

Hood Canal and 8.8 percent on the Strait of Juan de Fuca populations.

NMFS' analysis indicates that the proposed fishing regime (BCR) would not result in escapement significantly less than if fishing had not occurred at all. These exploitation rates were evaluated by NMFS and found to meet the requirements of Limit 6 of the ESA 4(d) Rule. This included the NMFS' recommended determination that the RMP will not appreciably reduce the likelihood of survival and recovery of the ESU in the wild. Based on this analysis, excluding populations that are below the critical thresholds (which require Co-managers to investigate additional harvest management measures), a further reduction in the BCR average exploitation rate is not needed to meet the Limit 6, ESA 4(d) Rule requirements.

#### References

A complete list of all references cited herein is available upon request (see **ADDRESSES**), or through the documents available on the Sustainable Fisheries web site (see Electronic Access, under the heading **SUPPLEMENTARY INFORMATION**).

#### Authority

Under section 4 of the ESA, NMFS, by delegated authority from the Secretary of Commerce, is required to adopt such regulations as it deems necessary and advisable for the conservation of the species listed as threatened. The ESA salmon and steelhead 4(d) rule (65 FR 42422, July 10, 2000) specifies categories of activities that are adequately regulated to provide for the conservation of listed salmonids and sets out the criteria for such activities. The rule further provides that the prohibitions of paragraph (a) of the rule do not apply to actions undertaken in compliance with a RMP developed jointly by the State of Washington and the Tribes (joint plan) and determined by NMFS to be in accordance with the salmon and steelhead 4(d) rule (65 FR 42422, July 10, 2000).

Dated: June 7, 2001.

#### Chris Mobley,

Acting Chief, Endangered Species Division,  
Office of Protected Resources, National  
Marine Fisheries Service.

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

#### 50 CFR Part 223

[I.D. 052301D]

#### Endangered and Threatened Species; Take of Anadromous Fish

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice of final determination and discussion of underlying biological analysis.

**SUMMARY:** NMFS has evaluated the joint resource management plan (RMP) for harvest of Puget Sound chinook salmon provided by the Washington Department of Fish and Wildlife (WDFW) and the Puget Sound Treaty Tribes pursuant to the protective regulations promulgated for Puget Sound chinook salmon under the Endangered Species Act (ESA). The RMP specifies the future management of commercial, recreational and tribal salmon fisheries that potentially affect listed Puget Sound chinook salmon.

This document serves to notify the public that NMFS, by delegated authority from the Secretary of Commerce, has determined pursuant to the Tribal Rule and the government-to-government processes therein that implementing and enforcing the RMP will not appreciably reduce the likelihood of survival and recovery of the Puget Sound chinook salmon Evolutionarily Significant Unit (ESU).

**DATES:** The final determination on the take limit was made on April 27, 2001.

**ADDRESSES:** Sustainable Fisheries Division, National Marine Fisheries Service, 7600 Sand Point Way NE, Seattle, Washington 98115-0070.

**FOR FURTHER INFORMATION CONTACT:** Susan Bishop at: 206/526-4587, or e-mail: [susan.bishop@noaa.gov](mailto:susan.bishop@noaa.gov) regarding the RMP.

**SUPPLEMENTARY INFORMATION:** This notice is relevant to the Puget Sound chinook salmon (*Oncorhynchus tshawytscha*) ESU.

#### Electronic Access

The full texts of NMFS' determination, and the final Evaluation are available on the Internet at the NMFS, Sustainable Fisheries Division web site at: <http://www.nwr.noaa.gov/1sustfsh/limit6/index.html>.

## Background

In February of this year, the WDFW and the Puget Sound Treaty Tribes (Co-managers) provided a jointly developed RMP that encompasses Washington coastal and Puget Sound salmon fisheries affecting the Puget Sound chinook salmon ESU. The RMP is the harvest management component of a larger Puget Sound management and conservation planning effort called Comprehensive Chinook. Harvest objectives specified in the RMP account for fisheries-related mortality of Puget Sound chinook throughout its migratory range DBU\*COM003\*MDNM from Oregon and Washington to Southeast Alaska. The RMP also includes implementation, monitoring and evaluation procedures designed to ensure fisheries are consistent with these objectives. On March 5, 2001, at 66 FR 13293, NMFS published a notice of availability for public review and comment in the **Federal Register**, on its evaluation of how the Puget Sound chinook RMP addressed the criteria in § 223.203 (b)(4) of the ESA 4 (d) rule (65 FR 42422).

