

# Biodiversity

## What is it good for?

Valued @ \$33 trillion/year or more than double the world's GNP.

**BIODIVERSITY- 1.4 million species presently known; possibly 3 – 50 million.  
70 – 95% invertebrates.**

**Over 50% in tropical rainforests.**

**TYPES**

**Genetic 2. species 3. ecological**

**BENEFITS**

**Food – All of our food comes from other organisms!**

**Estimates of 80,000 edible plants**

**Drugs & Medicines = Valued @ \$30 billion/year**

**Ecological benefits-**

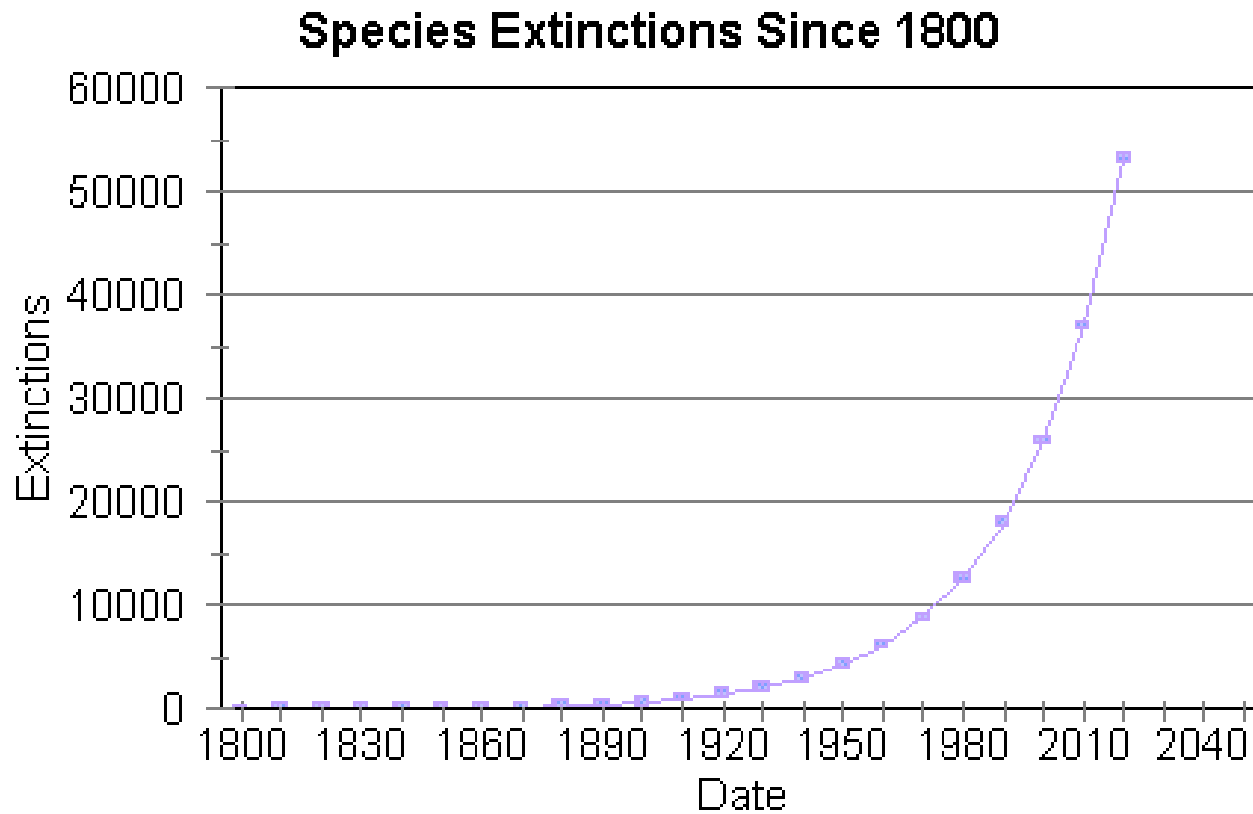
**Include soil formation, waste disposal, air & water purification, nutrient cycling, solar energy absorption, & management of biogeochemical & hydrological cycles.**

**It is estimated that 95% of the potential pests & disease-carrying organisms in the world are controlled by other species that prey upon them or compete with them in some way.**

**Recreation - Americans spend \$104 billion every year on wildlife-related recreation.**

**Valued @ \$33 trillion/year or more than double the world's GNP.**

**A Plant or Animal Goes Extinct Every 20 minutes.**



**THREATS** Extinction is occurring 1000's times the natural rate.

Geologic rate of species extinction = 1 every decade.

