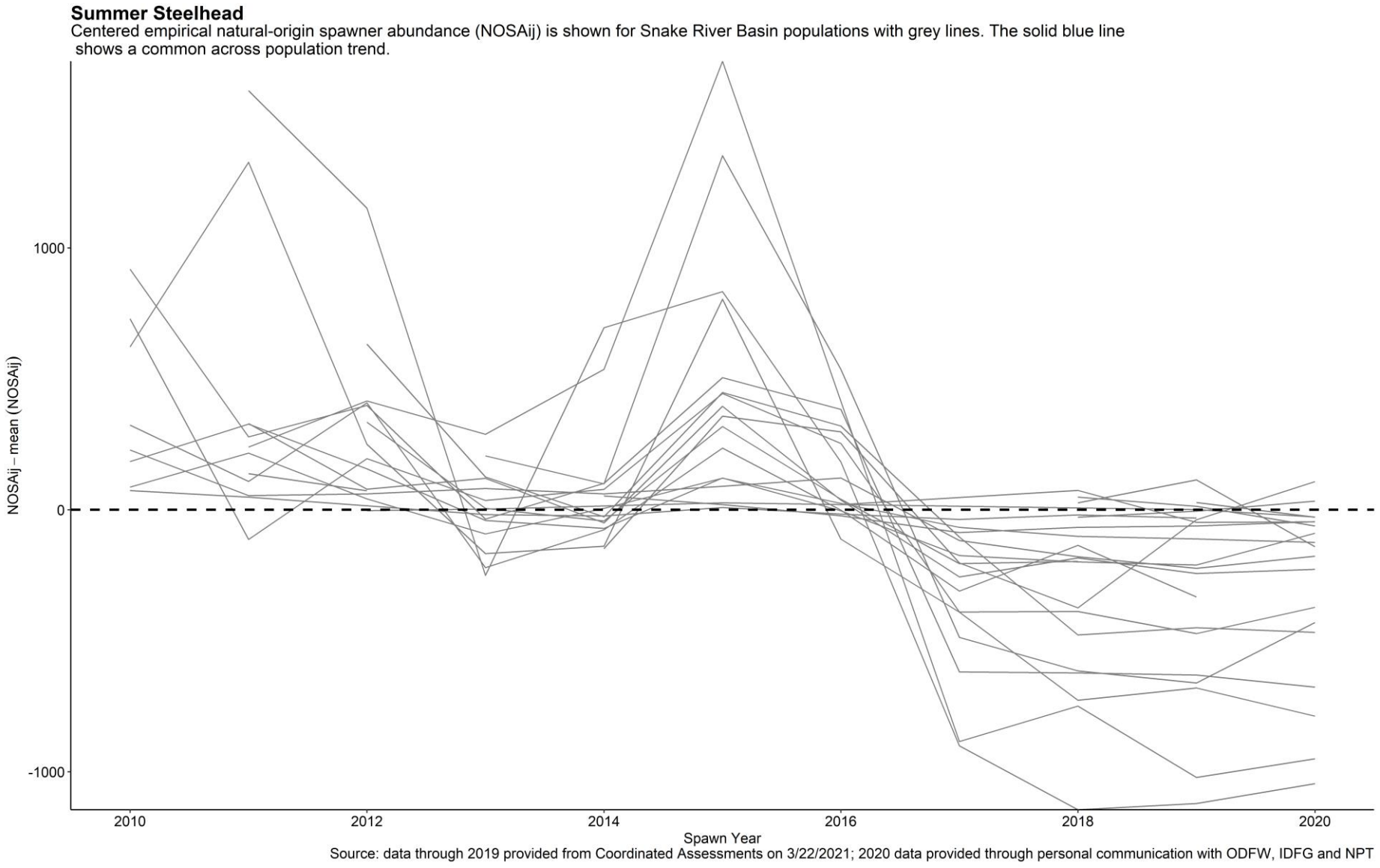
Summer Steelhead



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

Synchrony Across Populations

Summer Steelhead

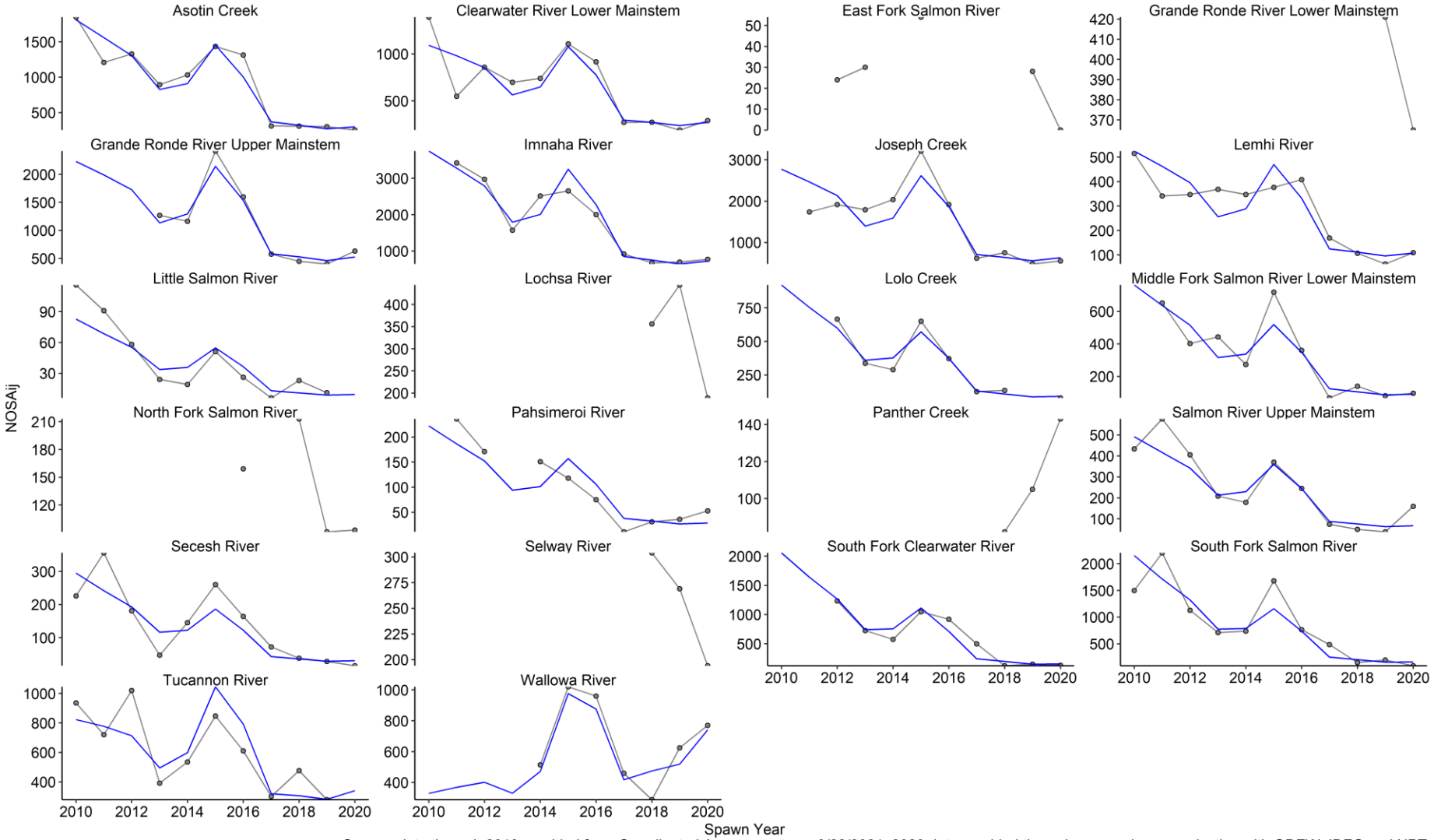


Abundance Fits Common Model

Steelhead

Summer Steelhead

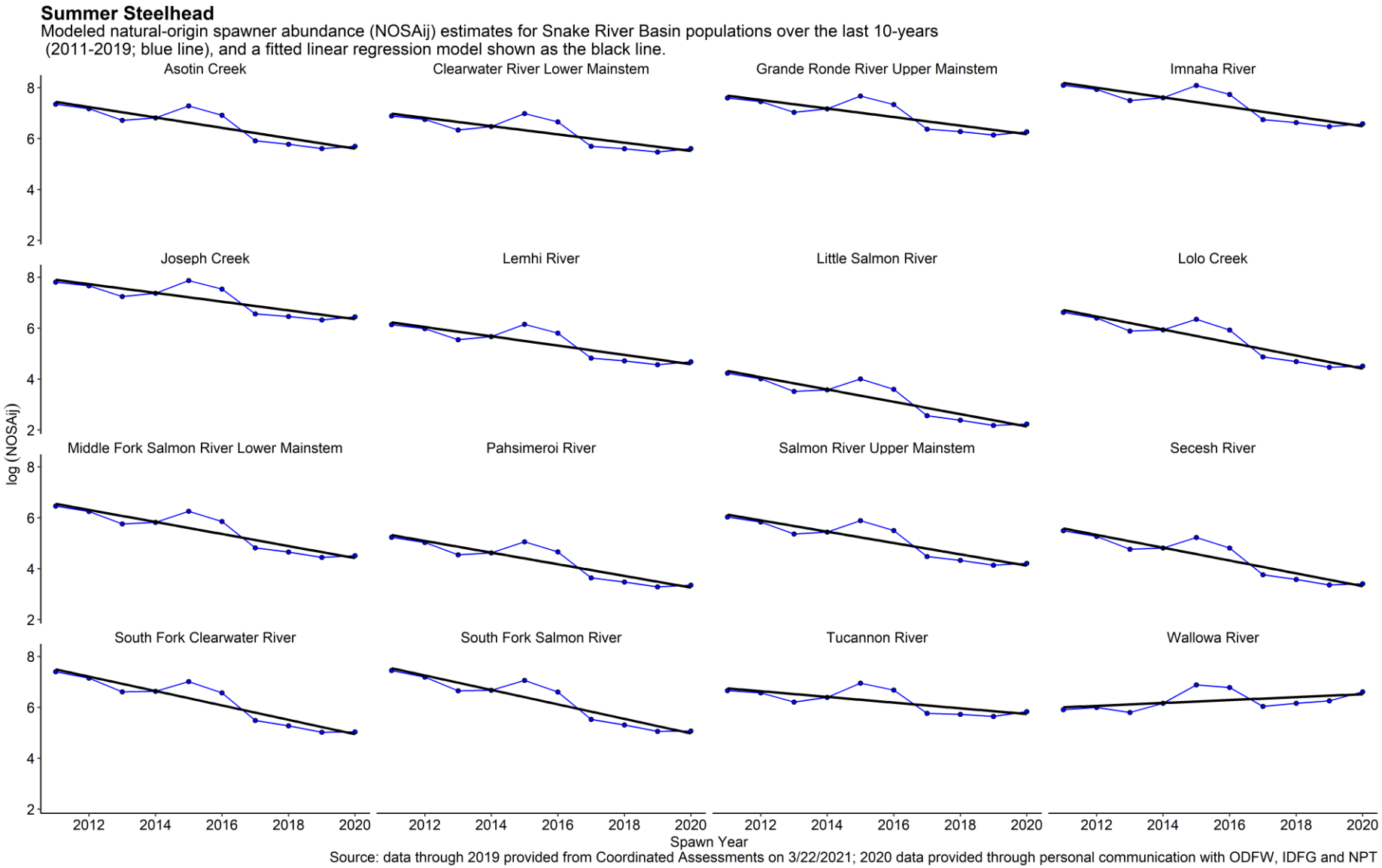
Modeled (blue lines) and empirical (grey points) natural-origin spawner abundance estimates (NOSAij) for Snake River Basin populations.



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

ost Populations in Decline Over Last 10 Yea

Summer Steelhead



Source: data through 2019 provided from Coordinated Assessments on 3/22/2021; 2020 data provided through personal communication with ODFW, IDFG and NPT

Columbia Basin Bulletin
FISH & WILDLIFE NEWS

