

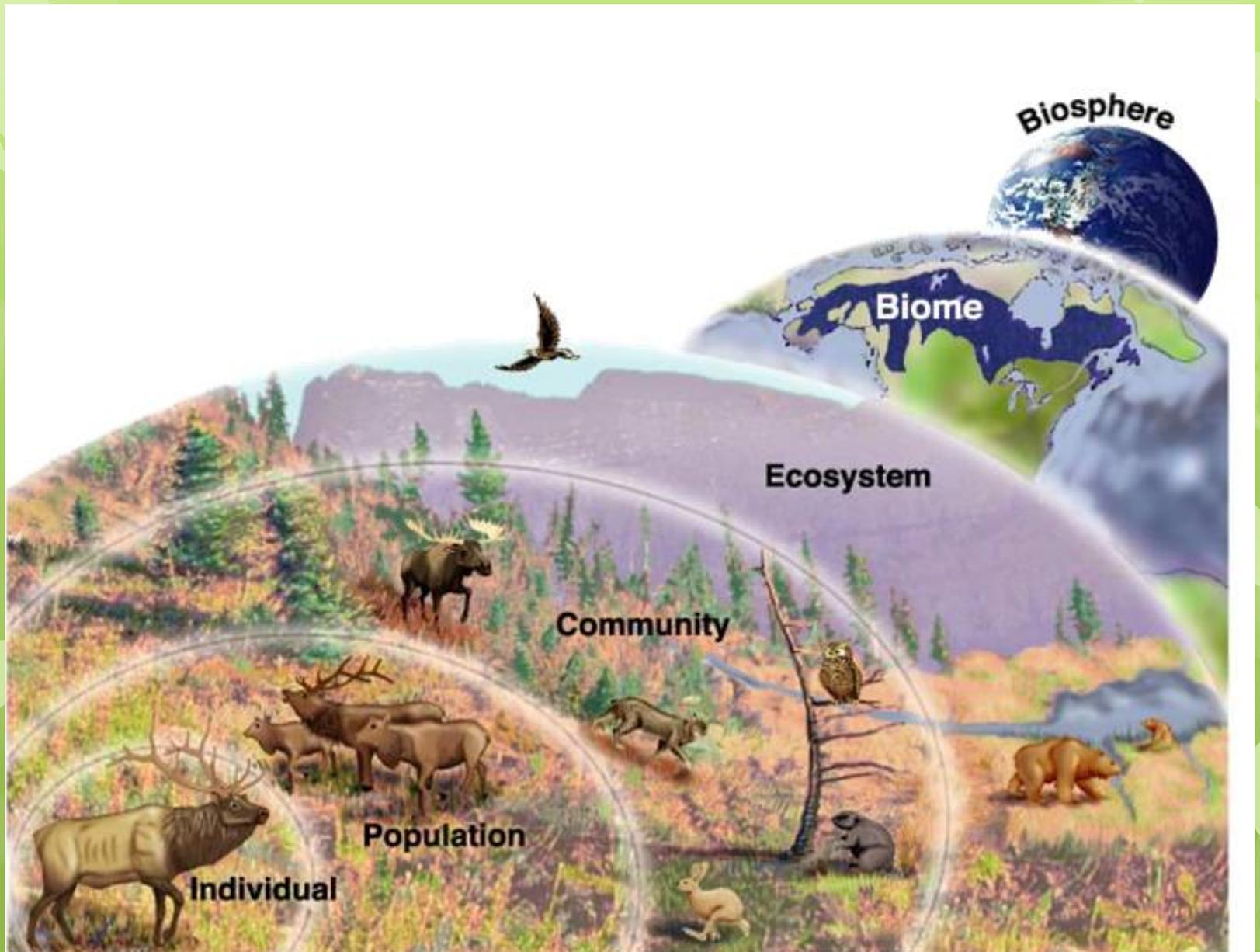
ECOLOGY- Ch. 19

Study of interactions between organisms and the living & nonliving components of the environment

Current issues- reading (Ch. 19-1)

- Human population
- Sixth mass extinction
- Thinning ozone layer
- Greenhouse effect (global climate change)

Levels of organization



Interdependence



- SURVIVAL depends on interconnectedness between other organisms & the nonliving environment



