NMFS Comments on ODF B1 Riparian Paper-Log of comments and ODF response

NMFS provided both general and specific comments on ODF PECE Criteria Paper: Certainty that the conservation strategy will be effective: Riparian Areas (ODF B1). Their comments are documented in: *Northwest Fisheries Science Center Review of The Oregon Plan and Coastal Coho Assessment—Habitat. Primary reviewers were Michael Pollock, Tim Beechie, Peter Kiffney, Ashley Steel, Blake Feist, Phil Roni*. The following captures our response to both the general and specific sets of comments.

Riparian Paper: ODF B1

The following comments were incorporated into ODF B1 as described below

Improvements to Riparian Management

NMFS: "Overall the progress Oregon has made in protecting riparian areas is substantial, relative to the recent past."

- ✓ ODF: We agree.

Riparian Function:

Importance of Hardwoods to Stream Ecosystems

NMFS: NMFS reviewers provided conflicting comments on how ODF handled hardwoods. The comment was made that ODF provided "no recognition of the importance of hardwoods to stream ecosystems" and "we like the fact hardwoods are being considered important components of the landscape". This is understandable as NMFS was coordinating multiple reviewers of numerous papers.

- ✓ ODF: ODF provided discussion on this that some reviewers overlooked (original pages 9 and 10).

  We are in complete agreement with the reviewers that hardwoods play a critical role to riparian function. Furthermore, we observe that this function is nearly completely overlooked from a fish habitat perspective because of a myopic focus on large wood recruitment-specifically from large diameter conifers (reference). We have moved the discussion on hardwoods into the introduction in an attempt to make the discussion more prominent (final page 5-6). We have also added text and a placeholder describing the need to develop a monitoring parameter that better values and reflects the role of hardwoods (Table 8, final page 31).

Status and Trend Analysis

NMFS: Define reference sites

- ✓ ODF: A definition was added, as well as references to methods of data collection, descriptions of selection and analyses processes (final pages 7-8).

NMFS: Interpretation of significance of differences between random and reference sites were not in keeping with the results.

- ✓ ODF: We agree and have rewritten the paragraph to reflect that the differences in large conifers and total conifers are substantial.

Large Wood Recruitment

NMFS: ODF provided no data to support assumption that the size of riparian conifers in managed forests is surrogate for instream LWD levels.

- ✓ *ODF*: This was NOT our assumption. We use riparian conifers as an index for potential large wood *recruitment* to streams. This is much different than instream LWD levels. Large wood recruitment signifies potential sources of large wood from riparian areas, in this case as a snapshot in time. Alternatively, instream LWD signifies the amount of large wood in streams. Among other things, instream LWD levels are the result of stream, valley and riparian characteristics as well as historic activities such as instream cleaning to improve fish passage, splash dams, disturbance events, and historic timber harvest without riparian management areas. We clarified the language (final page 9) as shown below in italic text

  > We used numbers of large (DBH > 50 cm), numbers of very large (DBH > 90 cm), and total numbers of conifers within riparian areas as an index *of potential future sources of* large wood recruitment *to streams*.

NMFS: The basal area target for mature forest conditions is too low.

- ✓ *ODF*: We added text and data to describe how the basal area targets were established (final page 13 and Figure 6).

NMFS: Thinning riparian areas decreases the amount of large wood recruitment to streams.

- ✓ *ODF*: We acknowledge that immediate reductions may occur from riparian areas that are managed with the basal area option. ODF has incorporated text, data, and references to demonstrate estimates of large wood recruitment for all stream sizes under both a no-harvest RMA and harvesting to the basal area target following methods described in Murphy (1995). We coupled results from Murphy (1995) with findings from Dent (2001) of observed changes in large wood recruitment as a result of harvesting. We also added data from Robben and Dent (2002) that demonstrates the percent of riparian areas typically managed with the basal area option as well as data from Robben and Dent (2002,) and Allen and Dent (2001) demonstrating the amount of basal area typically retained in riparian areas (final pages 17- 19). It is worth noting that removal of trees in RMAs that are not yet tall enough to reach the stream probably does little to reduce contributions. Trees that die simply from density mortality, rather than other events that pitch the tree over, often stand as snags and will not necessarily have much probability for contribution of LWD.

