## Question 3

1. The approaches summarized in Chapter 4 promote the development of forest areas with complex stand structure, reserve areas for the protection of special resources, and non-reserve areas with an emphasis on commodity production distributed across the landscape. What are the scientific and technical strengths and weaknesses of this approach? Is this approach compatible with the concept of a dynamic balance of forest structures across the landscape?

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| Bisson | This is a very difficult question to answer because the distribution and abundance of forests in the three general categories will have a very large impact on the attainment of the overall Elliott State Forest management objectives. Whether the proposed distribution will satisfy the objectives cannot be determined at this time, although I believe them to be generally reasonable. I will, however, comment on the use of the phrase "dynamic balance of forest structures across the landscape". The report lacked enough specifics for me to know whether this phrase meant simply maintaining a diversity of stand structures over the Forest or the gradual evolution of a landscape where natural and anthropogenic disturbances emulate the distribution and function of stand structures that might exist in a relatively pristine state (and by this I mean a landscape where natural disturbances maintain a complex mosaic of forest types). |
| Emmingham | As noted above the various discussions in Chapter 4 are based on a great deal of ecosystem research conducted over the last decade. The concepts discussed in Chapter 4 are compatible with maintaining a dynamic balance of forest structures across the landscape, but there is not enough detail in the FMP to determine how well the plan will succeed.<br><br>**Stand Structure**: In the short term, **reserves** with diversity and structure are likely to be static. There is little doubt about how to create structure in young forest stands. Recent experiments conducted in COPE showed that shrub and herb vegetation respond to wide thinning in closed canopy Douglas-fir stands, and under planted conifers survived and grew well on the west flank of the Coast Range. Diverse, bi-layered stands developed in the first decade after stands were thinned to relative densities of 20 or less. Stands thinned to around RD 35 did not develop bi-layer structure. Continued thinning in bi-layered stands will be needed to create multi-layered stands. Creation of more-diverse, young plantations (i.e. non-structured stands) is also quite possible, but retention of legacy features requires sacrifice of merchantable timber volume, and modification of standard operational procedures during regeneration harvest. How will these investments in diversity be weighed against loss in timber volume?<br><br>**Landscape Structure**: I fully support efforts to create a dynamic balance of |

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| | forest structures across the landscape as a way to achieve a sustainable balance between the economic and social values in the ESF. In other words, I think this approach offers the best way to sustainable manage forests for the complex set of values demanded these days. The ultimate success of the TSF FMP at the landscape level will depend on the distribution of a variety of forest types and the connectivity of the landscape. That information is not available in this document.<br><br>The strategies for distribution of forest types are not very explicit in Chapter 5, so judgements on the success of the plan are not easy to make. The ideas expressed in the TFP (as far as it goes in chapter 4) are supported by theories published in the literature, but actual landscape studies even on the scale of the TSF are rare. Therefore judgements about the potential success of ESF FMP are likely to rest on map displays and tabular values showing costs and benefits. Use of only 3 forest types would limit ODF ability to show the range of diversity that exists, and what will be created by Implementation Plan. (See question 4) |
| Gresswell | I do not feel technically qualified to discuss the scientific strengths and weaknesses of the management approaches summarized in Chapter 4 in detail. It is difficult to assess whether the approach is compatible with the concept of "a dynamic balance of forest structures across the landscape" because I am not aware of examples of this type of management at a landscape scale. In a sense, this plan is a management experiment, and adherence to the principles of adaptive management will ultimately be linked to its success or failure. |
| Irwin | Some strengths are described above for Strategy 1. And the approach should be compatible with a dynamic balance among forest structures and successional types across the landscape. This strategy has been described in the literature as a shifting habitat mosaic, yet it is modified with the inclusion of a variety of reserves and retention of important habitat structural features. It is intended to emulate natural disturbance patterns and intensities, to the extent that we can know them. There are three or four primary weaknesses. First, there is a great deal of scientific uncertainty regarding the extent to which judicious applications of silvicultural tools and technology can truly emulate natural disturbances. This should be recognized as a gap that needs a good deal of infusion of science. Second, the assumption that the biota is keenly adapted to a natural disturbance regime, while a reasonable basis for a management paradigm, may ultimately prove faulty. For example, it is arbitrary to establish a baseline timeframe for characterizing disturbance regimes and interactions among disturbances. Third, recent information suggests that chronic disturbances such as above- and below-ground herbivory can be very important in determining floristics of an area, and thereby influence episodic disturbances. Therefore, what we think we know about disturbance regimes and their influences on biological diversity may well be modified with additional scientific evidence. |

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| | Finally, and most importantly in my opinion, the Plan excludes an explicit recognition of the importance of productivity in influencing the expression of biological diversity. Certainly, forest structure and composition, as influenced by disturbances, are important influences on biological diversity. So is productivity, from the stand to landscape scale. The Plan recognizes that riparian zones are inherently productive. Therefore, the Plan recognizes the influences of productivity to a limited extent. However, identifying a large proportion of the reserves for inoperable, rocky or swampy ground could have strong effects on the expression of biodiversity through different pathways of energy and nutrient flows. I suggest the authors of the final Plan consider including some means of estimating productivity (e.g., via site index or other means as suggested in the Waring reference below) and commentary from Michael Huston's book on biological diversity and the following references: … Huston 1999; Waide, Willig, Steiner, Mittelbach, Gough, Dobson, Juday, and Parmenter 1999; Waring, Coops, Ohmann and Sarr 2002 … |
| Ohmann | Although this approach overall is technically and scientifically sound, I think there is an inherent conflict between this approach and the concept of a 'dynamic balance of forest structures across the landscape' that need to be considered. This conflict is introduced by having some of the designated areas (reserves) fixed in space and focused on only one stage of forest development (late-successional forest, and remnant old-growth patches in particular). There are no plans to 'grow' any new old growth, and reserves that are burned or blown down will be salvage-logged. (I'm not sure whether the reserve status is removed in this case.) Under this scenario, old growth will gradually be lost from the landscape due to the inevitable natural disturbances, and there will be no natural (unmanaged) forest in early- and mid-successional stages contained in reserves. One alternative would be to designate enough area in reserves to accommodate the full range of variation in development stages, but this area likely would be large and thus incompatible with timber production goals. Another approach would be to have reserves only partially fixed in place. For example, if a natural disturbance event such as a wildfire kills most of the trees in an old-growth reserve, an older complex-structure stand could be selected as a replacement for this reserve, and allowed to develop into old growth. There also would be great ecological and research value in retaining the burned reserve in its natural state, without salvaging, as I discussed under question 2. I'm sure there are other creative solutions I haven't thought |

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| | of.<br>Overall, it makes more sense to me to describe the desired future condition of the ESF in terms of ranges of percentages in each of the forest development stages, rather than for a mixture of forest stages (complex stand structures) and administrative designations (reserves or nondesignated) as shown in Table 5-1 (p. 5-8). |