HABITAT AND NICHE
What is a Habitat?

- Where a species lives

- Consists of all the physical and biological resources available to a species

- Different than ecosystem
Habitats

**Physical Factors**
- Elevation
  - Air temperature
  - Rainfall
- Steepness
  - Soil type
  - Amount of water
- Slope aspect
- In water: pH levels, salinity, DO level, temperature

**Biological Factors**
- Other organisms
- Food
- Water
- Shelter

*refers to the necessities needed to live, grow, and reproduce*
Physical and Biological Factors

- Interact to determine the quality of the habitat for a given organism
What habitats do you see?

Santa Cruz Island, off of California coast
Characteristics of...

An ANIMAL habitat

A PLANT habitat
Geographic Range

- Collection of all habitat areas of a species
- In different parts of the world, different species can be found
- Factors limit the distribution of organisms
  - Dispersal ability
  - Tolerance to different environmental conditions
  - Interactions with other species
Range Map

- Gray = humans
- Blue = Desert Bighorn
- Red = pupfish
What is a Niche?

- The role a species plays in the ecosystem
- How an organism “makes a living” → occupation
- An organism’s “ecological position in the world”

- What impacts/relates to organism? How does it impact/relate to other organisms?
  - Sum of all its interactions
Niches include...

- Ranges of conditions it can tolerate
- Resources it uses
- Methods by which it obtains resources
- Number of offspring
- Time of reproduction
- Time of activity (nocturnal or diurnal)
- All interactions with environment
2 types of Niches

- **Fundamental** \( \rightarrow \) all the resources that a species could use in the environment

- **Realized** \( \rightarrow \) part of fundamental niche that is actually being occupied by the species
Rules of a Niche

1) No 2 species can occupy the same niche at the same time
2) Too much niche overlap leads to competition
3) Direct competition results in a winner and a loser (+, - relationship)
4) Species can co-exist if there is a lack of niche overlap
Kudzu Vines in S.E. U.S.A
Beaver Habitat and Niche

Describe the habitat and niche:
Brown creeper and Nuthatch

Avoiding Overlap!

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Avoiding direct competition!
Bart Owl and Screech Owl

Avoiding competition!
Avoiding niche overlap!
Squirrels

Avoiding niche overlap!
Generalists and Specialists
Generalists

- Species with broad niches
- Tolerate a range of conditions
- Use a variety of resources

- Ex: Raccoons
Specialists

- Organisms with narrow niches
- Cannot tolerate a wide range of conditions
- Have to have certain foods and climate
- Some species with more than one niche during a lifetime

- Ex: Koalas → eucalyptus-only diet