NMFS: Can't tell how the state forest management and forest practices act standards differ.

- ✓ *ODF*: Appendices containing the exact wording of the strategies (FMP) and rules (FPA) was added.

The following comments were not incorporated. A brief rational is provided.

Ultimately the interpretation of effectiveness now and into the future is based on, first and quantification of risk and second on judgment on how much risk is acceptable. For the first step, it was our goal to provide the best available data for quantifying risks to large wood recruitment and shade. We were able to incorporate changes to the quantification step where NMFS highlighted a misinterpretation of the data, as described above. In other cases, NMFS highlighted a lack of data. In some instances, as described above, we were able to incorporate additional data or findings. However, in other cases the data were simply not available, or significant time, that we don't have, was needed to fill the data gap or run additional analyses.

The second component, "How much risk is acceptable?" typically reflects values and paradigms rather than research and data. For example, comments from NMFS suggest an underlying paradigm that all risk should be eliminated. As such, no changes should occur as a result of management, at any scale. NMFS states that the measure of success in the no-change endeavor is achieved by comparing managed conditions to unmanaged conditions.

The State's paradigm is different. Our framework for judging acceptable risk is based on a paradigm that even without management there was a range of conditions that varied over space and time. Our approach is to manage risk, acknowledging that changes will occur as a result of management. Our measure of success is that management-induced changes should not result in conditions observed at the extreme ends of the "natural" range of conditions. We submit that historic practices as described above did just that. They pushed the habitat conditions to the extreme ends of the range (low wood in streams, low numbers of large conifers in riparian areas, landslides with less wood delivery, fewer side channels, loss of estuarine habitats, etc.). However, we submit that current practices do not pose nearly the same level of risk. Under these strategies conditions are improving and will continue to improve over time.

The challenge of answering how much risk is acceptable is amplified in the absence of data that clearly relates biological meaning to changes that result from current land management activities. NMFS highlighted a need for the State to make this link. We agree, but submit that such data and research is not available. Without such information, the conclusions regarding acceptable risk are founded on paradigms and values. We do not think we can, nor do we intend to change the value structure underlying how NMFS judges what an acceptable level of risk is. However, there is benefit to continuing to bring our underlying paradigms and values into the light so we can have a more productive discussion on risk management.

Furthermore, any effort to eliminate "risk" from NMFS perspective is likely to have a range of social and economic consequences that can increase the risk of conversion to other uses or willingness to invest in restoration.

<u>Large Wood Recruitment From Riparian Areas</u>

NMFS: Reviewers stated that growing large diameter trees in riparian areas "conflicts" with the goals for "producing LWD for streams in that the trees that have been removed are unavailable to fall into the stream and create instream LWD." The reviewers argue that thinning riparian areas delays recruitment of large wood to streams and therefore is not beneficial to instream habitat. They argue this occurs because thinning riparian areas creates healthy stands, of fewer trees.

- *ODF:* ODF disagrees with the assertion that the creation of healthy riparian forests with larger diameter conifers is inconsistent with goals for increasing the amount and timing of large wood recruitment to streams. An extensive discussion of large wood recruitment goals for the forest practice rules and management strategies, which includes requirements for retaining snags, was provided initially. The relationships between stand density, age, and diameter are very well established. Thinned stands produce larger trees at any given age than do unthinned stands; they are more open than unthinned stands; and are often more diverse (Curtis et al. 1998). A review of this literature is outside the scope of this document. However, a few other references that address thinning as a management tool are listed below.
- *In addition, the hypothesis that density mortality is a large factor in contributing trees is flawed.* Most wood input comes during episodic events such as windthrow or floods. Density mortality in closed stands often occurs in highly mesic conditions and tree fall is limited (they stand as snags and fall in pieces as the snag decays). Suppressed trees that die will often be too short to reach the stream even if they do fall. The small diameter of the material will result in rapid depletion compared to the exponential gain in diameter and persistence from retained trees.
- Finally, to the extent that such mortaility may be lost through thinning, we can encourage or require placement of wood instream that has a certainty and size to make a difference! The FMP identifies as a strategy to "restore aquatic habitats" on State Forests. This work occurs following watershed analyses to identify "factors that could be contributing to undesirable aquatic conditions." Finally, the OP watershed councils, SWCD's and others are working to assess watershed conditions and then implement LWD projects where appropriate.

