State and county	Location and case No.	Date and name of newspaper where notice was published	Chief executive officer of community	Effective date of modification	Community No.
Bryan	Unincorporated areas of Bryan County (10–04–4427P).	April 6, 2011; April 13, 2011; *The Bryan County News*.	The Honorable Jimmy Burnsed, Chairman, Bryan County Board of Commissioners, 51 North Courthouse Street, Pembroke, GA 31321.	August 11, 2011	130016
Forsyth	Unincorporated areas of Forsyth County (11–04–1171P).	March 23, 2011; March 30, 2011; *The Forsyth County News*.	The Honorable Brian R. Tam, Chairman, Forsyth County Board of Commissioners, 110 East Main Street, Suite 210, Cumming, GA 30040.	July 28, 2011	130312
Montana:					
Yellowstone	Unincorporated areas of Yellowstone County (10–08–0854P).	March 31, 2011; April 7, 2011; *The Billings Gazette*.	The Honorable Bill Kennedy, Chairman, Yellowstone County Board of Commissioners, P.O. Box 35000, Billings, MT 59107.	August 5, 2011	300142
Nevada:					
Douglas	Unincorporated areas of Douglas County (10–09–3566P).	April 6, 2011; April 13, 2011; *The Record-Courier*.	The Honorable Michael A. Olson Chairman, Douglas County Board of Commissioners, 3605 Silverado Drive, Carson City, NV 89705.	August 11, 2011	320008
North Carolina:					
Caldwell	Unincorporated areas of Caldwell County (10–04–7739P).	January 20, 2011; January 27, 2011; *The Lenoir News-Topic*.	Mr. Stan Kiser, Caldwell County Manager, P.O. Box 2200, 905 West Avenue Northwest, Lenoir, NC 28645.	May 27, 2011	370039
Columbus	Unincorporated areas of Columbus County (10–04–6815P).	April 7, 2011; April 14, 2011; *The News Reporter*.	Mr. Giles E. Byrd, Chairman, Columbus County Board of Commissioners, 112 West Smith Street, Whiteville, NC 28472.	August 12, 2011	370305
Durham	City of Durham (10–04–4374P).	March 30, 2011; April 6, 2011; *The Herald-Sun*.	The Honorable William V. Bell, Mayor, City of Durham, 101 City Hall Plaza, Durham, NC 27701.	August 4, 2011	370086

(Catalog of Federal Domestic Assistance No. 97.022, ''Flood Insurance.'')

Dated: June 10, 2011.

Sandra K. Knight,

Deputy Federal Insurance and Mitigation Administrator, Mitigation, Department of Homeland Security, Federal Emergency Management Agency.

[FR Doc. 2011–15308 Filed 6–17–11; 8:45 am]

BILLING CODE 9110–12–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 223

[Docket No. 110531311–1310–02]

RIN 0648–XA407

Listing Endangered and Threatened Species: Threatened Status for the Oregon Coast Coho Salmon Evolutionarily Significant Unit

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

ACTION: Final rule.

SUMMARY: We, the National Marine Fisheries Service (NMFS), issue a final determination to retain the threatened listing for the Oregon Coast (OC) Evolutionarily Significant Unit (ESU) of coho salmon (*Oncorhynchus kisutch*) under the Endangered Species Act (ESA). This listing determination will supersede our February 11, 2008, listing determination for this ESU. Our February 11, 2008, determinations establishing protective regulations under ESA section 4(d) and designating critical habitat for this ESU remain in effect.

DATES: Effective June 20, 2011.

ADDRESSES: NMFS, Protected Resources Division, 1201 NE., Lloyd Blvd., Suite 1100, Portland, OR 97232.

FOR FURTHER INFORMATION CONTACT: Eric Murray at the address above or at (503) 231–2378, or Marta Nammack, NMFS, Office of Protected Resources, (301) 713–1401. The final rule, references and other materials relating to this determination can be found on our Web site at *http://www.nwr.noaa.gov* or by contacting us at the address above.

SUPPLEMENTARY INFORMATION: We first proposed to list the OC coho salmon ESU as threatened under the ESA in 1995 (60 FR 38011; July 25, 1995). Since then, we have completed several status reviews for this species, and its listing classification has changed between threatened and not warranted for listing a number of times. The ESA listing status of the OC coho salmon ESU has been controversial and has attracted litigation in the past. A complete history of this ESU's listing status can be found in our May 26, 2010, proposal to retain the threatened listing for this ESU (75 FR 29489). As part of a legal settlement agreement in 2008, we committed to complete a new status review for this ESU.

The steps we follow when evaluating whether a species should be listed under the ESA are to: (1) Delineate the species under consideration; (2) review the status of the species; (3) consider the ESA section 4(a)(1) factors to identify threats facing the species; (4) assess whether certain protective efforts mitigate these threats; and (5) evaluate and assess the likelihood of the species' future persistence. We provide more detailed information and findings regarding each of these steps later in this final rule.

To aid us in the status review, we convened a team of Federal scientists, known as a biological review team (BRT). The BRT for this OC coho salmon ESU status review was composed of scientists from our Northwest and Southwest Fisheries Science Centers and the USDA Forest Service. As part of its evaluation, the BRT considered ESU boundaries, membership of fish from hatchery programs within the ESU, the risk of extinction of the ESU, and threats facing this ESU. The BRT evaluated the best available information on ESU viability criteria (abundance, ESU productivity, spatial structure, and diversity). It also considered factors affecting ESU viability, including marine survival, trends in freshwater habitat complexity, and potential effects of global climate change. It considered the work products of the Oregon/Northern California Coast Technical Recovery Team and information

submitted by the public, State agencies, and other Federal agencies.

We asked the BRT to assess the level of extinction risk facing the species, describing its confidence that the species is at high risk, moderate risk, or neither. We described a species with high risk as one that is at or near a level of abundance, productivity, and/or spatial structure that places its persistence in question. We described a species at moderate risk as one that exhibits a trajectory indicating that it is more likely than not to be at a high level of extinction risk in the foreseeable future, with the appropriate time horizon depending on the nature of the threats facing the species and the species' life history characteristics. The preliminary report of the BRT deliberations (Stout *et al.,* 2010) describes OC coho salmon biology and assesses demographic risks, threats, and overall extinction risk.

On May 26, 2010, we announced completion of the status review and a proposal to retain the threatened listing for this ESU (75 FR 29489). We solicited comments and suggestions from all interested parties including the public, other governmental agencies, the scientific community, industry, and environmental groups. Specifically, we requested information regarding: (1) Assessment methods to determine this ESU's viability; (2) this ESU's abundance, productivity, spatial structure, or diversity; (3) efforts being made to protect this ESU or its habitat; (4) threats to this ESU; and (5) changes to the condition or quantity of this ESU's habitat.

Summary of Comments Received in Response to the Proposed Rule

We solicited public comment on the proposed listing of the OC coho salmon ESU for a total of 60 days. We did not receive a request for, nor did we hold, a public hearing on the proposal. Public comments were received from 8 commenters, and copies of all public comments received are available online at: *http://www.regulations.gov/#!docketDetail;dct=FR+PR+N+O+SR+PS;rpp=10;so=DESC;sb=postedDate;po=0;D=NOAA-NMFS-2010-0112*.

Several commenters stated that they were in favor of retaining the threatened listing for this ESU but did not present any specific information to support their position. Summaries of the substantive comments received, and our responses, are provided below, organized by category.

In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review establishing minimum peer review standards, a transparent process for public disclosure, and opportunities for public input. In accordance with this guidance, we solicited technical review of the preliminary status report (Stout *et al.,* 2010) from nine independent experts selected from the academic and scientific community. Each reviewer is an expert in either salmon biology, fish risk assessment methodology, ocean/salmon ecology, climate trend assessment, or landscape-scale habitat assessment. Eight reviewers responded to our request.

After considering the information provided during the public comment period and by peer reviewers, the BRT prepared a final report (Stout *et al.,* 2011). In preparing its final report, the BRT also considered some new scientific information that became available since the issuance of its preliminary report.

Response to Comments

There was substantial overlap between the comments from the peer reviewers and the substantive public comments. The comments were sufficiently similar to warrant a response to the peer reviewer's comments through our general responses below. The Oregon Department of Fish and Wildlife (ODFW) provided the most substantial technical comments. In the Pacific Northwest, there is unique co-management of salmon and their habitat shared by Federal and State agencies and tribes. Due to this shared management, we specifically identify ODFW's comments in the following section. Other individuals, agencies, and organizations who submitted comments during the public comment period are identified as ''commenters,'' while peer reviewers are referred to a ''reviewers.''

Productivity Trends

Comment 1: ODFW stated ''* * * the BRT makes generalizations regarding trends in coho salmon productivity that are not consistent with patterns of productivity observed over the last twelve years.''

Response: After reviewing its report in response to ODFW's comments, the BRT revised the ''Current Biological Status'' section extensively to add clarity and better support for their findings. In particular, they added additional information on the historical abundance of the ESU and 20th century trends in two measures of productivity: Pre-harvest recruits per spawner and the natural return ratio. The BRT concluded that there clearly has been a long-term decline in recruits per spawner during the 20th century, consistent with what has been found in previous status reviews (Weikamp *et al.,* 1995; Good *et al.,* 2005). The BRT found no evidence that this decline has reversed. In fact, recruits from the return years 1997–1999 failed to replace parental spawners: A recruitment failure occurred in all three brood cycles even before accounting for harvest-related mortalities. This was the first time this had happened since data collection began in the 1950s. In most years since 2000, improved marine survival and higher rainfall are thought to be factors that have contributed to a recent upswing in recruits. However, in the return years 2005, 2006, and 2007, recruits again failed to replace parental spawners. The BRT discussed several possible explanations for this recruitment failure, including the possibility that the higher spawning abundance levels in recent years have reached the current carrying capacity of the degraded freshwater environment. In addition, the BRT noted that while total spawning abundance has been at its highest level since the 1950s, the total numbers of recruits remain lower than in the 1950s–1970s. The BRT therefore concluded that with the current freshwater habitat conditions, the ability of the OC Coho Salmon ESU to survive another prolonged period of poor marine survival remains in question.

Persistence Analysis

Comment 2: ODFW stated ''In summary, we believe that the use of peak count data fundamentally altered the results of the Decision Support System (DSS) analysis. In addition, we believe that negative depensatory effects on coastal coho [are] extremely unlikely based on experience with other populations and because of the lack of any evidence of such effects in the Life Cycle basins or at the population scale.''

Response: The BRT's initial report (Stout *et al.,* 2010) noted that the OC coho salmon Technical Recovery Team's report (Wainwright *et al.,* 2008) analyzed the critical abundance criterion using incorrect data. In particular, the Technical Recovery Team report specifically states that this criterion should be evaluated using peak count data, but inadvertently used area under the curve data. The BRT discovered this discrepancy when rerunning the DSS for the BRT's analysis. The analysis found in the BRT's initial report (Stout *et al.,* 2010) is therefore a correction, not a change. Stated differently, the Technical Recovery Team and the BRT both

intended to use peak counts as the selected measure of spawner abundance in the DSS analysis; the use of area under the curve data in the Technical Recovery Team's report was a mistake, later corrected in the BRT's initial report (Stout *et al.,* 2010).

Comment 3: One commenter took issue with the BRT's consideration of depensation as risk based on the spawner density levels found in the North Umpqua River from 1946–2009.

Response: The spawner density levels cited by the commenter were influenced by hatchery returns, which makes it impossible to assess the response of the natural component of that population to low abundance events.

Comment 4: One commenter stated that the model results do not reflect actual production. The commenter contended that the BRT changed the DSS and eliminated the population functionality criterion from the results.

