

## CH 9 - Sustaining Biodiversity: The Species Approach

### Importance of Wild Species

- Wild species are important for economic, medical, scientific, ecological, aesthetic, recreational and ethical reasons. E.O. Wilson calls our inherent affinity for the natural world \_\_\_\_\_.
  - 90% of today's food crops were domesticated from wild tropical plants
  - 80% of the world's population relies on plants or plant extracts for \_\_\_\_\_

### Extinction

- Extinction is a natural process. \_\_\_\_\_% of all species that have ever existed are now extinct because of a combination of background and mass extinctions
  - The small number of species that become extinct naturally is the \_\_\_\_\_ or Natural Rate of Extinction
  - Mass Extinction is an abrupt rise in extinction rate above the background level. These are usually followed by adaptive radiations, when diversity of life increases rapidly to fill the open niches.

### Sixth Extinction?

- Some conservation biologists estimate that currently \_\_\_\_\_ species per DAY become extinct. This is thousands of times the estimated natural background extinction rate. (if there are 100 million species, the background rate of extinction is about 30 species per YEAR)
- The current extinction crisis is the first to be caused by a single species and is taking place in only a few decades, rather than over thousands to millions of years.
- Besides killing off species, we are eliminating many biologically diverse environments that in the past have served as evolutionary centers for the \_\_\_\_\_ of biodiversity after a mass extinction.

### Three Levels of Extinction

- \_\_\_\_\_ extinction occurs when there are so few members of a species left that it can no longer play its ecological roles where it is found
- Biological extinction occurs when a species is no longer found anywhere on earth
- \_\_\_\_\_ extinction occurs when a species is no longer found in an area it once inhabited but it still found elsewhere in the world

### Endangered and Threatened Species

- An endangered species has so few individual survivors that the species could soon become extinct over all or most of its natural range
- A \_\_\_\_\_ species is still abundant in its natural range but is declining in numbers and is likely to become endangered

### Protecting Wildlife and Biodiversity

- The \_\_\_\_\_ \_\_\_\_\_ aims to preserve balanced populations of species in their native habitats, establish protected areas, and reduce nonnative species
- The species approach is based on protecting endangered species by identifying them, giving them legal protection, preserving their habitats, and propagating and reintroducing them
- The wildlife management approach manages game species for \_\_\_\_\_ yield

### IUCN

- The International Union for Conservation of Nature (IUCN) is the world's leading authority on species conservation. They maintain the IUCN \_\_\_\_\_ of Threatened Species, which is the most comprehensive assessment of species status.

## CITES

- The 1975 Convention on International Trade in Endangered Species (CITES) is now signed by 183 countries and lists almost \_\_\_\_\_ species that cannot be traded as live specimens or wildlife products because they are endangered or threatened

## Endangered Species Act

- The U.S. Endangered Species Act of \_\_\_\_\_ is one of the world's toughest environmental laws. It authorizes the National Marine Fisheries Service and the U.S. Fish and Wildlife Service to identify and list endangered and threatened species
- Principal amendments occurred in 1978, 1982, 1988, and 2004. All of these increased the effectiveness of the law except for 2004, which exempted the Department of Defense from some critical habitat designations.

## Examples of U.S. Endangered Species

- Common examples that look good on the AP Exam
  - **Bald Eagle**, *Haliaeetus leucocephalus* (recovered enough to be removed from the list in 2007)
  - **Whooping Crane**, *Grus americana* (low point was 54 individuals)
  - \_\_\_\_\_ **Wolf**, *Canis rufus* (low point was 17 individuals)
  - **California Condor**, *Gymnogyps californianus* (most expensive species conservation project in U.S. history)
  - **Florida** \_\_\_\_\_, *Trichechus manatus latirostris* (recently moved from endangered to threatened list)
- Enforcement and use of the Endangered Species Act changes greatly depending on the U.S. policy makers.

## Wildlife Management

- Wildlife management entails manipulating wildlife populations and their habitats for their welfare and for human benefit
- Migratory birds must be managed along \_\_\_\_\_, which are their north-south migration routes
- Wildlife Managers can encourage the growth of plant species that are the preferred food and cover for a particular animal species by controlling the ecological succession of the vegetation in an area

## Invasive Species

- Invasive Species (ie. \_\_\_\_\_ species, introduced species, \_\_\_\_\_ species) are species that are deliberately or accidentally introduced into an ecosystem by humans. They are often generalist, r-selected species that outcompete native species.
- Important examples of invasive species include the zebra mussel, the kudzu vine, the lionfish, and the burmese python.

## HIPPCO

- The greatest threats to any species are (**in order**)
  - Loss or degradation of \_\_\_\_\_,
  - Harmful Invasive species,
  - Human Population growth,
  - \_\_\_\_\_,
  - Climate change, and
  - Overexploitation.