

Appendix 1 - Attachment II
Comments on the 2nd Draft Coho Conservation Plan

Review of Coho Conservation Plan, 2nd Draft.

Because it is more complete this draft is much easier to review than the previous one. It also is more coherent and appears better written, although excessively redundant. I have prepared 6 general comments on the Draft Conservation Plan overall, and 60 comments keyed to specific areas of text.

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General Comments:

1. This Plan draft is highly redundant. Some findings, concepts, and assertions are repeated over and over throughout the document. This gives the impression of being a sales job – if you repeat something enough times people will get familiar with it and tend to believe, even if you have not ever provided documentation. This redundancy needs to be reduced, and where some has to remain, the Plan needs extensive cross-referencing. I strongly recommend hiring a professional editor with string organizational skills.

Consider the treatment of beavers. The subject is introduced with a brief statement of 3 bullet points on pages 68-69, then discussed for a contentious page (pp. 97-98) in the section of responses to reviewers' issues, and then ODFW "commitments" relative to beavers are described in more detail in Appendix 1 (pp.22-24). No cross-referencing is done, so readers encountering one of these passages will not immediately be aware of the others. In reading the plan I was regularly disappointed by the inadequate coverage of various subjects, and drafted critical comments to that effect, only to find the discussion I wanted elsewhere in the document. The lists of stakeholder issues addressed and not fully addressed (Pp. 20-21) are selective and I was disappointed about several comments I thought needed explicit responses. But several of those responses are found on pp 94-100. Had that been noted on p.20, I would have known I did not need to worry about the completeness of the lists. Ditto for the Private Lands Habitat Initiative, hatchery management, harvest management, and so on.

2. Several pieces of evidence that I have received recently, or recently connected to each other, cause me to question the generality of the conclusion that overall high-quality wintering habitat is limiting in most basins.

- a. As you know, the MidCoast Watershed Council has been engaged in limiting factors analyses at the 6th field scale. We have received from our contractor five more of these analyses in the past few months, some since release of Draft 1 of this plan. Specifically, spawning gravel appears to be limiting in at least 2 of the last 5 analyses, and summer water

temperature may be limiting in a third, and we have reason to expect these limitations in a variety of other sub-basins.

- b. In part, the discovery of spawning gravel limitation follows the location of unpublished data from the Alsea Project in the 1960s and 1970s indicating that egg-to-fry survival is typically much lower than other recent modeling efforts have assumed (30-40% versus 70%). In part it comes from the realization egg to fry survival is also strongly density-dependent in real-world situations (but not generally modeled that way). Thus more gravel is needed than is generally recognized. This is relevant to restoration, for most of these gravel-limited streams have some gravel, and providing structure and complexity in the right places allows the stream to sort and retain the gravel it does have, thus alleviating the limitation.
- c. If available gravel were measured and summed for whole independent populations it would probably look like all of them have ample gravel, but in reality some tributaries will lack ample gravel and others will have an overabundance, and adults and juveniles may not effectively move among these streams.
- d. Another observation relevant to this subject is that once adult returns get high enough, the life cycle monitoring sites consistently see downstream migrant fry in their smolt traps. This tells me that spring-summer rearing habitat is limited (if not limiting) in small tributaries, and that the fish are able to sense this within days of emergence.
- e. Many streams in the ESU are 303(d) listed for temperature, which means that those downstream migrant fry may not find habitat that will sustain them through the summer, let alone the winter.

All this does not mean that winter habitat is not the most important issue in the independent populations as wholes. However we cannot do restoration projects on the populations as wholes. We generally do them in individual streams or clusters of streams, and project designs need to be sensitive to limitations at that level. Thus, I recommend that less emphasis be put on the population-wide determinations of limiting factors, and more emphasis be put on more local determinations of limitation. The most appropriate scale for determining limiting factors is the scale at which juveniles from a defined spawning reach or cluster of reaches use the habitat prior to their migration to smolt. In practice this usually works out to 6th field to 7th field scale in the Mid Coast Stratum. It may well be different where fish use alternate life histories (lake rearing, estuarine rearing), and where summer and winter stream habitats are spatially more separated.

3. Despite my comment 2, above, our results strongly support the need for increasing stream complexity, particularly by replacing lost or removed large wood. The issue is where, not whether. The important point here is that wood and complexity restore numerous stream functions, do far more than provide winter habitat, and benefit far more watershed functions than just improve Coho habitat. Among the functions provided by large wood in wadeable streams are bedload retention and sorting, retention of spawning gravel, retention of nutrient sources higher in the system (e.g., carcasses, leaves),

restoring/maintaining floodplain connectivity, helping generate sinuosity, retention of floodwater, maintaining stream-groundwater connectivity, improving unit heterogeneity (e.g., pool-riffle ratios), providing cover for juvenile and adult fish, and providing substrate and food for invertebrates. We need to look at all these functions and think of large wood placements in a broad (Oregon Plan) context of restoring ecosystem function. Just tying it to Coho winter habitat and siting projects *only* on that basis misses the point. If the thrust of the Private Lands Habitat Initiative is to expand the scope of projects to increase stream complexity into lowlands, then great. If the thrust is to move the projects downstream, and reduce work upstream, then it likely will be counterproductive.

4. I get a sense throughout the draft plan of too narrow a focus on limited extents of high-quality habitat. This is particularly evident in the discussion of Criterion 6, but recurs throughout. Coastal Coho spawning and rearing is naturally far more dispersed across the landscape than Chinook or Chum spawning and rearing. Too much concentration on a minority of the available habitat is a mistake for Coho. It might work for Chinook, but the Coho effort needs to include efforts to improve second-tier habitats as well. My desired future condition has Coho production spread very widely across the landscape. Creeks that only have the potential capacity to produce a few hundred pre-smolts need to be producing those few hundred. [Of course streams with potential capacity to produce 20,000 smolts should be doing so as well.] Streams that have spawning room for 5-10 redds need to get the adults to dig those 5-10 redds. I also see the draft Plan not giving enough consideration to production through alternate life histories, such as estuarine rearing. The problem here may be one of self-fulfilling prophecies. Most of the Coho natural history modeling efforts that are the foundation of this Plan apply explicitly to wadeable streams. Because larger waters are left out of the models, their real and potential contributions are undervalued. I believe the biggest opportunities for increasing production and achieving the desired conditions may come from the variant life histories in many basins.

5. Beavers and their role in Coho production. This subject is treated in rather differently in four places in the draft Plan and Appendices. On pp 68-69 is a brief statement of ODFW commitment to increase non-regulatory (outreach) efforts, do better mapping, and an overoptimistic statement that these actions should increase the number of beaver dams. On pp. 83-84 is identification of a RM&E top-tier need for beaver research. This is constructive and forward-looking. On pp. 97-98 is a tendentious response to stakeholder comments (including mine) requesting more be done to enhance beavers' proclivity to improve habitat for Coho. Finally on pp. 22-24 of Appendix 1 is a discussion that appears very similar to what appeared in Draft 1. I strongly support research on beaver life history in the Coast Range (which is different from other areas where beavers have been more extensively studied) and on ways to enhance their ability to increase stream complexity. In the spirit of full disclosure, I am currently working with several colleagues on proposals to OWEB to fund some beaver research. I remain unconvinced that the "commitment" outlined on pp. 68-69 of the Plan will be adequate. In essence it says, ODFW will continue its current course, which has not had the desired effect, but we expect it to have better results in the future.

The response to stakeholder comments about beavers (pp. 97-98) includes several statements that need discussed.

Bullet 4. “ODFW asserts that fewer than 4 beaver were harvested from public land (in important coho habitat) between 1999 and 2003 and none were harvested in 2005.” This statement is laughable. Given the casual nature of data collection (phone interviews, conversations with trappers at statewide fur sales) this doesn’t begin to pass the red-face test. I can just imagine the conversations: “Hi, I’m Joe and I’m a game biologist with ODFW. Gee those are some nice beaver pelts. Now you didn’t get any of those out of important Coho habitat did you?” “Oh no, Joe, I wouldn’t do that.”

Bullet 5. “ODFW asserts that beaver are near or at carrying capacity across the ESU.” ODFW may assert this, but has not shown any evidence of data to back it up. Our observations on the ground show a very different trend, and we have not been able to locate any actual research by ODFW to support the assertion.

Bullet 6. “A study conducted along the mid-Oregon coast between 1997 and 1999 showed no correlation between beaver density and the density of dams.” There are at least two things wrong with this statement. First, beavers use habitat differently in different places. In deeper mainstem streams they dig bank dens and do not attempt to build dams, however they still contribute to “beaver density.” So, if the results are not stratified by stream characteristics, a lack of correlation is not surprising. Second, “density of beaver dams” is not a good measure of how beavers can improve stream complexity (and Coho habitat). We have observed in numerous streams the disappearance of large, persistent valley-width beaver ponds with high dams (which provide superb Coho habitat) but the presence of small temporary dams that only back up water within the channel, and that blow out on the first fall freshet. We suspect this change is related to reductions in population density or changes in age structure, but the “density of beaver dams” probably did not go down, if you equate the 5-foot high persistent ones with the 15-inch in-channel ones.

So in summary, I continue to be disappointed by ODFW’s unwillingness to recognize the trends we see, and unwillingness to recognize the magnitude of the opportunity available, but I applaud the recognition and priority of the RM&E need.

6. Population Structure. I have gotten the sense that this Conservation Plan acknowledges the possibility that the assumed population structure may need modification, and in particular that one or more “dependent” populations may deserve being treated as independent populations. This pleases me, for I have been somewhat skeptical of the TRT’s population structure since it was first proposed. The genetic analyses done in Michael Banks’ laboratory show a higher degree of divergence for one “dependent” population, Devils Lake, than between other “independent” populations. They also show evidence of geographic partitioning within some of the larger basins that suggests some level of independence within those basins. As I note elsewhere (comment 13, below) the MCWC has conducted RBA snorkel surveys of the dependent population streams throughout the ESU, and we have a detailed snapshot of 2005 Coho distribution.

I would like to offer some thoughts on the “dependents” most likely to approach “independent” status.

a. Devils Lake. This system has a very small spawning and stream-rearing system, but a large, shallow lake. The stream habitat is mostly in Rock Creek, which flows into a large marsh at the south end of the lake. Seid Creek, a much smaller stream, also flows into the same marsh, and is used by Coho. Two small streams further north on the lake may have been Coho habitat in the past, but apparently are now unsuitable. Devils Lake Coho tend to spawn several weeks later than fish in other mid-coast streams, suggesting local adaptation (population differentiation). The preliminary genetic analyses also indicated Devils Lake Coho are a distinct population. Evidently, lake rearing has greatly improved the resilience of this population, allowing it to survive long enough to differentiate, despite the basin’s very small size. Management of the numerous development threats to the lake environment will be critical to persistence of the population.

b. Yachats River. Our RBA snorkel surveys measure 40 miles of stream habitat accessible to Coho in the basin. Much of the basin has higher-gradient streams, more suitable for steelhead than Coho, but the North Fork and its largest tributary, Williamson Creek, and the upper South Fork, and two upper tributaries, Schoolhouse Creek and Grass Creek are high-quality Coho Habitat. Coho numbers were very low in the Yachats some years in the 90s, and spawning distribution contracted back into these few higher-quality streams. In years following higher adult returns, we find extensive juvenile rearing in the larger mainstem streams as well as these tributaries. This is a basin where winter habitat is clearly limiting. Large wood placements done in 2005 in the upper North Fork, South Fork, Grass Creek, and Williamson Creek, have addressed this limit to some extent. A stretch of the lower river was pushed over against the hill slope and channelized (Carson Meadow). Restoring flow to the historic channel could create substantial additional winter habitat and greatly increase the basin’s productive capacity, however the current owners of the property are not in favor of such restoration. The Yachats has a small, poorly understood estuary that develops water quality problems in fall, but may possibly provide some wintering habitat.

c. Sutton/Mercer system. This small basin north of Florence has two lakes, but relatively small areas of stream habitat. With appropriate management of the streams and lakes, it might become as resilient as Devils Lake.

d. Neskowin Creek. The 2005 snorkel surveys showed surprising numbers of Coho and a very wide distribution through this system. The current breadth of distribution is such that no single adverse event (landslide, chemical spill) would be likely to affect a majority of the habitat now occupied. The lower end of the basin has extensive lowlands that flood in winter. Had then-governor Kitzhaber not “saved” the golf course that occupies much of this lowland from the depredations of The Nature Conservancy, we might have seen this restored to wetland conditions that would have wintered large numbers of Coho, and allowed the system to function much like Beaver Creek.

7. I am disappointed that ODFW has not made better use of the Stakeholder group and its collective expertise. The model being followed seems to be: ODFW does its thing, trots it out for our approval, gets defensive about critical comments, modifies things to address a few of the comments, and claims its plan has had public input. Several opportunities for earlier, constructive stakeholder input have been avoided. For example, this plan draft includes several oblique references to a modified and augmented Coho monitoring program, apparently to provide more precise population estimates at the population level. This effort should have been reviewed by the stakeholders during development. I do not suggest that we are better statisticians than the research staff (but see my comment 13, below), but we do have different perspectives on priorities and needs, and I think hearing these would have been helpful.

Comments Keyed to Particular Places in the Text:

1. Pp. 19-20. Relevant findings from 2005 OCCA: This list omits some key points:
 - a. The recent (since early 1990s) history of harvest management has been radically different from past management, and undoubtedly has contributed to the current population levels.
 - b. Recent changes in hatchery practices in the ESU are temporally correlated with recent population upsurges. Although populations have rebounded throughout, the hatchery changes likely contributed significantly in several systems (Aalsea, Yaquina, Nehalem).
2. P. 24. Conservation Concepts Differ: Bullet 1. "...a leadership infrastructure that includes the Oregon Governor's office and all state and federal agencies that affect salmon habitat." I doubt you have them all. Federal Flood Insurance Program? LUBA?
3. P. 27. ESU/SMU Population Structure: It would help to introduce the dependent population concept here, and include a count of dependent populations per stratum in Table AAA, p. 28.
4. P. 33. Desired Status: Why the 50-year horizon for achieving desired status? I cannot think of any particular restoration activity that has a 50-year lag. Growing trees to recruit wood to streams will take significantly longer than 50 years to be fully functional. Growing trees for shade should not take that long in most circumstances. Somehow I doubt that you have projected lottery revenues into the future and figured it will take that long to pay for all the needed culvert replacements and large wood projects.
5. P. 34. Desired Status Vision. This vision lacks specific inclusion of spatial extent of Coho production. The measurable criteria for success require all independent populations to pass, and aggregate dependent populations to pass, which is a strong basis for being spatially explicit in the Vision Statement.

6. Pp. 35-36. “minimum level of desired status:” Besides being a remarkably awkward phrase, the metric here does not work well. In the TRT’s Decision Support System, values between, say -0.2 and +0.2, really mean “we don’t have a clue whether it’s true or not,” so setting the cutoff at 0.0 means you can conclude success without really having any evidence.
7. Pp. 36-39. Criterion 1 – Adult Abundance. The concept of marine-survival-dependent escapement targets is fairly sophisticated and has a lot going for it. In practice, there are several issues with it that need to be addressed.
 - a. The real marine survival probability experienced by the fish from a given population may not be the coastwide mean. [On pp. 94-95, the Plan acknowledges a trend for higher ocean survival for the south coast in the 1990s.] As Bill Pearcy demonstrated years ago, the smolts’ first week in the ocean is critical to overall survival, which means smolts exiting the Coquille may well be entering a different ocean environment than ones exiting the Alsea or Nehalem, even if they exit the same time.
 - b. Using the life cycle monitoring sites to estimate marine survival is an improvement over using Columbia River hatchery returns, but there still are several pitfalls.

First, the geographic range of the sites is limited compared to the ESU. Second, most are well inland so they are really measuring survival to adult of downstream migrant pre-smolts, and significant mortality may occur between the traps and the ocean. This is significant because we may be able to change management to reduce this mortality if we recognize it as in-basin, and not write it off as marine.

Second, one of the six (Mill Creek Yaquina) is a reservoir system and has consistently higher survival, which may bias the results upward relative to most streams in the ESU.

Third, in some basins (Coquille, Coos) substantial downstream rearing seems to be happening that is not captured by stream-scale life cycle monitoring.

I strongly support adding additional monitoring sites, for example Fall Creek at the HRC, and Three Rivers at Cedar Creek, but be careful with use of the data in the desired status metrics.

- c. If the survival rates at the six sites differ substantially I hope you do not just average and ignore the heterogeneity.

8. P. 37. Average Escapement of 50,500. This was described as “calculated by summing individual independent population estimates.” This sounds like an inferior way to get to the overall estimate. The randomized spawning surveys program was designed to provide greatest resolution (tightest confidence intervals) at the ESU level, intermediate resolution at the stratum level, and lower resolution at the population level. Therefore, it would make more sense to use the ESU estimates directly. In addition, an average of the years 1993-99 is not an adequate descriptor of what happened. It is likely no accident that the poorest return was near the end of the period and involved smolts from a poor parental class entering a sick ocean.
9. False positives: p. 37, final paragraph. I am less pessimistic about occupancy rates under the desired conditions. It appears to me that if the poor ocean return targets are met (left column table bb), and if spawning gravel is of adequate quality (and we have some control over that), enough fry should be produced to more than fully seed the highest-quality streams. I think that with effective restoration efforts we can get away from the picture painted here of Coho production dominated by relatively few stream miles. The restoration of “corridor habitat” (p.54) may be important here, in maintaining occupancy when returns are in the 100,000 range.
10. Criterion 3. Persistence. Pp. 44-45. When I look at Table ee, the results do not mesh with my concept of which populations are most likely to persist. In particular, the better performance of the Alsea compared to the Yaquina, Beaver, and Siletz populations, does not mesh well with recent history. The Alsea had absolute numbers, as well as fish/mile, fall far lower than the others. This result suggests problems with one or more of the models.
11. Within-population distribution. Pp. 44-45. This plan needs a response to criticisms of this criterion in Draft 1. Pretending those comments do not exist accomplishes nothing. This response would presumably go in the section beginning on p. 94. In my opinion, the determination to measure distribution using spawning surveys is foolish. Coho habitat includes much more than spawning habitat, and more than spawning habitat needs to be assessed for occupancy. I will provide more detailed comment when the “under development” parts are available.
12. Diversity. Pp. 46-48. I have several concerns about the decision not to provide a criterion for life-history diversity (p. 47), and by the cavalier treatment of this subject and of my and other stakeholders’ comments on it.
 - a. I wonder whether the decision not to include this subject in the treatments of addressed and inadequately-addressed stakeholder comments (pp. 21-22; pp.94-100) reflects a belief that this subject does not rise to the level of the ones listed, or a desire to sweep difficult and embarrassing subjects under the rug?

