



# Wild Fish Conservancy

N O R T H W E S T

S C I E N C E   E D U C A T I O N   A D V O C A C Y

Comments on NMFS proposal (FR Notice, vol. 81, No. 204, October 21, 2016, pp.72759-72769) to add 23 hatchery populations to listed Evolutionarily Significant Units ('ESUs') and Distinct Population Segments ('DPSs') in California, Oregon, Washington, and Idaho.

December 20, 2016

**Re: FR Notice, vol. 81, no. 204, October 21, 2016, pp. 72759-72769.**

Dear Honorable Civil Servants:

Please accept these comments submitted on behalf of the Wild Fish Conservancy... (collectively, "Commenters") on NMFS' proposal to add 23 hatchery programs to salmon ESUs and steelhead DPSs currently listed as threatened or endangered under the Endangered Species Act. It is our view that the proposed addition of the 23 hatchery programs is unsupported by any evidence and inconsistent with best available scientific data. Therefore, a decision to include these programs in the lists of threatened or endangered ESUs and DPSs would be arbitrary and capricious, an abuse of NMFS's discretion, and otherwise not in accordance with the Endangered Species Act ('ESA')—including by failing to evaluate the listing criteria in ESA § 4(a)(1). Any decision made without undertaking consultation under ESA § 7(a)(2) and issuance of a biological opinion ('BiOp') and without compliance with the National Environmental Policy Act ('NEPA') would also be a violation of law.

## Introduction.

The proposal to add 23 hatchery programs (henceforth, 'proposal') to the listed salmon and steelhead ESUs and DPSs (henceforth, simply 'ESUs') raises significant concerns for the

viability of the affected ESUs. Many, perhaps all, of the 23 hatchery programs at issue present considerable threats to the persistence and potential for recovery of the affected ESUs. NMFS' 2005 Hatchery Listing Policy ('Listing Policy') is ill-suited to address these potential threats. The eleven year-old Listing Policy is out of date and inconsistent with the best available scientific data and knowledge. The proposal is, therefore, scientifically controversial.

The Commenters request that NMFS withdraw the current proposal and prepare an Environmental Impact Statement ('EIS') pursuant to NEPA that addresses the scientific controversy in detail and provides alternatives in addition to the current proposal. Further, the circumstances that motivate NMFS to add the 23 hatchery populations to listed ESUs provide the occasion for NMFS to initiate a comprehensive review of the scientific basis of the Listing Policy. Substantial advances in the understanding of the adverse impacts hatchery salmon may have on wild, at risk salmon populations have occurred in the 11 years since the Listing Policy was adopted.

Before discussing specific scientific concerns with the proposal and the Listing Policy, we first note some general inadequacies in the Federal Register (FR) Notice and supporting documentation that independently warrant the withdrawal of the proposal.

Lack of access to key data upon which the proposal relies.

NMFS has failed to make available to the public key information and data relied upon by the agency in reaching its proposed decision. This prevents meaningful participation in the decision making process and violates the rulemaking requirements of the Administrative Procedure Act.

The FR Notice references a NMFS internal memorandum (Jones 2015) as summarizing "the results of our most recent hatchery program review" (FR Notice p. 72760). That document cites only two documents that provide genetic data that may be relevant to the proposal: NMFS 2003 Salmon Steelhead Hatchery Assessment Group (SSHAG)

assessment of hatchery broodstocks within the ESUs at issue in the proposal, and NMFS 2004 Salmonid Hatchery Inventory and Effects Evaluation Report (SHIEER) assessing the effect of hatchery programs on the status of the same ESUs. Only the SHIEER report was obtainable via internet search. Internet queries failed to find the SSHAG report. In any case, both documents are out-dated with respect to the likely harmful effects of hatchery programs on the status and recovery prospect of the ESUs at issue in the proposal, and with respect to the determination of the genetic relationships of the specific hatchery programs/populations that are the subject of the proposal to the wild populations within those same ESUs. Jones 2015 also references a previous NMFS internal memorandum, Jones 2011, that was also not readily available by internet search, including NMFS website. A copy of the memorandum was obtained after requesting it from NMFS' Protected Resources Division office in Portland, OR.