19-2 Environmental Factors

BIOTIC

- ALL LIVING THINGS
- Predators
- Competitors
- Parasites
- Food sources

ABIOTIC

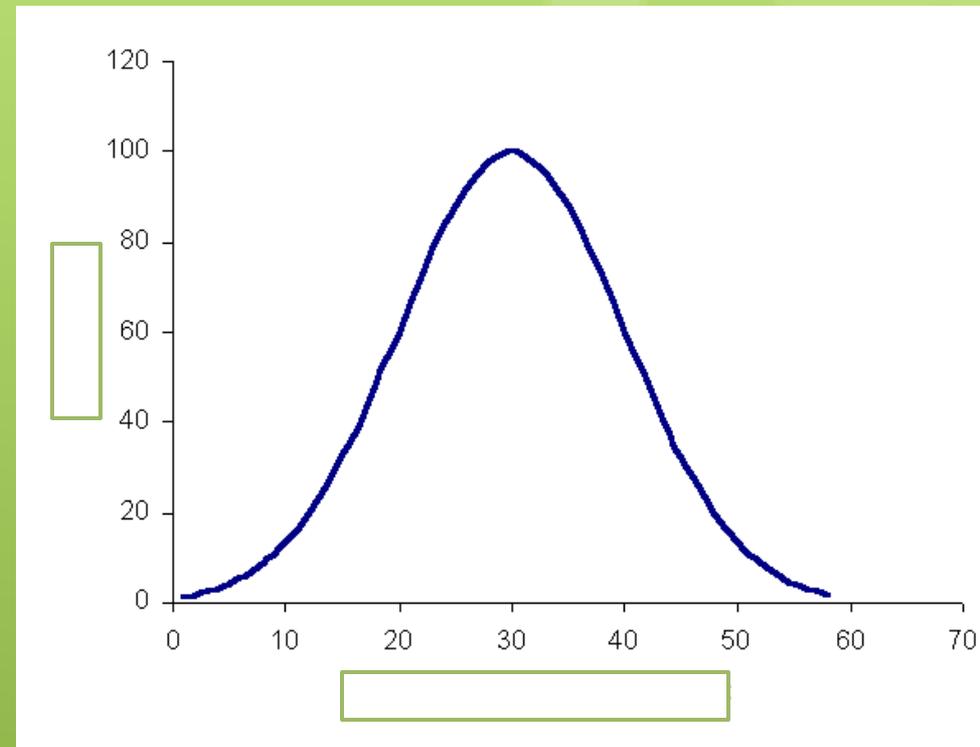
- ALL PHYSICAL & CHEMICAL CHARACTERISTICS OF ENVIRONMENT
- Temperature
- Humidity
- Precipitation
- pH
- Salinity
- Oxygen concentration
- Amount of sunlight
- Nitrogen concentration

Interdependence

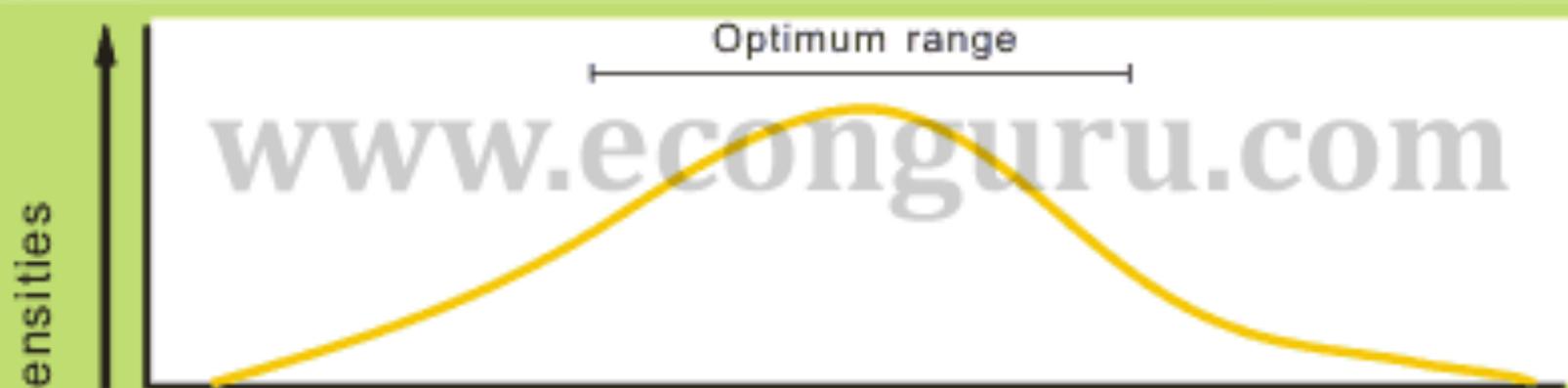
- Habitat- where an organism lives
- Organisms change their environment
- Changes in the environment affect organisms