Response: This appears to be a misunderstanding of the BRT's report. The BRT included the population functionality criterion in the DSS. It did, however, discuss the need to reconsider this criterion in the future. In addition, the BRT did not rely solely on the DSS in its deliberations, but considered other factors and sources of information in reaching its final risk conclusions.

Comment 5: One commenter stated that the BRT arbitrarily changed the population assessment model metric for spawner density. The commenter contended that peak count data was arbitrarily used instead of area under the curve data in running the DSS analyses. The commenter stated that the use of area-under-the-curve counts is more commonly accepted in the fisheries profession. The commenter also contended that observer bias was not accounted for in data sets used in the BRT analyses.

Response: As discussed in our response to Comment 2, the Technical Recovery Team and the BRT both intended to use peak counts as the selected measure of spawner abundance in the DSS analysis. The use of area under the curve data in the Technical Recovery Team's report was a mistake, later corrected in the BRT's initial report (Stout *et al.,* 2010). The BRT note that the use of peak count data is well documented in the fishery management literature and cite several studies supporting the use of peak counts to assess salmon spawner abundance. Regarding observer bias, the data set obtained from the ODFW, and used in the DSS, was corrected for observer bias.

Comment 6: One commenter noted that persistence and sustainability of the North Umpqua populations of OC coho salmon is well documented. The commenter suggested that the BRT look to the historical record for evidence of the wide variation of habitat and climatic conditions under which this population has persisted.

Response: The BRT found that the North Umpqua population persistence and sustainability is confounded by high hatchery production in the recent past, and the Technical Recovery Team's productivity analysis takes that into account. That hatchery program has recently been terminated, so future analyses will be better able to assess the sustainability of the North Umpqua population. With respect to the historical record, the BRT did examine the historical record and recognized that there are strong climate driven fluctuations in OC coho salmon abundance and productivity. The BRT risk assessment and Technical Recovery Team criteria account for these fluctuations.

Comment 7: One commenter suggested that the BRT selected unscientific and untested methodologies to support continued listing of the ESU in their assessment.

Response: The BRT used the best available scientific information, including information submitted by the commenter. The overall methodology for conducting the status review was the same as NMFS has used for many past salmon status reviews and as such it has received extensive scientific review. The BRT also used specific methods and analyses developed by the Oregon/Northern California Coast Technical Recovery Team. The Technical Recovery Team consisted of a range of experts from NMFS, ODFW, USDA Forest Service, tribes and independent consultants. The tools and methods it developed reflect that expertise. Both the Technical Recovery Team and BRT reports received extensive peer review that supported the models and analyses.

Comment 8: One commenter stated ''The spawning habitat within the Umpqua River Basin is comprised of 409 miles in the Lower Umpqua and Smith River (Lower Umpqua); 433 miles in the upper main stem Umpqua including the Elk and Calapooya and other tributaries (Middle Umpqua); 656 miles in the South Umpqua basin including 131 miles in Cow Creek (South Umpqua); and 126 miles in the North Umpqua (North Umpqua). The wide distribution of habitat and spawning populations within the basin serves as an effective built-in protective mechanism against any one catastrophic event resulting in the extinction of the species.''

Response: We agree diversity and spatial structure are important factors to consider in evaluating extinction risk, and these factors were explicitly evaluated by the BRT and discussed in its report. In addition, the DSS developed by the Technical Recovery Team uses this type of information in its diversity/spatial structure criteria. Specifically, the DSS watershed-level criteria account for the occupancy of both adult spawners and juvenile OC coho salmon in the basins throughout the range of this ESU.

Comment 9: One reviewer noted that it would be useful and informative to include a master table or appendix in the BRT report that clearly listed the metrics and associated data sets that were incorporated into the DSS and the criteria to which they were applied.

Response: We agree. The BRT included this type of information in Appendix A of its final report (Stout *et al.,* 2011).

Comment 10: One commenter stated that viability models for predicting fisheries' responses to management or environmental changes are in relatively early stages of development and involve considerable uncertainty.

Response: We agree, and the BRT stated that there is significant uncertainty in the long term projections it considered. This is why the BRT considered many aspects of OC coho salmon ecology in assessing status and used a variety of information (population viability modeling, the Technical Recovery Team's DSS, habitat assessments, climate assessments, assessment of other threats) in conducting its assessment. The BRT also was careful to characterize the degree of certainty of its conclusions, and this was extensively discussed in both its preliminary and final reports.

Climate Change and Stream Temperatures

Comment 11: One reviewer provided suggestions for adding and changing climate change text, and adding information from four additional scientific articles. This reviewer is a recognized expert on global climate change and had a number of technical suggestions regarding the BRT analysis of effect of climate change on OC coho salmon and their habitat. His comments included discussion, suggestion, and additional references for the following climate related impacts: (1) Possible changes in ocean conditions and subsequent changes in marine ecosystem function, (2) possible changes in stream flow and temperature in the Pacific Northwest, and (3) possible

changes in Cascade Mountain snowpack.

Response: The BRT reviewed the suggested articles and revised the ''Effects on Climate Change'' section of the final report to reflect this new information. The reviewer's comments allowed the BRT to adjust its analysis to reflect the most recent research and latest theories on the potential effects of climate change on salmon and their habitat. Although it was able to update this section of its report, the BRT conclusions regarding climate change remained fundamentally unaltered by the addition of the new information.

Comment 12: One reviewer stated ''The inclusion of the potential impacts of climate change on coho habitat was helpful, as was the inclusion of other factors (*e.g.,* human population growth and land use conversions) that will be likely to cause problems for the species. Given the overwhelmingly strong scientific evidence for climate change and the near certainty of population growth and land conversion along the Oregon coast—all of which have major implications for habitat quality—it would have been imprudent to ignore these factors. Additionally, it is quite probable that there will be interactions among these factors, many unforeseen at present, which could exacerbate habitat loss.''

Response: The BRT carefully evaluated these threats before reaching its conclusion. The BRT noted in its conclusion that ''Finally, the BRT was also concerned that global climate change will lead to a long-term downward trend in both freshwater and marine coho salmon habitat compared to current conditions (see Climate section and Wainwright and Weitkamp, in review). There was considerable uncertainty about the magnitude of most of the specific effects climate change will have on salmon habitat, but the BRT was concerned that most changes associated with climate change are expected to result in poorer and more variable habitat conditions for OC coho salmon than exist currently. Some members of the BRT noted that changes in freshwater flow patterns as a result of climate change may not be as severe in the Oregon coast as in other parts of the Pacific Northwest, while others were concerned by recent observations of extremely poor marine survival rates for several West Coast salmon populations. The distribution of the BRT's overall risk scores reflects some of this uncertainty.'' The risks posed by climate change, poor marine conditions, and further human development in the area were key factors in reaching our conclusion to retain the threatened listing for this ESU.

Comment 13: One reviewer stated ''I work a lot on impacts of temperature on salmonids and was hoping to see a bit more than a paragraph on the issue * * * Perhaps a sentence or two emphasizing the primacy of temperature as a component of habitat and threat to salmon—I believe temperature is the #1 source of water quality impairment in Oregon.''

Response: We agree that more information on the effects of elevated stream temperatures would improve the BRT report. Additional information on elevated stream temperature and its potential effect on OC coho salmon was added to the ''Water Quality Degradation,'' ''Climate Change,'' ''Water availability,'' and ''Forest and Agricultural Conversion'' sections of the BRT report.

Comment 14: One commenter stated ''Not only are we concerned that the current BRT assessment does not reflect the true viability risk as evidenced by the quantitative data that is available for the independent populations, we are also concerned that the BRT has adopted a new and untested qualitative prediction of climatic conditions for the next 100 years that also has a significantly high uncertainty of accuracy. Unfortunately, as with the other models the BRT did not test these predictive climatic models utilizing the long term data sets that were available. In this case historic climatic records illustrate the coho evolved under a high range of climatic fluctuations—fluctuations which can be expected to occur in the future as well.''

Response: The BRT addressed the risks related to climate change using the best available scientific information, including a detailed review of available published, peer-reviewed literature relating to recent and future climate change in the Pacific Northwest and the likely effects of such change on OC coho salmon. The BRT is aware of past and likely future trends and fluctuations in the local climate, and took those trends and fluctuations into account in the analysis. The BRT noted that there is a great deal of uncertainty surrounding the effects of future climate on OC coho salmon ESU, and took that uncertainty into account as a contributing risk factor. Much of the BRT's climate analysis does rely on predictive climate models that have been tested against long-term climate data. The BRT did not conduct its own assessment of the accuracy of these models, but rather relied on a large body of peer-reviewed scientific literature that has reported such assessments.

Assessment of Habitat Trends

Comment 15: The ODFW's comments contained a number of technical questions and observations regarding the BRTs assessment of stream habitat trends. ODFW commented it was concerned that the BRT placed too much emphasis on a Bayesian analysis of habitat trends that used a small subset of the available data. It stated that the use of the ODFW Habitat Limiting Factors Model may also be inappropriate, particularly when applied to the full range of streams within the ESU. It also noted that the BRT report did not contain a full description of the Aquatic and Riparian Effectiveness Monitoring Program (AREMP) (Reeves et. al (2004), although data generated by this program played a key role in habitat modeling exercise.

Response: Scientists from our Northwest Fisheries Science Center and ODFW formed a working group to resolve these issues. In its comments, ODFW noted that the BRT's habitat analysis used a small subset of the available data. It also stated that the BRT's initial report contained insufficient explanation of the methodology used to carry out the habitat trend analysis. The group held several meetings to discuss appropriate analyses, data sets, data transforms, etc. The BRT's final report (specifically the In-Channel Stream Complexity section) was revised to reflect the progress the group made in resolving these technical issues. This issue is discussed in detail in the *New Habitat Trend Analysis* section, below.

Comment 16: One reviewer stated ''I think the conclusion here about complexity (rate of continued disturbance outpacing restoration) is likely correct, but we don't know for sure. Local ''active'' restoration activities are likely dwarfed by the larger human footprint on the landscape, but passive efforts to restore landscape condition (*e.g.,* improved forest harvest practices) will likely take decades to yield detectable positive trends. Might be worth clarifying the issue here because passive restoration is much more likely to have longer term and much more widespread benefits in the future.''

Response: We generally agree and a short clarification of this issue is now included in the BRT report's ''Stream Habitat Complexity Summary'' section. Managing watersheds in a manner that allows for natural habitat forming processes to occur is the first step in ensuring that OC coho salmon have suitable freshwater habitat. However, we also acknowledge that active

restoration is a key part of an overall strategy to improve stream habitat across the range of this ESU. Active restoration is often the fastest way to address certain reach-level concerns such as lack of instream woody debris or lack of riparian vegetation.

Fish Passage

Comment 17: ODFW commented that fish passage issues facing the OC coho salmon ESU are complex and may require additional analysis.

Response: We agree that attempting to analyze fish passage in streams across the range of this ESU is a complex task. ODFW provided several additional sources of information regarding fish passage. The BRT updated its report to reflect this new information. The BRT also considered a new data set on fish passage, the Oregon Fish Passage Barrier Data Set (OFPDS, 2009). Although this data set represents the most up-to-date catalog of fish passage blockages throughout the range of this ESU, it still does not account for some blockages on private land and certain types of blockages including berms and levees (Stout *et al.,* 2011). Berms and levees are common in lowland and estuary habitat that can be important coho salmon rearing habitat. The BRT concluded that fish passage blockages are a source of substantial uncertainty as to the true effect that fish passage barriers present to OC coho salmon.