Similar to Jones 2015, Jones 2011 does not provide any specific data, genetic or otherwise, that permits an evaluation of the claims in the FR Notice that the 23 hatchery populations “exhibit a level of genetic divergence relative to the local natural population(s) that is not more than what occurs within the ESU/DPS”. Further, as with the SSHAG and SHIEER reports, the results summarized in Jones 2011 are not current. Finally, the agency is undoubtedly aware that the federal district court in Oregon rejected the Jones 2011 memo as evidence that the hatchery fish in the Sandy River were no more than moderately divergent from the local natural population. The Court held that NMFS's decision to include a 10% pHOS (percent of hatchery-origin spawners on the spawning grounds with wild fish) in its biological opinion was arbitrary and capricious—despite the bare assertions of genetic similarity in the Jones 2011 memo—because the biological opinion did not define what “moderately divergent” means or analyze the extent to which the hatchery fish diverged from the local population. *Native Fish Soc'y v. NMFS*, 992 F. Supp. 2d 1095, 1113 (D. Or. 2014).

NMFS's failure to provide the data and evidence purporting to support its proposed decision prevents the public from meaningfully commenting on and participating in the process, which violates NMFS's disclosure obligations in notice and commenting

rulemaking. See, e.g., *Am. Radio Relay League, Inc. v. Fed. Commc'ns Comm'n*, 524 F.3d 227, (D.C. Cir. 2008) (The Administrative Procedure Act, 5 U.S.C. § 553, requires agencies make critical information, including “technical studies and data” employed by the agency in reaching its decisions, available at the time rules are proposed).

Failure to employ current terminology for characterizing hatchery programs.

In 2000 Congress established the Pacific Northwest Hatchery Reform Project to review the role of hatcheries in the Pacific Northwest and recommend “comprehensive reform” of individual hatchery programs and practices ([http://www.hatcheryreform.us/hrp/welcome\\_show.action](http://www.hatcheryreform.us/hrp/welcome_show.action)). A particular task of the Review was to evaluate the potential kinds of harmful impacts that hatchery programs and practices could have on wild salmon and steelhead populations and to recommend reforms aimed at minimizing or eliminating such adverse impacts. A group of independent and former agency scientists known as the Hatchery Scientific Review Group (HSRG) was empanelled to develop evaluation procedures and conduct a number of reviews of regional hatchery programs, starting with the Puget Sound region in 2004 (HSRG 2004, 2005). In addition to Puget Sound, major reviews of relevance to the proposal include the Columbia River Basins (HSRG 2009) and California (California HSRG 2012). In addition several reports to Congress summarized key findings, concerns, and recommendations (e.g., HSRG 2015).

In its first major report (Puget Sound review, HSRG 2004), the HSRG defined two terms for broadly characterizing the purpose of hatchery programs and their potential impact on local wild populations with which they may interact ecologically and genetically: ‘segregated’ and ‘integrated’:

Hatchery programs for Pacific salmon and steelhead can be classified as either “integrated” or “segregated” based on the genetic management goals and protocols for propagating a hatchery broodstock. Hatchery programs are classified as genetically *integrated* if a principal goal is to minimize potential genetic divergence between the hatchery broodstock and a naturally-spawning population such that natural-origin fish are systematically included in the broodstock each

year or generation. Hatchery programs are classified as genetically *segregated* if the broodstock is propagated as a reproductively distinct population primarily, if not exclusively, from adult returns back to the hatchery. In segregated programs, little or no gene flow should occur from a naturally spawning population to the hatchery broodstock. (HSRG 2004, page 16).

These two basic terms have commonly been adopted in both the peer reviewed literature, in salmon/steelhead recovery planning documents, and in NMFS Biological Opinions (see Gayeski 2016 for a specific description). A particular concern of the HSRG and fisheries scientists in general is the impact on the fitness (survival, reproductive success) of wild populations from interbreeding and competition for spawning and rearing habitat with stray hatchery fish from segregated and integrated hatchery programs. The HSRG has recommended guidelines for determining the maximum proportion of hatchery-origin fish from each type of program that can occur on the spawning grounds of wild fish without causing unacceptable fitness impacts on the receiving wild population. For segregated programs, the principal metric is pHOS (percent of hatchery-origin spawners on the spawning grounds with wild fish). For integrated programs, the principal metric is PNI (percent natural influence) which is a function of pHOS and pNOB, the proportion of natural-origin (non-first generation hatchery-origin fish) incorporated annually into the hatchery broodstock.