As required by § 223.203 (b)(6) of the ESA 4 (d) rule, NMFS must determine pursuant to 50 CFR 223.209 and pursuant to the government to government processes therein whether the RMP for Puget Sound chinook would appreciably reduce the likelihood of survival and recovery of the Puget Sound chinook and other affected threatened ESUs. NMFS must take comments on how the RMP addresses the criteria in § 223.203 (b)(4) in making that determination.

#### Discussion of the Biological Analysis Underlying the Determination

The RMP's approach to establishing management objectives is risk averse and progressive, representing significant improvements from past management practices, including (1) management objectives based on natural production and natural spawning have been established for the majority of naturally producing populations which historically had self-sustaining chinook populations and for which data is available. These management units represent the entire range of life history types (races) and geographic distribution that comprise the Puget Sound ESU; (2) the RMP derives exploitation rates based on conservative, quantifiable standards directly related to recovery, which take into account scientific uncertainty; (3) in isolating the effect of harvest on survival and recovery, the approach is valuable in ensuring that harvest actions do not

impede recovery, regardless of the contribution of the other Hs (hatcheries, habitat, hydropower). At the same time, the approach is linked to the other Hs by taking into account current environmental and habitat conditions; (4) the proposed objectives are generally consistent with NMFS' Rebuilding Exploitation Rates (RER), population standards previously used to assess the likelihood of survival and recovery of the Puget Sound ESU. These standards included an assessment of the long-term effects of exploitation rates at these levels; (5) the RMP includes specific and integrated monitoring programs to maintain and improve population assessment methodologies as well as evaluate the effectiveness of harvest management actions and objectives. The RMP also includes provisions for annual progress reports and a 5-year comprehensive plan evaluation. These reports will assess compliance with, parameter validation of, and effectiveness of the RMP objectives. The inclusion of new information through monitoring and evaluation provides greater assurance that objectives will be achieved in future seasons.

A more detailed discussion of NMFS' Evaluation is on the Sustainable Fisheries Division web site (see Electronic Access, under the heading, **SUPPLEMENTARY INFORMATION**).

#### **Summary of Comments Received in Response to the Proposed Evaluation and Recommended Determination**

NMFS and the Co-managers recognize that there is a need for more information regarding the Puget Sound ESU. For this reason, the application of Limit 6 of the ESA 4 (d) rule to the RMP is in effect from May 1, 2001, through April 30, 2003. Prior to the end of that period, NMFS will evaluate all of the information obtained and determine whether to extend the application of Limit 6 of the ESA 4(d) rule to the RMP. This document also includes a summary of the underlying biological analysis used in the determination (Evaluation).

NMFS published notice of its proposed Evaluation and recommended determination on the RMP for public review and comment on March 5, 2001 (66 FR 13293). During the 21-day public comment period, three organizations and one private citizen submitted comments to NMFS. Several of the comments were addressed in NMFS' final Evaluation and Recommended Determination document, but no changes were required to the RMP. Based on its Evaluation and taking into account the public comments, NMFS issued (April 27, 2001) its final

determination on the Puget Sound chinook RMP.

Those comments related to NMFS' proposed evaluation and recommended determination (Evaluation) are summarized here. Similar comments have been combined where appropriate.

#### **Comments and Responses**

*Comment 1:* Several comments spoke to the legality of the listing itself, the ESA 4(d) rule, the treatment of hatchery fish under the ESA, and the allowance of direct take.

*Response:* NMFS understands the concerns of the commenters on these issues, but they are not relevant to the Evaluation itself. NMFS addressed these issues in its response to public comment at the time of promulgation of the ESA 4(d) rule, the decision to list, and in various NMFS technical documents and reports.

