

January 6, 2016

Dear Members of the Board of Forestry and State Forester Decker,

We write regarding the ongoing planning process on Oregon's NW State Forests.

On November 5, Mr. Barnes of the Oregon Forest Industries Council presented testimony regarding state forest modeling and the Technical Expert Review Group (TERG).

Mr. Barnes' testimony and accompanying letter of October 21 expressed support for the work of the TERG. We share his view on the importance of the TERG: it is essential to gain a common, science-based understanding of the effects of different management approaches on state lands. The TERG promises a better vetting and clearer understanding of ODF data and modeling.

On several other points, however, we see things differently than Mr. Barnes. While there is agreement on much among the TERG members, there is also disagreement, especially regarding several of the points emphasized by Mr. Barnes. The TERG is not united behind Mr. Barnes' view.

Mr. Barnes raised issues regarding the starting inventory, growth and yield models, and site class. In general, the understanding of these issues would be improved if ODF presented a range of model outcomes based on simulating key inputs within a plausible range of variability. Unless this is done, it is virtually impossible to assess or communicate model sensitivity or confidence. Because changes to the modeling environment since the last H&H study have produced dramatic declines in predicted forest growth and yield, an assessment of model sensitivity seems indispensable.

As to the specific issues emphasized by Mr. Barnes:

1) Starting inventory.

No one among ODF, the TERG expert reviewers, nor the diverse array of stakeholders actually knows the current inventory with practically useful accuracy or precision. The last time these stands were inventoried was (on average) 10 years ago. Estimating current standing inventory thus requires growing the inventory forward for 10 years. ODF has calibrated a growth-and-yield model (the Forest Vegetation Simulator, or FVS) using a modest sample of permanent plots. When they use this parametrization to grow the inventory up to now, they get the lower estimate than they have previously reported to the public.

ODF maintains its inventory in a database that also has capability of growing forward. This model (the Forest Projection and Planning System, or FPS) has not been calibrated using the best available permanent plot data by ODF. By default (i.e., 'out of the box'), this model predicts faster growth than the FVS model calibrated to local ODF data. Over the past 10 years, ODF has been reporting inventory estimates based on growing the data forward using the inventory database model (FPS). The issue regarding uncertainty in current inventory estimates could be resolved most directly by re-measuring a sample of the inventory plots. Until remeasurement occurs, we honestly don't know which of the models is accurately predicting current inventory the best (assuming either model is close enough to the truth).

Considering FVS has been locally calibrated with ODF permanent plots while FPS has not, it seems

prudent for the subcommittee to defer to FVS (which has been calibrated and which produces lower growth estimates) until definitive data is available to ground-truth and recalibrate either or both models.

## 2) Growth and yield models.

As mentioned above, FVS has been locally calibrated for the North Coast state forests based on a modest sample of ODF permanent plots. This calibration—which sets multiplication factors to fit FVS default basal area to match ODF field observations—integrates growth rates observed on diverse sites as well as the impact of Swiss needle cast. In concert with estimates for each site’s potential productivity and maximum density (i.e., Site Index and maximum Stand Density Index), this calibration is what defines growth rates of current stands. There is certainly room for improvement in this calibration (more permanent plot sampling, repeating measurements again). Nevertheless, this remains the best available science, and it should not be disregarded.

Once site index and maximum density are defined for each stand, the FVS growth-and-yield model effectively simulates forest growth and management outcomes. An earlier report for ODF by Mason, Bruce & Girard specifically recommended that ODF use the FVS model. There has been no evidence uncovered to date that suggests the current parameterization of growth—or more specifically, basal area growth and height growth multipliers—is too low (or too high). On the contrary, the current growth rate parameterization of the FVS growth-and-yield model is based on the best available permanent plot data.

There are several factors present in the field that are known to result in non-trivial decreases in growth rates which still have not yet been accounted for in the model, such as root rot and other pathogens, insect impacts such as from Douglas-fir beetle, and tree mortality from wildlife activity such as seedling browsing and bear damage. All of these vectors are of such a scale that they could reasonably produce non-trivial declines in yields that may not rise to the level to support recouping timber losses through salvage harvest. Considering these damage and mortality agents are distributed across the North Coast state forests, it would be prudent to assess and incorporate these impacts where practicable.

Much attention has instead been focused on incorporating ‘genetic gain’ into the growth of newly-established plantations. As currently configured, future stands (following regen/clearcut harvest) are assumed to grow at the same rate as the preceding stand. Among the TERG reviewers, Mr. Rasmussen has suggested 15-25% increases in new plantation growth rates to account for improved genetics. An increase in growth is plausible, but no scientific or independent evidence has yet been presented to ODF or the TERG to justify a specific growth rate increase or the likelihood that ODF could successfully achieve and sustain it. Furthermore, care must be taken to ensure that there is availability of adequate seed with a known percentage gain and what costs efforts to achieve this genetic gain would impose on other objectives through aerial spraying, erosion, habitat loss, etc.

ODF should evaluate a range of plausible growth rates in both current and future stands to communicate the sensitivity of the model to these assumptions. The choice for growth rates simulated should be based upon empirical evidence, not anecdotes. The confidence and reliability of projections

in genetic gain should be adequately reflected in these simulations if these growth improvements are factored into the model.

3) Site class issues.

ODF is using soil maps to estimate productivity for all stands, even overriding field measurements that have been collected. Analysis by ODF confirms that soil site is, on average, lower than field-measured site. This introduces a systematic bias that underestimates site potential. All TERG members agreed that actual measurements should be used whenever they are available and be considered more accurate than the soil map estimates. On average, this change should be expected to increase the yield curves for those stands where site index has been measured in the field, and is a separate consideration from whether the growth model is calibrated 'too high' or 'too low.'

Several challenges remain for analysis of potential revision of the FMP, especially the modeling of conservation outcomes and comparison of potential alternatives to the current FMP. To date, ODF has not reported any information on conservation outcomes in their modeling, and has refrained from modeling of the current FMP using the most up-to-date modeling technology pending direction from the Board of Forestry. All reporting on management alternatives from ODF so far has focused on revenue to ODF and timber volumes. Until specific conservation measures are finalized and reported, particularly with a comparison to the current FMP, the analysis of state forest management alternatives and outputs will be seriously incomplete.

We look forward to continuing to work with you. Please let us know if you have any questions.

Sincerely,



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Wild Salmon Center



David Diaz (TERG Member)  
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Cc:

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