Comment 18: One reviewer noted that ''Conclusions quoted regarding present impacts of hydropower should be expanded to consider future development as well. I know there are possible plans for hydroelectric dams to be placed in some coastal rivers, such as the Siletz River near the former town site of Valsetz. Also the development of small hydro may come into play in the future as the region develops alternative energy sources. This is becoming an issue in other parts of western North America (*e.g.*, British Columbia).''

Response: We agree that future hydropower development could affect OC coho salmon in certain areas. The BRT made a slight modification to its report to reflect this. There are, however, numerous protective measures in place to assure that future hydropower projects would be developed in a manner that reduces potential effects on this ESU. For instance, all hydropower projects in the State of Oregon must have a water right issued by the Oregon Water Resources Department. Most significant non-Federal hydropower facilities would need to be licensed by the Federal Energy Regulatory Commission. During these regulatory processes, we expect the addition of conservation measures/project modifications designed to reduce the project's effects on OC coho salmon and their habitat. Although we cannot predict, with certainty, what those specific protective measures might be, it is reasonable to conclude that major adverse effects on this ESU would be avoided. For instance, it is unlikely, although not completely impossible, that the construction of hydropower facilities would be authorized in cases where a large amount of OC coho salmon habitat would be blocked. Currently, it is far more common in the Pacific Northwest for dams to be removed to restore fish passage (*e.g.*, Marmot Dam, Elwha Dam) than for new dams to be constructed that would block fish passage. For these reasons, we do not expect development of new hydropower facilities to pose a serious threat to this ESU.

Comment 19: One reviewer provided a copy of a recent report (Bass, 2010) providing information on juvenile coho salmon movement and migration through tide gates.

Response: The BRT considered the information in the report and revised the content of the final report accordingly. The BRT noted that at a minimum, tide gates in the OC coho salmon ESU act as partial barriers to fish passage and were, for the most part, unaccounted for in past analyses. It also notes that fish passage barriers have not been identified as a major limiting factor for OC coho salmon in previous assessments conducted by ODFW; however, a great deal of uncertainty exists about the total number of passage barriers throughout the range of this ESU.

Estuaries/Wetland Life History Diversity

Comment 20: ODFW submitted a number of technical comments regarding the BRT's conclusions about the importance of estuaries to OC coho salmon. In summary, ODFW felt that the importance of estuaries to OC coho salmon is somewhat unknown. They questioned whether the BRT may have overstated the degree to which the loss of estuary habitat is a limiting factor for this ESU. ODFW noted that the Oregon Watershed Enhancement Board has funded a substantial amount of estuary restoration over the last several years. It also provided additional information about the role estuaries may play in the life cycle of OC coho salmon.

Response: Both the BRT and ODFW are in agreement that there has been significant loss of estuary habitat along the Oregon Coast during the last 100 years. We acknowledge that there is some scientific disagreement between ODFW and the BRT regarding the severity of the effect of estuary loss on the viability of the OC coho salmon ESU. However, the loss of estuary habitat is only one of many factors affecting the viability of this ESU. In its risk conclusion, the BRT did not specifically identify estuary loss as one of the primary sources of risk to this ESU. Even if the BRT were to adopt ODFW's position on the effect of estuary loss on the viability of this ESU, it would be unlikely to change the outcome of its overall risk assessment.

Comment 21: In contrast to the previous comment, a reviewer stated that ''the emphasis given to the importance of estuarine habitat is moderate and adequate given the information available in the literature.'' The reviewer noted observing juvenile OC coho salmon rearing in estuaries and feels that this life history strategy is fairly common. The reviewer also provided some specific scientific information to support this statement.

Response: This viewpoint is consistent with the BRT's position on the importance of estuaries to juvenile OC coho salmon. The BRT revised its report's section on estuaries to include the information provided by the reviewer.

Comment 22: One reviewer suggested that a somewhat broader definition of 'life history' in the glossary may be useful. The reviewer noted that a 'life history' encompasses changes experienced from birth through death, including variation in life history traits, such as the size and age at maturity and fecundity. The reviewer argued that traits such as juvenile growth rate and age at ocean emigration are aspects of species' life history.

Response: We agree and the BRT modified its definition of ''life history'' as suggested.

Restoration

Comment 23: The ODFW and Oregon Watershed Enhancement Board commented that in our proposed rule, we underestimated the variety and effectiveness of habitat and watershed process restoration efforts. ODFW also stated that we did not consider the information contained in an effectiveness monitoring report demonstrating the results of several projects designed to increase the amount of woody debris in stream reaches.

Response: In the BRT report and proposed rule, we stated that an analysis conducted by the BRT showed that habitat restoration efforts are not well matched with habitat limiting factors in some areas including the

Umpqua Basin. The comments submitted by ODFW contained a number of technical points regarding our statements about restoration efforts matching restoration needs. After reviewing these comments, we decided that the BRT habitat restoration analysis needed further consideration. We decided not to consider the results of the BRT's analysis when we evaluated efforts being made to protect the OC coho salmon ESU. Instead, we acknowledge that a number of restoration projects are occurring throughout the range of this ESU, and we expect that they will have benefits to ESU viability some time in the future. However, we do not have information available that would allow us to predict or quantify these future improvements to ESU viability. Similarly, we acknowledge that the information submitted by ODFW demonstrates that restoration efforts can increase the amount of woody debris in stream reaches and improve habitat complexity. We also agree with ODFW that these improvements are likely to lead to improved survival of OC coho salmon juveniles. However, these improvements will occur primarily at a stream-reach scale (several hundred to several thousand meters maximum). There is currently a lack of scientific information that would allow us to scale the positive collective effects of multiple restoration projects up to the population, strata, or ESU level. We are working with ODFW and our other Federal, State, and tribal co-managers to develop monitoring programs and databases that would assist us in developing these types of analyses in the future.

Even when this information becomes available, we have reason to believe that relying on active restoration to mitigate for the effects of ongoing land management that degrades OC coho salmon habitat is not feasible. The one recent study that has examined this issue (Roni *et al.,* 2010) used a new technique to estimate the amount of restoration needed within a watershed to cause a significant increase in steelhead and coho salmon production. These authors found that the percentage of floodplain and in-channel habitat that would have to be restored in a modeled watershed to detect a 25 percent increase in coho salmon and steelhead smolt production was 20 percent. Although 20 percent may seem like a low value, restoring 20 percent of floodplain and in-channel habitat in any disturbed watershed in the Pacific Northwest would be very costly (Roni *et al.,* 2010). The results of this study highlight the need to protect high quality habitat while strategically improving degraded areas with active restoration.

Comment 24: Another commenter noted that the BRT's analysis of match between habitat restoration efforts and habitat limiting factors ''* * * has the potential to provide useful guidance to local groups performing restoration, but some logical lapses affect the conclusions drawn here.'' The commenter stated that the level of detail provided ''* * * is insufficient to fully evaluate the methods, or to make good use of the results at the local level.''

Response: As stated above, we will no longer be considering the results of the BRT's assessment of habitat restoration in the Umpqua in our evaluation of protective efforts for this ESU. We do believe however, that this type of analysis would be appropriate for consideration during development of a recovery plan for this ESU.

Comment 25: One reviewer pointed out the need for ''* * * a way in which future effects of restoration (again, on an ESU-wide basis) could be similarly quantified * * *'' The reviewer also noted the ''* * * pressing need to determine whether habitat is currently being lost or damaged faster than it can be restored or rehabilitated, particularly because so much money is being spent on recovering salmon habitat based on the belief that long-term improvement can be achieved at very large spatial scales.''

Response: We agree with the reviewer's statement that there is a need for a way in which future effects of restoration could be similarly quantified. As noted above, we are working with our co-managers to develop monitoring programs and data collection systems that will aide us in conducting these types of analyses in the future. In the absence of this information, we must look at measures of ESU viability to determine if restoration efforts are lowering ESU extinction risk.

Artificial Propagation

Comment 26: One commenter noted that the BRT report's section on artificial propagation and membership of hatchery programs in the ESU would benefit from more information.

Response: We agree that the addition of more information would help to clarify this section. The BRT revised its report to include more detail in this section. We must note however, that hatchery production has been significantly curtailed in this ESU and no longer represents a significant limiting factor for most populations in the ESU. There are only three remaining hatchery programs within the range of this ESU. Release numbers have been reduced 10-fold in recent years, substantially reducing interactions between hatchery and wild fish.

Beavers

Comment 27: One commenter stated that the habitat benefits beavers (*Castor canadensis*) provide are landscape-context specific. The commenter noted that beavers occur within the ESU in a variety of contexts, from brackish estuarine marshes, to lakes, to large mainstem rivers, to smaller tributaries, and the ways in which they may alter this type of aquatic habitat varies considerably. The commenter also stated that beavers are differentially vulnerable to trappers. For instance, beavers tend to be more vulnerable to trappers in headwater areas as opposed to large mainstem rivers.

Response: The BRT revised its report's section on beavers to reflect the information provided by the commenter.

Comment 28: One commenter stated that the BRT's report properly reviewed the legal status of beaver protection in Oregon, but failed to identify cougar predation as a cause of observed beaver declines.

Response: We agree with the commenter in part. Estimated cougar populations have increased since the 1970s over the entire State of Oregon from approximately 214 to over 2,800 individuals by 1992 (Keister and VanDyke, 2002). However, nothing in the literature suggests that predation on beaver is a primary cause for reduction in beaver population. The majority of studies identify deer and elk as the primary food source for cougars (Ackerman *et al.,* 1984).

Comment 29: One commenter noted that many riparian areas throughout the range of the OC coho salmon ESU have been colonized by invasive Reed canarygrass (*Phalaris arundinacea*). The commenter points out that this plant can out-compete trees and shrubs that provide food for beavers. This colonization may disrupt the natural cycle of consumption of shrubs and trees in a given area by beavers followed by recovery of this vegetation as beavers leave the area in search of food elsewhere.

Response: We agree that invasion of riparian areas by Reed canarygrass may pose a threat to beaver food supply. In response to this comment, the BRT noted that more aggressive management actions may be needed to deal with Reed canarygrass as evidenced by recent work that suggests plantings and natural

vegetation alone cannot control it. The BRT's report highlights the importance of beavers to the formation and maintenance of habitat for juvenile OC coho salmon.

Comment 30: One reviewer noted that based on the information provided in the BRT report, they could not tell if cycles or trends in beaver activity are evident. The reviewer stated that they thought there was not good evidence for a trend of any kind.

Response: In response to this comment, the BRT added the following statement to the beaver section of their report: ''Due to the limited dataset we cannot conclude that there is an overall trend and would recommend a more extensive monitoring effort be pursued to identify short and long-term trends throughout the Oregon Coast Coho Salmon ESU.''

Comment 31: One reviewer noted that some research (Pollack *et al.,* 2003) cited in the section on beavers in the BRT report was conducted in Washington state and is useful for comparison purposes but is not directly relevant to the OC coho salmon ESU.

Response: This observation is correct in that the study sites for this research were in Washington. The BRT added a paragraph to its report's section on beavers to address this issue. The BRT noted that the areas where beaver pond density is highest typically have the same physical characteristics regardless of the ecological region—lower gradient (less than 2 percent), unconfined valley bottoms, in smaller watersheds (drainage areas typically less than 10 square kilometers). Smaller, lowland, rain-dominated Puget Sound watersheds have the same basic physical and hydrological characteristics as the smaller Oregon coast watersheds, thus the relationships we see with respect to beaver pond densities in Puget Sound should also hold true for the Oregon coast.

Forest and Agriculture Conversion

Comment 32: One reviewer suggested that the BRT report would benefit from a discussion of floodplain development and storm water issues.

