

Biodiversity



What do you know?

Break the word "Bio-Diversity" down...what do you think it means?

What organisms do you think ecosystems couldn't survive without?

Do you think there are any organisms that could go extinct and it wouldn't matter?



biodiversity



Biodiversity Vocab

- **Biodiversity**- total of all the genetically based variation in all organisms in biosphere.
- **Ecosystem diversity**- variety of habitats, communities, & ecological processes in the biosphere
- **Species diversity**- number of different species in the biosphere or particular area
- **Genetic diversity**- sum total of all different forms of genetic information carried by a particular species, or all organisms on Earth.

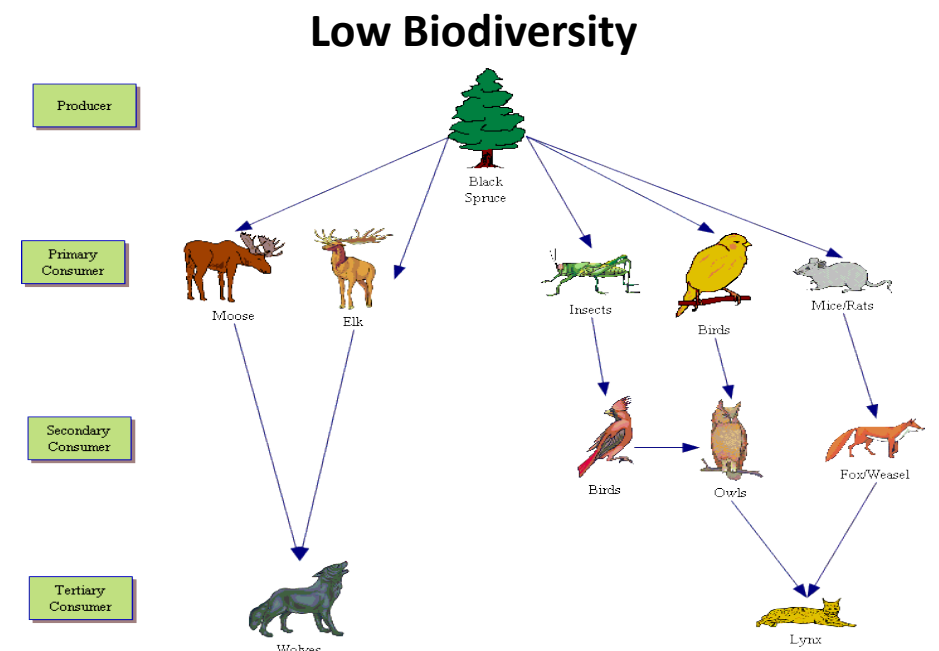
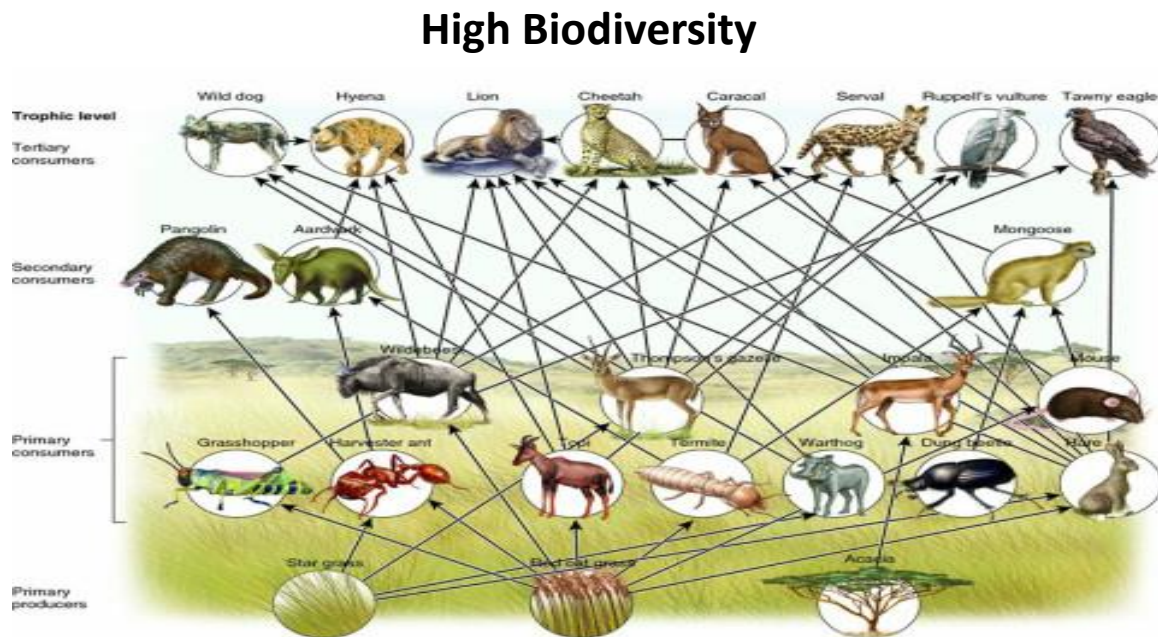
Biodiversity