Tolerance curve of an organism

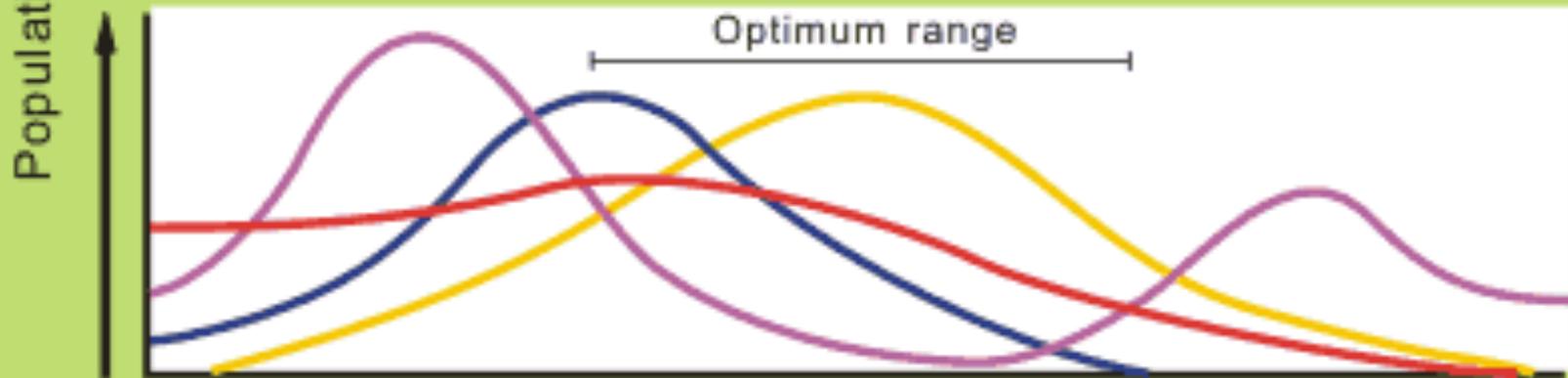
- Shows the range of conditions (abiotic) in which an organism can survive
- Optimal range
 - *Best functioning*
- Zone of physiological (functional) stress
 - *Reduced functioning*
- Zone of intolerance
 - *No functioning*



Individual vs. Community



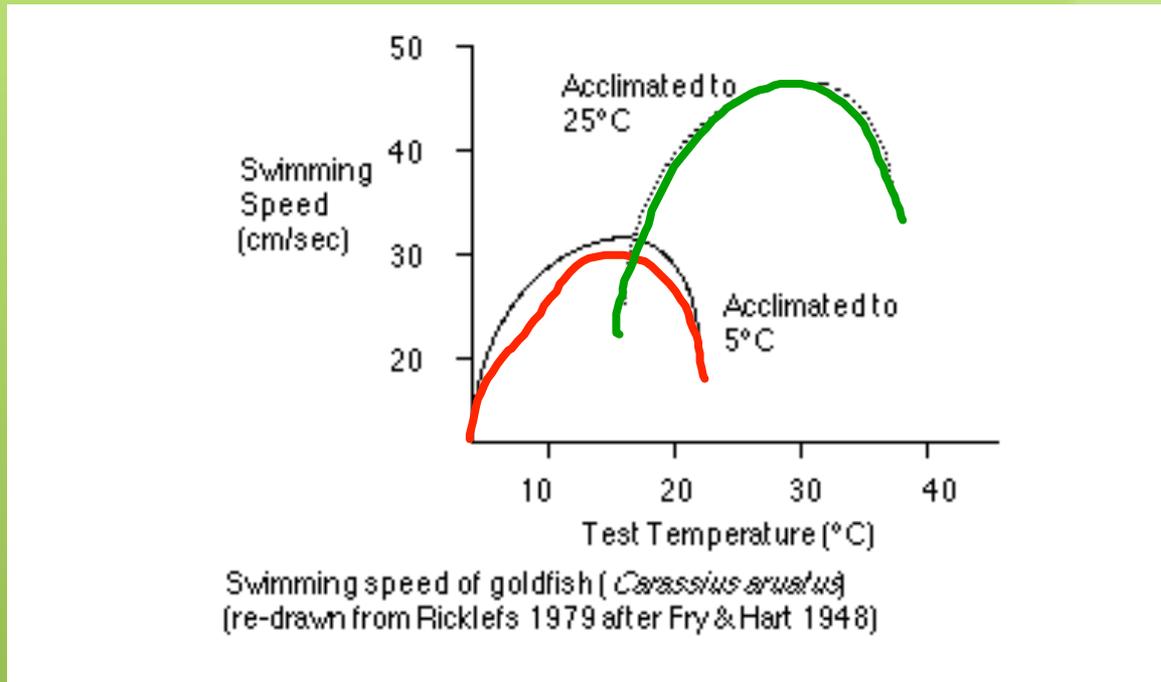
One species



Several species

Environmental Gradient 

Acclimation- adjustment of tolerance to an abiotic factor



Goldfish raised at different temperatures have different tolerance curves. THIS HAPPENS WITHIN AN ORGANISM'S LIFETIME.... Unlike an adaptation (genetic change in a species over many generations)

