Practice Questions

1. Define NPP, GPP and Respiration, at the level of an ecosystem.

For the following data from a light/dark bottle experiment, what are NPP, GPP and R? For this experiment, the plankton were passed through a filter to remove large zooplankton.

Initial oxygen concentration: 9 mg O_2 / L
Final oxygen concentration – light bottle: 10.5 mg O_2 / L
Final oxygen concentration – dark bottle: 7.5 mg O_2 / L

2. Describe the process of decomposition in an aquatic system. Start with a leaf that falls into a pond. Use an example of a leaf that has low lignin content.

How would the process change if the leaf had high lignin content?

What are three types of decomposer involved in the aquatic decomposition process?

3. What is the largest carbon stock in the carbon cycle?

What is the largest annual flux?

Which carbon fluxes to humans have most direct control over?

4. If a shrubland standing stock is 100 kg biomass / m2, and primary productivity is about 1 kg / m2 / yr, what is the turnover of this biome?

Define turnover.

For the shrub example, what do you hypothesize is causing the turnover?

How is the 'fate of NPP' related to turnover?

5. List the three kinds of energy that power ecological systems. Explain the role of each, and give an example of how each kind of energy can influence the production and fate of NPP.

6. Can you draw and explain a simple decomposer food web in terms of stocks and fluxes of energy (not carbon or biomass)?