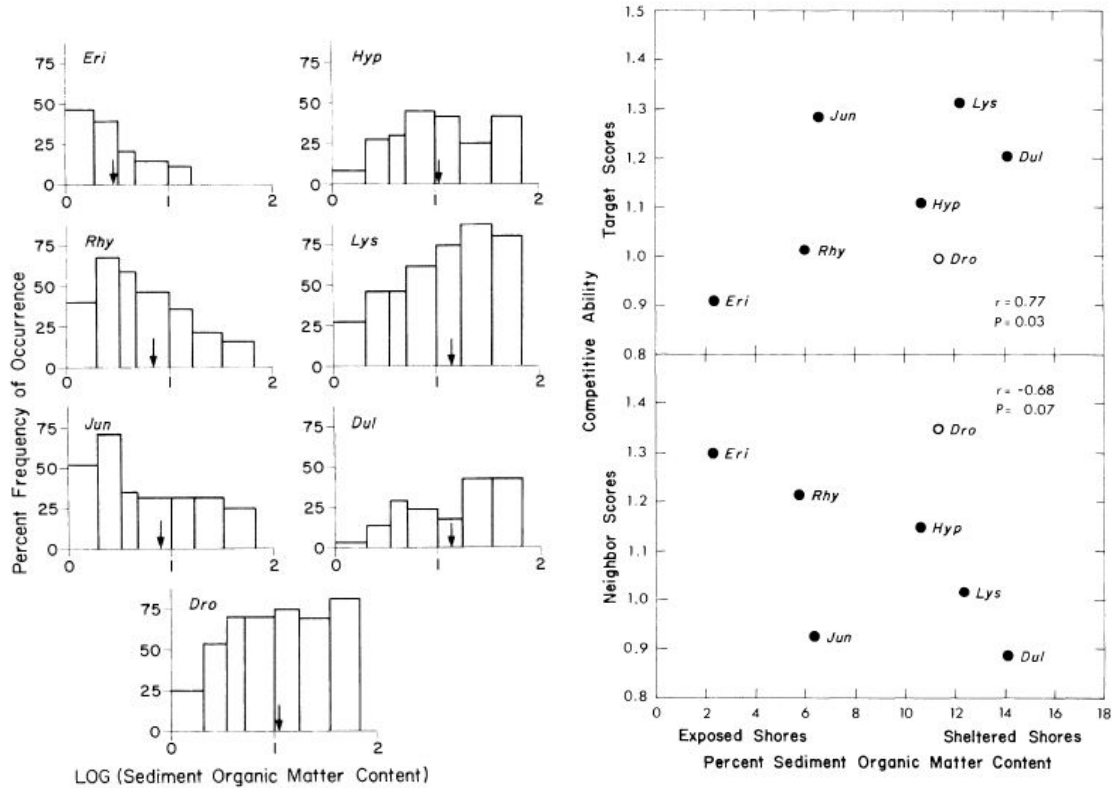




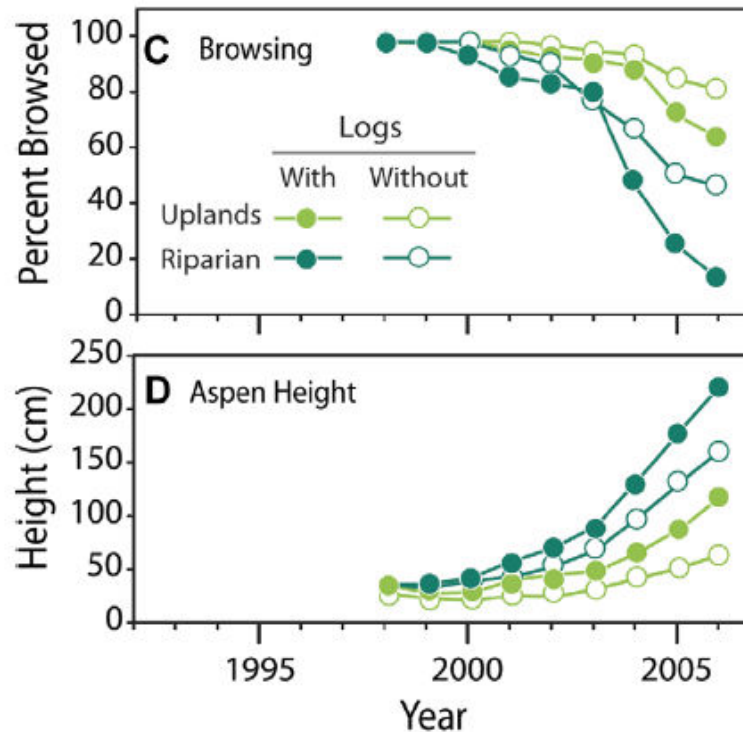
## c. Logistic population growth



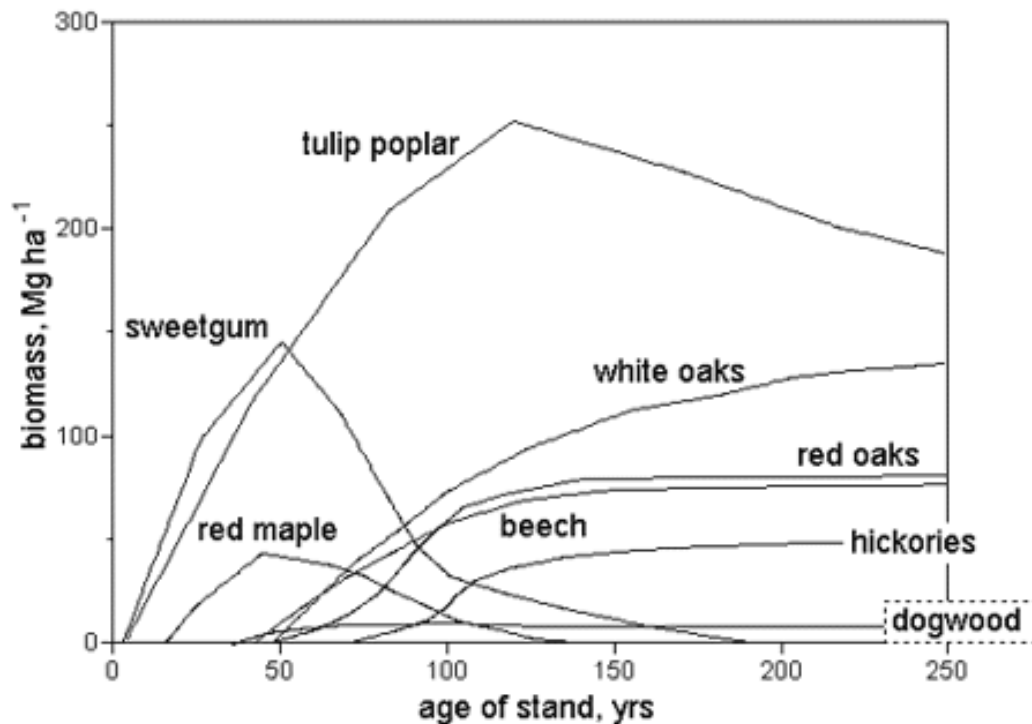
4. Answer the following questions regarding the graphs above.
- What major differences do you observe in the frequency distributions of the seven plants shown in the above left figure?

b. State the trade-off hypothesis, **in one sentence**, that the scientists who conducted this study were interested in testing.

c. What do the two graphs in the right figure show, in relation to the tested hypothesis?

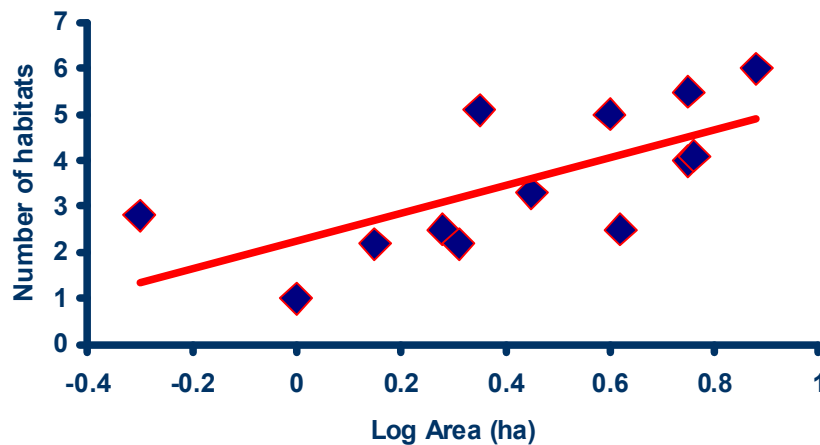


5. Consider the figure on elk browsing on aspen in Yellowstone National Park. Recall that uplands are high elevation sites, riparian sites are close to rivers, and downed logs were either present or not at each site. Browsing refers to the effect of elk foraging.
- Restate the predictions of the scientists who conducted the study of aspen tree height and elk foraging, as they relate to predation risk on elk.
  - If the foraging pattern of elk relates to their perceived predation risk, such that they forage less in areas where they perceive more risk, then according to the figure, which habitat has the highest predation risk?
  - Compare the general effect of logs (upland with logs vs. upland without logs, and riparian with logs vs. riparian without logs) to habitat type (the two uplands curves with and without logs together vs. the two riparian curves with and without logs together). In your estimation, is the effect of logs greater than or less than the effect of habitat type? Briefly explain.
6. Succession and disturbance are two concepts that illustrate the dynamic nature of ecosystems. Consider the figure below and the natural disturbance of fire in a temperate deciduous forest, and answer the following questions.
- What would you predict about life history strategy and competitive ability for sweetgum and white oaks?