NEZ PERCE STUDY SHOWS SNAKE RIVER BASIN SALMON/STEELHEAD AT RISK OF EXTINCTION; TRIBE SAYS EMERGENCY ACTIONS NEEDED

MAY 7, 2021

Natural origin spring/summer chinook salmon adult returns to the Snake River basin are declining at a rate of 19 percent each year and 77 percent of Snake River spring/summer chinook populations will fall below a quasi-extinction risk threshold of 50 fish for each distinct population by 2025 without emergency actions, Nez Perce tribal fisheries biologists warned this week.

Extinction for natural origin spring/summer chinook is already in progress, said Ryan Kinzer, research scientist for the Tribe.

“In the last ten years, 13 populations of spring/summer chinook have met the quasi-extinction risk threshold of 50 spawners or less and five of those populations have been at that level for the past four years,” Kinzer said.

Nez Perce fisheries staff presented the results of their recent study on Snake River Basin spring/summer chinook and steelhead population extinction risk to the Northwest Power and Conservation Council at its meeting Wednesday, May 5 (see April 27, 2021 Council memorandum .

The basin has some 38 populations of spring/summer chinook and 32 are listed under the federal Endangered Species Act. The desired management goal developed by the Columbia Basin Collaborative for each population is 2,000 to 8,000 fish. Minimum abundance is 500 to 2,000 fish per population, according to NOAA Fisheries.

The Columbia Basin Collaborative released its final report last October saying there is “a strong sense of urgency that immediate action is needed to address salmon and steelhead declines in the Columbia River Basin.”

