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| Biology Cornell Notes: Ecology Date: |
| Study Questions/ Vocabulary:What are biotic and abiotic factors?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_What are producers?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_How do consumers obtain energy and nutrients? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_What is a niche? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_What are three primary ways that organisms depend on each other? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_How does matter move through the biosphere? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_What is the importance of the main nutrient cycle? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. **What is ecology?**
* \_\_\_\_\_\_\_\_\_\_\_\_\_ - the scientific\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between \_\_\_\_\_\_\_\_\_\_\_\_\_and their\_\_\_\_\_\_\_\_\_\_\_\_\_\_, focusing on \_\_\_\_\_\_\_\_\_transfer
* It is a science of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
1. **What do you mean by environment?**

The environment is made up of \_\_\_\_\_ factors:* \_\_\_\_\_\_\_\_\_ factors- all \_\_\_\_\_\_\_\_\_\_\_ organisms inhabiting the Earth
* \_\_\_\_\_\_\_\_\_\_ factors- \_\_\_\_\_\_\_\_\_\_\_\_ parts of the environment (i.e.\_\_\_\_\_\_\_\_\_\_\_\_\_\_, soil, \_\_\_\_\_\_\_\_\_, moisture, \_\_\_\_\_ currents)
1. **Habitat vs. Niche**
* \_\_\_\_\_\_\_\_\_- the \_\_\_\_\_\_\_\_ a species plays in a community: its total way of life (job)
* \_\_\_\_\_\_\_\_\_\_\_\_- the \_\_\_\_\_\_\_\_\_ in which an organism \_\_\_\_\_\_\_\_\_\_ out its life (address)
* A \_\_\_\_\_\_\_\_\_\_is determined by the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_of an organism, or a\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_ factor- any biotic or abiotic factor that \_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_of organisms in a specific environment.
* Examples of limiting factors-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_1. **Feeding Relationships**
* There are \_\_\_ main types of feeding relationships.

 1. \_\_\_\_\_\_\_\_\_\_\_\_- \_\_\_\_\_\_\_\_\_\_\_\_\_\_2. \_\_\_\_\_\_\_\_\_\_\_\_- \_\_\_\_\_\_\_\_\_\_\_\_\_\_3. \_\_\_\_\_\_\_\_\_\_\_\_- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* \_\_\_\_\_\_\_\_\_\_\_- all \_\_\_\_\_\_\_\_\_\_ (plants), they trap \_\_\_\_\_\_\_\_\_\_ from the \_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_ of the food chain
* \_\_\_\_\_\_\_\_\_\_\_\_\_- all\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: they \_\_\_\_\_\_\_\_ food containing the sun’s energy
* Herbivore – Carnivores – Omnivore - Decomposers
1. **Symbiotic Relationships**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**- \_\_\_\_\_ species living \_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_ Types of symbiosis:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**- \_\_\_\_ species \_\_\_\_\_\_\_\_\_\_\_ and the other is \_\_\_\_\_\_\_\_\_ harmed nor helped

 Example: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* **\_\_\_\_\_\_\_\_\_\_\_\_\_**- One species \_\_\_\_\_\_\_\_\_\_\_(parasite) and the other is \_\_\_\_\_\_\_\_\_\_ (host)

 Example: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- beneficial to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ species

 Example: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Type of relationship** | **Species harmed** | **Species benefits** | **Species neutral** |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |

1. **Trophic Levels**
* Each \_\_\_\_\_\_ in a food \_\_\_\_\_\_\_\_is known as a \_\_\_\_\_\_\_\_\_ level.
* Trophic levels represent a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ in the \_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_ and matter in an ecosystem.
* As you move \_\_\_ a food chain, available \_\_\_\_\_\_\_\_\_ decreases.
* \_\_\_\_\_\_\_\_\_ is transferred upwards but is \_\_\_\_\_\_\_\_\_\_\_\_\_ with each transfer.

How Does Energy Flow Through an Ecosystem? | Earth Reminder* **\_\_\_\_\_\_\_\_ chain**- \_\_\_\_\_\_\_\_\_\_ model that shows how matter and \_\_\_\_\_\_\_\_\_\_ move through an ecosystem
* **Food \_\_\_\_\_\_**- shows \_\_\_\_ possible feeding \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a community at each \_\_\_\_\_\_\_\_\_ level
1. **Nutrient Cycles**

Cycling maintains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (balance) in the environment.* \_\_\_ cycles to investigate:

1. \_\_\_\_\_\_\_\_ cycle2. \_\_\_\_\_\_\_\_\_ cycle3. \_\_\_\_\_\_\_\_\_\_\_\_\_ cycle**\_\_\_\_\_\_\_\_ cycle-** evaporation, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, condensation, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_\_\_\_\_\_\_\_ cycle-** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cycle carbon and \_\_\_\_\_\_\_\_\_\_\_ through the environment.**\_\_\_\_\_\_\_\_\_\_\_ cycle-** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nitrogen (N2) makes up nearly \_\_\_ %-\_\_\_ % of air. Organisms \_\_\_\_ \_\_\_\_\_ use it in that form.\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ convert nitrogen into \_\_\_\_\_\_\_\_\_\_\_ forms.Only in certain \_\_\_\_\_\_\_\_\_\_\_\_ and industrial \_\_\_\_\_\_\_\_\_\_\_\_\_\_ can \_\_\_\_\_ nitrogen.**Nitrogen\_\_\_\_\_\_\_\_\_\_\_\_\_\_** - \_\_\_\_\_\_\_\_\_\_atmospheric nitrogen (N2) into \_\_\_\_\_\_\_\_\_\_\_\_(NH4+) which can be \_\_\_\_\_\_\_ to make organic compounds like\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.**Nitrogen-fixing\_\_\_\_\_\_\_\_\_\_\_\_\_:** Some live in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ relationship with plants of the \_\_\_\_\_\_\_\_\_\_\_\_family (e.g., soybeans, clover,\_\_\_\_\_\_\_\_\_\_\_\_).* Some \_\_\_\_\_\_\_\_\_\_\_\_-fixing bacteria live \_\_\_\_\_\_\_ in the\_\_\_\_\_\_\_.
* Nitrogen-fixing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are essential to maintaining the fertility of semi-\_\_\_\_\_\_\_\_\_\_ environments like \_\_\_\_\_\_ paddies.

**\_\_\_\_\_\_\_\_\_\_ in food chains-** While energy \_\_\_\_\_\_\_\_\_\_\_\_ as it moves up the food chain, \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ in potency. * This is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ex: \_\_\_\_\_\_ & Bald \_\_\_\_\_\_\_\_\_\_\_ |
| SUMMARY : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |