Chapter 10- Biodiversity

* Short for “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
* Number and variety of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species in an area
* 1.7 million known species, most insects
* Estimated over 10 million

**Levels of Diversity**

* Species diversity- All the differences between the populations of a species, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species
* Ecosystem diversity- Variety of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, communities, and ecological processes within and between ecosystems
* Genetic diversity- Different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contained within all members of a population (Gene pool)

**Benefits of Biodiversity**

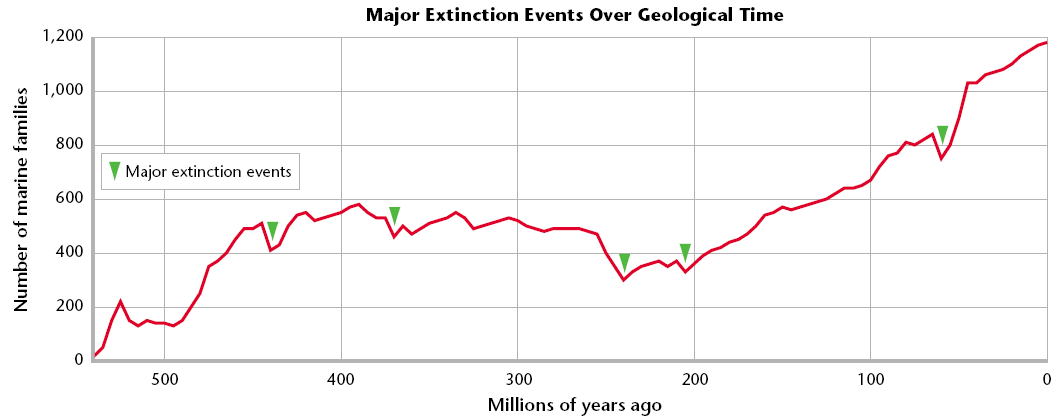
* Species \_\_\_\_\_\_\_\_\_\_\_ within food web
* Keystone species- Species \_\_\_\_\_\_\_\_\_\_\_ to the functioning of the ecosystem
  + Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and kelp beds
  + Sea Otters protected…eat sea urchins…kelp beds regenerated.
* Larger populations with larger gene pools survive under pressure
* Bottleneck- As populations shrink, the gene pool does as well
  + Increase in genetic disorders
* Some species used for food, clothing, shelter, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* ¼ of drugs derived from plants
* Almost all \_\_\_\_\_\_\_\_\_\_\_ from fungi
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or studied species represent potential products
* Most \_\_\_\_\_\_\_\_\_\_\_ originated from a few areas of \_\_\_\_\_\_\_\_\_\_ biodiversity
* Hybrid- New crop variety from genetic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can result from dependence on too few plants

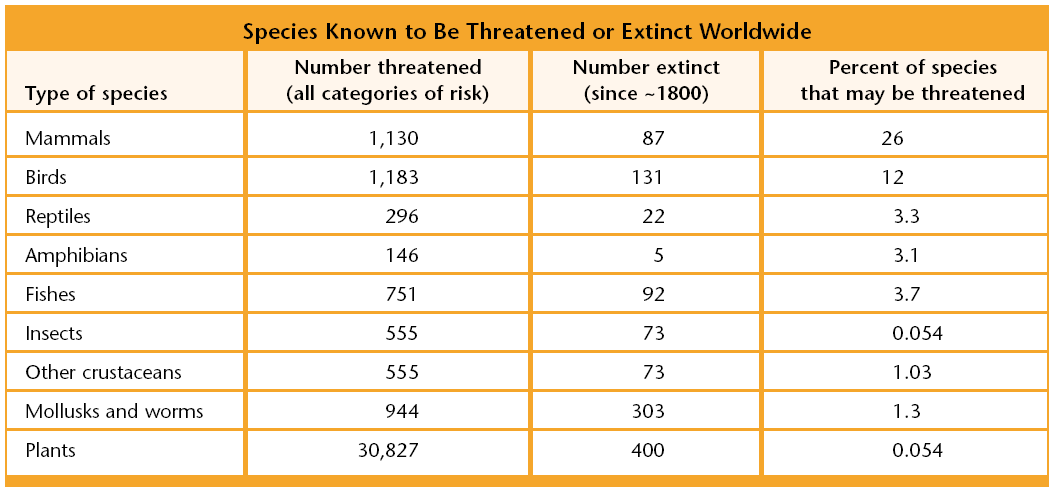
**Ethics, Aesthetics, and Recreation**

* Species and ecosystems have the right to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ regardless of value
* Some cultures believe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has a higher purpose
* Outdoor activities enhanced by nature
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Supports the conservation and sustainable development of ecologically unique areas

**Current Extinctions**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- many species extinct in a short time
  + Dinosaurs, 65 million years ago
  + 25% of all species by 2100
* Species prone to extinction
  + Not cockroaches and rats
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ populations
  + Migrating species
  + Those with large or special habitats
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Likely to become extinct
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Declining population and in danger of becoming endangered





