

### Mating behaviors

Permuncious	No strong pairs
Monogamous	one male + one female
Pologymy	1 Individual, multiple partners

### Coloration and Mimicry

Aposmetic coloration	Prey use to avoid predatation, warning colors
Cryptic coloration	Prey use to avoid predatation, camoflague
Batesian Mimicry	Nontoxic mimics toxic
Mullerian Mimicry	2 or more dangerous species with similiar warning coloration, more known

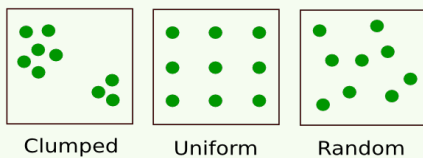
### Relationships

Interspecific	Between species
Competitive exclusion	two species competing for same resources can't coexist
Explotation	One species benefits, other harmed

### Water Cycle

1.	Evaporation
2.	In aptmosphere as water vapor
3.	Forms clouds
4.	Falls
5.	Runoff absorbed
Human impact:	Reduce abailibility, cause pollution by agriculture and urbanization

### Dispersion



### Nitrogen cycle

1.	Nitrogen gas converted to usable form by nitrogen-fixing bacteria, other bacteria convert to nitrates which are taken up by plants through the roots
2.	Animals consume plants, acquire nitrogen in body
3.	When animals die, nitrogen goes into soil and is reused
Human Impacts:	Nitrogen fertilizers, leads to eutrophical and water polution

### Phophorous Cycle

1.	Found in rocks
2.	Plants take up through roots
3.	Animals consume, die, return, phosphorous gets locked in rocks
Human impact:	Mining releases large amounts of phosphorous

### Plants

Dormancy	Inactivity or slow metabolism triggered by environment
Hormones	Auxins and cytokines play role in plant development
Trophism	Plants grow in response to particular stimulus
Photo Periarosm	Plants able to see changes in day lengths

### Organisms uses

Biorem- ediation	Use of organisms to remove pollutants
Biological augmen- tation	Addition of organisms to ecosystem to enhance its function (ex. nitrogen-fixing bacteria increase plant growth)



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### Stimulus response

**Kinesis** Nondirectional response to stimulus, activity level aranges in response to intensity.

### Fixed Action Patterns

**Fixed action patterns** innate, stereotyped, behavior sequences that are triggered by specific environmental cues.

**Sign** Specific environmental cues

**Simulus**

### Ultimate vs Inate Evolution

**Ultimate** Focuses on evolutionary history and behavior of trait

**Inate** Genetic + physiological basis

### Definitions

**Ecology** The study of organisms and their interactions with the environment

**Biotic** Living; plants, animals, bacteria

**Abiotic** Non-living; temperature, sun, water, soil, rocks, weather

### Species movement

**Species Transplant** Adding a species to areas where it was previously absent to see if dispersal is a key factor or limiting distribution, must survive and reproduce to be sucessful

**Dispersal** Movement away from high population density or origin, contributes to distribution

### Biomes

**Tundra** Cold

**Savanna** Desert

**Temperate Broadleaf forest** Indiana, Arkansas

**Tropical** Most diverse, by equator

**Temps are warmer at equator** Colder at poles

### Climate vs Weather

**Weather** Shorter period of time

**Climate** Statistical changes over time (temp, percipitation, sunlight, wind)

**Climate change** Long-term shift in teperature and weather patterns caused by human activities especially burning of fossil fuels

### NEP

**Definition** difference between total CO2 absorbed by photosynthesis and released by respiration

**+** singk

**-** releasing. loosing

### j

### Eutrophication

**Eutrop- hication** Body of water becomes enriched with nutrients = excessive plant growth and death of fish

### Limiting Nutrient

**Limiting nutrient** Nutrient in short supply, limits growth of organisms

### Carbon Cycle

- CO2 taken in by plants in photosynthesis (some carbon transformed to soil)
- Plants and animals die, carbon returned to soil, stored for long time or released into aptmosphere through respiration, decomposition

**Human impact:** Burning of fossil fuels



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### Niches

Fundamental	Potential
Realized	Actual environment
Ecological	Role organism fills in ecosystem

### Temporal Partitioning

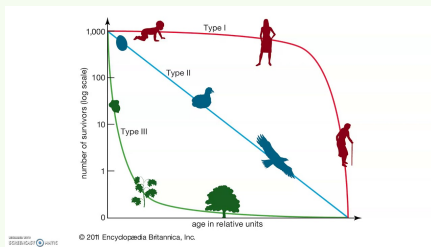
Temporal Partitioning	Species that occupy similar niches reduce competition by using at different times
Example	Birds look for food at different times a day

### Species Diversity

Richness	number of different species present
Abundance	number of individuals of each species

### Dispersion

### Survivorship Curve



### Density dependent vs independent

Density dependent	Affect population size, effects increase as population increases
Density independent	Abiotic, significant impact on population regardless of size

### Altruistic behaviors

Altruistic behaviors	Benefit others at cost to individual
Hamilton's rule	Predicts altruistic behaviors through evolution
Kin selection	Explains altruistic behaviors

### Learning

Imprinting	Organism develops strong attachment to first item it discovers
Associated Learning	Organism associates stimulus with response
Operant conditioning	Organism associates behavior with new and or punishment and adjust accordingly
Cognition	Mental process involved in perception, learning, memory and problem solving

### Animal Behavior

Behavior Ecology	Study of ecological and evolutionary causes of behavior in organisms.
Competition	Organisms competing
Resource partitioning	Division of resources to avoid competition
Mutualism	Both organisms benefit
Commensalism	One animal benefits one is unaffected.
Agonistic Behaviors	Associated with conflict between individuals (fighting, threatening...)

### Definitions

Bioaccumulation	Increase of toxins in food web by building up in individual organism.
Biomagnification	Retained substance becomes more concentrated at each level.

### Primary productivity

GPP=	NPP+RR
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