Bio 20c (community)

6 types of learning1. conditioning

2. imprinting

3. spatial learning

4. life history modified learning

5. mistake based learning

6. cognition

(candy is so like milk chocolate)Conditioningsimple learning

ex. pavlov's dog ONBIO 20C (COMMUNITY) SPECIFICALLY FOR YOUFOR ONLY$13. 90/PAGEOrder NowImprintingfast and irreversible learning occurs during a critical time window

ex. geese and bootsCognition- a type of learning

-recognition and manipulation of facts about the world

-ability to form concepts and gain insightsCommunicationsignal from one individual modifies behavior of anotherSignalinformation containing behavior

-visual, tactile, olfactory, auditoryDeceptiontype of communitcation.

-to persist, it must be rareForaging behaviorpredicts an animal will maximize its benefits and maximize its costs with respect to food selection

- ratio of value vs. abundanceOrientationMovement that results in a change of positionTaxismovement toward or away from a stimulus

photo = towards light

phono = towards sounds

geo = towards sounds

chem = towards a chemicalMigrationlong distance movement associated with change of seasons

3 types:

1. Piloting

2. Compass navigation

3. Bi-coordinate navigationBi-coordinate (true) navigationtype of migration

compass navigation plus knowledge of where you areCompass navigationuse

stars, sun, or magnetic fields for migrationPilotingtype of migration

use of visual referencesAltruismA behavior that imparts a cost to self and a

benefit to another

(aka: self sacrificing behavior)

2 types: Kin selection, reciprocal altruismKin selectionaltruism occurs if cost

is less than benefit due to relatedness

ex. white fronted bee eaters

-Birds more likely to help rear full siblings than less related birds

-offered no assistance to unrelated birdsReciprocal Altruismtype of altruism

self sacrificing behavior with unrelated individualsEusocialityAltruism in

social groups that have sterile individuals

ex. ants, beesDensity independent factorsfactors limiting population growth

-not affected by population size

-ex. bad weather conditions that affect the entire populationDensity

dependentfactor that limits population growth

-becomes more pronounced with increasing density

ex. availability of food, abundance of predators, and diseaser selected

speciesr is intrinsic growth rate

-good dispersal

-small size

-short life span

ex. house flies, rabbitsk selected species-slow growth

-long life span

ex. Oak trees, blue birds, polar bearsCommunityall the organisms living together in the same areaSpecies interactionsinteractions between two species

5 basic types:

1. Mutualism

2. Commensalism

3. Consumption

4. Amensalism

5. CompetitionMutualism+/+

type of species interactionsCommensalismtype of species interaction

+/0

ex. barnicles on a whales skinConsumption(aka: antagonistic interactions)

type of species interaction

+/-Amensalismtype of species interaction

0/-Competitiontype of species interaction

-/-nicheform of competition

sum of total resources used by a speciesSymmetric Competitioneach species experiences the same decrease in fitnessFundamental nichetype of competition

total possible use of the environment by a speciesAsymmetric CompetitionOne species has a greater fitness decrease than the other

-more common than symmetricRealized nicheactual observed use of the environment by a species

-realized niche can be smaller then the fundamental niche because of interactions with other speciesHamilton's ruleBR > C

B = Benefit

R = coefficient of relatedness between individuals

C = CostCompetitive exclusion principleThe hypothesis that 2 species with the same niche cannot co-exist3 types of consumption1. Herbivory

2. Parasitism

3. PredationHerbivorytype of consumption

-grazing organisms (herbivores) consume plant tissueParasitismtype of consumption

-parasite consumes small amounts of tissues in a host organism

-ex. mosquito

-ex. leechPredationtype of consumption

-predator kills and consumes all or most of another organism (prey)Constitutive Defensealways presented

ex. schools of fish

ex. weaondry of a porcupineInducible Defenseproduced in response to a predator

-inducible defense minimizes fitness costMimicrytype of constitutive defence

2 types:

1. Mullerian

2. BatesianMullerian mimicryspecies with similar defenses resemble each otherBatesian mimicryspecies without defenses resemble those with defensesBottom upAmount of prey regulates predator abundanceTop downPredators control prey abundance

ex. hare-lynx population cycleIndirect interactionstwo species that do not directly interct exert influence on each other

ex. tropic cascade

ex. Otters <3 KelpKeystone SpeciesSpecies with affects of communities that are disproportionate to their biomass

-tend to be top level predatorsSpecies Diversitykey feature of community

-weighted measure that includes both species # and abundanceSpecies richnesstotal # of speciesNet Primary Productivity (NPP)amount of plant material available to herbivores and decomposersCommunity Stability2 measures:

1. Resistance

2. ResilianceResistancemeasure of how much disturbance affects a communityResiliencemeasure of how quickly a community recovers from disturbanceFrederick ClementsA researcher of communities

-saw communities as working cooperativelyHenry GleasonA researcher of communities

-had an individualistic viewSuccessionrecovery of a community after disturbancePrimary SuccessionAll species and soil/propagules are removed

ex. lava flow

ex. glacier movementSecondary SuccessionSome or all species removed, but soil/propagules are left intact

ex. fire leaves seeds behindEarly successional communitypioneer species move in

-high disperasal

-fast growing

-short-livedLate successional community(Type of community)

-long lived

-slow growing

-superior competitors move inClimax communitystable persistant

communityFacilitationspecies interaction during succession

-one species makes sonditions more tolerable for anotherInhibitionspecies interaction during succession

-one species prevents the establishment of anotherTolerancespecies interaction during succession

-existing species do not influence the arrival of new speciesModern ViewView of succession

Who can live there? (spiecies involved)

Who does what to whom? (species interactions)

What happened before or next door? (environmental circumstances)Equilibrium TheoryDynamic equilibrium between

- rates of colonization

- rates of extinctionSSpecies number

as S increases, colonization of new species decreases and rates of extinction increase