Use of these terms and discussion of hatchery impacts with reference to these concepts have become *status quo* among fisheries scientists and geneticists since the HSRG proposed them in 2004. It is therefore surprising and noteworthy that the proposal nowhere characterizes any of the 23 hatchery programs NMFS proposes to add to the listed ESUs using these terms, nor provides or discusses any of the data that allegedly justifies the proposed additions to the ESUs in terms of past and current levels of pHOS and PNI.

It is also worth noting that the California HSRG expressed strong concern over the adverse impacts strays from segregated hatchery programs are likely to have on wild populations:

The California HSRG believes that for a program to be truly segregated, returning hatchery origin adults must not breed in naturally-spawning populations, and thus must be completely isolated reproductively from these populations. In a truly segregated program, neither domestication selection nor phenotypic divergence of a hatchery population from a natural population would pose any risk to natural populations through interbreeding, although ecological and disease risks from the hatchery program might still exist. We emphasize that for a program to be truly segregated, the proportion of hatchery origin spawners on a natural spawning ground, pHOS, *must be equal to zero* (emphasis added). To meet this criterion, hatchery fish must, at a minimum, be released at a location and in such a way as to foster reliable homing, although this tactic will not result in 100% fidelity to the release site (a low stray rate is expected and is “natural”). Thus, when hatchery fish return to spawn, (a) it must be to locations that are free of naturally spawning fish or (b) they must be behaviorally and/or physiologically isolated reproductively from naturally spawning fish. It is theoretically possible that returning hatchery origin adults could be entirely removed from natural spawning grounds through the use of mechanical methods (e.g., segregation weirs). In practice this mechanism is not always an option and, when an option, is never completely efficient. *We note that numerous Columbia River hatchery programs have been designated as segregated, but have not achieved the criterion of pHOS equal to zero* (emphasis added). In addition, when hatchery origin fish from highly segregated programs breed in natural populations, the potential reduction in fitness of the natural population is greater than that from hatchery origin fish from an integrated program. Therefore, the California HSRG asserts that a truly segregated anadromous fish hatchery program is not possible in California, and we are therefore generally unsupportive of the concept (California HSRG 2012, chapter 2, Section 2.2, page 24)

Several of the hatchery programs that NMFS proposes to add to currently listed ESUs are (or appear to be) segregated programs and thus are subject to the concerns and associated recommendations of the California HSRG.

Finally, the proposed rule includes no information whatsoever on the threat that hatchery fish pose to wild fish. When NMFS has in the past defended its emphasis on wild fish populations for species recovery, a federal court in California found that “the underlying science regarding the impact of hatchery fish on natural populations and the conclusions reached by NMFS based on that science are entirely undisputed.” *Cal. State Grange v. NMFS*, 620 F. Supp. 2d 1111, 1158 (E.D. Cal. 2008). The court recited the “undisputed” facts that “[h]atchery fish are less fit for survival in the wild than genetically similar wild fish,” that “[h]atchery releases have a significant negative effect on the productivity of

wild populations,” that “[i]t is a fact that no one has ever used a salmon hatchery to restore a depressed wild population to the point where it is self-sustaining,” and “there is little or no evidence that hatcheries have been effective over the long term at assisting in the recovery of wild populations.” *Id.* The Hatchery Listing Policy encourages NMFS to evaluate whether inclusion of hatchery populations in an ESU presents risks or threats to the ESU’s wild populations. 70 Fed. Reg. 37,204, 37,208 (June 28, 2005). Yet, despite its own listing policy, and its own position that it is undisputed that hatchery fish pose risks to natural populations, the proposed rule includes no discussion of these risks and threats whatsoever.

Specific failings of the proposal and concerns arising therefrom.

The Summary to the FR Notice states that the “proposed changes were informed by our recently completed 5-year reviews under ESA” (p. 72759). But no explanation is provided to clarify how precisely the recent reviews “inform” the proposed actions. No quantitative data or related analyses are provided to justify the bald assertions that specific hatchery programs and populations warrant inclusion in the listed ESUs proposed. The FR notice goes on to state “As part of the 5-year review, we reviewed the classification of all West Coast salmonid hatchery programs, taking into consideration the origin for each hatchery stock, the location of release of hatchery fish, and the degree of known or inferred genetic divergence between the hatchery stock and the local natural population(s). We used criteria in NMFS’ Policy on the Consideration of Hatchery-Origin Fish in Endangered Species Act Listing Determinations for Pacific Salmon and Steelhead (“Hatchery Listing Policy”) (70 FR 37204, June 28, 2005) to guide our review.”