  - Explain how researchers piece together a picture of forest tree composition over a 250 year time period without actually studying it continuously over that time period.



7. Suppose that biodiversity in a particular ecosystem declines due to human-caused impacts. Consider how ecosystem functions may change, and answer the following questions.
  - a. Given what we know about the relationship between diversity and ecosystem function, why might you predict that function will not decline rapidly at first as species are lost from the system?
  - b. Briefly describe one ecosystem function that has value to humans.
  - c. What is one other ecological function, besides the one in part “b,” we should consider as species are lost from an ecosystem (one that does not relate to humans)?
8. Answer the following questions regarding global climate change.
  - a. Explain the connection between atmospheric carbon dioxide concentrations and global average temperatures.

- b. Provide one example of a climate “mis-match” between two or more interacting species.
- c. Briefly discuss the causes of changes in sea level due to a warmer world – what changes are occurring and how do they impact sea levels?



9. The graph above shows the relationship between habitat number, or diversity, and the area of an island. **Use specific concepts from Biology 112** to answer the following questions.
- Explain the connection between this graph and the Theory of Island Biogeography.
  - Consider the Theory of Island Biogeography, which makes predictions about the number of species we expect to observe on oceanic islands of different size. Explain how and why this theory can be applied to conservation of ecosystems on continents.
10. Consider our discussion of conservation and the article by Pimm and Jenkins (“Sustaining the variety of life”) and answer the following questions.
- Explain the relationship between one of the laws of biogeography and the observed pattern of global biodiversity.
  - Why are the pockets of high global biodiversity in peril (apply the laws of biogeography)?