

Ecology & Biodiversity

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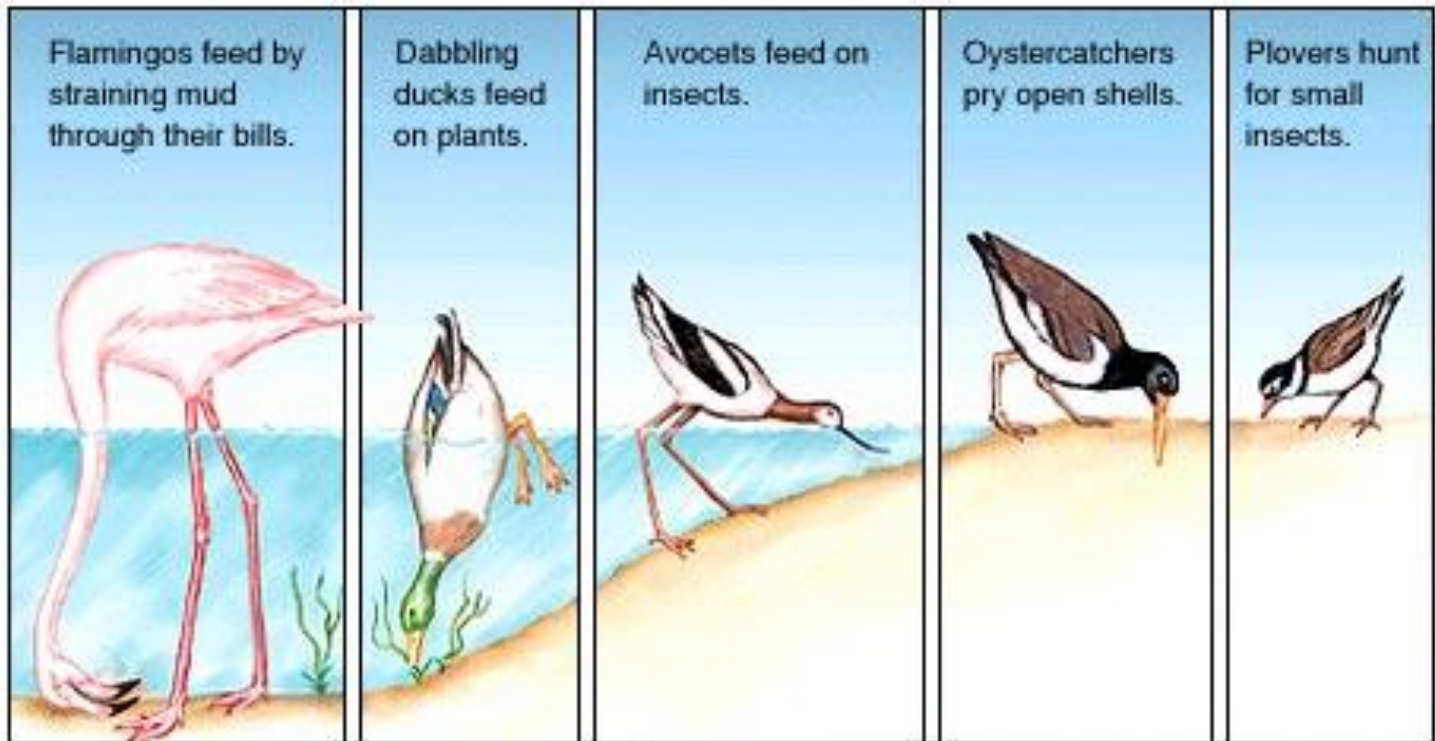
Unit 8