The Hatchery Listing Policy states that hatchery stocks will be considered part of an ESU/DPS if they exhibit a level of genetic divergence relative to the local natural population(s) that is not more than what occurs within the ESU/DPS” (72760). NMFS refers to this level of genetic divergence between a hatchery and local natural population as a ‘moderate’ level of divergence (e.g., Jones 2015, Table 1). However, NMFS fails to

provide or even discuss any objective, measurable biologically relevant criteria and methods for determining whether or not any hatchery population is “no more than moderately diverged” from the natural spawning, wild, populations in a listed ESU or DPS. Nowhere in the Listing Policy, the current proposal, or any of the publically available documentation referred to in the current proposal (e.g., Jones 2015) does NMFS cite any specific genetic data and associated standardized statistical procedures that are to be employed for the purpose of determining the genetic relationship between hatchery populations and wild populations within an ESU/DPS.

This failure to provide objective criteria inevitably leads to descriptions of the relationship of specific hatchery programs and populations to listed wild populations that are subjective, or otherwise arbitrary and capricious. As noted above, the Court in *Native Fish Society* specifically held that the failure to define what “moderately divergent” meant in the context of NMFS’s argument that hatchery fish were no more than moderately divergent from wild fish rendered NMFS’s biological opinion arbitrary and capricious. *Native Fish Soc’y*, 992 F. Supp. 2d at 1113.

To illustrate the potential inconsistencies that may arise as a result of the failure to provide clear, objective criteria for determining whether or not a hatchery population is “no more than moderately diverged” from a local wild population within an ESU, we calculated common genetic divergence metrics  $F_{st}/G_{st}$  for five ESA-listed Puget Sound wild steelhead populations and two unlisted segregated hatchery programs derived from the Chambers Creek hatchery stock, one formerly operating within the Puget Sound steelhead DPS (the Lower Elwha-Klallam (LEKT) program) and one currently operating outside the DPS in the unlisted Olympic Peninsula steelhead DPS (the Bogachiel Hatchery). The results for  $G_{st}$  using Nei and Chesser’s correction for calculating  $H_T$  and  $H_S$  as recommended by Meirmans and Hedrick (2011) and calculated using GenA1EX 6.501 (Peakall & Smouse 2012) are presented in Table 1. The data were calculated using a standardized set of 13 microsatellite loci used by NMFS for characterizing Pacific northwest steelhead populations. Data were from a data file obtained from Dr. Gary

Winans of NMFS' Northwest Fisheries Science Center, labeled "Total13loc\_march2013\_short\_woHohH\_wo by11" .

We calculated  $G_{st}$  (Nei-Chesser) for samples from five ESA-listed steelhead populations within the Puget Sound DPS and the two hatchery steelhead populations. There are several variations of the gene diversity metric  $G_{st}$  and the common fixation index,  $F_{st}$  on which it is based (see, Meirmans & Hedrick 2011). However, regardless of which of several variants of the metric is employed the relative relationships between populations remains unchanged.

TABLE 1. Pairwise  $G_{st}$  values (below diagonal;) for five wild winter-run steelhead populations within the Puget Sound DPS. Statistical significance based on 999 permutations is shown above the diagonal. The hatchery populations are: LektH5 (Lower Elwha-Klallam Hatchery, brood year 2005), and Bogachiel Fish Hatchery. Both hatchery stocks are derived from the Puget Sound Chambers Creek hatchery stock.

LektH5	Dungeness	Dosewalips	Puyallup	Cedar	Samish	Bogachiel H	
0.000	0.001	0.001	0.001	0.001	0.001	0.001	LektH5
<b>0.025</b>	0.000	0.001	0.001	0.001	0.001	0.001	Dungeness
<b>0.024</b>	0.009	0.000	0.001	0.001	0.001	0.001	Dosewalips
0.042	0.024	0.023	0.000	0.001	0.001	0.001	Puyallup
0.042	<b>0.037</b>	<b>0.036</b>	0.031	0.000	0.001	0.001	Cedar
0.032	0.013	0.018	<b>0.032</b>	<b>0.043</b>	0.000	0.001	Samish
0.022	0.019	0.020	0.030	0.046	0.025	0.000	Bogachiel H