Response: We agree that floodplain development and storm water management have the potential to affect water quality, peak/base stream flow and several physical habitat parameters for OC coho salmon. Although these threats may not have been specifically discussed in the initial BRT report, we did note in the proposed rule that ''Urbanization has resulted in loss of streamside vegetation and added impervious surfaces, which alter normal hydraulic processes.'' We also stated in the proposed rule that ''Stormwater and agricultural runoff reaching streams is often contaminated by hydrocarbons, fertilizers, pesticides, and other contaminants.'' Nevertheless, in response to the reviewer's suggestion, the BRT added information on how these threats affect OC coho salmon habitat.

Comment 33: One commenter stated that land use conversion trends may be more complex than described in the BRT report. The commenter noted that several types of land use conversion beyond those described in the BRT report, such as agricultural to forest land, and serious agriculture operation to hobby farm, are occurring throughout the range of this ESU. The commenter also noted that residential development is occurring along many reaches of larger rivers in this area, and this may lead to increased recreational fishing.

Response: We agree that a variety of land use conversions are occurring throughout the range of this ESU. The BRT revised its report to include some of the land use conversion types identified in this comment. We also agree that greater human development, especially in riparian areas, could lead to degradation of OC coho salmon habitat. It becomes difficult to predict with any certainty, however, how some of the less common land use conversions (such as serious agricultural operation to hobby farm) would affect coho salmon habitat. The particular management changes resulting from these types of land use conversions can be expected to vary on a case-by-case basis depending on the desired outcomes of a particular land owner. For this reason, it is best to evaluate general trends in land use conversions when trying to predict how these conversions may affect OC coho salmon habitat. This is consistent with the approach taken by the BRT.

Comment 34: One reviewer noted that the BRT report's section on land use conversion did not contain significant information on some of the secondary effects of residential development–water quality degradation from septic drainage, fertilizers and pesticides, and pharmaceuticals. The reviewer noted that there is a great deal of uncertainty about these effects and that a new report on this topic was expected soon from the State of Oregon Independent Multidisciplinary Science Team.

Response: We agree that these secondary effects from residential development may pose a threat to the OC coho salmon ESU. The report of the Independent Multidisciplinary Science Team became available shortly after the publication of the initial BRT report and proposed rule. The BRT discussed this report and agreed with the conclusions of the report, namely that ''The pressures of urban and rural residential land use affect aquatic ecosystems and salmonids through alterations of, and interactions among, hydrology, physical habitat structure, water quality, and fish passage. These alterations occur at local and, especially, watershed scales, and thus require study and management at multiple scales. Urban and rural residential development causes profound changes to the pathways, volume, timing, and chemical composition of stormwater runoff. These changes alter stream physical, chemical, and biological structure and potential, as well as the connectivity of streams with their watersheds'' (IMST, 2010). The BRT updated its report to reflect this new information.

Comment 35: Several reviewers noted that climate change, invasion of exotic organisms, and increasing human development may lead to drastic changes in riparian and aquatic communities throughout the range of this ESU.

Response: In response to these comments, the BRT discussed this issue more fully, and expanded discussions and literature citations are included in its revised report in the ''Ecosystem Impacts of Non-indigenous Species,'' ''Non-indigenous Plant Species,'' and ''Non-indigenous Fish'' sections.

Data Used in Risk Assessment

Comment 36: One reviewer noted that it would be useful for the BRT to identify key data gaps in their risk assessment.

Response: The BRT revised its report to identify some of the key data gaps. For instance, the BRT noted data gaps regarding beaver populations, fish passage, and road density on private lands.

Comment 37: One commenter suggested that NMFS use annual spawner returns to the North Umpqua River as an indicator of population status throughout the ESU.

Response: We believe that evaluating the status of an entire ESU from dam counts for a single population ignores differences in populations within the ESU, such as the diversity found in the Lakes populations, and in the geology and hydrology of other systems. It would essentially restrict our analysis to a small amount of information while ignoring the substantial amount of other information available to us. The suggested approach does not take into account that the habitat in the North Umpqua population is not typical of the rest of the ESU, nor does it reflect the

diversity of other habitats found in the ESU. Also, as noted above, the North Umpqua return data have been influenced by hatchery production and thus do not reflect the status of natural populations and their habitats.

Comment 38: One commenter stated that the BRT made several key assumptions about future marine conditions that are not consistent with the known variability in ocean conditions and adopted an overall pessimistic view about future ocean conditions. The commenter stated that the BRT could have used data on this known variability to assess marine conditions in both intra-annual and inter-decadal time frames.

Response: The commenter did not identify which particular key assumptions about future marine conditions were questionable, so it is difficult to respond to this comment. However, any assumptions made by the BRT are consistent with the scientific literature regarding marine survival of coho salmon. The BRT agrees that fluctuations in marine conditions (including the Pacific Decadal Oscillation and other factors) strongly affect survival of OC coho salmon, and has accounted for such fluctuations in its analyses.

Comment 39: One commenter stated that the BRT should have considered data on climate conditions as evidenced by patterns of tree ring growth.

Response: The BRT did examine the historical record and recognized that there are strong climate driven fluctuations in abundance and productivity. These fluctuations are accounted for in both the Technical Recovery Team criteria and the BRT risk assessment.

Recommendations for Management

Comment 40: One reviewer noted the lack of any recommendations for future management within the BRT's report. The commenter thought inclusion of these recommendations would be logical and desirable.

Response: The BRT was tasked with reviewing the status of the OC coho salmon ESU. Specifically, the BRT was asked to assess the level of extinction risk for this ESU and identify the threats facing this ESU (letter from Barry Thom, Acting Regional Administrator, to Usha Varanasi, Science and Research Director of the Northwest Fisheries Science Center, August 13, 2009). Site-specific management actions designed to help conserve the OC coho salmon ESU will be identified in a forthcoming recovery plan for this species.

Predation

Comment 41: One reviewer noted that the BRT report's section on predation was dated. The reviewer recommended some reports for the BRT to consider.

Response: The BRT updated its discussion of predation with new (Johnson *et al.,* 2010) as well as older relevant literature (Schreck *et al.,* 2002; Clements and Schreck, 2003), as well as a recent population assessment of double crested cormorants within the ESU and other sources of information. The BRT concluded that the significant increases in avian predation on salmonids appears to be restricted to the Columbia River System and does not affect the OC coho salmon ESU. The Columbia River salmon ESUs suffer the greatest impact because the birds (Caspian terns and double-crested cormorants) have established large nesting colonies in close vicinity to the mainstem Columbia River.

Determination of Species Under the ESA

We are responsible for determining whether species, subspecies, or distinct population segments (DPSs) of Pacific salmon and steelhead are threatened or endangered under the ESA. To identify the proper taxonomic unit for consideration in a listing determination for salmon, we use our Policy on Applying the Definition of Species under the ESA to Pacific Salmon (ESU Policy) (56 FR 58612). Under this policy, populations of salmon substantially reproductively isolated from other conspecific populations and representing an important component in the evolutionary legacy of the biological species are considered to be an ESU. In our listing determinations for Pacific salmon under the ESA, we have treated an ESU as constituting a DPS, and hence a ''species,'' under the ESA.

The OC coho salmon ESU was identified as one of six West Coast coho salmon ESUs in a coast-wide coho status review published by NMFS in 1995 (Weitkamp *et al.,* 1995). Weitkamp *et al.* (1995) considered a variety of factors in delineating ESU boundaries, including environmental and biogeographic features of the freshwater and marine habitats occupied by coho salmon, patterns of life-history variation and patterns of genetic variation, and differences in marine distribution among populations based on tag recoveries. Regarding the OC coho salmon ESU, Weitkamp *et al.* (1995) concluded that Cape Blanco to the south and the Columbia River to the north constituted significant biogeographic and environmental transition zones that likely contributed to both reproductive isolation and evolutionary distinctiveness for coho salmon inhabiting opposite sides of these features. These findings were reinforced by discontinuities in the ocean tag recoveries at these same locations. The available genetic data also indicated that OC coho salmon north of Cape Blanco formed a discrete, although quite variable, group compared to samples from south of Cape Blanco or the Columbia River and northward.

The BRT evaluated new information related to ESU boundaries, and found evidence that no ESU boundary changes are necessary (Stout *et al.,* 2011). The basis for its conclusion is that the environmental and biogeographical information considered during the first coast-wide BRT review of coho salmon (Weitkamp *et al.,* 1995) remains unchanged, and new tagging and genetic analysis published subsequent to the original ESU boundary designation continues to support the current ESU boundaries. The BRT also evaluated ESU membership of fish from hatchery programs since the last BRT review (Good *et al.,* 2005). In doing so, it applied our Policy on the Consideration of Hatchery-Origin Fish in ESA Listing Determinations (70 FR 37204; June 28, 2005). The BRT noted that many hatchery programs within this ESU have been discontinued since the first review of coast-wide status of coho salmon (Weitkamp *et al.,* 1995). They identified only three programs—the North Fork Nehalem, Trask (Tillamook basin) and Cow Creek (South Umpqua)—that produce coho salmon within the boundaries of this ESU.

The North Fork Nehalem coho stocks are managed as an isolated harvest program. Natural-origin fish have not been intentionally incorporated into the brood stock since 1986, and only adipose fin clipped brood stock have been taken since the late 1990s. Because of this, the stock is considered to have substantial divergence from the native natural population and is not included in the OC coho salmon ESU. The Trask (Tillamook population) coho salmon stock is also managed as an isolated harvest program. Natural-origin fish have not been incorporated into the brood stock since 1996 when all returns were mass marked. Therefore, this stock is considered to have substantial divergence from the native natural population and, based on our Policy on the Consideration of Hatchery-Origin Fish in ESA Listing Determinations, is not included in the OC coho salmon ESU. The Cow Creek stock (South Umpqua population) is managed as an integrated program and is included as

part of the ESU because the original brood stock was founded from the local natural origin population and natural-origin coho salmon have been incorporated into the brood stock on a regular basis. This brood stock was founded in 1987 from natural-origin coho salmon returns to the base of Galesville Dam on Cow Creek, a tributary to the South Umpqua River. Subsequently, brood stock has continued to be collected from returns to the dam, with natural-origin coho salmon comprising 25 percent to 100 percent of the brood stock nearly every year since returning fish have been externally tagged. The Cow Creek stock is probably no more than moderately diverged from the local natural-origin coho salmon population in the South Umpqua River because of these brood stock practices and is therefore considered a part of this ESU.

Updated BRT Extinction Risk Assessment

The BRT conducted an extinction risk assessment for the OC coho salmon ESU considering available information on trends in abundance and productivity, genetic diversity, population spatial structure, and diversity. It also considered marine survival rates, trends in freshwater habitat complexity, and a variety of threats to this ESU, such as possible effects from global climate change. We received a substantial amount of information during the public comment period regarding the BRT risk assessment. One peer reviewer of the BRT report also had numerous comments on the risk assessment. After considering this information, the BRT decided to revise its risk assessment, and conduct its risk voting again, considering this new information.

The BRT noted that spawning escapements in some recent years have been the highest in the past 60 years. This is attributable to a combination of management actions and environmental conditions. In particular, harvest has been strongly curtailed since 1994, allowing more fish to return to the spawning grounds. Hatchery production has been reduced to a small fraction of the natural-origin production. Nickelson (2003) found that reduced hatchery production led directly to higher survival of naturally produced fish, and Buhle *et al.* (2009) found that the reduction in hatchery releases of OC coho salmon in the mid-1990s resulted in increased natural coho salmon abundance. Ocean survival, as measured by smolt to adult survival of Oregon Production Index area hatchery fish, generally started improving for fish returning in 1999 (Stout *et al.,* 2011). In combination, these factors have resulted in the highest spawning escapements since 1950, although total abundance before harvest peaked at the low end of what was observed in the 1970s (Stout *et al.,* 2011).

