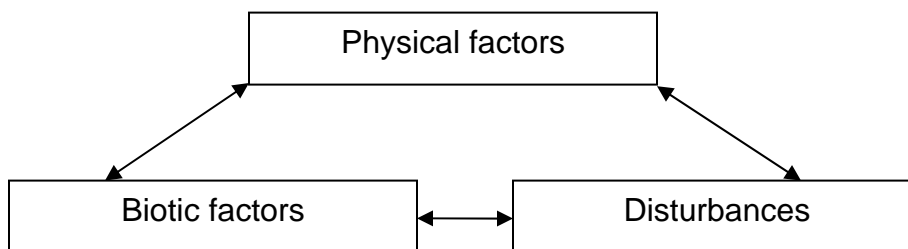


## STUDY QUESTIONS

Consider all discussion questions that were not part of previous discussion papers as well as the following ten review questions. The three questions on the final exam are similar (but not identical) to the questions posed in the six sets (including this one) of discussion questions.

1. Describe the concept of feedbacks (interactions) indicated by the double-headed arrows below. Compare the relative importance of each type of feedback between two of the three following forest types (pre Euro-American impact): a) Puget lowland forests, b) subalpine forests, c) forest similar to those at site Wenatchee site A. Explain your reasoning.



2. Write a conceptual overview, with specific examples, on the topic of “interactions.” What types of interactions are important in western forest communities? Organize the topic into a useful conceptual framework that would make an interesting lecture, or insightful published paper. (Do not use the figure in question #1 (above) to define the content of this answer).

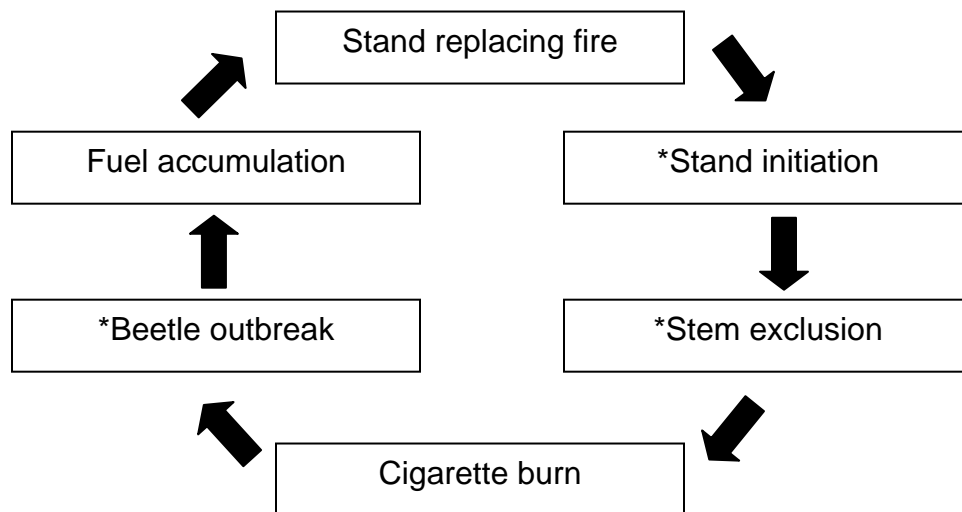
3. Compare factors affecting the distribution and survival of understory herbs versus understory tree seedlings. What factors are similar, different and why?

4. As scientist, the questions we ask and the tools (research approaches) we are closely tied to a particular spatial scale. What ecological question do you think is most important to ask at the spatial scale of a) 5x5 m, b) 100x100 m, and c) 1x1 km? For each scale, justify the importance of your question, and describe what research tool is most appropriate for the study. Your answer should focus on one forest type that we have discussed.

5. Scientists often believe that they understand a system if they can accurately predict its behavior based on understanding of processes, principles, and interactions. What key factors do you think are important in making predictions about successful conifer seedling establishment and growth after disturbance in: a) severe physical environment near limit of tree growth; and b) moderate physical environment well within a species range limit? Why are these principles the same or different in these two environments?

6. The characteristics of forest communities are the complex interactions that often involve events or processes that occur at different time scales. Describe examples that support this statement.

7. The diagram below depicts the different stages in Gara's model of fire-beetle-forest dynamics in the *Pinus contorta* forests northeast of Crater Lake, Oregon. At each of the three steps marked with a \* describe the major ecophysiological stresses faced by seedlings and adult trees. How do those different stresses directly or indirectly result in the mortality of seedlings and adult trees?



8. Understanding cause and effect relationships in forests is difficult for many reasons: a) large size of organisms, b) long time scale of processes, c) complex interactions between causal factors, and d) time lags that separate events and their effects. Critically evaluate the effectiveness of methods and study designs that are used to overcome these limitations. Be specific, using examples from readings, fieldtrips and lectures.

9. How will the effects of global change on high elevation forest communities differ from the effects on low elevation forest communities? Note: For this question, "forest communities" refers to assemblages where some stage of succession has a closed canopy.

10. How does succession differ from community dynamics?