Ecology

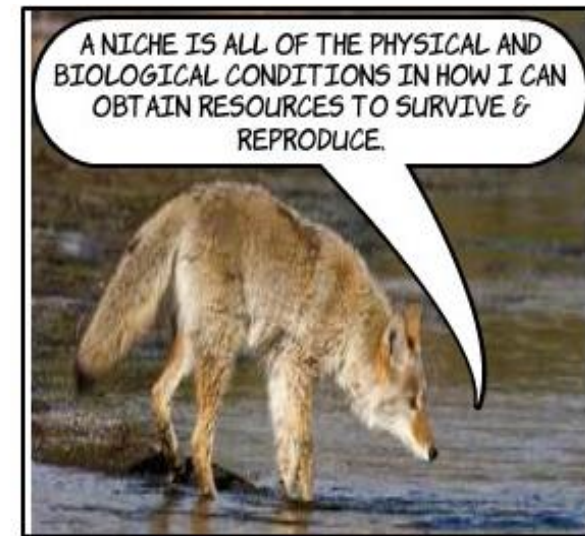
- **DEF:** Study of *interactions* between organisms & its environment (*ecosystem*)
 - **Goals of Ecology:**
 - Understand principles of *operation*
 - Predict *responses* to environmental changes

Habitat vs Niche

- Habitat - Where a species *lives*
- Niche – Its ecological *role* in that habitat



Coyote *Habitat* & *Niche*



What Describes a Niche?

- **Biotic** and **Abiotic** factors:
 - **Feeding** relationships with other species
 - **Trophic** levels
 - How physical **environment** is used
 - Preferred **temperature** & **humidity**
 - How potential **mates** are selected
 - When it **reproduces**

Predators in a Niche

- **Increases** niche **BIODIVERSITY** among predators by **decreasing** prey population
 - **Keystone Species** – Species in which other species (same ecosystem) ***largely depend*** on
 - **Apex Predator** - Predator ***without*** its own predator



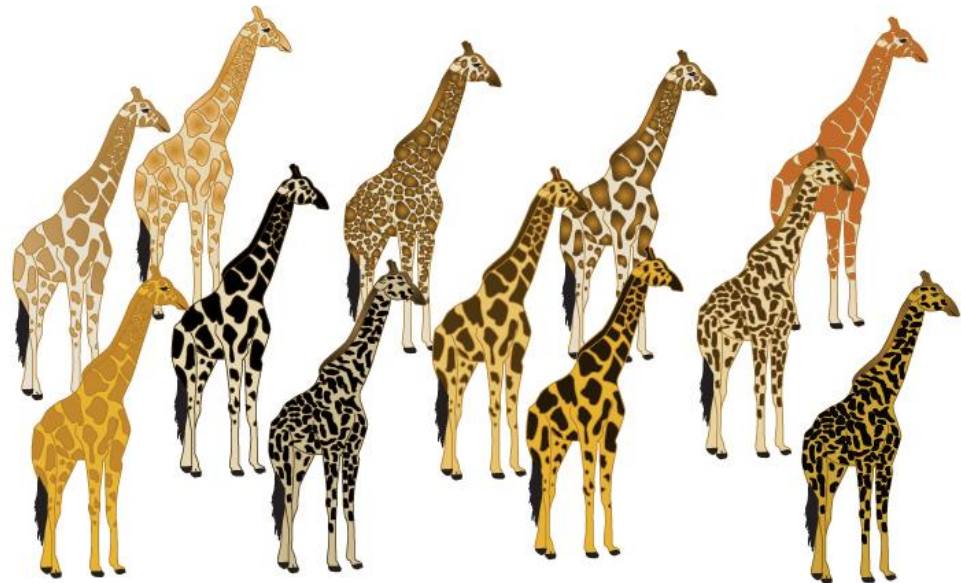
Biodiversity

- **DEF:** *Variety* of species life within ecosystems
 - However, **NOT** evenly distributed