The BRT applied the DSS of the Technical Recovery Team (Wainwright *et al.,* 2008) to help assess viability and risk level for this ESU. Our proposed rule discusses the DSS in detail. The BRT updated the DSS with data through 2009. In the process of compiling data for the four years since the Technical Recovery Team analysis, the BRT discovered and reconciled several inconsistencies related to the data that are inputs into the DSS. For this reason the DSS results reported by the BRT are not directly comparable to the results presented in the Technical Recovery Team's report (Wainwright *et al.,* 2008). The DSS results from the Technical Recovery Team's report are presented in the BRT report for historical comparison but were not used by the BRT in its deliberations. Data used in the updated DSS analysis were provided by ODFW.

The DSS result for ESU persistence was 0.34. A value of 1.0 would indicate complete confidence that the ESU will persist for the next 100 years, a value of −1.0 would indicate complete certainty of failure to persist, and a value of 0 would indicate no certainty of either persistence or extinction. The BRT therefore interpreted a value of 0.34 to indicate a moderate certainty of ESU persistence over the next 100 years, assuming no future trends in factors affecting the ESU. The DSS result for ESU sustainability was 0.24, indicating a low-to-moderate certainty that the ESU is sustainable for the foreseeable future, similarly assuming no future trends in factors affecting the ESU. The overall ESU persistence and sustainability scores summarize a great deal of variability in population and stratum level information on sustainability.

New Habitat Trend Analysis

In our proposed rule, we summarized the BRT's analyses of habitat complexity across the freshwater habitat of this ESU. We received a number of comments from ODFW regarding this analysis. Scientists from our Northwest Fisheries Science Center and ODFW formed a working group to resolve the technical issues identified in the ODFW comments. A brief background on this issue is provided below.

Over the past decade (1998 to present), the ODFW has monitored wadeable streams (streams that would be shallow enough to wade across during survey efforts) to assess freshwater rearing habitat for the OC coho salmon ESU during the summer low flow period (Anlauf *et al.,* 2009). The goal of this program is to measure the status and trend of habitat conditions throughout the range of the ESU. The following variables related to the quality and quantity of aquatic habitat for coho salmon were monitored: Stream morphology, substrate composition, instream roughness, riparian structure, and winter rearing capacity (Moore, 2008). In 2009, scientists from ODFW and scientists from the BRT independently analyzed these data to answer the question ''Has juvenile coho habitat changed during ODFW's monitoring program over the past 11 years?'' These analyses reached different conclusions, and the discrepancies between the results prompted the formation of the interagency working group.

The working group found that the most important discrepancy between the BRT analysis and the ODFW analysis (Anlauf *et al.,* 2009) was that different subsets of the ODFW habitat monitoring data were used. The ODFW analysis focused only on sites designated as coho salmon spawning or rearing habitat (1st through 3rd order wadeable streams and below fish passage barriers; Anlauf *et al.,* 2009). In contrast, the BRT's analysis had included sites both within and outside of the area recognized as spawning and rearing habitat for coho salmon. Both approaches are biologically reasonable, but the working group agreed that a common dataset should be used in the joint analysis and that initially only spawning or rearing sites within the OC coho salmon ESU be included for the working group report. Subsequently, the BRT also analyzed the upstream areas in a separate analysis, because these areas also affect water quality and habitat (*e.g.,* large wood) in downstream areas where coho spawning and rearing occur.

The working group also explored whether differences in the two group's modeling approaches led to significant differences in the results, and concluded that when the same data were used, any differences in modeling approach led to at most minor differences in results. These issues are discussed in detail in the BRT report.

In the BRT's original habitat trend analysis, three measures of habitat complexity were assessed: Winter parr capacity, summer parr capacity, and channel score (AREMP). In addition to winter parr capacity, ODFW also examined trends in large woody debris, and fine organic sediment (Anlauf *et al.,* 2009). The working group agreed that the three measures of complexity would

be re-analyzed, in addition to the volume of large woody debris, and fine organic sediment in riffles.

Trend estimates were mixed and vary both among metrics and regions. Habitat complexity and summer parr capacity were decreasing in the Umpqua but increasing in the other regions. Winter parr capacity trended flat in the North Coast and Mid-Coast, but declined in the Mid-South and Umpqua. For the percent of fine sediment in riffles, there appear to be declines in the North and Mid-Coast, a positive trend in the Mid-South, and little change in the Umpqua. Large wood volume appears to have declined in the North Coast and Umpqua, and increased in the Mid-Coast and Mid-South regions.

In contrast to the coho rearing areas, trends in upstream areas were more pronounced. In particular, large woody debris declined substantially in all regions. Trends in sediment were mixed, with increases in the Mid-Coast and Mid-South, and declines in the North Coast and Umpqua

The BRT was impressed with the ODFW habitat monitoring program and believes it is an invaluable source of information on freshwater habitat trends on the Oregon coast. The results from the working group were encouraging in that they resolved some clear discrepancies between earlier analyses. The BRT concluded that the results paint a complex picture of habitat trends along the Oregon coast. Some trends, such as the increase in habitat complexity and summer parr capacity in 3 of the 4 regions were clearly encouraging. Other trends, such as the declines in large woody debris in the North Coast and Umpqua regions and in upstream areas in all regions appear more troubling. The North Coast trend in large woody debris may be a result of large debris dams that formed during the 1996 floods and have been actively redistributed over the past several years, reducing overall large woody debris densities. While the North Coast experienced a large decline, it also had the largest amount of large woody debris relative to the other regions. The declining trends in winter parr capacity (believed to be a limiting life-stage for coho production) in two regions also concerned the BRT.

BRT Extinction Risk Conclusions

To reach its final extinction risk conclusions, the BRT used a ''risk matrix'' as a method to organize and summarize the professional judgment of a panel of knowledgeable scientists with regard to extinction risk of the species. This approach is described in detail by Wainwright and Kope (1999) and has been used for over 10 years in our Pacific salmonid and other marine species status reviews. In this risk matrix approach, the collective condition of individual populations is summarized at the ESU level according to four demographic risk criteria: Abundance, growth rate/productivity, spatial structure/connectivity, and diversity. These viability criteria, outlined in McElhany *et al.* (2000), reflect concepts that are well founded in conservation biology and are generally applicable to a wide variety of species. These criteria describe demographic risks that individually and collectively provide strong indicators of extinction risk. The summary of demographic risks and other pertinent information obtained by this approach was then considered by the BRT in determining the species' overall level of extinction risk. This analysis process is described in detail in the BRT's report (Stout *et al.,* 2011). The scoring for the risk criteria correspond to the following values: 1—very low risk, 2—low risk, 3—moderate risk, 4—high risk, 5—very high risk.

After reviewing all relevant biological information for the species, each BRT member assigned a risk score to each of the four demographic criteria. The scores were tallied (means, modes, and range of scores), reviewed, and the range of perspectives discussed by the BRT before making their overall risk determination. To allow individuals to express uncertainty in determining the overall level of extinction risk facing the species, the BRT adopted the ''likelihood point'' method, often referred to as the ''FEMAT'' method because it is a variation of a method used by scientific teams evaluating options under the Northwest Forest Plan (FEMAT 1993). In this approach, each BRT member distributes ten likelihood points among the three species' extinction risk categories, reflecting their opinion of how likely that category correctly reflects the true species status. This method has been used in all status reviews for anadromous Pacific salmonids since 1999, as well as in reviews of Puget Sound rockfishes (Stout *et al.,* 2001b), Pacific herring (Stout *et al.,* 2001a; Gustafson *et al.,* 2006), Pacific hake, walleye pollock, Pacific cod (Gustafson *et al.,* 2000), and black abalone (Butler *et al.,* 2008).

In its May 2010 preliminary report, the BRT conducted both the risk assessment matrix analysis and the overall extinction risk assessment under two different sets of assumptions. First, the BRT evaluated extinction risk based on the demographic risk criteria (abundance, growth rate, spatial structure and diversity) recently exhibited by the ESU, assuming that the threats influencing ESU status would continue unchanged into the future. This case in effect assumed that all of the threats evaluated in the previous section of the report were already fully manifest in the current ESU status and would in aggregate neither worsen nor improve in the future. Also, in the 2010 preliminary report, the BRT evaluated extinction risk based on the demographic risk criteria currently exhibited by the ESU, taking into account consideration of predicted changes to threats that the BRT evaluated to be not yet manifest in the current demographic status of the ESU. In effect, this scenario asked the BRT to evaluate whether threats to the ESU would lessen, worsen, or remain constant compared to current conditions.

In the time since the completion of the last risk assessment in 2010, the BRT considered additional information on the potential magnitude and trajectory of threats including climate change, changes in ocean conditions, and trends in freshwater habitat. The BRT also further refined the time horizon used to evaluate whether the OC coho salmon ESU was at moderate risk of extinction. The BRT selected a 30 to 80 year time frame, noting that beyond this time horizon, the projected effects on OC coho salmon viability from climate change, ocean conditions, and trends in freshwater habitat become very difficult to predict with any certainty. Considering this new information, the BRT felt it unnecessary and potentially confusing to conduct the risk assessment under multiple sets of assumptions. For the final risk assessment, therefore, each BRT member evaluated all the available information on both current demographic status and future threats to come to a single overall conclusion on the degree of extinction risk.

The mean risk matrix scores for each demographic risk factor fell between the low risk (2) and moderate risk (3) categories (abundance mean score= 2.21, productivity mean score=2.63, spatial structure mean score=2.33 and diversity mean score=2.67) indicating that the BRT as a whole did not consider any of the demographic risk factors as likely to contribute substantially to a high risk of short-term extinction when considered on its own.

The overall assessment of extinction risk of the OC coho salmon ESU indicated considerable uncertainty about its status, with most likelihood points split between ''moderate risk'' and ''not at risk,'' and a small minority of points indicating ''high risk.'' The

BRT members placed 6 percent of the likelihood points in the high risk category, 47 percent of the likelihood points in the moderate risk category and 47 percent of the points in the low risk category.

The large range in the demographic risk scores and the lack of a strong mode in the overall assessment of risk were indicative of considerable uncertainty among BRT members about the current level of risk facing the ESU. This uncertainty was largely due to the difficulty in balancing the clear improvements in some aspects of the ESU's status over the last 15 years against persistent threats driving the longer term status of the ESU, which probably have not changed over the same time frame and are predicted to degrade in the future. In addition, the BRT noted that accurately predicting the long-term trend of a complex system is inherently difficult, and this also led to uncertainty in the overall risk assessment.

The BRT concluded that some aspects of the ESU's status have clearly improved since the initial status review in the mid-1990s (Weitkamp *et al.,* 1995). In particular, the BRT assigned a relatively low mean risk score to the abundance factor, noting that spawning escapements were higher in some recent years than they had been since 1970. Recent total returns (pre-harvest recruits) were also substantially higher than the low extremes of the 1990s, but still mostly below levels of the 1960s and 1970s. The BRT attributed the increased spawner escapements largely to a combination of greatly reduced harvest rates, reduced hatchery production, and improved ocean conditions. Even with the recent increases, however, pre-harvest abundance remains at approximately 10 percent of estimated historical abundance (approximately 150,000 current compared to peak abundance of approximately 1.5 million fish historical).

The BRT also noted that compared to the mid-1990s, the ESU contained relatively abundant wild populations throughout its range, leading to a relatively low risk associated with spatial structure. The BRT also discussed the observation that the recent natural origin spawning abundance of the OC coho salmon ESU was higher than that observed for other listed salmon ESUs, although some members noted that the 15-fold variability in abundance since the mid-1990s brings into question how heavily to weigh abundance as an indicator of status. Finally, the BRT noted that hundreds of individual habitat improvement projects over the last 15 years had likely benefited the ESU, although quantifying these benefits is difficult.

