**Guided Notes: Biodiversity Defined**

**Big Idea:** Biodiversity refers to the variety of life forms in an ecosystem or region, including the genetic diversity within species, the number of different species, and the variety of ecosystems.

**Key Concepts:**

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the variety of life that exists in a natural habitat.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the number of genetic characteristics in a single species.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the number of different species in an ecosystem.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the variety of ecosystems in a geographic region.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are critical species that if removed, would cause their entire ecosystem to collapse.

• More biodiverse ecosystems tend to be more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and can recover from changes better.

**Real World Examples:**

1) The many different types of dogs like poodles, bulldogs, huskies etc. demonstrate high \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within that one species.

2) If a new mall was built covering a forest and a prairie area near your town, it would decrease the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of that region.

**Guided Notes: Invasive Species**

**Big Idea:** Invasive species introduced to new environments can severely disrupt the balance and biodiversity of those ecosystems.

**Key Concepts:**

• An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an organism that causes harm in a new environment where it is not native.

• Invasive species outcompete native species for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like food, water, shelter.

• They spread rapidly with no \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to control their population growth.

• This upsets the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by harming/outcompeting multiple species.

• Invasives make it very difficult for an ecosystem to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ even after they are removed.

**Real World Examples:**

1) Introducing a snake or lizard species from another country into a local park could negatively impact the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ biodiversity there.

2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants like kudzu growing rapidly and covering over native plant species in your area is an example of an invasive species problem.

**Guided Notes: Changing Coral Reef**

**Big Idea:** Coral reefs are extremely biodiverse ecosystems threatened by coral bleaching caused by climate change and warming oceans.

**Key Concepts:**

• The Great Barrier Reef is one of the most \_\_\_\_\_\_\_\_\_\_\_ environments on Earth.

• Coral reefs are formed by colonies of \_\_\_\_\_\_\_\_\_ that secrete hard \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

• Coral polyps have a \_\_\_\_\_\_\_\_\_\_\_\_ relationship with algae, providing \_\_\_\_\_\_\_\_\_\_ and receiving \_\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_\_\_\_.

• \_\_\_\_\_\_\_\_\_\_\_ temperatures cause the algae to become overactive, leading to \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

• Climate change is increasing the \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ of coral bleaching events.

• Humans depend on coral reefs as a \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ and for \_\_\_\_\_\_\_\_\_\_ in the atmosphere.

**Real World Examples:**

1) "Many of the species of fish that people \_\_\_\_\_\_\_\_\_\_ live in or near the coral reef."

2) The oceans absorb excess \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ in the atmosphere, reducing the warming effects of climate change.

**Guided Notes: Ecosystem Services**

**Big Idea:** Ecosystems provide various services that contribute to human well-being and survival.

**Key Concepts:**

• A \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a specific geographic area with a certain climate where certain types of organisms live.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the contributions of ecosystems to the well-being and survival of humans.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the products that humans obtain from ecosystems for their own use, like food, clothing, transportation, and medical supplies.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the material benefits that humans receive as a result of ecosystem processes, like photosynthesis, nutrient cycling, and soil creation.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the non-material benefits that people receive from ecosystems, like recreational opportunities, cultural significance, and preservation of resources for future generations.

**Real-World Examples:**

1. \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ are direct services provided by ecosystems. These are essential for human survival and are obtained directly from the environment.

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an indirect service that benefits humans. Most flowering plant species, including many human food sources, require \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to reproduce. This natural process indirectly contributes to our food production.

**Guided Notes: Biodiversity and Ecological Health**

**Big Idea:** Biodiversity is a key indicator of an ecosystem's overall health and ability to withstand and recover from changes or disturbances.

**Key Concepts:**

• An \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a community of interacting organisms and their physical environment.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the variation of life at all levels of an ecosystem.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the relationship among ecosystems, ecosystem services, and human health.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the ability to recover from change that has already happened.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the ability to withstand change.

• A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a species whose removal from an ecosystem can cause the entire ecosystem to collapse.

**Real-World Examples:**

1. The \_\_\_\_\_\_\_\_\_ is considered a keystone species in many ecosystems. If it was eliminated, the entire ecosystem could collapse as the \_\_\_\_\_\_\_\_\_ population would grow unchecked, overgrazing plants and disrupting the food web.

2. If a common species like \_\_\_\_\_\_\_\_\_\_\_\_ was removed from an ecosystem, the impact would be less severe as other species could fill that niche. The ecosystem's \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ would allow it to adapt and recover.

**Guided Notes: Making Compost**

**Big Idea:** Composting is a simple yet effective solution for reducing waste, returning nutrients to the soil, and maintaining biodiversity and ecosystem services.

**Key Concepts:**

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are organisms that break down organic material, such as bacteria, fungi, or small invertebrates.

• The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ describes how water circulates as water vapor, liquid water, and ice between Earth's atmosphere, land, and bodies of water.

• Composting requires a balance of "greens" (nitrogen-rich materials like \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_) and "browns" (carbon-rich materials like \_\_\_\_\_\_\_\_\_).

• The ideal carbon-to-nitrogen ratio for a compost pile is between \_\_\_:\_\_\_ and \_\_\_:\_\_\_.

• Animal products like \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_ should not be added to compost piles.

**Real-World Examples:**

1. Food waste like \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ make great additions to a compost pile, providing essential nitrogen and minerals.

2. Fallen \_\_\_\_\_\_\_\_\_ from trees and \_\_\_\_\_\_\_\_\_ clippings are examples of carbon-rich "browns" that can be composted along with nitrogen-rich "greens."

**Guided Notes: Reducing Food Waste**

**Big Idea:** Reducing food waste is crucial for mitigating climate change, preserving biodiversity, and addressing food insecurity by maximizing the benefits of ecosystem services.

**Key Concepts:**

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is changes in global or regional climate patterns.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the variation of life at all its levels.

• Being \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ means lacking access to nutritional food.

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the contributions of ecosystems to human well-being and survival.

• To \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is to use a smaller amount of something.

• To \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is to use something more than once.

• To \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is to convert waste into material that can be used again.

**Real-World Examples:**

1. Donating unexpired canned goods and non-perishable items to local \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ is an example of reusing food to address food insecurity.

2. Instead of throwing away vegetable scraps, egg shells, and coffee grounds, these items can be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to create nutrient-rich soil for gardens.