Values in bold show that the LEKT hatchery population is less diverged from the two Hood Canal wild populations (Dosewalips and Dungeness) than those two populations are diverged from the wild populations in the Cedar and Samish rivers, as measured by the gene diversity measure  $G_{st}$ . Moreover, several pairs of wild populations are more diverged from one another than the two Hood Canal populations are diverged from the hatchery populations. The Chambers Creek (aka "Early Winter") steelhead hatchery stock (the source broodstock of the two hatchery populations) would appear to be no more than "moderately diverged" from wild Puget Sound steelhead, taking into account that no objective criteria for level of divergence is specified by NMFS in any of the relevant documents referred to above; in fact, one might make the case that the Chambers Creek hatchery stock is no more than "minimally diverged". Consequently, this hatchery stock and hatchery programs in Puget Sound that use this stock would appear to be in either category 2b or 1b as defined in Table 1 of Jones 2015. Yet, NMFS excluded from

the threatened Puget Sound steelhead DPS this hatchery stock and all hatchery program in the Puget Sound DPS that employ this stock (see, for example, Pess et al. 2010).

The point of this table is to show that a hatchery population whose brood stock is derived from a wild (and now extinct) steelhead population from within the Puget Sound DPS but functions as a segregated program and that NMFS correctly excluded from the DPS due to its high degree of domestication and the threat that such domesticated hatchery stocks pose to wild populations (see, e.g., Pess, Myers, and Hard 2010) could be considered “no more than moderately diverged” from wild populations within an ESU due to past and ongoing gene flow as measured by common metrics of genetic divergence or distance. Absent biologically credible, measurable criteria for determining divergence, decisions to either include or exclude hatchery populations from ESA-listed ESU will be arbitrary and inconsistent across species, ESUs and DPSs.

#### Tule Fall Chinook salmon hatchery programs in the Lower Columbia River (LCR) ESU.

Of particular concern among the 23 hatchery populations NMFS has proposed to add to listed ESUs are the several Tule Fall Chinook programs in the Lower Columbia River (LCR) ESU: Deep River Net Pens-Washougal Program, Klaskanine Hatchery Program, Bonneville Hatchery Program, and Cathlamet Channel Net Pens Program (FR Notice p. 72761; Jones 2015, Table 3). Like the Puget Sound Chambers Creek steelhead hatchery programs, the broodstocks for these four programs were founded from local wild populations within the ESU (in this case from Tule Fall Chinook populations within the LCR ESU). Yet, all four are segregated harvest subsidization programs serving no conservation purpose<sup>1</sup>. High stray rates from these and other Tule Fall Chinook harvest subsidization programs throughout the LCR (pHOS levels significantly greater than those recommended by the HSRG) have been identified by the HSRG in its 2009 Columbia Review and echoed by NMFS in the final LCR Salmon and Steelhead Recovery Plan and in the 2015 Five-year Status Review Update that the proposal cites as justification for the

proposed inclusions of these programs (see Gayeski 2016 for further details and discussion of these stray rates).

The LCR Chinook Recovery Plan (Plan) divides the ESU into three strata: the Gorge, Cascade, and Coast. Due to concerns about the low number of independent populations that may exist in the Gorge stratum, the Plan requires that a total of nine populations in each of the Coast and Cascade strata attain “high” or “very high” probability of recovery in order for the entire ESU to be considered recovered and, hence, de-listed. Most of the listed wild populations in the Coast strata are small to medium size rivers draining directly into the Columbia River. All are affected by high past and/or current stray rates from segregated hatchery programs, including those proposed to be added to the ESU (see Gayeski 2016, Table 2). The high past and ongoing stray rates from these programs will alone result in the fish from these programs appearing to be “no more than moderately diverged” from wild populations when measured at the standard neutral genetic markers (microsatellites and SNPs) currently used to measure gene flow and genetic divergence between populations. In other words, absent biologically credible measurable criteria for determining similarity of populations in terms relevant to population fitness in the wild and evolutionary legacy of the ESU, the vague “criteria” of “no more than moderately diverged” will reward hatchery programs like the Tule Fall Chinook programs in the LCR with inclusion in the (currently) ESA-listed ESUs, while the listed wild populations themselves incur further reductions in their fitness and ability to recovery as a result of genetic introgression from these very same hatchery strays. (see Luikart 2016 and HSRG 2015, esp. Table 3, page 19 for discussion of some of these effects).

