

**Study Questions—Week 7 Succession**  
**Forests Through Time and Space**  
**These are due next Mon (Nov 15)**

1. Explain fig 13.6 in Chapin.
2. Clear cuts are one type of perturbation experienced in local forest ecosystems. How resistant are the lowland Puget Sound forest ecosystems to this perturbation? How has the resistance and ecological resilience changed over the last 100 years?
3. What is NEP? Outline how it would change during the scenario given below and give examples of the plants that you might encounter during three or four stages of succession (include early and late-stage). A medium intensity fire in the Hoh valley within the National Park (like the area where you did your plots) burned all the over story trees and killed them (many were left standing) and killed all the under story plants in a 10 acre area. The soil remained unaffected.
4. Provide examples of ways in which the carbon and nitrogen cycling of a forest ecosystem might be influenced by the legacy of events that occurred 1 week ago, 5 years ago, 100 years ago, and 2000 years ago.
5. Give five specific examples of plant interactions involved in forest succession (other than the ones given in lecture).
6. Production of allelochemicals that specifically inhibit autotrophic nitrification has been proposed as a mechanism through which plants conserve nitrogen within an ecosystem. Develop an experiment that would prove or disprove this theory.

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1. Annual leaf fall in a particular Tennessee forest has been measured to deliver 1370 g leaf biomass per  $\text{m}^2$  to the soil surface. These leaves are decomposed by a mixed population of bacteria and fungi with an average C/N ratio of 8/1 and an efficiency (microbial yield efficiency) of 0.4 (40%). The leaves are 50% carbon and the C/N ratio is 30/1. Will nitrogen will be immobilized or mineralized? How much nitrogen will be added or removed per  $\text{m}^2$ ?
2. In the PNW, clear cuts are often favored by wildlife managers to increase deer and elk populations. However, the attractiveness of clear cuts to large herbivores declines over time. Describe the type of succession that happens and outline the successional sequence that occurs. Give examples of plants that might be found in this sequence if the clear cut was in Evergreen's forest between campus and the Organic Farm.