- **Higher Biodiversity = More resilient ecosystem**

- Able to adjust to changes more easily

- Ex: When comparing the high to low biodiversity food webs below:

- If one producer in the high biodiversity example goes extinct the rest of the food web won't collapse (because there are two other choices of producer)



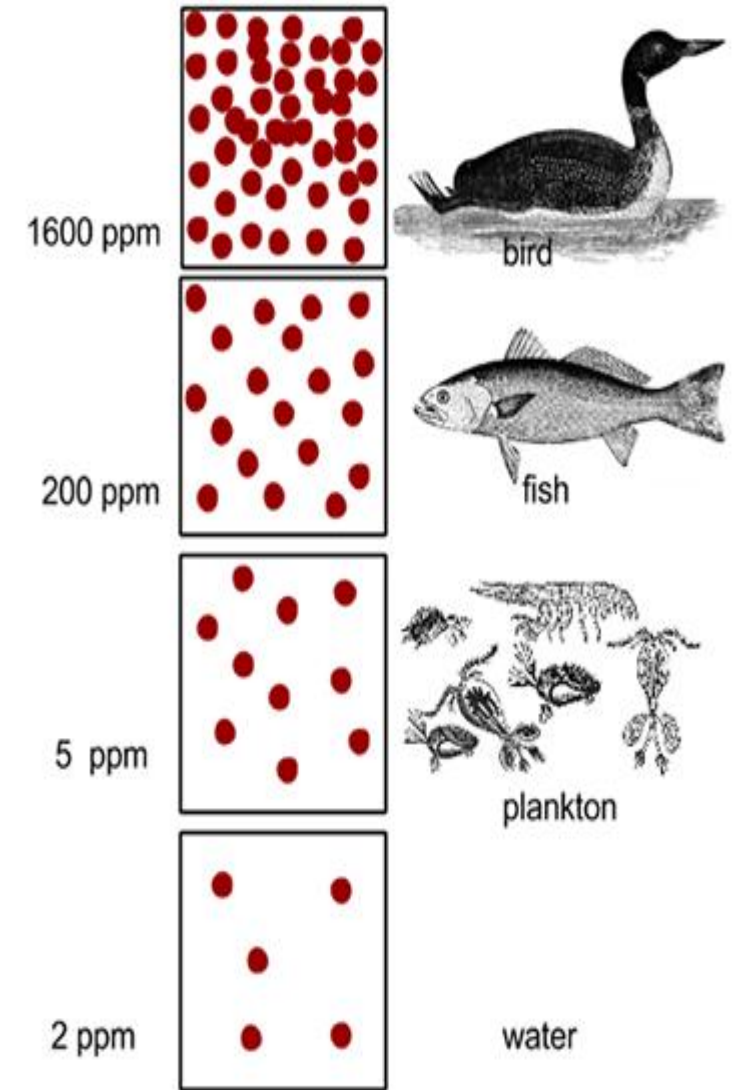
Biodiversity

- *Humans* reduce biodiversity by:
 - *altering natural habitats
 - *hunting
 - *introducing invasive/exotic species
 - *releasing pollution into food webs
 - *contributing to climate change