- b. I find the short paragraph dismissing the subject on p. 47 specious and misleading:

“We recognize that within-population diversity is just one measure of the diversity of a species, but there is no consensus within the Oregon/Northern California Coast TRT or the Region on what and how to adequately measure other indicators of diversity, such as life-history diversity. Oregon will continue to work on this important issue, but until a viable approach is determined, life history diversity will not be evaluated.”

I have several problems with this statement. First, the chosen metric (harmonic mean of spawner abundance) does not measure “within-population diversity” but rather just one aspect of within-population diversity, namely allelic diversity that is sensitive to erosion from small-population random events (genetic drift and founder and bottleneck effects). Second, my contacts on the TRT do not recall having this conversation with the state team. Third, I wonder about the word “continue” as I have not seen any evidence of constructive work on this yet from ODFW.

- c. I want to reiterate the importance of this issue. If Oregon is to achieve the stated goal of 9.9 million smolts per year (p.37) we cannot expect to get them all out of the “typical” life history. We need to get significant production from alternate life histories using different habitats, as well. Not keeping track of alternate life histories may be the surest way to trap us in a situation where we cannot ever reach the desired conditions.
- d. I suspect that the inability to come up with anything here is at least partly because the subject was pretty much ignored in the 2005 OCCA. At some point it needs to be picked up, and why not now?
- e. Now that I have vented, I would like to try to be constructive, and suggest an approach to developing a criterion and metric. I understand that this approach is less analysis-driven than the other metrics, but face it, this is the kind of thing you will be doing all the time in conservation plans for less-intensively researched SMUs.

Step 1. Describe the standard life history. Eggs laid in gravel in tributary stream. Fry emerge and take up residence in the same stream, summer there, winter there, begin downstream migration the second spring, reside briefly in the estuary, enter the ocean at about 18 months, spend about 18 months in the ocean, return to natal basin stream, spawn and die.

Step 2. List all the life history variants known in the ESU.

Variant 1: migrate downstream in first spring to rear in a lake.

Variant 2. : migrate downstream in first spring, rear in a different stream (complicated by density dependent displacement, but appears volitional in some places – e.g. NF Smith River)

Variant 3. migrate downstream in spring, rear in an estuarine marsh.

Variant 4. migrate downstream in spring, rear in an estuarine marsh, smolt in first year of life.

Variant 5. Migrate downstream in fall, winter in a lake.

Variant 6. Migrate downstream in fall, winter in an estuarine marsh.

Etc.

Step 3. Assemble a matrix with the 21 populations as rows and the variant life histories as columns.

Step 4. Ask District fish biologists, tribal biologists, watershed council staff, South Slough staff, etc. to rate each variant in the basins they know best.

Suggested rating system.

NA = not applicable – e.g. would apply to Variants 1, 5 in basins without accessible lakes.

O = not known to be present in this basin, although habitat appears to exist.

1 = present in basin but rare or restricted to small area of apparent potential (e.g. estuarine wintering in Siletz).

2 = moderately prevalent in basin.

3 = available habitat extensively used (e.g., winter rearing in Tenmile Lake?).

Step 5. Research effort to address unknowns, and to determine which variants are productive of smolts vs dead ends, and if dead ends can be re-connected.

Step 6. Develop desired conditions in terms of which variants should become more prevalent in which basins.

Again, the reason I make such a big deal of this is because I believe that the way to achieve our overall desired conditions is to expand juvenile rearing outside the Standard Life History.

13. Pp. 48-50. Measurable Criteria for Dependent populations. Spawner Trend. I have several concerns with the adult monitoring approach outlined and do not believe it will give you the information you need.

- a. There are severe and apparently unrecognized practical problems with the spawner trend monitoring program outlined. First is the numbers and distribution of the dependents. The MidCoast Watersheds Council completed snorkel surveys in 2005 of all the dependents in the TRTs list from the draft population report. The later (trimmed) TRT list includes 9 dependents in the North Coast Stratum, 25 in the Mid Coast, and 3 in the south coast. Three-mile Creek, one of the “south coast” streams is not really in the south coast stratum but has been placed there for convenience. [It is located just north of the mouth of the Umpqua, and is embedded in the middle of the Lakes stratum, but lacks a lake.] We found several to be currently not Coho habitat (blocked, too small and steep, no gravel at all, etc.), and consider only about 6 on the north coast, 21 on the mid coast, and the 3 south coast to be currently viable candidates for Coho occupancy. Those we have dropped include Rocky Creek and Squaw Creek, both blocked by impassible Hwy 101 culverts, Johnson Creek, which falls over a cliff, China Creek, with zero spawning gravel (it arises in and flows through Pleistocene sand dune deposits). Three in the mid coast (Devils Lake, Berry Creek, and Sutton/Mercer are small lake systems and probably should not be compared to the mid coast independents (perhaps to the lake system stratum instead?). So: we end up with 6 north coast, 18 mid coast, 3 lake, and 3 south coast streams potentially worth surveying. In the 2005 survey Coho were present in 5 north coast dependent systems, 14 mid coast (including the 3 with lakes), and only 1 from the south coast. Thus the number of dependents you would aggregate differ so much that results from stratum to stratum would not be very comparable.

The second problem is caused by the variation in size of the dependents. They range from larger systems that possibly should be rated as potentially independent (Devils Lake, possibly Yachats River, possibly Neskowin Creek) to small streams whose habitat could be fully seeded by the fry from a single successful redd. This will cause real sampling problems, as described below (c.).

- b. The proposed metric has obvious statistical problems.

First, it appears from the text and figures that regressions of “average of total adult escapement” will be used for the comparisons. It is not statistically valid to compare averages in this way. Regressions have to be calculated on the raw data. Running regressions on averages illegitimately discards variance and easily leads to false positive outcomes.

Second, using a 3-year window makes sense from the perspective of response time in an adaptive management context, but regressions on three points necessarily will be linear. It simply is not legitimate to fit higher-order regressions to only 3 points (and shaky for linear). In the hypothetical examples shown, the three years do tend to show a linear trend. But suppose you get a pattern of spawner abundance of 40,000 then 90,000 then 30,000 for the independent populations. You will get a flat regression with huge confidence intervals and it will basically be impossible to demonstrate that any trend in the dependents differs from it.

Third, the range of creek sizes also could cause statistical problems with spawning surveys (survey design not included in the report). If survey reaches are chosen at random, some years they could be concentrated more in the larger systems and others more in the small creeks. Such coverage differences might make as much difference in aggregate return estimates as several percent difference in marine survival. This problem can be dealt with by doing spawn surveys on all the dependents each year, but that would be quite expensive. Or, the survey randomization could be stratified by creek length categories.

Fourth, in the current independent-population surveys, the randomization process often places surveys in reaches that do not include the best spawning habitat in the stream. This was appropriate for the design of that program, where the primary goals were estimating ESU and stratum escapement. In a small stream with little spawning habitat, this approach will lead to too-frequent misses in coverage.

A real-life example: Spencer Creek is a small dependent population a few miles north of Newport. A north fork and south fork join a mile or less east of Hwy 101 and flow through Beverly Beach State Park to the ocean. The EMAP randomized spawning survey program has located a spawning survey on South Fork Spencer. This is a nasty, difficult survey; brushy, swampy, tangled with downed logs, and with little gravel. Adult fish are rarely seen. The MCWC snorkel surveys have been finding Coho in Spencer Creek annually, and it appears most or all the spawning is in the North Fork. Again, if the main purpose of the survey is to estimate returns to the ESU this is not a problem (except to the surveyors). But, if it is important to estimate returns to the 18 midcoast dependents, it would be a serious problem. An equivalent survey mis-location among the north coast's 6 dependents, or the south coast's 3 would affect results even more.

- d. Even if these logistic and statistical problems are overcome, the aggregate adult return estimate for these dependents is not really the best metric for tracking their performance. As noted above, some dependents are small enough that one or two redds could fully seed the habitat. For these, we

would expect occasional colonization by strays in years of overall ESU abundance, followed by relatively few generations of offspring before extirpation, and at any given time one or more cohorts may be missing. Other dependents are large enough that while they may not meet model predictions of more than 100 years persistence, they should have fish most years, and should have genetic continuity of populations for many generations. Some can profitably receive hundreds of returning adults. At least one, Devils Lake, shows evidence of significant local adaptation, and thus stretches the concept of dependence. It would be more valuable to know which ones are occupied in a given year, and how that compares to expectations, than having an aggregate estimate for the stratum. Few Coho in Devils Lake or Neskowin Creek or the Yachats River would be a much greater concern in bad ocean years than zero Coho in Short Sands Creek, Fogarty Creek, or South Depoe Bay Creek. Thus I would recommend a metric based on occupancy rather than one estimated adult returns.

14. P. 51. Measurable Criteria for Dependent populations. Habitat Trends. I wholeheartedly support tracking trends in habitat availability and quality in the dependents, and look forward to the details.
15. P. 52. Conservation Strategy: Key Elements: element 1, and p. 53.
“remediate...via current management programs (harvest management, hatchery program management, and landuse management).” This is important, but not adequate. Some, but not all legacy effects will heal themselves given no further abuse. Others need directed restorative action if the legacy effects are to be remediated within the time frame of this plan – for example stream straightening, channelization, marsh diking.
16. P. 52. Key Elements of Conservation Strategy: Element 2. Regulatory framework.
“...improve selected elements... if deemed necessary.” When will that discussion happen?
17. P. 52. Key element # 8 “Seek to restore processes...” Why is this only number 8 of 10 elements?
18. P. 54 and p. 56. The concept of *dispersal corridor habitat* needs to be refined with respect to Coho. Clearly alleviating manmade barriers is important here and not controversial, but in the conservation literature the corridor habitat concept tends to go a lot farther. Is the idea here to provide cover/structure/complexity throughout the freshwater migration routes of adults and pre-smolts? Sounds good to me. Or is it to somehow modify habitats parr travel through when they are moving upstream in search of cooler water?

It appears to me that the most productive use of this concept might be to assure availability of habitat for fish using variant life histories. For example,

downstream migrant fry have been found regularly in smolt traps whenever spawning densities upstream were high enough to more than fully seed the habitat. In RBA surveys in the Yaquina, juvenile Coho have been found in the lower ends of several small tributaries of the lower river that completely lack spawning habitat. Evidently these are some of those downstream migrants, who entered the small tributaries in summer seeking cooler water. Some of these kinds of tributaries are blocked by impassible culverts, which have not been considered priorities because of lack of spawning habitat.

19. Pp. 55-56. Future improvement: This effort is inadequately described. Needs include staffing and funding for local partners. If dispersal corridor habitat is to be mapped, a good definition of it is needed. Local groups already have several of these products (or equivalents) for some basins. These have been developed locally, so a requirement of consistent format across the ESU would impose unnecessary duplication of effort.

Item 6 may be generally unnecessary, as I expect the primary driver of time sequencing will remain landowner readiness. We can spend all the time and effort we want on sequence planning, but if we are not willing to work out of sequence, we might as well give up, because unwilling or unready owners will be frequent enough to stymie most sequenced plans.

20. P. 56 #5 “...population and reach scale limiting factors...” This brackets, but misses, the appropriate scale for analyzing limiting factors. As I noted in my second general comment above, the appropriate scale is the scale at which juveniles from a defined spawning reach or cluster of reaches use habitat prior to smolting. In practice this usually works out to 6th field to 7th field scale in the Mid Coast Stratum. It may well be different where fish use alternate life histories (lake rearing, estuarine rearing). For example, several small tributaries of the lower Yaquina get little use because they lack spawning gravel (they do get limited use by dispersers from other streams). However, a basin-wide survey would show plenty of gravel in the Yaquina, just unevenly distributed.
21. P. 56. Drop the final bullet on page 56: “...at the population strata and population scales.” See my comment 25, below. This is not a useful scale for prioritization, given the desired conditions chosen.
22. P. 57, 4th bullet. How about “Continue *and augment* infrastructure support (funding)...”
23. P. 58. Background: *Stream Complexity* needs a more explicit explanation. Something like, “Oregon’s use of the term *stream complexity* refers to structure in the stream channel that creates heterogeneity in hydrology and microhabitats. A complex stream may have multiple channels, and/or frequent changes in character (e.g. from riffle to pool to step to pool to riffle). A stream lacking complexity will tend to have long stretches of uniform character – long riffles or long glides.

Generally, stream complexity is induced by solid structures that retard, deflect, and divert flow. In naturally complex streams, logs, boulders, bedrock outcrops, beaver dams, and streamside vegetation are the most frequent generators of complexity. Complex streams perform better at a variety of ecosystem functions, including retention and sorting of bedload and sediment, providing high-quality spawning gravel, retaining nutrient sources higher in the system (e.g., carcasses, leaves), maintaining floodplain connectivity, retaining floodwaters and thus reducing downstream flood effects, maintaining connection with groundwater, and providing food, habitat and cover for fish. Complex streams that provide areas of low velocity habitat during winter high water events are particularly important for juvenile Coho.”

24. P. 59. Applying Priorities to Conservation Action. The last three of these four bullet points are critical and need more emphasis throughout the plan. Too much of this plan seems to ignore them. Over-prioritization on Coho needs can be contrary to all three.
25. Pp. 59-64. Priorities by limiting factor, Population Strata, and Populations; and Table WWW. I do not think this prioritization effort is needed, or helpful and **I recommend discarding it**. Prioritizing among independent populations will do enough damage to the local groups involved in implementation to much more than offset any gains in efficiency.

Two organizing motivations are in opposition here. One is the conservation biology principle that stresses improving the best habitats first. The other is the understandable need to achieve viability in the populations that failed.

The solution to this dilemma comes from remembering that the overall goals require achieving substantial improvement in all 21 independent populations, and having productive Coho habitat distributed as widely as possible across the landscape. Therefore potential projects should be evaluated on the basis of what they can contribute, not on whether they are in the Nestucca vs the Tillamook, or the Alsea vs the Siletz. I therefore recommend discarding most of the recommendations in Table WWW. The disparity in priorities among strata is perplexing. North Coast has two of four basins top tier, but 81% of the draft CWHIP mileage. The Umpqua has 3 of 4 populations top tier, comprising 94% of draft CWHIP. South Stratum has 2 of 4 populations top tier, and 85% of draft CWHIP. In contrast the MidCoast Stratum has only 2 of 6 in top tier, comprising only 60% of draft CWHIP.

The sequencing information in Table WWW is valuable and should be retained, e.g. that habitat restoration in the Salmon River should follow and be contingent upon the proposed hatchery changes.

The decision to choose “mid-tier” Alsea over “top-tier” Siletz as the mid coast basin for the rollout of the Private Lands Habitat Initiative shows that staff does

not see these priorities as constraining their own choices. How can staff justify imposing them on the rest of us?

Also drop bullet 3 on P. 64, referring to stratum prioritization and the final bullet on p. 56.

26. P. 64. final bullet. "...will trigger a rapid reassessment of the ESU..." Since several of the measurable criteria are based on 12-year analyses, the claim of rapid response seems overblown.
27. P. 67. Hatchery Management, 3rd bullet: "Maintain releases of hatchery coho in numbers and locations as outlined in this plan..." Is this statement a commitment to the remaining programs, and as such does it violate the spirit of adaptive management?
28. P. 68. Western Oregon Stream Restoration Program. ODFW needs to commit to funding this program, rather than depending on OWEB. Passing the funding off to OWEB was one of Lindsey Ball's tactics to usurp as much Measure 66 funding from OWEB as he could. To further this OWEB gave the WOSRP little departmental support and faint praise in the budget development process and legislative hearings, then ODFW asked OWEB to bail out the program. We need to get beyond that, and ODFW needs to take firm ownership of the program, enthusiastically support it to the legislature, and get it stable funding.
29. P. 68. Habitat Protection – limiting factors... This is not completely accurate. Habitat Protection in many instances can gradually create higher quality habitat through healing the wounds of old abuses, and through succession. This is the whole premise of riparian management zones in the Forest Practices Act. As the trees grow bigger, the habitat gets better.
30. P. 70. Number 2. Coastal Lowlands Initiative is referred to here as "on non-forested lands." Elsewhere (e.g. p. 63) this is called a "private-lands initiative." The initiative needs consistent terminology.
31. P. 71. ODF proposals. ODF appears to be asking the legislature for \$1.5 million (POP 154A) or \$2.85 million (POP 154B) of lottery funds for cost share or incentive programs. I have several problems with this.

First, it is clear that Measure 66 lottery funds have been used most effectively and efficiently when administered through the OWEB grant programs. We do not need to see yet another diversion to another department's empire building.

Second, the timber industry made a deal to take the lead in doing habitat work on their own lands, and has accomplished a lot. Why should we divert lottery funds to subsidize what they are already doing anyway?

Third, it appears that at least 40% - 50% of the funds would go to new ODF staff, rather than to projects on the ground, which supports my first point that OWEB uses these funds more efficiently.

Fourth, these programs may actually be a hidden backfill, to in effect restore the recently cut Extension Forester positions.

32. P. 71. ODA. It is interesting to see “Agriculture Water Quality Management” listed first on ODA’s list of ongoing efforts to be included in this plan. ODA’s representative to the Mid Coast area explained at length to the Lincoln SWCD as recently as July 20, 2006, that SB 1010 implementation (which I take to be the same as the “Agriculture Water Quality Management” effort) was not related to salmon habitat improvement, and no link should be made between the two. At the Aug 4 Stakeholders meeting ODA staff defended this contradiction by citing a very narrow interpretation of their jurisdiction. ODA needs to get on board and really support the Oregon Plan, not just pay lip service and look for ways to undercut real progress.
33. Pp. 72-74. WRD. This section is totally inadequate. It basically does not even mention municipal rights and users. In our area we see municipal withdrawals as more of a threat to Coho and other salmon and watershed health than rural use (the opposite may be true in the Middle and South Umpqua). Our experience with water rights negotiations over Drift Creek (Siletz) showed that WRD staff considered their priority to be accommodating municipal applicants, and showed little regard for fisheries and other environmental concerns. To this end, staff structured proceedings completely to the benefit of the applicants, and even violated confidences to our detriment and to the benefit of the applicants.
34. P. 74. DEQ. As part of the planned new emphasis on coordination (p. 63, OPSW Core and Implementation Team) DEQ needs authorization to work more closely with ODA in the implementation of SB1010. As it stands, US EPA negotiated an agreement with Oregon to allow the state to implement the non-point-source requirements of the re-authorized Clean Water Act. Oregon designated DEQ as the lead agency in working with EPA, but through SB1010 designated ODA to develop and implement local rules to abate agricultural (including non-point-source) water quality issues. Then, DEQ is authorized to implement TMDLs for these same water quality issues in the same streams (although not limited to agricultural inputs). This process would work much better if SB1010 implementation and TMDL development were better coordinated. See my comment 32, above.