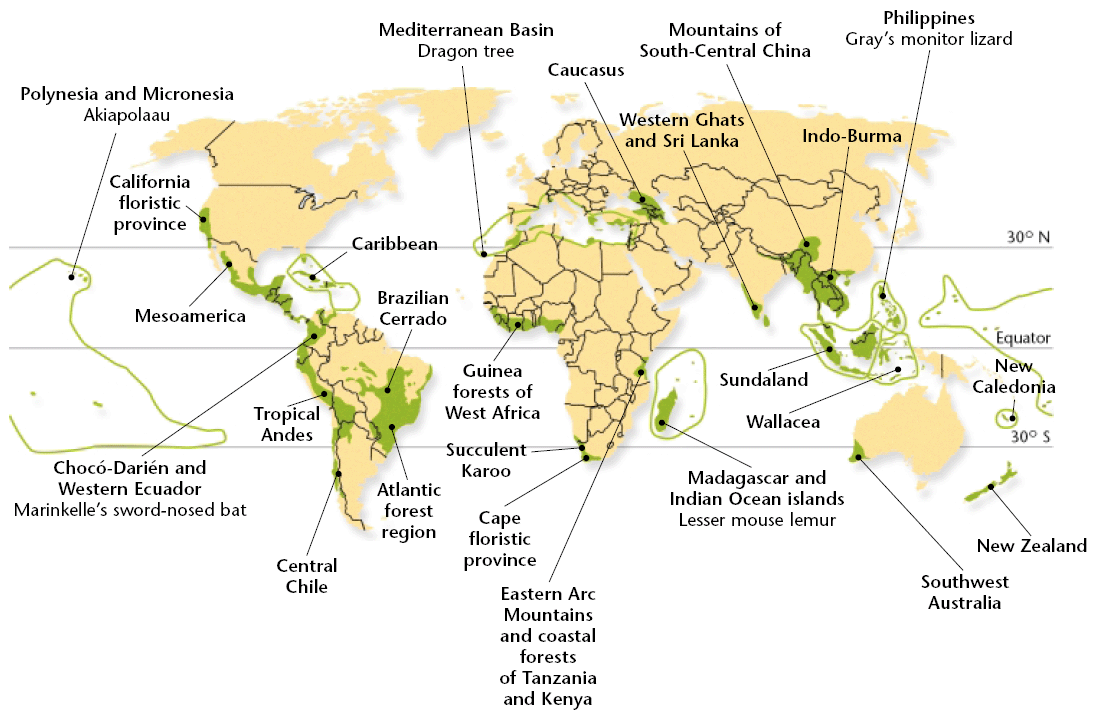
**How Do Humans Cause Extinctions?**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and fragmentation
  + 75% of extinctions
  + Ex: Florida panther
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exotic species (non-native)-Not native to region
* Harvesting, hunting, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Passenger pigeons (early 1900s)
  + American bison
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + DDT and Bald Eagle

**Areas of Critical Biodiversity**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Native to/found only in certain region
* Tropical Rain Forest
  + A/B 7% of Earth’s surface
  + \_\_\_\_\_\_\_\_\_\_\_\_ of the world’s species
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Coastal Ecosystems
  + Fraction of marine environment with many species
  + 60% threatened by humans
* Islands
  + Distinct but limited species
  + Ex: Hawaii and Honeycreepers
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Most threatened areas of high species diversity
* Biodiversity in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + CA Floristic Province: 3, 488 native plants; 2,124 endemic sp; and 565 threatened/endangered
  + Everglades, CA coast, Hawaii, Midwest prairies, Pacific NW forests

**Biodiversity Hotspots**



**Saving Species One at a Time**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to return to wild.
  + Ex: CA Condor
  + 9 left in 1986
  + 58 in wild/102 in captivity (2002)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Genetic Material
  + Germ plasm banks (reproductive cells)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Aquariums, and Gardens
  + Some species last hope
  + Living museums
* More Study Needed
  + Captive species may not reproduce or survive in wild
  + Small pop. vulnerable to infectious disease and inbreeding

**Preserving Habitats and Ecosystems**

* Most effective way to save species-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ strategies
  + Protect entire ecosystems
  + Focus on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* More Study Needed
  + Research species and ecosystems

**Legal Protection for Species**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + 1973-Endangered Species Act
  + USFWS- list of endangered and threatened species; 983 in 2002
* USFWS must prepare a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Propose to restore or protect habitat
  + Controversy between developers and conservationists
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Protect one or more species across large areas of land through trade-offs or cooperative agreements

**International Cooperation**

* International Union for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of Nature and Natural Resources (IUCN)
  + Over 200 gov’t. agencies and 700 private organizations
* International Trade and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Convention on International Trade of Endangered Species (CITES)
    - Stopped slaughtering of African elephants
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + To preserve biodiversity and and ensure sustainable and fair use of genetic resources
  + United Nations Conference on Environment and Development (Earth Summit) in 1992.
* Private Conservation Efforts
  + More effective
  + World Wildlife Fund; The Nature Conservancy; Greenpeace International

**Balancing Human Needs**

* Protecting species often \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Some endangered species sources of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or income
* Not considered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ due to a lack of understanding
* Understanding is key to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species