The BRT also discussed some ongoing positive changes that are likely to become manifest in abundance trends for the ESU in the future. In particular, hatchery production continues to be reduced with the cessation of releases in the North Umpqua River and Salmon River populations, and the BRT expects that the near-term ecological benefits from these reductions will result in improved natural production for these populations in the future. In addition, the BRT expected that reductions in hatchery releases that have occurred over the past decade may continue to produce increasingly positive effects on the survival of the ESU in the future, due to the time it may take for past genetic impacts to become attenuated.

Despite these positive factors, the BRT also had considerable concerns about the long-term viability of the ESU. The BRT continued to be concerned that there had been a long-term decline in the productivity of the ESU from the 1930s through the 1990s. Despite some improvements in productivity in the early 2000s, the BRT was concerned that the overall productivity of the ESU remains low compared to what was observed as recently as the 1960s and 1970s. The BRT was also concerned that the majority of the improvement in productivity in the early 2000s was likely due to improved ocean conditions, with a relatively smaller component due to reduced hatchery production (Buhle *et al.,* 2009).

The BRT noted that the legacy of past forest management practices combined with lowland agriculture and urban development has resulted in a situation in which the areas of highest habitat capacity (intrinsic potential) are now severely degraded. The BRT also noted that the combined ODFW/NMFS analysis of freshwater habitat trends for the Oregon coast found little evidence for an overall improving trend in freshwater habitat conditions since the mid-1990s, and evidence of negative trends in some strata. The BRT was also concerned that recent changes in the protection status of beaver, which through their dam building activities create coho salmon habitat, could result in further negative trends in habitat quality. The BRT was therefore concerned that when ocean conditions cycle back to a period of poor survival for coho salmon, the ESU may rapidly decline to the low abundance seen in the mid-1990s. Some members of the BRT observed that the reduction in risks from hatchery and harvest are expected to help buffer the ESU when marine survival returns to a lower level, likely resulting in improved status compared to the situation in the mid-1990s. Others noted that potential declines in beaver, observed negative trends in some habitat features, and the potential for more severe declines in marine productivity could result in even lower abundance levels than during the last period of poor ocean conditions. On balance, the BRT was, as a whole, uncertain about whether the long-term downward trajectory of the ESU's status has been arrested and uncertain about the ESU's ability to survive another prolonged period of low ocean survivals.

Finally, the BRT was also concerned that global climate change will lead to a long-term downward trend in both freshwater and marine coho salmon habitat compared to current conditions. There was considerable uncertainty about the magnitude of most of the specific effects climate change will have on salmon habitat, but the BRT was concerned that most changes associated with climate change are expected to result in poorer and more variable habitat conditions for OC coho salmon than exist currently. Some members of the BRT noted that changes in freshwater flow patterns as a result of climate change may not be as severe in the Oregon coast as in other parts of the Pacific Northwest, while others were concerned by recent observations of extremely poor marine survival rates for several West Coast salmon populations. The distribution of overall risk scores reflects some of this uncertainty.

The BRT concluded that, when future conditions are taken into account, the OC coho salmon ESU as a whole is at moderate risk of extinction. The BRT therefore did not explicitly address whether the ESU was at risk in only a significant portion of its range.

Summary of Factors Affecting the OC Coho Salmon ESU

The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Our previous **Federal Register** Notices, proposed rule, previous BRT reports (Weitkamp *et al,* 1995; Good *et al.* 2005), as well as numerous other reports and assessments (ODFW, 1995; State of Oregon, 2005; State of Oregon 2007), have reviewed in detail the effects of historical and ongoing land management practices that have altered OC coho salmon habitat. The BRT reviewed the factors that have led to the current degraded condition of OC coho salmon habitat. We briefly summarize

this information here and direct readers to the comprehensive analysis of factors affecting OC coho salmon habitat in the BRT report (Stout *et al.,* 2011) for more detail.

Historical and ongoing timber harvest and road building have reduced stream shade, increased fine sediment levels, reduced levels of instream large wood, and altered watershed hydrology. Historical splash damming removed stream roughness elements such as boulders and large wood and in some cases scoured streams to bedrock. Fish passage has been blocked in many streams by improperly designed culverts. Fish passage has been restricted in most estuary areas by tide gates.

Urbanization has resulted in loss of streamside vegetation and added impervious surfaces, which alter normal hydraulic processes. Agricultural activities have removed stream-side vegetation. Building of dikes and levees has disconnected streams from their floodplains and resulted in loss of natural stream sinuosity. Stormwater and agricultural runoff reaching streams is often contaminated by hydrocarbons, fertilizers, pesticides, and other contaminants. In the Umpqua River basin, diversion of water for agriculture reduces base stream flow and may result in higher summer stream temperatures.

Conversion of forest and agricultural land to urban and suburban development is likely to result in an increase in these effects in the future (Burnett *et al.,* 2007). Loss of beavers from areas inhabited by the OC coho salmon has led to reduced stream habitat complexity and loss of freshwater wetlands. The BRT reports that the amount of tidal wetland habitat available to support coho salmon rearing has declined substantially relative to historical estimates across all of the biogeographic strata (Stout *et al.,* 2011). Instream and off-channel gravel mining has removed natural stream substrates and altered floodplain function.

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Historical harvest rates of OC coho salmon ranged from 60 percent to 90 percent from the 1960s into the 1980s (Stout *et al.,* 2011). Modest harvest reductions were achieved in the late 1980s. By 1994, most directed coho salmon harvest was prohibited (Stout *et al.,* 2011). The Pacific Fishery Management Council adopted Amendment 13 to its Salmon Fishery Management Plan in 1998. This amendment was part of the Oregon Plan for Salmon and Watersheds and was designed to reduce harvest of OC coho salmon. Current harvest rates are based on predicted marine survival and range from 0.8 percent to 45 percent. Allowable harvest rates have not exceeded 20 percent (with actual harvest rates being considerably lower) in the past 10 years (PFMC, 2010).

A few small freshwater fisheries on OC coho salmon have been allowed in recent years based on the provision in Amendment 13 that terminal fisheries can be allowed on strong populations as long as the overall exploitation rate for the ESU does not exceed the Amendment 13 allowable rate, and that escapement is not reduced below full seeding of the best available habitat. We have approved these fisheries with the condition that the methodologies used by the ODFW to predict population abundances and estimate full seeding levels are presented to the Pacific Fishery Management Council for review and approval.

While historical harvest management may have contributed to OC coho declines, the BRT concluded that the decreases in harvest mortalities described above have reduced this threat to the ESU and that further harvest reductions would not further reduce the risk to ESU persistence.

Disease or Predation

The ODFW (2005), in its assessment of OC coho salmon, asserted that disease and parasitism is not an important consideration in the recovery of this ESU. However, as many of the streams coho salmon juveniles inhabit are already close to lethal temperatures during the summer months, and with the expectation of rising stream temperatures due to global climate change, increases in infection rates of juvenile coho by parasites may become an increasingly important stressor both for freshwater and marine survival (Stout *et al.,* 2011) and may become important risks for juvenile fish in the early ocean-entry stage of the lifecycle.

The BRT identified several bird species and marine mammals that prey on OC coho salmon, but concluded that avian and mammalian predation may not have been a significant factor for decline when compared with other factors, but more recent work shows that it may be important to recovery actions in certain populations and specific situations within the OC Coho Salmon ESU.

The BRT was more concerned about predation on OC coho salmon from introduced warm-water fishes such as smallmouth bass (*Micropterus dolomieu*) and largemouth bass (*Micropterus salmoides*). These predatory fish are especially abundant in the streams and lakes of the Lakes and the lower Umpqua River. The BRT concluded that predation and competition from exotic fishes, particularly in light of the warming water temperatures from global climate change, could seriously affect the lake and slow-water rearing life history of OC coho salmon by increasing predation.

The Inadequacy of Existing Regulatory Mechanisms

Existing regulations governing coho salmon harvest have dramatically improved the ESU's likelihood of persistence. These regulations are unlikely to be weakened in the future. Many hatchery practices that were detrimental to the long-term viability of this ESU have been discontinued. As the BRT notes in its report, some of the benefits of these management changes are being realized as improvements in ESU abundance. However, trends in freshwater habitat complexity throughout many areas of this ESU's range remain discernibly unchanged (Stout *et al.,* 2011). We remain concerned that regulation of some habitat altering actions is insufficient to provide habitat conditions that support a viable ESU. In the *Efforts Being Made to Protect the Species* section of this Notice, we present our analysis of the current efforts to protect OC coho salmon freshwater and estuarine habitat

Other Natural or Manmade Factors Affecting its Continued Existence

Ocean conditions in the Pacific Northwest exhibit patterns of recurring, decadal-scale variability (including the Pacific Decadal Oscillation and the El Niño Southern Oscillation), and correlations exist between these oceanic changes and salmon abundance in the Pacific Northwest (Stout *et al.,* 2011). It is also generally accepted that for at least 2 decades, beginning about 1977, marine productivity conditions were unfavorable for the majority of salmon and steelhead populations in the Pacific Northwest, but this pattern broke in 1998, after which marine productivity has been quite variable (Stout *et al.,* 2011). In considering these shifts in ocean conditions, the BRT was concerned about how prolonged periods of poor marine survival caused by unfavorable ocean conditions may affect the population viability parameters of abundance, productivity, spatial structure, and diversity. OC coho salmon have persisted through many favorable-unfavorable ocean/climate cycles in the past. However, in the past

much of their freshwater habitat was in good condition, buffering the effects of ocean/climate variability on population abundance and productivity. It is uncertain how these populations will fare in periods of poor ocean survival when their freshwater, estuary, and nearshore marine habitats are degraded (Stout *et al.,* 2011).

The potential effects of global climate change are also a concern for this species. The BRT noted that there is considerable uncertainty regarding the effects of climate change on OC coho salmon and their freshwater, marine, and estuarine habitat. The final BRT report (Stout *et al.,* 2011) relied on an analysis of climate effects on OC coho salmon developed by two of its members (Wainwright and Weitkamp, in review).

Recent climate change has had widespread ecological effects across the globe, including changes in phenology; changes in trophic interactions; range shifts (both in latitude and elevation and depth); extinctions; and genetic adaptations (Parmesan, 2006). These types of changes have observed in salmon populations (ISAB 2007; Crozier *et al.,* 2008a, and Mantua *et al.,* 2009). Although these changes have undoubtedly influenced the observed VSP attributes for OC coho salmon ESU, the BRT could not partition past climate effects from other factors influencing the status of the ESU. Continuing climate change poses a threat to aquatic ecosystems (Poff *et al.,* 2002) and more locally to Pacific salmon (Mote *et al.,* 2003). The coho salmon life cycle extends across three main habitat types: Freshwater rivers and lakes, estuaries, and marine environments. In addition, terrestrial forest habitats are also essential to coho salmon because they determine the quality of freshwater habitats by influencing the types of sediments in spawning habitats and the abundance and structure of pools in juvenile rearing habitats (Cedarholm and Reid, 1987). The BRT considered these four habitats, how physical climate change is expected to affect those habitats over the next 50 years, and how salmon may respond to those effects during specific life-history stages (Stout *et al.,* 2011; Wainwright and Weitkamp, in review). Climate conditions have effects on each of these habitats, thus affecting different portions of the life cycle through different pathways, leading to a very complex set of potential effects. The BRT recognized that, while we have quantitative estimates of likely trends for some of the physical climate changes, we do not have sufficient understanding of the biological response to these changes to reliably quantify the effects on salmon populations and extinction risk. For this reason, their analysis was qualitative, summarizing likely trends in climate, identifying the pathways by which those trends are likely to affect salmon, and assessing the likely direction and rough magnitude of coho salmon population response.