In addition to direct and indirect effects of hatchery straying and genetic introgression on the fitness of affected ESA-listed wild populations, past and current high levels of gene flow from hatchery populations to wild populations within ESUs/DPSs have and will continue to reduce the spatial diversity and resilience of entire ESUs/DPSs by

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<sup>1</sup> Although the hatchery programs that serve as sources for the Cathlamet channel and Deep River Net Pen programs are described as ‘integrated-harvest’ programs (HSRG 2009, Appendix E), the net pen programs

synchronizing their dynamics. This will defeat the very purpose of recovering a number of independent populations spread throughout an ESU, each likely subject to different ranges and kinds of environmental variability and habitat heterogeneity that result in a resilient portfolio of independent populations (see e.g., Hilborn et al 2003, Moore et al. 2010, Schindler et al. 2010). Recent work on Central Valley (California) Fall Chinook salmon has shown that high stray rates from segregated hatchery programs weaken the portfolio effect by synchronizing the dynamics of introgressed wild populations, while also masking the productivity and status of the affected wild populations (Williamson and May 2005, Carlson and Satterwaite 2011, Johnson et al. 2012, Satterwaite and Carlson 2015).

#### Future consequences of the proposal.

In light of these considerations, it would appear that the proposed additions of hatchery programs to current ESA-listed ESUs and DPSs raises the prospect of perpetually adding to listed ESUs and DPSs hatchery programs that have genetically introgressed listed wild populations sufficiently to establish genetic “similarity” to wild populations when measured at a small number of (as-yet unspecified) neutral genetic markers. Not only will this reward poor hatchery management practices that result in high stray rates and pHOS levels that pose threats to the fitness and recovery potential of listed wild populations, at some point the number of hatchery programs that are members of an ESU will affect the listing status of the ESU. If not, NMFS will have put itself in the uncomfortable position of having large ESA-listed segregated hatchery populations that it considers positively harmful to the survival and recovery of the wild component of the ESU.

#### Concerns about the legal validity of the proposed action.

*The proposed rule does not comply with the requirements of ESA § 4*

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themselves function as segregated programs, and in any case serve no conservation purpose.

NMFS's authority to revise its designations of listed species can only flow from ESA § 4. Section 4(c)(1) and (2) specify that NMFS "shall from time to time revise each list [of species determined to be endangered or threatened] to reflect recent determinations, designations, and revisions made in accordance with subsections (a) and (b)" and that it shall make determinations following status reviews "in accordance with the provisions of subsections (a) and (b)." In its proposed rule, NMFS proposes to redefine the species that are listed by adding nearly two dozen hatchery programs, in effect making new determinations that a newly-defined species will appear in the lists of threatened and endangered species in the Code of Federal Regulations. However, to do so legally, NMFS must do so in accordance with the provision of subsections (a) and (b), which requires NMFS to first consider five factors as well as the best scientific and commercial data available.

No analysis of the five factors in ESA § 4(a)(1) is included in the proposed rule, despite the well-documented risks and threats that hatchery programs pose to wild populations and the resulting potential for harm to the species as a whole in terms of its survival and recovery. Likewise, only bare assertions of genetic similarity appear in the single document NMFS has circulated to the public to justify its proposed rule, without any consideration of the best available scientific data available related to hatchery-wild fish interactions and the risks they pose to the long-term recovery of the listed species. Although NMFS asserts that it does not need to comply with these provisions, its proposed rule cites no statutory or regulatory authority for redefining listed species without compliance with subsections (a) and (b) of ESA § 4. Because its only possible statutory authority for NMFS's proposed action lies in subsection (a) or (c) of ESA § 4, both of which require that NMFS's decisions to be made "in accordance with the provisions of subsections (a) and (b)," NMFS will be in violation of ESA § 4 if it finalizes the proposed rule without complying with those subsections, and any decision to adopt a final rule without considering the best available scientific data and including meaningful, objective criteria for making its decision will be arbitrary and capricious.

As described above, NMFS also has not complied with the requirements of its hatchery Listing Policy to identify potential risks and threats that inclusion of these additional hatchery programs would cause to listed species and especially to their wild populations. NMFS also has not provided meaningful scientific standards or scientific evidence by which to make a decision whether to redefine the species to include the 23 hatchery programs, or evaluated the factors listed in the Listing Policy—particularly whether the programs proposed for inclusion are “managed without adequate consideration of [their] conservation effects” and whether there will be adequate long-term monitoring and evaluation of these programs—in violation of its Listing Policy and the ESA.