It does no one any good to have ODA approve as adequate a riparian treatment under SP1010, then have DEQ appear 2 years later and tell the same owner that the buffer needs to be expanded or vegetated differently to meet TMDL shade requirements.

35. Pp. 74-75. DSL. DSL has had a history of lackadaisical and haphazard enforcement of dredge-fill laws and regulations. My experience has been that the field staff were grossly overworked and exhibited poor morale and little dedication to the job. It would sure be nice if the Plan included a more explicit description of how DSL will do better in the future. I am not convinced that adding a half-time position “dedicated to compliance monitoring” will solve the problem.

The MidCoast Watersheds Council contracted for winter snorkel surveys a few years ago to investigate winter distribution of Coho juveniles. In mainstem Lobster Creek and Drift Creek (Alsea), juvenile Coho were found using gravel-rich reaches, spending the days nestled among the gravel and coming out into the water column at night. This finding was verified by comparing daytime snorkel surveys, nocturnal snorkel surveys, and electrofishing (the latter done by ODFW staff). It probably would not be a stretch to say that in mainstems, gravel bars are an important part of stream complexity contributing to Coho winter habitat, so with this interpretation, instream gravel-mining operations need further scrutiny.

36. Pp. 75. DLCD. The Plan should include a listing of any commitments as of May 2005, to conform to the format. The record on regulation of development in sensitive locations in coastal Oregon is poor. This problem goes far beyond Coho habitat, to development on unstable bluffs, development in Tsunami zones, and development in floodplains. Allowing these developments is not in the best interests of Oregon, local communities, or the long-term interests of the property owners. It is our local version of subdividing and selling Florida swampland. DLCD needs to step up to the plate and manage growth for the long-term benefit of Oregon and coastal communities. The current local-state partnership is not working. Local planning commissions, municipal governments, and county commissions are under great pressure to approve most development as “good for the economy” and state oversight is too often lacking. Neither local governments nor the state appear committed to implementation of the already-adopted comprehensive plans.
37. P. 75. DLCD. One area of land-use management that has slipped through the cracks is management of stream banks and streambank vegetation on residential properties. Forest lands have riparian regulation under the Forest Practices Act, and SB1010 rules and temperature TMDLs provide some vegetation requirements for riparian areas on agricultural lands. Residential stream-bank vegetation is unprotected, and frequently mismanaged or abused. This very often comes back to haunt the offending landowners as banks wash away and acreage is lost, but poetic justice does not help the habitat. Regulations promoting and protecting riparian vegetation in residential areas are needed, and I think these would be within DLCD jurisdiction. Perhaps these could be part of the “dispersal corridor habitat” initiative.

38. P. 75-76. ODOT. In our experience, ODOT's actual performance in implementing its "Routine Roadside Maintenance Manual" needs better policing. Violations seen in the mid coast area include improper disposal of landslide debris near or into streams, and improper application of herbicides too close to streams.
39. P. 75-76. ODOT, Does ODOT (or any agency?) have jurisdiction over maintenance activities of railroads? We regularly see improper disposal of old railroad ties and plastic wrapping from new railroad ties, and improper application of herbicides.
40. P. 77-78. Resources to Develop Conservation Strategies at Scales within Populations. The MidCoast Watersheds Council has been active in this arena for a few years, but has found resources limiting. This effort needs a specific plan for staffing, coordination with local groups, and funding. If implementation by 2008 is more than a pipe-dream, significant additional resources need to be brought to bear. SHOW US THE MONEY!
41. P. 81. Prioritization of RM&E needs. I am disturbed by the lack of explanation for the differences between this list and the list in Draft 1. In particular the disappearance of the need for research on life-stage specific limiting factors needs to be explained (or reversed). As I have stated elsewhere, production through alternate life histories will be critical to achievement of the desired status.

Top Tier: Life-stage Specific Limiting Factors. Add this back in as a top-tier priority. It will be particularly important for variant life histories. Variant life histories are not well-understood in OC Coho, but may give us some of the best opportunities to achieve our desired status. In some cases, specific restoration actions may be needed to complete these life histories. For example, 0-year Coho have been rearing and growing rapidly in tidal marshes in the upper Yaquina estuary. They disappear by July, when the water in the marshes gets very warm. We do not know whether they have viable habitat options to continue beyond this point, or whether this is a dead end. If the latter, specific restoration actions might provide or expand opportunities to continue to smolting.

Verify results of CWHIP model. This is definitely high priority. How about *test* the CWHIP model? As noted in my second General Comment (P. 1 of these comments), I have doubts about the generality of the results, and recommend that the test be comprehensive – examining all assumptions, performing sensitivity analyses, performing extensive ground-truth surveys, and examining alternate hypotheses of limitation.

Evaluate the effects of marine mammal and avian predation. This does not deserve top, or even mid tier. This is driven by public opinion rather than data. Bird and mammal predators are a frequent excuse for not doing needed restoration work, without good evidence that they limit productivity except in very limited circumstances. In the Columbia we kill and harass birds and pay bounties on

Pike-Minnnows in order to delay having to face up to the real issues limiting the salmon. It does the fish no good to cater to this attitude. The life history of salmon is naturally resilient to depredation. A female salmon who lays 2500 eggs needs to have 2 survive and return, to maintain the population. If she has 10 return, the population grows rapidly. Losing some of the other 2490 to predators is something the populations naturally experience and are well-equipped to survive.

In stream environments it is pretty clear that complex cover greatly reduces the depredations of birds – kingfishers, mergansers, and herons. If any additional research is needed, it should address habitat modifications to reduce impact of predators. Our estuaries are much “cleaner” of complex cover than they used to be, so equivalent research for estuarine habitat might be worth while – but again not top tier.

Evaluate methods to support management of beaver populations. Clearly a top-tier priority.

Middle Tier. **Tools to identify and prioritize restoration projects.** If Oregon is serious about the 2008 deadline for conservation strategies within populations, this needs to be top tier.

Evaluate Coho repopulation of the Salmon River. This needs to be top tier. This is a rare opportunity, and has the potential to tell us a lot about population structure. The study should include genetic analyses as well as numerical ones (spawner counts) to determine sources of colonizing fish. This is an unusual opportunity to learn about “straying” of wild fish, and will be helpful in understanding population differentiation and structure throughout the ESU and elsewhere. The TRT Population report used several assumptions about straying rates to define independent, potentially independent, and dependent populations. Genetic identification of sources for Coho recolonizing the Salmon River will provide a good test of these assumptions.

Lower Tier. Impacts of other hatchery programs: Back under the rug?

Carcass nutrients. Much research has been done elsewhere, so not a high priority here.

42. P. 86. Practical Application. Crediting implementation of SB1010 to adaptive management is sophistry. SB1010 was a necessary response to the Clean Water Act re-authorization.
43. P. 88. Top-down analysis and targeting and community-based leadership. This reads like “We’ll provide the brains and they can provide the brawn.” The problem with this approach is that if the top-down gets the least bit heavy-handed,

(which it usually does) the community leadership is deflected. One of the major difficulties to date in implementation of the Oregon Plan is a lack of buy-in by property owners and other local interests, to the top-down guidance and prioritization.

And frankly, this plan as written so far will not help with the job. For example, assertions like the 50-year timeline made without adequate explanation will either convince people you (top leadership) are clueless or arrogant (if not both), or that the situation is hopeless so why bother.

The communication job is challenging, and to date not well done. An approach that may help would be for representatives of the “top” to make themselves widely available to help educate the community on the scientific basis for the important prioritization decisions and on other relevant issues. The job is to teach the science, and let the audience come to the conclusions that follow.

44. P. 90. Leadership Proposal. Why the focus on the brief annual report? The important things this Core Team would do would be ensuring performance by the various agencies. If the team does not have authority to do that, they would be a waste of time.
45. P. 93. Why 50 years? I asked this question earlier (specific comment No. 4 above). This number does not make a lot of sense to me when I consider the tasks to do:
- a. Increasing complexity by adding large wood to streams: we have demonstrated an IMMEDIATE response – a doubling of over-winter numbers in a treated stream (Green River). We expect the same quick response elsewhere – and have anecdotal evidence of good response in Yachats River this spring. How fast we can put these projects on the ground will depend on public acceptance and infrastructure support, but I can think of no way of reliably projecting 50 years.
 - b. Increasing complexity by planting trees to grow and fall into streams. This is worth doing, but do not expect much of a response in 50 years.
 - c. Planting trees to provide shade. This should not take 50 years except on the largest streams, and they are not where the greatest effect will be. Coos Watershed Association achieved remarkable cooling by riparian planting in about a decade.
 - d. Encouraging Beaver populations. It may take a few years – less than a decade – to build up food supplies in some places, but like large wood projects, the coho responses to beaver ponds can be quick – within weeks.
 - e. Recruiting gravel in gravel-poor streams. This depends on the flux from landslides and remobilization, and in some places will take a while, but I know of no research that puts a 5-decade time frame on it.

f. Population recovery time once habitat is restored? Some depleted rockfish stocks have multi-decade recovery predictions, but those are based on much lower growth and reproductive rates than salmon. With decent ocean conditions and harvest management, juvenile habitat should be filled to whatever habitat capacity we can restore in a (fish) generation or two.

So, just what is the basis for this number? Either explain it or drop it.

And if you do keep it, you need some interim goals, so that the implementers and public will have ways to measure progress within their (and your) careers and lifetimes.

Some possibilities:

1. At least 20% increase in ocean-condition-adjusted returns in the first 10 years for the ESU as a whole.
2. Achieve at least 20% of ocean-condition-adjusted escapement goals (per Table bb) in every independent population in the first 20 years.

46. Pp. 94. Uncertainty regarding goals. This is weasel-worded waffling and we want it removed from the Plan. Statements of desired conditions are a form of vision statements, and ought to be ambitious, but we ought also to commit to them. There is no justification for calling the goals “placeholders” unless a process is underway to modify or refine them, and we have not been informed of such.

The text here seems to be confounding goals and measurability. One possible outcome is that in the future we will have lots of Coho, but we will recognize that we are not very good at telling whether we have precisely met all 6 criteria for all the populations. That is a possible future that does not frighten me.

Another future, which I think is more likely, is that within the next few years research will show us that several of the assumptions that went into the plan were incorrect; for example that the assumed population structure is over-simplified, or that the limiting factors are different than stated. This may necessitate rewriting parts of the plan and refiguring targets, but I think this fits within Adaptive Management, and again is not something to fear.

The real problem is that by calling the goals placeholders, in writing, in the Plan, the Plan’s eventual status as an OAR adopted by the Commission may be severely weakened, and the door would be open for weakening the goals without even re-opening the rule-making process. If that door is open, all the optimism about commitment to implementation will be unjustified.

47. Pp. 94-95. Uncertainty over marine survival rates. It would be surprising if marine survival rates were uniform, given that the populations enter the oceans at different locations on different schedules. Further, as the life cycle monitoring sites are various distances inland, the calculated rates incorporate exposure to different mainstem and estuarine environments. I think it makes sense to seriously consider opportunities for additional Life Cycle Monitoring Sites, particularly ones in additional basins.

Another, perhaps more productive approach, would be to replace the Abundance Criterion with something less sensitive to the vagaries of marine survival, such as smolt production and condition.

48. Pp. 95-96. Uncertainty over hatchery program changes. I will not comment on the Umpqua programs, but it appears that the Salmon River plan has broad support both in Lincoln County and in the Youngs Bay area. I believe ODFW staff have the authority to take this proposal to the Commission independently of the overall Plan, and should do so now, so that they do not lose another year.

49. Pp. 96-97. Adequacy of existing landuse regulatory structure. This subject and response are extremely frustrating. I probably should dig out some of the written statements from the beginnings of the stakeholders group, but, essentially, we were informed that the state was conducting a review of the performance of the Oregon Plan as relates to OC Coho, and it would be an honest assessment that would see what had worked, and what needed improvement. I distinctly remember the phrase “Let the chips fall where they may.” As the assessment progressed, it became clear that the questions: Which regulations are adequate? Which might be adequate if adequately enforced? And which need strengthening? were not being seriously addressed. The text here on p. 96 confirms this point: “In the Coastal Coho Assessment (2005 OCCA), each agency described management responsibilities, regulatory programs, and any related effectiveness and compliance rate monitoring.” So, the agencies described their programs I their own, generally self-serving terms, and the effectiveness thereof was not analyzed.

The text (p.96) continues: “Available data from these agencies will be considered by the state during successive evaluations of this Conservation Plan’s effectiveness. This analysis will help determine the effectiveness of restoration efforts and regulatory structures.” So, staff are announcing that they have no intention of doing that evaluation at this time. I have heard rumors that the Governor’s office has decreed that this Plan will contain no new regulations, lest they become campaign issues in the current Governor’s race. The next review is supposed to be in 6 years, which at least will not be a governor’s election year, but it will be just before Measure 66 is set to sunset, so we can expect that review to be sensitive to anything that might reflect negatively on the prospects for renewal.

Unfortunately, the bottom line seems to be, objective review of regulatory adequacy is too politically sensitive for state staff to ever undertake. Eventually, maybe, some governor will have the gumption to set up an independent panel for that review. In the meantime those of us on the ground will continue to see the obvious inadequacies, and our complaints will be deflected, probably with the explanation that the OCCA and Coho Conservation Plan did not find a need for changes. Am I cynical or what?

50. P. 99. Restoring ecological/watershed processes. I think the state is generally on the right track here, but one aspect needs comment. While there is general agreement that restoring healthy process is preferable to treating symptoms, there is not agreement on which treatments restore process, and which just treat symptoms. Often it's a matter of perspective.

I have encountered several times the argument that placing logs in streams by artificial means is just treating symptoms (e.g. in multiple draft project prioritization documents presented to the OWEB board). If it is your perspective that streams should meet a benchmark of 60-80 logs per mile, and you are placing them to meet that benchmark, then yes, you are treating a symptom. But properly placed logs enhance sediment sorting (a stream/watershed process). They retain gravel, and retard its flushing downstream, supporting important stream processes. They also positively affect the distribution of nutrients, reducing downstream flushing (an important stream process). In the right circumstances they aggrade the streambed, improving the stream's connection to its floodplain and to the adjacent groundwater table, restoring important watershed processes, including buffering streamflows. They also provide cover and substrate for invertebrates, enhancing the instream food web, surely important to watershed health. So, the bottom line: the philosophy expressed is good, but be thoughtful in applying it.

51. Appendix 1, pp. 2-9. Private Lands Habitat Initiative. Watershed councils and SWCDs have been working primarily on non-industrial private lands since their inception. To date we have tended to do large wood placements in wooded reaches but mainly fencing and tree planting in agricultural reaches. This is mainly because of landowner (un)willingness and logistical issues. Landowner issues we have encountered mainly revolve around fears of damage from the logs in high water. A few years ago we developed a proposal to place large wood in the North Fork Yachats River. We were planning to place full-spanning structures in the forested upper reaches and side-oriented placements on the agricultural lands downstream. Because of community concerns that our logs would wash out and damage pastures, destroy bridges, and so on, OWEB recommended, and we did, shrink the project back upstream onto the forested lands. Even with this change, community opposition delayed the project for a year.

Logistics issues. The normal pattern is for agricultural land to be downstream of forested land where streams are larger and log sizes need to be larger. Many streams we would like to treat are too large to use truck-delivered wood (effective maximum length for logs transported by a self-loading log truck is 50-60 feet). With enough money somewhat longer logs could be transported by truck, but this would require use of a loader, flag cars, etc. When we need to place logs in larger streams we use heavy-lift helicopters. They work well in forested landscapes but because of safety and liability issues the helicopters will not transport logs over buildings or utility lines. Roads also need to be closed during log transport operations. In agricultural landscapes all these problems are compounded – more buildings, more wires, more roads. The one helicopter wood placement project we have done in an agricultural landscape (South Fork Alsea) had to be scaled back because safe flying corridors could not be found to access part of the project reach.

So, my recommendation is, to make this initiative a success, focus on overcoming these issues: landowner willingness, community concerns, wood delivery logistics. None of these problems are necessarily insurmountable, but be aware of them up front.

One approach that might make sense, although suitable locations are uncommon, would be to concentrate on opportunities to re-wet old, disconnected side channels. Providing cover and structure to these might be easier than to larger streams, and some of the flood fears might be more easily allayed. The MCWC has done two such projects on small scale in the upper Alsea Basin, (Ernest Creek and Crooked Creek). **These may be available and very useful for demonstration purposes.** I can think of a few possible sites in the mid coast, but not in the Alsea Basin at this time. A couple are in Beaver Creek, one is in Rock Creek (Devils Lake), and one is in the Yachats Basin. Landowner willingness is likely to be problematic for all of them, and our analyses indicate Coho are not winter habitat limited in either Beaver Creek or Rock Creek.

Background. P. 3. (mid-paragraph). "...the amount of high intrinsic potential habitat on non-forested lands is only about 500 miles." Before making such statements we really need to ground-truth the CWHIP analyses.

52. Appendix 1. Pp. 19-21. Western Oregon Stream Restoration Program. Much of this Conservation Plan is heavy on administrative details – Core committees, lead agencies, proposed funding sources. These details took up about 4 pages of the write-up on the Private Lands Habitat Initiative. The discussion here of the WOSRP, which is a very valuable program, omits any such discussion. This is unfortunate because this valuable program has been beset by funding problems since its inception. As I noted in my comment 28, above, ODFW needs to commit to putting this program in its base budget, sell it to the legislature, and get it stable funding. This Plan, and the Private Lands Habitat Initiative may be the tools to make the sale.

I would like to see (if not in the plan, then somewhere) an explanation of the statements in the second paragraph under “Conservation Plan Actions.” “The program will continue to develop better methods and techniques for creating high quality habitat. This includes incorporation of coarse wood into large wood structures to help improve and accelerate the development of dam pool habitats.” What is the difference between “coarse” and “large” wood? And what is the proposed “new” structure of the placements?

53. Pp. 26-27. I was pleased to see that OWEB has not committed to endorsing the stratum prioritizations proposed in this draft Plan. It would do no end of harm to OWEB’s relationship with its primary customers, watershed councils and SWCDs if it were to have to tell them that some of them had an automatic handicap as a result of this plan. I hope OWEB is not pressured into adopting these misguided priorities.

54. Appendix 1, Pp. 28-44. In my comments on draft 1 I objected to ODF’s mischaracterization of Oregon’s forestry practices as sustainable. I will not repeat those comments here – you have seen them. I will just say that sustainability is a high standard to meet, and claiming that a diversity of approaches to forest management constitutes sustainability comes nowhere near that standard. I interpret the shaded paragraph on p. 34 as reference to my comments. It does acknowledge some of my concerns, but obviously does not satisfy them.