Niche-role of an organism within a community

- Not just “where it lives”
- What it does
- What & who it eats
- What & how many resources it uses
- What type & how much waste does it produce
- When & how does it reproduce

Niche types

FUNDAMENTAL

- Range of conditions that an organism can potentially tolerate
- Range of resources it could potentially use

REALIZED

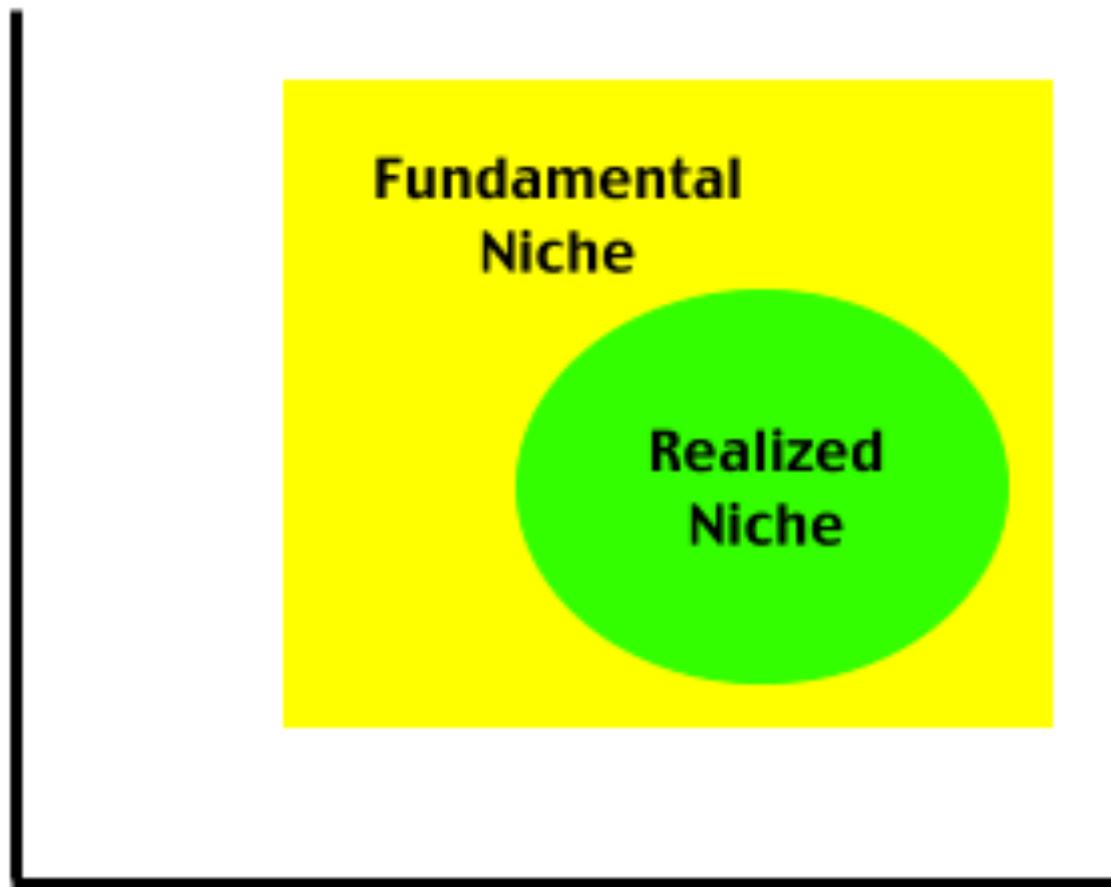
- Range of conditions that an organism actually lives in
- Range of resources it actually uses

Moisture

**Fundamental
Niche**

**Realized
Niche**

Temperature



Niche overlap- 2 species utilizing same resources

- COMPETITION OCCURS!!
- Ecologically similar species do NOT occupy the same realized niche

Sylvia S Mader, Biology, 6th edition. © 1998 The McGraw-Hill Companies, Inc. All rights reserved.

Competition Between Two Laboratory Populations of *Paramecium*