*Comment 2:* Two commenters stated that they were denied the opportunity to provide meaningful comment on the Evaluation because of (1) difficulty in locating the Evaluation on the website and (2) the availability of the Evaluation but not the RMP itself.

*Response:* The website address for NMFS Northwest Region as well as the telephone number and email address of the NMFS contact person were included in the **Federal Register** notice, dated March 5, 2001. When the FRN was first published, NMFS received several calls and e-mails from reviewers asking for assistance in locating and printing the Evaluation. The difficulties were found to be a combination of software and web design problems, which NMFS corrected and improved by the second day of notification. The FRN also listed the same contact information in order to obtain further information on the RMP. The RMP was, in fact, provided to several reviewers on request. The timeliness in which the problems were solved and the availability of NMFS staff to assist reviewers resulted in no substantial effect on the opportunity to review and comment.

*Comment 3:* Commenters expressed concern (1) about a 2-year approval of the RMP despite acknowledged data uncertainties, asserting that the RMP fails to meet the requirements of the ESA 4(d) rule, and (2) it constituted an inconsistency in the treatment of fishery activities versus habitat activities.

*Response:* Limit 6 of the ESA 4 (d) rule requires that NMFS determine whether (1) the RMP addresses the criteria as referenced in either Limit 4 or 5, and (2) that the RMP does not appreciably reduce the likelihood of survival and recovery. NMFS has determined that the Puget Sound

chinook RMP does adequately address each of the criteria as referenced in Limit 4, and that it would not appreciably reduce the survival and recovery of the Puget Sound chinook ESU. The ESA requires that in making that decision, NMFS must use the best available scientific information.

However, NMFS recognizes that there will be some uncertainty associated with whatever information is available, and considers the degree of uncertainty when making its decisions. To address these uncertainties, the data analyses incorporated variability around the productivity and capacity stock-recruit parameters, survival variables and management error (NMFS 2000b, WDFW/PSTT 2001). In making its decision on the RMP, NMFS determined that the data uncertainties did not represent a significant risk in the short term to the ESU, and that the benefits to the ESU in immediate implementation of the plan outweighed the risks represented by the uncertainty in the data. NMFS believes that the 2-year time limit is an adequate amount of time to address the data uncertainties without increased risk to the ESU, and that it corresponds with the current schedule for completion of the tasks assigned to the Puget Sound and Olympic Peninsula Technical Recovery Team (TRT), including establishment of recovery goals.

The ESA 4 (d) rule does not specify the duration that take limits must be applied for activities approved under any of the Limits in the 4 (d) rule. This approach is consistent with the implementation of other sections of the ESA. For example, both the section 7 biological opinions and section 10 permits that NMFS has issued have varied from single year to multi-year duration. Therefore, the two-year application of take limits for the RMP and the treatment of data uncertainty do not represent inconsistency in treatment among the activities considered under the 4 (d) rule.

*Comment 4:* One commenter expressed concern about a lack of viable thresholds for several of the populations where natural production occurs.

*Response:* The RMP identified viable thresholds for all of the management units where natural production occurs and self-sustaining natural production occurred historically, and for all populations for which the Co-managers believed data were sufficient. Where the Co-managers believed data were insufficient to define viable thresholds for individual populations, populations were aggregated and a viable threshold was determined for the management unit as a whole. This is consistent with

the ESA 4 (d) rule which allows populations to be aggregated into management units "when dictated by information scarcity." (4 (d) rule Limit 4, Criteria 1). NMFS derived viable thresholds for several populations where the Co-managers felt the data were insufficient, and determined that the RMP objectives for the management unit were sufficiently protective of the individual populations, and the ESU as a whole. However, NMFS does not believe the original Evaluation was clear on this point and has revised it to clarify this information.

*Comment 5:* Two of the commenters expressed concern that the Evaluation inadequately addresses the lack of recovery goals and management objectives for productivity in the RMP.

*Response:* The ESA 4(d) rule does not require that a RMP include recovery goals. This is taken up in the separate recovery planning process. The 4 (d) rule does require that the viable and critical thresholds be consistent with the concepts in the Viable Salmon Populations document (VSP)(McElhaney *et al.* 2000). There is very limited direct information on the current capacity and productivity of most chinook systems in Puget Sound to define explicit objectives for productivity. However, information on productivity and capacity can be inferred by deriving population dynamic relationships for management units and populations based on available escapement, survival and age data. Productivity and capacity are components within the formulas used to derive several of the management objectives in the RMP, and all of NMFS' RER standards. In areas where this information was not available, the RMP escapement and exploitation rate management objectives used escapement goals adopted in the Puget Sound Salmon Management Plan that were based on information from the 1960s and 1970s. The Puget Sound Salmon Management Plan (PSSMP) goals are probably conservative in that they likely overestimate the current capacity and productivity of the chinook habitat when compared with current habitat condition. NMFS evaluated these escapement goals against its own population standards and VSP guidance. Using this approach, NMFS concluded the objectives in the RMP were consistent with the concepts in the VSP document as required by the 4 (d) rule criteria.

*Comment 6:* One commenter expressed concern that the Evaluation did not adequately address the impacts of fishing on spatial structure since the RMP did not define take targets for

spatial structure. It suggested there should be impact studies of fishing actions on the spatial structure of chinook salmon populations.

*Response:* Providing adequate spatial structure for salmonid populations requires that the habitat is of sufficient quality and quantity, that it is connected, and that the timing and biological characteristics of the salmon themselves provide for the use of the available habitat. Fishing activities can affect the return timing and biological characteristics of the fish (age, size, sex), and in some cases the pattern of spawning. Generally, this occurs when a certain segment of the population is disproportionately harvested over a period of time. However, as stated in the Evaluation, there is currently no information to indicate that these fisheries are having deleterious effects on specific segments of the populations, and certainly not to the ESU as a whole. For example, NMFS' status review (Myers *et al.*, 1998) did not discern any trends in size, weight, fecundity or other life history traits for Puget Sound chinook that might be a result of fishing activities. NMFS sees no reason to change its conclusion on this issue. However, NMFS agrees with the commenter that the potential effects of fishing activities on spatial structure should continue to be monitored and evaluated for shifts in run or spawning timing, or biological characteristics attributable to fishing activities. Such monitoring was included in the implementation terms accompanying the final determination.

Evaluating spatial structure at the ESU level, NMFS concluded that the management units represent the full complement of the natural chinook populations within Puget Sound and include all principal life history traits (spring, summer and fall runs).

*Comment 7:* One of the commenters expressed concern about the quality of the coded wire tag (CWT) data underlying the derivations of the rebuilding exploitation rates (RERs) and their connection to the Maximum Sustainable Yield (MSY) escapement goals established in the PSSMP.

*Response:* The MSY-based RERs in the RMP use current information on spawning escapement, age structure and survival. They are not based on the PSSMP escapement goals. At this time, CWT data provide the best available information to estimate survival rates by age and mortality rates by fishery. Wild stock tagging in Puget Sound has been tried in several areas, but the resulting mortality has been high, and there have not been enough wild juveniles captured to result in sufficient tag

recoveries to estimate stock composition of fisheries or population distribution with confidence. However, where both wild and hatchery stocks of the same outmigrant type have been tagged successfully, significant differences in distribution or exploitation rate between the two groups have not been detected. The simulation models used to assess the RERs incorporated uncertainty. Until more direct estimates are available, this represents the best available scientific information. Management performance will be evaluated annually and the management objectives will be revised as significant new information becomes available.

*Comment 8:* Commenters expressed concern about the magnitude of the exploitation rate and escapement threshold objectives, especially relative to the PSSMP escapement goals.