I also remain concerned that some aspects of the riparian management areas rules allow management activities that are not in the best interests of the stream, or of Coho habitat. In particular, the allowance of harvest outside 20 feet if basal area is adequate, could have the effect of allowing selective harvest of most of the largest trees outside 20 feet, if the basal area of smaller trees is high enough, thus frustrating the intent of growing large trees for recruitment to the stream.

A second problem has arisen a number of times in the midcoast, and I suspect elsewhere in the ESU. Harvests have been done in accordance with Forest Practices Act rules, leaving a legally adequate buffer. Then within a winter or two, the whole buffer has blown down, in part into the stream. The result is that particular reach now may meet large wood standards, but it has lost its ability to recruit new wood for at least several decades.

55. Appendix 1, p. 41. I have serious concerns about the advisability of the two proposed new actions discussed here. Both appear to be low-cost alternatives to “doing the right thing.” The direct falling of trees into streams would indeed be a low-cost way of adding large wood to increase complexity. The first problem with it is how to determine whether that tree is more valuable in the stream now, or continuing to grow to fall in naturally when it is larger, and likely with roots.

Falling trees into the water can be considered robbing the future to satisfy the present. Bringing in other trees from outside the riparian area to place in the stream, and leaving the ones growing there in place has a potential to benefit both the present and future, but of course is more expensive.

Under certain conditions this proposed practice might be less objectionable, but these are fairly restrictive:

1. The number of trees to be felled is adequate to bring the instream conditions within reasonable range of benchmarks (i.e. 3 per half-mile is grossly inadequate).
2. The trees to be dropped into the stream are of sizes appropriate to the instream restoration objectives.
3. The project can legitimately be described as thinning beneficial to the goals of the RMA, including the accumulation of wood volume in large trees.
4. The Riparian Management Area still meets basal area standards upon completion of the project.

The second proposed practice, mechanically moving gravel from above to below culverts, also seems problematic. Mechanical movement of wood past culverts may be accomplished without major risk, and I do not have major issues with it. Retention of wood and gravel above culverts should not be a major problem for culverts that meet current size and elevation standards. This practice looks like a tactic to extend the lifespan of culverts that ought to be replaced to current standards. Several issues remain, however, with “gravel” movement. It is true that the gravel trapped above culverts should have moved on downstream, but usually the above-culvert accumulations are full of fine sediments as well. These also travel naturally in healthy streams, but fluxes are strongly tied to flow rates, i.e. healthy streams get muddy mainly on high flow events, when they are better able to deposit fines in their floodplains. Mechanical transport of sediments past a culvert during moderate or low flows carries the risk of major turbidity events on lower flows, when the fines are confined to the channel and are most damaging.

56. Appendix 1, pp. 45-51. Management of state forests. Concerns I raised in comments to the first draft about the stability of state forest management given recent challenges in the legislature and locally to increase harvest have not been addressed. Does incorporation stream-protection elements of the current management plans for the Tillamook State Forest in this Conservation plan provide any further protection from management changes deleterious to Coho habitat?
57. Appendix 1, pp 52- 55. ODA. Agricultural Water Quality Management. Note my comment 32, above. ODA has not consistently treated SB1010 implementation as a program that has anything to do with salmon or salmon habitat. ODA Staff have on occasion refused to acknowledge the link between their SB1010 authority and Coho habitat. They have maintained that SB1010 is just about water quality. In fact, the link is straightforward. Water quality standards are set for each stream on a best-use basis, which for most coastal streams is salmonid habitat. SB1010

was enacted to implement these best-use water quality standards in agricultural lands. Since SB1010 appears here in the Coho Conservation Plan, evidently ODA has finally recognized the connections.

A real question exists as to whether the SB 1010 process is adequate to ensure significant improvements in the systematically degraded streams (from a Coho perspective) typical of valley-bottom agricultural lands in the ESU. Our experiences to date do not give us lot of optimism on this point.

- a. Much of this land has a history of stream simplification through cleaning, straightening and re-routing. The common pattern is a formerly meandering stream pushed over to the edge of the valley, into a straight ditch. ODA seems not to acknowledge this as an issue.
- b. The riparian condition rules as adopted (I am very familiar with the mid-coast rules, moderately with north coast rules) are likely inadequate to foster much habitat improvement. Buffer requirements tend to be weaker than on forest land. From a water quality perspective, the adequacy of these buffers depends on up-slope land use, and that is not figured into the rules. Specifically, a buffer that adequately filters runoff from a well-managed, moderately stocked pasture may well be overwhelmed by a winter feeding sacrifice zone pasture. In addition, a buffer that is narrower than the floodplain will be completely inadequate during flood events, as pollutants will be picked up directly by the water before they even reach the buffer, and filtering will be minimal. I have heard unofficially that EPA is beginning review of north coast SB1010 rules, and early indications are they are concerned about adequacy.
- c. To date our experiences with ODA compliance monitoring have not been good. ODA staff seem to have an extremely flexible concept of compliant riparian conditions. They have also exhibited extreme tunnel-vision in regard to their mandate. An example: The first complaint-driven investigation in Lincoln County was of a pasture with a stream, and no riparian buffer. As a result of the investigation the tenant removed the animals, and turned the pasture into a parking lot for heavy equipment. There still is no riparian woody vegetation, and pollution risk appears at least as great as before, but ODA considers it in compliance because it is no longer an agricultural activity. In other instances, compliance staff have refused to provide guidance on what width or species composition of riparian vegetation is appropriate.

58. Appendix 1. pp. 55-57. CAFO. We have seen one recurrent problem with application of the CAFO rules: application to horse stabling operations. ODA seems loath to classify some of these as CAFOs, even though they seem to meet all the criteria.

59. Appendix 1. pp. 72-77. DSL. Note my comment 35, above, about DSL enforcement issues.

Permitting issues. The tables on p. 74 show that almost all fish habitat permitting is done within the general authorizations. Our experience is that we use the GA guidelines as sideboards for our projects. In other words, if a possible project does not qualify for a GA, we modify it to qualify, or do not pursue it. The table suggests others are taking the same approach. This possibly is preventing some innovation.

Editorial

- 1 p. 22 Microsoft gotcha? Numbers should be 1-6, not 7-12.
2. P. 25 Para 2. Oregon Coast oho ESU?
3. P. 37 final paragraph. Sentence beginning “By conducting” is garbled.
4. P. 53 Strategy to Address Key limiting factors: end of passage is missing.
5. P. 54 last paragraph: “predictable” should be “predictably”.
6. P. 55 Action Plan. Why is this sentence in past tense?
7. p. 56 Practicality section. Remove the 0.
8. p. 56 Actions to achieve... first bullet remove “the”.
9. P. 58 Prioritizing Conservation Effort: first sentence is ungrammatical: most likely...than?
10. P. 60. Priorities for oho Salmon?
11. P. 64. Final paragraph. Drop the hyphen.
12. P. 69 Conservation Plan Outreach – limiting factors: Sentence is ungrammatical. “are an essential” disagrees in number.
13. P. 88. Leadership - Concepts. First sentence. Split stator.
14. P. 97, Top. There is no I in ESU.

**Oregon Anglers' comments on the second draft of the
Oregon Coast Coho Conservation Plan**

Generally we think that you have done a very good job making the draft more readable. We do have some comments that we feel would address concerns of our constituents: the sport fishing public, guides, charter boat owners, and commercial fishermen that make their living from sport fishing. These are the people most affected by this plan, and contribute the most directly to the financial base of ODFW.

1) The new Oregon Strategic Wildlife Plan should be high on the list of existing regulatory and voluntary frameworks on page 10.

2) On page 13, table ZZZ:

a) A Top Tier evaluation tool should be: Verification, on a time line, that the reductions in hatchery output have had a significant positive effect on natural production. These reductions have had a significant effect on the fishing industry and tourism in this state, particularly in our coastal communities. Most of the current claims that cutting back on mitigation have showed increased wild Coho returns don't take into account the improved ocean conditions as the major factor that have corresponded with the timing of the decreases.

b) Middle Tier: Second point- Commit to a time line on evaluating the Salmon River. If this stream is not capable of sustaining a significant naturally producing Coho population, we should re-introduce the popular hatchery Coho run. Your information that this run wasn't heavily fished is erroneous. We have gotten more negative feedback from this closure than all other elements in this plan put together.

c) Lower Tier RME: First point- We don't think this point should even be on any "Potential Research" list. There is considerable documentation regarding the benefits of and need for fertilization of our Western rivers with carcasses. A program based on the findings of scientists like Robert Bilby, and Achord, Levin and Zabel of NOAA, and many others, should have been high on the list of all the basin plans in the ESU. We're reinventing the wheel again here!

3) The relevance statement on page 32 is REALLY GOOD! It shouldn't be buried in this lengthy document. Get it up front- and repeat it in the conclusion.

4) Under Hatchery Management (page 67): Why are we giving the impression that we are discarding a potentially important tool in Coho recovery. We agree that past hatchery practices have contributed to a decline in overall salmonid populations. We suggest a minor rewording to make the document a little more upbeat, and give fishermen and those who make their living from this key component of tourism a reason to accept this plan.

- a) Third point: insert- “Until (or unless...) research indicates otherwise, maintain releases of hatchery Coho in numbers...”
- b) Fourth point: insert-“Apply research results from the Oregon Hatchery Research Center to this plan regarding management of hatchery programs.”

5) Under Hatchery Management- Limiting Factors:

- a) Third point: This statement is written as if any improvement in the status of these four rivers can only be due to reductions in mitigation. **THIS STRAINS THE CREDIBILITY OF THIS ENTIRE DOCUMENT!** This overall tone will be attacked by those who live in and fish the coastal areas, as well as a growing number of legislators.
- b) Fourth point: change- “Future application of research-based technology will be (strike *consistent with*) used in achieving the desired status goal for naturally produced Coho in the ESU.”

6) Page 83: The difference between an active and passive recovery plan is about 100 years, a mere wink of geological time, but key to the success or failure of this plan.

7) Lack of Management Action...predation (page 99): Predation is a natural part of the ecosystem. However man has altered the balance by protecting the predators, and they have responded by increasing to record numbers (harbor seals, California sea lions, arctic terns, etc.) What we have now is not a natural system. Predator control can quickly bring about positive results. The Northern Pikeminnow bounty program has been a major factor in the increase in Columbia River returns. But to date well-intending but misguided organizations have used the court system to thwart meaningful attempts to demonstrate reasonable control of overpopulated predators. We, nor anyone that I know of, has advocated exterminating any species. Control means bring numbers back into balance.

8) Finally, we suggest that a six year progress report is made on the plan, with a twelve year major evaluation. However, the reality is that you must be ready with ongoing data to be able to satisfy both the state and federal bodies, and the general public, that provide the financial support and volunteer cooperation to keep this program going.

Thanks for all your efforts.

Dennis Richey
For Oregon Anglers and all sports fishermen

To: Kevin Goodson, ODFW
Jay Nicholas, ODFW

FROM: Rosemary Furfey and Jeff Lockwood, NOAA Fisheries

**Summary of Staff-to-Staff Comments on
July 2006 Second Draft of the Oregon Coast Coho Conservation Plan
August 11, 2006**

We appreciate the opportunity to provide the following staff-to-staff comments on the July 26, 2006 second draft of Oregon's Conservation Plan for Oregon Coast Coho Salmon. We recognize that this draft will undergo revisions based on comments from the Coho Stakeholder Team and NMFS's Technical Recovery Team (TRT) Coho Workgroup. We therefore share these comments and questions in an effort to assist the state of Oregon (Oregon) in producing a technically sound and robust Coho Conservation Plan (CCP). Our comments are designed to help Oregon produce the best possible conservation plan that could potentially comport with the format and contents commonly used in recovery plans for ESA-listed species.

In addition to reviewing the draft CCP, you have asked NMFS to evaluate whether the draft CCP meets the requirements of a Federal Endangered Species Act (ESA) recovery plan. Section 4(f)(1) of the ESA identifies that recovery plans need to include the following: (1) a description of site-specific management actions; (2) objective, measurable criteria for delisting; and (3) estimates of the time required and the cost to carry out those measures needed to achieve the plan's goals and to achieve intermediate steps toward that goal.

Our review of the draft CCP reveals that while this draft is well organized, more clearly written than the June 2006 first draft, and includes descriptions of Oregon programs currently being implemented within the ESU, it does not include site-specific recovery actions that address limiting factors and threats, nor does it include time and cost to carry out recovery actions. The draft plan includes proposed viability criteria and we understand that the Oregon Coast Coho TRT will presently evaluate how these criteria compare with their recommended viability criteria.

The draft plan identifies agency contributions to the CCP, and presents a template (using the Alsea watershed as an example) for future actions to support local conservation strategies. NMFS strongly supports the use of local watershed efforts and conservation strategies for salmon conservation and recovery, and it is a good strategy to provide a template to guide these efforts. However, these actions do not identify site-specific actions that are linked to specific limiting factors, threats, life stages, and viability parameters, as Oregon is doing for ESA recovery plans in the Columbia Basin. Also, there is not a visible commitment or process described for further developing actions in this manner. Thus, while the plan provides a very good foundation, it would require

substantial additional detail, similar to that being developed elsewhere in Oregon, Washington, and Idaho, to be consistent with requirements of an ESA recovery plan.

Overall Comments

This second draft is well organized and well written. The Executive Summary is also a good addition to summarize key points in the draft plan.

NMFS supports the proposed population priorities for short term conservation efforts.

The coho TRT has urged Oregon to use conservation biology principles as a foundation for the CCP. The principles of conservation biology are first mentioned on page 53. We recommend these principles be included in the Introduction to the CCP.

Page 8: Private Lands Initiative: NMFS commends Oregon for recognizing the need to engage private land owners in coho conservation work. Given the very general description of this new program in the draft plan, NMFS has questions about how it can best be implemented while also taking advantage of the strong system of watershed councils and soil and water conservation district (SWCDs) that are already in place on the coast. Instead of creating another program, perhaps Oregon can take the principles of this initiative, i.e., increased outreach to private lowland landowners, focused attention on coho salmon restoration activities, and incorporate these principles into the day to day activities of the current ODA, ODFW, ODF, and OWEB staff. There is still a need for new positions on the coast within ODA and SWCDs, but these staff should be assisting regular operations of these programs in concert with all staff having additional training on coho restoration strategies. One coordinated outreach program needs to be developed and implemented within the ODA and ODFW program areas.

Page 55: The CCP references the “Action Plan.” There needs to be more detail provided here and identify the sections of the CCP this section is referring to.

Page 63: The Private Lands Initiative section needs to identify the types of projects that will be implemented, together with a lead agency to coordinate this effort.

Page 63: The Demonstration Projects section needs to identify specific projects that will be carried out. Give specific examples.

Page 66: This page begins a section that identifies programs carried out by state agencies. The CCP needs to acknowledge that these are programmatic actions and identify which limiting factor these programs address, and more specifically where the actions may be carried out.

Specific Comments

Page 3: The draft CCP states that the steps identified in the Native Fish Conservation Policy for developing a native fish conservation plan are consistent with elements

required in a Federal recovery plan, and on page 17, the CCP states that “Oregon is designing this Conservation Plan to also meet the requirements of a Federal ESA Recovery Plan.” Please describe how the proposed coho Conservation Plan is, or is not, consistent with an ESA recovery plan.

Page 13, 1st paragraph: The top tier RME should have evaluating effectiveness of restoration actions, i.e., adaptive management, above predation studies. As stated in the Plan, habitat restoration is the one component of the four H’s that still needs to be addressed, thus, research activities should focus on this goal.

P. 52: We are pleased to see a better-organized section pertaining to conservation strategy at the landscape scale, although population-specific strategies have yet to be developed.

P. 53: There is a section on “legacy threats,” but no section on current or future threats to the survival and recovery of the species (that is, human activities or actions that are causing, or could cause, limiting factors). Thus, one must conclude that there are no current or future threats, and that all the limiting factors are due entirely to the “legacy threats;” that is, there are no current human activities contributing to the limiting factors. This is not realistic.

P. 57: Regarding the third bullet, “Develop, for each of the 21 independent coho populations, long term conservation strategies, including time-sequenced action plans.” This, in a nutshell, is what NMFS would expect in a recovery plan under the ESA.

Page 58, last paragraph: In the list of habitat conditions, “pasture trenches” should be removed. The list contains natural, nonanthropogenic, habitat conditions that provide overwintering habitat conditions for coho salmon. Pasture trenches are man-made structures that are not always beneficial to overwintering coho.

Page 63, 1st bullet: Included in the new actions for the Plan are annual reports on the status and trend of native salmonids and habitat across in the ESU. NMFS would suggest providing a report every two years considering the amount of staff time needed to be dedicated to this effort and the relatively little amount of information that would be gathered and ready for publication in this small time frame.

P. 66: Regarding the data sharing project, there would be obvious advantages to including Federal agencies, Indian tribes, and non-governmental data warehouses (such as Streamnet) in such an effort.

Page 77: Population-Based Conservation Strategies and Priorities: This section provides a framework for developing the guidance and priorities to conserve coho, but it does not identify specific actions, beyond ground-verifying coho maps. It also does not identify which limiting factors the actions address, nor include time and cost for the actions. The draft plan states that this section will “show what needs to be done immediately to

improve the effectiveness of Oregon’s conservation effort” yet it does not identify actions that can be carried out right away.

Page 78: NMFS supports the ground-verification of coho CWHIP maps. This activity needs to be identified as an immediate action, together with other on-going actions within the watershed. Oregon should contact each watershed council on the coast to identify their list of top actions they plan to implement. Step 6 states that the ground-verification will lead to developing sequenced conservation priorities. This step should also include identification of actions. The plan states that the ground-verification actions will be accomplished by January 2008. We question whether the map verification actions can’t be accomplished more quickly instead of taking one year before recovery actions are identified and implemented. It also is not clear who or which entity is responsible for carrying out the map verification tasks, and who or what entity will ensure that this is carried for each population in the ESU.

P. 78, Key Analysis to Support Local Conservation Strategies: This is a good start that obviously needs to be fleshed out.

- Regarding bullet 2 (refining maps of high quality habitat), will the definition of high quality habitat used for this purpose be based entirely on smolt production? We recommend also using physical, chemical and biological habitat quality so as to provide a verifiable baseline from which to measure changes over time due to effects of both restoration and land management actions.
- Regarding bullet 4, we recommend adding restoration to the purpose of these maps.

Page 81: Define Oregon’s understanding of adaptive management and how it will be applied in the different agencies. This section identifies research priorities, yet there also needs to be a framework identified and a discussion about how each agency will use research and monitoring data to revise and adapt their programs.

P. 83: Regarding the “Alternative to Rule Concept #8,” we appreciate the effort to develop ways to increase the abundance of large wood in streams with “high aquatic potential.” However, we are concerned that allowing reduced retention of basal area in exchange for instream placement of wood may jeopardize long-term recruitment of wood as well as other riparian functions (e.g., shade) for the sake of short-term increases in wood abundance. Modeling could be a useful way to examine these possible tradeoffs. Also, how would “adequate” levels of large wood in streams be determined?

