10/28/04

Study Questions—Week 5 *Competition & Nutrient Cycles*

Forests Through Time and Space

These are due next Wed (Nov 3)

1. Complete the Salmon Nitrogen workshop that was handed out in class.

1. Salmon-derived nutrient subsidies have both direct effects in forest ecosystems, as well as indirect effects. List three or four examples of each type.

1. Construct a dichotomous key (like the keys in Pielou) that refers to features that you can use in the field to positively identify the following tree species: *Picea sitchensis, Abies lasiocarpa, Pseudotsuga menziesii, Tsuga heterophylla, Tsuga mertensiana,* and *Alnus rubra.*

1. List all the N_2-fixing plants that you can think of that are found in the PNW.

1. List three ways that the principle of allocation affects and predicts intra-specific competitive encounters.

1. What do seasons in the tropics look like? How common are they? How strong? Do plants and animals have breeding seasons?

1. List and describe five interesting and defining features of one of the following types of tropical forests: lowland evergreen rainforest, freshwater periodic swamp forest (aka flooded forest), mid-elevation montane forest (aka cloud forest), or seasonal karst forest (aka limestone forest).

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Quiz Questions—Week 5

Forests Through Time and Space

This is due at your conference next week.

1. Fertilization of second-growth forests is increasingly common here in the PNW. This increased nitrogen input into the forest ecosystem can have a number of deleterious ecological effects, including destruction of ozone in the stratosphere. A common form of nitrogen fertilizer used is ammonium nitrate. When it dissolves in the soil solution, it forms both ammonium (NH_4^+) and nitrate (NO_3^-). Outline the forms of nitrogen, the organisms involved, locations in the ecosystem, and the names of the processes the nitrogen molecules go through until they end up in the ozone layer.
2. The chum salmon that are returning to Kennedy Creek this year represent several lineages; while some returning individuals are probably siblings, most are not related.
    a. Explain in as much detail as you can muster why "Bob," one of this years' returnees, would be better off if the pals he's swimming upstream with die before they get to the spawning grounds. (5 points)
    b. Give two real examples of how either intra- or inter-specific competition on chum salmon can affect their reproductive success (that is, their production of viable offspring). Be specific. (5 points)