*Response:* For the purposes of evaluating the RMP under the requirements of the ESA 4 (d) rule, it is not appropriate to comment on the objectives of the RMP relative to those in other management plans. NMFS evaluated the RMP management objectives against NMFS' independently derived population standards and the guidelines provided by the VSP document. NMFS' guidelines and standards were developed through a thorough review of the ecological, conservation and salmonid literature (McElhaney *et al.*, 2000) or through independent analysis of spawner-recruit relationships based on the best available estimates of escapement, hatchery contribution to escapement, natural production and survival. Acknowledging data uncertainties, NMFS' analysis incorporated variability in capacity, productivity, management error and survival (NMFS 2000b). NMFS concluded that the RMP objectives are consistent with NMFS' guidelines.

*Comment 9:* One commenter questioned the need for exploitation rate objectives for Category 2 populations (those systems where established chinook populations existed historically but have largely been replaced by hatchery production) and the inclusion of the Hoko River chinook in the RMP.

*Response:* One of the ESA 4 (d) rule criteria is to establish escapement or exploitation rate objectives for each of the populations or management units within the ESU. It is up to the Co-managers how to structure these objectives. Exploitation rate objectives for Category 2 populations were included in the RMP provided to NMFS for review and evaluation consistent with that criterion. NMFS believes that it is important to establish management objectives for these populations since

they may play an important role in recovery. Hatchery contribution to the natural escapement of these populations is probably significant. However, information on the amount of contribution is limited for most of these systems. As more information becomes available on stray rates, and the hatchery and harvest programs are successfully integrated, the management objectives may be revised and refined to better reflect the natural production of the systems.

The harvest management component of the Comprehensive Chinook Management Plan was provided to NMFS for evaluation as an RMP under Limit 6 of the 4(d) rule. However, it was developed as part of a larger planning effort by the Co-managers, unrelated to ESA, that encompasses the western Strait of Juan de Fuca, where the Hoko River is located, and the rest of Puget Sound. The Hoko River chinook population is not part of the Puget Sound chinook salmon ESU, and NMFS did not include it in its evaluation of the RMP under Limit 6 of the 4 (d) rule.

*Comment 10:* Two commenters expressed concern about the inclusion of hatchery fish in determining whether escapement thresholds have been achieved.

*Response:* The composition of escapement thresholds is described in Table 1 of the Evaluation. Escapement thresholds are defined in terms of natural origin recruits for six of the ten management units managed for natural production. Three of the remaining four of these management units use hatchery production to maintain and rebuild the associated chinook populations. In areas with significant hatchery production, it is currently difficult or impossible to distinguish between hatchery-origin and wild-origin fish on the spawning grounds. Mass-marking programs have been or will be implemented for most hatcheries releasing chinook in Puget Sound, allowing separation of returning hatchery and natural origin adults. However, marked adults will not return for several years. In addition, there are not currently hatchery contribution guidelines in place for the proportion of hatchery fish on the spawning grounds. Both the Hatchery and Genetic Management Plans which NMFS is in the process of developing with the Co-managers, and ultimately the recovery plan for Puget Sound chinook will address this issue. When this information is available, management objectives may be revised, as per the evaluation requirements of the RMP.

*Comment 11:* One commenter expressed confusion over the terms used to describe escapement threshold and

exploitation rate objectives in the Evaluation, and asked for more specificity on the actions that would be taken should escapements fall below the thresholds.

*Response:* NMFS acknowledges the use of the different terms in the Evaluation may have been confusing and has revised the Evaluation to clarify the definition and use of these terms. Long-term abundance and low abundance thresholds are terms the state and tribal Co-managers use in the RMP to describe lower and upper escapement objectives for fisheries management. Critical and viable thresholds are terms used by NMFS in its ESA 4(d) rule and in the VSP document for ESA purposes. NMFS evaluates the long-term and low abundance management objectives provided in the RMP against its guidelines for viable and critical thresholds to see whether the RMP thresholds, used for a variety of fishery management objectives, meet the requirements under ESA. The exploitation rate objectives are in terms of brood year exploitation rates.

Examples of the types of fishery actions that would be taken should escapements fall below their lower abundance thresholds are captured in section H of the Evaluation, and in appendices A and C of the RMP. The actions taken must be appropriate to the circumstances and will vary depending on the population, distribution of fishery mortality and the cause of the failure to meet the escapement objectives. A generic, one-size-fits-all response is rarely the most beneficial to either the resource or fishery objectives. Fishery closures and restrictions are among the actions listed in the RMP, and increasingly among the actions the Co-managers have voluntarily taken in recent years in response to declines in chinook abundance.