P. 86-87, Early Warning System: We appreciate the potential usefulness of this concept, but believe additional thought must be given to identifying coho population responses, predictors of ocean conditions, and other factors that could truly be useful in predicting and confirming downturns in viability of coho populations. The TRT could be particularly helpful in identifying these factors, which should be laid out in more detail in subsequent versions of the conservation plan.

Page 86: Give an example of how the early warning system will be used and describe how it can be applied within an agency's program.

Page 87: Identify the actions needed to implement the RM&E section. Identify how the early warning system will be developed. Which agency will be responsible for these actions?

Comments on Appendix 1

P. 5: What actions will OWEB take to increase funding for CREP participation?

P. 5, ODFW actions: At what point will the ODFW actions become planned actions instead of the current "potential actions?"

P. 6, DSL actions: How will DSL expedite approval of projects with current staffing and funding levels? Are additional funds and staff needed to accomplish this?

Page 6 in Appendix 1: NMFS is identified as a Federal agency for potential actions. NMFS will need time to identify actions to complete this section.

P. 20, third para.: the conservation plan should include a plan and schedule for contacting landowners with CWHIP lands.

P. 20, fifth para.: the conservation plan should include a plan and schedule for updating the guide for large wood placement.

P. 20, last para.: "Riparian planting projects carried out by the WOSRP..." Does the WOSRP actually carry out restoration projects or just provide technical assistance?

P. 21, second para.: the conservation plan should include a plan and schedule for identifying seasonal stream crossings that block access to winter refuge habitat.

P. 22, beaver proposal: Our comments from June 26th have not been addressed.

P. 25, outreach program: In the third paragraph of this section, we suggest adding watershed councils and soil/water conservation districts.

ODF section: We appreciate that ODF made an effort to explain how it handled comments from stakeholders. Within this section, we have the following comments.

P. 35, landscape trend sampling: "Sampling at the landscape scale is needed..." It is unclear whether ODF is planning to undertake this sampling or not.

P. 35, Current Forest Practices and The Oregon Plan: How will ODF use the upcoming IMST upcoming report on effectiveness monitoring that is described in this paragraph?

P. 39, Riparian Management:

- “Riparian management actions are implemented to achieve or enhance a range of aquatic functions on a site specific basis.” This sentence implies that the goal of forest management in riparian areas is riparian protection or restoration. In reality, this likely is the goal of a very small percentage of management decisions for streamside stands. First, the majority of stream miles in coho watersheds are in non-fish-bearing streams that do not have riparian management areas with requirements for retention of trees, so riparian management usually consists of clearcutting of all existing streamside trees, hardly a strategy “to achieve or enhance a range of aquatic functions.” Second, we have been told repeatedly by ODF that most landowners are not managing in administratively-designated riparian management areas due to the complexities of planning and rule compliance, so protection or restoration is not the goal in this case either, although in some cases it may be a side effect of the decision not to cut the trees.
- “These actions include both active and passive strategies: thinning dense streamside stands, creating openings, providing large wood, planting additional trees, managing for a mix of hardwoods and conifer or electing to not harvest within all or portions of an RMA. Over time these management actions increase the potential for large wood recruitment from the riparian areas, from upslope sources through natural disturbance events, or from opportunities for deliberate placement.” Not all of these strategies increase the potential for large wood recruitment (creating openings, managing for a mix of hardwoods and conifer, clearcutting alongside small non-fish streams).
- “For instance, some streamside stands are overly dense. Thinning in these stands will increase diameter growth and tree health and vigor. Managing these stands will provide opportunities for large wood contributions sooner than if the stands were not thinned.” Modeling studies in western Washington indicate that riparian thinning increases LWM recruitment *only* when trees in the initial stand are too small to create pools (LWM size required to create pools increases with increasing channel width) (Beechie et al. 2000¹). When trees in the initial stand already are large enough to form pools, thinning reduces the number of trees available for recruitment.

P. 40, Upland Management: This paragraph asserts that upland management actions, including “addressing... insects and disease, fire risks, and taking opportunity to use bio-fuels for alternative energy sources”, “help to address water quality limiting factors as well as ensure a potential supply of large wood exists from upslope areas situated along debris torrent prone channels.” This seems like an overgeneralization since these measures often involve heavy or complete removal of trees from uplands and debris flow paths.

¹ Beechie, T.J., G. Pess, P. Kennard, R.E. Bilby, and S. Bolton. 2000. Modeling recovery rates and pathways for woody debris recruitment in northwestern Washington streams. *North American Journal of Fisheries Management* 20:436-452.

P. 47, fourth paragraph: Regarding the Forest Management Plan for the Northwest Oregon state forests, the plan should describe any evidence that “The site-specific strategies are achieved,” or reword this sentence.

P. 47, last paragraph, first bullet: The subject goal applies to large and medium non-fish-bearing streams, not small and large.

P. 48, first paragraph, second bullet: The subject riparian management areas apply to Wide” riparian buffers apply to large and medium non-fish-bearing streams, not small and large.

Oregon Department of Agriculture

Our comments from June 26th have not been addressed

August 21, 2006

TO: Kevin Goodson
ODFW
3406 Cherry Ave. NE
Salem, OR 97303

FROM: Paul Engelmeyer

RE: Comments concerning ODFW's 2nd draft Coastal Coho Conservation Plan (CCCP)

I appreciate the opportunity to comment on the 2nd draft Oregon Coastal Coho Conservation Plan and support the general direction that has been laid out for the Desired Status/recovery planning effort. I would like you to consider a number of issues that I believe should be included in the final recovery planning discussion.

The Coastal coho assessment indicated that coastal coho were barely viable under current habitat conditions. So, when I review the Independent Multidisciplinary Science Team reports on Forestry as well as their Lowlands Report, and the comments by Environmental Protection Agency concerning water quality and stream complexity, I come to the conclusion that existing management does not protect stream habitat conditions necessary for salmon recovery over time in the uplands nor the lowlands. Status quo management of riparian zone has to change. There have been a number of ODFW coho recovery plans in the past decades and I do not consider this a new plan that will help in the recovery of stream complexity, water quality and ultimately our coho salmon. The recovery plan calls for no changes in land management measures in forestry, agricultural or the urban/floodplain development areas. If we are going to recover coho and the other salmon species that are considered species of concern in our coastal landscape ie spring chinook, steelhead and lamprey we must deal with changes in the way we live and work on the landscape.

Specific comments;

Page 4 - historical perspective - what is the reference for this statement of 200 to 500 fish per mile?

Page 5 - This is really an ODFW plan unless there are rules changes by law. And what are the conservation principals that relate directly to recovery of stream complexity and water quality. What changes to land use must be made to ensure we are on the right track on improving stream complexity and water quality?

Page 6 - I do not agree with the statement that 'current land use regulatory framework is likely, generally, in stable or improving habitat production potential across the landscape.'

Page 7 - Prioritization Restoration Efforts - This section should be reworked. I suggest reviewing the National Research Council's 'Upstream Report' concerning metapopulation

structure and link that discussion with prioritization at the 6th field scale by watershed. I would drop Table QQQ. The MidCoast Watersheds Council uses their Limiting Factors Analysis at the 6th field before we develop restoration plans. The strategy should be expanded to all watershed restoration efforts.

Page 8 Key New Actions in the Conservation Plan - I support the direction of accountability. I would challenge the Core Team department heads to not only identify issues under their control that affect the salmon recovery plan ie limiting factors stream complexity, and water quality. So, for example I would think rural and urban development in 'High Intrinsic Potential' habitat would be one issue the DLCD would identify and then make recommendations to deal with this threat. Let's face it the pressure to develop those HIP areas will only increase. Then I challenge those Core Team department heads to a "no loss of HIP habitat'. This is accountability to a recovery plan which would include the design of an incentive strategy that works for protection of HIP. We need to establish benchmarks for protection and restoration for each Core Team department.

Page 46 - Within Population Distribution - I look forward to reviewing this section when it is complete. I believe there should be spawning distribution as well as a summer distribution criterion. With all of our streams on the DEQ's 303dlist and most of them for water temperature the 'heat of the summer' distribution would be an excellent metric for improving habitat conditions and productivity.

Page 48 Criterion 6 - Habitat Conditions. I look forward to reviewing this section when it is completed. This is where establishing a baseline of current habitat conditions for forestry, agriculture and urban with a clear direction to improve stream complexity and identify all risks and threats to the existing habitat conditions. Aquatic Habitat Inventories give a clear direction on this issue. All of our streams lack large wood and our riparian zones have been impacted significantly by human activities. I hope you compare existing habitat conditions to the NOAA benchmarks for stream conditions.

Desired Status: Dependent Populations

Criterion 1 Spawner trend for Dependent populations - I have in the past expressed concern about the accuracy of establishing population estimates for the dependent populations - clearly they are inaccurate. I am pleased that ODFW is developing a monitoring design to deal with this issue.

Page 53 - Principals of Conservation Biology: An Ecosystem Perspective. While I support the concepts the document is articulating here once again I believe there is a disconnect. Protection sounds good but as you can see from the EPA Attachment 1 I find it difficult to believe we can effectively deal with improving stream complexity without dealing with improving the Forest Practices in the riparian zone, Type N stream and unstable slopes.

"As EPA noted in testimony at the October 21, 2004 joint Board meeting with the Environmental Quality Commission we generally support the proposed forestry rule

changes that have been under consideration by the Board. We believe that there is a substantial body of science that demonstrates Oregon's existing forestry rules and best management practices do not consistently meet water quality standards or fully provide riparian functions important to water quality, public water supplies, and fish. We believe that protecting water quality and meeting salmon recovery goals on private forest lands in Oregon will require changes to the State Forest Practices Act (FPA)." Dave Powers, EPA.

As ODFW and the region moves forward with ecosystem approaches to management I would urge the state and NOAA to initiate the concepts and strategies of Marine Driven Nutrients/salmon carcasses as a component of stream productivity, riparian conditions, spawning escapement goals. Bilbly, Cederholm and Naiman have brought the issue out into the open it is time to incorporate these ideas into our planning and monitoring.

Page 59 Prioritizing Conservation efforts - What are the recent management changes that will improve stream complexity? Proposed changes??

This is were I would include clear direction to do the following;

- Establish a timeline to review and revise Amendment 13, and the full seeding issue.
- Establish a process to peer review the effectiveness of SB1010.
- Have an peer review team pull all recommendations identified by the Independent Multidisciplinary Science Team (IMST) that would relate to salmon recovery strategies ie stream complexity, lowlands, forestry practices, water quality/stream temperatures and see what has actually been incorporated into the various state department management measures, then establish a timeline to complete the process.

Sequencing Conservation actions - This is good but I think you should start with the first significant actions 1) reducing the exploitation rate and 2) reducing detrimental hatchery programs. And I agree with the statement about conserving high quality habitat but I find myself in agreement with the IMST and EPA, that we need changes in the rules in Forest Practices. And we need a full external review of the effectiveness of SB1010. It was clear in the presentation by Department of Agriculture that the WQMPs do not deal with salmon recovery. (See attachment 2) This should be one of the highest priorities is for ODA to respond directly to the IMST Lowlands Report and the issue of stream complexity on agricultural lands.

Page 64 - Improved monitoring focus - I would support an external review of the ODFW monitoring program. It has been in place for 10 years or so and from my perspective we need to get at a number of issues that relate to assumption imbedded in the management direction of Amendment 13, such as full seeding, fine sediments/egg to fry survival and harvest rate triggers, as well as population estimates for dependent populations.

Page 65/66 - Regulatory Frameworks/agencies - I would support a direction in this recovery plan for each of these regulatory department to identify the risks and threats to coho recovery with a focus on stream complexity and water quality. For example DEQ/Clean Water Act and the issue of wetlands protection and non-point source pollution.

We know fine sediments are an issue that relates directly to productivity and does existing WQMP effectively deal with these issues? If not, how do we develop a strategy to deal with non-point pollution?

Why hasn't the plan brought the IMST Reports into the discussions concerning improving stream complexity or Lowlands habitat? I have requested presentations that are applicable to these discussions but have been ignored thus far. The Coastal Landscape Monitoring Study (CLAMS) has been available to help the Stakeholder Team but I have been once again unable to bring them into the process to educate the Team on the issues of their research. K. Burnett, G. Reeves et. al have completed "**Distribution of Salmon Habitat Potential Relative to Landscape Characteristics and Implications for Conservation,**" which gives the state clear direction on a number of issues related to salmon recovery. "Results suggest that widespread recovery of coho salmon is unlikely unless habitat can be improved in high-intrinsic-potential reaches on private lands. Knowing where HIP stream reaches occur relative to landscape characteristics can help in evaluating the current and future condition on freshwater habitat, explaining differences between species in population status and risk, and assessing the need for and feasibility of restoration."

The Coastal lowland initiative and private lands initiative are they the same thing or not? Once again this is not new, the watershed councils, and soil and water conservation districts have doing 'on the ground restoration', some of which have been based on a Limiting Factors Analysis. But, if we do not deal with land use laws we will not achieve recovery of ecosystems processes that would benefit multiple species.

Page 67 Hatchery Management - I believe there should be acknowledgement of the issue of ocean density dependency and the potential impacts to recovery. The Columbia River hatchery program is so huge that there may in fact be a reduction in marine survival of our coastal coho. This should be included in the RME priorities.

Page 67 Harvest Management - While there has been significant improvement in harvest management under Amendment 13 I have consistently drawn attention to a number of issues related to this direction ie full seeding, population estimates and harvest rate triggers. I still support putting this into the recovery planning effort.

I cannot endorse RME issue - evaluate the effects of marine mammals and avian predation very low priority.

I cannot agree with the section on beaver management. Beaver are not a nuisance species but a keystone species critical to ecosystem processes and salmon recovery. The monitoring and tracking of this issue needs improvement. I urge ODA/ODFW to deal with this issue more appropriately. High priority for research and strategies at the population scale.

If you would like to discuss any of the issues do not hesitate to call.
Paul Engelmeyer

Attachment 1

Testimony of David Powers,
Regional Manager for Forests and Rangelands,
Environmental Protection Agency, Region 10

Oregon Board of Forestry
November 22, 2005

Good morning Chair Hobbs and Board of Forestry members. My name is David Powers. I am the Regional Manager for Forests and Rangelands for the Environmental Protection Agency's (EPA) Region 10 Office. Thank you for the opportunity to share EPA's thoughts on the Rule Concepts draft reports.

As EPA noted in testimony at the October 21, 2004 joint Board meeting with the Environmental Quality Commission we generally support the proposed forestry rule changes that have been under consideration by the Board. We believe that there is a substantial body of science that demonstrates Oregon's existing forestry rules and best management practices do not consistently meet water quality standards or fully provide riparian functions important to water quality, public water supplies, and fish. We believe that protecting water quality and meeting salmon recovery goals on private forest lands in Oregon will require changes to the State Forest Practices Act (FPA).

Three of the rule concepts under consideration by the Board would help ensure a more consistent, broad-scale application of forest practices that have a higher likelihood of addressing water quality and aquatic habitat impairment on private forest lands than the existing rules. Adoption of new rules to implement concepts #3, #4, and #8 would make progress in addressing protection of riparian areas and high risk, landslide prone areas.

An extensive body of research, monitoring, reviews and assessments support the need for FPA rule changes regarding increased protection of riparian and landslide prone areas. The Governor's Independent Multidisciplinary Science Team report on FPA adequacy provides a strong basis for increased protection of riparian areas. A joint ODF/DEQ FPA sufficiency analysis highlights the high degree of uncertainty that riparian measures in the current FPA are adequate to meet water quality objectives on smaller streams. Improved forest management in riparian areas above human caused fish barriers is strongly supported by science, watershed restoration strategies and expenditures in Oregon, and Oregon Plan objectives.

EPA supports rulemaking on rule concepts #3, #4 and #8 because it would make incremental progress towards addressing shade, bank stability, sedimentation, large wood recruitment, and other functions critical to water quality and beneficial uses. While EPA is not confident that the proposed rule concepts alone will ensure attainment of water quality standards or full attainment of beneficial uses, their adoption as rules would be an important step towards meeting water quality standards, protecting public water supplies, and addressing aquatic habitat impairment on private forest lands.

Thank you again for the opportunity to comment on the draft reports for the three rules concepts. Additional, specific comments are provided below for concepts #3, #4, and #8.

Rule Concept Specific Comments:

Rule Concept #3 Riparian management above fish barriers - the benefits of this rule concept would be enhanced by requiring consistent broad scale rule application and by the use of uniform criteria in determining fish presence. As currently written, provision 11(e) provides no standard or quality assurance that the type of information or “other” processes that can be used to determine fish presence are scientifically credible. In addition, the exception provided by provision 11(f) could substantially negate the potential benefits of rule concept #3. We encourage the Board to eliminate or modify proposed Rule concept #3 provisions 11(e) and 11(f) to ensure consistent progress towards attainment of water quality and aquatic habitat goals.

Rule Concept #4 Wood from debris flows and landslides - the benefits of this rule concept would be enhanced if tree retention outside of riparian management areas in high risk, landslide prone areas that have the potential to deliver wood to streams were also required. The long-term retention of leave trees (through next rotation) should also be required in the rule.

Rule Concept #8 Basal area target increase for medium and small Type F streams - We recommend that the Board eliminate the sunset provisions for the increased basal area targets associated with Concept #8. The existing large wood deficiency documented on private forest lands and the long timeframe associated with recruitment of wood that will persist in streams warrant longer term rule adoption of the proposed increased basal area targets.

We understand the stated concern about reduced primary productivity from “too much shade” within riparian areas. We believe that a credible demonstration of too much shade has not been made, particularly at the landscape scale. The proposed basal area target increase for small and medium streams falls well below the basal area generally found in mature forest stands. The revised targets would also apply only in riparian management areas for Type F streams which usually constitute well under 10% of the land area in typical watersheds in Oregon. No basal area retention is proposed for Type N streams which make up a substantial percentage of the overall stream network. Blow down occurs frequently in riparian areas especially after adjacent regeneration harvest. Flooding, beaver, landslides, insects, and disease also reduce shade levels in riparian stands. Based on the above factors we believe that elevated stream temperatures, high sediment levels, unstable banks, large wood deficiencies, stream simplification, and other aquatic habitat impairments on private forest lands provide a sound basis for adopting higher basal targets for riparian areas. We believe that the benefits of increased riparian protection to water quality and aquatic habitat far outweigh potential concerns about reduced primary productivity.

Attachment 2

The Mid Coast Watersheds Council and Lincoln Soil and Water Conservation District have struggled to reach consensus on the minimum coastal lowland riparian forest buffer widths needed to meet water quality standards and ensure salmonid recovery. Unlike forested uplands, many riparian areas in lowlands receive little or no protection.

