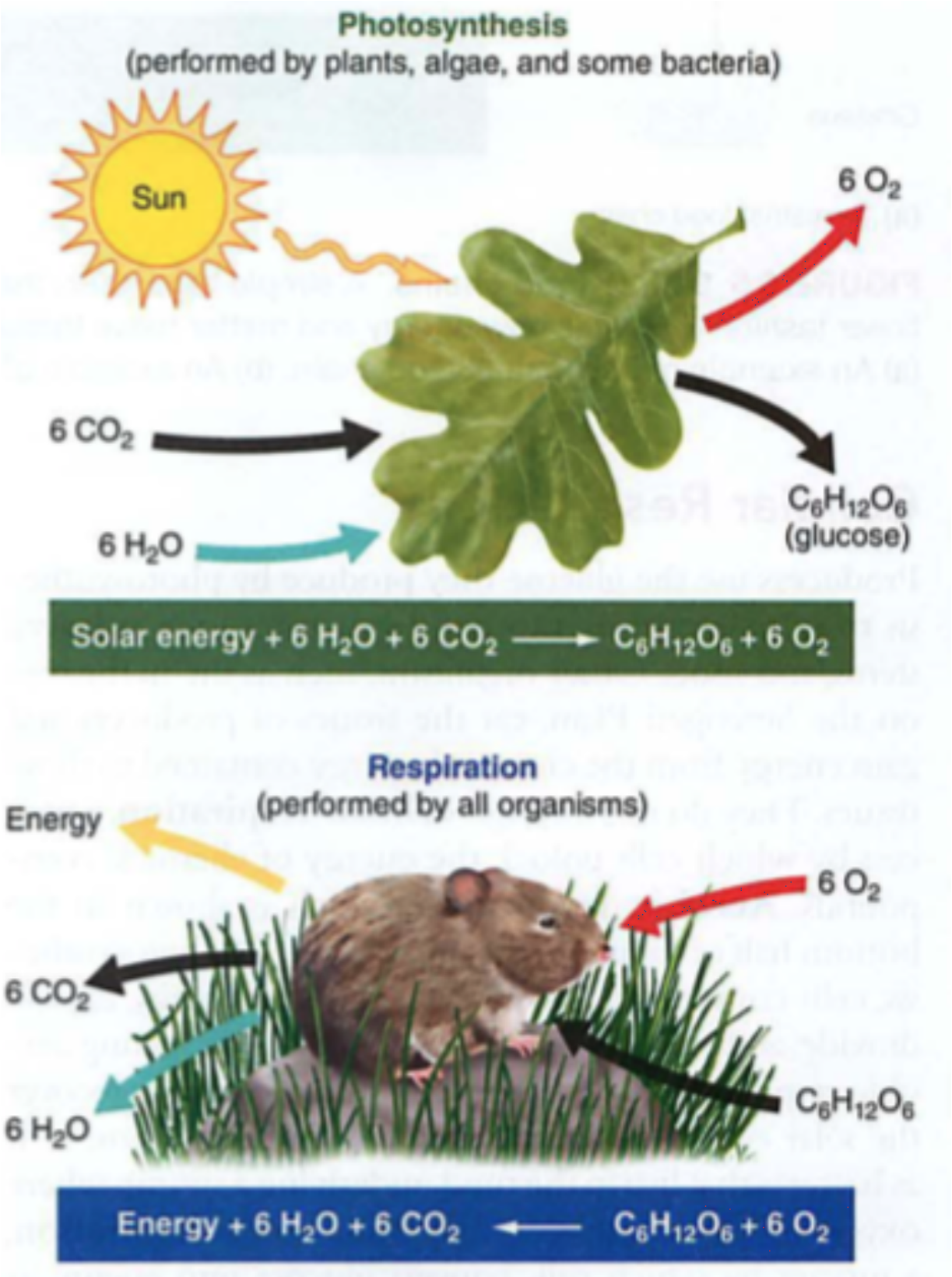
Module 06: movement of energy

Module 6: Movement of energy

Biosphere-all life

Producer (also primary producer) gets energy from sun or heat directly, also known as autotrophexample: grass

Photosynthesis: CO2 + water + energy (heat or light) -> sugars (CHO)Reverse process is **respiration**: Sugars + O2 -> energy + CO2 + water



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Anaerobic respiration (e.g. bacteria) don't use O2, less efficient, older primitive source of energy (pre-oxygen)