Overall returns (all populations) of spring/summer chinook to the Snake River basin are forecasted to continue to be low. The 2021 forecast is just 8,150 fish and last year’s return was only slightly higher at 8,565 fish. As a bookend, the 2001 return of natural origin fish was 45,000, but the past 10 years have averaged just 14,259 fish. Delisting would be called for at 29,250 fish and the critical threshold is 1,850 fish.

Asotin, Lookingglass, Big Sheep and Panther creeks and all Clearwater basin

spring/summer chinook populations already are classified as functionally extirpated, Kinzer said.

Steelhead populations in the Snake River basin are doing a little better with 3 of 38 populations having fallen below the Quasi-extinction threshold of 50 fish, but four are in line to also drop below that threshold, Kinzer said. Still, steelhead are experiencing a decline of 18 percent per year and those populations in steepest decline are the larger B-run steelhead.

The desired management goals for natural origin Snake River steelhead are 2,500 to 7,500 fish per population, according to the CBP. The overall return to the basin of steelhead is forecasted to be 14,450 fish for 2021-22. The previous actual return was 15,252 and the 10-year average is 22,713. A high of 45,000 was recorded in 2010.

Quasi-extinction is an abundance threshold for risk assessment and/or management intervention, said Jay Hesse, director of biological services for the Tribe. In his presentation he added that quasi-extinction could fall into several categories of risk:

— it could be when adult salmon abundance in a population is nearing absolute extinction,

— it could be a state where the risk of extinction cannot be modeled but is considered to be unacceptably high,

— it could be when a population is uncertain to persist, or

— It could be that the probability of recovery is low without substantial intervention.

“Quasi-extinction is generally used in population viability assessments,” Hesse said. “It’s less commonly used as a threshold for management intervention as we are using the term today.”

In its study, with declining returns of Snake River spring/summer chinook and steelhead, the Tribe analyzed the basin’s population extinction risk. The Council memo said that Tribal staff noted that the results are troubling and

the status of these populations requires emergency actions, in addition to what is already being done in the basin.

A similar call to action occurred when the fish were first listed under the ESA and involved captive broodstock programs and gene-banking through cryogenetic-preservation. At the time of listing, some 9 percent of natural origin spring/summer chinook were being lost each year, far under the current loss of 19 percent per year.

In the early 2000s ocean conditions improved resulting in better survival, but conditions in the ocean began to decline in 2010, Kinzer said. All populations are experiencing the same decline.

“Every year we lose 19 percent of the spring/summer chinook population and if we extend that out, we quickly go from 13 populations at the quasi-extinction risk threshold to 24, or 77 percent of the entire Snake River wild spring/summer chinook population,” Kinzer said.

The Tribe views survival improvements in the freshwater and early-ocean phase of their life cycle as essential to keeping these fish on the spawning grounds, especially during poor ocean conditions.

“The influence of the ocean overrides all other life cycle stages,” Hesse said. “However, freshwater survival has an influence on the ultimate SARs (smolt to adult returns). Changing freshwater experience for smolts and adults to more favorable conditions, or even to historic conditions, would be a benefit. If we improve the freshwater environment, we improve smolt survival in the ocean.”

A recent study by NOAA Fisheries confirms much of what the Nez Perce Tribe asserted in its presentation to the Council, specifically pointing at ocean conditions as a problem. The agency predicted that threatened Snake River spring/summer chinook salmon will experience starkly lower survival rates during their years in the ocean in the future compared to now. Unusually warm temperatures—including a 2014-2015 marine heatwave— have depressed salmon returns to many West Coast rivers, including the Snake and Columbia.

Even the largest chinook populations in the Snake River Basin face a high risk of extinction by the 2060s, according to the Northwest Fisheries Science Center's study titled "Climate Change Threatens Chinook Salmon Throughout Their Life Cycle" published in February.

— CBB, February 26, 2021, "Unsettling: NOAA Research Says Warming Ocean Poses Risk Of Extinction For Snake River Spring/Summer Chinook By 2060,"

Only dramatic increases in the number or survival of juvenile salmon could buffer the likely impacts of climate change, the scientists concluded. While the findings are unsettling, they can help focus conservation efforts to improve the odds for the Columbia Basin's 13 salmon and steelhead stocks listed under the Endangered Species Act.

"This does not mean it is game over for salmon," said Lisa Crozier, a research biologist and lead author of the research. "It means that we need to look very closely at the options we have to conserve them, so they make it into the future."

In an October 2020 study, NOAA predicted a similar extinction threat for ESA-listed Snake River sockeye salmon.

"So much needs to be done in and out of the basin," said Dave Johnson, Department Manager, Nez Perce Tribe Department of Fisheries Resources Management. "We need to turn a larger focus on the mainstem and more needs to be done about predators in the river (sea lions and predatory birds) and small mouth bass and walleye in the Snake. They aren't supposed to be there, this is salmon area."

Johnson said that the region needs a big initiative, something much more than has been done for salmon recovery so far, such as the plan Idaho U.S. Rep. Mike Simpson is advocating, including breaching the lower Snake River dams.

— CBB, February 5, 2021, "Idaho U.S. Rep. Simpson Proposing Sweeping $32 Billion 'Columbia Basin Fund' To Finance Lower Snake Dam Breaching,"

— CBB, February 26, 2021, "Unsettling: NOAA Research Says Warming Ocean

Poses Risk Of Extinction For Snake River Spring/Summer Chinook By 2060,

The Columbia Basin Partnership was the first time a process in the region had completed a full accounting of Columbia River salmon and steelhead numbers at the stock level from the ocean to the spawning grounds for natural and hatchery-origin fish.

A Phase 2 Report includes detailed summaries of the quantitative goals for each of 27 stocks of salmon and steelhead in the basin and a description of the methodologies used to derive the goals. The report includes salmon and steelhead natural production goals for all stocks. Historically, says the report, 9.45 million wild fish returned to the Columbia River basin. Currently, about 350,000 naturally-produced fish return. The report's goals for naturally-produced fish: Low, 440,000 fish; Medium, 1.57 million; High, 2.85 million.

For background, see:

— CBB, April 9, 2021, "Next Steps For Columbia Basin Collaborative To Focus On Refining Process, Participation, Funding," https://www.www.www.cbbulletin.com/next-steps-for-columbia-basin-collaborative-to-focus-on-refining-process-participation-funding/

— CBB, February 26, 2021, "Unsettling: NOAA Research Says Warming Ocean Poses Risk Of Extinction For Snake River Spring/Summer Chinook By 2060," https://www.www.www.cbbulletin.com/unsettling-noaa-research-says-warming-ocean-poses-risk-of-extinction-for-snake-river-spring-summer-chinook-by-2060s/

— CBB, January 29, 2021, "Columbia Basin Collaborative Schedules Organizational Workshop To Discuss 'Proposed Process Approach', Goal to Create 'Salmon Ethic'" https://www.www.www.cbbulletin.com/columbia-basin-collaborative-schedules-organizational-workshop-to-discuss-proposed-process-approach-goal-to-create-salmon-ethic/

— CBB, Oct. 15, 2020, NW STATES AGREE TO 'DEFINE A FUTURE COLLABORATIVE FRAMEWORK' FOR ACHIEVING ABUNDANCE GOALS FOR COLUMBIA BASIN SALMON/STEELHEAD, https://www.www.www.cbbulletin.com/nw-states-agree-to-define-a-future-

collaborative-framework-for-achieving-abundance-goals-for-columbia-basin-salmon-steelhead/

— CBB, Oct. 1, 2020, AGENCIES ISSUE RECORD OF DECISION ON PLAN TO OPERATE 14 COLUMBIA/SNAKE DAMS WITHOUT JEOPARDIZING SALMON,STEELHEAD; CRITICS SAY MORE STATUS QUO, https://www.www.www.cbbulletin.com/agencies-issue-record-of-decision-on-plan-to-operate-14-columbia-snake-dams-without-jeopardizing-salmon-steelhead-critics-say-more-status-quo/

— CBB, Feb. 26, 2020, DIVERSE GROUP CALLS FOR NORTHWEST GOVERNORS TO 'FOSTER NEW DIALOGUE' ON COLUMBIA BASIN SALMON RECOVERY, https://www.www.www.cbbulletin.com/diverse-group-calls-for-northwest-governors-to-foster-new-dialogue-on-columbia-basin-salmon-recovery/

— CBB, Jan. 29, 2021, BIDEN 'CLIMATE CRISIS' EXECUTIVE ORDERS CALL FOR INPUT ON HOW TO MAKE FISHERIES MORE RESILIENT TO CLIMATE CHANGE https://www.www.www.cbbulletin.com/biden-climate-crisis-executive-orders-call-for-input-on-how-to-make-fisheries-more-resilient-to-climate-change/

— CBB, Oct. 15, 2020, NOAA FISHERIES STUDY WARNS CLIMATE CHANGE POSES 'CATASTROPHIC' THREAT TO SURVIVAL OF ENDANGERED SNAKE RIVER SOCKEYE https://www.www.www.cbbulletin.com/noaa-fisheries-study-warns-climate-change-poses-catastrophic-threat-to-survival-of-endangered-snake-river-sockeye/

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