According to the Independent Multidisciplinary Science Team (IMST), few studies examine what percentage of a landscape must contain intact riparian management zones, and where the riparian management zones should be located to be most beneficial for maintaining quality salmonid habitat. The IMST further notes that fixed-width buffers are easy to determine but do not necessarily consider variations in the landscape, while variable-width buffers are more difficult to determine but do consider variations in the landscape and stream function. An alternative approach to determining buffer widths is based on the flood-prone area of a stream or river. However, naturally functioning lowland streams and rivers are generally less constrained than upland stream systems and thus the wide floodplains may or may not be feasibly protected.

As a result of the above, the IMST has called for the establishment of science-based riparian area protection guidelines. In addition, they recommend that a statewide riparian policy be developed and implemented to provide healthy riparian areas in sufficient quantity to achieve statewide water quality standards and protect and restore aquatic habitat for salmonids.

The Natural Resources Conservation Service (NRCS) published a Riparian Forest Buffer conservation practice standard in 2003 that establishes the minimum riparian buffer width at 100 feet or 30 percent of the flood plain whichever is less, but not less than 35 feet. In January 1999, a fact sheet was produced by the Washington County Soil and Water Conservation District (SWCD) and the Small Acreage Steering Committee. While acknowledging the minimum 35 foot buffer recommended by NRCS, this fact sheet recommends a minimum of 50 feet to achieve aquatic habitat benefit. The 35 feet of buffer is considered only sufficient to stabilize the stream bank and filter sediment. For maximum flood protection, it recommends that a buffer extending the width of the 100-year floodplain may be desirable.

Many agricultural landowners in the coastal valleys are reluctant to

reduce their limited pastures by developing riparian forest buffers beyond their current width and vegetative composition. They relate stories of how their ancestors settled the coastal valleys shortly after the coast range fires of the mid-1800's and remember salmon being plentiful. Therefore, they question the science that serves to demand more sacrifice from them in the name of salmonid recovery.

To move forward in our salmon recovery efforts, it is imperative that the criteria developed for Coho recovery clearly define the riparian forest buffer requirements for the coastal streams from the headwaters down to the estuaries. The criteria should be specific and include expected widths, plant composition, etc. or provide formulas for determining site-specific management actions.

August 21, 2006

Memo to Jay Nicholas

From: Bill Moshofsky, Save the Salmon Coalition and Oregonians In Action

Re: Comments on Coho Conservation plan – 2nd draft

Overall, the plan presents a positive program to achieve the desired goal, and we appreciate all the efforts to develop and explain it. Here are some suggestions to improve it:

Page 3, second paragraph – I believe relying on the “definition” of conservation which addresses “native fish” is misleading. It does not include any reference to hatchery fish which are included in OAR 635-007-0502, 0503, and 0504, which sets forth “policy.” Having served on the Native Fish Conservation task force, I am keenly aware that the policy includes concern for hatchery fish. Failure to refer to hatchery fish reinforces the notion that there is an inherent, unjustified bias against hatchery fish.

Page 4, 3rd line – I urge this be qualified to leave room for a role for hatchery fish, and suggest the word “primary” be inserted before “natural production.”

Page 5, paragraph headed “Desired Status and Measurable Criteria – As written the second sentence gives the impression only “significant participation by all landowners” is needed to restore salmon. I believe this should be expanded to include other factors, such as in-stream improvements, hatchery management, harvest controls, nutrients, and predator controls.

Page 5, next paragraph “Oregon’s Conservation Strategy” – again, implies “landownerships” are the key. I suggest adding “ and water bodies.”

Throughout the plan – urge using an alternative to “landscape,” such as water-related land, or watersheds.

Page 16, bottom of page – see comment on Page 3 above – using definition section instead of policy sections on “conservation.”

Page 24 – “Conservation Concepts in this Plan Differ from Historical Plans ” – Urge adding something about “predators.” The attention given to predators later on is most welcome and different, and should be included.

Page 52, 57, 64, 65, and 92 – Urge adding reference to “predators.” Getting at the predator problem is good for salmon and responds to broad public concerns.

Comment on Oregon Department of Forestry’s Commitment to the Plan:

Appendix page 33 – The last sentence of the first paragraph includes support for adoption of regulatory controls on forest land relating to non-fish bearing streams. No evidence has been presented to the stakeholder's to justify such controls – certainly not a limiting factor.

COMMENTS CONCERNING 2nd DRAFT of the COASTAL COHO CONSERVATION PLAN

by Johnny Sundstrom, representing
Oregon's Conservation Districts

Public Reaction and Outreach

Public reaction to this Conservation Plan is referenced on p. 20 of the Draft. It focuses almost exclusively on the reactions of the Stakeholder Team and fails to address the need for a far broader investigation of diverse publics and their reaction to this document. While the Stakeholder team has made a huge effort to reflect society's questions and suggestions concerning this Plan and its goals, greater participation from the public will still be necessary.

On p. 25 of the Appendix there is a description of ODFW's Outreach strategy for the Plan and its goals. This strategy tells us *how* this will be done (number of employees, locations, etc.), but fails to offer much, if any, information concerning *what* will be provided. Will this outreach effort include cost estimates so that the Oregon residents, taxpayers and lottery-players can have some sense of what this 50 year process will amount to in terms of the investment of their dollars? Will this outreach effort identify the benefits to coastal communities and the people of Oregon inherent in meeting the goals of the plan? How much revenue can be expected in terms of fishing permits, catch sales, employment and income taxes? If the desired status is achieved, what will be the contribution it will make to the ecosystems involved; how much ocean produced nutrients will be deposited in Coast Range forests, what will be the effects on water quality, quantity and storage as a result of the many improvements envisioned in the Plan? What will be the benefit to all of the wildlife associated and dependent on the annual salmon return? The public has a right to know these things, even if they are mere projections which can be updated and changed every time the Plan is reviewed. Without this kind of knowledge, it may be a hard fight to retain the commitment of Measure 66 beyond 2014 as a myriad of other needs compete for those dollars. Again, on p. 69 the Outreach component of the Plan is mentioned with no reference to the content of such outreach. If this Plan is going to be marketed, and it will have to be marketed if it is to succeed, then there must be a very carefully and well thought out plan for reaching the landowner whose property is vital to these recovery goals, the

school biology teachers whose students will form the nucleus of the next generation's opinion makers, the local politicians and board members of the communities and their Ports and the Councils, the chefs in our restaurants throughout the Pacific NW, the Native Americans whose culture depends on these fish, all of these and everyone else deserve to be informed of the costs and consequences of this Plan and its potential outcomes and benefits.

The Delivery System

Time and again, the local delivery of the Plan, its technical assistance and its impact on the highest intrinsic habitat invokes the services of Soil & Water Conservation Districts and Watershed Councils. Nowhere in the plan is there any analysis of the differences between these entities, their authorities, roles, responsibilities and capacity for serving the needs of the Plan and its projected activities. Is there any difference between these entities and their roles and responsibilities? Are there advantages to a targeted use of each for their particular strengths? What has been the success of these efforts and their participants? What is needed? All that the Plan talks about is more money for capacity? How much more money? Each one million dollars per year for all of Oregon's 45 Conservation Districts will allow for about \$22,222 per District, hardly a half-time employee, and yet this component of the "restoration infrastructure" is expected to carry the ball for the Private Lands Initiative and much more.

P. 89 (statement #4) of the Plan calls Districts and Councils the strongest elements in the on-the-ground implementation of the Oregon Plan, and then criticizes their linkage to higher levels of State government. Help us fix this. Funding for OACD (the Oregon Association of Conservation Districts) in addition to anticipated increases in funding for individual districts would go a long ways toward establishing communication and linkage between the Districts and the State-level administration of the Oregon Plan. Right now there is a proposal to divide Oregon's districts into four geographic areas (NW, SW, NE, & SE) for the purposes of developing and maintaining District capacity and leadership in locally-led processes. Funding for an administrative assistant to the Executive Board member responsible for each of these regions could guarantee a functional response to the criticism mentioned above.

Restoring Ecosystem and Watershed Processes

This is what it's all about.

On p. 99, there is a brief statement concerning the need to address this issue. What we are involved in, if our work is to have any chance of success, is restoring the functions of our watersheds and ecosystems, functions that have been lost or diminished by unparalleled extraction and transformations of the landscape. Does this mean a return to pristine conditions? Of course not. This would be impossible within five hundred years even if the human impact of our current and growing population was to cease immediately. What can we do? We can apply the principles of the emergency room and try to sustain and rebuild salmonid populations by restoring freshwater habitat and praying for good ocean conditions: that is the Plan. In time, if Nature is given the opportunity, our region will once again begin to resemble pre-European conditions and our efforts will help us adapt to these conditions and their pre-requisites. But what really is the restoration of habitat? It is the mimicking and re-establishment of the functions of the landscape, its diversity and its inter-relatedness, and this is far more important than just getting it to look pre-historic... *For example:* we lack the steady input of large wood at the headwaters and throughout the aquatic corridor which can and will move through the system to the ocean reefs. So we place large wood into our streams and it is very costly. Due to downstream bridges, properties, and other infrastructure we cannot afford to let these big logs and roots go crashing willy-nilly down the system in the ancient way. However, in spite of this reality, there are those who oppose cabling these structures so that they remain somewhat in the same location where they are placed. This stance is based on a confusion between appearance and function. The absence of cable, and the huge logs it would take to remain in place in our flashy coastal stream systems, would make costs prohibitive if this were required everywhere large wood is needed. Helicopter placement is sometimes necessary, but it is too expensive to be the technical solution to all of our large wood needs. Protection of downstream infrastructure and property is a legitimate social expectation, therefore we need to use modern cable and glue to restore the historic function of large wood in the system... This example is only brought in for reference to the larger problem of outcomes we can expect and demand of the Conservation Plan.

In other aspects of recovery priorities, The Plan must serve to restore ecosystems and not just stream reaches, and it must guarantee the habitat needs of a wide variety of species or we will be forever contradicting ourselves with specie-by-species management conflicts. And the Plan must allow for society's utilization of these landscapes in a sustainable manner,

integrating the human need for nature's goods and services with the human capacity for the stewardship of resources and the bounty of the land.

8/24/06

September 12, 2006

Bruce McIntosh
Asst. Conservation and Recovery Program Manager
Oregon Department of Fish and Wildlife
28655 Highway 34
Corvallis, OR 97333

Re: *Oregon Coast Coho Conservation Plan – 05/19/2006 Draft.*

Dear Bruce,

Thank you for the opportunity to comment on the July, 2006 draft of the Oregon Coast Coho Conservation Plan (Plan). I apologize for the tardiness in returning these comments to you. The revised draft is a significant improvement over the May draft, offering a more complete, organized and concise Plan. Nonetheless, it still lacks critical components necessary to make it an effective plan for coho recovery. In addition, many of our past comments on the prior draft were not sufficiently addressed and are relevant to this draft. Instead of repeating those comments, we incorporate them by reference and use this opportunity to highlight key themes that must be addressed in the final public draft of the Plan, namely assurances, targeted management actions, and adaptive management.

It is unfortunate that in the past two years of work on this Plan, the State of Oregon has missed two key opportunities to first, increase accountability to coho and second, inspire innovative, cooperative management actions. The first would have led to improved regulations and adaptive management that are the backbone of any natural resource recovery plan. The second would have resulted in many more voluntary partnerships.

Since the Oregon Plan was adopted, coho populations in the ESU spiked but since 2002, have been on a constant decline – in some years losing more fish than the were present in the entire ESU in 1997. The increase has been primarily attributed to a change in ocean conditions and not directly to actions under the Oregon Plan, but the decrease is blamed on a mixture of declining ocean conditions and habitat conditions. The State of Oregon cannot point to a single action it has taken in response to the four years of decline. Indeed, during this time it has rolled back coho-protective regulations on state forests, abdicated its permitting authority over harvest on private lands, and passed one of the most sweeping Oregon-Plan-trump-cards in Measure 37. Yet, based on this draft Plan, the State would have us believe that the proposed Plan offers sufficient accountability, management and adaptive responses to *double* the status of coho in the next fifty years. With the exception of the Department of Fish and Wildlife's laudable plan to reduce hatchery production in select watersheds where it is an identified limiting factor, there are no new proposals, voluntary or otherwise, in this Plan that will move coho any closer to that goal.

Because of these significant deficiencies, we think it would be prudent at this point to add two steps into the time line. The first is an independent scientific review of the Plan to determine if the management actions are sufficient to meet the desired status goals. Notably, the TRT was not tasked or even asked to do a comprehensive sufficiency review. The IMST, AFS or TRT would be the appropriate bodies to conduct this review. Second, we request that the Governor's office take the lead in a negotiation workshop that brings together all of the stakeholders in the absence of the agencies (but with the help of the facilitation team). This workshop would be used to identify specific additional actions and incentives between the parties that can be incorporated into the Plan. To date, there has been no forum for the stakeholders to discuss specific actions and incentives that may be provided to improve conditions for coho. The agencies have dictated this process from the beginning with no chance for the parties to discuss potential new programs and partnerships. The Governor's office is needed to add legitimacy, urgency and leadership to this process.

Accountability:

We applaud the state for identifying accountability as a new management action. We couldn't agree more. However, we believe that what is proposed in this Plan is hardly new and is lacking significant details.

The review of the historical attempts at coho recovery (ex. sum. and pg. xx) offers a useful context by which to measure the potential success of this Plan. While it is true, and a great improvement, that this Plan incorporates the entire life cycle of coho and all of the state agencies, the Plan is only as strong as the efforts put forward to address those individual life stages, and the sincerity and enforcement behind those actions. The previous recovery plans failed in part because there was no follow through when actions did not occur and there was no assurance that commitments wouldn't be rolled back at a future date. In other words there was no accountability. What was there preventing agencies or actors from changing course? The failure of agencies to fully implement the suite of recommendations from the IMST, the passage of Measure 37, the increasing number of streams on the 303(d) list, the change in management of the state forests, are all examples of this lack of assurance and enforcement. Indeed, the fish numbers back up this claim. While hitting a relative high in 2002, the numbers are again on a declining trajectory and there has been no corresponding reaction by any agency. It ultimately boils down to one question: what assurance is there that this plan will succeed?

The Plan proposes two new solutions, which suffice both the leadership/accountability and the adaptive management needs. First, it proposes that a Core Team review the data every 6-12 years and provide a report as an "early warning system." Second, that a team of senior level managers will have direct oversight and responsibility for the Plan. There is no further description of how these proposals are any different from the current management under the existing Core team.

There needs to be a clear line of responsibility for the Plan from the agencies through the Governor's office, that must include a description of who does what when things look bad for coho. The report by the Core Team serves no purpose if a clear reaction and response to the report is not vested in individuals at higher levels. In fact, this is a criticism of past leadership failures (the lack of vested authority) in the Plan itself (pg. 89, pt. 5). Simply providing a report to the Governor's office and Legislature gives them the prerogative to ignore it, which will not advance the coho to the desired status. For example, if the report shows that coho are not advancing towards the desired status and explains which agencies are not committed to their proposed management actions, then this Plan should describe in detail that the Governor will ask the legislature to reduce discretionary agency funding or some other incentive to change course. If agencies are making significant headway towards the goal, additional rewards should be built into the system, such as staffing. Instead of explaining how this leadership and responsibility will work, the Plan provides a laundry list of excuses as to why the leadership has failed in the past and is likely to fail in the future (pg. 89), with no fixes proposed. An example of how this lack of leadership has failed even in the Stakeholder process is provided below.

This clear delineation of responsibility and accountability is imperative in light of the fact that this Core Team and report will be focused on multiple ESUs, many of which are currently listed under the ESA that may require greater attention. It will be too easy for Oregon Coast coho, and this Plan, to be lost in the sheer workload across the state. The accountability and responsibility, complete with possible reactions and the individuals with authority to carry them out, must be identified in the Plan itself to ensure that Oregon Coast coho are not simply "shelved" over the next 50 years, or are not thrust aside with changing political climates. Strong accountability will lead to strong management actions, innovative thinking, and effective adaptive management.

Management Actions

It is most unfortunate that this process missed a key opportunity to improve management actions, both regulatory and nonregulatory, for coho. The desired status is an ambitious and aggressive goal. It is abundantly clear that the actions under the Oregon Plan are not sufficient to reach that goal, which is considerably higher than mere "viability" – if they were, this Plan would not be necessary. Indeed, many reviews have criticized the weakness of the management actions included in the Oregon Plan or taken in response to the Oregon Plan especially the land based actions (see for example, CLAMS, the IMST reports or NOAA Fisheries final listing decision for Oregon Coast Coho; contrast to claims made on pg. 6-7). There is a clear need for a new "carrot and stick" model.

As it stands now, the desired status, while still subject to its own problems, is something that can easily be pushed aside. There is no bottom line – or stick - for coho. The way the Plan is currently written, actions could be ignored, leadership abdicated, and goals unmet until the coho are literally on the verge of extinction until something happens in response, and even that is not guaranteed. There must be something in this Plan that is

a firm backstop. That is missing entirely. Instead, the Plan proposes to maintain existing regulatory and conservation infrastructure but says nothing about what happens if it isn't maintained, never mind that it has already been shown that the existing framework is not enough to get to the desired status. The regulatory framework must provide this firm basement starting level. It doesn't need to be a high bar, but there must be a bar. The ESA provided that bar to some degree, but now that the coho are no longer protected by the ESA, the state, through this Plan, must provide that regulatory backstop.

From there, this Plan could have, and should have, provided new, innovative ideas to address limiting factors – the carrots. There is no doubt that we need to do more to achieve the desired status. Yet the Plan primarily relies on “continuing” and “maintaining” activities – activities that aren't even linked verbally or otherwise, to identified limiting factors. The crux of the new activities are the private lands initiative, the demonstration project and the hatchery modification. Of these three, only the hatchery modification is linked directly to any primary limiting factor. The others must be linked back to key limiting factors. In addition, the descriptions of the private lands initiative and demonstration project do not describe how they are any different than what was originally proposed in the Oregon Plan for new positions for technical assistance, or how the demonstration project is any different than the hundreds of watershed projects that occur throughout the coast. The Plan must explain these proposals in much greater detail, including how they will address primary limiting factors necessary to meet the desired conditions. Missing from these new actions are any new and innovative ideas that are specifically targeted to limiting factors. The other proposals, such as those under the Department of Forestry (pg. 70), are not guaranteed to happen. For example, the agency commits to developing rule concepts. Notably, the Commission has rejected many of the prior rule concepts put before it. The agencies must be willing to put forward actions that have a very high likelihood of changing things on the ground.