Pollution: Bio magnification

- As you move up a food chain pollution concentrations increase
 - That means effects of the pollutants increase as well
- Why?
 - If a fish has a pollutant in it, how many fish would a duck eat?
 - Now all of the pollution that was in all of this fish are in the duck!



Ecology - Video 3



Biomagnification
with the Amoeba Sisters

Invasive Species

- **Invasive species:**

New species introduced into an ecosystem that begin competing with native species



INVASIVE SPECIES



Invasive Species: Emerald Ash Borer (EAB)

- First found in America in 2006 (Michigan)
- Insect larvae chew through branch insides, cutting off branch circulation.
- Brought over to America from Asia during shipping of goods



Releasing Goldfish

- Threaten trout species who need clean water.



- Goldfish (carp) stir up muck in ponds that put trout at risk.
- Hybridize native species.
- Carry pet store disease.



Zebra Mussels



- Zebra mussels were discovered in the Great Lakes in the late 1980's,
- They “hitched rides” to the United States on boats, trailers and equipment people transport from place to place.
- The first confirmed sample in US was in 2008



Biodiversity

To conserve biodiversity, we must protect species, preserve habitats & ecosystems

- **Ecological hot spot**- place where large numbers of species & habitats are in immediate danger of extinction.
- **Habitat fragmentation**- Development splits ecosystems into pieces, leaving habitat “islands” - patch of habitat surrounded by a different habitat.

Problem:



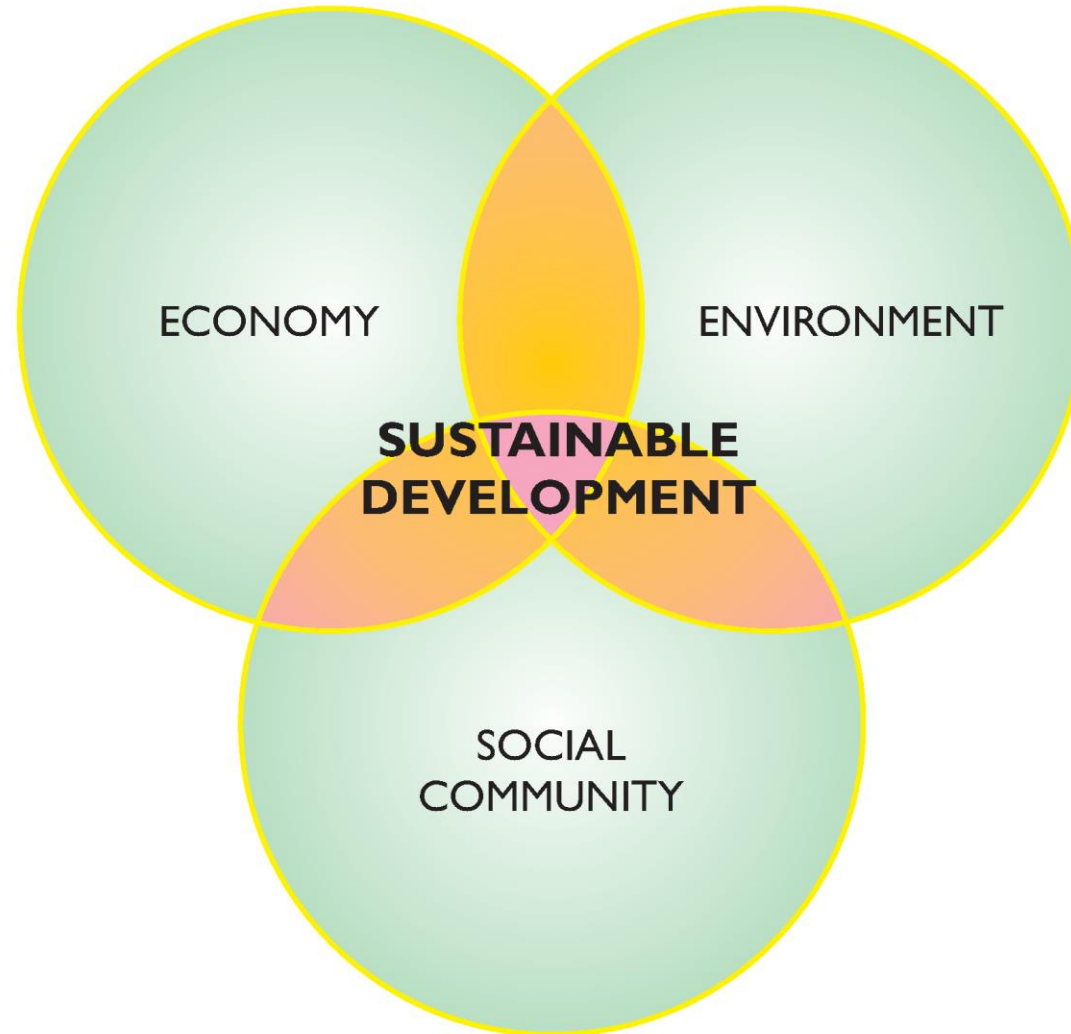
Solution:



