

March 30, 2015

Communities (Part 1)

Announcements

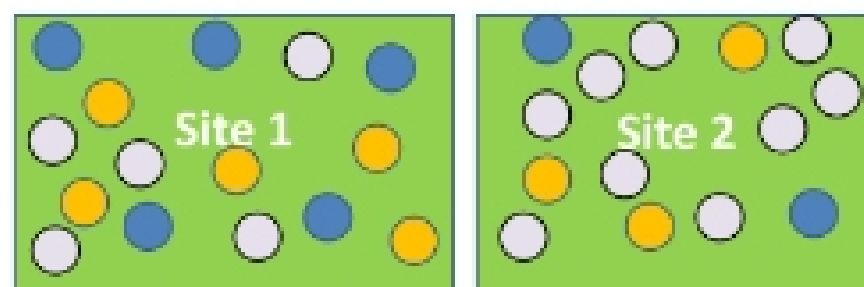
- Quiz 7 now available
 - Due Sunday April 5 at 11:59 pm
- Critical Thinking #5 now available
 - Due Monday April 6 11:59 pm

Community: all biotic factors

- Group of populations of different species living in a specific location with potential to interact

Types of Biodiversity: Species Diversity

- Community level measure of biodiversity
- Variety of different species present in geographical location
- Measured by the number of species and the relative abundance of each species in the community
- Species richness= number of species
 - Very easy to calculate

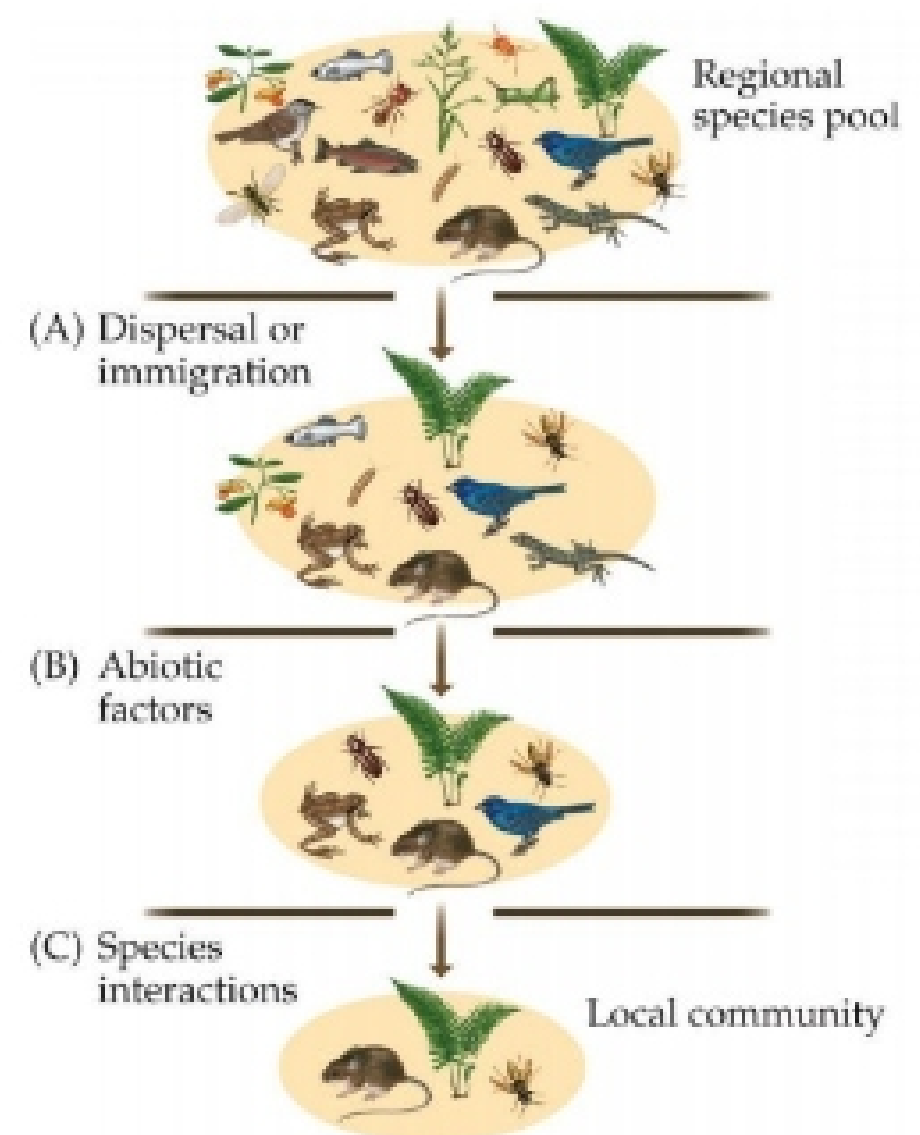


- What is the species richness for Site 1? 3
- Species richness in Site 2 is also 3

- Relative abundance = $((\# \text{ of individuals of species}) / (\text{total } \# \text{ of individuals of all species})) * 100$
 - o ex) Site 1: Number of gray species = 6; Total number of individuals of all species = 15; $(6/15) * 100 = 40\%$
 - o What is the relative abundance of gray species at site 2?
 - gray = 9 total = 14 $(9/14) * 100 = 64\%$

Species Diversity in Communities

- Species diversity determines the function of the community
 - o Positive relationship between species diversity and community function
- Interactions are synergistic
 - o The “community” is the combined result of all the interactions of individual species
- Species diversity varies at regional scale
- Local community depends on Ecological filters:
 - o Regional species pool
 - Pool of species found in a particular area
 - o Dispersal/Immigration capabilities
 - Can the species move to the location?
 - o Abiotic conditions
 - Can the species survive the abiotic factors?
 - o Species interactions (survivors are local community)



Community Interactions

- Interspecific Interactions= relationships between different species
- Important in determining biodiversity at local level

	Predation	Herbivory	Parasites/Pathogens	Mutualism	Competition
Species 1	+	+	+	+	-
Species 2	-	-	-	+	-

Predation (+,-)

- Species 1 (predator) eats Species 2 (prey)
- One benefits (predator) the other has negative effect (prey)
 - o Can assume that the prey will die after being predated on.
- Prey have adaptations for predator avoidance
 - o Camouflage (can't see it)
 - o Mechanical defenses (physical deterrent)
 - o Chemical defenses (smell or toxins)
 - o Mimicry
 - An organisms that is non-posionous or venomous that mimics something that is scary to predator
 - Coral snake (bad) vs. King snake (not-bad)
 - Red touches yellow kill the fellow
 - Red on black won't hurt jack

Herbivory (+,-)

- Species 1 (animal) eats Species 2 (plant)
- Usually does not cause death, but plant must expend energy to replace damaged tissues
- Plants have adaptations to decrease herbivory
 - o Thorns