For example, after a presentation by the dairy industry explaining their need for land, including riparian areas, for grazing and manure management, a hallway conversation led to the following idea. The idea included the state fostering the removal of the manure and its possible use as electricity (through methane digestion), with either the manure removal or electricity occurring at subsidized rates for the dairy farmers, in exchange for set back rules, fencing or tidegate removal to enhance the lowland overwintering habitat for juvenile coho. I had a further conversation with the VP for Renewable energy at MidAmerican Energy Holding Company, now the owner of PacifiCorp, who expressed great interest in possibly getting involved in the project. The Governor's office started by researching the possibility of methane digestion and expansion and was then going to bring together the parties to discuss the idea in further detail. It is in theory a win-win all around – for coho, for farmers and for the State by diversifying and increasing the state's renewable energy portfolio while reducing greenhouse gases. However, with a change in the Governor's office personnel, this idea was lost. This example is not only a possible win-win for all parties, but is also completely nonregulatory. Yet, there was no forum for this kind of creative thinking and exchange during the Stakeholder meetings. Trout Unlimited for example, has many private-public-government partnerships across the country that are great examples to

repeat on the coast and would love the opportunity to explore the possibility of these partnerships.

In addition, there is no analysis indicating how the totality of these management actions will result in the desired status (or what the consequences and changes will occur if they don't progress towards the desired status). Not only is more description needed for each of the management actions, but also an analysis of the totality of the actions. For example, with the private lands initiative, is the problem with projects the lack of technical assistance, or is it the willingness of landowners to come forward to engage in projects for coho. How will the program foster more landowners doing more for coho? Indeed, there are other management actions such as increasing beaver dams that seem to be given a much lower priority. Is the prioritization of management actions adequate for the desired status?

As a result, we recommend adding two processes. Even though it is very late in the process, we believe that these suggested actions will only improve the Plan and that not pursuing them will result in a very weak Plan. First we suggest having a workshop of the stakeholders, lead by the Governor's office. This workshop will focus on private-public partnerships targeted at limited factors. At its core, it is a negotiation aimed at figuring out creative new actions. However, in addition to the facilitation team, the Governor's office should be the lead in this workshop to demonstrate the seriousness of the actions needed and commitment of the state to put forward resources to help improve coho populations. Because this Plan represents the agencies negotiated results, we do not believe they need to be at the workshop. Once the workshop is concluded, we recommend putting all of the management actions before an independent science group to determine the ability of the actions to meet the ambitious desired status goals.

Adaptive Management

Many of the previous comments on accountability also apply to adaptive management given that the response is the same – provide a report to a Core Team. The Plan proposes a series of tiered research and some enhanced monitoring, but does not describe what will be done in response to the new information. Within the Plan, only Amendment 13 offers a built in adaptive management system. If the coho act one way, managers react another way to hopefully change the trajectory of coho. The Native Fish Conservation Policy also has a short term warning flag system that is specifically linked to reactions, all in an effort to change the outcome for coho. However, none of that is built into the Plan.

This Plan lacks any description of any management changes in response to data. For example, what happens if the regulatory measures are rolled back? What has the state done in response to four years of decline that give us any assurance they will react in response to glaring data? Instead, on pg. 57, the only indication is that in the face of "extremely adverse" or "unexpected performance" would trigger an "immediate assessment of potential monitoring and management responses." In other words, when the coho are on the brink of extinction, the state will step back and reassess but will not

commit to making changes. That is the best the Plan has to offer. Indeed, the six and 12 year review would have completely missed the huge declines in the 1990s. If the desired status means anything, a much more rigorous adaptive management system is required. The last four years have been very disappointing in terms of adaptive management.

Misc.

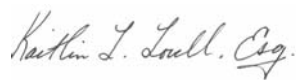
There are many aspects of this plan we support. First, we appreciate the approach by ODFW on pg. 67 linking their actions to limiting factors (even though we disagree strongly with their proposed action with respect to beavers). Second, we support the development of maps in response to the conservation principles on pg. 56. We also support the prioritization of watersheds and management actions in an effort to target actions to needs. We also appreciate the efforts to demonstrate how the Plan would work in the Alsea example (pg. 79). We concur with NOAA Fisheries that more detail is required in the example.

Conclusion:

While this Plan is an improvement, it still falls far short of an effective for coho recovery. Because the “meat” of the Plan has not changed dramatically, we suggest two dramatic responses – an innovative partnership workshop and an independent science review. In addition, we strongly urge the state to provide stronger leadership and adaptive management within the plan. Finally, most of our prior comments on desired status still apply to this draft and we reiterate those concerns here.

Thank you for the opportunity to provide these comments. I look forward to the continued discussion and evolution of these documents.

Sincerely,



Kaitlin Lovell
Salmon Policy Coordinator
Trout Unlimited

Date: August 25, 2006

To: Kevin Goodson, ODFW
Jay Nicholas, ODFW

FROM: Mark McCollister, Oregon Trout
Les Helgeson, Native Fish Society

RE: Oregon Trout and Native Fish Society comments on July 2006
second draft of the Oregon coastal coho conservation plan

Oregon Trout and Native Fish Society appreciate the opportunity to comment on the Oregon Department of Fish and Wildlife's draft Oregon coast coho conservation plan. We appreciate the changes in the second draft and are supportive of the state's desired status, addition of habitat metrics, prioritization strategy, discussion on accountability and effectiveness monitoring. However, the plan still lacks the rigor and assurances necessary to address limiting factors and achieve desired status. In failing to identify current and future habitat conditions/ecosystem processes along with actions necessary to achieve desired status the plan, as currently written, misses a critical opportunity to begin the recovery of coastal coho.

It is essential that the conservation plan describe the habitat conditions necessary to achieve desired status. Spell out what the landscape level habitat conditions will need to look like (i.e. buffers, forest conditions, lowland conditions) to restore watershed/ecological processes. We recognize that there are unknowns in the recovery equation regarding habitat needs, however, it is known that the continuation of current land management practices, unchanged, will not get us to desired status (functional health). The width and health of riparian zones, and the location of large wood delivery areas that are needed to protect, restore and maintain aquatic form and function are well researched and broadly known. (See, e.g., Federal Aquatic Conservation Strategy 1993, IMST 1999-1, IMST 2002, ODF Salmon Anchor Habitats Strategy 2003). Failure to describe these habitat conditions prevents the translation of planning goals into meaningful on-the-ground actions.

We appreciate the State's commitment to the Oregon Plan and its emphasis on non-regulatory actions. We support this approach, however, the conservation plan needs stronger regulations and commitments from the agencies, particularly the Oregon Department of Forestry (ODF) and the Oregon Department of Agriculture (ODA), regarding their support of and contribution to recovery, specifically actions on private lands. ODA and ODF need to develop more tools/suite of actions to address limiting factors. The limiting factors and actions needed to address them have been well researched and documented.

The planning process and the plan itself is an opportunity to bring managing agencies together to develop actions to address limiting factors and to analyze their sufficiency. Agencies must utilize the expertise of their partners in this process. This opportunity, however, appears to have been missed. For example, when ODA appears unaware of over-wintering habitat as a limiting factor and that they have a role in addressing it two years into this process it is disturbingly clear that little communication has occurred.

Furthermore, changes to Oregon's Forest Practices Act were first recommended by the Independent Multidisciplinary Science Team in 1999, yet the Board of Forestry has not adopted any new rules that would help ensure the restoration of ecosystem processes essential to improving critical over wintering habitat. Voluntary habitat restoration projects are important but unless long-term ecosystem processes are concurrently restored it is unlikely that we will achieve recovery of coastal coho in the foreseeable future.

We would like to see four things happen prior to completion of this plan:

1. Describe, using best available science, the forest and lowland conditions/riparian buffers necessary to protect/restore stream function. Discuss the scale (stream miles per population) that these conditions are likely necessary to address limiting factors and achieve desired status.
2. Coordinate agency heads discussion of coastal coho limiting factors and actions to address them, including voluntary actions. Focus on development of private land actions and buffer width recommendations.
3. Have actions (regulatory and recommended voluntary actions) peer reviewed to determine sufficiency/likelihood of addressing limiting factors.
4. Develop common stream health and function metrics for agencies to pursue in an integrated way.

Oregon Trout and Native Fish Society want this conservation plan to succeed. We do not, however, believe the draft plan to date will lead to coastal coho recovery.

Sincerely,

Mark McCollister
Oregon Trout

Les Helgeson
Native Fish Society

Cc Mike Carrier, Natural Resources Policy Director

August 28, 2006

To: Jay Nicholas and Kevin Goodson, ODFW
From: Pete Lawson, Oregon Coast Coho Salmon Workgroup
RE: Staff to Staff Comments on the second draft of the Oregon Coast Coho
Salmon Conservation Plan

Jay and Kevin,

The Oregon Coast Coho Salmon Workgroup has reviewed the second draft of the Oregon Coast Coho Conservation Plan. We have assembled these comments to reduce the redundancy of our concerns. It is our goal to provide positive, useful comments for your conservation plan. If you have questions regarding any of these comments, please contact Heather Stout at (541) 867-0290 so she can direct you to the commenter.

Plan Structure

There are improvements over the first version, however, the plan still needs much work. Organization would benefit from use of the Recovery Plan layout. The writing and amount of information included is improved, but much of plan is redundant. Also, an especially irritating aspect is that there are lots of subheadings followed by a single paragraph. The presentation of the “big picture” is lacking. This includes how pristine systems are supposed to work, what the overall strategy is, how limiting factors will be prioritized, how competing societal interests will be dealt with, etc. Without understanding this big picture, it’s difficult to understand how all the little pieces fit together and whether they are adequate to address the issue. The presentation appears to have suffered from emphasis on laundry lists and details without much thought about the bigger questions that are so important at the beginning of a process.

Desired Status

The vision for desired status would benefit from looking at areas where coho salmon are very abundant and habitat quality is generally high (e.g., SE Alaska) to gain insight into how coho salmon behave and respond to the landscape. For example, I don’t think these systems have “200–500 spawners per mile” (they’re coho, not chum). Also, might there be emergent properties that become apparent once populations become large enough? I’d suggest talking to Leon Shaul (ADFG, Juneau) for insight.

“Stream complexity” is a pretty vague term to use as a primary limiting factor (kind of like saying “global warming”, when specific factors such as ice cap melting or acidification of the oceans are intended). It would be helpful if more specific limiting factors were identified. This should happen during the population assessment phase, and be associated with landscape processes that are operating at different landscape positions.

Similarly, one of the “gaps” to desired status is increasing overwintering habitat. Do we really know that all populations are limited by this? Dave Seiler (WDFW) has fairly clearly shown that coho salmon in different areas of western Washington are affected by different processes due to geological/topography/climate differences. For example, the Quileute is very sensitive to peak winter floods blowing out redds, the Chehalis benefits from high fall flows to increase spawning area, while the Skagit is limited by summer

rearing. While Oregon coast may be more uniform, however, the “one size fits all” is probably not the best assumption

p. 34, Desired status vision bullets.

First bullet; either restrict to “adult coho” in fall and winter, or say “lots of coho year round.” Juveniles are important, too!

4th/5th bullets re. harvest. Saying people “may” be able to harvest “wild” coho (is this the same as “naturally-produced”?) is setting a very low bar for long-term “visioning”. If the rest of the vision is achieved, there should be ample harvest opportunities in all but the worst production years.

Research Priorities

Research priorities should include coho salmon use of estuaries. Several of the stakeholders noted that the word estuary does not even occur in the document. Tidal areas may provide the most opportunities as far as restoration is concerned, but we don’t know, because ODFW doesn’t sample there much. Indications from recent sampling of restoration projects lead us to believe that once coho salmon populations rebounded from the lows of the 90’s more coho salmon moved out of their natal streams to rear and are sometimes found in tidal areas in great numbers. Much of this information is not yet published and we would refer you to Stan van de Wetering of the Siletz Tribe; Kim Jones, Bruce Miller and Trevan Cornwell of ODFW; Jon Sauder of Coos Watershed Council, and Paul Heikkela of OSU Extension for a start.

Beavers are given very short shrift given the science supporting the importance to coho salmon in other areas. We are unfamiliar with the studies cited by ODFW and would like to have copies for our use.

“Much of the recent restoration efforts to create slow water juvenile coho salmon rearing habitat have focused on instream placement of large woody debris rather than encouraging the expansion of beaver populations. However, the smolt production potential per beaver dam ranges from 527 to 1174 fish per dam. Whereas the smolt production potential from a pool formed by instream LWD is about 6-15 individuals, indicating that beaver dams may be the better option” (Pollock et al 2004)

Beavers are well documented as a keystone species, which means that they have a disproportionate effect on the ecosystem relative to their abundance. It has been demonstrated that beaver dams can control geomorphological and ecological processes and it has been well documented that beaver ponds provide overall benefit to numerous fish species (Pollock et al 2003).

Beaver ponds provide high quality rearing habitat for juvenile coho salmon. The slow current velocities and high edge-to-surface ratio provide extensive cover and high production for vegetation and aquatic invertebrates. These qualities subsequently provide excellent foraging, cover and velocity refuge (Leidholt-Brunner et al. 1992). Juvenile coho salmon during winter rearing utilize beaver pond habitat at higher densities, are larger and have higher overwintering survival (Swales et al 1986). For summer rearing, juvenile coho salmon occur at higher densities than in pools formed by wood or other obstructions (Leidholt-Brunner et al 1992).

The extirpation of beaver in the Pacific Northwest has been a long term activity starting with early commercial trapping (Mackie 1997) and continuing with routine subsistence and landscape conversion trapping to the present (Naiman et al. 1988). Beavers are

routinely lost to the ecosystem through removal of nuisance animals (“predator” removal under ODA rules) as well as animal damage control (APHIS) and low level commercial trapping (permitted removal through ODFW). Given the value of beaver ponds to restoration of Oregon Coast coho salmon, a reevaluation of these activities should be included as a research task for the conservation plan.

References

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- Pollock, M. M., G. R. Pess, T. J. Beechie, and D. R. Montgomery. 2004. The importance of beaver ponds to coho salmon production in the Stilliguamish River Basin, Washington, USA. *North American Journal of Fisheries Management* 24:749–760.
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- Swales, S., R. B. Lauzer and C. D. Levings. 1986. Winter habitat preferences of juvenile salmonids in two interior rivers in British Columbia. *Canadian Journal of Zoology* 64:1506–1514.

Prioritization

Prioritization is an important aspect of recovery planning, but should be done with excellent information from local sources. We suggest that instead of assigning priorities at this point before the population “assessment” is done, you simply define a process by which it would be accomplished. It would also make sense to go through a “potential gain assessment” to see which areas would give the most opportunity for effective restoration of coho salmon habitat. In addition, it would be valuable to have some of the larger property owners document the voluntary actions they have taken and are planning to take so that those actions can be included in the assessment of what really needs to be accomplished within each population.

In several places the plan mentions seemingly incompatible interests, which it is trying to address (e.g., high quality salmon habitat and human population growth). It would be helpful to include some discussion (a paragraph or two) of how these apparent conflicts might be resolved.

We would recommend the inclusion of the work of Reeves and his colleagues at the Forest Service, as well as the AREMP results as examples of how a process might be identified to prioritize actions on the landscape.

Time/Cost Issues

We would recommend that as a beginning step, the authors take ongoing actions of each of the agencies and do a “time/cost” chart. This will at least document what is being done at this time, what the intention of the agency is to continue what is being done, and how much it costs. Make sure these are parsed out for Oregon Coast Coho Salmon, not statewide as has been reported previously.

Assertions

This document is full of assertions, it would be more believable if assertions were backed up by citations or information in appendices. The presentation of the conservation plan is long on rhetoric but short on details. It makes many promises but does not give any compelling or quantitative evidence for the many contentions that it makes. The following are some obvious examples:

- Page 19 The report claims that an evaluation of the state’s conservation efforts found “significant improvements” in the past. What are the improvements and where is the report and data?
- Page 24 “Recognizes that hatchery production of salmon has valid roles in relation to mitigation for habitat loss and harvest supplementation,....” Where is there any evidence that hatchery production has mitigated the loss of habitat? In examples of where this might be true, what were the features of the hatchery policies and practices that successfully mitigated habitat loss and how extensive was the habitat loss? Does the Oregon strategy contain similar features?
- Page 53 “Oregon’s diverse regulatory and non-regulatory efforts to conserve and restore watershed processes and functioning reaches-*within existing social, regulatory, and infrastructure constraints previously noted*-are applicable from the upper range of coho salmon distribution to the lowlands represent significant potential to support overwintering coho salmon juveniles”. First, what is the evidence for this statement and where are the data? At least, give a citation. Second, previous scientific reviews of rules and regulations, such as the State Forest Practices Act by Botkin et al. (1995) and the IMST (1999) would argue to the contrary. Where do state regulations deal with headwater (i.e, non-fish bearing) streams, which are now known to be important influences on conditions in fish-bearing streams? How do you reconcile differences between your contentions and independent evaluations and why are such reviews not presented?
- Page 101 “Private landowners, especially the timber industry, have demonstrated significant and sustained commitment to participate in restoration....” What exactly has the timber industry done and what has been the result of this work? How wide-spread is it? Provide evidence to support this.

The State asserts that its conservation plan is based on principles of conservation biology. Programs for the conservation of metapopulations, which is appropriate for coho salmon, require the conservation of: (1) numerous patches of suitable habitat over time; and (2) the potential for dispersal among the patches (Harrison 1994). Where there is a current lack of a sufficient number of patches of high quality habitat, it is important to protect the

existing high quality patches in the near term (Frissell 1997). Minimizing or eliminating external threats increases the likelihood of persistence of these patches (Carroll and Meffe 1997). These areas will serve as sources of individuals to colonize new patches as they develop favorable habitat. Development of future patches of favorable habitat requires the protection or restoration of critical ecological processes that create favorable habitat over time (Carroll and Meffe 1997). The State's plan does not appear to adhere to or contain any of these basic principles other than a mention in passing on page 53. The State argues in several cases about social, etc, limitations. What are the consequences of these limitations and what are their affects on the conservation plan and how do they compromise conservation principles?

The focus on the State plans is on short term habitat restoration not the longer term restoration of ecological processes. Past and many present approaches to management of freshwater habitats of anadromous salmonids have focused on mitigating losses rather than preventing them. This strategy has generally not been successful (Bisson et al. 1992) and habitat loss and degradation continue. Williams et al. (1989) also found that such a strategy failed to halt the decline of habitat quantity and quality for other freshwater fishes. The dependence of coho salmon on freshwater habitats and the extensive amount of habitat degradation that has occurred, protection and restoration of upslope and fluvial processes that can create and maintain habitats must be an integral component of any recovery program. There is nothing in the document that suggests that habitat restoration can by itself make the necessary improvements in ecological conditions. The State needs to provide support to buttress its arguments and show that its efforts will indeed accomplish what it contends that it will.