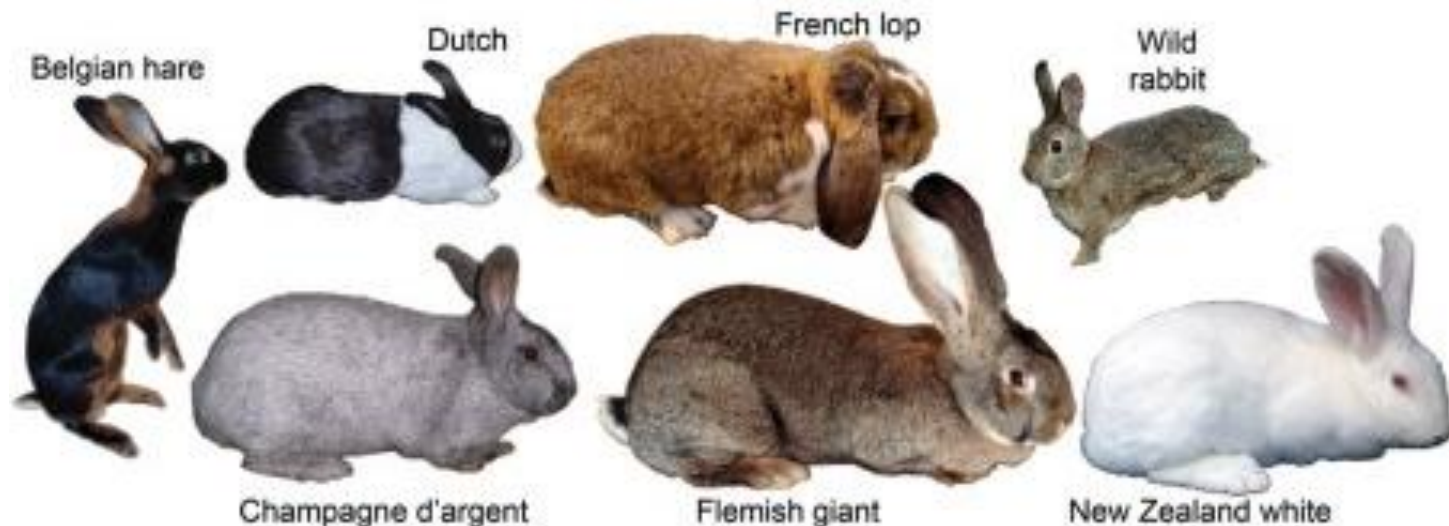
Genetic Diversity

- **DEF:** Ability to *adapt* to environmental *changes* due to *genetic traits*
 - *Greater* variation = *More* offspring



Genetic Diversity

- **Increases** chance that **more** individuals will **survive** within population
 - Genetic diversity **stored** in population's **gene pool**



Genetic Diversity

- Variation is derived from *DNA mutations* or *recombination* of genes

Environmental Stress

+

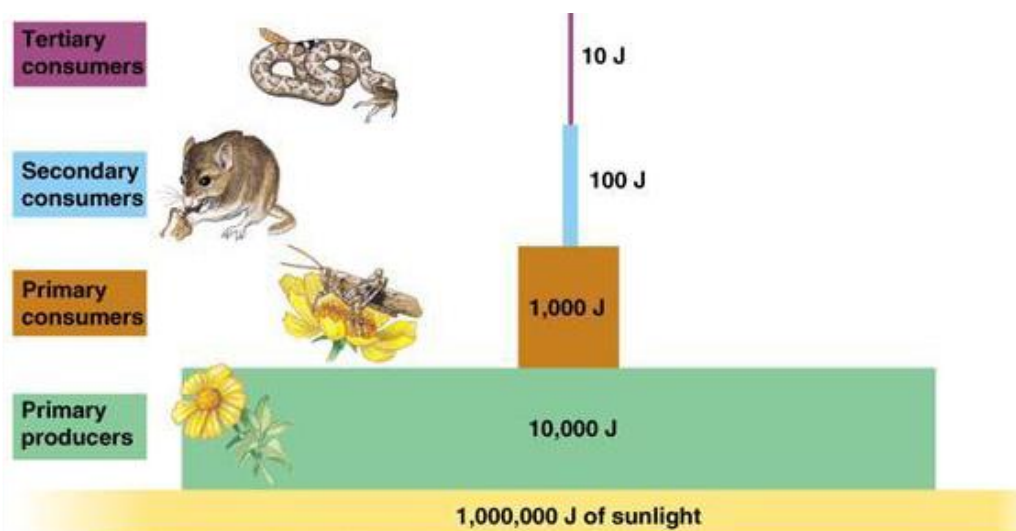
High Genetic Variation/Diversity

=

High Rate of Adaptation

Ecological Efficiency

- **DEF:** *Effectiveness* with which *energy* is *transferred* within trophic levels



- Most energy transfer is *inefficient*
- **10%** transferred
- **90%** lost to environment

Quantifying Efficiency

- Ex) For every 1,000 energy units available within secondary consumers of a trophic level, how many energy units are available for the producers?
 - ***Producers = 100,000 energy units***