Between 1600 & 1850 the rate increased to 2 to 3 per decade. (geological)

Currently the rate has increased 100's to 1000's times greater.

### **CAUSES OF EXTINCTION:**

**#1 Habitat destruction.**

**Africa: Poaching & deliberate murder to scare wildlife conservationists.**

**Over harvesting – hunting & fishing. Worldwide, 13 of 17 mail fishing zones are now reported to be commercially exhausted or in steep decline. At least  $\frac{3}{4}$  of all commercial oceanic species are over harvested.**

**Commercial products & live specimens-**

**The mortality rate is estimated to be 50 animals are caught or killed for every live animal that gets to market.**

**More than  $\frac{1}{2}$  of the coral reefs are potentially threatened by human activities with up to 80% at risk. (Climate change & pollution)**

**Predator & Pest control = deliberate extermination or killed by pesticides & herbicides meant for other species.**

**Exotic species – More than 4500 alien species in the U.S.**

**Former mild mannered species can turn into supper aggressive “weedy” invaders in a new habitat.**

**Diseases – predators. Normally there is a balance in the environment.  
Pollution- Toxics, lead, etc.**

**Genetic assimilation – due to crossbreeding.**

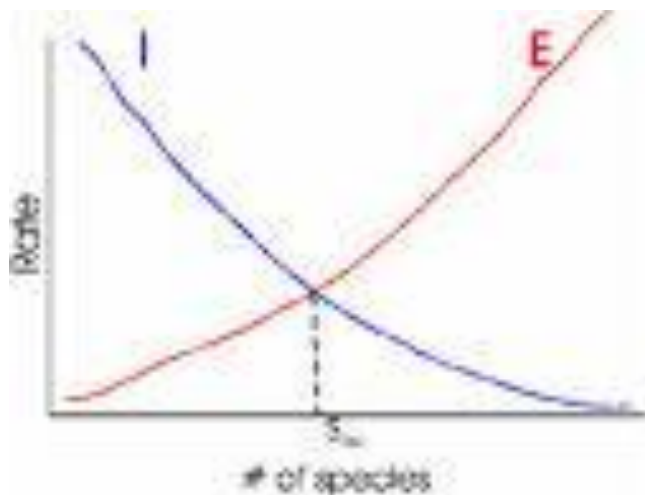
**Founder effect – occurs when a few individuals establish a new population.**

**Demographic bottleneck – only a few individuals survive some catastrophe.**

**Genetic drift – reduction in gene frequency due to unequal reproductive successive.**

**Inbreeding – mating of closely related individuals.**

**(Island biogeography – the number of mammals is smaller when the island is further from the mainland & the number of individuals of a species is less when the island is smaller.)**



**Insular dwarfism is the process and condition of the reduction in size of large animals – almost always mammals– when their gene pool is limited to a very small environment, primarily islands.**

**SOLUTIONS - How many species should we save? What about slimy ones?**

**Endangered species act: ESA is a NATIONAL LAW! 1973. Endangered- imminent danger of extinction. Threatened- likely to become endangered. Vulnerable – naturally rare or locally depleted by human activities that puts them at risk.**

**ESA bans “taking” (harassing, harming, pursuing, hunting, shooting, trapping, killing, capturing, or collecting either accidentally or on purpose. No importing, exporting, possessing, selling, transporting, or shipping or selling or offering for sale. Applies to live organisms, body parts, & products made from endangered species.**

**Fish & Wildlife must prepare a recovery plan detailing how population will be rebuilt to sustainable levels. Total cost = \$5 billion for all currently listed species.**

**Habitat conservation plans (HCP)- Landowners are allowed to harvest resources or build on part of their land as long as the species benefits. Safe Harbor & No-Surprises – If the species benefits, the landowner does not have increased responsibilities. This hopefully will prevent: “Shoot, shovel & shut up.”**

**CITES Convention on International Trade in Endangered Species 1975. Regulates trade in living specimens toward worldwide protection of endangered flora & fauna.**

**Zoos – Most animals are produced in captivity but they used to be caught & 80% died from the trauma.**