*Comment 12:* One commenter disagreed with NMFS' statement that an exploitation rate rather than a fixed-escapement goal approach would result in rebuilding of Puget Sound chinook populations. The commenter uses an example from the Snohomish system to support its position.

*Response:* The comments reflect a misunderstanding of the analyses used to derive the objectives in the RMP and the implementation of those objectives. The exploitation rates are designed to provide an 80-percent probability of exceeding the upper escapement threshold (the viable or long-term escapement threshold) within 25 years, starting from the existing levels of spawning escapement. In other words, resulting in a high probability of

rebuilding chinook populations to viable escapement levels, not merely meeting the critical or low-abundance escapement thresholds as asserted by the commenter. This approach is designed such that the upper escapement level will increase as habitat capacity increases, integrating harvest with habitat recovery and restoration actions. In effect, this provision guards against inappropriately increasing exploitation rates when habitat capacity or productivity increases. The exploitation rates are maximum rates that fisheries may be managed below, but cannot be exceeded. In fact, managers have consistently set annual exploitation rates below exploitation rate objectives over the last several years. If management units and populations do not rebuild as expected, the RMP contains provisions to revise exploitation rates if the data evaluation shows that fishery activities are impeding rebuilding.

Some of the information the commenter uses to support its assertion is incorrect. The 1996 Puget Sound run size of Snohomish summer/fall chinook wild adults was approximately 5,200 rather than the 8,000 originally reported. The revised estimate was based on the results of an otolith marking study that enables managers to better distinguish between hatchery and wild spawners. With a run size of 5,200, the spawning escapement of 5,250 would not have been achieved even with closure of all fisheries in Puget Sound. The exploitation rate in southern U.S. fisheries was very low, estimated to be less than 10 percent. With this correction, the data appear to support the contention of the Evaluation that exploitation rates have contributed to higher escapement in years of higher return. In both 1996 and 1998, the post-season return was higher than preseason estimates, the exploitation rates remained very low, and the escapements were correspondingly higher. In 1996, the pre-season run size expectation was 4,200, the post-season return was 5,200, and the escapement was 4,851. In 1998, the preseason terminal run size was expected to be 5,600, the post-season return was 6,400, and the escapement was 6,304. Based on this information, NMFS sees no need to change its evaluation of the RMP.

*Comment 13:* The commenter stated that the Evaluation does not address what it perceived are inconsistencies with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) policies regarding overfishing and the use of biological reference points.

*Response:* NMFS' evaluation of an RMP must conclude that it is consistent with the requirements of the ESA as defined by Limit 6 of the 4(d) rule for Puget Sound chinook. It does not involve procedures under the Magnuson-Stevens Act. Stocks listed under the ESA is one of three exceptions to the application of the general overfishing criteria under Amendment 14 to the Pacific Coast Salmon Plan (FMP) (PFMC 2000). Instead, fishery actions are automatically required to be consistent with the jeopardy standards and recovery objectives for listed stocks. As explained in the FMP, the jeopardy standards and recovery plans developed by NMFS for listed populations are considered interim rebuilding plans. Although NMFS' jeopardy standards and recovery plans may not by themselves recover listed populations to historical MSY levels within 10 years, they are sufficient to stabilize populations until freshwater habitats and their dependent populations can be restored and estimates of MSY developed consistent with recovered habitat conditions. As species are delisted, the Pacific Fisheries Management Council will establish conservation objectives with subsequent overfishing criteria and manage to maintain the stocks at or above MSY levels (PFMC 2000).

*Comment 14:* One commenter stated that the Evaluation failed to adequately address the uncertainty in fisheries management models, and failed to consider the effect of fishing on life history traits such as body size and age structure.