Also, the State contends that "conservation techniques designed to improve stream complexity will often simultaneously produce improvements in water quality." What is the basis for the statement and where is the evidence? I would speculate that you are referring to the State Forest Practices Act. I know of no evidence to support this (see Botkin et al. (1995) and IMST (1999)).

Viability Criteria/Models

This section is much improved, but still not there yet.

p. 35, "Measurable Criteria: Introduction" paragr. 1: Have the "independent" and "dependent" terms been defined at this point? If not, some explanation is needed.

p. 35, last paragraph (minimum sustainability criteria): This is hard to understand. My first reaction was that a minimum truth value of 0.0 (total uncertainty) was a very low bar, but that is moderated in the next sentence. I would suggest reversing the sentences to put the emphasis on maintaining or improving status of all populations, then noting the minimal criterion for those populations that currently have negative truth values.

p. 36, "Criterion 1--Adult Abundance":

Generally, this seems a reasonable approach, although there seems to be little scientific basis for choosing these thresholds over others.

Under thresholds, should read "the most recent 12-year period" rather than "any 12-year period." As written, someone could claim that a pass during the 1960s means that everything is okey-dokey, or that the 1990s means it fails for all time.

As defined, the thresholds represent a 12-year median of abundance; was there discussion of using a 12-year mean instead? Why or why not?

Tables aa and bb give midpoints for the survival categories, but don't define the cut-points. Without the cut-points, we don't know how to classify any given year (e.g. is a year with a survival of 3.2% in the "extremely low" or "low" category?). Also, need consistent terminology: tables aa and bb use "extremely low", table cc uses "VL", elsewhere "very low" is used.

p. 39: "Criterion 2--Productivity":

Metric: clarify if spawners & recruits are naturally-produced, or include hatchery production.

Thresholds: Again, can't apply Table dd without knowing the survival cut-points for the categories, for both marine survival and Smax.

Need to define the method for determining Smax fraction: Fraction equals what divided by what?

p. 43, middle paragraph. States that table dd is "essentially the same as" the Amendment 13 matrix." Amendment 13 table is quite a bit different. Maybe you could say it is "conceptually similar." Amendment 13 table has fewer rows and columns, and does not refer to Smax, but to "rebuilding criteria" that are based on a fraction of full-seeding of high quality habitat. Is this exactly what is meant by Smax? If so, how does the criterion account for all the non-high-quality habitat, and for changes in the habitat base as improvements continue under the plan. Will "Smax" be re-estimated regularly to reflect the changing habitat base?

p. 44. "Criterion 3--Persistence"

Under "Analysis" the draft states "This does not appear to be a very sensitive indicator of desired status." AGREE wholeheartedly!. The TRT used persistence modeling as an indicator of the "Endangered" threshold; it has little to do with broad-sense recovery as addressed in this plan, and this criterion is adequately covered by the requirement of meeting the TRT sustainability criteria--if those are met, populations will be FAR above the levels of persistence specified here. Strongly suggest dropping this criterion.

If it is kept, need to specify a time-frame for the persistence modeling (TRT used 100 years).

If some model-based population forecast criterion is desired, the state might consider forecasting population "robustness" rather than persistence, perhaps by using the models to predict the probability of achieving or staying above the VL abundance goals into the foreseeable future. This could be done by using the abundance thresholds as a "quasi-recovery" (as opposed to "quasi-extinction") level in the model analyses.

p. 44. "Criterion 4--within-population distribution"

There is insufficient detail here to comment. One important idea here might be to ensure that fish are utilizing all of the historically-present habitat types (including lowland and estuarine habitats), at least during high abundance years.

The State has more faith in viability models than we do. Increasing the persistence criteria from 95% to 99% is intended to "raise the bar", but models are only as good as what goes into them. In particular, their ability to predict future conditions doesn't increase just because the passing level has increased.

- p. 46. “Criterion 5--Diversity”
Clarify: naturally-produced or total spawner abundance?
Forecasts based on a single model are of questionable reliability; it would be better to use empirical observations, and modify the criterion to fit the data available. If a model is used, at least provide confidence intervals on the results, including effects of both parameter estimation error and environmental variation. There is a lot more to maintaining diversity than simply maintaining an approximation of genetic effective population size. Consider other measures of phenotypic, habitat, or life-history diversity.
- p. 48. “Criterion 6--Habitat Conditions”
This is too vague to comment. You might consider tying habitat thresholds to the amount and distribution of habitat required to meet the fish abundance and distribution criteria.
- p. 48. “Criterion 1--Spawner trend for Dep. Pops”
Clarify: “total” or “naturally-produced” adult escapement?
Consistency of terminology: Is “adult escapement” the same as “spawners” in other criteria??
Thresholds: something’s wrong here: “except where dependent populations exhibit steeper trends” seems to imply that the criterion passes if dependent populations are declining faster than the independent populations, which probably isn’t what was meant. Also, is there any statistical confidence requirement for the comparison?

Other Issues

p. 29, Figure GGG: Please credit the TRT (Lawson et al. 2006) for this figure. Also, update to latest version from the TRT, with revised population names (contact Heather). One of the results that came from the State Assessment was that most of the agencies working on the Oregon Plan don’t have the information or analytical framework needed to track their effectiveness, much less track their piece of the Oregon Plan. For example, Water Resources has no way of determining water withdrawals because users do not meter their water use, DEQ has never entered the watershed council monitoring information into their database, DSL doesn’t know how many in stream gravel permits are active on the Umpqua River, and how many have been applied for because their tracking system doesn’t do that. These are just small examples of the State’s inability to understand the effects of their efforts for the Oregon Plan. This is a big issue that hasn’t even made it into the conservation plan.

The Assessment of Leadership Strategies (p.89) provides a remarkably candid overview of the current leadership structure. This frank assessment greatly enhances the credibility of the Plan and demonstrates awareness of key issues that must be addressed. Unfortunately, the description of proposed leadership structure that follows the assessment fails to address the key leadership issues and adds nothing of substance regarding accountability or leadership.

A key message of the Conservation Plan is that Oregon is committed to evaluating progress under the Plan and that Oregon will make changes to policies, programs, and specific management practices as needed in order to assure the success of

the plan. The success or failure of this Conservation Plan, and of all ESA Recovery Plans Oregon has committed to produce, requires ongoing coordination of effort, clear lines of accountability, and strong commitments to plan implementation and evaluation. In short, success of the Conservation Plan requires leadership. The Plan does not provide an adequate description of the leadership structure and completely fails to address accountability for agency commitments.

The document contends that the Oregon Plan Core Team and the Oregon Plan Implementation team will be responsible for issues of accountability and adaptive review of management programs intended to assure Oregon Coast coho conservation. The Implementation Team no longer exists. Is there a commitment on the part of the Governor's Office or any of the state agencies to reconstitute this team? Nothing presented in the document suggests this is so.

The Core Team continues to meet and is chaired by the Governor's Salmon Policy Advisor. The Core team was established to engage high level policy leadership (agency Deputy Directors) in important policy decisions. An important product of this leadership was the drafting of Governor Kitzhauber's Executive Order 1999-01 documenting the State's commitment to the Oregon Plan following the first reversal of the listing decision.

The Conservation Plan needs to more clearly document the role of the Core Team. Is the mission of the Core Team supported by all natural resource agency Directors? Is there a signed charter or set of rule that prescribe what the Core Team must do? What is the recent track record of the Core Team? What important policy decisions or program changes can be traced to the actions of the Core Team?

The presentation at the Stakeholders meeting made clear that the State agencies that were there have no intention to make commitments to the plan, and that the effort to restore coho salmon on the Oregon Coast will have to be accomplished on whatever level of funding and effort each agency is willing to dedicate to it at any given time. It was clear that none of the agencies are really on board to do what needs to be done. If that is truly the case, document it and be honest about what can really be expected in the way of commitment to this long term effort.

Problem Analysis of Old World Salmon Restoration Submitted by Tom Forgatsch

This short discussion is my attempt to list problems and solutions for Coho restoration. In identifying solutions, I have approached each problem with a non-political, analytical review to create a KISS (keep it simple, stupid!) fix-it list. These solutions can be implemented to aid the solution to increased Coho viability and restoration.

Oregon Coho salmon have been replaced by more genetically adaptable species of fish. Coho are "Old World" in that they reproduce only one time, and then die. The "New

World" genetics have already replaced the species by a new variety (i.e. Atlantic salmon) that spawns multiple times prior to natural death. However, it is socially and economically important to help the Coho survive and flourish.

A major impact to the survival of Coho is the human effect. Human-caused problems have led to numerous environmental issues that affect Coho. With that in mind, it is possible to extend Coho survival periods by solving these human-caused problems.

The following is a list of specific problems and proposed solutions to improving Coho restoration, in a shorter time line than "five or more decades" to achieve. Significant time and money has been spent on a model based on incorrect assumptions. We need results based on prior data, actual needs, and fixable problems.

Problem: Loss of Coho natural habitat Solution: Coho use both ocean and fresh-water habitats. --Ocean habitat: create artificial reefs (made of unwanted ships, tires, concrete terra pods or waste concrete) in areas lacking in natural reef habitat, to provide cover, shelter and substrate for animals and fish. This will improve both the rockfish habitat and natural food for Coho, such as anchovies, sardines, and herring. The terra pod placement at the off shore entrances of coastal harbors would also provide tsunami protection, as well as habitat for marine life and scuba divers. Cost is recoverable via increased fish habitat and recreational use. --Fresh-water habitat: Use the new conservation security program funding to develop land use and habitat for Coho. Example: #1 Excavate waterways and stream channels back to pre-sedimented conditions. #2: Dig off channel sumps (alcoves) for water storage and fish nursery. This will allow fingerlings to escape high flow periods and find places for feeding. #3: Construct more permanent in-stream and off-channel cover/debris placement. This is to control high water flow losses of debris placed in stream for cover. #4. Dig deep pools in various sites along a stream course (depth of 10 to 30 feet).

Problem: Improve hatchery care and management Solution: · #1 Do not use chemicals and fish food that are known to cause problems. For example, the use of formalin and antibiotics on both eggs and fry cause problems in growth and development. Substitute the use of UV light for fungus and bacterial control. The use of ozone and O2 levels for bacterial and fungal control also use potassium permanganate or methylene blue for fungal control · #2 Improve oxygen monitoring in transporting and growing situations where crowding causes depletion of oxygen and developmental damage in the fry. · #3 Extend the period of time that eggs and/or fry are kept in the water that they will be released in thereby allowing them to identify their water release area (cut down stray rate). · #4 Increase the fry hold time in order to allow a larger size of fish at release time. · #5 Improve conditions at fish release time. Lower the predation rate on fry by sonar use of fish/predator sounds. Using seal sounds to lower striped bass population prior to fry release. Stagger the release times and lower release counts at each release - use multiple release periods and use nighttime release periods. Release smolts during striped bass spawning time. No massive dump the truck and run behavior.

Problem: Need to expand and fund more Step Programs. Solution: Involve more of the population in improving the quantity and quality of the fish released. The Step Program provides a link between the recreational fishermen and the behavior they enjoy. One thing we can be sure of is that the population of recreational fishermen will not be decreasing. More money is brought to Oregon through recreational fishing than by commercial take. The Step Program produces a fish that has a longer time to "identify the water" of the release stream; therefore, lowering the stray potential. It is my and other people contention that the Step Program fish are better quality, stronger fish than hatchery raised fish.

Problem: Depletion of natural nutrients in Coho habitat Solution: Develop an administrative rule that allows all recreational fishermen to do a "commercial cut" on fish at the time of catch. Reasons: · #1 Put the nutrients back into the environment where they are needed. Nothing is wasted in nature. Removal of these nutrients causes depletion of limiting factors that belong in the water not in the landfill. · #2 Quick cleaning of fish at catch time improves taste/texture of fresh fish.

Problem: Administrative rule vs. Ecological needs Solution: Eliminate the administrative rule (general restriction #15) that makes it unlawful to "dispose of dead animals (fish) carcasses or parts thereof, in Oregon waters" · "Why #1" Those carcasses need to be placed back into the waters where they belong. The environment needs nutrients replaced as not to cause a limiting factor example: calcium for bone development. · #2 Need to put the Oregon State Marine Board in lawful behavior. The Marine Board sponsors and finances fish cleaning stations, many of which dump fish waste back into the waters of Oregon. · #3 Need to put Oregon Dept. of Fish and Wildlife back into legal behavior for dumping fish carcasses into streams. ODF&W has to obtain permission from itself and DEQ to dump carcasses to enhance stream nutrient levels. It has been well demonstrated that this dumping is a definite improvement in replacing "limiting factors" back into the waters of Oregon. · #4 Need to do away with the odor and health hazard of trash dumpsters with dead fish waste in them.

Problem: High mortality rate for catch and release fish Solution: Alter catch and release rules to first limit caught is kept. This will decrease mortality rate now estimated between 16% to 60%. The use of magnesium alloy hooks that will dissolve in salt water can increase survival rate, just cut the line without handling the fish.

Problem: Misuse of data collection Solution: Use "local ports" catch and use reports to micro manage each port zone. Alter catch and season rules to match port catch data. No statewide "shot gun" application of season/limit rules.

Problem: Inaccurate fish catch data collection Solution: Do not skew the data collection process by picking the "best boats" over "poor boats" for catch data numbers. No secondary agendas to show a higher catch rate than was actually caught

Problem: General public confusion with current law. Solution: Simplify Fish and Game rules/laws/regulations to lower confusion. The general public has found present rules

and regulations confusing and misleading. Better inform the fishing public as to when, where and how to fish for specific fish varieties. More "public relations" for positive information approach to the fishing public. The pass action on the rockfish situation was not handled very well.

Problem: Financial waste Solution: Spend money on long-term more permanent projects that have data to show that they work. Do not waste money on projects that are wiped out each year. Example: the fencing and tree planting that are removed by yearly winter floods.

Problem: Affect of global warming to local environment Solution: Global warming. This is a natural process that we are adding to and have no major control over. By off-stream impoundments and scattered deep-water pools, we can develop cooler water by increased water flow and deeper in stream pools. The use of stream shading is not as effective as increased water flow and deeper channels.

Problem: Smolt feed effecting fish health Solution Alter food stock for smolts. Use no food with urea as an ingredient. Feed out smolts prior to release into "home" water. Do not feed smolts with surface floating feed. It trains them to feed on the surface where they are easier prey to birds and other surface feeding predators.

Problem: Decline in habitat conditions Solution: Habitat: · Increase gravel beds in spawning areas. Example 10 Mile Lake. · Increase over winter, off channel deep pools (alcoves). · Increase in channel deep pools (over 10 feet deep). · Increase channel debris and buffer zones. · Use Wildlife Habitat Incentives Program's (WHIP) Salmon Habitat Restoration Initiative monies (part of 2.8 million to Oregon, Alaska, California, Idaho, Maine and Washington). Provide incentive payments and tax incentives to private and commercial landowners to implement best management practices and land use. · Use Natural Resources Conservation Service "Equip" program to dig "sumps" with gravity, valve controlled drains. The sumps would be used to release winter-stored water during times of low flow and temperature problems.

Problem: Data not being collected Solution: No purchase of new harvest punch card tags until original first issued tag is turned in completed, truthfully. Make this data useful and timely. Currently new harvest tags can be bought without turning in the original tag.

Problem: Predator impact to Coho Solution: Predator control: 1. Use night releases in various places. 2. Lower the smolt release count with increased release points to decrease bird predation. 3. Use Marine Mammal Act to control/remove "nuisance" animals. 4. Use sound tracts of transient Orcas to control seal feeding. 5. Striped bass have been shown to stop feeding during spawning. Release of smolts at that time will cut losses.

Problem: Water shortages Solution: Addition of in-stream dug sump reservoirs. Water impoundment in the upper reaches of all streams where water quantity and/or water quality are the primary or secondary "bottlenecks" for Coho population. This extra

winter storage could be released during seasonal low water flow. The release could lower water temperatures, increase oxygen levels and improve water quality of the listed streams. We do not have a water quality or quantity problem; we have water storage problem. Two of the primary and fifteen of the secondary limiting factors are related to water quality or quantity (see second draft "limiting factors chart").

Problem: Poor Ocean conditions - up welling Solution: As many as 99 percent of juvenile Coho in a given migration year failed to survive at sea, according to the Coho second draft report. An aid to better sea conditions would seem to be important. One type of "fix" has been used in Hawaii to develop local up welling. The research project on the Big Island pumps deep-sea bottom water to the surface. The water is then run through tanks of abalone, shrimp, algae etc. for aquaculture purposes. The used water is dumped back on the surface water to be recycled - thus causing a local up welling effect. This effect, along with developing reefs to provide mid water habitat for Coho food chain members, could affect smolt survival rate at sea. This reef habitat would also increase other fish habitat. The economic boost to the fisheries harvest would pay for the reef placement.

Problem: Online information is out of date or unavailable Solution: Place new informational bulletin on the statewide license computer system. When vendors go on line to purchase fish and hunting licenses have "pop up" information on any catch or new fishing/hunting restrictions. Significant time and money has been spent on a model that is based on very little data and incorrect assumptions. We need results based on prior data, actual needs, and fixable solutions. I have previously provided these ideas to the Stakeholders team members.

Since June of 2004, when I agreed to participate as a non-paid member of the Stakeholders Team, I have listened, watched and reacted to the politics of the many self-justifying parties on the team. There are strong political and economic agendums that appear not to have Coho survival and reproduction as their primary goal.

The major conclusions I had from those many meeting are: 1. Follow the money trail. There are more paid positions and more layers of employment. 2. If members really cared about salmon recovery, they would try to implement some easily fixed solutions along with the long-term activities. A fifty-year time line is not a solution it is a CYA behavior. 3. Politics of the Stakeholders members does not allow for implementation of doable solutions. "Either do it our way or we will sue you". 4. The second draft of the conservation plan says a great deal and covers all the aspects, but fails to take any immediate actions.

Despite this, I am again submitting my list of recommendations. These simple solutions can be implemented swiftly and with minimal cost. It is based on problems and solutions I feel could be accomplished to the benefit of salmon, other fish, and human needs for fish.

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August 13, 2006

Re: Oregon Coastal Coho Stakeholder Recommendations

- 1- More emphasis should be put forth that natural spawn and hatchery fish are native fish.
- 2- No bias should appear regarding hatcheries due to past errors in management.
- 3- More emphasis to use the research developed by the Hatchery Research Center to improve the fisheries

Include a voluntary program in the report asking landowners to donate 3 logs per half mile of stream (small and medium size streams) the right diameter and length. The placement location to be identified by ODFW. The landowner who can not afford the placement cost, ask NOAA to pay the cost.

This would immediately provide over wintering habitat and reduce one of the major limiting factors.

Keep the program simple and get the job done.

Wayne Giesy