Consumer (heterotroph) consumes other primary autotrophs

- Primary consumers eat plants (e.g. herbivores)

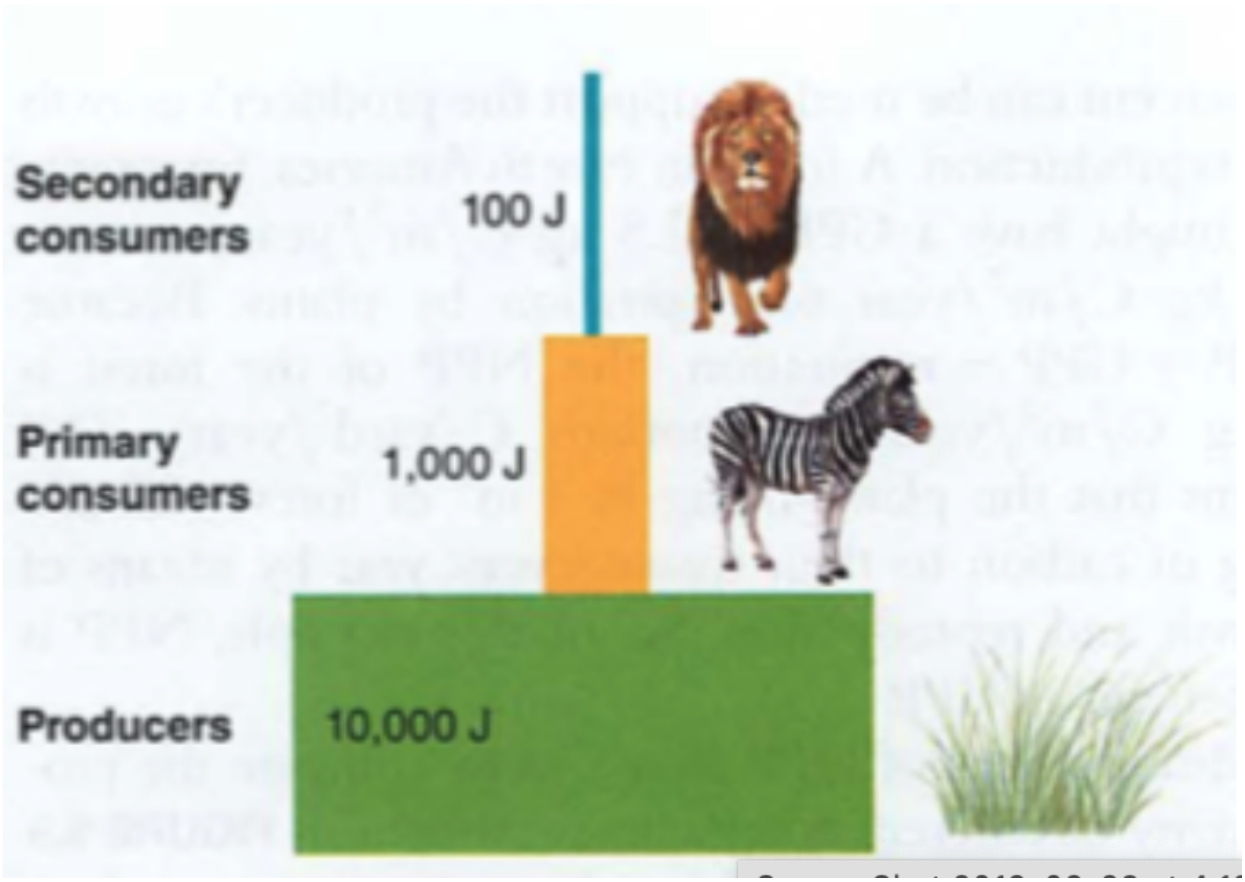
- Secondary consumers eat them (carnivores)
- Tertiary consumers eat other carnivores (algae->zooplankton->fish->eagles)

Trophe = "nourishment"Trophic levels = food levels, see also food web

- Scavenger-eats dead stuff
- Detritovore-eats dead stuff that is decaying
- Decomposers-break down into basic elements

GPP gross primary productivity= Total amount of solar energy into the system: like gross income in a businesse.g. all of the money coming into your business