Wolves of Yellowstone

<https://illinois.pbslearningmedia.org/resource/a58e3ca2-52ab-45f5-87ac-26ee0d681146/wolves-of-yellowstone-earth-a-new-wild/>

Sustainability



What do you know?

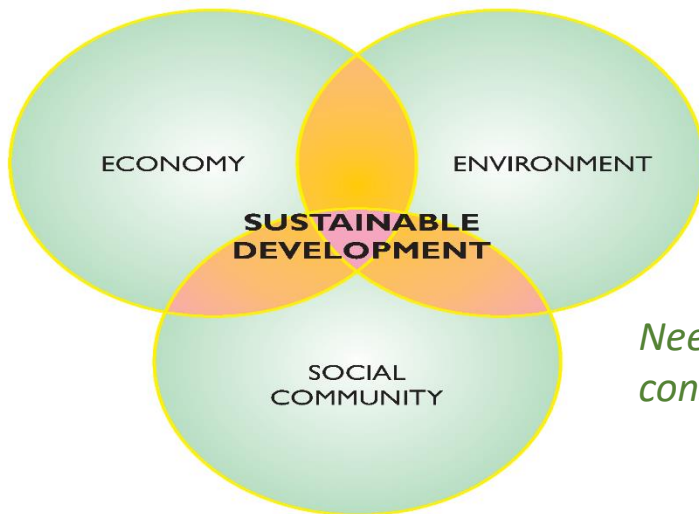
What does sustainable mean?

Why is it important for something to be sustainable?



A Changing Landscape

- **Sustainable development**- provides for human needs & preserves ecosystems that produce natural resources.
- *Goods*- items that can be bought & sold
- *Services*- processes or actions that produce goods.
 - ecosystem goods & services- produced by ecosystems that benefit human economy.
 - Healthy ecosystems provide goods & services naturally & free of charge: air, water



Needs to be a good option for all three categories to be considered sustainable

Meeting Ecological Challenges

Ecological footprint- total area of functioning land & water ecosystems needed to provide the resources an individual or population uses & to absorb the wastes that it generates.

Ecology can guide humans toward a sustainable future & have a positive impact on the global environment by:

- (1) recognizing a problem in the environment
- (2) researching the problem to determine its cause
- (3) using scientific understanding to change our behavior

