

APES Chapter 9-11 Supplemental Notes

Sustaining Biodiversity

- *STB-3.J. Describe the effects of bioaccumulation and biomagnification.*
 - Some effects that can occur in an ecosystem when a persistent substance is biomagnified in a food chain include eggshell thinning and developmental deformities in top carnivores of the higher trophic levels.
- *EIN-4.A. Explain the environmental problems associated with invasive species and strategies to control them.*
 - Invasive species are species that can live, and sometimes thrive, outside of their normal habitat. Invasive species can sometimes be beneficial, but they are considered invasive when they threaten native species.
 - Invasive species are often generalist, r-selected species and therefore may outcompete native species for resources.
 - Invasive species can be controlled through a variety of human interventions.
- *EIN-4.B. Explain how species become endangered and strategies to combat the problem.*
 - A variety of factors can lead to a species becoming threatened with extinction, such as being extensively hunted, having limited diet, being outcompeted by invasive species, or having specific and limited habitat requirements.
 - Not all species will be in danger of extinction when exposed to the same changes in their ecosystem. Species that are able to adapt to changes in their environment or that are able to move to a new environment are less likely to face extinction.
 - Strategies to protect animal populations include criminalizing poaching, protecting animal habitats, and legislation.
- *EIN-4.C. Explain how human activities affect biodiversity and strategies to combat the problem.*
 - HIPPCO (habitat destruction, invasive species, population growth, pollution, climate change, and over exploitation) describes the main factors leading to a decrease in biodiversity.
 - Some organisms have been somewhat or completely domesticated and are now managed for economic returns, such as honeybee colonies and domestic livestock. This domestication can have a negative impact on the biodiversity of that organism.
- *ERT-2.B. Describe ecosystem services.*
 - There are four categories of ecosystem services: provisioning, regulating, cultural, and supporting.
- *ERT-2.C. Describe the results of human disruptions to ecosystem services.*
 - Anthropogenic activities can disrupt ecosystem services, potentially resulting in economic and ecological consequences.
- *EIN-2.B. Describe the effect of clearcutting on forests.*
 - Clearcutting can be economically advantageous but leads to soil erosion, increased soil and stream temperatures, and flooding.
 - Forests contain trees that absorb pollutants and store carbon dioxide. The cutting and burning of trees releases carbon dioxide and contributes to climate change.
- *EIN-2.J. Describe causes of and problems related to overfishing.*
 - Overfishing has led to the extreme scarcity of some fish species, which can lessen biodiversity in aquatic systems and harm people who depend on fishing for food and commerce.
- *STB-1.G. Describe methods for mitigating human impact on forests.*
 - Some of the methods for mitigating deforestation include reforestation, using and buying wood harvested by ecologically sustainable forestry techniques, and reusing wood.
 - Prescribed burn is a method by which forests are set on fire under controlled conditions in order to reduce the occurrence of natural fires.
- *STB-3.E. Describe the impacts of human activity on wetlands and mangroves.*
 - Threats to wetlands and mangroves include commercial development, dam construction, overfishing, and pollutants from agriculture and industrial waste.

- *EIN-4.C. Explain how human activities affect biodiversity and strategies to combat the problem.*
 - Habitat fragmentation occurs when large habitats are broken into smaller, isolated areas. Causes of habitat fragmentation include the construction of roads and pipelines, clearing for agriculture or development, and logging.
 - The scale of habitat fragmentation that has an adverse effect on the inhabitants of a given ecosystem will vary from species to species within that ecosystem.
 - Some ways humans can mitigate the impact of loss of biodiversity include creating protected areas, use of habitat corridors, promoting sustainable land use practices, and restoring lost habitats.