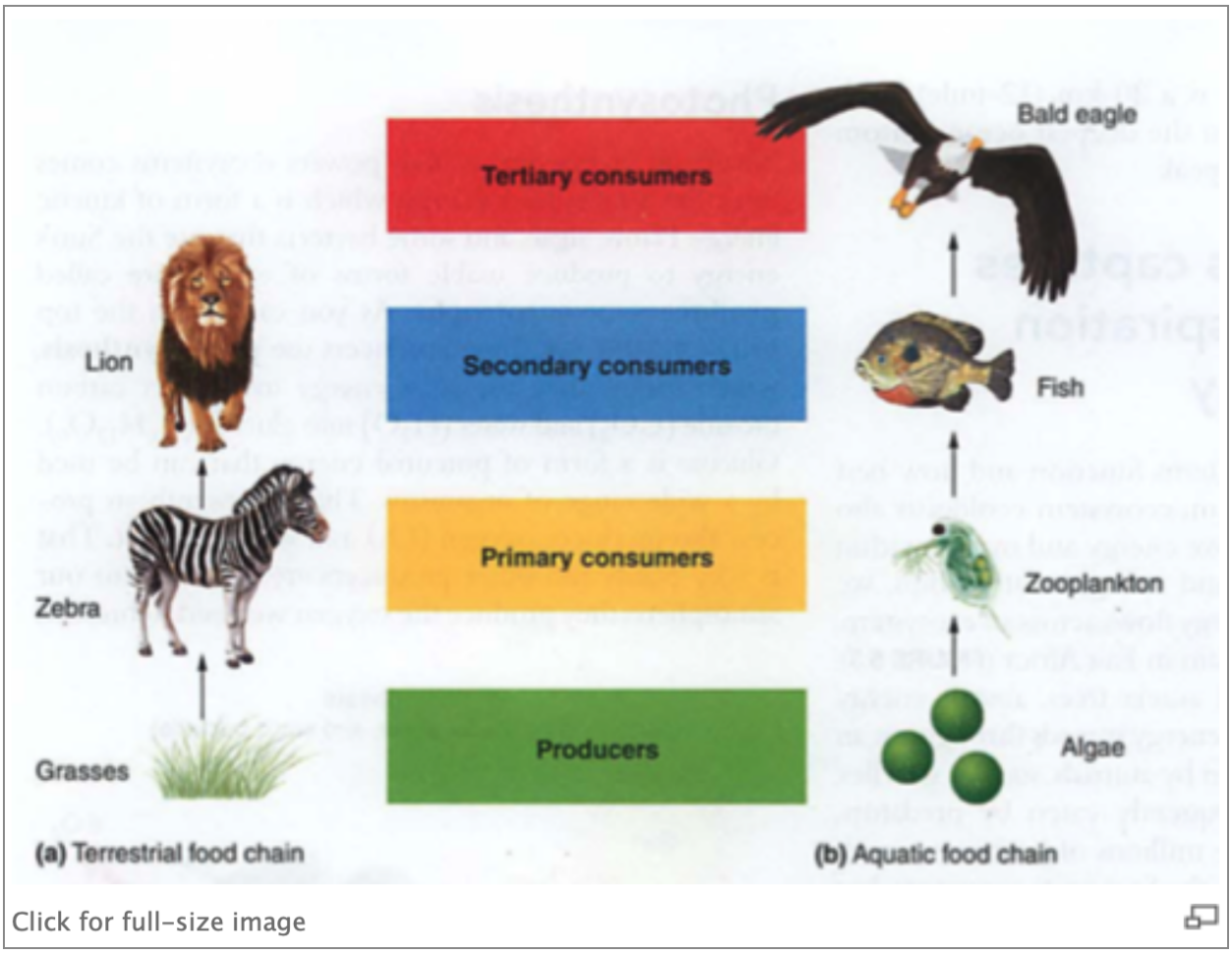
NPP net primary productivity = GPP minus respiration (think of Maui onions):gross income-expenses=net income
Biomass-total mass of all living things in an ecosystem-odd fact: rain forest soil is the lowest in nutrients and biomass-why?
Standing crop-total plant biomass (e.g. forest)Efficiency is low (around 10%)
Trophic pyramid: 10x reduction in energy for each level (why?)-vegetarians vs. meat eatersSo, carnivores (us, wolves) are eating harvesting devices (cows) for autotrophs (grasses):



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Not very efficient, unless you can't digest grass, or it takes too much energy to walk around all day. This IS, however a good argument for global sustainable survival, as the sun will not go away soon, and as long as we have arable (farmable) land to grow plants, we could survive with a global population of 8-10 billion.But we'd need access to fresh water...**Recall: energy->water->food-**

>culture



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