Name: _____ Date: _____ Env. Science Period: _____

Chapter 10: Biodiversity Student Guided Notes

Section 1, What is Biodiversity?

A World Rich in Biodiversity

- _____ short for biological diversity, is:
  - the _____ of organisms in a given area
  - the _____ within a population
  - the variety of _____ in a community
  - the variety of _____ in an ecosystem.
- Certain areas of the planet, such as _____, contain an extraordinary variety of species.

Unknown Diversity

- The number of species known to science is about _____, most of which are _____.
  - Actual number of species on Earth is _____.
- New species are considered known when they are _____scientifically.

Levels of Diversity

- Biodiversity can be studied and described at three levels:
  - _____
  - _____
  - _____
- Species diversity refers to all the _____ between populations of species, as well as between different species.
- Ecosystem diversity refers to the _____ of habitats, communities, and ecological processes within and between ecosystems.
- Genetic diversity refers to all the _____ contained within all members of a population.
- A _____ is a segment of DNA that is located in a chromosome and that code for a specific hereditary trait.

Benefits of Biodiversity

- Biodiversity can affect the _____ of ecosystems and the _____ of populations.

Species Are Connected to Ecosystems

- Every species is probably either _____ upon by at least one other species in ways that are not always obvious.
- A _____ is a species that is critical to the functioning of the ecosystem in which it lives because it affects the survival and abundance of many other species in its community.
- An example is the _____.

- _____ increases the chances that some members of the population may survive environmental pressures or changes.
- _____ are less likely to survive such pressures.

Species and Population Survival

- When a population shrinks, its genetic diversity _____ as though it is passing through a bottleneck.
- The members of the population may then become more likely to _____ genetic diseases.

Medical and Industrial Uses

- About _____ of the drugs prescribed in the United Sates are derived from plants, and almost all of the antibiotics are derived from chemicals found in _____.

Agricultural Uses

- Most of the crops produced around the world originated from a few areas of _____ biodiversity.
- Most new crop varieties are _____, or crops developed by combing genetic material from other populations.

Ethics, Aesthetics, and Recreation

- _____ is a form of tourism that supports the conservation and sustainable development of ecologically unique areas.

Section 2, Biodiversity at Risk

Biodiversity at Risk

- The extinction of many species in a relatively short period of time is called a _____.

Current Extinctions

- The rate of extinctions is estimated to have increased by a multiple of _____ since 1800, with up to 25 percent of all species on Earth becoming extinct between 1800 and 2100.
- The current mass extinction is different from those of the past because humans are the _____ cause of the extinctions.

Species Prone to Extinction

- Large populations that adapt easily too many habitats are _____ to become extinct.
- However, _____ in limited areas can easily become extinct.
- Species that are especially at risk of extinction are those that _____, those that need large or special habitats, and those that are exploited by humans.
- An _____ is a species that has been identified to be in danger of extinction throughout all or a significant part of its range, and that is thus under protection by regulations or conservation measures.
- A _____ is a species that has been identified to be likely to become endangered in the foreseeable future.

How Do Humans Cause Extinctions?

- The major causes of extinction today are:
  - _____
  - _____
  - _____
  - _____

Habitat Destruction and Fragmentation

- In the process, we _____ the habitats of other species.
- It is estimated that habitat loss causes almost _____ of the extinctions now occurring.

Invasive Exotic Species

- An _____ is a species that is not native to a particular region.
- Exotic species can _____ native species that have no natural defenses against them.

Harvesting, Hunting, and Poaching

- _____ is the illegal harvesting of fish, game, or other species.

Pollution

- The bald eagle was endangered because of a pesticide known as _____. Although DDT is now illegal to use in the United States, it is still manufactured here and used around the world.

Areas of Critical Biodiversity

- An _____ is a species that is native to a particular place and that is found only there.
- Ecologists often use the numbers of endemic species of plants as an _____ of overall biodiversity because plants form the basis of ecosystems on land.

Tropical Rain Forests

- Biologist estimate that over half of the world's species live in these forests even though they cover only _____ of the Earth's land surface.

Coral Reefs and Coastal Ecosystem

- Nearly _____ of Earth's coral reefs are threatened by human activities, such as pollution, development along waterways, and overfishing.

Islands

- When an island rises from the sea, it is colonized by a _____ of species from the mainland. These colonizing species may then evolve into several new species.

Biodiversity Hotspots

- The most threatened areas of high species diversity on Earth have been labeled _____ and include mostly tropical rainforests, coastal areas, and islands.
- Most of these hotspots have lost at least _____ of their original natural vegetation.

Biodiversity in the United States

- The United States includes a wide variety of unique ecosystems, including the _____, the California coastal region, Hawaii, the Midwestern prairies, and the forests of the Pacific Northwest.
- The _____, a biodiversity hotspot, is home to 3,488 native plant species.

Section 3, The Future of Biodiversity

Saving Species One at a Time

- Methods to preserve individual species often involve _____ the species in captivity.

Captive-Breeding Programs

- Wildlife experts may attempt to restore the population of a species through _____ _____.
- These programs involve breeding species in _____, with the hopes of reintroducing populations to their natural habitats.
- This type of program has been used successfully with the _____, for example. But the question remains whether or not these restored populations will ever reproduce in the wild.

Preserving Genetic Material

- _____ is hereditary material (chromosomes and genes) that is usually contained in the protoplasm of germ cells and may be stored as seeds, sperm, eggs, or pure DNA.

More Study Needed

- Also, small populations are _____ to infectious diseases and genetic disorders caused by inbreeding.

Preserving Habitats and Ecosystems

- The most effective way to save species is to _____ their habitats.
- Therefore, protecting the habitats of endangered and threatened species often means _____ large areas.

Conservation Strategies

- One strategy is to _____ areas of native habitat that can be preserved, restored, and linked into large networks.
- Another promising strategy is to _____ products that have been harvested with sustainable practices.

Legal Protection for Species

- The _____ is designed to protect any plant or animal species in danger of extinction.

U.S. Laws

- Under the first provision of the Endangered Species Act, the U.S. Fish and Wildlife Service (USFWS) must _____ a list of all endangered and threatened species in the United States.
- As of 2002, _____ species of plants and animals were listed.
- The second main provision of the act _____ listed species from human harm.
- The third provision _____ the federal government from carrying out any project that jeopardizes a listed species.

Recovery Plans

- Under the fourth main provision of the Endangered Species Act, the USFWS must _____ a species recovery plan for each listed species.

Habitat Conservation Plans

- A _____ is a land-use plan that attempts to protect threatened or endangered species across a given area by allowing some tradeoffs between harm to the species and additional conservation commitments among cooperating parties.

International Cooperation

- At the global level, the International Union for the Conservation of Nature and Natural Resources _____ facilitates efforts to protect species and habitats.
- The IUCN publishes _____ of species in danger of extinction around the world, advises governments on ways to manage their natural resources, and works with groups like the World Wildlife Fund to sponsor projects such as attempting to stop poaching in Uganda.

International Trade and Poaching

- One product of the IUCN has been an international treaty called _____(the Convention on International Trade in Endangered Species).
- The CITES treaty was the first effective effort to _____ the slaughter of African elephants being killed by poachers who would then sell the ivory tusks.

The Biodiversity Treaty

- One of the most ambitious efforts to tackle environmental issues on a worldwide scale was the United Nations Conference on Environment and Development, also known as the first _____. An important result of the Earth Summit was the Biodiversity Treaty.
- The _____ is an international agreement aimed at strengthening national control and preservation of biological resources.
- The treaty's goals are to _____ biodiversity and ensure the sustainable and fair use of genetic resources in all countries.