Date:

Objective: Interactions and Symbiosis

1. **Epiphytes**: commensal relationship

2. **Fungi**:
   - **a. heterotrophs**: feeds on something for energy
   - **b. decomposers**: decay, breakdown remains of plant/animals. different
   - **c. mutualism**: lichens, fungus provides **minerals** and the algae provide **sugar**

3. Leaf-cutter ants and fungal gardens

   **Ants provide**: leaf cuttings/protection
   **fungus provides**: "Fluffy growth" -> carbohydrates from invasive fung.
Objective: Energy and Communities (5.3)

Chemical reactions:

- **reactants** (are written on the left side of equation)
- **products** (are written on the right side of the equation).

1. **Page 142**: photosynthesis and cellular respiration

   \[
   \begin{align*}
   \text{Water} (H_2O) + \text{Carbon Dioxide} (CO_2) & \rightarrow \text{Sugar} \\
   \text{Sugar} + \text{Oxygen} (O_2) & \rightarrow \text{Energy!} + \text{CO}_2 + \text{H}_2\text{O}
   \end{align*}
   \]

2. Planktonic: floats or propels, but does not swim like a fish. **Phytoplankton** and **zooplankton** are fed upon by giant and small sea life.

   **Producer:** Phytoplankton
   **Consumer:** Zooplankton (producer)

3. Organisms that carry on **photosynthesis**:

   **autotroph**
1. **Detritivores** and **decomposers** feed on **organic** (dead) material.
   
   a. What is it the difference between them?
   
   b. Define **organic**.

2. Vultures are similar to **detritivores**, but have a “special” name. What is it?.

3. Page 148, question #2
1. **Detritivores** and **decomposers** feed on **organic** (dead) material.
   
a. Eat (with a mouth) decaying and/or remains of plants or animals (earthworms, millipedes, sea spider)
   
   break down/decay (some fungi/bacteria)

   **b. Organic**: contains carbon, all **biotic** remains contain carbon

2. Vultures are similar to **detritivores**: scavengers

3. **Page 148**, question #2

1,623 \lesssim 15^{th} \text{ trophic level (producers)}

\times \frac{1}{1}

\overline{162.3 \lesssim 2^{nd} + 1}

\times \frac{1}{1}

\overline{16.23 \lesssim 3^{rd} + 1}

\times \frac{1}{1}

\overline{1.623 \lesssim 4^{th} + 1}

\frac{1}{n} - 4

\frac{1}{n} - 3

10 - 2

100 - 1
A fox consumes a rabbit. Percentage of the energy from the rabbits plant-based meal that will reach the fox: 10%. Aside from what is being eaten, the arrows represent: direction of the flow of energy.
Label: 3 detritivores and 3 decomposers
Objective: Life and Energy

1. Food webs: omnivores can be drawn as: 2\textsuperscript{nd} trophic level or higher – 1\textsuperscript{st}, 2\textsuperscript{nd}... level consumers

2. Black bears: can be drawn in many trophic levels. Large omnivores that eat a variety of foods – seeds, nuts, berries, small animals, insects...

3. In tropical rainforests, most of the biomass is in the stems, trunks, leaves, and branches. 

\textit{What is biomass and explain why most of it is not found in the roots.}
biomass $\rightarrow$ all the weight of all living things.

Life "material" something is made of

rainforest: warm, "rainy" climate

plants grow fast $\rightarrow$ take up H_2O + nutrients very quickly (roots)
Objective: Food Webs, Invasives, and Trophic Levels (p. 146)

1. Four impacts of invasive zebra mussels in an aquatic community: spread of disease, death by predators, consume a lot of phytoplankton (makes water too clear)

2. Everglades food web (p. 147) and nutrients for crayfish/invertebrates:
   a. omnivore: raccoon
   b. Identify a six trophic level food chain: plant → g. shrimp → k-fish → l-bass → anhinga → alligator
   c. Identify a four trophic level food chain: plants → crayfish → frog → alligator
   d. Apex predator: bobcat/alligator
   e. Secondary and tertiary consumer (one species): frog