Throughout the life cycle of OC coho salmon, there are a numerous potential effects of climate change (Stout *et al.,* 2011; Wainwright and Weitkamp, in review). The main predicted effects in terrestrial and freshwater habitats include warmer, drier summers, reduced snowpack, lower summer flows, higher summer stream temperatures, and increased winter floods, which would affect coho salmon by reducing available summer rearing habitat, increasing potential scour and egg loss in spawning habitat, increasing thermal stress, and increasing predation risk. In estuarine habitats, the main physical effects are predicted to be rising sea level and increasing water temperatures, which would lead to a reduction in intertidal wetland habitats, increasing thermal stress, increasing predation risk, and unpredictable changes in biological community composition. In marine habitats, there are a number of physical changes that would likey affect coho salmon, including higher water temperature, intensified upwelling, delayed spring transition, intensified stratification, and increasing acidity in coastal waters. Of these, only intensified upwelling would be expected to benefit coastal-rearing salmon; all the other effects would likely be negative.

Despite the uncertainties involved in predicting the effects of global climate change on the OC coho salmon ESU, the available information indicates that most impacts are likely to be negative. While individual effects at a particular life-history stage may be small, the cumulative effect of many small effects multiplied across life-history stages and across generations can result in large changes in salmon population dynamics (Stout *et al.,* 2011). In its conclusion on the likely effects of climate change, the BRT expressed both positive and negative possible effects but stressed that when effects are considered collectively, their impact on ESU viability is likely to be negative despite the large uncertainties associated with individual effects.

Efforts Being Made To Protect the Species

Section 4(b)(1)(A) of the ESA requires the Secretary to take into account efforts being made to protect a species when evaluating a species' listing classification (50 CFR 424.11(f)). In our proposed rule for this action, we presented a comprehensive analysis of Federal, State, and local programs that provide protection to OC coho salmon and their habitat. We did not receive any specific comments regarding our analysis of protective efforts during the public comment period. We present a summary of that analysis below, and direct the reader to the proposed rule for greater detail.

Forestry

State Forest Practices Act

Management of riparian areas on private forest lands within the range of OC coho salmon is regulated by the Oregon Forest Practices Act and Forest Practice Rules (Oregon Department of Forestry, 2005b). These rules require the establishment of riparian management areas (RMA) on certain streams that are within or adjacent to forestry operations. The RMA widths vary from 10 feet (3.05 meters) to 100 feet (30.48 meters) depending on the stream classification, with fish-bearing streams having wider RMA than streams that are not fish-bearing.

Although the Oregon Forest Practices Act and the Forest Practice Rules generally have become more protective of riparian and aquatic habitats over time, significant concerns remain over their ability to adequately protect water quality and salmon habitat (Everest and Reeves, 2007; ODF, 2005b; IMST, 1999). In particular, disagreements continue over: (1) Whether the widths of RMAs are sufficient to fully protect riparian functions and stream habitats; (2) whether operations allowed within RMAs will degrade stream habitats; (3) operations on high-risk landslide sites; and (4) watershed-scale effects. Based on the available information, we were unable to conclude that the Oregon Forest Practices Act adequately protects OC coho habitat in all circumstances. On some streams, forestry operations conducted in compliance with this act are likely to reduce stream shade, slow the recruitment of large woody debris, and add fine sediments. Since there are no limitations on cumulative watershed effects, road density on private forest lands, which is high throughout the range of this ESU, is unlikely to decrease.

State Forest Programs

Approximately 567,000 acres (2,295 square kilometers) of forest land within the range of OC coho salmon are managed by the Oregon Board of Forestry (Oregon Department of

Forestry, 2005). The majority of these lands are managed under the Northwest Oregon Forest Management Plan and the Elliot Forest Management Plan. The plans are described in detail in our proposed rule and in Oregon Department of Forestry (2001 and 2006).

The Oregon Department of Forestry began an ESA section 10 habitat conservation plan for the Elliot State Forest Management Plan. On July 19, 2009, we notified Oregon Department of Forestry that ''we are unable to conclude the strategies would meet the conservation needs of our trust resources and provide for the survival and recovery of Oregon Coast (OC) coho salmon.'' (Letter from Kim Kratz, NMFS to Jim Young, Oregon Department of Forestry, dated July 19, 2009). We identified concerns over stream shade, woody debris recruitment, and certain other issues that needed to be resolved before the Habitat Conservation Plan can be approved. On July 27, 2009, the Oregon Department of Forestry responded, stating that the proposed protective measures ''will provide a high level of protection for Oregon's fish and wildlife species and a low level of risk'' (Letter from Jim Young, Oregon Department of Forestry, to Kim Kratz, NMFS, dated July 27, 2009). There is still significant disagreement over whether the proposed protective measures are sufficient to conserve OC coho salmon and their habitat. Since publication of our proposed rule, no additional progress has been made on this habitat conservation plan. We are as yet unable to conclude that the Elliot State and the Northwest Oregon Forest Management Plans provide for OC coho salmon habitat that is capable of supporting populations that are viable during both good and poor marine conditions.

Northwest Forest Plan

Since 1994, land management on Forest Service and Bureau of Land Management (BLM) lands in Western Oregon has been guided by the Federal Northwest Forest Plan (USDA and USDI, 1994). The aquatic conservation strategy contained in this plan includes elements such as designation of riparian management zones, activity-specific management standards, watershed assessment, watershed restoration, and identification of key watersheds (USDA and USDI, 1994).

Although much of the habitat with high intrinsic potential to support the recovery of OC coho salmon is on lower-elevation, private lands, Federal forest lands contain much of the current high-quality habitat for this species (Burnett *et al.,* 2007). Relative to forest practice rules and practices on many non-Federal lands, the Northwest Forest Plan has large riparian management zones (1 to 2 site-potential tree heights) and relatively protective, activity-specific management standards (USDA and USDI, 1994). As discussed in the proposed rule, we consider the Northwest Forest Plan, when fully implemented, to be sufficient to provide for the habitat needs of OC coho salmon habitat on Federal lands. Although maintaining this high-quality habitat on Federal lands is necessary for the recovery of OC coho salmon, the recovery of the species is unlikely unless habitat can be improved in streams with high-intrinsic-potential on non-Federal lands (Burnett *et al.,* 2007).

The proposed rule also noted that uncertainty exists about the future of the aquatic conservation strategy on Federal lands in the Pacific Northwest. The Forest Service and Bureau of Land Management have attempted to revise the aquatic conservation strategy of the Northwest Forest Plan several times over the last few years, but have encountered legal challenges each time, resulting in no change to the strategy. In addition, ESA section 7 consultations on the management of riparian forests on Federal lands throughout the range of the OC coho salmon ESU have become increasingly contentious over the last year. Recently, we initiated a dispute resolution process with the Forest Service, Bureau of Land Management, and U.S. Fish and Wildlife Service to help resolve scientific issues associated with the management of riparian forests and its effects on salmon habitat.

Agriculture

Across all populations, agricultural lands occupy approximately 0–20 percent of lands adjacent to OC coho salmon habitat (Burnett *et al.,* 2007). Much of this habitat is considered to have high intrinsic potential (low gradient stream reaches with historically high habitat complexity) but has been degraded by past management activities (Burnett *et al.,* 2007). In our proposed rule, we presented an analysis of the degree of protection afforded to OC coho salmon habitat by: (1) Agricultural water quality programs, (2) state water quality management plans for confined animal feeding operation, (3) state pesticide programs, (4) the Federal pesticide labeling program, and (5) irrigation and water availability regulations. We concluded that these state and Federal programs are partially effective at protecting OC coho salmon habitat. Many of the agricultural actions that have the greatest potential to degrade coho habitat, such as management of animal waste, application of toxic pesticides, and discharge of fill material, have some protective measures in place that limit their adverse effects on aquatic habitat. However, deficiencies in these programs limit their effectiveness at protecting OC coho salmon habitat. In particular, the riparian rules of the water quality management program are vague and enforcement of this program is sporadic. The lack of clear criteria for riparian condition will continue to make the requirements of this program difficult to enforce. Levees and dikes can be maintained and left devoid of riparian vegetation regardless of their proximity to a stream. The lack of streamside buffers in the state's pesticide program likely results in water quality impacts from the application of pesticides. Although new requirements from ESA section 7 consultations on Federal pesticide registration may afford more protection to OC coho salmon, these requirements will only apply if the OC coho salmon ESU remains listed. Although a water leasing program is available, there is much uncertainty about how this program will result in increased instream flow. The available information leads us to conclude that it is likely that the quality of OC coho salmon habitat on private agricultural lands may improve slowly over time or remain in a degraded state. It is unlikely that, under the current programs, OC coho salmon habitat will recover to the point that it can produce viable populations during both good and poor marine conditions.

Federal Clean Water Act Fill and Removal Permitting

Several sections of the Federal Clean Water Act, such as section 401 (water quality certification), section 402 (National Pollutant Discharge Elimination System), and section 404 (discharge of fill into waters of the United States), regulate activities that might degrade salmon habitat. Despite the existence and enforcement of this law, a significant percentage of stream reaches in the range of the Oregon Coast coho salmon do not meet current water quality standards. For instance, many of the populations of this ESU have degraded water quality identified as a secondary limiting factor (ODFW, 2007). Forty percent of the stream miles inhabited by OC salmon ESU are classified as temperature impaired (Stout *et al.,* 2011). Although programs carried out under the Clean Water Act are well funded and enforcement of this law occurs, it is unlikely that programs are sufficient to protect salmon habitat

in a condition that would provide for viable populations during good and poor marine conditions.

Gravel Mining

Gravel mining occurs in various areas throughout the freshwater range of OC coho salmon but is most common in the South Fork Umpqua, South Fork Coquille, Nehalem, Nestucca, Trask, Kilchis, Miami, and Wilson rivers. The U.S. Army Corps of Engineers issues permits under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act for gravel mining in rivers in the southern extent of the OC coho salmon's range. Although gravel mining activities using similar methods occur within rivers at the northern extent of this ESU's range, such as the Nehalem River, the Corps of Engineers does not always issue permits for these activities. It is unclear why fewer permits are issued in the northern portion of this ESU's range. The Oregon Department of State Lands issues similar permits under both the Removal-Fill Law and the State Scenic Waterway Law.

In our proposed rule we described in detail the potential adverse effects of improperly managed gravel mining on OC coho salmon habitat. We noted that gravel mining can result in a deeper and less complex streambed with reduced refuge areas for juvenile coho salmon. Gravel mining can alter salmonid food webs and reduce the amount of prey available for juvenile salmonids. Removal of riverbed substrates may also alter the relationship between sediment load and shear stress forces and increase bank and channel erosion. This disrupts channel form, and can also disrupt the processes of channel formation and habitat development (Lagasse *et al.,* 1980; Waters, 1995). Operation of heavy equipment in the river channel or riparian areas can result in disturbance of vegetation, exposure of bare soil to erosive forces, and spills or releases of petroleum-based contaminants.

In our proposed rule, we noted that we have issued draft conference opinions under section 7 of the ESA that have concluded that issuance of permits for gravel mining in streams occupied by OC coho salmon would jeopardize the continued existence of this ESU and result in the destruction or adverse modification of their critical habitat (letter from Michael Crouse, NMFS to Larry Evans, Corps of Engineers dated May 29, 2007). Although gravel mining has ceased in some areas occupied by this ESU, gravel mining in the South Fork Coquille and other areas remains a concern.

Recent ESA and Magnuson-Stevens Fishery Conservation and Management Act consultations indicate that, in some cases, the measures governing sand and gravel mining are inadequate to provide for OC coho salmon habitat capable of producing viable populations during good and poor marine conditions.