*Response:* NMFS agrees that having finer resolution fishery impact models is desirable, but is often limited by the level of available information. The commenter appears to suggest that the current fishery models are not fishery, time, or stock specific, nor do they contain information on maturation rates, age, or stock distribution. In fact, the Fisheries Regulation and Assessment Model (FRAM) used in fishery planning assesses stock-specific fishing mortality by time step (3-month blocks), fishery (catch area by general gear type) and age (ages 2-5). The model estimates stock-specific mortality using age-specific exploitation rates, maturation rates by size category, and stock distribution data, based on CWT recoveries. The model developed by the WDFW in the early 1970's, to which the commenter refers, was a pioneering effort in harvest management models. However, it was developed prior to the advent of the CWT data system and the stock specific data on catch composition and stock

distribution that it provides. The current models, including FRAM, are significant improvements over the initial WDFW effort due to both increased knowledge and greater computing power.

The commenter relied on information for California chinook populations to infer the same effects on Puget Sound chinook. However, although NMFS concurs that fishing activities may select for body size, and may, therefore, have an indirect effect on age structure, NMFS' status review (Myers *et al.*, 1998) did not discern any trends in size, weight, fecundity or other life history traits for Puget Sound chinook that might be a result of fishing activities. If, however, deleterious effects are detected, the RMP commits to taking the appropriate measures such as gear modification or adoption of size limits. The RMP identifies the need to conduct analysis of harvest regulations for existence of size or sex selectivity and the extent of the potential impact. Therefore, NMFS does not agree with the commenter's assessment and sees no need to revise its conclusion.

*Comment 15:* One commenter suggested that without more detail on the parameters and assumptions made in the simulation modeling, it could not verify the Evaluation's conclusion that the RMP was sufficiently risk averse.

*Response:* As part of its evaluation, NMFS compared the RMP objectives with its own population standards and viability guidelines for the Puget Sound chinook ESU. The approach and assumptions for the derivation of these standards can be found in two previous biological opinions, the 2000-2001 Pacific Fisheries Management Council and Puget Sound fisheries (NMFS 2000a) and the implementation of the 1999 Pacific Salmon Treaty agreement (NMFS 1999), and the VSP document (McElhaney *et al.*, 2000). The first two documents are available on the NMFS Northwest Region web site and the VSP document is available on the NMFS Northwest Fisheries Science Center web site. Any of the three documents is also available on request.

*Comment 16:* The commenter suggests that by managing many units simultaneously for extinction probabilities, the overall extinction probability for the ESU will be greater than the extinction probability for any individual population.

*Response:* NMFS disagrees with the commenter's conclusion for several reasons. First, the commenter's formula assumes that the population dynamics of the 21 Puget Sound chinook populations are independent. In fact, population abundance is highly correlated. Second, the commenter fails

to take into account the function of lower abundance thresholds in reducing extinction probabilities. The simulation models used to derive the exploitation rate objectives assumed that the rates would be applied at all abundance levels, when, in fact, fisheries will be further constrained when abundance falls below the low abundance thresholds. Finally, the commenter fails to note that the lower abundance thresholds against which the exploitation rates are derived are generally higher than quasi-extinction thresholds used in formal viability assessment. Therefore, the derivation of the management objectives does not involve assessment of absolute extinction probabilities, but rather probabilities of declining below a level significantly higher than extinction, and, in fact, in most cases, significantly higher than VSP critical abundance thresholds, for each population.

#### References

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#### Authority

Under section 4 of the ESA, NMFS, by delegated authority from the Secretary of Commerce, is required to adopt such regulations as it deems necessary and advisable for the conservation of the species listed as threatened. The ESA salmon and steelhead 4 (d) rule (65 FR 42422, July 10, 2000) specifies categories of activities that are adequately regulated to provide for the conservation of listed salmonids and sets out the criteria for such activities. The rule further provides that the prohibitions of paragraph (a) of the rule do not apply to actions undertaken in compliance with a RMP developed jointly by the State of Washington and the Tribes and determined by NMFS to be in accordance with the salmon and steelhead 4 (d) rule (65 FR 42422, July 10, 2000).

Dated: June 7, 2001.

#### Chris Mobley,

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