

Name \_\_\_\_\_

## Biodiversity: The Key to a Thriving Planet

### Open-Ended Response Answer Key

1. Biodiversity is important for the stability and resilience of ecosystems because it ensures that ecosystems are composed of a variety of species that can respond differently to environmental changes and disturbances. This diversity allows ecosystems to adapt and thrive in the face of challenges such as climate change, diseases, and natural disasters. For example, in diverse ecosystems, if one species is affected by a disease or a change in habitat conditions, other species may be able to fill its ecological niche, maintaining the overall functioning of the ecosystem.
2. One ecosystem service provided by biodiversity is nutrient cycling, which is essential for the recycling of nutrients in ecosystems. Nutrient cycling involves processes like decomposition, where dead organic matter is broken down by decomposers like bacteria and fungi, releasing nutrients back into the soil for uptake by plants. This process supports the growth of new plants and maintains the fertility of soils, ensuring the productivity and health of ecosystems.
3. Biodiversity contributes to cultural, aesthetic, and recreational purposes by providing opportunities for people to connect with nature and derive enjoyment, inspiration, and spiritual fulfillment from diverse ecosystems. For example, people may enjoy hiking in forests, birdwatching in wetlands, or snorkeling on coral reefs, experiencing the beauty and wonder of the natural world. These experiences can foster a sense of appreciation and stewardship for biodiversity, encouraging people to protect and conserve diverse ecosystems for future generations.
4. Biodiversity contributes to human health and well-being by providing medicines derived from natural compounds found in plants, animals, and microorganisms. For example, many antibiotics, painkillers, and cancer treatments are derived from natural compounds with therapeutic properties. Biodiversity also provides a vast reservoir of genetic diversity that scientists can explore to discover new drugs and treatments for various diseases. By preserving biodiversity, we ensure access to these valuable resources for medical research and drug development, improving human health and saving lives.