*NMFS must engage in consultation under ESA § 7(a)(2)*

ESA § 7(a)(2) requires a federal agency to “insure that any action authorized, funded, or carried out” by the agency “is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species.” ESA § 7(b) requires a federal agency to complete formal consultation if the agency determines that any action on its part “may affect” any listed species or critical habitat. Consultation under ESA § 7 is required when the effects of a proposed regulation may affect a listed species. *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 496 (9th Cir. 2010).

NMFS has the primary obligation under the ESA to protect listed species and to ensure their recovery to the point that they can be self-sustaining in the wild. The addition of the 23 hatchery programs and redefinition of the species listed is likely to adversely affect the species by suppressing and risking harm to the wild populations of those species, which will retard or prevent the recovery of the species to the point that they could be removed from the endangered or threatened species lists. Because of the likely adverse effects of the hatchery programs on the wild populations among the listed species, and because of the likely harm to efforts to recover the species as required by the ESA, NMFS must engage in formal consultation and issue a Biological Opinion to determine whether the addition of 23 hatchery programs to the redefined lists of species is likely to jeopardize

the continued existence of those species, and other listed salmonid species that are affected by these 23 hatchery programs, or destroy or adversely modify their designated critical habitat.

*NMFS must prepare an EIS before adding potentially harmful hatchery populations to the ESUs and DPSs*

NEPA requires federal agencies to prepare, consider, and approve an EIS for “any major federal action significantly affecting the quality of the human environment.” 42 U.S.C. 4332(2)(C); 40 C.F.R. § 1501.4(a)(1). An agency must prepare an EIS if “the agency’s action *may* have a significant impact upon the environment.” *Nat’l Parks & Conservation Ass’n. v. Babbitt*, 241 F.3d 722, 730 (9th Cir. 2001). “This is a low standard.” *Klamath Siskiyou Wildlands Ctr. v. Boody*, 468 F.3d 549, 562 (9th Cir. 2006). In addition, NEPA § 102(2)(E) requires agencies to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.”

The proposed action here, to add 23 hatcheries and redefine the species listed to which they purportedly belong, “may” have a significant impact to the environment by harming wild fish populations and retarding or preventing species affected by these 23 hatchery populations from recovering. And the lack of meaningful scientific standards in the proposed rule, as well as the scientific controversy regarding the inclusion of hatchery programs among listed species, mean that this proposed action reflects “unresolved conflicts” related to how federal agencies use their resources, including but not limited to federal funding of artificial propagation programs. Accordingly, NMFS must prepare an EIS before proceeding to finalize the proposed rule and provide *all* of the evidence it supposedly has to support its proposal to the public to allow for meaningful public comment.

Conclusion and Recommendations.

The several conflicts and inconsistencies arising from the 2005 Listing Policy and reflected in the current proposal make it is necessary to re-consider the Listing Policy and the current proposal that is based on that Policy. We therefore recommend and request:

- A. NMFS postpone the proposal and produce a full EIS of the proposal together with proper alternatives analysis to provide the interested public with all of the evidence underlying the proposed rule to allow for meaningful public comment and democratic decisionmaking related to the proposal.
- B. NMFS re-issue its proposed rule including an evaluation of the five listing factors and best available science as required by ESA § 4 as well as making available to the public all of the evidence underlying the proposed rule to allow for meaningful public comment.
- C. NMFS prepare a Biological Opinion regarding whether the proposed regulation will jeopardize the continued existence of salmonid species affected by the 23 hatchery programs or destroy or modify their critical habitat.
- D. NMFS convene an advisory panel composed of a balance of scientists from NMFS' Northwest and Southwest Fisheries Science Centers and independent university scientists to:
  - evaluate the 2005 Hatchery Listing Policy and recommend revisions or alternatives for evaluating the relationship of the several kinds of hatchery programs recognized since 2005;
  - identify the appropriate scientific bases for determining the relationship of the various kinds of hatchery populations to the wild, naturally spawning populations that are the basis for identifying ESUs and DPSs and for determining their ESA-listing status;
  - recommend the appropriate genetic and other characteristics of wild salmonid populations that are necessary to consider and quantify in making listing decisions and, thereby, for determining whether or not any hatchery population warrants inclusion in an ESU or DPS; and,
  - recommend the appropriate genetic markers and associated statistical analyses to be employed in making determinations of the relationships between wild

populations within ESUs and DPSs and the relationship of hatchery populations within ESUs and DPSs to the component wild populations.

Literature Cited.

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