Habitat Restoration Programs

The Oregon Watershed Enhancement Board funds and facilitates habitat restoration projects throughout the range of the OC coho salmon. Many of these projects occur on private land and are planned with local stakeholder groups known as watershed councils. Biologists and restoration specialists from state, Federal, and tribal agencies often assist in the planning and implementation of projects. Habitat restoration projects funded by the Oregon Watershed Enhancement Board include installation of fish screens, riparian planting, placement of large woody debris, road treatments to reduce sediment inputs to streams, wetland restoration, and removal of fish passage barriers (Oregon Watershed Enhancement Board, 2009). The web-based Oregon Watershed Restoration Inventory (*http://www.oregon.gov/OWEB/MONITOR/OWRI_data.shtml*) and the North Coast Explorer (*http://www.northcoastexplorer.info/*) systems provide detailed information on restoration projects implemented within the range of OC coho salmon. We also maintain the Pacific Northwest Salmon Habitat Project Database (*http://webapps.nwfsc.noaa.gov/pnshp*) to track salmon habitat restoration projects. Douglas County provided information on several habitat restoration projects completed within the Umpqua River Basin. In addition to state and private efforts, the Forest Service and Bureau of Land Management carry out restoration projects on Federal lands (USDA and USDI, 2005).

A number of restoration projects are occurring throughout the range of this ESU and we expect they will have benefits to ESU viability some time in the future. However, we do not have information available that would allow us to predict or quantify these future improvements to ESU viability. In the absence of this information, we must look at measures of ESU viability to determine if restoration efforts are lowering ESU extinction risk. In the case of OC coho salmon, there are some encouraging signs such as increased abundance over the last several years.

Beaver Management

Beavers were once widespread across Oregon. There is general agreement that beavers are a natural component of the aquatic ecosystem and beaver dams provide ideal habitat for overwintering coho salmon juveniles (ODFW, 1997). Currently, beavers in Oregon are classified as nuisance species, so there is no closed season or bag limit. They may be killed at any time they are encountered. Oregon also maintains a trapping season for beavers. The ODFW is currently investigating possible ways to protect beavers and their dams throughout the range of OC coho salmon. All current protective efforts are voluntary, and there is low certainty they will be fully implemented.

Final Listing Determination

Section 4(b)(1) of the ESA requires that a listing determination be based solely on the best scientific and commercial data available, after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any state or foreign nation to protect and conserve the species. We have reviewed the preliminary and final reports of the BRT (Stout *et al.,* 2010, 2011), co-manager comments, peer review, public comments, and other available published and unpublished information. Based on this review, we conclude that there is no new information to indicate that the boundaries of this ESU should be revised or that the ESU membership of existing hatchery populations should be changed.

Ongoing efforts to protect OC coho salmon and their habitat, as described in the previous section, are likely to provide some benefit to this ESU. Considered collectively, however, these efforts do not comprehensively address the threats to the OC coho salmon ESU from past, ongoing, and future land management activities and global climate change.

Based on the best scientific and commercial information available, including the BRT report, we conclude that the OC coho salmon ESU is not presently in danger of extinction, but is likely to become so in the foreseeable future throughout all of its range. Factors supporting a conclusion that this ESU is not presently in danger of extinction include: (1) Abundance of naturally spawned returns has increased recently; (2) this ESU remains well distributed throughout its historical range from just south of the Columbia River to north of Cape Blanco, Oregon; (3) each one of the five major

geographical areas comprising this ESU contains at least one relatively healthy population; (4) threats posed by overharvest and hatchery practices have largely been addressed; and (5) spawning escapement levels have improved considerably in recent years.

Factors supporting a conclusion that the DPS is likely to become in danger of extinction in the foreseeable future include: (1) After considering the results of the DSS, other information about the ESU's viability, and threats, the BRT found the OC coho salmon ESU to be at least at a moderate risk of extinction; (2) abundance of naturally spawned returns is one tenth of historic levels of abundance; (3) the BRT's analysis of freshwater habitat trends for the Oregon coast found little evidence for an overall improving trend in freshwater habitat conditions since the mid-1990s, and evidence of negative trends in some strata; (4) current protective efforts are insufficient to provide for freshwater habitat conditions capable of producing a viable ESU; (5) there is ongoing uncertainty about the future management of OC coho salmon habitat, particularly forested habitat on state, Federal, and private lands; (6) global climate change is likely to result in further degradation of freshwater habitat conditions and poor marine survival; (7) there are still numerous primary threats to OC coho persistence, including legacy effects from past forest management, poor marine conditions, agricultural activities and urban development in high intrinsic potential habitat, global climate change, etc.; and (8) this ESU faces a long and growing list of secondary threats including invasions of exotic organisms, poor water quality, and land-use conversion. Therefore, we retain the threatened listing for the OC coho salmon ESU.

Prohibitions and Protective Measures

Section 9 of the ESA prohibits the take of endangered species. The term ''take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 U.S.C. 1532(19)). In the case of threatened species, ESA section 4(d) requires us to issue regulations we deem necessary and advisable for the conservation of the species. Such regulations may include extending section 9 take prohibitions. On February 11, 2008, we issued final protective regulations under section 4(d) of the ESA for the OC coho salmon ESU (73 FR 7816). The new information evaluated in this review of the status of the OC coho ESU does not alter our determinations regarding those portions of our February 11, 2008, rule establishing ESA section 4(d) protections for the species. Accordingly, those protective regulations remain in effect.

Other Protective ESA Provisions

Section 7(a)(4) of the ESA requires that Federal agencies confer with NMFS on any actions likely to jeopardize the continued existence of a species proposed for listing and on actions likely to result in the destruction or adverse modification of proposed critical habitat. For listed species, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or conduct are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a proposed Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with NMFS or the US Fish and Wildlife Service, as appropriate. Examples of Federal actions likely to affect salmon include authorized land management activities of the Forest Service and the BLM, as well as operation of hydroelectric and storage projects of the Bureau of Reclamation and the U.S. Army Corps of Engineers. Such activities include timber sales and harvest, permitting livestock grazing, hydroelectric power generation, and flood control. Federal actions, including the U.S. Army Corps of Engineers section 404 permitting activities under the Clean Water Act, permitting activities under the River and Harbors Act, Federal Energy Regulatory Commission licenses for non-Federal development and operation of hydropower, and Federal salmon hatcheries, may also require consultation. We have a long history of consultation with these agencies on the OC coho salmon ESU.

ESA sections 10(a)(1)(A) and 10(a)(1)(B) of the ESA provide NMFS with authority to grant exceptions to the ESA's ''take'' prohibitions. Section 10(a)(1)(A) scientific research and enhancement permits may be issued to entities (Federal and non-Federal) conducting research that involves a directed take of listed species. A directed take refers to the intentional take of listed species. We have issued section 10(a)(1)(A) research/enhancement permits for currently listed ESUs for a number of activities, including trapping and tagging, electroshocking to determine population presence and abundance, removal of fish from irrigation ditches, and collection of adult fish for artificial propagation programs. Section 10(a)(1)(B) incidental take permits may be issued to non-Federal entities performing activities that may incidentally take listed species. The types of activities potentially requiring a section 10(a)(1)(B) incidental take permit include the operation and release of artificially propagated fish by state or privately operated and funded hatcheries, state or academic research that may incidentally take listed species, the implementation of state fishing regulations, logging, road building, grazing, and diverting water into private lands. These ''Other Protective ESA Provisions'' of the February 11, 2008, rule remain in effect.

Effective Date of the Final Listing Determination

Since the OC coho salmon ESU is currently listed as threatened and this final rule is conformation of that finding, this rule is effective immediately.

Critical Habitat

Section 4(a)(3) of the ESA requires that, to the extent practicable and determinable, critical habitat be designated concurrently with the listing of a species. Designation of critical habitat must be based on the best scientific data available and must take into consideration the economic, national security, and other relevant impacts of specifying any particular area as critical habitat.

On February 11, 2008, we designated critical habitat for the OC coho salmon ESU (73 FR 7816). The new information we evaluated in this review of the status of the OC coho ESU does not alter our determinations regarding those portions of our February 11, 2008 rule designating critical habitat for the species. Accordingly, this critical habitat designation remains in effect.

Classification

National Environmental Policy Act (NEPA)

ESA listing decisions are exempt from the requirements to prepare an environmental assessment or environmental impact statement under the NEPA. See NOAA Administrative Order 216 6.03(e)(1) and *Pacific Legal Foundation* v. *Andrus 657 F2d 829 (6th Cir. 1981).* Thus, we have determined that this final listing determination for the OC coho salmon ESU is exempt from the requirements of the NEPA of 1969.

Executive Order (E.O.) 12866, Regulatory Flexibility Act and Paperwork Reduction Act

As noted in the Conference Report on the 1982 amendments to the ESA,

economic impacts cannot be considered when assessing the status of a species. Therefore, the economic analysis requirements of the Regulatory Flexibility Act are not applicable to the listing process. In addition, this rule is exempt from review under E.O. 12866. This final rule does not contain a collection-of-information requirement for the purposes of the Paperwork Reduction Act.

E.O. 13084—Consultation and Coordination With Indian Tribal Governments

E.O. 13084 requires that if NMFS issues a regulation that significantly or uniquely affects the communities of Indian tribal governments and imposes substantial direct compliance costs on those communities, NMFS must consult with those governments or the Federal Government must provide the funds necessary to pay the direct compliance costs incurred by the tribal governments. This final rule does not impose substantial direct compliance costs on the communities of Indian tribal governments. Accordingly, the requirements of section 3(b) of E.O. 13084 do not apply to this final rule. Nonetheless, we will continue to inform potentially affected tribal governments, solicit their input, and coordinate on future management actions.

E.O. 13132—Federalism

E.O. 13132 requires agencies to take into account any federalism impacts of regulations under development. It includes specific directives for consultation in situations where a regulation will preempt state law or impose substantial direct compliance costs on state and local governments (unless required by statute). Neither of those circumstances is applicable to this final rule. In keeping with the intent of the Administration and Congress to provide continuing and meaningful dialogue on issues of mutual state and Federal interest, the proposed rule was provided to Oregon State and the state was invited to comment. We have conferred with the State of Oregon in the course of assessing the status of the OC coho salmon ESU, and have considered and incorporated their comments and recommendations into this final determination where applicable.

References

A list of references cited in this notice is available upon request (see **ADDRESSES**) or via the Internet at *http://www.nwr.noaa.gov.* Additional information, including agency reports and written comments, is also available at this Internet address.

List of Subjects in 50 CFR Part 223

Endangered and threatened species, Exports, Imports, Transportation.

Dated: June 13, 2011.

John Oliver,

Deputy Assistant Administrator for Operations, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 223 is amended as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

■ 1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531 1543; subpart B, § 223.201–202 also issued under 16 U.S.C. 1361 *et seq.;* 16 U.S.C. 5503(d) for § 223.206(d)(9) *et seq.*

■ 2. In § 223.102, in the table, revise paragraph (c)(24) to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

(c) * * *

Species [1]		Where listed	Citation(s) for listing determination(s)	Citation(s) for critical habitat designation(s)
Common name	Scientific name			
*	*	* *	* *	*
(24) Oregon Coast Coho salmon.	*Oncorhynchus kisutch*.	U.S.A., OR, all naturally spawned populations of coho salmon in Oregon coastal streams south of the Columbia River and north of Cape Blanco, including the Cow Creek (ODFW stock #37) coho hatchery program.	73 FR 7816; Feb 11, 2008; [*Insert FR citation; June 16, 2011*].	73 FR 7816; Feb 11, 2008.
*	*	* *	* *	*

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement, see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement, see 56 FR 58612, November 20, 1991).

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