

CFR501

Discussion Questions: #1

October 10, 2007

Group #1	Group #2	Group #3	Group #4	Group #5	Group #6	Group #7
Wink 103	Wink 107	And 22	And 107A	And 114	Blo 261/286	CBH Closet
Laura	Aaron	Paul	Karen	Ben	Royce	Liz
Sarah	Joy	Jason	Dara	Nicole	Rachel	Keala
Jared	Chad	Ian	John	Guang	Sonja	Ziyu
Reed	Kati	Esther	Lauren	Jorge	Joyce	Greg
Andy	Anna	Rachel L.	Melissa	Cynthia	Michael	Brenda

Purpose

The discussion questions give you an opportunity to think about processes shaping forest communities. Your discussion paper must **carefully** explain your logic. **Support** your ideas with **specific** observations and information from lectures, field trips and readings. Be sure to address **all** parts of the assigned question. Use the discussion session to develop your thoughts with your colleagues. However, the written assignment should be your individual work.

Schedule

October 10, 16:00: Andrew and Jim identify one discussion question to answer in writing. The discussion question will be identical, or nearly identical, to one of the following. The question will be posted on the web site.

October 12, midnight: Finished discussion papers due, in MS Word format, to cfr501@u.washington.edu

Style Tips

Take advantage of the style tips listed at:

http://courses.washington.edu/cfr501/index_files/Assignments.htm

Be sure your species naming conventions follow:

http://courses.washington.edu/cfr501/Using_Species_Codes.pdf

Page Limit

Two pages maximum, 1" margins all around, 12 point font, double spaced. Put your name in the document header and embed your name in the file name (e.g. Clements_Fred_DQ1.doc). Tables, figures and references do not count to the page limit.

1. Lassoie *et al.* suggest that future studies “will provide the scientific community with a more complete picture of the physiological basis for distributions and abundances of conifers in the PNW.” In what ways is the understanding of ecophysiological behavior more (or less) valuable than presence/absence studies *sensu* McKenzie *et al.* for predicting patterns of tree distributions in the Wenatchee Mountains at various spatial scales:

- small: 1- several meters (within stands, sites)
- intermediate: 10s meters to km—across landforms
- large: 10-100 kms—across larger physiographic areas

2. According to the Gleasonian perspective, which is well represented by the analytical framework employed by McKenzie *et al.* (2003), community composition is driven by species’ individualistic response to environmental gradients. However, interspecific and intraspecific interactions throughout the life history of respective species also influence community composition.

Consider sites AN (Figure 1a) and BS (Figure 1b). Discuss the relative importance of (1) individualistic species response to the environmental conditions and (2) species interactions in structuring the community composition at each of these two sites. Consider only plant-plant interactions in your analysis (i.e., do not worry about insects). Develop your argument in terms of specific ecophysiological and biophysical parameters, and with the use of the field data. Finally, outline the ecophysiological hypotheses (and predictions) that follow from your discussion and the specific measurements you will use to assess your predictions.



Figure 1. (a) Site AN (photo by Paul Footen) and (b) site BS (photo by Keala Haggmann).

3. Both the Peterson and Peterson 2001 and the McKenzie *et al.* 2003 papers discuss the importance of top-down influences of climate on the growth rate and presence of trees. Furthermore, both papers justify the importance of their findings in terms of predicting the consequences of future climate change.

Consider two of the sites we visited in the Wenatchee Mountains (AS, AN, BS, BN, CS, CN): one that you suspect would be most sensitive to climate change and one that you expect would be least sensitive to climate change. Assume: 1) a 1°C increase in summer temperature and a 3°C increase in winter temperatures, but no change in precipitation over the next 50 years, 2) fire, beetles and other disturbances continue to be successfully excluded from the sites, and 3) no change in the range of climate variability.

Discuss how the influence of climate and landform are likely to affect vegetation community composition at each of the two sites immediately and over the next 50 years. What ecophysiological measurements ($\delta^{13}\text{C}$, water relations, shade tolerance) would confirm your predictions of future community composition? What trends would you expect to see during the 50 years of your study?