NMFS: Implicit in NMFS comments regarding riparian thinning, is a concern on the part of the reviewers that as soon as a tree is large enough to represent large wood recruitment it will be harvested from the riparian areas. Also that a stand can be harvested down to the basal area target once it reaches mature forest conditions.

- *ODF*: At some point in time under the current rules basal area is not the driver, rather a required minimum number of trees becomes the limiting factor. Furthermore, at the time of the next harvest entry we will know more and the standards may be different. ODF provided data to demonstrate that large trees are not disproportionately harvested from RMAs. No changes were made in that discussion. Furthermore, it appears the reviewers don't quite understand the goals of the rules and strategies. We provide the following excerpt from chapter B1 to illustrate that the goals for riparian areas are to provide for riparian function rather than wood production:

  > FPA: The act acknowledges that the unique concentration of public resource values in and near waters of the state shifts the focus from production to protection measures in riparian areas.
  > FMP: Riparian areas will be managed through two basic approaches. One is to achieve conditions associated with mature forests. Once a riparian area has met the desired condition, it will have limited or no management activity. For riparian areas that do not meet the desired conditions, management strategies will be designed to move the stand toward these conditions in a timely manner.

NMFS: "…most of the extensive literature addressing riparian thinning in riparian forests" demonstrates that "thinning usually delays the entry of LWD into streams and therefore is usually not beneficial to instream habitat."

- *ODF*: No references were provided by NMFS. Will the reviewers please provide full references of the "extensive" literature findings on riparian thinning and the negative influence it has on instream habitat?

NMFS: The analysis needs to compare the effect of management on LWD loads relative to unmanged riparian forests. There is nothing to suggest the management plans will provide adequate levels of LWD in the near-term or long-term.

- *ODF*: We had initially provided a measure of status against reference conditions and demonstrated a paucity of potential large wood recruitment using numbers of large trees as an index of large wood recruitment. We had also put our effectiveness findings in the context of the percent of the coast range historically estimated to be in old growth conditions as a means to judge the relative risk of short-term management strategies that are designed to increase long-term sources of large wood. We feel no changes were needed to address NMFS request to relate findings to unmanaged forests. Furthermore, "unmanaged" or reference stands reflect management in terms of long-term fire suppression and beaver populations substantially reduced from historic levels.

- ODF understands and agrees with reviewers on the need for more monitoring and research to both evaluate and model the effectiveness of riparian thinning and other management strategies over the long term. However, one challenge inherent in this NMFS comment is that we don't currently have a standard against which to measure "adequate levels" of large wood recruitment. Nor do we think such a standard is appropriate given the high variability of riparian areas and the fact that such a standard overlooks the role of other riparian structures and functions provided by hardwoods and shrubs. Note, we did add analyses from Murphy (1995) that estimates reductions in potential large wood recruitment based on current rules as described above.

NMFS: The state needs to provide more evidence of the biological meaning of changes to habitat.

- *ODF*: We agree there is a need for this. However, while there has been ample research on the effects of historic forest management and stream cleaning on fish habitat, in the case of large wood recruitment there is not scientific evidence linking current forest management to a biological, or fish response. CLAMS is working on a model that uses various management scenarios to create riparian areas that can be modeled over time to predict relationships to instream large wood. Such work, although not currently available, will help us to describe alternative futures for aquatic habitat under various management strategies.

Harvest Around Small Streams

NMFS: Where is the data to support the levels of harvest around debris flow sources of large wood to streams?

- *ODF*: An extensive discussion on the importance and relative contributions of upslope and upstream sources of wood is provided with associated references (pages 24-26) in the original document. No changes were made. The recently adopted forest practices and regulations were designed to address this state of knowledge. Currently, no research is available to establish neither acceptable nor unacceptable levels of harvest around the streams and debris flow sources.

Sediment

NMFS had several comments about roads and sediment.

- ODF: These are addressed in the roads and landslides papers.

Beaver

NMFS: There is no beaver management zone.

- *ODF*: This is correct. ODF&W has embarked on a non-regulatory, cooperative effort to increase public awareness and educate landowners and trappers of the benefits of beaver dams to coho habitat. This program and outcomes are described in the ODF&W beaver report.

References

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