

Ecology 7

- send answer to iClicker Question 35A now.
- Course Evaluations II: Brian's (until ~12:10) 12:10
- Ecosystems
 - energy (photosynthesis)
 - trophic levels
 - efficiency
- iClicker Question 35B

only if you've already done it! (otherwise - weds)

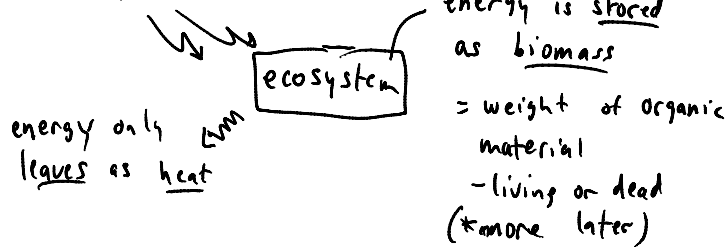
⇒ Phylogenetic Collection report due to TA's mailbox in W-3-021 at regular lab time.

Final Exam Wednesday 5/19 11³⁰ - 2³⁰ (info in Ecology 5)

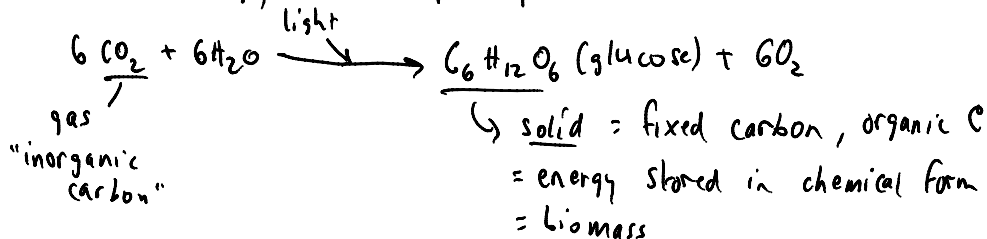
- Last names A - G in McCormack Cafe
 - Last names H - Z here (1 bonus point for going to correct place!)
 - If you would like to be a paid tutor for Bio 111 or 112 next year, send me e-mail *I will download thru AM*
- Don't forget SimUText (Ecology 2) - it will be on the final!

Ecosystems - organisms (communities, etc.) + the nonliving environment

Energy only enters as light



How does energy enter? photosynthesis



to make 1 gram of glucose takes 16,000 joules of energy

What happens to glucose?

What happens to glucose?

④ can be used to make:

amino acids	→	proteins	} = biological material = biomass
nucleotides	→	DNA, RNA	
sugars	→	carbohydrates	
fatty acids	→	lipids	

∴ every gram of biomass required (at least) 16,000 J (16 kJ) of energy to produce it.

∴ biomass ↔ energy

⑤ used to "produce energy" - how? cellular respiration

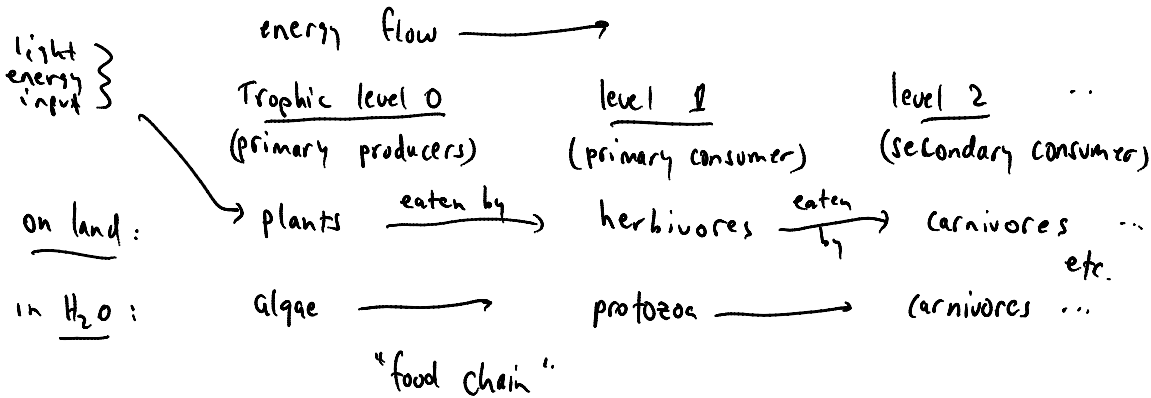


"burning" 1 gram glucose releases 16 kJ of energy

⇒ used to make ATP

ATP used to make polymers, move, maintenance, etc.)

Trophic levels - organize organisms by where they get their energy



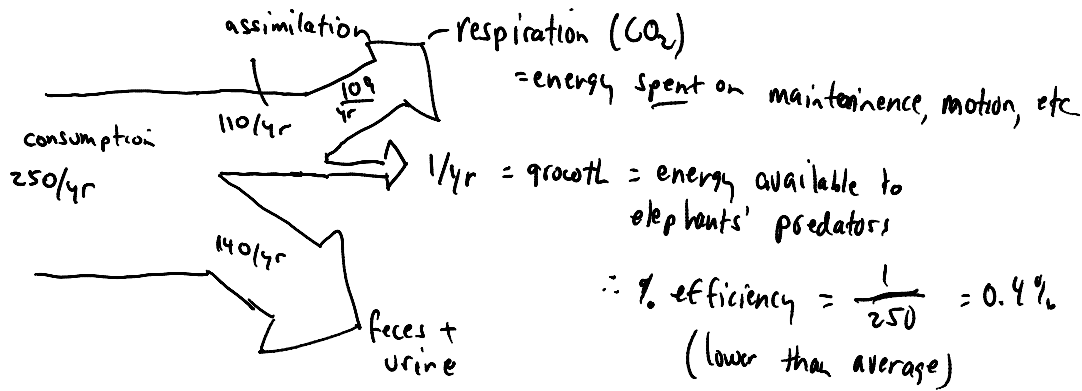
How efficient is energy transfer?

$$\text{production efficiency} = \frac{\text{biomass produced (growth)}}{\text{biomass consumed}}$$

"how efficient are cows at turning grass into more cows?"

~ 10% per trophic level (average over many)

ex. Herd of elephants for 1 year (units are giga-grams (10⁹ grams) dry biomass)



Or suppose you fed these elephants 250/yr of food that they can digest more fully - so that feces + urine = only 40/yr and they move around, etc just as much. how will the #'s change?

